The relationship between mR (milliroentgen), which is the unit of radiation, and µC/kg (micro-coulomb/kilogram), which is the SI derived unit of radiation, is as follows.

1 mR = 0.258 µC/kg

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Getting Started

Scope
This Service Manual is applicable to Fuji Computed Radiography CR-IR341 and CR-IR341P. The machine is categorized as Class 1 according to IEC classification. For the console (hereinafter abbreviated as CSL), reference should be made to the Service Manual for ID-T741 or CR-IR348CL.

NOTES
- Differences between the CR-IR341 and CR-IR341P are as follows. The CR-IR341 may be connected to the ID-T741. The CR-IR341P may be connected to the CR-IR348CL and ID-T741.
- Units with serial number #5001 or later are called “CR-IR341P”.

Notational Conventions
In this manual, some conventions for unit symbols, cautions, warnings, etc. are followed to provide a simple, easy-to-read layout.

Notation of unit symbols
For notation of unit symbols, metric units set forth in the International Systems of Units (SI) are used, as a rule. However, some metric units that are not allowed in the SI but are permitted in the Measurement Law are used partially.

Notation of cautions, warnings, etc.
The notation formats of “warning,” “caution,” “note,” “supplementary note,” and “reference” are shown below.

WARNING
Used when physical injury or death may occur if the instruction is not observed.

CAUTION
Used when a minor physical injury may be incurred or the machine may suffer serious damage if the instruction is not observed.

NOTE
Used when the machine may suffer damage, or any failure or malfunction may occur if the instruction is not observed.

SUPPLEMENTARY NOTE
Used to supply information that is not related directly to the work flow but may be useful if known.

Used to indicate the section you should refer to.
### Servicing Instruments and Tools That Require Inspection/Calibration

The machine should be installed and serviced by use of servicing instruments and tools that have been inspected and calibrated as appropriate.

If the machine were serviced using servicing instruments and tools that have not been inspected and calibrated, proper performance of the machine could not be guaranteed.

Servicing instruments and tools that require inspection/calibration are as listed below.

Inspection/calibration procedures should be performed in accordance with the inspection/calibration manuals described in the ECN Information.

- **Instruments and tools that require inspection/calibration**

<table>
<thead>
<tr>
<th>Name</th>
<th>Inspection</th>
<th>Calibration</th>
<th>Inspection/calibration manual No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel rule (150mm)</td>
<td>☑</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Steel rule (300mm)</td>
<td>☑</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Digital tester</td>
<td>☑</td>
<td>☑</td>
<td>ECN No. FCR-A014</td>
</tr>
<tr>
<td>Calipers</td>
<td>☑(✻)</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Push-pull gauge</td>
<td>☑</td>
<td>☑</td>
<td></td>
</tr>
</tbody>
</table>

✻: A block gauge for use in inspection requires calibration.
Safety Precaution

Observe the following safety precautions to avoid possible hazards and accidents during installation and servicing.

1. General Precautions

■ Power Supply
  • Be sure to turn OFF the power before servicing. If servicing is performed while the power remains ON, you may experience electric shock, burn, or machine malfunction. Since some parts are not fully discharged (such as the photomultiplier) or remain at high temperature (such as the lamp) even after power OFF, exercise due care not to touch them. If servicing procedures (such as voltage measurement) that cannot be performed under power-OFF condition are to be performed, use due care to avoid electric shock and other hazards, as instructed in this manual.
  • To restart the machine, power it OFF and wait more than five seconds before powering it ON again. If the machine is powered ON within five seconds, it may shut down due to overcurrent/overvoltage protection.

■ Check on Drive Mechanisms
  For your safety, be sure to turn OFF the power before proceeding with inspection or adjustment. If inspection or adjustment that cannot be performed under power-OFF condition is to be made, use due care, as instructed in this manual.

■ Heavy Objects
  Get an assistant to help you during installation and removal of heavy objects. Also use suitable gear or machinery when appropriate.

■ Safety Devices
  For safety devices, such as fuses, breakers, interlock switches, panels, and covers, their safety features should always be enabled. Do not make any alternation or modification that may impair their functionality.

■ Fixing Adjustable Foot
  As anti-vibration measures for the machine, fix its adjustable feet onto the floor in place.
**Precautions for Optical Parts**

Observe the following rules for all the optical parts. Otherwise, the image quality may be degraded.

- Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.
- Never touch the surface of optical parts.
- Do not attempt to remove dust or soil with procedures other than those specified.
- Remove optical parts in a clean environment. When removing protective housings to replace optical parts, use care to avoid saliva from spattering around. Accordingly, it is desirable to wear a mask.

**Other General Precautions**

General precautions to be observed when performing servicing procedures are described below. Note that precautions for individual procedures are described for their respective procedures and thus be observed accordingly.

- To avoid hazards and prevent damage to components, do not remove or install any part while the machine is powered. When performing checks and adjustments under the powered condition, exercise care against electric shock.
- To avoid hazards, do not put your hand on or into any rotating part. Also use care not to get your hand, foot, hairs, or clothes entangled in the machine.
- Use care not to touch the erasure lamp by hand, because it remains at high temperature immediately after power is turned OFF.
- Since some components, such as the photomultiplier, are not sufficiently discharged after power is turned OFF, exercise due care to avoid electric shock. (Do not touch any exposed parts, such as connectors and terminals, by bare hand inadvertently.)
- When servicing any LD assembly and printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electronic parts on the board.
- Keep clean the product labels, safety standards labels, product serial number indications, and so forth attached on the machine, and do not peel them or put another label over them.
- Upon completion of the servicing procedures, put the protective housings, retaining screws, and cover grounding back exactly where they were, and secure them in place.
2. **Safety Against Laser Radiation**

As indicated by the Certification and Identification Label attached on the rear cover of the machine for overseas use, the machine complies with the U.S. Federal Regulations concerning laser safety. The image reader incorporates a laser with a maximum output of 60 mW (Class 3B, semiconductor laser wavelength of 660 nm, red visible light), but you will not be exposed to any hazard if you perform tasks as instructed in this manual.

### Precautions Against Laser Exposure

Observe the following rules to avoid laser exposure.

- **Procedures that require precautions against laser exposure**
  
  When performing the following procedures, observe the instructions exactly as described in this manual to avoid laser exposure.
  
  - Remove and restore the scanning optics unit.
  - Replace the semiconductor laser unit.
  - Replace or clean subscanning unit parts.

  After the procedures are completed, put the protective housings and retaining screws back exactly in their original position to prevent leakage of a laser beam out of the machine.

- **Preventive maintenance for keeping the machine in compliance**
  
  In order to keep the machine in compliance with laser safety standards, perform preventive maintenance programs described in “Preventive Maintenance Volume” at intervals specified.

- **Things that should not be done to avoid laser exposure**
  
  Observe the following rules during servicing to avoid laser exposure.
  
  - Never attempt to perform procedures other than instructed in this manual because you may be exposed to laser beam radiation.
  - Do not reflect a laser beam by placing a mirror or the like in the laser beam path.
  - Do not alter the light path of a laser beam.
  - Do not replace optical parts while the laser is energized.
  - Never attempt to make optical axis adjustment in the field. Although the semiconductor laser beam is red visible light, field adjustment of the optical axis cannot be done.

### Labels and Protective Housings for Laser Safety

- “Safety Labels page 0.36”
- “Protective Housings Against Laser Exposure page 0.40”
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How Service Manual Is Organized

This Service Manual is available in two forms: electronic manual and paper manual. The contents described are the same, but how to access the information is different. See either “Electronic Manual” or “Paper Manual” for their respective interface, depending on the media you refer to.

Electronic Manual (currently not available)

An electronic version of the manual is supplied in the form of PDF data. Before consulting the electronic manual, familiarize yourself with the following matters.

About PDF
An electronic version of the manual is distributed as a PDF (Portable Document Format) file. PDF is an electronic document file format developed by Adobe Systems Inc., and can be read with a commercially available PDF viewer.

About Acrobat Reader
The CD-ROM that contains electronic manuals also contains Adobe Systems’ Acrobat Reader as a their PDF viewer.

To view an electronic manual, use Acrobat Reader bundled. If any PDF viewer other than Acrobat Reader is used, the image displayed on screen or printed out may differ from the original.

The recommended operating environments for running Acrobat Reader alone are as follows.

- Version: Acrobat Reader 3.0 or later
- CPU: Pentium 133 MHz or faster processor
- OS: Microsoft Windows 95 or Windows NT 4.0
- Free memory: at least 16MB of RAM after startup of Windows NT
  (at least 32 MB of RAM recommended)
- Display: at least 800x600 dots, with color depth of at least 256 colors
- CD-ROM drive: at least 4x speed (8x or higher speed recommended)
- Disk capacity: at least 5MB of free space after startup of Windows NT

Installing Acrobat Reader

For installation of Acrobat Reader, see the “Read Me” file in the CD-ROM that contains electronic manuals. If the version of Acrobat Reader is older than 3.0, the electronic manual cannot be viewed or, if it can be viewed, its specific features may not be guaranteed. Referring to the “Read Me” file, install a proper version of Acrobat Reader.
How Service Manual Is Organized

■ Paper Manual

The Service Manual consists of the following four volumes.

<Maintenance Volume>
- Machine Description
  Describes the summary of the machine (CR-IR341).
- Troubleshooting
  Describes the troubleshooting methods and servicing procedures.
- Checks, Replacement and Adjustment
  Describes the procedures for servicing in steps.
- Maintenance Utility
  Describes the functional organization of Service Utility.

<Service Parts Volume>
  Describes the service part lists and exploded views, as well as how to read the service parts lists.

<Preventive Maintenance Volume>
  Describes the procedures for preventive maintenance.

<Installation Volume>
  Describes the specifications of the machine, installation requirements and procedures, and checkpoints after installation, which are required for installation preparation and installation.

■ How To Search

- Refer to the table of contents and document map.
  In order to facilitate efficient search for a desired item in the paper version of the manual, a document map is provided in addition to the table of contents.
  The document map is illustratively organized so that you can visually find a location where your desired information is described.

- Open a desired chapter by referring to the chapter icon on the header.
  The header contains “chapter icons” to indicate the chapter where the current page is located; the highlighted number corresponds to the chapter number for each volume.
  On the hardcopy version of the manual, you can browse pages with reference to the “chapter icon” to access your desired chapter quickly.
  On the electronic version of the manual, you can skip pages with reference to the “chapter icon” to access your desired chapter quickly.

- Section number on the footer
  In the footer, a section number for that page is indicated.
  On the hardcopy version of the manual, you can browse pages with reference to the footer to access your desired section quickly.
  On the electronic version of the manual, you can skip pages with reference to the “chapter icon” to access your desired section quickly.

■ Supplementary Note about Machine Name

It should be understood in the Service Manual that the “CR-IR341” is the same as the “FCR5000”.
## Organizational Differences from Preceding Manuals

The CR-IR341 service manual substantially differs from the preceding (9000 Series and other) manuals in organizational structure. Structural changes have been made for the following three purposes.

- To provide increased compactness.
- To provide increased handling ease.
- To furnish additional information for reducing the downtime.

As a result of the structural changes, the service manual is now divided into the following four volumes.

- "Maintenance Volume"
- "Service Parts Volume"
- "Preventive Maintenance Volume"
- "Installation Volume"

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Reading the Maintenance Volume upon Failure Occurrence

When a failure (error) occurs in the machine, take appropriate remedial action depending on the purpose.

- To achieve prompt machine recovery
  Remedies based on troubleshooting flows

- To analyze the error cause or prevent an error recurrence
  Remedies based on mechanical control flows

- To check for improper operations
  Remedies based on descriptions of operations

Remedies based on troubleshooting flows

“2.4 Troubleshooting Flows” in Troubleshooting

The “Troubleshooting Flows” section enables you to restore the machine to normal by performing the procedures indicated by the flowchart that is related to the encountered error (error code).

The steps to be performed are outlined below.

1. Confirm the generated error code.
   Note the error code displayed on the operation panel.

2. Note the “Index” at the beginning of “Troubleshooting Flows” section and search for the “recovery procedure” for the error code.
   The recovery procedures are set forth in numerical order.

3. Estimate the cause of the error, with reference to the “Cause” in the “Troubleshooting Flows.”
   The “Troubleshooting Flows” describe the following information.
   - Cause
   - Error-related I/O locations
   - Error-related system block diagram

4. Restore the machine to normal by following the flow chart that is indicated in the “Troubleshooting.”
   When replacing or adjusting parts, refer to the following sections.
   - Replacement parts confirmation
     Service Parts List Volume
   - Parts replacement and adjustment
     Checks, Replacement and Adjustment of Parts

SUPPLEMENTARY NOTES

- If the machine cannot be restored to normal by performing the specified procedures, report the employed procedures and results to the Service Headquarters to make a request for analysis.
- Even if the machine has been restored to normal by performing procedures other than those which are set forth in the “Troubleshooting Flows,” report the employed procedures, progress, and results to the Service Headquarters. Such reports will be utilized for future service manual improvement and machine serviceability enhancement.
• Remedies based on mechanical control flows
  "8. Mechanical Control Flows" in Machine Description Volume
  The "Mechanical Control Flows" section furnishes flowcharts to detail the machine operations and describe the error occurrence timing. Note the mechanical control flowcharts to determine the machine operations performed at the time of error occurrence and investigate the error cause.

◆ SUPPLEMENTARY NOTE ◆
When initiating a troubleshooting operation in accordance with the generated error code, refer to the "7. Index of Error Codes" at the end of "8. Mechanical Control Flows" in Machine Description Volume.

• Remedies based on descriptions of operations
  "7. Descriptions of Operations" in Machine Description Volume
  The "Descriptions of Operations" section furnishes diagrams to explain about the normal operations and functions of various machine components. Read the relevant descriptions of operations to check whether the machine normally operates.

■ Maintenance Space
When performing maintenance procedures, secure sufficient space for that purpose.

Height: 1900 or more
Rear: 700 or more
Front: 700 or more
Unit: mm
FR1H4029.EPS
Safety Labels

1. Laser Precaution Labels

- Label Attachment Locations

Below are illustrated the protective housings and laser precaution labels specified in Part 1-J, Federal Regulations Code “Title 21” issued by the FDA of the U.S.
### List of Labels

- **HHS Certification and Identification Label**

  **CR-IR341P**

  ![CR-IR341P Label](FR1B1261.EPS)

  FUJI PHOTO FILM CO., LTD.  
  26-30, NISHIAZABU 2-CHOME, MINATO-KU,  
  TOKYO 106-8620, JAPAN

  MODEL: CR-IR 341P  
  SERIAL No.  
  MANUFACTURED: FPE

  This product complies with  
  21 CFR Chapter 1. Subchapter J.

  **CR-IR341**

  ![CR-IR341 Label](FR1B1043.EPS)

  FUJI PHOTO FILM CO., LTD.  
  26-30, NISHIAZABU 2-CHOME, MINATO-KU,  
  TOKYO 106-8620, JAPAN

  MODEL: CR-IR 341  
  SERIAL No.  
  MANUFACTURED: FPE

  This product complies with  
  21 CFR Chapter 1. Subchapter J.

- **HHS Label #1**

  ![HHS Label #1](FR1B1045.EPS)

  **DANGER**

  Laser radiation when open  
  AVOID DIRECT EXPOSURE TO BEAM

- **HHS Label #2**

  ![HHS Label #2](FR1B1046.EPS)

  **DANGER**

  Laser radiation when open external cover  
  AVOID DIRECT EXPOSURE TO BEAM

- **EN 60825-1: 1996 Class 1 Product Label**

  ![EN 60825-1: 1996 Label](FR1B1044.EPS)

  **クラス 1 レーザ製品**  
  CLASS 1 LASER PRODUCT  
  LASER KLASSE 1  
  APPAREIL A LASER DE CLASSE 1  
  PRODOTTO LASER DI CLASSE 1  
  PRODUCTO LASER DE CLASE 1  
  KLASSE 1 LASERPRODUKT  
  KLASSE 1 LASERPRODUKT  
  클래스 1 레이저 제품  
  EN60825-1:1996
2. **Labels**

## Label Attachment Locations

![Label Attachment Locations Diagram](FR1B1047.EPS)

- **Ratings Indication Label**
- **Manufacturer Label**
- **Acceptance Label**
- **Electric Shock Warning Label**

### EN 60825-1: 1996 Class 3B Panel Label

**注意** ここを触るとレーザビームが発生します。ビームを直視したり、顔に近づけないようにしてください。

**CAUTION** LASER RADIATION WHEN OPEN
AVOID EXPOSURE TO BEAM.

**VORSICHT!** LASSERSTRahlung.
WENN ABDECKUNG GEÖFFNET
NICHT DEM STRAHL AUSSETZEN.

**ATTENTION** RAYONNEMENT LASER EN CAS
D'OUVERTURE
EXPOSITION DANGEREUSE AU FAISCEAU.

**ATTENZIONE** RAGGIO LASER IN CASO DI
APERTURA NON ESPORSI AL RAGGIO.

**PRECAUCIÓN** RADIACION LASER EN CASO DE APERTURA
EVITAR LA EXPOSICIÓN A LOS RAYOS.

**OBSEVERA** LASERSTRALNING OM ÖPPNAD
UNDVÄK ATT UTSÄTTA DIG FÖR STRÅLEN.

**FORSIGTIG** LASERUDSTRÄLNING VID ÖPPNING
VÅG A UDSETTELSE FOR STRÅLEN.

**ADVARSEL** UNGÅ EKSPONERING AV STRÅLEN.

**주의** 이곳을 만지면 레이저 손상이 나타나고, 부상을 줄 수 있으니, 먼저 보거나 접촉하지 마십시오.
List of Labels

- Ratings Indication Label

CR-IR341P

CR-IR341

- Manufacturer Label

- Acceptance Label
Even when the protective housings are removed for servicing, laser beams will never leak out from the machine unless the optical path is intentionally changed. However, if the optical path is changed inadvertently during optics-related installation, the person in charge of installation or other people around the machine may be possibly exposed to laser radiation. During optics-related installation, carefully perform the procedures while checking the instructions described in this manual, and after the installation procedures are completed, restore the protective housings removed back exactly where they were.

■ Protective Housings of Machine
The removable protective housings of the machine are illustrated below. The four covers marked by ❌ in the illustration below are protective housings against laser exposure.
Protective Housing of Scanning Optics Unit

The removable protective housing for the scanning optics unit is illustrated below. Note that the single piece marked by 
\( \times \) in the illustration below represents a protective housing against laser exposure.

Maintenance (M)

Machine Description (MD)

Troubleshooting (MT)

Checks, Replacement and Adjustment of Parts (MC)

Maintenance Utility (MU)
CR-IR341 Service Manual – Contents

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CR-IR341/CR-IR341P
Service Manual

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<tr>
<th>Issue date</th>
<th>Revision number</th>
<th>Reason</th>
<th>Pages affected</th>
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<tr>
<td>05/31/99</td>
<td>04</td>
<td>Corrections due to change in configuration (FM2460)</td>
<td>All pages</td>
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<td>04/20/2001</td>
<td>05</td>
<td>Corrections (FM3006)</td>
<td>MD-12, 14, 34, 36, 53, 61, 102,</td>
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<td></td>
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<td>165, 172–175, 175.1, 175.2</td>
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<td>08/30/2001</td>
<td>07</td>
<td>Additional information for LAN board (FM3115)</td>
<td>MD-12, 34, 36</td>
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</table>
1. Overall Configuration and Nomenclature of Machine

1.1 External View of Machine
1.2 Configuration of Machine

NOTE: An alphabet in parentheses denotes a unit symbol.
2. Features of Machine

2.1 Features of Mechanical Mechanism

- Reading and erasure are performed simultaneously
  The CR-IR341 employs the DPR-CS (Dual Pass Reader with Cassette Stack) scheme to perform simultaneous reading and erasure.
  Two changeover guides are provided in the IP conveyance path, and conveyance paths other than for reading and erasure are shared.

- High-output LD for enhanced image quality
  Because a high-output LD is used to achieve enhanced image quality. The CR-IR341 with standard specifications retains image quality equivalent to the high-resolution mode of the FCR9000 series.

- Each component in the scanning optics unit can be replaced
  The scanning optics unit is structured so that the polygon assembly and LD assembly within the unit can be replaced on an assembly-by-assembly basis.
2.2 Image Network I/F Option

The CR-IR341 comes standard with an Ethernet interface for an ID network. In addition, a high-speed image network interface option for an image network may be installed.

- **Hardware Specs**
  - IEEE802.3 (10Base-TX)
  - IEEE802.3u (10Base-TX) auto-sensing & switching

- **Hardware**
  - Compression/decompression board (HCP08A)
  - Network I/F board (CPU90F)

- **Software Specs**
  - FINP (Fuji Integrated Network Protocol)
  - Base on DICOM (OEM Network Protocol)
3. New Parts with Better Serviceability

The CR-IR341 employs new parts with better serviceability. They should be handled in a different manner than with conventional parts. When servicing the CR-IR341 for the first time, check the mechanisms of such new parts and their locations.

3.1 E-ringless Housing Employed

The employed housing (bearing incorporated) permits fastening to the side plates without using E-rings which inconvenience installation and removal operations.

![Diagram of E-ringless housing and conveyor system](FR1H4024.EPS)
3.2 Snap-fit Pinion Gears Employed

The employed pinion gears can be easily installed and removed without using clamps or tools.

The pinion gear has two latches, such that it is secured in place by snapping the protruding portions of the latches into the notches of the shaft. For removal, pull out the pinion gear with its two latches extended outward. For installation, slowly insert the pinion gear into the shaft until the protruding portions of the latches snap into the notches of the shaft.

♦ NOTE ♦

When putting the pinion gear onto the shaft, use care not to confuse the orientation of the pinion gear. If it is put onto the shaft in a wrong way, the latch for preventing the removal of the pinion gear will be damaged.

![Diagram of snap-fit pinion gears](image1)

![Diagram of correct and incorrect orientation](image2)

![Diagram of Erasure conveyor](image3)
3.3 Simple Bearing Employed

As a bearing for a shaft onto which relatively less load is applied, a plastic bearing that is easy to install and remove is employed.
3.4 Tensioner Not Requiring Tension Adjustment

For a timing belt that needs to be replaced during removal of a unit, a tensioner that permits the tension to be automatically adjusted by the spring force is employed.

**Procedures for removing the timing belt**

1. Loosen the tensioner retaining screw.
   - The tensioner becomes movable.
2. With the tensioner pushed to the loosened screw, secure it in place by tightening the screw.
3. Remove the timing belt.
**Procedures for installing the timing belt**

1. Install the timing belt.
2. Loosen the tensioner retaining screw, and flick the timing belt two or three times with your fingers.
   - The tensioner is pulled by the spring force to the state where the tension of the timing belt is adjusted.
3. Secure the tensioner in place by tightening the screw.
3.5 Sensor Not Requiring Adjustment of Its Mounting Position

Because a snap-on type sensor that is secured onto the bracket with its four latches is employed, displacement of its mounting position is less likely, as compared to a screwed-down type of sensor. As a result, inconvenience associated with its positioning is mitigated. It may be somewhat difficult to snap in the latches during installation of the sensor, but it can be snapped in more easily by pushing the latches with a 150-mm rule as illustrated below.

**CAUTION**

*Mount the sensor exercising care not to bend its claws.*
4. System Block Diagram
5. I/O Locations and Functional Descriptions

5.1 I/O Location Diagram

NOTE: The I/O symbol has the following meaning.

**SD2**
- **Serial number**
- **Unit symbol (A–G, T, Z)**
  - Example: D: Side-positioning conveyor
  - The unit symbol may sometimes be omitted.

**I/O type**
- **S**: Sensor
- **M**: Motor
- **TSW**: Thermal switch
- **FAN**: Fan
- **SV**: Solenoid valve
  - and more

FR1H1135.EPS
## 5.2 I/O List (Sensor)

### 5.2.1 Models of Sensors and Parts Codes

<table>
<thead>
<tr>
<th>Code No.</th>
<th>MS/PS</th>
<th>Model</th>
<th>Relevant sensor symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>104N0043</td>
<td>PS</td>
<td>OJ-380331-701 (5mm Type I)</td>
<td>SA1, 5, 9, 13, SB1, SD2, SE1, SZ2, 3</td>
</tr>
<tr>
<td>104N0044</td>
<td>PS</td>
<td>OJ-380331-702 (5mm Type L)</td>
<td>SA3, 7, 11, 15, 17, SB3, SD1</td>
</tr>
<tr>
<td>104Y0162</td>
<td>PS</td>
<td>Separation type</td>
<td></td>
</tr>
<tr>
<td>113Y1038</td>
<td>PS</td>
<td>19mm Type I</td>
<td>SB2, SC1, 2, SD3, SF1, 2, 3</td>
</tr>
<tr>
<td>113Y1395</td>
<td>PS</td>
<td>Reflective type</td>
<td>SB4</td>
</tr>
<tr>
<td>128S0392</td>
<td>Suction sensor</td>
<td>MPL-503(MPL)</td>
<td>SB5</td>
</tr>
<tr>
<td>128Y0241A</td>
<td>MS</td>
<td>SS-01GL111</td>
<td>SA2, 6, 8, 10</td>
</tr>
<tr>
<td>128Y0258B</td>
<td>MS</td>
<td>SS-01GL2-F + mount</td>
<td>SA4, 8, 12, 16</td>
</tr>
</tbody>
</table>
5.2.2 Description of Sensor ON/OFF

- **Transmissive sensor**
  - OFF(0) : OPEN
  - ON(1) : CLOSE

- **Reflective sensor**
  - OFF(0) : OPEN
  - ON(1) : CLOSE

- **Microswitch (SA2, 6, 10, 14)**
  - OFF(0) : OPEN
  - ON(1) : CLOSE

- **Microswitch (SA4, 8, 12, 16)**
  - ON(1) : CLOSE
  - OFF(0) : OPEN

5.2.3 Sensor Monitoring Screen Under Idle Condition

```
SA1 - 17 : 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 1
SB1 - 5  : 1 0 1 0 0
SC1 - 2  : 0 0
SD1 - 3  : 1 1 0
SE1   : 1
SF1 - 4  : 0 0 0 0
SZ2 - 3  : 1 0
0 : QUIT
```

“0” and “1” denote “Open” and “Close”, respectively.
## 5.3 I/O List (Actuator)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Symbol</th>
<th>Name</th>
<th>Type</th>
<th>Function/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassette set unit (A)</td>
<td>SOLA1, 2, 3, 4</td>
<td>Cassette hold SOL</td>
<td>Power-down solenoid</td>
<td>Pulls in the cassette hold pin, when turned ON.</td>
</tr>
<tr>
<td>Multi-stage cassette loading unit (T)</td>
<td>LEDT1, 3, 5, 7 LEDT2, 4, 6, 8</td>
<td>Cassette insertable, Cassette removable</td>
<td>LED</td>
<td>LED</td>
</tr>
<tr>
<td>Up-down IP removal unit (B)</td>
<td>MB 1 MB 2 MB 3 PB 1 SVB1</td>
<td>Suction cup drive motor, IP transport motor, Up-down drive motor, IP suction, IP leak valve</td>
<td>Pulse motor, Pulse motor, Pulse motor, DC pump, Solenoid valve</td>
<td>Opens the rear cover of the cassette and moves the roller. Conveys the IP. Moves up and down the IP suction conveyor. Sucks when turned ON. Leaks when turned ON.</td>
</tr>
<tr>
<td>Before-side-positioning conveyor (C)</td>
<td>MC 1 SOLC1</td>
<td>IP transport motor, Convergence path changeover guide drive</td>
<td>Pulse motor, Power-down solenoid</td>
<td>Conveys the IP. Changes the path to the load side when turned ON.</td>
</tr>
<tr>
<td>Side-positioning conveyor (D)</td>
<td>MD 1 MD 2 MD 3</td>
<td>Side-positioning motor, Grip release motor, IP transport motor</td>
<td>Pulse motor, Pulse motor, Pulse motor</td>
<td>Drives the side-positioning mechanism. Roller grip/release. Conveys the IP.</td>
</tr>
<tr>
<td>After-reading conveyor (E)</td>
<td>ME 1 ME 2</td>
<td>Grip release motor, IP transport motor</td>
<td>Pulse motor, Pulse motor</td>
<td>Roller grip/release. Conveys the IP.</td>
</tr>
<tr>
<td>Erasure conveyor (F)</td>
<td>MF 1 SOLF1 LAMP1, 2, 3, 4, 5 FANF1</td>
<td>IP transport motor, Branch path changeover guide drive, Erasure lamp, Erasure cooling</td>
<td>Pulse motor, Power-down solenoid, Fluorescent lamp, DC fan</td>
<td>Conveys the IP. Changes the path to the erasure side when turned ON. Light source for erasure</td>
</tr>
<tr>
<td>Subscanning unit (Z)</td>
<td>MZ1 MZ2 MZ3</td>
<td>Subscanning motor, Driving shaft grip, Driven shaft grip</td>
<td>FFM6 DC motor, DC motor</td>
<td>Conveys the IP. Driving shaft grip/release. Driven shaft grip/release.</td>
</tr>
<tr>
<td>Housing (G)</td>
<td>FANG1 FANG2 FANG3 FANG4 FANG5</td>
<td>Board cooling, Board cooling, Board cooling, Board cooling, Board cooling</td>
<td>DC fan, DC fan, DC fan, DC fan, DC fan</td>
<td>Cools down the DRV08A board. Cools down the DRV08A board. Cools down the DRV08A board. Cools down the MTH. Cools down the MTH.</td>
</tr>
</tbody>
</table>
6. IP Flow

6.1 Timing Chart

For normal reading (continuous processing of four IPs of 14"x14" size)
BLANK PAGE
7. Descriptions of Operations

7.1 Elevation Unit

**Elevation Home Position Sensor**

The elevation unit performs its up-down operation by transferring the driving from the MB3 to the worm gear via the timing belt.

Operational requirements are imposed on the movement (up or down) of the elevation unit: it can be operated when the suction cups are in their home position (HP) (in order to prevent interference between the suction cup arm and the cassette set unit).

Home positioning of the elevation unit is detected by SA17 (elevation HP sensor) and SB3 (each shelf position sensor), and implemented during initialization.

When the elevation operation is permitted, MB3 is driven and SA17 sensor detection is implemented (OPEN → CLOSE); then SB sensor detection is implemented (OPEN → CLOSE → OPEN) to ensure that the elevation unit is located at the topmost shelf position. Subsequently, 1-pulse driving is performed by MB3, and the home position is detected by the SB sensor (OPEN → CLOSE).

**Each Shelf Position Sensor**

When a cassette is inserted into the cassette set unit (first shelf through fourth shelf), MB3 is driven to move the elevation unit to the cassette shelf where the cassette has been inserted. The cassette set unit has an actuator installed for each shelf, so the shelf position is determined by SB sensor detection (OPEN → CLOSE).
7.2 IP Removal Unit

■ Suction Cup Home Position

The IP in the cassette inserted is sucked and conveyed to the feed roller.

A crank arm is attached to the suction cup so that the suction cup is moved toward the cassette cover as MB1 is driven.

When SB1 becomes CLOSE, it detects that the suction cup is in its home position.

■ IP Feed Suction

In order to suck the IP, MB1 that drives the suction cup moves from the home position toward the cassette cover by 83 mm (250 pulses). When the suction cup arrives at the IP suction position, it also activates the suction pump (PB1) at the same time, so that the IP is sucked by air.

After the activation of the suction pump (PB1), if the SB5 sensor does not become CLOSE after an elapse of 1 sec, it is judged as IP suction failure.
### IP Feed Leak

After the suction cup is moved to the feed roller by 88 mm (-262 pulses), the IP sucked is detached from the suction cup as SVB1 is activated for air leak. Because the movement speed of the suction cup is the same as the rotation speed of the feed roller, the leading edge of the IP is fed to the feed roller.

The IP being conveyed is prevented from coming into contact with the suction cup by moving the suction cup, which has moved to the feed roller, from the home position toward the cassette cover by 30 mm (86 pulses).

For the IP conveyed, its IP leading edge is detected by the SB2 sensor (OPEN → CLOSE), thereby monitoring that it has been conveyed normally.

#### IP Load Suction

In order to insert into the cassette the IP conveyed from the erasure conveyor to the elevation unit, the suction cup is moved from the suction cup home position toward the cassette cover by 30 mm (86 pulses) and placed in the standby mode.

When the IP conveyed from the feed roller is inserted into the cassette, the suction cup that is placed in the standby mode is moved by 30 mm (86 pulses) and the suction pump is activated, thereby sucking the trailing edge of the IP.
**IP Load Leak**

After the suction cup is moved toward the cassette cover by 88 mm (262 pulses), the IP sucked is detached from the suction cup as SVB1 is activated for air leak.

Because the movement speed of the suction cup is the same as the rotation speed of the feed roller, the trailing edge of the IP is inserted into the cassette.

The IP sucked is moved to the cassette cover and detached.
7.3 **Before-Side-Positioning Conveyor**

**IP Length Measurement**

The IP conveyed from the up-down IP removal unit is subjected to IP length measurement by SC1 (IP passage time through SC1) and routed to the side-positioning conveyor.

For IP length measurement, the IP size is classified into eight types according to the length of the IP, SB4 status during IP feed, and mammo/ST cassette sensor status. If the passage time through SC1 is 2.9 sec or longer, it is judged as an IP jam.

<table>
<thead>
<tr>
<th>IP type setting</th>
<th>Length x width mm</th>
<th>SC1 passage time Sec</th>
<th>SB4 result</th>
<th>SA4, 8, 12, 16 status</th>
</tr>
</thead>
<tbody>
<tr>
<td>14&quot; x 17&quot;</td>
<td>430 x 354</td>
<td>0.83—2.9</td>
<td>CLOSE</td>
<td>OPEN</td>
</tr>
<tr>
<td>14&quot; x 14&quot;</td>
<td>354 x 354</td>
<td>0.7—0.83</td>
<td>CLOSE</td>
<td>OPEN</td>
</tr>
<tr>
<td>10&quot; x 12&quot;</td>
<td>303 x 252</td>
<td>0.57—0.7</td>
<td>CLOSE</td>
<td>OPEN</td>
</tr>
<tr>
<td>8&quot; x 10&quot;</td>
<td>201 x 252</td>
<td>—0.57</td>
<td>CLOSE</td>
<td>OPEN</td>
</tr>
<tr>
<td>18cm x 24cm ST</td>
<td>178 x 238</td>
<td>—0.57</td>
<td>OPEN</td>
<td>OPEN</td>
</tr>
<tr>
<td>24cm x 30cm ST</td>
<td>298 x 238</td>
<td>0.57—0.7</td>
<td>OPEN</td>
<td>OPEN</td>
</tr>
<tr>
<td>18cm x 24cm HR</td>
<td>178 x 238</td>
<td>—0.57</td>
<td>OPEN</td>
<td>CLOSE</td>
</tr>
<tr>
<td>24cm x 30cm HR</td>
<td>238 x 298</td>
<td>—0.57</td>
<td>CLOSE</td>
<td>CLOSE</td>
</tr>
</tbody>
</table>
Path Changeover during IP Load Conveyance

When the IP is erased during erasure conveyance, SOLC1 of the before-side-positioning conveyor is energized to activate the path changeover guide. The IP is passed through the guide with its path changed, and conveyed (returned) to the up-down IP removal unit.

After detection by the cassette inlet IP sensor SB2 (CLOSE → OPEN), the SOLC1 energized is deenergized, so that the conveyance path is changed over. A spring is attached to SOLC1, so that upon deenergization, the spring force (tension) causes the guide to be forcefully returned to its original position.
### 7.4 Side-Positioning Conveyor

#### Barcode Reader (BCR) Reading

After the width/length of the IP is determined, the IP is conveyed to the side-positioning conveyor. The IP No. is read by the barcode reader (BCR) from the IP being conveyed. For an IP size of 14”x 17” or 14” x 14”, the leading edge of the IP has moved beyond the side-positioning top stopper and reached before the subscanning unit; as such, after reading by the barcode reader, reverse conveyance of the IP is performed to move the latch assembly by 9.6 mm (64 pulses) from the home position and move up the side-positioning top stopper.

For IP sizes other than 14”x 17” or 14” x 14”, reverse conveyance of the IP is not performed; instead, after reading by the barcode reader, the side-positioning top stopper is moved up.
Grip Roller Release

After the IP No. is read by the barcode reader (BCR) and the leading edge of the IP is conveyed to SD3, the grip roller is released, so that the IP is brought into contact with the IP stopper by the conveyance force.

By releasing the grip roller before the IP is brought into contact with the IP stopper, skewing of the IP and so forth is prevented.

Side Guide Operation

For the IP brought into contact with the IP stopper, MD2 is activated to rotate the cam, while the side guide is activated to detach the feed roller from the IP. Subsequently, the latch assembly initiates its operation to push the IP against the side guide, so that the IP is moved away from the side plate by 3 mm.
## Side-Positioning Operation

The latch assembly moves by a distance corresponding to the width of the IP already detected, thereby performing side-positioning operation.

During the side-positioning operation, as the IP is aligned against the side guide, the IP is pushed into by two latches. Because a tension is applied by a spring to the two latches, they are brought down when loaded, so that the IP is pressed with a fixed pressure.

This operation is executed twice, thereby determining an accurate horizontal position of the IP.

This not only prevents contact of the IP with the side plate, but also determines the reading position in the main-scan direction for the scanner unit.

Subsequently, the latch assembly moves to its home position and the IP stopper moves down. MD2 is also activated to rotate the cam, so that the roller grips the IP and the side guide is accommodated, thereby conveying the IP to the scanner unit.
7.5 Subscanning Unit

■ Driving Shaft Roller/Driven Shaft Roller

The IP conveyed to the driven shaft of the scanner unit is conveyed by the driving of FFM (MZ1) and operation of the driven shaft roller and driving shaft roller to initiate reading.

To drive the upper driven shaft roller and upper driving shaft roller, their respective motors are used; as the cam attached thereto is rotated, the upper driven shaft roller or upper driving shaft roller is operated (up and down). The rotation of the cam facilitates smooth up/down operation of the upper rollers, thereby preventing uneven IP fluctuations.

■ Driven Shaft Grip

For the IP conveyed to the driven shaft, in order to initiate gripping of the driven shaft roller, MZ3 is activated to cause the driven shaft roller to move down (descend), thereby gripping the IP. The descend position is detected as the sensor SZ3 becomes CLOSE from the OPEN status. After gripping of the driven shaft roller is completed, the driving of FFM (MZ1) is initiated, thereby conveying the IP to the IP leading-edge sensor (SZ1).
### Driving Shaft Grip

For the IP conveyed from the driven shaft roller, the IP leading edge is detected, and then image reading is initiated.

After the IP leading edge is detected (by SZ1), MZ2 is activated when the IP is conveyed by a predetermined amount, so that the driving shaft roller slowly descends to grip the IP. The descend position is detected as the sensor SZ2 becomes OPEN from the CLOSE status.

### FFM (MZ1) Driving

The driving shaft driven by FFM (MZ1) transfers its drive to the driven shaft through the steel belt. By use of the steel belt, belt elongation and so forth is prevented, while transferring the reading speed from FFM (MZ1) accurately.

Furthermore, by gripping the IP conveyed, the IP can be read accurately while maintaining the reading speed constant.
7.6 After-Reading Conveyor

■ After-Reading Grip

The grip operation is terminated as the sensor SE1 becomes CLOSE from the OPEN status, so that the IP is conveyed by ME2 to the erasure conveyor.
7.7 Erasure Conveyor

■ Inverting Stocker

The IP conveyed from the after-reading conveyor is temporarily conveyed to the inverting stocker in order to change the conveyance path. The conveyance stops after the IP passes SF2 (CLOSE → OPEN), and IP overrun (conveyance beyond specified value) is monitored by SF4 (overrun IP sensor).

■ IP Path Changeover

For IP path changeover, after the IP passes SF2 (CLOSE → OPEN), SOLF1 is energized to activate the path changeover guide, thereby changing the IP conveyance direction toward the erasure conveyor.
## IP Reverse Conveyance

After the path changeover guide is activated, the IP is conveyed to the inlet of the erasure conveyor by the driving of MF1.

![Guide (SOLF1 ON)](FR1H0227.EPS)

## IP Erasure

For the IP conveyed to the erasure conveyor, the image data of that IP is erased by the erasure lamps.

Five erasure lamps are used to erase the image data of the IP. In order to maintain a required level of light intensity for the erasure lamps, the turn-on of the erasure lamps is initiated immediately after the completion of the IP length measurement performed by the before-side-positioning conveyor, thereby making erasure preparation.

![Lamp](FR1H0229.EPS)

For the IP conveyed to the erasure unit, its image data is erased by the erasure lamps.
7.8 Electrical System Block Diagram

The electrical system consists of the following boards. The scanner unit is comprised of the LDD08A board (laser diode control board), SYN08A board (start-point detection board), and polygon driver.
7.9 Image Data Flow

A process flow for image data is described below.

Basic Configuration of Boards and Outline of Image Data Flow

Basic-configuration image data flow

1. While the data from the scanner is read into the shared memory, the data is distributed to the EDR and CRT reduction board.
2. After the completion of the reading, the data is temporarily saved to the HDD, and one frame is freed for the next image acquisition.
3. After the write to the HDD is completed, the shared memory is used for a pin-pong buffer, so that a portion of the image is loaded in the shared memory.
4. While handshaking with the shared memory, image processing is performed for output to the LP.
5. As with step 3 above, the data for DMS output is loaded in the shared memory.
6. As with step 4 above, the output is provided to the DMS.
### Full-Optional Board Configuration and Outline of Image Data Flow

**Optional-configuration image flow**

1. While the data from the scanner is read into the shared memory, the data is distributed to the EDR and CRT reduction board.
2. After the completion of the reading, the data is temporarily saved to the HDD, and one frame is freed for the next image acquisition.
3. After the write to the HDD is completed, the shared memory is used for double buffer, so that a portion of the image is loaded in the shared memory.
4. While handshaking with the shared memory, optional image processing is performed for output to the LP.
5. As with step 3 above, the data for network output is loaded from the HDD into the shared memory.
6. If rotation is required, the loopback path of BUSCON is used to implement rotation. The result of processing requires one screen worth of frame.
7. While handshaking with the shared memory, compression is performed.
8. Compressed blocks are sequentially saved to the HDD.
9. Once the process described in step 8 is completed for one frame, the data is read on a block-by-block basis for transfer to the LAN board. If distributed processing is provided (FINP), the data is block-transferred from the HDD to the shared memory for each distribution destination.
10. For each distribution destination, the image is transferred from the shared memory on a block-by-block basis and sent to the LAN.
7.10 Function of Each Board

The functions and block diagrams of standard and optional boards connected within the rack are described.

CPU90E Board

The 68EN360 (25 MHz), available from Motorola, is used as a CPU, with 16 MB of DRAM as main memory, 1 MB of EPPROM and FEPROM, and 128 KB of SRAM.

The SRAM contents, as well as the date and time, are backed up by a battery (lithium ion cell).

A µPD72070 floppy disk controller (FDC) is used to control the floppy disk drive (FDD).

The 128KB SRAM contains gamma correction values.

In addition, the CRT controller supports a VGA monochrome monitor.

With VRAM (4M bits, x3), an image plane is displayed with 640 x 480 pixels (12 bits), while a text plane is displayed with 640 x 480 pixels (4 bits).

When an image is displayed on the CR-IR341’s monitor, gamma correction is performed. Thus, in order to achieve gamma correction quickly, the monitor screen goes blank, and an image is then displayed after gamma correction.
CPU90E Block Diagram
CPU90F Board (Optional)

A 133MHz Pentium CPU is used to perform I/O initialization within the board, communication with an upper-layer host, and control of the LAN.

16 MB of main memory (two 8 MB SIMMs) is installed.

Its LAN controller supports IEEE 802.3-compliant 100BASE-TX/10BASE-T, and auto-negotiates the speed for automatic switching; as such, only one RJ-45 connector is provided.

On this board, eight software control LEDs and six LAN communication status indication LEDs are located.

Of them, the LAN communication status indication LEDs and their block diagram are illustrated below.
**IMG08A Board (Optional)**

The IMG08A, which is an LP interface board, is responsible for normalization (Sk/Gp conversion) and pixel density conversion processing, basic image processing (frequency/gradation processing, DR compression, 1-D USM), and image enlargement/reduction for the LP. For image processing, it contains a 128K-word (24-bit) SRAM and a 1M-word (16-bit) DRAM.

**IMG08A Block Diagram**
DMC08A Board (Optional)

The DMC08A, which is a DMS interface (I/F) board, outputs data to the E I/F. It also performs normalization (Sk/Gp conversion) and pixel density conversion processing, and accumulation to and reoutput from the DMS.

For image processing, it contains a 128K-word (24-bit) SRAM and a 1M-word (16-bit) DRAM.

The data that is image-processed by the IMG board is written to the HDD and then read from the HDD for output to the E I/F at high or standard resolution.

High resolution or standard resolution is judged in an image transfer reservation response from the output destination.

This information is stored for each DMS after boot-up.

It should be noted that when a break status is detected on the line, the E I/F clear its memory.

DMC08A Block Diagram
HCP08A Board (Optional)

The HCP08A board, which supports Fuji Protocol (FINP) during network connection, performs normalization (Sk/Gp conversion) and pixel density conversion processing, and compression/decompression processing. JPEG-compliant compression with compression ratios of 1/2, 1/5, 1/10, and 1/20 is supported.

HCP08A Block Diagram
SNS08A Board

The SNS08A board provides direct control of a sensor input system, as well as control of drive I/O. A drive I/O control signal is transferred to the DRV08A board for driving.

Measures to cope with chattering and noise during sensor control are provided by software.

The sensor input system controls the buzzer, touch panel, magnetic card reader, and keyboard, in addition to various sensors.
### DRV08A Board

The DRV08A board receives control signals sent from the sensor board (SNS08A) to directly drive the actuators within the machine.

Control signals from the SNS08A board are transferred through a photocoupler interface.

Main functions are as follows.

<table>
<thead>
<tr>
<th>I/O name</th>
<th>I/O drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse motor drive</td>
<td>24 VDC 10 circuits</td>
</tr>
<tr>
<td>Power-down solenoid</td>
<td>24 VDC 6 circuits</td>
</tr>
<tr>
<td>Solenoid valve</td>
<td>24 VDC 1 circuit</td>
</tr>
<tr>
<td>DC pump</td>
<td>24 VDC 1 circuit</td>
</tr>
<tr>
<td>DC motor</td>
<td>24 VDC 2 circuits</td>
</tr>
<tr>
<td></td>
<td>15 VDC 1 circuit</td>
</tr>
</tbody>
</table>

**DRV08A Block Diagram**
7.11 Power Supply

The power supply unit provides power supplies of +5VDC, +12VDC, +15VDC, and +24VDC to the respective boards.

The power supply unit contains an inverter power supply circuit for control of lamp turn-ON, thereby allowing the erasure lamp to turn ON.

For protection of the power supply circuitry, the output of the power supply unit is disconnected upon detection of overvoltage or overcurrent.

For recovery, manually turn OFF the breaker and back ON again.

The details of the outputs are described below.

<table>
<thead>
<tr>
<th>Output terminal</th>
<th>Output voltage</th>
<th>Voltage accuracy</th>
<th>Variable voltage range</th>
<th>Minimum</th>
<th>Steady state</th>
<th>Maximum</th>
<th>Output destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN4</td>
<td>+5V</td>
<td>− 5%</td>
<td>Fixed</td>
<td>0.1A</td>
<td>0.1A</td>
<td>0.1A</td>
<td>LED08A</td>
</tr>
<tr>
<td>TB2</td>
<td>+5V</td>
<td>− 5%</td>
<td>− 10%</td>
<td>2.0A</td>
<td>37A</td>
<td>37A</td>
<td>MTH08A</td>
</tr>
<tr>
<td>DCOUT1</td>
<td>+12V</td>
<td>− 5%</td>
<td>− 10%</td>
<td>1.0A</td>
<td>9.5A</td>
<td>9.5A</td>
<td>MTH08A</td>
</tr>
<tr>
<td>DCOUT2</td>
<td>+5V</td>
<td>− 5%</td>
<td>Fixed</td>
<td>0.5A</td>
<td>3.0A</td>
<td>3.0A</td>
<td>SNS08A</td>
</tr>
<tr>
<td>DCOUT3</td>
<td>+15V</td>
<td>− 5%</td>
<td>− 10%</td>
<td>0A</td>
<td>0.6A</td>
<td>2.4A</td>
<td>DRV08A</td>
</tr>
<tr>
<td>DCOUT4</td>
<td>+24V</td>
<td>− 5%</td>
<td>Fixed</td>
<td>0A</td>
<td>2.77A</td>
<td>3.1A</td>
<td>FAN</td>
</tr>
<tr>
<td>DCOUT5</td>
<td>+24V</td>
<td>− 5%</td>
<td>− 10%</td>
<td>0A</td>
<td>2.77A</td>
<td>3.1A</td>
<td>SCN08A</td>
</tr>
<tr>
<td>DCOUT6</td>
<td>+5V</td>
<td>− 5%</td>
<td>− 10%</td>
<td>1.0A</td>
<td>3.2A</td>
<td>3.2A</td>
<td>FFM</td>
</tr>
<tr>
<td>DCOUT7</td>
<td>+5V</td>
<td>− 5%</td>
<td>− 10%</td>
<td>0A</td>
<td>0.1A</td>
<td>0.1A</td>
<td>LAMP</td>
</tr>
<tr>
<td></td>
<td>+15V</td>
<td>− 5%</td>
<td>− 10%</td>
<td>0.1A</td>
<td>0.4A</td>
<td>2.0A</td>
<td>LAMP</td>
</tr>
</tbody>
</table>
7.12 Scanning Optics/Scanner Unit

Summary

The SCN08A board controls the LDD08A board (laser diode control board), SYN08A board (start-point detection board), polygon driver, the photomultiplier’s PMT08A board (LOG amp), and SED08A board (leading-edge detection board) located in the scanning optics/scanner unit.

An analog image signal sent from the PMT08A board is transferred to the IMG08A board as digital image data that is analog-to-digital converted by the SCN08A board.
### Scanner Data Flow

**HD**

- **(a):** Shading data
- **(b):** Polygon data
- **(c):** Sensitivity data
- **(d):** Format data
- **(e):** Other scanner data

**Scanner**

- **(a):** Shading data
- **(b):** Polygon data
- **(c):** Sensitivity data
- **(d):** Format data
- **(e):** Other scanner data

**FD**

- **(a):** Shading data
- **(b):** Polygon data
- **(c):** Sensitivity data
- **(d):** Format data
- **(e):** Other scanner data

**NOTE 1:** Data will not be changed unless the machine is restarted after RESTORE.

- **5-7-2:** Select 5. SCANNER UTILITY, 7. SHADING/SENSITIVITY, and 2. CALCULATION in sequence.
- **5-8-1:** Select 5. SCANNER UTILITY, 8. DATA MANAGEMENT, and 1. SAVE SHADING AND POLYGON DATA in sequence.
- **5-8-2:** Select 5. SCANNER UTILITY, 8. DATA MANAGEMENT, and 2. SAVE SENSITIVITY in sequence.
- **5-8-3:** Select 5. SCANNER UTILITY, 8. DATA MANAGEMENT, and 3. SAVE FORMAT DATA in sequence.
- **5-8-5-1:** Select 5. SCANNER UTILITY, 7. SHADING/SENSITIVITY, 5. LOAD FROM FD, and 1. SHADING AND POLYGON in sequence.
- **5-8-5-2:** Select 5. SCANNER UTILITY, 7. SHADING/SENSITIVITY, 5. LOAD FROM FD, and 2. SENSITIVITY in sequence.
- **5-8-6:** Select 5. SCANNER UTILITY, 7. SHADING/SENSITIVITY, and 2. CALCULATION in sequence.
- **7-3-1:** Select 7. FILE UTILITY, 3. BACKUP, and 1. SCANNER DATA in sequence.
- **7-4-1:** Select 7. FILE UTILITY, 4. RESTORE, and 1. SCANNER DATA in sequence.

For more detail, see “4. Maintenance Utility, 4.10 Scanner Diagnostics and Setting: 5. SCANNER UTILITY, and 4.12 File Operation: 7. FILE UTILITY.”
**SCN08A Board**

The SCN08A board, which is located between the MTH board and scanning optics/scanner unit, controls each I/O of the scanning optics/scanner unit in accordance with an instruction from the MTH board.

Polygon driver/laser/HV control is performed so that a start-point detection signal detected by the SYN08A board and a leading-edge detection signal detected by the SED08A board are acquired as sync signals to control the image acquisition timing. Furthermore, as its self-diagnostic function, image quasi-read control is implemented to generate a quasi-read LED output voltage.

For image acquisition, an analog image signal is inputted from the PMT08A board (log amp board), and after shading correction and filtering, it is analog-to-digital (A/D) converted for output to the IMG08A board (image processing board) as digital image data.

**Image signal acquisition**

A block diagram, from input of an analog signal from the PMT08A board (log amp board) to A/D conversion for output to the IMG08A board (image processing board), is illustrated below. The digital image data acquired is transferred to the IMG08A board at high speed.

![Image Signal Acquisition Block Diagram](image.png)

Image acquisition timing is shown below.

```
OFCLKL
OLCLKL
OLCLKL
Enlarged view
OPCLK
Image data [10 : 0]
```
● Shading correction
Shading correction is implemented in hardware to achieve high-speed processing. Analog image data sent from the PMT08A board (log amp board) is corrected for shading. Shading correction compensates for differences in beam-collecting efficiency of the light-collecting/scanning optics system in the main-scan direction.

● Filtering
The image signal response is adjusted to achieve sharpness balance between main scanning and subscanning.
**A/D converter**

An analog image signal filtered is converted to a digital image by an A/D converter.

![A/D converter diagram](FR1H0243.EPS)

**Erasure level detection**

An erasure level signal is outputted from the PMT08A board and inputted into the SCN08A board, where a maximum value within one screen is detected. Because this signal is nonlinear, it is eventually converted to a dose by software-based table correction.

The IP erasure time is determined according to this dose detected.

![Erasure Level Detection Block Circuit](FR1H0244.EPS)
HV control

HV can artificially control the turn-ON/OFF of the output by use of a software switch of the Maintenance Utility and a slide switch (S1) located on the SCN08A board.

This information is reported to the CPU, so that when HV is OFF, a dialog indicative of the HV OFF status is displayed on the monitor.

The HV control signal is routed from the SCN08A to the PMT08 board.

This signal is outputted at an analog level of 0 (OFF) – 10 V.

The resulting output, multiplied by 100 (i.e., 0 V to -1000 V), is outputted as HV.

![HV Control Block Diagram](image-url)
Quasi-read control

A troubleshooting signal is generated when an image anomaly occurs. It is used to distinguish probable causes of the failure into either of scanning optics section, light-collecting section (PMT/log amp), or scanner control board.

By selecting this mode and scanning an unexposed IP, a quasi-image signal can be generated from each selected point to check if a normal image is obtained and to isolate the probable cause of the failure.

1. With LIGHT, a fixed amount of light can be inputted to the photomultiplier from the LED on the light-collecting section’s PMT board to check if a normal solid image is obtained. If the resulting image is normal, the probable cause of the image anomaly is the scanning optics unit, subscanning unit, IP, or extraneous noise.

2. With LOGAMP, a fixed amount of current can be inputted to the log amp on the PMT board to check if a normal solid image is obtained. If the resulting image is normal, the probable cause of the image anomaly is the photomultiplier, high-voltage power supply, leaked light during erasure or due to extraneous light, IP optical noise, or so forth.

3. With SCN08INPUT, a fixed amount of voltage can be inputted to the scanner control board to check if a normal solid image is obtained. If the resulting image is normal, the probable cause of the image anomaly is the PMT board, extraneous noise to the PMT board, or cable connection between the PMT board and SCN board.

4. If all of the results obtained at steps 1 through 3 above are abnormal, the probable cause is the SCN board, extraneous noise of SCN, or image board(s) that are subsequent to the SCN board.

Polygon control

After power-ON, the polygonal mirror is rotated.

Laser diode (LD) control

Beam-intensity detection is performed for two lasers, so that if it is less than half the nominal level, it is judged as a failure.

If either of the lasers experiences a light-emitting failure, it is reported as “insufficient laser intensity” (user notification warning); if both of the lasers experience light-emitting failures, they are handled as “laser error” (system down).

Error detection

The SCN08A board detects errors related to the polygon, LD, image signal, etc.

<table>
<thead>
<tr>
<th>Error detection item</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polygon</td>
<td>A lock signal of the polygon motor (indicating that it rotates at a constant rate) is monitored.</td>
</tr>
<tr>
<td>Laser beam intensity</td>
<td>The beam intensity of two LDs is monitored.</td>
</tr>
<tr>
<td>Start-point detection</td>
<td>It is checked to see that a signal is generated at nominal timings.</td>
</tr>
<tr>
<td>Leading-edge detection</td>
<td>It is checked to see that a signal is detected upon incident laser beam.</td>
</tr>
<tr>
<td>(during self-diagnostics)</td>
<td></td>
</tr>
<tr>
<td>Leading-edge detection</td>
<td>During a series of reading sequences, the time from the activation of the subscanning motor to the generation of a leading-edge detection signal (until the IP reaches its laser scanning position) is monitored.</td>
</tr>
<tr>
<td>(during reading timeout)</td>
<td></td>
</tr>
<tr>
<td>End-of-screen timeout</td>
<td>During a series of reading sequence, the time from the leading-edge detection to the generation of an end signal is monitored.</td>
</tr>
<tr>
<td>HV power supply</td>
<td>The output voltage and noise of the high-voltage power supply provided to the PMT is monitored.</td>
</tr>
<tr>
<td>PMT analog power supply</td>
<td>It is checked if the power supply to the PMT08A board is normal.</td>
</tr>
</tbody>
</table>
LED functions

The SCN08A board has eight LEDs mounted on its surface to permit visual inspection of signals. Their locations on the board and signals detected are shown below.

- **HVON (HV ON LED)**
  This LED is OFF when reading operation is performed under the HV ON condition. To check the LED, HV should be turned OFF.

- **SOH (leading-edge sensor check LED)**
  Normal if this LED is ON, or if the leading edge of the IP is located at SZ1 (IP leading-edge sensor) with this LED OFF. If this LED is OFF or blinking (slow blinking), with the IP not located at SZ1, and the laser is normal, then it is necessary to check SZ1.

- **SOS (staring-point sensor LED)**
  Normal if this LED is ON. If this LED is blinking (slow blinking) or OFF and the laser is normal, then it is necessary to check the start-point sensor board.

- **POLLOCK (polygon lock LED)**
  When this LED is ON, the polygonal mirror is rotating at a constant speed. If it is OFF or blinking, it is necessary to check the polygonal mirror.

- **PCLK (pixel clock check LED)**
  When this LED is ON, a pixel clock is generated during reading. If this LED is OFF and the laser is normal, it is necessary to check the SCN08A board.

- **LCLK (line clock check LED)**
  When this LED is ON, a line clock is generated during reading. If this LED is OFF and the laser is normal, it is necessary to check the SCN08A board.

- **FCLK (frame clock check LED)**
  When this LED is ON, reading is in progress. If LED is OFF even though the leading edge of the IP is detected (leading-edge sensor check LED is OFF) and the laser is normal, then it is necessary to check the SCN08A board.

- **LD2OK (second laser check LED)**
  When this LED is ON, the laser is normal. If it is OFF, it is necessary to check the first or second laser.

- **LD1OK (first laser check LED)**
  When this LED is ON, the laser is normal. If it is OFF, it is necessary to check the first or second laser.
7.13 General Description of Scanning Optics System

Two laser diodes installed on the LDA08A board of the scanning optics unit irradiate red-colored laser beams of 60 mW max./660 nm onto a six-faceted polygonal mirror.

For the laser beam scanned by the polygonal mirror in the main-scan direction, its scan start timing is detected by the main-scan synchronization sensor of the SYN08A board to establish synchronization.

**Laser irradiation**

The laser beam reflected by the polygonal mirror passes through $f\theta$ lenses, and the laser beam is irradiated by the reflective mirror onto the IP surface under the scanning optics unit.

**Laser Irradiation onto IP**
Accelerated phosphorescence light emitted from a latent image due to laser beam irradiated onto the latent image on the IP surface is collected by the light-collecting mirror, and the excited light (660 nm laser light) is cut off by the filter mounted on the photomultiplier section, and the resulting light is guided to the photomultiplier (PMT).

The dust-shield guide prevents dust deposits onto an area between the light-collecting guide/mirror section and scanning optics unit.

**Accelerated Phosphorescence Light**
8. Mechanical Control Flows

1. How to Understand Control Flow

A legend of conventions used in the control flow is described below.

- **START**: Start of sequence
- **User operation**: Operation performed by the user
- **Normal processing**: Normal operation of the system
- **Decision block**: Decision point in the control flow
- **Subroutine name**: Call to a subroutine
- **Occurrence of error**: Error occurs
- **END**: End of sequence

**PB11**: Control parameter for pulse motor
- Number (serial number)
- Unit number (B through F)

**TA11**: Timer value or timeout value
- Number (serial number)
- Unit number (A through D, F, Z)

**NA11**: Retry value
- Number (serial number)
- Unit number (A, B, D)
2. Routine (Single-IP Conveyance)

2.1 Summary of Operation

(1) Machine Operation during Single-IP Conveyance (Overall/General Flow)

The machine operation during single-IP conveyance is as follows. The general relationship between unit components and processes along the conveyance paths is illustrated on the next page.

Fig. 2.1.1 Machine Operation during Single-IP Conveyance

- **Cassette set unit**
  - In this sequence, the hold on the cassette inserted is detected and confirmed.
- **Up-down IP removal unit**
  - In this sequence, the elevation unit is moved to the shelf where the cassette that loads the IP has been set.
- **Up-down IP removal unit**
  - In this sequence, the IP is removed from the cassette and conveyed to the before-side-positioning conveyor.
- **Before-side-positioning conveyor**
  - In this sequence, the IP from the up-down IP removal unit is conveyed to the side-positioning conveyor. During the conveyance, IP length measurement is performed. After the IP length measurement, the erasure lamp turn-on process is performed.
- **Side-positioning conveyor**
  - In this sequence, the barcode on the back of the IP is read during the conveyance; subsequently, positioning of the start point for IP reading (i.e., side-positioning) is performed.
- **Subscanning unit / After-reading conveyor**
  - In this sequence, after the IP data is read, the IP is conveyed to the conveyance-inverting stocker.
- **Up-down IP removal unit**
  - In this sequence, the elevation unit is moved to the shelf where the cassette that loads the IP has been set.
- **Erasure conveyor**
  - The IP in the inverting stocker is passed under the erasure lamp (data is erased) by switching the conveyance path of the erasure conveyor, and conveyed to the before-side-positioning conveyor. The erasure lamp turn-off process is also performed.
- **Before-side-positioning conveyor / Up-down IP removal unit**
  - The IP sent from the erasure conveyor is conveyed to the up-down IP removal unit by switching the conveyance path, and loaded into the cassette.
- **Cassette set unit**
  - In this sequence, the hold on the cassette into which the IP has been loaded is released, so that the cassette...
(2) Machine Unit Components

- Housing
- Cassette set unit
- Power supply unit
- Erasure conveyor
- Subscanning unit
- After-reading conveyor
- Side-positioning unit
- Up-down IP removal unit
- Before-side-positioning unit

Units related to descriptions of mechanical control:
- A: Cassette feeder
- B: Up-down IP removal unit
- C: Before-side-positioning conveyor
- D: Side-positioning conveyor
- Z: Subscanning unit
- E: After-reading conveyor
- F: Erasure conveyor

Units not mentioned in descriptions of mechanical control:
- G: Housing
- H: Power supply unit
- J: Control unit

(3) IP Conveyance Paths

- Cassette set unit
- SF1
- SF2
- SF4
- SC1
- SC2
- SZ1
- SD3
- FR1H0303.EPS

- SF3
- BCR
- Power supply unit
- Before-side-positioning conveyor
- Erasure conveyor
- After-reading conveyor
- Side-positioning conveyor
2.2 Cassette IN

(1) Overall/General Sequence

This is for the operation of the cassette set unit.
In this sequence of cassette IN operation, “after the cassette inserted is detected, it is held, and then whether it has been held properly is detected.”

Fig. 2.2.1 Cassette IN (1/2)
Table 2.2.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA14</td>
<td>Hold timeout</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TA15</td>
<td>Wait for hold retry</td>
<td>2 sec</td>
</tr>
<tr>
<td>NA12</td>
<td>Hold retry</td>
<td>5 times</td>
</tr>
</tbody>
</table>

Table 2.2.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name</th>
<th>I/O name in flow</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
<td></td>
</tr>
<tr>
<td>SA2</td>
<td>SA2</td>
<td>SA6</td>
<td>SA10</td>
<td>SA14</td>
<td></td>
</tr>
<tr>
<td>SA3</td>
<td>SA4</td>
<td>SA7</td>
<td>SA11</td>
<td>SA15</td>
<td></td>
</tr>
<tr>
<td>SOLA1</td>
<td>SOLA1</td>
<td>SOLA2</td>
<td>SOLA3</td>
<td>SOLA4</td>
<td></td>
</tr>
<tr>
<td>LEDT1</td>
<td>LDET1</td>
<td>LDET3</td>
<td>LDET5</td>
<td>LDET7</td>
<td></td>
</tr>
</tbody>
</table>

Condition where the cassette has been set (loaded)

- Topmost stage
- 2nd stage
- 3rd stage
- 4th stage

Cassette that has been set in the 3rd stage

Cassette loading direction

Hold pin

SA2

OFF:CLOSE
ON:OPEN
(2) Detailed Sequence of Hold Release

The operation is to release the cassette hold.

If an attempt to release the hold fails five times in succession, the relevant shelf is marked by level 1 error, “cassette hold release failure.”

Fig. 2.2.2 Cassette Hold Release

Preprocessing: Fig. 2.2.1, Fig. 2.11.1, Fig. 5.4.3, Fig. 5.10.1, Fig. 6.1.1, Fig. 6.3.1, Fig. 6.7.1, and Fig. 6.8.1

Table 2.2.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA11</td>
<td>Hold release timeout</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TA12</td>
<td>Wait for hold release retry</td>
<td>2 sec</td>
</tr>
<tr>
<td>NA11</td>
<td>Hold release retry</td>
<td>5 times</td>
</tr>
</tbody>
</table>

Table 2.2.2a List of I/O Names Used in the Flow

<table>
<thead>
<tr>
<th>I/O name</th>
<th>I/O name in flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA3</td>
<td>SA3</td>
</tr>
<tr>
<td>SA7</td>
<td>SA11</td>
</tr>
<tr>
<td>SA15</td>
<td>SOLA1</td>
</tr>
<tr>
<td>SOLA2</td>
<td>SOLA3</td>
</tr>
<tr>
<td>SOLA4</td>
<td></td>
</tr>
</tbody>
</table>

* Push the cassette once to draw it out. The cassette cannot be drawn out by merely pulling it.
2.3 Movement (Feed) of Elevation Unit

(1) Overall/General Sequence

In this sequence, the elevation unit is moved to a designated shelf of the cassette set unit in order to feed IPs.

The movement of the elevation unit cannot be performed if the suction cups are not in their home position (HP).

If there is any IP being fed, the machine waits until the suction cup movement process described in “2.6 (3) Sequence of Side-Positioning Conveyance” is completed.

Fig. 2.3.1 Movement of Elevation Unit

Preprocessing: Fig. 2.2.1 and Fig. 3.1.1

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB19</td>
<td>Suction cup movement (HP → feed leak)</td>
<td>-12 p</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>NB101</td>
<td>Elevation movement retry</td>
<td>2 times</td>
</tr>
</tbody>
</table>

Table 2.3.1a Elevation Unit Movement Parameters (PB_) | Movement of elevation unit | Symbol | Pulse count (P) |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Topmost stage → 2nd stage</td>
<td>PB112</td>
<td>-3,470</td>
</tr>
<tr>
<td>Topmost stage → 3rd stage</td>
<td>PB113</td>
<td>-6,930</td>
</tr>
<tr>
<td>Topmost stage → 4th stage</td>
<td>PB114</td>
<td>-10,392</td>
</tr>
<tr>
<td>2nd stage → topmost stage</td>
<td>PB121</td>
<td>3,470</td>
</tr>
<tr>
<td>2nd stage → 3rd stage</td>
<td>PB123</td>
<td>-3,460</td>
</tr>
<tr>
<td>2nd stage → 4th stage</td>
<td>PB124</td>
<td>-6,922</td>
</tr>
<tr>
<td>3rd stage → topmost stage</td>
<td>PB131</td>
<td>6,930</td>
</tr>
<tr>
<td>3rd stage → 2nd stage</td>
<td>PB132</td>
<td>3,460</td>
</tr>
<tr>
<td>3rd stage → 4th stage</td>
<td>PB134</td>
<td>-3,462</td>
</tr>
<tr>
<td>4th stage → topmost stage</td>
<td>PB141</td>
<td>10,392</td>
</tr>
<tr>
<td>4th stage → 2nd stage</td>
<td>PB142</td>
<td>6,922</td>
</tr>
<tr>
<td>4th stage → 3rd stage</td>
<td>PB143</td>
<td>3,462</td>
</tr>
</tbody>
</table>

Condition as seen from the cassette loading side (front) | Condition as seen from the right-hand side

Sensor arm for SA17 (attached at the elevation unit) | Sensor arm for SB3

Sensor arm for SA17

Sensor arm for SB3
(2) Detailed Sequence of Suction Cup HP Positioning

This sequence is performed when home positioning (HP) is performed for the suction cups.

Fig. 2.3.2 Suction Cup HP Positioning (1/2)

Table 2.3.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB50</td>
<td>Suction cup movement (initial driving)</td>
<td>1p</td>
</tr>
<tr>
<td>PB51</td>
<td>Suction cup movement (HP positioning)</td>
<td>∞</td>
</tr>
<tr>
<td>PB52</td>
<td>1 pulse suction cup driving (HP movement 1)</td>
<td>1p</td>
</tr>
<tr>
<td>PB53</td>
<td>Suction cup movement (HP positioning)</td>
<td>∞</td>
</tr>
<tr>
<td>PB54</td>
<td>Suction cup movement (HP movement 2)</td>
<td>εp</td>
</tr>
<tr>
<td>TB51</td>
<td>Wait for suction cup HP settlement</td>
<td>0.5sec</td>
</tr>
<tr>
<td>TB52</td>
<td>Suction cup HP detection timeout</td>
<td>1.3sec</td>
</tr>
<tr>
<td>TB53</td>
<td>Suction cup HP detection timeout</td>
<td>5.3sec</td>
</tr>
<tr>
<td>TB54</td>
<td>Suction cup HP 1-pulse driving timeout</td>
<td>20sec</td>
</tr>
<tr>
<td>NB51</td>
<td>Side-positioning HP retry</td>
<td>2 times</td>
</tr>
</tbody>
</table>

---

**Preprocessing:**

- Fig. 2.3.1, Fig. 2.3.3, Fig. 2.4.2, Fig. 2.4.3, Fig. 2.4.4, Fig. 2.6.4, Fig. 2.8.1, Fig. 2.10.3, Fig. 2.10.4, Fig. 4.2.2, Fig. 4.2.3, Fig. 4.3.1, Fig. 5.1.1, and Fig. 5.3.2

**Fig. 2.3.2 Suction Cup HP Positioning (1/2)**

- **START**
  - MB1 phase start-point forced return (2-phase)
  - Suction cup driving (initial driving)
    - DRIVE (MB1/PB50)

- **Is SB1 closed?**
  - Yes: Suction cup driving (positioning)
    - DRIVE (MB1/PB53)
    - With deceleration time setting and LIMIT stop, it is fed by a specified amount after sensor edge detection.
  - No: DELAY TB51

- **Is SB1 opened within TB52?**
  - No: Suction cup driving stop
    - DRIVE (MB1/OFF) (Soft)
    - DELAY TB51
    - Suction cup driving stop
      - DRIVE (MB1/OFF) (Soft)
      - DELAY TB51

- **Is SB1 closed within TB53?**
  - Yes: DELAY TB51
  - No: Suction cup driving stop
    - DRIVE (MB1/OFF) (Soft)

- **Is SB1 opened within TB52?**
  - Yes: DELAY TB51
  - No: Suction cup HP detection preparation retry

---

**Level 2 error**

**Suction cup HP detection preparation retry**
**Explanation of HP Detection Operation**

- The home position (HP) is detected when the sensor arm attached to the suction arm shields SB1.
- The suction cups are moved by MB1 driving and stops at their home position according to the following steps.

1) **Positioning for suction cup HP detection preparation**
   - When SB1 is OPEN: Positioning operation (backward movement) is performed to seek the home position, and after SB1 is CLOSE, the suction cups are fed by a specified amount and then stop.
   - When SB1 is CLOSE: Proceed to the next step.

2) **Return for suction cup HP detection**
   - The return operation (forward movement) is performed, and after SB is OPEN, the suction cups are fed by a specified amount and stop.

3) **Suction cup HP detection: Sensor edge detection**
   - The positioning operation is performed by 1-pulse driving, and the sensor edge is detected when SB1 is CLOSE.

4) **Suction cup HP detection: HP positioning**
   - The suction cups are fed from the edge by a specified amount, and the positioning operation is stopped.
   - If normal, this stop point represents the home position.
(3) Detailed Sequence of Elevation Unit HP Positioning

This operation is performed during IP feed conveyance or load conveyance, or when the elevation unit is not in a proper shelf position.
It is also performed during initialization.

Fig. 2.3.3 Elevation Unit HP Positioning (1/2)

Preprocessing: Fig. 2.3.1, Fig. 2.8.1, and Fig. 5.1.1

Is SB1 closed?

Level 2 error
Suction cup HP return error

DELAY TB17

Suction cup HP positioning

Fig. 2.3.2

MB3 phase start-point forced return (2-phase)

Elevation unit movement (initial driving)
DRIVE (MB3/PB101)

Is SA17 closed?

Elevation unit movement UP
DRIVE (MB3/PB101)

Is SA17 closed within TB101?

Elevation unit movement stop
DRIVE (MB3/OFF) (Soft)

Elevation unit movement DOWN
DRIVE (MB3/PB102)

Is SA17 opened within TB102?

Elevation unit movement stop
DRIVE (MB3/OFF) (Soft)

Level 0 error
Elevation HP movement error

For up/down movement of the up-down IP removal unit, it is prerequisite that the suction arm is in its home position in order to avoid interference.

It is confirmed that the up-down IP removal unit is near the topmost shelf by checking that sensor SA17 is CLOSE.
Fig. 2.3.3 Elevation Unit HP Positioning (2/2)

HP positioning preparation operation Sensor SB3 is engaged with the actuator for topmost shelf detection.

Sensor SB3 detects the edge (lower end) of the actuator for HP positioning.

Moved by 60p to the center of the actuator, which corresponds to the home position of the up-down IP removal unit (travel: 1.5 mm).

Operation for elevation edge detection preparation

Operation for elevation edge detection

Is SB3 closed within TB103?

Is SB3 opened within TB104?

Is SB3 closed within TB105?

Elevation unit movement UP
DRIVE (MB3/PB101)

Elevation unit movement stop
DRIVE (MB3/OFF) (Soft)

Elevation unit movement DOWN
DRIVE (MB3/PB102)

Elevation unit movement stop
DRIVE (MB3/OFF) (Soft)

1-pulse driving process Parameter
Elevation unit movement UP (to edge)
DRIVE (MB3/PB103)

Elevation unit movement UP (to HP)
DRIVE (MB3/PB104)

Is SB3 closed?

Level 0 error
Elevation unit movement error

Level 2 error
Elevation shelf movement failure retry

Is the number of retries made greater than the retry count (NB100)?

END

Table 2.3.3 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB100</td>
<td>Elevation (initial driving)</td>
<td>1 p</td>
</tr>
<tr>
<td>PB101</td>
<td>Elevation (UP)</td>
<td>± infinite P</td>
</tr>
<tr>
<td>PB102</td>
<td>Elevation (DOWN)</td>
<td>± infinite P</td>
</tr>
<tr>
<td>PB103</td>
<td>Elevation 1 pulse driving (edge movement)</td>
<td>1 p</td>
</tr>
<tr>
<td>PB104</td>
<td>Elevation (HP movement)</td>
<td>60 p</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB101</td>
<td>Elevation reference seek timeout 1</td>
<td>14.5 sec</td>
</tr>
<tr>
<td>TB102</td>
<td>Elevation reference seek timeout 2</td>
<td>2.4 sec</td>
</tr>
<tr>
<td>TB103</td>
<td>Elevation topmost shelf seek timeout 1</td>
<td>2.4 sec</td>
</tr>
<tr>
<td>TB104</td>
<td>Elevation topmost shelf seek timeout 2</td>
<td>2.4 sec</td>
</tr>
<tr>
<td>TB105</td>
<td>Elevation HP 1 pulse driving timeout</td>
<td>20 sec</td>
</tr>
<tr>
<td>NB100</td>
<td>Elevation HP retry</td>
<td>2 times</td>
</tr>
</tbody>
</table>

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2.4 IP Feed

(1) Overall/General Sequence

In this sequence, an IP is removed from the cassette and fed to the before-side-positioning conveyor.

The IP conveyance path is from the up-down IP removal unit to the before-side-positioning conveyor to the before-side-positioning conveyor.

In order to prevent conflict with the returning (loading) IP, this sequence is performed after conveyance path clearing is confirmed.

Fig. 2.4.1 IP Feed (Overall Sequence)

Preprocessing: Fig. 2.1.1, and Fig. 3.1.1

Is IP feed permitted?

START

Y

IP feed permission enabled: Fig. 2.7.3

N

Feed suction

Feed suction gripping

Feed gripping and conveying

END

<Sequence start requirements>
When all the following requirements are met, the sequence starts.

- IP feed permission enabled: Fig. 2.7.3

The IP in the cassette is sucked by the suction cups.

The IP sucked by the suction cups is gripped by the grip rollers of the up-down IP removal unit.

The IP gripped by the grip rollers is conveyed.

FR1H0315.EPS

Conveyance Path and IP Driving

FR1H0316.EPS
(2) Feed Suction Sequence

This is for the operation of the up-down IP removal unit. In this sequence, the IP in the cassette is sucked by the suction cups. This sequence is also performed during a search for any remaining IP.

Fig. 2.4.2 Feed Suction

Preprocessing: Fig. 2.4.1

START

Leak valve suction condition
Drive (SVB1/ON)

Suction cup movement (HP feed suction)
Drive (MB1/PB11)

Suction pump ON
Drive (PB1/ON)

Is SB5 closed within TB11?

DELAY TB12

LEVEL 2 error
Feed IP suction failure retry

IP leak
Drive (PB1/OFF)
Drive (SVB1/ON)

DELAY TB17

Fig. 2.3.2

Suction HP detection

Is the number of retries made greater than the retry count (NB11)?

DELAY TB12

LEVEL 1 error
Feed IP suction failure

Leak valve suction condition
Drive (SVB1/ON)

Error handling
Cassette ejection

Cassette ejection

Table 2.4.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB11</td>
<td>Suction cup movement (HP → feed suction)</td>
<td>250 p</td>
</tr>
<tr>
<td>TB11</td>
<td>Feed suction timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB12</td>
<td>Wait for feed suction</td>
<td>0 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>NB11</td>
<td>Feed suction retry</td>
<td>3 times</td>
</tr>
</tbody>
</table>
(3) Sequence of Feed Suction Conveyance

This is for the operation of the up-down IP removal unit. In this sequence, the IP sucked is removed from the cassette and fed to the grip rollers of the IP removal unit. This sequence is also performed during a search for any remaining IP.

Fig. 2.4.3 Feed Suction Conveyance

The grip rollers rotate at the rate of suction cup movement. While the suction cups feed the IP to the grip rollers, the IP is monitored so that it is not dropped. OPEN: IP dropped CLOSE: IP sucked

When the leading edge of the IP is fed to the grip rollers, air leak occurs so that the IP is released from the suction cups.

Remedial sequence at the time of suction cup operation failure

Preprocessing: Fig. 2.4.1

Conveyance driving
DRIVE (MB2/PB21)

Is SB5 closed?

IP leak
DRIVE (PB1/OFF)
DRIVE (SVB1/ON)

DELAY TB13

Is SB1 closed?

Level 1 error
Feed IP dropped

IP leak
DRIVE (PB1/OFF)
DRIVE (SVB1/ON)
SB4 monitoring completed

DELAY TB17

Suction cup HP positioning
Fig. 2.3.2

Level 2 error
Suction cup HP return failure

DELAY TB17

Suction cup HP positioning
Fig. 2.3.2

Suction cup movement (HP → feed leak)
DRIVE (MB1/PB19)

END

Remedial sequence when the IP is dropped

- Pump/Suction Cup Operation
- Operation of Suction Cup Movement (Feed Suction → Feed Leak)

Table 2.4.3 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB12</td>
<td>Suction cup movement (feed suction → feed leak)</td>
<td>-262 p</td>
</tr>
<tr>
<td>PB19</td>
<td>Suction cup movement (HP → feed leak)</td>
<td>-12 p</td>
</tr>
<tr>
<td>PB21</td>
<td>Conveyance (feed suction standby)</td>
<td>675 p</td>
</tr>
<tr>
<td>TB13</td>
<td>Wait for feed leak</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
</tbody>
</table>

Fig. 6.2.1
(4) Feed Conveyance Sequence

This is for the operation of the up-down IP removal unit. In this sequence, the IP fed by the grip roller is routed to the before-side-positioning conveyor.

Fig. 2.4.4 Feed Conveyance

Operation of Suction Cup Movement (Feed Leak → Feed Standby)

Table 2.4.4 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB18</td>
<td>Suction cup movement (feed leak → load standby)</td>
<td>98 p</td>
</tr>
<tr>
<td>PB26</td>
<td>Conveyance (grip retry)</td>
<td>+ infinite P</td>
</tr>
<tr>
<td>TB14</td>
<td>Grip timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB18</td>
<td>Wait for feed</td>
<td>0.05 sec</td>
</tr>
</tbody>
</table>
2.5 Feed Conveyance (IP Length Measurement)

(1) Overall/General Sequence

In this sequence, the IP sent from the IP removal unit is fed through the erasure conveyor to the side-positioning conveyor. During the conveyance, IP length measurement is performed. If the IP length measurement is completed normally, the erasure lamp, if unlit, is lit.

Fig. 2.5.1 Passage through Before-Side-Positioning Conveyor and IP Length Measurement
(Overall Sequence)

Preprocessing: Fig. 2.1.1, and Fig. 3.1.1

(Sequence initiation requirement)
When the following requirement is met, the sequence starts.

- IP feed conveyance permission OK: Fig. 2.9.1

To the conveyance path of the up-down IP removal unit, the IP is not fed with the driving motor, but with the belt drive, from the before-side-positioning conveyor.

Data for determination of IP type is obtained.

Fig. 2.5.2

The erasure lamp is lit.

Fig. 2.5.3

IP determination

IP feed conveyance permitted?

Conveyance driving
DRIVE (MD3/PD31)
DRIVE (MC1/PB22)
DRIVE (MB2/PB22)

IP length measurement

Table 2.5.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB22</td>
<td>Conveyance (feed)</td>
<td>+ infinite P</td>
</tr>
<tr>
<td>PC11</td>
<td>Conveyance (feed)</td>
<td>- infinite P</td>
</tr>
<tr>
<td>PD31</td>
<td>Conveyance (feed)</td>
<td>- infinite P</td>
</tr>
</tbody>
</table>

Structure and Operation of Path Changeover Mechanism

The conveyance path of the before-side-positioning conveyor is normally in the feed state. Upon load request, the conveyance path changeover guide driving solenoid SOLC1 is turned ON to implement path changeover.

After the IP has been passed (sensor SB2 is CLOSE → OPEN), the solenoid is turned OFF to reset it to its original state.

Relationship between Conveyance Path and IP Driving
(2) Sequence of IP Length Measurement

This sequence is performed while the IP is fed by the before-side-positioning conveyor. In response to the result of this IP length measurement, the type of the IP being fed is determined.

Fig. 2.5.2 IP Length Measurement

![Flowchart](image)

Table 2.5.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC11</td>
<td>Feed conveyance timeout</td>
<td>3.5 sec</td>
</tr>
<tr>
<td>TC12</td>
<td>IP length measurement timeout</td>
<td>2.9 sec</td>
</tr>
</tbody>
</table>
(3) Sequence of IP Determination

The sequence for IP type determination and upon detection of out-of-spec IP is as follows.

Fig. 2.5.3 IP Determination

Preprocessing: Fig. 2.5.1

Table 2.5.3 IP Determination Criteria

<table>
<thead>
<tr>
<th>IP type setting</th>
<th>Length x width, in mm</th>
<th>SB4 result</th>
<th>State of SA4, 8, 12, 16</th>
<th>SC1 passage time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–TC21 (–0.57)</td>
</tr>
<tr>
<td>14x17 I</td>
<td>430x354</td>
<td>CLOSE</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>14x14 I</td>
<td>354x354</td>
<td>CLOSE</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>10x12 I</td>
<td>303x252</td>
<td>CLOSE</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>8x10 I</td>
<td>201x252</td>
<td>CLOSE</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>18x24 ST</td>
<td>178x238</td>
<td>OPEN</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>24x30 ST</td>
<td>298x238</td>
<td>OPEN</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>18x24 HR</td>
<td>178x238</td>
<td>OPEN</td>
<td>CLOSE</td>
<td></td>
</tr>
<tr>
<td>24x30 HR</td>
<td>238x298</td>
<td>CLOSE</td>
<td>CLOSE</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 6.3.1 TR1H0033.EPS

TR1H0033.EPS
2.6 Barcode Reading and Side-Positioning

(1) Overall/General Sequence

This is for the operation of the side-positioning conveyor. Barcode reading is performed in the middle of conveyance. For 14"x17" and 14"x14" sizes, reverse conveyance is performed before side-positioning to implement IP leading-edge positioning; for other sizes, this IP leading-edge positioning with reverse conveyance is not necessary. The side-positioning conveyance grip HP positioning is performed concurrently with the after-reading grip HP positioning of the reading sequence. For more detail, see 2.7 (3) and 2.7 (5).

Fig. 2.6.1 Barcode Reading and Side-Positioning (Overall Sequence)

![Diagram of Barcode Reading and Side-Positioning](FR1H0331.EPS)

- Relationship between Conveyance Path and IP Driving

![Diagram showing relationship between conveyance path and IP driving](FR1H0332.EPS)
(2) Sequence of Barcode Reading

This sequence is performed during IP feeding at the side-positioning conveyor. The barcode reader (BCR) is located near the inlet of the side-positioning conveyor.

Preprocessing: Fig. 2.6.1

Reading is implemented according to IP size and ST/HR information. In this case, no error notification is issued, but a notification is made upon loading of this IP.

When BCR data is obtained during conveyance, a request is immediately issued to the IDT.

Table 2.6.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD23</td>
<td>Conveyance grip (HP return)</td>
<td>400 p</td>
</tr>
<tr>
<td>PD32</td>
<td>Conveyance (BCR)</td>
<td>-972 p</td>
</tr>
<tr>
<td>ND31</td>
<td>BCR retry</td>
<td>3 times</td>
</tr>
</tbody>
</table>

Fig. 2.6.2 BCR

■ BCR Installation Location

Fig. 2.6.3 BCR

Other than V type

FR1H0333.EPS

FR1H0334.EPS
(3) Sequence of Side-Positioning Conveyance

The IP fed from the side-positioning conveyor is positioned for its start point for side-positioning top stopper after conveyed to the side-positioning top stopper.

For 14”x17” and 14”x14” sizes, the leading edge of the IP moves beyond the side-positioning IP sensor (SD3), which is located at the inlet of the subscanning unit, and into the subscanning unit, upon completion of BCR reading, because of their IP length. Thus, reverse conveyance is performed to position the leading edge of the IP.

For other sizes, such reverse conveyance is not necessary.

Table 2.6.3a Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB13</td>
<td>Suction cup movement (load standby → HP)</td>
<td>86 p</td>
</tr>
<tr>
<td>PD11</td>
<td>Side-positioning (HP → stopper)</td>
<td>64 p</td>
</tr>
<tr>
<td>PD35</td>
<td>Conveyance (side-positioning)</td>
<td>- infinite P</td>
</tr>
<tr>
<td>TD32</td>
<td>Wait for side-positioning return</td>
<td>0.2 sec</td>
</tr>
</tbody>
</table>

Table 2.6.3b Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Mode</th>
<th>14x17</th>
<th>14x14</th>
<th>10x12</th>
<th>8x10</th>
<th>18x24 ST</th>
<th>24x30 ST</th>
<th>18x24 ST</th>
<th>24x30 ST</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD34</td>
<td>Conveyance (side-positioning conveyance return)</td>
<td>IDT</td>
<td>242</td>
<td>242</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSL</td>
<td>116 p</td>
<td>2.17 sec</td>
<td>2.24 sec</td>
<td>2.45 sec</td>
<td>2.50 sec</td>
<td>2.25 sec</td>
<td>2.50 sec</td>
<td>2.37 sec</td>
</tr>
<tr>
<td>TD34</td>
<td>Side-positioning timeout</td>
<td>IDT</td>
<td>2.17 sec</td>
<td>2.32 sec</td>
<td>2.34 sec</td>
<td>2.55 sec</td>
<td>2.60 sec</td>
<td>2.35 sec</td>
<td>2.60 sec</td>
<td>2.47 sec</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSL</td>
<td>2.16 sec</td>
<td>2.32 sec</td>
<td>2.34 sec</td>
<td>2.55 sec</td>
<td>2.60 sec</td>
<td>2.35 sec</td>
<td>2.60 sec</td>
<td>2.47 sec</td>
</tr>
</tbody>
</table>

Fig. 2.6.3 Side-Positioning Conveyance

Preprocessing: Fig. 2.6.1, Fig. 2.6.2, Fig. 3.2.1, and Fig. 5.6.1

- Side-Positioning Stopper Driving Mechanism

- Side-Positioning Stopper Driving Mechanism

- Side-Positioning Stopper Driving Mechanism

- Side-Positioning Stopper Driving Mechanism

- Side-Positioning Stopper Driving Mechanism

- Side-Positioning Stopper Driving Mechanism

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- Side-Positioning Stopper Driving Mechanism

- Side-Positioning Stopper Driving Mechanism

- Side-Positioning Stopper Driving Mechanism
(4) Sequence of Side-Positioning

The IP conveyed to the side-positioning stopper is side-positioned. The operation of the side-positioning stopper is performed during the sequence of side-positioning conveyance described in the preceding subsection 2.6 (3).

The side-positioning operation is performed twice in order to increase positional accuracy. The second side-positioning movement is so small that it is difficult to visually check that movement.

Preprocessing: Fig. 2.6.1, Fig. 2.6.2, Fig. 3.2.1, and Fig. 5.6.1

Fig. 2.6.4 Side-Positioning

The IP conveyed from the before-side-positioning conveyor to the side-positioning conveyor is side-positioned.

Is SD1 closed?

Table 2.6.4a Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD21</td>
<td>Conveyance grip release</td>
<td>256 p</td>
</tr>
<tr>
<td>PD24</td>
<td>Conveyance grip (slow)</td>
<td>144 p</td>
</tr>
<tr>
<td>TD11</td>
<td>Wait for settlement of IP that is not side-positioned</td>
<td>0.2 sec</td>
</tr>
<tr>
<td>TD12</td>
<td>Wait for side-positioning return</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TD13</td>
<td>Wait for re-side-positioning</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TD14</td>
<td>Wait for settlement of IP that has been side-positioned</td>
<td>0.2 sec</td>
</tr>
</tbody>
</table>

Table 2.6.4b Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>4x17</th>
<th>14x14</th>
<th>10x12</th>
<th>8x10</th>
<th>18x24 ST</th>
<th>24x30 ST</th>
<th>18x24 HR</th>
<th>24x30 HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD12</td>
<td>Side-positioning (stopper → side-positioning 1)</td>
<td>98 p</td>
<td>98 p</td>
<td>778 p</td>
<td>778 p</td>
<td>872 p</td>
<td>872 p</td>
<td>840 p</td>
<td>440 p</td>
</tr>
<tr>
<td>PD13</td>
<td>Side-positioning (side-positioning 1 → back)</td>
<td>68 p</td>
<td>68 p</td>
<td>68 p</td>
<td>68 p</td>
<td>68 p</td>
<td>68 p</td>
<td>68 p</td>
<td>68 p</td>
</tr>
<tr>
<td>PD14</td>
<td>Side-positioning (back → side-positioning 2)</td>
<td>-68 p</td>
<td>-68 p</td>
<td>-68 p</td>
<td>-68 p</td>
<td>-68 p</td>
<td>-68 p</td>
<td>-68 p</td>
<td>-68 p</td>
</tr>
<tr>
<td>PD15</td>
<td>Side-positioning (side-positioning 2 → HP)</td>
<td>162 p</td>
<td>162 p</td>
<td>842 p</td>
<td>842 p</td>
<td>936 p</td>
<td>936 p</td>
<td>904 p</td>
<td>504 p</td>
</tr>
</tbody>
</table>
(5) Detailed Sequence of Side-Positioning HP Positioning

In this sequence, the home position of the IP side-positioning mechanism of the side-positioning conveyor is located.

It is performed during initial operation and side-positioning operation.

Fig. 2.6.5 Side-Positioning HP Positioning (1/2)

Preprocessing: Fig. 2.6.4, and Fig. 5.1.1

![Diagram of the sequence](image-url)
Fig. 2.6.5 Side-Positioning HP Positioning (2/2)

Table 2.6.5 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD50</td>
<td>Side-positioning (initial driving)</td>
<td>1 p</td>
</tr>
<tr>
<td>PD51</td>
<td>Side-positioning (HP return)</td>
<td>+ infinite P</td>
</tr>
<tr>
<td>PD52</td>
<td>Side-positioning 1-pulse driving (HP movement 1)</td>
<td>-1 p</td>
</tr>
<tr>
<td>PD53</td>
<td>Side-positioning (HP positioning)</td>
<td>- infinite P</td>
</tr>
<tr>
<td>PD54</td>
<td>Side-positioning (HP movement 2)</td>
<td>-18 p</td>
</tr>
<tr>
<td>TD51</td>
<td>Wait for side-positioning HP settlement</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TD52</td>
<td>Side-positioning HP detection preparation retry</td>
<td>1 sec</td>
</tr>
<tr>
<td>TD53</td>
<td>Side-positioning HP detection timeout</td>
<td>8 sec</td>
</tr>
<tr>
<td>TD54</td>
<td>Side-positioning HP 1-pulse driving timeout</td>
<td>10 sec</td>
</tr>
<tr>
<td>ND51</td>
<td>Side-positioning HP retry</td>
<td>3 times</td>
</tr>
</tbody>
</table>

MD1 Belt
Guide plate

Side-positioning mechanism (view seen from above)

Is SD1 closed within TD54?

Is SD1 closed?

Level 2 error Side-positioning HP detection retry

Is the number of retries made greater than the retry count (ND51)?

Level 0 error Side-positioning operation error

1-pulse driving process parameter
Side-positioning 1-pulse driving (HP movement 1)
DRIVE (MD1/PD52)

MD1 excitation stability point reset (2-phase)
Side-positioning driving (HP movement 2)
DRIVE (MD1/PD54)

DELAY TD51

Is SD1 closed?
(6) Sequence of CSL/IDT Information Check

This is the process performed by the controller.
The IDT information read, machine type, and CSL information are identified, and whether the ID and other information has been entered/registered is checked accordingly.

Fig. 2.6.6 CSL/IDT Information Check

Preprocessing: Fig. 2.6.1, and Fig. 3.2.1

Table 2.6.6 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD33</td>
<td>IDT response timeout</td>
<td>120 sec</td>
</tr>
</tbody>
</table>

Fig. 2.6.7 CSL/IDT Information Check

CSL: Logical reading and high-sensitivity reading are disabled in Config Setting.

CSL: Logical reading or high-sensitivity reading is enabled in Config Setting.

Does the IDT respond within TD33?

No MPM code available

ID not registered

Level 1 error

No MPM code available

Error handling

Recovered IP load

Fig. 6.3.1

ID information OK

Level 1 error

ID information not registered

Error handling

ID information not registered

IP determination check

Fig. 2.6.7

End
(7) Sequence of IP Determination Check

HR/ST information is updated according to the barcode information.

Fig. 2.6.7 IP Determination Check

Preprocessing: Fig. 2.6.6

START

<table>
<thead>
<tr>
<th>Is the IP size 8x10 ST?</th>
<th>Is the IP size 24x30 HR?</th>
<th>Is the IP size 18x24 HR?</th>
<th>Is the IP size 18x24 ST?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

BC information

ST HR

END

Error handling
Recovered IP load
Fig. 6.3.1

Level 1 error
Out-of-spec IP size

Updated to IP size = 1824ST
Updated to IP size = 1824HR

END
2.7  Reading

(1) Overall/General Sequence

In this sequence, the IP data is read and then the IP is conveyed to the conveyance inverting stocker.

Reading preparation and reading are performed by the subscanning unit.

Fig. 2.7.1 Reading (Overall Sequence)

Preprocessing: Fig. 2.1.1

START

Preparation prior to IP reading

Reading preparation

Reading

The IP conveyed is scanned.

Movement of elevation unit (feed) permitted

CSL/IDT information check 2

END

Relationship between Conveyance Path and IP Operation

During reading preparation and start

During reading
(2) Sequence of Reading Preparation

This is for the operation of the subscanning unit.
In this sequence, prior to IP data reading, preparation for IP conveyance is performed.

Fig. 2.7.2 Reading Preparation

Preprocessing: Fig. 2.7.1

**Table 2.7.2 Operation Parameters**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD21</td>
<td>Conveyance grip release</td>
<td>256 p</td>
</tr>
<tr>
<td>PD36</td>
<td>Conveyance (preparation for reading)</td>
<td>-180 p</td>
</tr>
<tr>
<td>TZ34</td>
<td>Driven shaft grip timeout</td>
<td>2 sec</td>
</tr>
</tbody>
</table>

**● IP conveyance during reading preparation**

**● Location of driving shaft/driven shaft and nearby mechanism (initial condition)**
(3) Sequence of Reading

This is for the operation of the subscanning unit. In this sequence, the IP data is scanned.

Fig. 2.7.3 Reading (1/3)

Preprocessing: Fig. 2.7.1

START

FFM reading speed setting

FFM reading driving
DRIVE (MZ1/ON)

Is SD3 opened within TD35?

Level 0 error
Conveyance error
(reading conveyance)

Does the IP leading-edge detection interrupt occur within TZ11?

Level 0 error
Reading IP leading edge detection error

DELAY TZ12
Driving shaft grip driving
DRIVE (MZ2/ON)
TZ21 START
Timer START

Driving shaft grip stop
DRIVE (MZ2/OFF)
(Soft)

Level 0 error
Driving shaft grip error

Timer > TZ23 or Timer < TZ22?

Error log
(detailed information)
Timer data recording

DELAY TZ13
Driven shaft grip release driving
DRIVE (MZ3/ON)
TZ31 START
Timer START

Driven shaft grip release stop
DRIVE (MZ3/OFF)
(Hard)

Level 0 error
Driven shaft grip release error

Is SZ2 opened within TZ21?

Driver shaft grip (NOTE)

Is SZ3 opened within TZ31?

Driver shaft grip release (NOTE)

Delay TZ12
Driving shaft grip driving
DRIVE (MZ2/ON)
TZ21 START
Timer START

Delay TZ13
Driven shaft grip release driving
DRIVE (MZ3/ON)
TZ31 START
Timer START

Error log
(detailed information)
Timer data recording

NOTE: It is affected by the designation of reading mode (HR/ST).
From the scanner board

End-of-screen interrupt?

Level 0 error
End-of-screen error

DELAY TZ14

FFM stop DRIVE (MZ1/OFF) (Soft)

DELAY TZ15

After-reading conveyance grip
DRIVE (1/PE12)

Is SE1 closed?
Level 2 error
After-reading conveyance grip operation error

After-reading conveyance grip HP positioning

Fig. 2.7.4

Driving shaft grip release driving
DRIVE (MZ2/ON)

Is SD2 closed?
Level 2 error
Side-positioning conveyance grip operation error

Side-positioning conveyance grip HP positioning

Fig. 2.7.5

After-reading conveyance grip release stop
DRIVE (MZ2/Off) (Soft)

Is SZ2 closed within TA24?
Driving shaft grip release stop
DRIVE (MZ2/Off) (Hard)

Drives should be completed for both of the parallel grips.

Table 2.7.3a Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD22</td>
<td>Conveyance grip</td>
<td>144 p</td>
</tr>
<tr>
<td>PE12</td>
<td>Conveyance grip</td>
<td>-256 p</td>
</tr>
<tr>
<td>TZ12</td>
<td>Driving shaft grip start (ST/HR)</td>
<td>2.10/4.20 sec</td>
</tr>
<tr>
<td>TZ15</td>
<td>Wait for subscanning stop</td>
<td>0.3 sec</td>
</tr>
<tr>
<td>TZ21</td>
<td>Driving shaft grip timeout (ST/HR)</td>
<td>5/10 sec</td>
</tr>
<tr>
<td>TZ22</td>
<td>Lower limit for driving shaft grip spec (ST/HR)</td>
<td>1.6/3.3 sec</td>
</tr>
<tr>
<td>TZ23</td>
<td>Upper limit for driving shaft grip spec (ST/HR)</td>
<td>2.8/6.0 sec</td>
</tr>
<tr>
<td>TZ24</td>
<td>Driving shaft grip release timeout (fast/HR)</td>
<td>2 sec</td>
</tr>
<tr>
<td>TZ31</td>
<td>Driven shaft grip timeout (ST/HR)</td>
<td>5/10 sec</td>
</tr>
<tr>
<td>TZ32</td>
<td>Upper limit for driven shaft grip spec (ST/HR)</td>
<td>1.2/3.0 sec</td>
</tr>
<tr>
<td>TZ33</td>
<td>Upper limit for driven shaft grip spec (ST/HR)</td>
<td>2.4/4.9 sec</td>
</tr>
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</table>

Table 2.7.3b Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Mode</th>
<th>14x17</th>
<th>14x14</th>
<th>10x12</th>
<th>8x10</th>
<th>18x24 ST</th>
<th>24x30 ST</th>
<th>18x24 HR</th>
<th>24x30 HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>T035</td>
<td>Normal reading IP trailing-edge detection timeout</td>
<td>—</td>
<td>20.1 sec</td>
<td>16.0 sec</td>
<td>13.4 sec</td>
<td>8.0 sec</td>
<td>6.8 sec</td>
<td>13.1 sec</td>
<td>11.5 sec</td>
<td>17.8 sec</td>
</tr>
<tr>
<td>T211</td>
<td>Subscanning IP leading-edge detection timeout</td>
<td>—</td>
<td>21.1 sec</td>
<td>17.0 sec</td>
<td>14.4 sec</td>
<td>9.0 sec</td>
<td>7.8 sec</td>
<td>14.1 sec</td>
<td>12.5 sec</td>
<td>18.8 sec</td>
</tr>
<tr>
<td>T213</td>
<td>Driven shaft grip release start</td>
<td>—</td>
<td>18.5 sec</td>
<td>14.5 sec</td>
<td>11.8 sec</td>
<td>6.4 sec</td>
<td>5.2 sec</td>
<td>11.6 sec</td>
<td>10.4 sec</td>
<td>16.8 sec</td>
</tr>
<tr>
<td>T214</td>
<td>Wait for subscanning stop (conveyance compensation for logical reading)</td>
<td>Standard reading</td>
<td>0 sec</td>
<td>0 sec</td>
<td>0 sec</td>
<td>0 sec</td>
<td>0 sec</td>
<td>0 sec</td>
<td>0 sec</td>
<td>0 sec</td>
</tr>
<tr>
<td></td>
<td>Standard reading</td>
<td>18x38 portrait center</td>
<td>0 sec</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10x8 landscape upper right</td>
<td>0 sec</td>
<td>0 sec</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10x12 portrait upper right</td>
<td>0 sec</td>
<td>0 sec</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14x14 top</td>
<td>0 sec</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10x8 upper right</td>
<td>—</td>
<td>—</td>
<td>0 sec</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pantomor portrait right center</td>
<td>—</td>
<td>—</td>
<td>0.5 sec</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TR1H0032.EPS

TR1H0033.EPS
Fig. 2.7.3 Reading (3/3)

- **IP conveyance during reading**
- **Location of driving shaft/driven shaft and nearby mechanism (initial condition)**

### Diagram Description:
- **IP conveyance during reading**:
  - After-reading conveyor side
  - Conveyance direction: CCW (reading conveyance)
  - Sensor arm for SZ2
  - MZ2
  - Side-positioning conveyor side
  - MZ3
  - Sensor arm for SZ3

- **Location of driving shaft/driven shaft and nearby mechanism (initial condition)**:
  - Light-collecting mirror
  - Laser beam line
  - Driving shaft
  - Driven shaft
  - Side-positioning reference/location of side-positioning latch
  - Subscanning unit
  - MZ2
  - Sensor arm for SZ2
  - Cam
  - MZ3
  - Sensor arm for SZ3
  - Cam
  - MZ2 (Grip solid line): SZ2 (OPEN)
  - Grip release (dotted line): SZ2 (CLOSE)
  - MZ3 (Grip solid line): SZ3 (CLOSE)
  - Grip release (dotted line): SZ3 (OPEN)
(4) Detailed Sequence of After-Reading Conveyance Grip HP Positioning

This is for the after-reading conveyance grip HP positioning operation performed in the IP reading sequence.

Fig. 2.7.4 After-Reading Conveyance Grip HP Positioning (1/2)

Preprocessing: Fig. 2.7.3, and Fig. 5.1.1

START

- ME1 excitation stability point reset (2-phase)
- Grip driving (initial driving) DRIVE (ME1/PD60)
- DELAY TD61

Is SE1 closed?

- Grip driving (positioning) DRIVE (ME1/PD63)

Is SE1 closed within TD63?

- Grip driving stop DRIVE (ME1/OFF) (soft)
- DELAY TD61

At home position of side-positioning grip

- The rollers are in the grip state.

Driving system of side-positioning grip

- The wire should no be tense.

Return for grip HP detection preparation

- Grip driving stop DRIVE (ME1/OFF) (soft)
- DELAY TD61

Level 2 error

- After-reading conveyance grip HP detection preparation retry
Fig. 2.7.4 After-Reading Conveyance Grip HP Positioning (2/2)

1-pulse driving process
Parameter
Grip pulse driving (HP movement 1)
DRIVE (ME1/PD63)

Is SE1 closed within TD64?

MD2 excitation stability
point reset (2-phase)

Grip driving
(HP movement 2)
DRIVE (ME1/PD64)

DELAY TD61

Is SE1 closed?

Level 2 error
After-reading conveyance
Grip HP detection retry

Is the number of retries made greater
than the retry count (ND61)?

Level 0 error
After-reading conveyance
Grip operation error

Table 2.7.4 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD60</td>
<td>Conveyance grip (initial driving)</td>
<td>1 p</td>
</tr>
<tr>
<td>PD61</td>
<td>Conveyance grip (HP return)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PD63</td>
<td>Conveyance grip (HP positioning)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PD64</td>
<td>Conveyance grip (HP positioning 2)</td>
<td>6 p</td>
</tr>
<tr>
<td>TD61</td>
<td>Wait for side-positioning grip HP settlement</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TD62</td>
<td>Side-positioning grip HP detection preparation timeout</td>
<td>1.2 sec</td>
</tr>
<tr>
<td>TD63</td>
<td>Side-positioning grip HP detection timeout</td>
<td>13.3 sec</td>
</tr>
<tr>
<td>TD64</td>
<td>Side-positioning HP 1-pulse driving timeout</td>
<td>10 sec</td>
</tr>
<tr>
<td>ND61</td>
<td>Conveyance grip HP retry</td>
<td>3 times</td>
</tr>
</tbody>
</table>
(5) Detailed Sequence of Side-Positioning Conveyance Grip HP Positioning

This side-positioning conveyance grip home positioning operation is performed, concurrently with the after-reading conveyance grip home positioning operation, at the end of the reading sequence described in section 2.7 (3).

Fig. 2.7.5 Side-Positioning Conveyance Grip HP Positioning (1/2)

Preprocessing: Fig. 2.7.3, and Fig. 5.1.1

START

- MD2 excitation stability point reset (2-phase)
- Grip driving (initial driving) DRIVE (MD1/PD60)

DELAY TD61

Is SD2 closed?

- Grip driving (positioning) DRIVE (MD2/PD63)

Is SD2 closed within TD63?

- Grip driving stop DRIVE (MD2/OFF) (soft)

DELAY TD61

Grip driving (return) DRIVE (MD2/PD61)

Is SD2 opened within TD62?

- Grip driving stop DRIVE (MD2/OFF) (soft)

DELAY TD61

Grip driving (positioning) DRIVE (MD2/PD63)

- Level 2 error Side-positioning conveyance grip HP detection preparation retry

- Right-hand side plate of side-positioning conveyor Side guide

- The rollers are in the grip state.

- The wire should not be tense.

- At home position of side-positioning grip

- Driving system of side-positioning grip

- For side guide out/return
- For side-positioning grip open/close

- 2-stage cam

- Sensor arm

- Sensor arm

- SD2 CLOSE FR1H0361.EPS

FR1H0360.EPS

009-051-04 05.31.99 FM2460 CR-IR341 Service Manual MD - 89
Fig. 2.7.5 Side-Positioning Conveyance Grip HP Positioning (2/2)

Table 2.7.5 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD60</td>
<td>Conveyance grip (initial driving)</td>
<td>1 p</td>
</tr>
<tr>
<td>PD61</td>
<td>Conveyance grip (HP return)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PD63</td>
<td>Conveyance grip (HP positioning)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PD64</td>
<td>Conveyance grip (HP positioning 2)</td>
<td>6 p</td>
</tr>
<tr>
<td>TD61</td>
<td>Wait for side-positioning grip HP settlement</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>
(6) Sequence of After-Reading Conveyance

This is for the operation of the after-reading conveyor and erasure conveyor. In this sequence, the IP that has been read is fed into the conveyance inverting stocker via the after-reading conveyor and erasure conveyor.

Fig. 2.7.6 After-Reading Conveyance

Preprocessing: Fig. 2.7.1, and Fig. 3.3.1

The actuations of the sensors during normal operation are as follows:
- SF2: OPEN → CLOSE
- SF4: OPEN → CLOSE

Monitoring of SF4 is implemented in case SF2 becomes faulty.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE21</td>
<td>Conveyance (after-reading conveyance)</td>
<td>- infinite P</td>
</tr>
<tr>
<td>PF11</td>
<td>Conveyance (after-reading conveyance)</td>
<td>- infinite P</td>
</tr>
<tr>
<td>TF11</td>
<td>After-reading conveyance IP leading-edge detection timeout</td>
<td>2.67 sec</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>14x17 I</th>
<th>14x14 I</th>
<th>10x12 I</th>
<th>8x10 I</th>
<th>18x24 ST</th>
<th>24x30 ST</th>
<th>18x24 HR</th>
<th>24x30 HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF12</td>
<td>After-reading conveyance IP trailing-edge detection timeout</td>
<td>3.17 sec</td>
<td>3.01 sec</td>
<td>2.9 sec</td>
<td>2.68 sec</td>
<td>2.63 sec</td>
<td>2.89 sec</td>
<td>2.63 sec</td>
<td>2.76 sec</td>
</tr>
</tbody>
</table>
(7) Sequence of CSL/IDT Information Check 2

This is the process performed by the controller. It is performed in response to the result of the sequence described in 2.7 (6) “Sequence of CSL/IDT Information Check” performed at the end of BCR reading and side-positioning. If the ID information is obtained normally, the process continues.

Fig. 2.7.7 CSL/IDT Information Check 2

Preprocessing: Fig. 2.7.1, and Fig. 3.3.1
2.8 Movement of Elevation Unit (Load)

(1) Overall/General Sequence

In this sequence, the elevation unit is moved to a designated shelf of the cassette set unit in order to feed IPs. This sequence cannot be performed if the suction cups are not in their home position. For more detail, see Section 2.3 “Movement of Elevation Unit (Feed).”

Fig. 2.8.1 Movement of Elevation Unit (Load)

Table 2.8.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB14</td>
<td>Suction cup movement (HP → load standby)</td>
<td>86 p</td>
</tr>
<tr>
<td>PB19</td>
<td>Suction cup movement (HP → feed leak)</td>
<td>-12 p</td>
</tr>
<tr>
<td>PB112</td>
<td>Topmost stage → 2nd stage</td>
<td>-3,462</td>
</tr>
<tr>
<td>PB113</td>
<td>Topmost stage → 3rd stage</td>
<td>-6,930</td>
</tr>
<tr>
<td>PB114</td>
<td>Topmost stage → 4th stage</td>
<td>3,470</td>
</tr>
<tr>
<td>PB121</td>
<td>2nd stage → topmost stage</td>
<td>-10,392</td>
</tr>
<tr>
<td>PB123</td>
<td>2nd stage → 3rd stage</td>
<td>3,470</td>
</tr>
<tr>
<td>PB124</td>
<td>2nd stage → 4th stage</td>
<td>-6,922</td>
</tr>
<tr>
<td>PB131</td>
<td>3rd stage → topmost stage</td>
<td>6,930</td>
</tr>
<tr>
<td>PB132</td>
<td>3rd stage → 2nd stage</td>
<td>3,460</td>
</tr>
<tr>
<td>PB134</td>
<td>3rd stage → 4th stage</td>
<td>-3,462</td>
</tr>
<tr>
<td>PB141</td>
<td>4th stage → topmost stage</td>
<td>10,392</td>
</tr>
<tr>
<td>PB142</td>
<td>4th stage → 2nd stage</td>
<td>6,922</td>
</tr>
<tr>
<td>PB143</td>
<td>4th stage → 3rd stage</td>
<td>3,462</td>
</tr>
</tbody>
</table>

Table 2.8.1a Elevation Unit Movement Parameters (PB_)

<table>
<thead>
<tr>
<th>Movement of elevation unit</th>
<th>Symbol</th>
<th>Pulse count (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topmost stage → 2nd stage</td>
<td>PB112</td>
<td>-3,462</td>
</tr>
<tr>
<td>Topmost stage → 3rd stage</td>
<td>PB113</td>
<td>-6,930</td>
</tr>
<tr>
<td>Topmost stage → 4th stage</td>
<td>PB114</td>
<td>3,470</td>
</tr>
<tr>
<td>2nd stage → topmost stage</td>
<td>PB121</td>
<td>-10,392</td>
</tr>
<tr>
<td>2nd stage → 3rd stage</td>
<td>PB123</td>
<td>3,470</td>
</tr>
<tr>
<td>2nd stage → 4th stage</td>
<td>PB124</td>
<td>-6,922</td>
</tr>
<tr>
<td>3rd stage → topmost stage</td>
<td>PB131</td>
<td>6,930</td>
</tr>
<tr>
<td>3rd stage → 2nd stage</td>
<td>PB132</td>
<td>3,460</td>
</tr>
<tr>
<td>3rd stage → 4th stage</td>
<td>PB134</td>
<td>-3,462</td>
</tr>
<tr>
<td>4th stage → topmost stage</td>
<td>PB141</td>
<td>10,392</td>
</tr>
<tr>
<td>4th stage → 2nd stage</td>
<td>PB142</td>
<td>6,922</td>
</tr>
<tr>
<td>4th stage → 3rd stage</td>
<td>PB143</td>
<td>3,462</td>
</tr>
</tbody>
</table>
2.9 Erasure

(1) Overall/General Sequence

This is for the operation of the erasure conveyor. In this sequence, the path of the erasure conveyor is changed over to feed the IP in the inverting stocker to the erasure conveyor where the IP data is erased. The erasure lamp is lit (turned on), if unlit, once the IP length measurement is completed normally. Meanwhile, the erasure lamp is unlit (turned off) if the second IP is not in the feed condition at the end of erasure conveyance.

Fig. 2.9.1 Erasure (Overall Sequence)

Preprocessing: Fig. 2.1.1

START

Is the after-reading conveyance permitted?

N

Y

After-reading conveyance

IP feed conveyance permission OK (Sequence initiation requirement)

If the following requirement is met as logic, the sequence is initiated.

After-reading conveyance permission OK: Fig. 2.10.1

Before-erasure conveyance

Fig. 2.9.2

Erasure conveyance

Fig. 2.9.3

Is only one IP left in the machine?

Two IPs

One IP

Erasure lamp turn-off and preheating

DRIVE (LAMP1-5/preheating)

END

■ Relationship between Conveyance Path and IP Operation

During before-erasure conveyance

During after-erasure conveyance
(2) Sequence of Before-Erasure Conveyance

In this sequence, after path changeover in the erasure conveyor, the IP is fed from the conveyance inverting stocker to the erasure section.

Fig. 2.9.2 Before-Erasure Conveyance
Preprocessing: Fig. 2.9.1

Table 2.9.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF12</td>
<td>Conveyance (before-erasure conveyance)</td>
<td>1,044 p</td>
</tr>
<tr>
<td>TF13</td>
<td>Wait for switchback</td>
<td>0.2 sec</td>
</tr>
<tr>
<td>TF14</td>
<td>Before-erasure conveyance IP leading-edge detection timeout</td>
<td>2 sec</td>
</tr>
</tbody>
</table>

Inverting Stocker

Path Changeover Mechanism
(3) Sequence of Erasure Conveyance

In this sequence, the IP is erased and fed to the IP removal conveyor. After this sequence, the erasure lamp turn-off process is performed. For more detail, see Section 2.9 (1).

Fig. 2.9.3 Erasure Conveyance

Table 2.9.3 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF13</td>
<td>Conveyance (erasure 1)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PF14</td>
<td>Conveyance (erasure 2)</td>
<td>15,992 p</td>
</tr>
<tr>
<td>TF15</td>
<td>Erasure conveyance IPtrailing-edge detection timeout</td>
<td>Variable depending on exposure</td>
</tr>
</tbody>
</table>
(4) Sequence of After-Erasure Conveyance

In this sequence, after the IP is erased, it is fed to the up-down IP removal unit via the before-side-positioning conveyor.

This operation is collaboratively performed by the erasure conveyor, before-side-positioning conveyor, and up-down IP removal unit.

Fig. 2.9.4 After-Erasure Conveyance

---

Table 2.9.4 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB23</td>
<td>Conveyance (after-erasure conveyance)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PC12</td>
<td>Conveyance (after-erasure conveyance)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PF15</td>
<td>Conveyance (after-erasure conveyance)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TB21</td>
<td>After-erasure conveyance timeout</td>
<td>3.6 sec</td>
</tr>
<tr>
<td>TF17</td>
<td>After-erasure conveyance IP trailing-edge detection timeout 1</td>
<td>2.2 sec</td>
</tr>
<tr>
<td>TF18</td>
<td>After-erasure conveyance IP trailing-edge detection timeout 2</td>
<td>2.8 sec</td>
</tr>
</tbody>
</table>
2.10 IP Load

(1) Overall/General Sequence

This is for the operation of the IP removal unit.

In this sequence, the IP fed via the side-positioning conveyor and erasure conveyor is loaded into the cassette.

Fig. 2.10.1 IP Load (Overall Sequence)

Preprocessing: Fig. 2.1.1, Fig. 3.1.1, and Fig. 5.4.3

Is the IP load permitted?

The IP that has been erased is conveyed via the before-side-positioning conveyor to the up-down IP removal unit.

The IP is conveyed to the cassette inlet.

The IP conveyed is sucked by the suction cups.

The IP sucked is loaded into the cassette.

It is checked if the IP loaded has been processed normally.

End

Relationship between Conveyance Path and IP Driving

At the start of IP load conveyance

At the end of IP load conveyance
(2) Sequence of Load Conveyance

This is for the operation of the IP removal unit.

In order to load the IP into the cassette, the IP is conveyed to the grip rollers of the IP removal unit.

Driving is performed collectively for the side-positioning conveyor and erasure conveyor during “erasure conveyance.”

Fig. 2.10.2 Load Conveyance

Preprocessing: Fig. 2.10.1

- Is SB2 closed within TB22?

  - Yes: Load conveyance stop
  - No: Load conveyance stop

  DRIVE (MF1/OFF) (soft)
  DRIVE (MC1/OFF) (soft)
  DRIVE (MB2/OFF) (hard)
  DRIVE (SOLC1/OFF) (soft)
  DRIVE (SOLF1/OFF) (soft)

  MF1, MC1, MB2 excitation OFF

Table 2.10.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB22</td>
<td>Load timeout</td>
<td>2.9 sec</td>
</tr>
</tbody>
</table>

Structure and Operation of Path Changeover Mechanism

The conveyance path of the before-side-positioning conveyor is normally in the feed state.

Upon load request, the convergence path changeover guide driving solenoid SOLC1 is turned ON to implement path changeover.

After the IP has been passed (sensor SB2 is CLOSE → OPEN), the solenoid is turned OFF to reset it to its original state.

Table 2.10.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB22</td>
<td>Load timeout</td>
<td>2.9 sec</td>
</tr>
</tbody>
</table>

*Fig. 2.10.2 Load Conveyance*

START

Is SB2 closed within TB22?

*FR1H0378.EPS*

END

*FR1H0377.EPS*
(3) Load Suction Sequence

This is for the operation of the elevation unit.

The IP fed from the grip rollers of the up-down IP removal unit is sucked by the suction cups.

Fig. 2.10.3 Load Suction

Preprocessing: Fig. 2.10.1, Fig. 5.4.1, Fig. 5.6.1, Fig. 5.7.1, and Fig. 6.3.2

---

The suction cups move from the load standby position to the maximum retreat position (see illustration below).

It is detected that the suction cups suck the trailing edge of the IP.

OPEN: IP suction not completed
CLOSE: IP suction completed

---

Table 2.10.3 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB14</td>
<td>Suction cup movement (HP - load standby)</td>
<td>86 p</td>
</tr>
<tr>
<td>PB15</td>
<td>Suction cup movement (load standby - load suction)</td>
<td>-100 p</td>
</tr>
<tr>
<td>TB11</td>
<td>Feed suction timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB15</td>
<td>Wait for load suction</td>
<td>0 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1sec</td>
</tr>
<tr>
<td>NB11</td>
<td>Feed suction retry</td>
<td>3 times</td>
</tr>
</tbody>
</table>

---

Operation of Suction Cup Movement (Load Standby → Load Suction)

Pump/Suction Cup Operation

---

During IP suction

---

Unit: mm

Suction cup movement (load standby - load suction)
(4) Sequence of Load Suction Conveyance

This is for the operation of the elevation unit.
In this sequence, the IP sucked by the suction cups is loaded into the cassette. It is in the reverse order of IP feed.

Fig. 2.10.4 Load Suction Conveyance

The grip rollers convey the IP in the return direction at the same speed of the suction cups.
The suction cups suck the trailing edge of the IP and load it into the cassette (see illustration below).

While the suction cups load the IP into the cassette, it is checked if the IP is not dropped.

After the suction cups load the IP into the cassette and air leak occurs, the IP is released from the suction cups. After load leak, the suction cups return to their home position.

Table 2.10.4 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB1</td>
<td>Suction cup movement (load suction → load leak)</td>
<td>3.83 mm</td>
</tr>
<tr>
<td>PB17</td>
<td>Suction cup movement (load leak → HP)</td>
<td>infinite p</td>
</tr>
<tr>
<td>PB25</td>
<td>Conveyance (load suction synchronization)</td>
<td>infinte p</td>
</tr>
<tr>
<td>TB16</td>
<td>Wait for load leak</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
</tbody>
</table>

Remedial sequence at the time when the IP is dropped

Fig. 2.3.2 Suction cup HP positioning

Error handling Cassette ejection 2 Fig. 6.2.1

During IP leak

■ Pump/Suction Cup Operation

Operation of Suction Cup Movement (Load Standby → Load Suction)
(5) Erasure Check

In this sequence, it is checked if the IP data has been erased, and if erasure failed, its remedial action is taken.

Fig. 2.10.5 Erasure Check

Preprocessing: Fig. 2.10.1

START

Is the erasure lamp lit?

Y  N

13AA Level 1 error Erasure lamp failure

Error handling Erasure lamp
Fig.6.5.1

Is an overexposed IP indicated?

Y  N

13AB Level 1 error Overexposed IP unerased

Error handling Overexposed IP
Fig.6.4.1
2.11 Cassette Ejection

(1) Overall/General Sequence

This is for the operation of the cassette set unit.

In this sequence, the cassette hold is released at the time of IP loading so that the cassette can be taken out.

Fig. 2.11.1 Cassette Ejection

Preprocessing: Fig. 2.1.1, Fig. 3.1.1, Fig. 5.4.1, Fig. 5.6.1, Fig. 5.6.2, Fig. 5.7.1, and Fig. 5.8.1

START

Cassette hold release

Fig. 2.2.2

The cassette removable condition is indicated.

LEDT2 is turned on

Cassette removal

Operation performed by the operator

Is SA1 opened?

DELAY TA13

Instant return of cassette is supported.

Is SA2 opened?

LEDT2 is turned off

LEDT1 is turned on

The ready condition is indicated.

END

Table 2.11.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA13</td>
<td>Wait for cassette OUT</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>

Table 2.11.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
</tr>
<tr>
<td>SA2</td>
<td>SA2</td>
<td>SA6</td>
<td>SA10</td>
<td>SA14</td>
</tr>
<tr>
<td>SA3</td>
<td>SA3</td>
<td>SA7</td>
<td>SA11</td>
<td>SA15</td>
</tr>
<tr>
<td>SOLA1</td>
<td>SOLA1</td>
<td>SOLA2</td>
<td>SOLA3</td>
<td>SOLA4</td>
</tr>
<tr>
<td>LEDT1</td>
<td>LEDT1</td>
<td>LEDT3</td>
<td>LEDT5</td>
<td>LEDT7</td>
</tr>
<tr>
<td>LEDT2</td>
<td>LEDT2</td>
<td>LEDT4</td>
<td>LEDT6</td>
<td>LEDT8</td>
</tr>
</tbody>
</table>
3. Machine Operation During Secondary Erasure

3.1 Summary of Operation

This is for the sequence of “secondary erasure conveyance” in the Maintenance Utility. It is different from the routine (single-IP conveyance) in the following five points.

1. Barcode reading : The sequence is skipped. See Section 3.2.
2. Reading : The sequences for reading preparation and reading are different. See Section 3.3.
3. Erasure : The sequence of steps is the same, but at different conveyance speeds. See Section 3.4.

(1) Machine Operation during Secondary Erasure (Overall/General Flow)

Fig. 3.1.1 Machine Operation during Secondary Erasure
3.2 Side-Positioning (Secondary Erasure)

(1) Overall/General Sequence

Unlike in the routine (single-IP conveyance), the barcode reading is not performed.

Fig. 3.2.1 Side-Positioning (Secondary Erasure)
(Overall Sequence)

Preprocessing: Fig. 3.1.1

- This step is skipped in the secondary erasure. The barcode located on the back of the IP is read during the IP conveyance.
- Same as in the routine
  - For 14"x17" and 14"x14", reverse conveyance is performed before side-positioning to position the leading edge of the IP.
- Same as in the routine
  - The start point for reading, which is the next sequence, is located.
- Same as in the routine

3.3 Reading (Secondary Erasure)

(1) Overall/General Sequence

The sequence of reading preparation and reading conveyance is different than in the routine (single-IP conveyance).

Fig. 3.3.1 Reading (Overall Sequence)

Preprocessing: Fig. 3.1.1

- Different than in the routine
  - Preparation prior to IP reading
    - Reading preparation
      - Fig.3.3.2
- Different than in the routine
  - The IP conveyed is scanned.
    - Reading
      - Fig.3.3.3
- Same as in the routine
  - CSL/IDT information check 2
    - Fig.2.7.7
(2) Reading Preparation Sequence

This is for the operation of the subscanning unit.
It is the sequence of reading preparation during secondary erasure.

Fig. 3.3.2 Reading Preparation (Secondary Erasure)

Table 3.3.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD36</td>
<td>Conveyance (reading preparation)</td>
<td>-180 p</td>
</tr>
<tr>
<td>TZ21</td>
<td>Driving shaft grip timeout (ST/HR)</td>
<td>5 / 10 sec</td>
</tr>
<tr>
<td>TZ22</td>
<td>Lower limit for driving shaft grip spec (ST/HR)</td>
<td>1.6 / 3.3 sec</td>
</tr>
<tr>
<td>TZ23</td>
<td>Upper limit for driving shaft grip spec (ST/HR)</td>
<td>2.8 / 6 sec</td>
</tr>
<tr>
<td>TZ34</td>
<td>Driven shaft grip timeout (fast/slow)</td>
<td>2 / 10 sec</td>
</tr>
</tbody>
</table>
(3) Reading Sequence

This is for the operation of the subscanning unit.
It is the reading sequence during secondary erasure.

Fig. 3.3.3 Reading (Secondary Erasure)
3.4 Erasure Conveyance

The sequence is the same as in the routine (single-IP conveyance), except that the conveyance speed is different. Note, however, that 2-phase excitation is used.
4. Step Operation

4.1 Summary of Operation

The step operation is performed in the Service Menus and Maintenance Utility at the time of troubleshooting and machine adjustment.

The following step operations may be performed.

1. Feed/load step operation  ➔ See Section 4.2.
2. Side-positioning step operation  ➔ See Section 4.3.

4.2 Feed/Load Step Operation

(1) Overall/General Sequence

This operation is to check the IP handling at the cassette set unit and IP removal unit. At each step, the process halts to accept an input, and then the next step is performed.

From “6. MECHANICAL UTILITY” of the Maintenance Utility menus, select either feed or load step operation and execute it.

Fig. 4.2.1 Feed/Load Step Operation
(2) Detailed Sequence of Feed Step Operation

It is the sequence of “feed step operation” in the Maintenance Utility. From its menu, select 6. MECHANICAL UTILITY → 4. UNIT → 1. IP FEED/LOAD → 2. FEED to execute this sequence of operation.

Fig. 4.2.2 Feed Step Operation (1/3)

Preprocessing: Fig. 4.2.1

- Wait for cassette IN
- Leak valve suction condition
  DRIVE (SVB1/OFF)
- Suction cup movement (HP → feed suction)
  DRIVE (MB1/PB11)
- Suction pump ON
  DRIVE (PB1/ON)

Is SB5 closed within TB11?

<table>
<thead>
<tr>
<th>23E1</th>
<th>Level 2 error Feed IP suction failure retry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IP leak</td>
</tr>
<tr>
<td></td>
<td>DRIVE (PB1/OFF)</td>
</tr>
<tr>
<td></td>
<td>DRIVE (SVB1/ON)</td>
</tr>
</tbody>
</table>

DELAY TB12

- OPEN: IP suction not completed
- CLOSE: IP suction completed

These steps correspond to “Feed Suction” described in Fig. 2.4.2.

- Level 1 error Feed IP suction failure
- Leak valve suction condition
  DRIVE (SVB1/OFF)

Error handling
Cassette ejection 1
  Fig.6.1.1

The suction cups fail to suck the IP, so it is judged that there is no IP left in the cassette.

Is the number of retries made greater than the retry count (NB11)?

<table>
<thead>
<tr>
<th>13B1</th>
<th>The suction condition and suction cup position is reset.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suction cup HP positioning</td>
</tr>
<tr>
<td></td>
<td>Fig.2.3.2</td>
</tr>
</tbody>
</table>

The suction cups fail to suck the IP, so it is judged that there is no IP left in the cassette.
While the suction cups feed the IP to the grip rollers, the IP is monitored so that it is not dropped. OPEN: IP dropped, CLOSE: IP sucked.

When the leading edge of the IP is fed to the grip rollers, air leak occurs so that the IP is released from the suction cups.

These steps correspond to “Feed Suction Conveyance” described in Fig. 2.4.3.

Fig. 4.2.2 Feed Step Operation (2/3)
Fig. 4.2.2 Feed Step Operation (3/3)

The leading edge of the IP fed by the grip rollers is detected. (The leading edge of the IP shields SB2.)

- **Is SB2 closed?**
  - **Yes**: Suction cup moving (feed leak → load standby)
    - DRIVE (MB1/PB18)
  - **No**: Suction cup movement (SB2 closed within TB14?)
    - DRIVE (MB2/PB26)

- **Conveyance stop**
  - DRIVE (MB2/OFF) (soft)
  - (MB2 excitation OFF)

- SB4 monitoring completed
  - DELAY TB17

- **Suction cup HP positioning**
  - Fig. 2.3.2
  - Level 1 error
  - IP grip error
  - Error handling
  - Cassette ejection 2
  - Fig. 6.2.1

**Table 4.2.2 Operation Parameters**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB11</td>
<td>Suction cup movement (HP → feed suction)</td>
<td>250 p</td>
</tr>
<tr>
<td>PB12</td>
<td>Suction cup movement (feed suction → feed leak)</td>
<td>-262 p</td>
</tr>
<tr>
<td>PB18</td>
<td>Suction cup movement (feed leak → load standby)</td>
<td>98 p</td>
</tr>
<tr>
<td>PB19</td>
<td>Suction cup movement (HP → feed leak)</td>
<td>-12 p</td>
</tr>
<tr>
<td>PB21</td>
<td>Conveyance (feed suction synchronization)</td>
<td>675 p</td>
</tr>
<tr>
<td>PB26</td>
<td>Conveyance (grip retry)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>NB11</td>
<td>Feed suction retry</td>
<td>3 sec</td>
</tr>
<tr>
<td>TB11</td>
<td>Feed suction timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB12</td>
<td>Wait for feed suction</td>
<td>0 sec</td>
</tr>
<tr>
<td>TB13</td>
<td>Wait for feed leak</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB14</td>
<td>Grip timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB18</td>
<td>Wait for feed</td>
<td>0.05 sec</td>
</tr>
</tbody>
</table>
(3) Detailed Sequence of Load Step Operation

It is the sequence of "load step operation" in the Maintenance Utility.

From its menu, select 6. MECHANICAL UTILITY → 4. UNIT → 1. IP FEED/LOAD → 2. FEED/LOAD to execute this sequence of operation.

Fig. 4.2.3 Load Step Operation (1/3)

Preprocessing: Fig. 4.2.1

These steps correspond to "Load Suction" described in Fig. 2.10.3.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB12</td>
<td>Suction cup movement (feed suction → feed leak)</td>
<td>-262 p</td>
</tr>
<tr>
<td>PB14</td>
<td>Suction cup movement (HP → load standby)</td>
<td>86 p</td>
</tr>
<tr>
<td>PB15</td>
<td>Suction cup movement (load standby → load suction)</td>
<td>-100 p</td>
</tr>
<tr>
<td>PB17</td>
<td>Suction cup movement (load leak → HP)</td>
<td>-250 p</td>
</tr>
<tr>
<td>PB25</td>
<td>Conveyance (load suction synchronization)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>NB11</td>
<td>Feed suction retry</td>
<td>3 times</td>
</tr>
<tr>
<td>TA13</td>
<td>Wait for cassette OUT</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TB11</td>
<td>Feed suction timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB15</td>
<td>Wait for load suction</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB16</td>
<td>Wait for load leak</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
</tbody>
</table>
Fig. 4.2.3 Load Step Operation (2/3)

Wait for step input
- Roller rotation (at the equal speed of the arm) DRIVE (MB2/PB25)
- Suction movement (load suction → load leak) DRIVE (MB1/PB12)
- Roller rotation stop DRIVE (MB2/OFF)

Is SB5 closed?
- Suction leak DRIVE (SVB1/ON)
- Suction pump OFF DRIVE (PB1/OFF)
- DELAY TB16
- Suction movement (load leak → HP) DRIVE (MB1/PB17)
- Wait for step input
- Suction leak DRIVE (SVB1/ON)
- Suction pump OFF DRIVE (PB1/OFF)
- DELAY TB16
- Is SB1 closed?
- Suction HP check 2
- Level 2 error Suction cup HP return failure
- Suction cup HP positioning Fig. 2.3.2
- Leak disabled DRIVE (SB1/OFF)
- Level 1 error Load IP dropped
- IP leak DRIVE (PB1/OFF) DRIVE (SVB1/ON)
- DELAY TB17
- Suction cup HP positioning Fig. 2.3.2
- Leak valve suction condition DRIVE (SVB1/OFF)
- Error handling Cassette ejection 2 Fig. 6.2.1

While the suction cups load the IP into the cassette, it is checked if the IP is not dropped.

After the suction cups load the IP into the cassette and air leak occurs, the IP is released from the suction cups. After load leak, the suction cups return to their home position.

These steps correspond to "Load Suction Conveyance" described in Fig. 2.10.4.

While the suction cups load the IP into the cassette, it is checked if the IP is not dropped.

After the suction cups load the IP into the cassette and air leak occurs, the IP is released from the suction cups. After load leak, the suction cups return to their home position.

Remedial sequence at the time when the IP is dropped.

Level 2 error Suction cup HP return failure
Level 1 error Load IP dropped
Suction leak
Suction pump OFF
Delay
Wait for step input
Suction movement (load leak → HP)
Suction movement (load suction → load leak)
Roller rotation stop
Roller rotation (at the equal speed of the arm)
Suction leak
Suction pump OFF
Delay
Is SB5 closed?
Is SB1 closed?
Fig. 4.2.3 Load Step Operation (3/3)

- Cassette hold release
- LEDT2 is turned on
- Is SA1 opened?
- Is SA2 opened?
- DELAY TA13
- LEDT2 is turned off
- Cassette removal
- LEDT1 is turned on
- END

These steps are the same as in Fig. 2.11.1.

The cassette removable condition is indicated.

Operation performed by the operator

The ready condition is indicated.

Table 4.2.3 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB12</td>
<td>Suction cup movement (feed suction + feed leak)</td>
<td>-262 p</td>
</tr>
<tr>
<td>PB14</td>
<td>Suction cup movement (HP → load standby)</td>
<td>86 p</td>
</tr>
<tr>
<td>PB15</td>
<td>Suction cup movement (load standby + load suction)</td>
<td>-100 p</td>
</tr>
<tr>
<td>PB17</td>
<td>Suction cup movement (load leak + HP)</td>
<td>-250 p</td>
</tr>
<tr>
<td>PB25</td>
<td>Conveyance (load suction synchronization)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>NB11</td>
<td>Feed suction retry</td>
<td>3 times</td>
</tr>
<tr>
<td>TA13</td>
<td>Wait for cassette OUT</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TB11</td>
<td>Feed suction timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB15</td>
<td>Wait for load suction</td>
<td>0 sec</td>
</tr>
<tr>
<td>TB16</td>
<td>Wait for load leak</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>TB17</td>
<td>Wait for next operation</td>
<td>0.1 sec</td>
</tr>
</tbody>
</table>

Table 4.2.3a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
</tr>
<tr>
<td>SA2</td>
<td>SA2</td>
<td>SA6</td>
<td>SA10</td>
<td>SA14</td>
</tr>
<tr>
<td>LEDT1</td>
<td>LEDT1</td>
<td>LEDT3</td>
<td>LEDT5</td>
<td>LEDT7</td>
</tr>
<tr>
<td>LEDT2</td>
<td>LEDT2</td>
<td>LEDT4</td>
<td>LEDT6</td>
<td>LEDT8</td>
</tr>
</tbody>
</table>

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### 4.3 Side-Positioning Step Operation

#### (1) Overall/General Sequence

This operation is to check the IP handling at the side-positioning mechanism.

At each step, the process halts to accept an input, and then the next step is performed.

Select the step operation from "6. MECHANICAL UTILITY" of the Maintenance Utility menu.

Fig. 4.3.1 Side-Positioning Step Operation

#### Table 4.3.1a Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD11</td>
<td>Side-positioning (HP → stopper)</td>
<td>64p</td>
</tr>
<tr>
<td>PD16</td>
<td>Side-positioning (stopper → HP)</td>
<td>64p</td>
</tr>
<tr>
<td>PD21</td>
<td>Conveyance grip release</td>
<td>256p</td>
</tr>
<tr>
<td>PD23</td>
<td>Conveyance grip (HP return)</td>
<td>400p</td>
</tr>
<tr>
<td>PD24</td>
<td>Conveyance grip (slow)</td>
<td>144p</td>
</tr>
<tr>
<td>TD11</td>
<td>Wait for settlement of IP that is not side-positioned</td>
<td>0.2sec</td>
</tr>
<tr>
<td>TD12</td>
<td>Wait for side-positioning return</td>
<td>0.1sec</td>
</tr>
<tr>
<td>TD13</td>
<td>Wait for re-side-positioning</td>
<td>0.1sec</td>
</tr>
<tr>
<td>TD14</td>
<td>Wait for settlement of IP that has been side-positioned</td>
<td>0.2sec</td>
</tr>
</tbody>
</table>

#### Table 4.3.1b Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD12</td>
<td>Side-positioning (stopper → side-positioning 1)</td>
<td>96 p</td>
</tr>
<tr>
<td>PD13</td>
<td>Side-positioning (side-positioning 1 → back)</td>
<td>98 p</td>
</tr>
<tr>
<td>PD14</td>
<td>Side-positioning (back → side-positioning 2)</td>
<td>68 p</td>
</tr>
<tr>
<td>PD15</td>
<td>Side-positioning (side-positioning 2 → HP)</td>
<td>162 p</td>
</tr>
</tbody>
</table>

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**Fig. 2.6.5**

**Table 2.6.5**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD12</td>
<td>Side-positioning (stopper → side-positioning 1)</td>
<td>96 p</td>
</tr>
<tr>
<td>PD13</td>
<td>Side-positioning (side-positioning 1 → back)</td>
<td>98 p</td>
</tr>
<tr>
<td>PD14</td>
<td>Side-positioning (back → side-positioning 2)</td>
<td>68 p</td>
</tr>
<tr>
<td>PD15</td>
<td>Side-positioning (side-positioning 2 → HP)</td>
<td>162 p</td>
</tr>
</tbody>
</table>

---

**Fig. 2.6.5**

**Table 2.6.5**
5. Machine Operation During Conveyor Initialization

5.1 Summary of Operation

Normally, the machine takes about four minutes to boot up, and every time it automatically searches for any remaining IP left in the machine and ejects it.

It is not until the remaining IP is ejected or it is checked to see that there is no remaining IP left in the machine that the initialization self-diagnostics are completed. This section only addresses sequences that are different than in the routine operation (single-IP conveyance).
(1) Overall/General Sequence

Fig. 5.1.1 Machine Operation during DPR Conveyor Initialization

START

Side-positioning grip HP positioning
See "Routine" (during single IP conveyance) in Fig. 2.7.5.

Side-positioning HP positioning
See "Routine" (during single IP conveyance) in Fig. 2.6.5.

After-reading conveyance grip HP positioning
See "Routine" (during single IP conveyance) in Fig. 2.7.4.

Initialization subscanning grip check

Fig. 5.2.1

If suction cup HP positioning is executed during DPR IP search, this operation is not performed.

IP search
Fig. 5.3.1

Suction cup HP positioning
See "Routine" (during single IP conveyance) in Fig. 2.3.2.

Processing of feed/load conveyance IP
Fig. 5.4.1

Up-down HP positioning
See "Routine" (during single IP conveyance) in Fig. 2.3.3.

Cassette hold release operation check
Fig. 5.5.1

Mechanical initialization (second stage)

Processing of remaining IP (first stage)

Processing of remaining IP (second stage)

Mechanical initialization (third stage)

Lamp initialization
Lamp turn-on process only

Empty cassette ejection
Fig. 5.10.1

Cassette hold release operation
Fig. 5.11.1

END
5.2 Initialization Subscanning Grip Check

(1) Overall/General Sequence

Fig. 5.2.1 Initialization Subscanning Grip Check

Preprocessing: Fig. 5.1.1

Table 5.2.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ21</td>
<td>Driving shaft grip timeout (ST/HR)</td>
<td>5 / 10sec</td>
</tr>
<tr>
<td>TZ34</td>
<td>Driven shaft grip timeout (fast/HR)</td>
<td>2 / 10sec</td>
</tr>
<tr>
<td>TZ51</td>
<td>Wait for initialization grip operation</td>
<td>0.5sec</td>
</tr>
</tbody>
</table>

FR1H5402.EPS
5.3 IP Search

(1) Overall/General Sequence

Preprocessing: Fig. 5.1.1

START

Is SB2 closed?

(search for feed conveyance remaining IP)

(search for load conveyance remaining IP)

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Fig. 5.3.1 IP Search (2/3)

- **SF2 CLOSE**
  - SF1 & SF2 & SF3 OPEN
    - * Search for load conveyance remaining IP
      - Fig. 5.3.8
    - SF3 CLOSE
      - Others
        - SF1 & SF3 OPEN
          - Priority 2
            - SF1 & SF3 OPEN
              - Movement of after-reading conveyance remaining IP
                - Fig. 5.3.9
            - Priority 1
              - SF3 OPEN
                - Movement of load conveyance remaining IP
                  - Fig. 5.3.10
            - Priority 3
              - SF2 CLOSE
                - Special
                  - SF1 & SF3 CLOSE
          - SF2 CLOSE
            - SF1 & SF2 & SF3 OPEN
              - Positioning of load standby IP
                - Fig. 5.3.11
            - Load standby IP found
              - To Fig. 5.3.1 (3/3)
                - Processing of before-reading conveyance remaining IP

- **Status of each sensor?**
  - After-reading standby IP found
  - No IP
  - To Fig. 5.3.1 IP Search (2/3)
Fig. 5.3.1 IP Search (3/3)

Status of each sensor?

- SC1 & SD3 OPEN
  - Search for before-reading conveyance remaining IP
    - Fig. 5.3.13
  - SF1 OPEN
    - Processing of before-reading conveyance remaining IP
      - FR1H0405.EPS

- SD3 CLOSE
  - Movement of before-reading conveyance remaining IP
    - Fig. 5.3.12

- SC1 CLOSE
  - Movement of before-side positioning conveyance remaining IP
    - Fig. 5.3.14

SC1 remains OPEN

- SD3 CLOSE
  - Before-reading standby IP found
  - Is there any after-reading standby IP?
    - Y
      - Search for after-reading conveyance remaining IP
        - Fig. 5.3.15
      - SF1 OPEN
        - No IP
    - N
      - No IP
      - After-reading standby IP found

END
(2) Detailed Sequence of Search for Cassette Inlet IP

Fig. 5.3.2 Search for Cassette Inlet IP

Preprocessing: Fig. 5.3.1

START

Suction cup HP positioning
Fig. 2.3.2

Leak valve closed
DRIVE(SVB1/OFF)

Suction cup movement
(HP → load suction)
DRIVE(MB1/PB81)

Suction pump ON
DRIVE(PB1/ON)

Is SB5 closed within TB11?

Y

DELAY TB15

IP found (before search)
No IP

Suction leak
DRIVE(SVB1/ON)

Suction pump OFF
DRIVE(P1/OFF)

DELAY TB16

Suction cup movement
(load suction → HP)
DRIVE(MB1/PB82)

Is SB1 closed?

Y

Level 2 error
Suction cup HP return error

N

Suction cup HP positioning
Fig. 2.3.2

Leak released
DRIVE(sb1/OFF)

END

Table 5.3.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB81</td>
<td>Suction cup movement (HP → load suction)</td>
<td>-14 p</td>
</tr>
<tr>
<td>PB82</td>
<td>Suction cup movement (load suction → HP)</td>
<td>14 p</td>
</tr>
<tr>
<td>TB11</td>
<td>Feed suction timeout</td>
<td>1 sec</td>
</tr>
<tr>
<td>TB15</td>
<td>Wait for load suction</td>
<td>0 sec</td>
</tr>
<tr>
<td>TB16</td>
<td>Wait for load leak</td>
<td>0.1 sec</td>
</tr>
</tbody>
</table>

TR1H9269.EPS
(3) Detailed Sequence of Movement of Feed/Load Conveyance Remaining IP

Fig. 5.3.3 Movement of Feed/Load Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

When SB2 is not opened within TB72, or when SF1/SF2/SF3 is not closed within TB72

- Feed conveyance DOWN direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)
  - DRIVE (MF1/OFF) (soft)

- Level 0 error Feed/load conveyance remaining IP ejection error

When SF1/SF2/SF3 is closed

- Feed conveyance DOWN direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)
  - DRIVE (MF1/OFF) (soft)

- DELAY TF13

When SB2 is opened

- Feed conveyance DOWN direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)
  - DRIVE (MF1/OFF) (soft)

- DELAY TF13

- Branch 1
  Movement of feed conveyance remaining IP
  Fig. 5.3.4

When SC1/SF2/SF3 is not closed within TB79

- Feed conveyance DOWN direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)
  - DRIVE (MF1/OFF) (soft)

- Level 0 error Feed/load conveyance remaining IP ejection error

When SF3 is closed

- Feed conveyance DOWN direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)
  - DRIVE (MF1/OFF) (soft)

- DELAY TF13

When SC1/SF2 is closed

- Feed conveyance DOWN direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)
  - DRIVE (MF1/OFF) (soft)

- DELAY TF13

- Branch 2
  Positioning of feed/load conveyance remaining IP
  Fig. 5.3.6

- Branch 3
  Positioning of load conveyance remaining IP
  Fig. 5.3.7

Table 5.3.3 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>PB71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
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<tr>
<td>PC71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PF71</td>
<td>Initialization conveyance (after-reading conveyance direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>TB72</td>
<td>Feed/load conveyance remaining IP ejection timeout</td>
<td>7.6 sec</td>
</tr>
<tr>
<td>TB79</td>
<td>Feed/load conveyance remaining IP movement timeout 2</td>
<td>10.7 sec</td>
</tr>
<tr>
<td>TF13</td>
<td>Wait for switchback</td>
<td>0.2 sec</td>
</tr>
</tbody>
</table>
(4) Detailed Sequence of Movement of Feed Conveyance Remaining IP

Fig. 5.3.4 Movement of Feed Conveyance Remaining IP

Preprocessing: Fig. 5.3.1, and Fig. 5.3.3

Is SB2 opened within TB72?

- Feed conveyance DOWN direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)

- Level 0 error
  - Feed/load conveyance remaining IP ejection error

Table 5.3.4 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PC71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TB72</td>
<td>Feed/load conveyance remaining IP ejection timeout</td>
<td>7.6 sec</td>
</tr>
</tbody>
</table>

(5) Detailed Sequence of Search for Feed Conveyance Remaining IP

Fig. 5.3.5 Search for Feed Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

Is SB2 closed within TB71?

- Feed conveyance UP direction stop
  - DRIVE (MB2/OFF) (soft)
  - DRIVE (MC1/OFF) (soft)

- Feed/load conveyance IP found

Table 5.3.5 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC72</td>
<td>Initialization conveyance (UP direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PD72</td>
<td>Initialization conveyance (UP direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>TB71</td>
<td>Feed/load conveyance remaining IP search timeout</td>
<td>11.2 sec</td>
</tr>
</tbody>
</table>
(6) Detailed Sequence of Positioning of Feed/Load Conveyance Remaining IP

Fig. 5.3.6 Positioning of Feed/Load Conveyance Remaining IP

Preprocessing: Fig. 5.3.1, and Fig. 5.3.3

START

Feed conveyance UP direction
DRIVE (MB2/PB72)
DRIVE (MC1/PC72)

Is SB2 closed within TB78?

Y

Feed conveyance UP direction stop
DRIVE (MB2/OFF) (soft)
DRIVE (MC1/OFF) (soft)

Level 0 error
Feed/load conveyance remaining IP ejection error

END

(7) Detailed Sequence of Positioning of Load Conveyance Remaining IP

Fig. 5.3.7 Positioning of Load Conveyance Remaining IP

Preprocessing: Fig. 5.3.1, and Fig. 5.3.3

START

Feed conveyance UP direction
DRIVE (SOLC1/ON)
DRIVE (MB2/PB72)
DRIVE (MC1/PC72)
DRIVE (MF1/PF72)

Is SB2 closed within TB79?

N

Feed conveyance UP direction stop
DRIVE (SOLC1/OFF) (soft)
DRIVE (MB2/OFF) (soft)
DRIVE (MC1/OFF) (soft)
DRIVE (MF1/OFF) (soft)

Feed/load conveyance IP found

END
(8) Detailed Sequence of Search for Load Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

START

Is SC2 closed?

Y

Convergence path changeover
guide driving
DRIVE (SOLC1/ON)

N

Erasure conveyance direction
DRIVE (SOLF1/ON)
DRIVE (MF1/PF72)

When SF3/SC2 is closed

When SF3/SC2 is not closed within TF73

Erasure conveyance direction stop
DRIVE (SOLF1/OFF) (soft)
DRIVE (MF1/OFF) (soft)

Erasure conveyance direction stop
DRIVE (SOLF1/OFF) (soft)
DRIVE (MC1/OFF) (soft)

SB2 may be CLOSE.

No IP

DELAY TF13

Branch 1

Positioning of load standby IP
Fig. 5.3.11

END

Branch 2

Movement of after-reading
conveyance remaining IP
Fig. 5.3.9

Table 5.3.8 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF72</td>
<td>Initialization conveyance (erasure conveyance direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TF13</td>
<td>Wait for switchback</td>
<td>0.2sec</td>
</tr>
<tr>
<td>TF73</td>
<td>Erasure conveyance remaining IP search timeout</td>
<td>4.9sec</td>
</tr>
</tbody>
</table>

09-051-04
05.31.99 FM2460
CR-IR341 Service Manual
MD - 127
(9) Detailed Sequence of Movement of After-Reading Conveyance Remaining IP

Fig. 5.3.9 Movement of After-Reading Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

START

After-reading conveyance direction
DRIVE (ME2/PE71)
DRIVE (MF1/PF71)

Is SF2 opened → closed → closed within TF71?
Y

Is SF2 closed → opened within TF71?
N

After-reading conveyance direction stop
DRIVE (ME2/NO) (soft)
DRIVE (MF1/NO) (soft)

DELAY TF13

Erasure conveyance direction
DRIVE (SOLF1/ON)
DRIVE (MF1/PF71)

When SF1/SF3 is not closed within TF72

SF1: After-reading conveyance standby IP detection

SF3: Load standby IP detection

When SF1 is closed

Erasure conveyance direction stop
DRIVE (SOLF1/NO) (soft)
DRIVE (MF1/NO) (soft)

DELAY TF13

Positioning of load standby IP
Fig. 5.3.11

END

The actuation of the sensors during normal operation are as follows:
SF2: OPEN → CLOSE → OPEN
SF4: OPEN → CLOSE → CLOSE

Monitoring of SF4 is implemented in case SF2 becomes faulty.

Level 0 error
After-reading conveyance remaining IP ejection error

Level 0 error
Branch path changeover guide operation error

Table 5.3.9 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE71</td>
<td>Initialization conveyance (after-reading conveyance direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PF71</td>
<td>Initialization conveyance (after-reading conveyance direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PF72</td>
<td>Initialization conveyance (erasure conveyance direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TF13</td>
<td>Wait for switchback</td>
<td>0.2 sec</td>
</tr>
<tr>
<td>TF71</td>
<td>After-reading conveyance remaining IP ejection timeout</td>
<td>7.6 sec</td>
</tr>
<tr>
<td>TF72</td>
<td>Erasure conveyance remaining IP ejection timeout</td>
<td>6.8 sec</td>
</tr>
</tbody>
</table>
(10) Detailed Sequence of Movement of Load Conveyance Remaining IP

Fig. 5.3.10 Movement of Load Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

- Is CMOS information being erased?
  - Y: Branch path changeover guide driving
    - DRIVE (SOLF1/ON)
  - N: After-reading conveyance direction
    - DRIVE (MF1/PF71)

- Is SF4 is opened → closed → closed within TF71?
  - Y: Is SF4 is closed → opened within TF71?
  - N: After-reading conveyance direction stop
    - DRIVE (MF1/OFF) (soft)
    - DELAY TF13
    - Erasure conveyance direction
      - DRIVE (SOLF1/ON)
      - DRIVE (MF1/PF72)

- When SF1/SF3 is not closed within TF72
  - Erasure conveyance direction stop
    - DRIVE (SOLF1/OFF) (soft)
    - DRIVE (MF1/OFF) (soft)
    - DELAY TF13
    - Level 0 error
      - Erasure conveyance remaining ejection error

- When SF1 is closed
  - Positioning of load standby IP
  - Fig. 5.3.11

- When SF3 is closed
  - Erasure conveyance direction stop
    - DRIVE (SOLF1/ON) (soft)
    - DRIVE (MF1/OFF) (soft)
    - DELAY TF13
    - Level 0 error
      - Branch path changeover guide operation error

Table 5.3.10 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF71</td>
<td>Initialization conveyance (after-reading conveyance direction)</td>
<td>± infinite p.</td>
</tr>
<tr>
<td>TF72</td>
<td>Initialization conveyance (erasure conveyance direction)</td>
<td>± infinite p.</td>
</tr>
<tr>
<td>TF13</td>
<td>Wait for switchback</td>
<td>~2 sec</td>
</tr>
<tr>
<td>TF71</td>
<td>After-reading conveyance remaining IP ejection timeout</td>
<td>7.6 sec</td>
</tr>
<tr>
<td>TF72</td>
<td>Erasure conveyance remaining IP ejection timeout</td>
<td>6.8 sec</td>
</tr>
</tbody>
</table>

The actuation of the sensors during normal operation are as follows:
- SF2: OPEN → CLOSE → OPEN
- SF4: OPEN → CLOSE → CLOSE

Monitoring of SF4 is implemented in case SF2 becomes faulty.
(11) Detailed Sequence of Positioning of Load Conveyance Remaining IP

Table 5.3.11 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF71</td>
<td>Initialization conveyance (after-reading direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PF72</td>
<td>Initialization conveyance (erasure conveyance direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PF73</td>
<td>Initialization conveyance (load standby positioning)</td>
<td>-510 p</td>
</tr>
<tr>
<td>TF13</td>
<td>Wait for switchback</td>
<td>0.2 sec</td>
</tr>
<tr>
<td>TF74</td>
<td>Load standby positioning timeout 1</td>
<td>3.2 sec</td>
</tr>
<tr>
<td>TF77</td>
<td>Load standby positioning timeout 2</td>
<td>7.6 sec</td>
</tr>
</tbody>
</table>

Preprocessing: Fig. 5.3.1

START

SF3 OPEN & SC2CLOSE

SF3 CLOSE

Erasure conveyance direction
DRIVE (MF1/PF72)

Is SF3 opened within TF77?

Y

Erasure conveyance direction stop
DRIVE (MF1/OFF) (soft)

DELAY TF13

After-reading conveyance direction
DRIVE (MF1/PF71)

Is SF3 closed within TF74?

Y

After-reading conveyance direction stop
DRIVE (MF1/OFF) (soft)

Load standby IP found

END

FR1H0415.EPS
(12) Detailed Sequence of Movement of Before-Reading Conveyance Remaining IP

Fig. 5.3.12 Movement of Before-Reading Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

START

Side-positioning conveyance reverse direction
DRIVE (MD3/PD73)
DRIVE (MZ1/ON) Fast reverse conveyance

Is SC1 closed within TD72?

N

Side-positioning conveyance reverse direction stop
DRIVE (MD3/OFF) (soft)
DRIVE (MZ1/OFF) (soft) reverse

Level 0 error
Side-positioning conveyance remaining IP ejection error

Y

Side-positioning conveyance direction
DRIVE (MD31/PD71)

DELAY TD74

Initialization side-positioning conveyance

Is SD3 closed within TD75?

N

Before-reading standby IP found

Y

Side-positioning conveyance direction stop
DRIVE (MD31/OFF) (soft)

Level 0 error
Side-positioning conveyance remaining IP ejection error

Table 5.3.12 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PD73</td>
<td>Initialization conveyance (side-positioning conveyance reverse direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>TD72</td>
<td>Side-positioning conveyance remaining IP ejection timeout 2</td>
<td>5.9 sec</td>
</tr>
<tr>
<td>TD74</td>
<td>Wait for side-positioning switchback</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TD75</td>
<td>Initialization side-positioning timeout</td>
<td>5.8 sec</td>
</tr>
</tbody>
</table>

Fig. 5.3.12 Movement of Before-Reading Conveyance Remaining IP
(13) Detailed Sequence of Search for Before-Reading Conveyance Remaining IP

Fig. 5.3.13 Search for Before-Reading Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

START

- Side-positioning conveyance reverse direction
  DRIVE (MD3/PD72)

  Is SC1 closed within TD73?

  - **Y**
    - Side-positioning conveyance direction stop
      DRIVE (MD3/OFF) (soft)
  
    - **N**
      - DELAY TD74
      - Side-positioning conveyance direction stop
        DRIVE (MD31/PD71)

  Initialization side-positioning conveyance

  Is SD3 closed within TD75?

  - **Y**
    - Side-positioning conveyance direction stop
      DRIVE (MD31/OFF) (soft)
    - Level 0 error
      Side-positioning conveyance remaining IP ejection error
  
    - **N**
      - Before-reading standby IP found

END

Table 5.3.13 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>± infinite p</td>
</tr>
<tr>
<td>PD72</td>
<td>Initialization conveyance (UP direction)</td>
<td>± infinite p</td>
</tr>
<tr>
<td>TD73</td>
<td>Side-positioning conveyance remaining IP search timeout</td>
<td>5.8 sec</td>
</tr>
<tr>
<td>TD74</td>
<td>Wait for side-positioning switchback</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TD75</td>
<td>Initialization side-positioning</td>
<td>5.8 sec</td>
</tr>
</tbody>
</table>
(14) Detailed Sequence of Movement of Before-Side-Positioning Conveyance Remaining IP

Fig. 5.3.14 Movement of Before-Side-Positioning Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

START

Side-positioning conveyance direction
DRIVE (MD3/PD71)
DRIVE (MC1/PC71)
DRIVE (MB1/PB71)

Is SC1 opened within TD71?

Y

Side-positioning conveyance direction stop
DRIVE (MD3/OFF) (soft)
DRIVE (MC1/OFF) (soft)
DRIVE (MB2/OFF) (soft)

N

Side-positioning conveyance direction
DRIVE (MD31/PD71)

Is SD3 closed within TD75?

Y

Side-positioning conveyance direction stop
DRIVE (MD31/OFF) (soft)

N

Before-reading standby IP found

END

Table 5.3.14 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PC71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PD71</td>
<td>Initialization conveyance (DOWN direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TD71</td>
<td>Side-positioning conveyance remaining IP ejection timeout</td>
<td>7.6sec</td>
</tr>
<tr>
<td>TD75</td>
<td>Initialization side-positioning timeout</td>
<td>5.8sec</td>
</tr>
</tbody>
</table>
(15) Detailed Sequence of Search for After-Reading Conveyance Remaining IP

Fig. 5.3.15 Search for After-Reading Conveyance Remaining IP

Preprocessing: Fig. 5.3.1

START

Reading conveyance direction
DRIVE (MZ1/ON) Fast conveyance
DRIVE (ME2/PE73)

Is SF1 closed within TF76?

Y

Reading conveyance direction stop
DRIVE (MZ1/OFF) (soft)
DRIVE (ME2/OFF) (soft)

No IP

END

Table 5.3.15 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE73</td>
<td>Initialization conveyance (Reading conveyance direction)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TF76</td>
<td>Reading conveyance remaining IP search timeout</td>
<td>5.8 sec</td>
</tr>
</tbody>
</table>
5.4 Processing of Feed/Load Conveyance IP

(1) Overall/General Sequence

Fig. 5.4.1 Processing of Feed/Load Conveyance IP

Preprocessing: Fig. 5.1.1

START

IP search and comparison during feed/load
Fig. 5.4.2

Any remaining IP?

Y

Suction cup movement
(HP → load standby)
DRIVE (MB1/PB14)

\{ Suction cup load preparation \}

N

Any IP before search?

Y

Any load standby IP?

N

Feed conveyance UP direction
DRIVE (ME1/PB74)
DRIVE (MC2/PC74)
DRIVE (MF1/PF74)

Feed conveyance UP direction
DRIVE (ME2/OFF) (soft)
DRIVE (MC1/OFF) (soft)
DRIVE (MF1/OFF) (soft)

Is SB2 opened within TB72?

Y

Level 0 error
Feed/load conveyance remaining IP ejection error

0386

N

Load suction
Fig. 2.10.3

Load suction conveyance
Fig. 2.10.4

Cassette ejection
Fig. 2.11.1

Cassette can be inserted.
LED remains OFF.

END
(2) Detailed Sequence of IP Search and Comparison during Feed/Load

Fig. 5.4.2 IP Search and Comparison during Feed/Load.

Preprocessing: Fig. 5.4.1

START

Is any IP found in CMOS information?

Y N

Is there any search IP?

Y N

Is there any search IP?

Y N

Is CMOS information normal?

Y N

Is the cassette located in the shelf of interest?

Y N

Remaining IP
(before search/during search)

Remaining IP (after search)

User selected process continued?

Y N

System down

IP found

Message output ***

Level 1 error IP position information error

Level 0 error Feed/load conveyance remaining ejection error

No IP

"Load largest empty cassette".

Remaining ejected cassette IN

Fig. 5.4.3
(3) Detailed Sequence of Remaining Ejected Cassette IN

Fig. 5.4.3 Remaining Ejected Cassette IN

Preprocessing: Fig. 5.4.2, and Fig. 5.6.2

START

![Diagram of flowchart with decision points and actions related to cassette handling, error detection, and retry processes.]
5.5 Cassette Hold Release Operation Check

(1) Overall/General Sequence

Fig. 5.5.1 Cassette Hold Release Operation Check (1/2)

Preprocessing: Fig. 5.1.1

START

C

Any cassette in shelf?

Y

Is SA1 closed?

N

Y

Is SA3 closed?

N

DELAY TA51

Y

Is SA3 opened within TA11?

N

Is the number of retries made greater than the retry count (NA11)?

Y

A

Level 1 error Cassette shelf error

13A3

Processing for cassette hold release failure

N

Level 2 error Cassette hold release failure retry

23A2

Retry at the time of cassette hold release failure

Message display "CASS. SET INCORRECT CS#.”

Degeneration for relevant shelf

Delay TA12

B

Degeneration for all shelves

N

Level 0 error Degeneration for all shelves

03A3

Delay TA12

FR1H5423.EPS
Is SA3 closed within TA11?

Is the number of retries made greater than the retry count (NA12)?

Level 1 error
Cassette shelf error

Message display
"CASS. SET INCORRECT CS#"

Degeneration for relevant shelf

Degeneration for all shelves?

Level 0 error
Degeneration for all shelves

Release for all shelves checked?

Table 5.5.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA11</td>
<td>Hold release timeout</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TA12</td>
<td>Wait for hold release</td>
<td>2 sec</td>
</tr>
<tr>
<td>TA15</td>
<td>Wait for hold retry</td>
<td>2 sec</td>
</tr>
<tr>
<td>TA51</td>
<td>Wait for initialization</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>NA11</td>
<td>Hold release retry</td>
<td>5 times</td>
</tr>
<tr>
<td>NA12</td>
<td>Hold retry</td>
<td>5 times</td>
</tr>
</tbody>
</table>

Table 5.5.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
</tr>
<tr>
<td>SA3</td>
<td>SA3</td>
<td>SA7</td>
<td>SA11</td>
<td>SA15</td>
</tr>
<tr>
<td>SOLA1</td>
<td>SOLA1</td>
<td>SOLA2</td>
<td>SOLA3</td>
<td>SOLA4</td>
</tr>
</tbody>
</table>

END
5.6 Processing of Before-Reading Standby IP

(1) Overall/General Sequence

Fig. 5.6.1 Processing of Before-Reading Standby IP (1/2)

Preprocessing: Fig. 5.1.1

START

IP search and comparison
Fig. 5.6.2

Any remaining IP?

Up-down load movement
Fig. 2.8.1

Feed conveyance UP direction
DRIVE (MB2/PB72)
DRIVE (MC1/PC72)
DRIVE (MD3/PD72)

Is SB2 closed and is SC1 opened within TB75?

DELAY TB76

Is SB4 closed?

IP determining
SB4 CLOSE

IP determining
SB4 CLOSE

It is checked that it is for lateral (width) metric size.
It is checked that it is for lateral (width) inch size.

IP length measurement
Fig. 2.5.2

Side-positioning conveyance
Fig. 2.6.3

Level 0 error
Feed/load conveyance remaining ejection error

If the size of the IP being initialized is out of spec, level 0 error occurs.

SB2: Cassette inlet IP sensor
SC1: Before-BCR IP sensor
SB2:OPEN → CLOSE
SC1:CLOSE → OPEN

Suction cup movement is not executed.

If the size of the IP being initialized is out of spec, level 0 error occurs.
Fig. 5.6.1 Processing of Before-Reading Standby IP (2/2)

Is SB2 opened within TB74?

Is SB2 closed within TB75?

Feed conveyance UP direction
- DRIV (ME2/PB74)
- DRIV (MC1/PC74)
- DRIV (MD3/PD74)

Feed conveyance UP direction
- DRIV (ME2/OFF) (hard)
- DRIV (MC1/OFF) (soft)
- DRIV (MD3/OFF) (soft)

Load suction conveyance

Conveyance grip (HP return)
- DRIV (MD2/PD23)

Cassette can be inserted.
LED remains OFF.

Table 5.6.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB72</td>
<td>Initialization conveyance (up direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PC72</td>
<td>Initialization conveyance (up direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PD23</td>
<td>Conveyance grip (HP return)</td>
<td>400 p</td>
</tr>
<tr>
<td>PD72</td>
<td>Initialization conveyance (up direction)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>TB74</td>
<td>Load remaining IP ejection timeout</td>
<td>7.6 sec</td>
</tr>
<tr>
<td>TB75</td>
<td>Before-reading standby remaining IP ejection timeout</td>
<td>14.5 sec</td>
</tr>
<tr>
<td>TB76</td>
<td>Wait for side-positioning detection</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TB77</td>
<td>Wait for feed switchback</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>
(2) Detailed Sequence of IP Search and Comparison

Fig. 5.6.2 IP Search and Comparison

Preprocessing: Fig. 5.6.1, Fig. 5.7.1, and Fig. 5.8.1

START

- Is any IP found in CMOS information?
  - N
  - Y

- Is there any search IP?
  - N
  - Y

- Is CMOS information normal?
  - Y
  - N

  - Is the cassette located in the fourth shelf?
    - Y
    - N

  - Cassette ejection
    - Fig. 2.11.1

- Remaining ejected cassette IN
  - Fig. 5.4.3

Cassette setting check

- Message output "Load largest empty cassette"
- Maximum cassette setting request

- User selected process continued?
  - Y
  - N

- Is the cassette located in the shelf of interest?
  - Y
  - N

  - Message output "Load empty cassette in following size [10x12]"
  - Remaining ejected cassette IN
    - Fig. 5.4.3

IP found

END

Level 1 error
IP position information error

Message output
"IP may be jammed if CONTINUE key is pressed."

No IP
5.7 Processing of Load Standby IP

(1) Overall/General Sequence

Fig. 5.7.1 Processing of Load Standby IP

Preprocessing: Fig. 5.1.1

START

IP search and comparison
Fig. 5.6.2
Is there any remaining IP?

Y

Up-down load movement
Fig. 2.8.1
Load conveyance direction
DRIVE (SOLC1/ON)
DRIVE (MB2/PB74)
DRIVE (MC1/PC74)
DRIVE (MF1/PF74)

N

Is SB2 closed within TB73?

Y

Is SB2 opened within TB74?

N

Load conveyance direction
DRIVE (ME2/OFF) (soft)
DRIVE (MC1/OFF) (soft)
DRIVE (MF1/OFF) (soft)
DRIVE (SOLC1/OFF) (soft)

Load conveyance direction
DRIVE (ME2/OFF) (soft)
DRIVE (MC1/OFF) (soft)
DRIVE (MF1/OFF) (soft)
DRIVE (SOLC1/OFF) (soft)

N

Load suction
Fig. 2.10.3

Load suction conveyance
Fig. 2.10.4

Cassette ejection
Fig. 2.11.1

Cassette can be inserted. LED remains OFF.

END

Table 5.7.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB74</td>
<td>Initialization conveyance (load conveyance)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PC74</td>
<td>Initialization conveyance (load conveyance)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PF74</td>
<td>Initialization conveyance (load conveyance)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TB73</td>
<td>Load standby remaining IP ejection timeout</td>
<td>11.6 sec</td>
</tr>
<tr>
<td>TB74</td>
<td>Load remaining IP ejection timeout</td>
<td>7.6 sec</td>
</tr>
</tbody>
</table>
5.8 Processing of After-Reading Standby IP

(1) Overall/General Sequence

Fig. 5.8.1 Processing of After-Reading Standby IP

Preprocessing: Fig. 5.1.1

START

IP search and comparison
Fig. 5.6.2

Is there any remaining IP?

Y

Up-down load movement
Fig. 2.8.1

Steps "after-reading conveyance " to "IP load" in reading sequence of routine are executed (including erasure lamp turn-off and movement of elevation unit)
Fig. 2.1.1

N

Cassette ejection
Fig. 2.11.1

Cassette can be inserted.
LED remains OFF.

END
5.9 Subscanning Grip HP Positioning

(1) Overall/General Sequence

Fig. 5.9.1 Subscanning Grip HP Positioning

Preprocessing: Fig. 5.1.1

Table 5.9.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ51</td>
<td>Wait for initialization grip operation</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>
(2) Detailed Sequence of Driving Shaft Grip Release (Fast/HR)

Fig. 5.9.2 Driving Shaft Grip Release (Fast/HR)

Preprocessing: Fig. 5.9.1

![Diagram](image1)

Table 5.9.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ24</td>
<td>Driving shaft grip release timeout (ST/HR)</td>
<td>2 / 10 sec</td>
</tr>
</tbody>
</table>

NOTE: Slow is used only for self-diagnostics.

(3) Detailed Sequence of Driving Shaft Grip (HR/ST)

Fig. 5.9.3 Driving Shaft Grip (HR/ST)

Preprocessing: Fig. 5.9.1

![Diagram](image2)

Table 5.9.3 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ21</td>
<td>Driving shaft grip timeout (ST/HR)</td>
<td>5 / 10 sec</td>
</tr>
<tr>
<td>TZ22</td>
<td>Lower limit for driving shaft grip spec (ST/HR)</td>
<td>1.6 / 3.3 sec</td>
</tr>
<tr>
<td>TZ23</td>
<td>Upper limit for driving shaft grip spec (ST/HR)</td>
<td>2.8 / 6.0 sec</td>
</tr>
</tbody>
</table>

NOTE: It is subject to selection of reading mode (HR/ST).
(4) Detailed Sequence of Driven Shaft Grip Release (Fast/HR)

Preprocessing: Fig. 5.9.1

Fig. 5.9.4 Driven Shaft Grip Release (HR/ST)

Table 5.9.4 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ31</td>
<td>Driven shaft grip timeout (ST/HR)</td>
<td>5 / 10 sec</td>
</tr>
<tr>
<td>TZ32</td>
<td>Lower limit for driven shaft grip release spec (ST/HR)</td>
<td>1.2 / 3.0 sec</td>
</tr>
<tr>
<td>TZ33</td>
<td>Upper limit for driven shaft grip release spec (ST/HR)</td>
<td>2.4 / 4.9 sec</td>
</tr>
</tbody>
</table>

NOTE: Slow is used only for self-diagnostics.

(5) Detailed Sequence of Driven Shaft Grip (HR/ST)

Preprocessing: Fig. 5.9.1

Fig. 5.9.5 Driven Shaft Grip (Fast/HR)

Table 5.9.5 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ34</td>
<td>Driven shaft grip timeout (fast/HR)</td>
<td>2 / 10 sec</td>
</tr>
</tbody>
</table>

NOTE: Slow is used only for self-diagnostics.
(6) Detailed Sequence of Driven Shaft Self-Diagnostics

Fig. 5.9.6 Driven Shaft Self-Diagnostics

Preprocessing: Fig. 5.9.1

START

○ Speed data setting

Driven shaft grip release driving
DRIVE (MZ1/ST speed ON)
TZ35 STRAT
Timer START

○ Timer STOP

Is SZ3 opened within TZ35?

N

○ Driven shaft grip release stop
DRIVE (MZ3/OFF) (hard)

N

○ Driven shaft grip release stop
DRIVE (MZ3/OFF) (soft)

Level 0 error
Driven shaft grip release
self-diagnostics error

Y

○ Rotation-speed correction
Sequence flow chart

See 5.9 (8).

○ Speed data update

N

○ DELAY TZ51

○ Speed data setting

END

Table 5.9.6 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ35</td>
<td>Driven shaft grip release timeout (self-diagnostics)</td>
<td>5 sec</td>
</tr>
<tr>
<td>TZ36</td>
<td>Lower limit for driven shaft grip release spec (self-diagnostics)</td>
<td>1.7 sec</td>
</tr>
<tr>
<td>TZ37</td>
<td>Upper limit for driven shaft grip release spec (self-diagnostics)</td>
<td>2.0 sec</td>
</tr>
<tr>
<td>TZ51</td>
<td>Wait for initialization grip operation</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>
(7) Detailed Sequence of Driving Shaft Self-Diagnostics

Fig. 5.9.7 Driving Shaft Self-Diagnostics

Preprocessing: Fig. 5.9.1

START

- Speed data setting

Driven shaft grip release driving
TZ25 STRAT
Timer START

Is SZ2 opened within TZ25?

Y

- Driven-side grip release stop
  DRIVE (MZ2/OFF) (hard)
- Timer STOP

N

- Driven shaft grip release stop
  DRIVE (MZ2/OFF) (soft)
- Level 0 error
  Driving shaft grip release
  self-diagnostics error

Rotation-speed correction
Sequence flow chart
See 5.9 (8).

- Speed data update

DELAY TZ51

- Speed data setting

END

The previous latest data (corrected) in COMS is used.

Table 5.9.7 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZ25</td>
<td>Driven shaft grip timeout (self-diagnostics)</td>
<td>5 sec</td>
</tr>
<tr>
<td>TZ26</td>
<td>Lower limit for driven shaft grip spec (self-diag.)</td>
<td>2.2 sec</td>
</tr>
<tr>
<td>TZ27</td>
<td>Upper limit for driven shaft grip spec (self-diag.)</td>
<td>2.4 sec</td>
</tr>
<tr>
<td>TZ51</td>
<td>Wait for initialization grip operation</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>

TR1H6096.EPS
(8) Detailed Sequence of Rotation-Speed Correction Sequence Flow Chart

The rotation-speed correction sequence for driven-shaft and driving-shaft self-diagnostics, and their respective parameters are as follows.

Fig. 5.9.8 Rotation-Speed Correction Sequence Flow Chart

Preprocessing: Fig. 5.9.6, Fig. 5.9.7

T1: Processing time acquired by measurement
It represents the value of the timer indicated in Fig. 5.9.7.

Calculate correction D/A data in each mode (decimals omitted).

\[
\begin{align*}
DHR &= \text{DoHR} \times \frac{T1}{T0} \\
DST &= \text{DoST} \times \frac{T1}{T0} \\
D \text{ (fast)} &= \text{Do (fast)} \times \frac{T1}{T0}
\end{align*}
\]

Compare the upper-limit and lower-limit values of the correction D/A data in each mode, and confirm the value.

- Correction D/A data < lower-limit value → Substitute the lower-limit value for the correction D/A data.
- Correction D/A data > upper-limit value → Substitute the upper-limit value for the correction D/A data.
- In other cases → Use the correction D/A data as is.

Update the default for the subsequent calculation.

DoHR = DHR
DoST = DST
Do (fast) = D (fast)

Table 5.9.8 Rotation-Speed Correction Parameters

<table>
<thead>
<tr>
<th>Mode</th>
<th>Motor voltage (V)</th>
<th>D/A output voltage (V)</th>
<th>D/A data Do</th>
<th>Process time To(sec)</th>
<th>Driving-shaft grip spec</th>
<th>Correction D/A data Do</th>
<th>Lower-limit value Tmin</th>
<th>Upper-limit value Tmax</th>
<th>Lower-limit value Dmin</th>
<th>Upper-limit value Dmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>3.50</td>
<td>1.20</td>
<td>61 H</td>
<td>2.30</td>
<td>TZ26</td>
<td>36 H</td>
<td>36 H</td>
<td>255 H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>6.90</td>
<td>2.30</td>
<td>118 H</td>
<td>2.30</td>
<td>TZ27</td>
<td>36 H</td>
<td>36 H</td>
<td>255 H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast</td>
<td>10.00</td>
<td>3.30</td>
<td>170 H</td>
<td>1.86</td>
<td>TZ36</td>
<td>36 H</td>
<td>36 H</td>
<td>255 H</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode</th>
<th>Motor voltage (V)</th>
<th>D/A output voltage (V)</th>
<th>D/A data Do</th>
<th>Process time To(sec)</th>
<th>Driving-shaft grip spec</th>
<th>Correction D/A data Do</th>
<th>Lower-limit value Tmin</th>
<th>Upper-limit value Tmax</th>
<th>Lower-limit value Dmin</th>
<th>Upper-limit value Dmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>4.30</td>
<td>1.43</td>
<td>73 H</td>
<td>2.30</td>
<td>TZ36</td>
<td>36 H</td>
<td>36 H</td>
<td>255 H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>8.60</td>
<td>2.87</td>
<td>147 H</td>
<td>1.86</td>
<td>TZ37</td>
<td>36 H</td>
<td>36 H</td>
<td>255 H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast</td>
<td>10.00</td>
<td>3.30</td>
<td>170 H</td>
<td>1.86</td>
<td>TZ37</td>
<td>36 H</td>
<td>36 H</td>
<td>255 H</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.10 Empty Cassette Ejection

(1) Overall/General Sequence

Preprocessing: Fig. 5.1.1

START

Is SA1 opened?

N

Message output
"Unload cassette."

Cassette hold release

Fig.2.2.2

LEDT2 is turned on

The cassette removable
condition is indicated.

Cassette removal

Operation performed
by the operator

Is SA1 opened?

N

DELAY TA13

Is SA2 opened?

N

LEDT2 is turned off

Instant return of
 cassette is supported.

LEDT1 is turned on

Empty cassettes in all shelves are ejected?

END

Same as in the cassette ejection routine described in Fig. 2.11.1.

Table 5.10.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
</tr>
<tr>
<td>SA2</td>
<td>SA2</td>
<td>SA6</td>
<td>SA10</td>
<td>SA14</td>
</tr>
<tr>
<td>LEDT1</td>
<td>LEDT1</td>
<td>LEDT3</td>
<td>LEDT5</td>
<td>LEDT7</td>
</tr>
<tr>
<td>LEDT2</td>
<td>LEDT2</td>
<td>LEDT4</td>
<td>LEDT6</td>
<td>LEDT8</td>
</tr>
</tbody>
</table>

Table 5.10.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA13</td>
<td>Wait for cassette OUT</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>

TR1H0089.EPS
5.11 Cassette Hold Release Operation

(1) Overall/General Sequence

Fig. 5.11.1 Initialization Cassette Hold Release Operation

Preprocessing: Fig. 5.1.1

START

Check for next shelf

Cassette hold release

DRIVE (SOLA1/ON)

DELAY TA51

Is SA3 opened?

Y

N

Is SA3 opened within TA11?

Y

N

Processing for cassette hold release failure

Is the number of retries made greater than the retry count (NA11)?

Y

N

Level 1 error
Cassette shelf error

Message display
“CASS. SET INCORRECT CS#.”

 Degeneration for relevant shelf

Degeneration for all shelves?

Y

N

Level 0 error
Degeneration for all shelves

Released for all shelves?

END

Check for initialization cassette hold release

Table 5.11.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA11</td>
<td>Hold release timeout</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TA12</td>
<td>Hold release retry</td>
<td>2 sec</td>
</tr>
<tr>
<td>TA51</td>
<td>Wait for initialization hold</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>NA11</td>
<td>Hold release retry</td>
<td>5 times</td>
</tr>
</tbody>
</table>

Table 5.11.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name in flow</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA3</td>
<td>SA3</td>
<td>SA7</td>
<td>SA11</td>
<td>SA15</td>
</tr>
<tr>
<td>SOLA1</td>
<td>SOLA1</td>
<td>SOLA2</td>
<td>SOLA3</td>
<td>SOLA4</td>
</tr>
</tbody>
</table>

If the shelf intended for ejection is degenerated due to initialization, another empty cassette is put into another shelf so that the process resumes.
6. Error Handling

6.1 Error Handling: Cassette Ejection 1

(1) Overall/General Sequence

In this sequence, an error IP is returned to the cassette. The next IP processing is initiated upon return of the error IP to the cassette.

- Corresponding sequences
  - Fig. 2.4.2 Feed Suction
  - Fig. 4.2.2 Feed Step Operation (1/3)

Fig. 6.1.1 Error Handling: Cassette Ejection 1

Preprocessing: Fig. 2.4.2, and Fig. 4.2.2

At the time when the error IP is returned to the cassette, an elevation permission is issued to start the processing for the next IP in the queue. At the same time, removal of the cassette for the error IP is notified to the user.

- Elevation permission issued
- Error message output
- Alarm disabled
- Cassette hold release

Cassette ejection

Same as in the routine described in Fig. 2.11.1. If hold release error occurs during cassette ejection, degeneration takes place for the relevant shelf.

- LEDT2 is turned on
- Cassette removal

Is SA1 opened?

Yes

- DELAY TA13

No

Is SA2 opened?

Yes

- LEDT2 is turned off

No

LEDT1 is turned on

Fig. 2.2.2

This elevation permission allows the process to start.

- If there is another IP in the machine, up-download load.
- If there is any unprocessed cassette, up-down feed → feed.

Table 6.1.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA13</td>
<td>Wait for cassette OUT</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>

Table 6.1.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name in flow</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
</tr>
<tr>
<td>SA2</td>
<td>SA2</td>
<td>SA6</td>
<td>SA10</td>
<td>SA14</td>
</tr>
<tr>
<td>LEDT1</td>
<td>LEDT1</td>
<td>LEDT3</td>
<td>LEDT5</td>
<td>LEDT7</td>
</tr>
<tr>
<td>LEDT2</td>
<td>LEDT2</td>
<td>LEDT4</td>
<td>LEDT6</td>
<td>LEDT8</td>
</tr>
</tbody>
</table>

This cassette removable condition is indicated.

Operation performed by the operator

Instant return of cassette is supported.

The ready condition is indicated.

Return to normal routine
6.2 Error Handling: Cassette Ejection 2

(1) Overall/General Sequence

In this sequence, an error IP is returned to the cassette.

The next IP processing is initiated after removal of the error IP.

- Corresponding sequences
  - Fig. 2.4.3 Feed Suction Conveyance
  - Fig. 2.4.4 Feed Conveyance
  - Fig. 2.10.3 Load Suction
  - Fig. 2.10.4 Load Suction Conveyance
  - Fig. 4.2.2 Feed Step Operation (2/3 and 3/3)
  - Fig. 4.2.3 Load Step Operation (1/3 and 2/3)

Fig. 6.2.1 Error Handling: Cassette Ejection 2

| Preprocessing: | Fig. 2.4.3, Fig. 2.4.4, Fig. 2.10.3, Fig. 2.10.4, Fig. 4.2.2, and Fig. 4.2.3 |

Removal of the cassette for the error IP is notified to the user, and after the cassette removal, an elevation permission is issued to start the processing for the next IP in the queue.

Cassette ejection 2

If hold release failure occurs during cassette ejection 2, the system goes down.

No matter whether there is any IP in the machine or there is any unprocessed cassette, it is placed in a queue until an elevation permission.

- Another IP in the machine proceeds to the load standby condition.
- The unprocessed cassette enters the feed standby condition.

The ready condition is indicated.

This elevation permission allows the process to start.

- If there is another IP in the machine, up-down load.
- If there is any unprocessed cassette, up-down feed.

Table 6.2.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA13</td>
<td>Wait for cassette OUT</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>

Table 6.2.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name in flow</th>
<th>I/O name Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
</tr>
<tr>
<td>SA2</td>
<td>SA2</td>
<td>SA6</td>
<td>SA10</td>
<td>SA14</td>
</tr>
<tr>
<td>LEDT1</td>
<td>LEDT1</td>
<td>LEDT3</td>
<td>LEDT5</td>
<td>LEDT7</td>
</tr>
<tr>
<td>LEDT2</td>
<td>LEDT2</td>
<td>LEDT4</td>
<td>LEDT6</td>
<td>LEDT8</td>
</tr>
</tbody>
</table>
(2) Detailed Sequence of Cassette Hold Release

It is the cassette release operation corresponding to “Error Handling: Cassette Ejection 2.”

Fig. 6.2.2 Cassette Hold Release 2

Preprocessing: Fig. 6.2.1

Table 6.2.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA11</td>
<td>Hold release timeout</td>
<td>0.5 sec</td>
</tr>
<tr>
<td>TA12</td>
<td>Wait for hold release retry</td>
<td>2 sec</td>
</tr>
<tr>
<td>NA11</td>
<td>Hold release retry</td>
<td>5 times</td>
</tr>
</tbody>
</table>

Table 6.2.2a List of I/O Names Used in the Flow

<table>
<thead>
<tr>
<th>I/O name in flow</th>
<th>I/O name</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA3</td>
<td>SA3</td>
<td>SA7</td>
<td>SA11</td>
<td>SA15</td>
<td></td>
</tr>
<tr>
<td>SOLA1</td>
<td>SOLA1</td>
<td>SOLA2</td>
<td>SOLA3</td>
<td>SOLA4</td>
<td></td>
</tr>
</tbody>
</table>

*: Push the cassette once to draw it out. The cassette cannot be drawn out by merely pulling it.
6.3 Error Handling: Recovered IP Load

(1) Overall/General Sequence

This process is performed when any IP error is detected before side-positioning conveyance. Reverse conveyance load is performed to return the error IP to the cassette.

● Corresponding sequences
  Fig. 2.5.3  IP Determination
  Fig. 2.6.2  BCR
  Fig. 2.6.6  CSL/IDT Information Check

At the time when the error IP is returned to the cassette, an elevation permission is issued to start the processing for the next IP in the queue. At the same time, removal of the cassette for the error IP is notified to the user.

---

Table 6.3.1 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB14</td>
<td>Suction cup movement (HP load standby)</td>
<td>86 p</td>
</tr>
<tr>
<td>TA13</td>
<td>Wait for cassette OUT</td>
<td>0.5 sec</td>
</tr>
</tbody>
</table>

---

Table 6.3.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name in flow</th>
<th>Topmost shelf position</th>
<th>2nd shelf position</th>
<th>3rd shelf position</th>
<th>4th shelf position</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA1</td>
<td>SA1</td>
<td>SA5</td>
<td>SA9</td>
<td>SA13</td>
</tr>
<tr>
<td>SA2</td>
<td>SA2</td>
<td>SA6</td>
<td>SA10</td>
<td>SA14</td>
</tr>
<tr>
<td>LEDT1</td>
<td>LEDT1</td>
<td>LEDT3</td>
<td>LEDT5</td>
<td>LEDT7</td>
</tr>
<tr>
<td>LEDT2</td>
<td>LEDT2</td>
<td>LEDT4</td>
<td>LEDT6</td>
<td>LEDT8</td>
</tr>
</tbody>
</table>

---

Fig. 6.3.1 Error Handling: Recovered IP Load

Preprocessing: Fig. 2.5.3, and Fig. 2.6.6

Fig. 6.3.2 Error message

Fig. 6.3.3 Reverse conveyance load

Fig. 6.3.4 Elevation permission is issued

No matter whether there is any IP in the machine or there is any unprocessed cassette, it is placed in a queue until an elevation permission.

- Another IP in the machine proceeds to the load standby condition.
- The unprocessed cassette enters the feed standby condition.

This elevation permission allows the process to start.
- If there is another IP in the machine, up-down load → load.
- If there is any unprocessed cassette, up-down feed → feed.

---

Table 6.3.1a List of I/O Names Used in the Flow and Drawing

<table>
<thead>
<tr>
<th>I/O name</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrangement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Cassette removal

The cassette removable condition is indicated.

Operation performed by the operator

Instant return of cassette is supported.

The ready condition is indicated.

Return to normal routine

---

Cassette ejection

Same as in the routine described in Fig. 2.11.1.

If hold release error occurs during cassette ejection, degeneration takes place for the relevant shelf.
(2) Detailed Sequence of Reverse Conveyance Load

It is the detailed sequence of reverse conveyance load for “Error Handling: Recovered IP Load.”

Fig. 6.3.2 Reverse Conveyance Load

Preprocessing: Fig. 6.3.1, Fig. 6.7.1, Fig. 6.8.1, and Fig. 6.9.1

![Diagram](image1.png)

Table 6.3.2 Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB23</td>
<td>Conveyance (after-erasure conveyance)</td>
<td>- infinite p</td>
</tr>
<tr>
<td>PC12</td>
<td>Conveyance (after-erasure conveyance)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>PD23</td>
<td>Conveyance grip (HP return)</td>
<td>400 p</td>
</tr>
<tr>
<td>PD81</td>
<td>Recovery conveyance (fast load conveyance)</td>
<td>+ infinite p</td>
</tr>
<tr>
<td>TB22</td>
<td>Load timeout</td>
<td>2.9 sec</td>
</tr>
<tr>
<td>TB81</td>
<td>Recovery load timeout</td>
<td>5.1 sec</td>
</tr>
</tbody>
</table>
6.4 Error Handling: Overexposure

(1) Overall/General Sequence

This error handling is performed when overexposed IP is determined in the erasure check sequence.

- Corresponding sequence
  - Fig. 2.10.5 Erasure Check

Fig. 6.4.1 Error Handling: Overexposure

Preprocessing: Fig. 2.10.5

Start

START

Error message output
Stop ARARM/UNLOAD CASS.

Alarm disabled

Cassette removed

End

- Process continued

FR1H5445.EPS

6.5 Error Handling: Lamp Failure

(1) Overall/General Sequence

This error handling is performed when an unlit erasure lamp is detected in the erasure check sequence.

- Corresponding sequence
  - Fig. 2.10.5 Erasure Check

Fig. 6.5.1 Error Handling: Lamp Failure

Preprocessing: Fig. 2.10.5

Start

START

Error message output
Stop ARARM/UNLOAD CASS.

Alarm disabled

Cassette removed

Subsequently, degeneration is performed for the lamp and the IP is left unerased **.*

End

- Process continued

FR1H5446.EPS
6.6  Error Handling: Detection of IP with Improper Generation or Unit Type

(1) Overall/General Sequence

This error handling is performed when level 1 error “IP with improper generation/type detected” occurs in the BCR sequence.

- Corresponding sequence
  Fig. 2.6.2 BCR

Fig. 6.6.1 Error Handling: Detection of IP with Improper Generation or Unit Type

Preprocessing: Fig. 2.6.2

At the time when the error IP is returned to the cassette, an elevation permission is issued (via normal routine) to start the processing for the next IP in the queue. At the same time, removal of the cassette for the error IP is notified to the user.

Error message output
Stop ARARM/UNLOAD CASS.

Alarm disabled
Cassette removed

END

............ Process continued
6.7 Error Handling: IDT Line Error

(1) Overall/General Sequence

This error handling is performed when IDT line error occurs in the CSL/IDT information check sequence.

Corresponding sequence

**Fig. 2.6.6 CSL/IDT Information Check**

At the time when the error IP is returned to the cassette, an elevation permission is issued to start the processing for the next IP in the queue. At the same time, removal of the cassette for the error IP is notified to the user.

**Fig. 6.7.1 Error Handling: IDT Line Error**

Preprocessing: Fig. 2.6.6

No matter whether there is any IP in the machine or there is any unprocessed cassette, it is placed in a queue until an elevation permission.

- Another IP in the machine proceeds to the load standby condition.
- The unprocessed cassette enters the feed standby condition.

Cassette ejection

Same as in the routine described in Fig. 2.11.1.

If hold release error occurs during cassette ejection, degeneration takes place for the relevant shelf.
6.8 Error Handling: ID Information Error

(1) Overall/General Sequence

This error handling is performed when “ID information not registered” error occurs in the CSL/IDT information check sequence.

- Corresponding sequence
  Fig. 2.6.6 CSL/IDT Information Check

Fig. 6.8.1 Error Handling: ID Information Error

Preprocessing: Fig. 2.6.6

No matter whether there is any IP in the machine or there is any unprocessed cassette, it is placed in a queue until an elevation permission.
- Another IP in the machine proceeds to the load standby condition.
- The unprocessed cassette enters the feed standby condition.

At the time when the error IP is returned to the cassette, an elevation permission is issued to start the processing for the next IP in the queue.
At the same time, removal of the cassette for the error IP is notified to the user.

Cassette ejection
Same as in the routine described in Fig. 2.11.1. If hold release error occurs during cassette ejection, degeneration takes place for the relevant shelf.

Cassette hold release
Fig. 2.2.2
- LEDT2 is turned on
- The cassette removable condition is indicated.
- Operation performed by the operator

Is SA1 opened?
- Yes
- DELAY TA13
- LEDT2 is turned off
- LEDT1 is turned on
- The ready condition is indicated.
- Instant return of cassette is supported.
- Return to normal routine
- If continued without registration, the IDT waits for IP registration after reading.
- If there is another IP in the machine, up-down load.
- If there is any unprocessed cassette, up-down feed.

Error message output
Stop ARARM
UNLOAD CASS.

Alarm disabled
Cassette removed
Suction cup movement (HP DRIVE (MB1/PB14)
Reverse conveyance load
Fig. 6.3.2
Elevation permission is issued
Error message output
Stop ARARM
UNLOAD CASS.
Alarm disabled
Cassette removed
Cassette hold release
Fig. 2.2.2
- LEDT2 is turned on
- The cassette removable condition is indicated.
- Operation performed by the operator

Is SA2 opened?
- Yes
- LEDT2 is turned off
- LEDT1 is turned on
- The ready condition is indicated.
- Instant return of cassette is supported.
- Return to normal routine
- If continued without registration, the IDT waits for IP registration after reading.
6.9 Error Handling: After-Reading Conveyance Error

(1) Overall/General Sequence

In this sequence, if any error occurs in the after-reading conveyance operation, the IP in the sequence prior to side-positioning is conveyed in reverse direction along the feed conveyance path so that the IP is returned to the cassette.

Fig. 6.9.1 Error Handling: After-Reading Conveyance Error

---

**Table 6.9.1 Operation Parameters**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB14</td>
<td>Suction cup movement (HP → load standby)</td>
<td>86p</td>
</tr>
</tbody>
</table>

---
6.10 Error Handling: BCR Retry

(1) Overall/General Sequence

This error handling is performed when barcode retry occurs in the BCR sequence.

Corresponding sequence

Fig. 6.10.1 Error Handling: BCR Retry

Preprocessing: Fig. 2.6.2

Table 6.10.1a Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD11</td>
<td>Side-positioning (HP → stopper)</td>
<td>64 p</td>
</tr>
<tr>
<td>PD16</td>
<td>Side-positioning (stopper → HP)</td>
<td>-64 p</td>
</tr>
<tr>
<td>PD23</td>
<td>Conveyance grip (HP return)</td>
<td>400 p</td>
</tr>
<tr>
<td>TC31</td>
<td>Wait for BCR retry</td>
<td>0.1 sec</td>
</tr>
</tbody>
</table>

Table 6.10.1b Operation Parameters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>14x17</th>
<th>14x14</th>
<th>10x12</th>
<th>8x10</th>
<th>18x24 ST</th>
<th>24x30 ST</th>
<th>18x24 HR</th>
<th>24x30 HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD33</td>
<td>Conveyance (BCR return)</td>
<td>204 p</td>
<td>1752 p</td>
<td>2792 p</td>
<td>4870 p</td>
<td>5338 p</td>
<td>2894 p</td>
<td>5338 p</td>
<td>4116 p</td>
</tr>
</tbody>
</table>
7. Error Code Index

Table 7.1.1 CR-IR341 Error Code Index (1/2)

<table>
<thead>
<tr>
<th>Code</th>
<th>Error name</th>
<th>Chart No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>03A2</td>
<td>Cassette hold release error</td>
<td>Fig. 6.2.2 (MD-155)</td>
</tr>
<tr>
<td>03A3</td>
<td>Degeneration for all shelves</td>
<td>Fig. 2.2.2 (MD-61), Fig. 5.5.1 (MD-138/139), Fig. 5.11.1 (MD-152)</td>
</tr>
<tr>
<td>03B1</td>
<td>Conveyance error (during feed conveyance)</td>
<td>Fig. 2.5.2 (MD-72)</td>
</tr>
<tr>
<td>03B2</td>
<td>Conveyance error (during load conveyance)</td>
<td>Fig. 2.10.2 (MD-99)</td>
</tr>
<tr>
<td>03B3</td>
<td>Conveyance error (side-positioning conveyance inlet)</td>
<td>Fig. 2.6.3 (MD-76)</td>
</tr>
<tr>
<td>03B4</td>
<td>Conveyance error (recovered IP load fast)</td>
<td>Fig. 6.3.2 (MD-157)</td>
</tr>
<tr>
<td>03B5</td>
<td>Conveyance error (recovered IP load slow)</td>
<td>Fig. 6.3.2 (MD-157)</td>
</tr>
<tr>
<td>03B6</td>
<td>Feed/load conveyance remaining ejection error</td>
<td>Fig. 5.3.12 (MD-124), Fig. 5.3.4 (MD-126), Fig. 5.3.6 (MD-126), Fig. 5.3.7 (MD-126), Fig. 5.4.1 (MD-135), Fig. 5.4.2 (MD-136), Fig. 5.6.1 (MD-140/141)</td>
</tr>
<tr>
<td>03B7</td>
<td>Side-positioning conveyance remaining ejection error</td>
<td>Fig. 5.3.12 (MD-131), Fig. 5.3.13 (MD-132), Fig. 5.3.14 (MD-133)</td>
</tr>
<tr>
<td>03B9</td>
<td>Load standby remaining IP ejection error</td>
<td>Fig. 5.7.1 (MD-143)</td>
</tr>
<tr>
<td>03BC</td>
<td>Side-positioning HP operation error</td>
<td>Fig. 2.6.5 (MD-79)</td>
</tr>
<tr>
<td>03BF</td>
<td>Side-positioning grip operation error</td>
<td>Fig. 2.7.5 (MD-90)</td>
</tr>
<tr>
<td>03C1</td>
<td>Conveyance error (reading conveyance)</td>
<td>Fig. 2.7.3 (MD-84), Fig. 3.3.3 (MD-107)</td>
</tr>
<tr>
<td>03C2</td>
<td>Reading IP leading-edge detection error</td>
<td>Fig. 2.7.3 (MD-84)</td>
</tr>
<tr>
<td>03C6</td>
<td>Driving shaft grip error</td>
<td>Fig. 2.7.3 (MD-84), Fig. 3.3.2 (MD-106), Fig. 5.2.1 (MD-119), Fig. 5.9.3 (MD-146)</td>
</tr>
<tr>
<td>03C7</td>
<td>Driven shaft grip release error</td>
<td>Fig. 2.7.3 (MD-84), Fig. 3.3.3 (MD-107), Fig. 5.9.4 (MD-147)</td>
</tr>
<tr>
<td>03C8</td>
<td>Driven shaft grip release error</td>
<td>Fig. 2.7.3 (MD-85), Fig. 3.3.3 (MD-107), Fig. 5.9.2 (MD-146)</td>
</tr>
<tr>
<td>03C9</td>
<td>Driven shaft grip error</td>
<td>Fig. 2.7.2 (MD-83), Fig. 3.3.2 (MD-106), Fig. 5.2.1 (MD-119), Fig. 5.9.5 (MD-147)</td>
</tr>
<tr>
<td>03CA</td>
<td>Driving shaft grip release self-diagnostics error</td>
<td>Fig. 5.9.7 (MD-149)</td>
</tr>
<tr>
<td>03CB</td>
<td>Driven shaft release self-diagnostics error</td>
<td>Fig. 5.9.6 (MD-148)</td>
</tr>
<tr>
<td>03D1</td>
<td>Conveyance error (after-reading conveyance)</td>
<td>Fig. 2.7.6 (MD-91)</td>
</tr>
<tr>
<td>03D2</td>
<td>Conveyance error (switchback)</td>
<td>Fig. 2.7.6 (MD-91)</td>
</tr>
<tr>
<td>03D3</td>
<td>Conveyance error (before erasure)</td>
<td>Fig. 2.9.2 (MD-95)</td>
</tr>
<tr>
<td>03D4</td>
<td>Branch path changeover guide operation error</td>
<td>Fig. 2.9.2 (MD-95), Fig. 5.3.9 (MD-128), Fig. 5.3.10 (MD-129)</td>
</tr>
<tr>
<td>03D5</td>
<td>Conveyance error (erasure)</td>
<td>Fig. 2.9.3 (MD-96)</td>
</tr>
<tr>
<td>03D6</td>
<td>Conveyance error (after erasure)</td>
<td>Fig. 2.9.4 (MD-97)</td>
</tr>
<tr>
<td>03D7</td>
<td>Convergence path changeover guide operation error</td>
<td>Fig. 2.9.4 (MD-97)</td>
</tr>
<tr>
<td>03D8</td>
<td>After-reading conveyance remaining IP ejection error</td>
<td>Fig. 5.3.9 (MD-128), Fig. 5.3.10 (MD-129)</td>
</tr>
<tr>
<td>03D9</td>
<td>Erase conveyance remaining IP ejection error</td>
<td>Fig. 5.3.9 (MD-128), Fig. 5.3.10 (MD-129), Fig. 5.3.11 (MD-130)</td>
</tr>
<tr>
<td>03DC</td>
<td>After-reading conveyance grip operation error</td>
<td>Fig. 2.7.4 (MD-88)</td>
</tr>
<tr>
<td>03DD</td>
<td>Elevation HP movement error</td>
<td>Fig. 2.3.3 (MD-65)</td>
</tr>
<tr>
<td>03DE</td>
<td>Elevation shelf movement error</td>
<td>Fig. 2.3.1 (MD-62), Fig. 2.3.3 (MD-66), Fig. 2.8.1 (MD-93)</td>
</tr>
<tr>
<td>03EF</td>
<td>Suction cup movement error</td>
<td>Fig. 2.3.2 (MD-64)</td>
</tr>
<tr>
<td>0649</td>
<td>End-of-screen error</td>
<td>Fig. 2.7.3 (MD-85)</td>
</tr>
<tr>
<td>13A1</td>
<td>Cassette setting error</td>
<td>Fig. 2.1.1 (MD-59), Fig. 5.4.3 (MD-137)</td>
</tr>
<tr>
<td>13A2</td>
<td>Cassette hold release failure</td>
<td>Fig. 2.2.2 (MD-61)</td>
</tr>
<tr>
<td>13A3</td>
<td>Cassette shelf error</td>
<td>Fig. 5.5.1 (MD-138/139), Fig. 5.11.1 (MD-152)</td>
</tr>
<tr>
<td>13A8</td>
<td>Out-of-spec IP size</td>
<td>Fig. 2.5.3 (MD-73), Fig. 2.6.7 (MD-81)</td>
</tr>
<tr>
<td>13A9</td>
<td>Barcode reading error</td>
<td>Fig. 2.6.2 (MD-75)</td>
</tr>
<tr>
<td>13AA</td>
<td>Erasure lamp failure</td>
<td>Fig. 2.10.5 (MD-102)</td>
</tr>
<tr>
<td>13AB</td>
<td>Overexposed IP Unerased</td>
<td>Fig. 2.10.5 (MD-102)</td>
</tr>
<tr>
<td>13AC</td>
<td>ID information not registered</td>
<td>Fig. 2.6.6 (MD-80)</td>
</tr>
<tr>
<td>13AD</td>
<td>IP with improper generation/type detected</td>
<td>Fig. 2.6.2 (MD-75)</td>
</tr>
<tr>
<td>13AE</td>
<td>No MPM code available</td>
<td>Fig. 2.6.6 (MD-80)</td>
</tr>
<tr>
<td>13AF</td>
<td>IDT line error</td>
<td>Fig. 2.6.6 (MD-80)</td>
</tr>
<tr>
<td>13B8</td>
<td>IP position information error</td>
<td>Fig. 5.4.2 (MD-136), Fig. 5.6.2 (MD-142)</td>
</tr>
<tr>
<td>13E1</td>
<td>Feed IP suction failure</td>
<td>Fig. 2.4.2 (MD-68), Fig. 4.2.2 (MD-110)</td>
</tr>
<tr>
<td>13E2</td>
<td>Feed IP dropped</td>
<td>Fig. 2.4.3 (MD-69), Fig. 4.2.2 (MD-111)</td>
</tr>
<tr>
<td>13E3</td>
<td>IP grip failure</td>
<td>Fig. 2.4.4 (MD-70), Fig. 4.2.2 (MD-112)</td>
</tr>
<tr>
<td>13E4</td>
<td>Load IP suction failure</td>
<td>Fig. 2.10.3 (MD-100), Fig. 4.2.3 (MD-113)</td>
</tr>
<tr>
<td>13E5</td>
<td>Load IP dropped</td>
<td>Fig. 2.10.4 (MD-101), Fig. 4.2.3 (MD-114)</td>
</tr>
<tr>
<td>Code</td>
<td>Error name</td>
<td>Chart No.</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>23A1</td>
<td>Cassette hold failure retry</td>
<td>Fig. 2.1.1 (MD-59), Fig. 5.4.3 (MD-137), Fig. 5.5.1 (MD-139)</td>
</tr>
<tr>
<td>23A2</td>
<td>Cassette hold release failure retry</td>
<td>Fig. 2.2.2 (MD-61), Fig. 5.5.1 (MD-138), Fig. 5.11.1 (MD-152), Fig. 6.2.2 (MD-155)</td>
</tr>
<tr>
<td>23A3</td>
<td>Degeneration for relevant cassette shelf</td>
<td>Fig. 2.2.2 (MD-61)</td>
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## 8. Parameters

### 8.1 Timer Settings

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<td>TR12</td>
<td>SPR erasure conveyance IP trailing-edge detection timeout</td>
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</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
<td>Ref. value (sec.)</td>
<td>Remarks</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>------------------</td>
<td>---------</td>
</tr>
<tr>
<td>TZ11</td>
<td>Subscanning IP leading-edge detection timeout</td>
<td>20.1 ST</td>
<td>14x17 inch</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16.0 ST</td>
<td>14x14 inch</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13.4 ST</td>
<td>10x12 inch</td>
</tr>
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<td></td>
<td></td>
<td>8.0 ST</td>
<td>8x10 inch</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.8 ST</td>
<td>1824 ST</td>
</tr>
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<td></td>
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<td>13.1 ST</td>
<td>2430 ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.5 ST</td>
<td>1824 HR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.8 ST</td>
<td>2430 HR</td>
</tr>
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<td>TZ12</td>
<td>Driving shaft grip start</td>
<td>2.10 ST</td>
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</tr>
<tr>
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<td></td>
<td>4.20 HR</td>
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<td>Driven shaft grip release start</td>
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<td></td>
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<td>TZ14</td>
<td>Wait for subscanning stop (conveyance compensation for logical reading)</td>
<td>0 ST</td>
<td>Standard reading</td>
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<tr>
<td></td>
<td></td>
<td>18x43 portrait, center</td>
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<tr>
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<td></td>
<td>10x8 landscape, upper right</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>10x12 portrait, upper right</td>
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</tr>
<tr>
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<td></td>
<td>14x14, top</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>18x8, top</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pantomo, portrait, right center</td>
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</tr>
<tr>
<td>TZ15</td>
<td>Wait for subscanning settlement</td>
<td>0.3</td>
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</tr>
<tr>
<td>TZ16</td>
<td>Wait for secondary erasure grip release</td>
<td>3</td>
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</tr>
<tr>
<td>TZ17</td>
<td>Wait for end of secondary erasure reading conveyance</td>
<td>0.71</td>
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<tr>
<td>TZ18</td>
<td>Wait for secondary erasure subscanning settlement</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>TZ21</td>
<td>Driving shaft grip timeout</td>
<td>5 ST</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 HR</td>
<td></td>
</tr>
<tr>
<td>TZ22</td>
<td>Lower limit for driving shaft grip spec</td>
<td>1.8 ST</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.6 HR</td>
<td></td>
</tr>
<tr>
<td>TZ23</td>
<td>Upper limit for driving shaft grip spec</td>
<td>2.4 ST</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.8 HR</td>
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</tr>
<tr>
<td>TZ24</td>
<td>Driving shaft grip release timeout</td>
<td>2 Fast</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 HR</td>
<td></td>
</tr>
<tr>
<td>TZ25</td>
<td>Driving shaft grip timeout (self-diagnostics)</td>
<td>5 Self-diagnostics</td>
<td></td>
</tr>
<tr>
<td>TZ26</td>
<td>Lower limit for driving shaft grip spec (self-diagnostics)</td>
<td>2.2 Self-diagnostics</td>
<td></td>
</tr>
<tr>
<td>TZ27</td>
<td>Upper limit for driving shaft grip spec (self-diagnostics)</td>
<td>2.4 Self-diagnostics</td>
<td></td>
</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
<td>Ref. value (sec.)</td>
<td>Remarks</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------</td>
<td>-------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>TZ31</td>
<td>Driven shaft grip lease timeout</td>
<td>5</td>
<td>ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>HR</td>
</tr>
<tr>
<td>TZ32</td>
<td>Lower limit for driven shaft grip release spec</td>
<td>1.5</td>
<td>ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.0</td>
<td>HR</td>
</tr>
<tr>
<td>TZ33</td>
<td>Upper limit for driven shaft grip release spec</td>
<td>2.0</td>
<td>ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.0</td>
<td>HR</td>
</tr>
<tr>
<td>TZ34</td>
<td>Driven shaft grip timeout</td>
<td>2</td>
<td>Fast</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>HR</td>
</tr>
<tr>
<td>TZ35</td>
<td>Driven shaft grip release timeout (self-diagnostics)</td>
<td>5</td>
<td>Self-diagnostics</td>
</tr>
<tr>
<td>TZ36</td>
<td>Lower limit for driven shaft grip release spec (self-diagnostics)</td>
<td>1.7</td>
<td>Self-diagnostics</td>
</tr>
<tr>
<td>TZ37</td>
<td>Upper limit for driven shaft grip release spec (self-diagnostics)</td>
<td>2.0</td>
<td>Self-diagnostics</td>
</tr>
<tr>
<td>TZ40</td>
<td>Mirror-up timeout</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TZ41</td>
<td>Mirror-down timeout</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TZ51</td>
<td>Wait for initialization grip operation</td>
<td>0.5</td>
<td></td>
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</table>

### 8.2 Retry Count Settings

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Ref. value (sec/count)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA11</td>
<td>Hold release retry</td>
<td>5</td>
</tr>
<tr>
<td>NA12</td>
<td>Hold retry</td>
<td>5</td>
</tr>
<tr>
<td>NB11</td>
<td>Feed suction retry</td>
<td>3</td>
</tr>
<tr>
<td>NB12</td>
<td>Load suction retry</td>
<td>3</td>
</tr>
<tr>
<td>NB51</td>
<td>Suction HP retry</td>
<td>2</td>
</tr>
<tr>
<td>NB100</td>
<td>Elevation HP retry</td>
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<tr>
<td>NB101</td>
<td>Elevation movement retry</td>
<td>2</td>
</tr>
<tr>
<td>ND31</td>
<td>BCR retry</td>
<td>3</td>
</tr>
<tr>
<td>ND51</td>
<td>Side-positioning HP retry</td>
<td>3</td>
</tr>
<tr>
<td>ND61</td>
<td>Conveyance grip HP retry</td>
<td>3</td>
</tr>
</tbody>
</table>
## 8.3 Erasure Conveyance Table

### V-type ST (standard sensitivity)

<table>
<thead>
<tr>
<th>Erasure table No.</th>
<th>V-type ST (standard sensitivity)</th>
<th>Roller line speed (mm/sec)</th>
<th>PF13/PF14 conveyance speed (pps)</th>
<th>TF15 timeout (sec)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X-ray dosage (mR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greater than</td>
<td>Less than</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>85</td>
<td>42.00</td>
<td>2139</td>
<td>14.2</td>
</tr>
<tr>
<td>5</td>
<td>85</td>
<td>120</td>
<td>33.41</td>
<td>1702</td>
<td>17.8</td>
</tr>
<tr>
<td>6</td>
<td>120</td>
<td>200</td>
<td>25.13</td>
<td>1280</td>
<td>23.7</td>
</tr>
<tr>
<td>7</td>
<td>200</td>
<td>250</td>
<td>21.46</td>
<td>1093</td>
<td>27.7</td>
</tr>
<tr>
<td>8</td>
<td>250</td>
<td>300</td>
<td>18.38</td>
<td>936</td>
<td>32.3</td>
</tr>
<tr>
<td>9</td>
<td>300</td>
<td>350</td>
<td>15.72</td>
<td>801</td>
<td>37.8</td>
</tr>
<tr>
<td>A</td>
<td>350</td>
<td>400</td>
<td>13.49</td>
<td>687</td>
<td>44.1</td>
</tr>
<tr>
<td>B</td>
<td>400</td>
<td></td>
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<td>428</td>
<td>70.7</td>
</tr>
</tbody>
</table>

PF13/PF14 conveyance speed (pps): Equivalent to 2W1-2 phase

### V-type ST (sub-standard sensitivity)

<table>
<thead>
<tr>
<th>Erasure table No.</th>
<th>V-type ST (sub-standard sensitivity)</th>
<th>Roller line speed (mm/sec)</th>
<th>PF13/PF14 conveyance speed (pps)</th>
<th>TF15 timeout (sec)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X-ray dosage (mR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greater than</td>
<td>Less than</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>85</td>
<td>42.00</td>
<td>2139</td>
<td>14.2</td>
</tr>
<tr>
<td>5</td>
<td>85</td>
<td>120</td>
<td>33.41</td>
<td>1702</td>
<td>17.8</td>
</tr>
<tr>
<td>6</td>
<td>120</td>
<td>200</td>
<td>25.13</td>
<td>1280</td>
<td>23.7</td>
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</table>

PF13/PF14 conveyance speed (pps): Equivalent to 2W1-2 phase

### V-type ST (high sensitivity)

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<th>V-type ST (high sensitivity)</th>
<th>Roller line speed (mm/sec)</th>
<th>PF13/PF14 conveyance speed (pps)</th>
<th>TF15 timeout (sec)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X-ray dosage (mR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greater than</td>
<td>Less than</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>40</td>
<td>42.00</td>
<td>2139</td>
<td>14.2</td>
</tr>
<tr>
<td>6</td>
<td>40</td>
<td></td>
<td>25.13</td>
<td>1280</td>
<td>23.7</td>
</tr>
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</table>

PF13/PF14 conveyance speed (pps): Equivalent to 2W1-2 phase

### V-type HR (standard sensitivity)

<table>
<thead>
<tr>
<th>Erasure table No.</th>
<th>V-type HR (standard sensitivity)</th>
<th>Roller line speed (mm/sec)</th>
<th>PF13/PF14 conveyance speed (pps)</th>
<th>TF15 timeout (sec)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X-ray dosage (mR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greater than</td>
<td>Less than</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1700</td>
<td>42.00</td>
<td>2139</td>
<td>14.2</td>
</tr>
<tr>
<td>5</td>
<td>1700</td>
<td>2400</td>
<td>33.41</td>
<td>1702</td>
<td>17.8</td>
</tr>
<tr>
<td>6</td>
<td>2400</td>
<td>4000</td>
<td>25.13</td>
<td>1280</td>
<td>23.7</td>
</tr>
<tr>
<td>7</td>
<td>4000</td>
<td>5000</td>
<td>21.46</td>
<td>1093</td>
<td>27.7</td>
</tr>
<tr>
<td>8</td>
<td>5000</td>
<td>6000</td>
<td>18.38</td>
<td>936</td>
<td>32.3</td>
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<tr>
<td>9</td>
<td>6000</td>
<td>7000</td>
<td>15.72</td>
<td>801</td>
<td>37.8</td>
</tr>
<tr>
<td>A</td>
<td>7000</td>
<td>8000</td>
<td>13.49</td>
<td>687</td>
<td>44.1</td>
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<td>B</td>
<td>8000</td>
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<td>428</td>
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PF13/PF14 conveyance speed (pps): Equivalent to 2W1-2 phase
## Erasure table No.

<table>
<thead>
<tr>
<th>Erasure table No.</th>
<th>Other than V-type (different generation)</th>
<th>X-ray dosage (mR)</th>
<th>Roller line speed (mm/sec)</th>
<th>PF13/PF14 conveyance speed (pps)</th>
<th>TF15 timeout (sec)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>No limitation</td>
<td>471.20</td>
<td>3000</td>
<td>1.8</td>
<td></td>
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</tr>
</tbody>
</table>

PF13/PF14 conveyance speed (pps): Equivalent to 2W1-2 phase

## Erasure table No.

<table>
<thead>
<tr>
<th>Erasure table No.</th>
<th>V-type ST (secondary erasure)</th>
<th>X-ray dosage (mR)</th>
<th>Roller line speed (mm/sec)</th>
<th>PF13/PF14 conveyance speed (pps)</th>
<th>TF15 timeout (sec)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No limitation</td>
<td>471.20</td>
<td>3000</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PF13/PF14 conveyance speed (pps): Equivalent to 2W1-2 phase
8.4 Pulse Motor Parameters

How to Understand Pulse Motor Parameter

● Example of pulse motor parameter

● Pulse count (P)

Operating direction and operating pulse count.
Negative quantity: CCW direction
No sign (equivalent to positive quantity): CW direction

● HSPD (high-speed), LSPD (low-speed)

Maximum speed and minimum speed. If they differ, slow-up or slow-down control is performed (trapezoidal driving).

● UP (rise-time), DN (fall-time)

Acceleration and deceleration time during trapezoidal driving. It is set in msec.

● Delay (powerdown-delay)

A setup value, from stop to issuance of a next operating instruction.
Its unit is 2 msec. “5” in the Delay column means 10 msec.

● H/L (halt-limit)

It corresponds to three digits of bits.
  • 1st digit (bit 2): 0 = drive with high power; 1 = drive with low power
  • 2nd digit (bit 1): 0 = stop in energized condition; 1 = stop with unenergized condition
  • 3rd digit (bit 0): 0 = with power down delay; 1 = without power down delay

The meanings of the H/L values are summarized in the table below.

<table>
<thead>
<tr>
<th>HL value</th>
<th>3-bit value</th>
<th>Drive 1st digit of 3 bits</th>
<th>Stop condition 2nd digit of 3 bits</th>
<th>Power down delay 3rd digit of 3 bits</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>000</td>
<td>High power</td>
<td>Energized condition</td>
<td>Provided</td>
</tr>
<tr>
<td>1</td>
<td>001</td>
<td>High power</td>
<td>Energized condition</td>
<td>Not provided</td>
</tr>
<tr>
<td>2</td>
<td>010</td>
<td>High power</td>
<td>Unenergized condition</td>
<td>Provided</td>
</tr>
<tr>
<td>3</td>
<td>011</td>
<td>High power</td>
<td>Unenergized condition</td>
<td>Not provided</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
<td>Low power</td>
<td>Energized condition</td>
<td>Provided</td>
</tr>
<tr>
<td>5</td>
<td>101</td>
<td>Low power</td>
<td>Energized condition</td>
<td>Not provided</td>
</tr>
<tr>
<td>6</td>
<td>110</td>
<td>Low power</td>
<td>Unenergized condition</td>
<td>Provided</td>
</tr>
<tr>
<td>7</td>
<td>111</td>
<td>Low power</td>
<td>Unenergized condition</td>
<td>Not provided</td>
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</tbody>
</table>
### List of Pulse Motor Parameters

<table>
<thead>
<tr>
<th>VD name</th>
<th>Symbol</th>
<th>Description</th>
<th>Motor rotating direction</th>
<th>Pulse count (up, down to each IP)</th>
<th>HSPD(pps)</th>
<th>LSPD(pps)</th>
<th>UP(ms)</th>
<th>DN(ms)</th>
<th>Delay</th>
<th>VL</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB1</td>
<td>PB11</td>
<td>Suction cup movement (HP - load suction)</td>
<td>CW</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>65</td>
<td>109</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PB12</td>
<td>Suction cup movement (feed suction - feed leak)</td>
<td>CW</td>
<td>262</td>
<td>500</td>
<td>300</td>
<td>65</td>
<td>109</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PB13</td>
<td>Suction cup movement (load standby - HP)</td>
<td>CCW</td>
<td>86</td>
<td>500</td>
<td>300</td>
<td>100</td>
<td>100</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PB14</td>
<td>Suction cup movement (HP - load standby)</td>
<td>CW</td>
<td>86</td>
<td>500</td>
<td>300</td>
<td>100</td>
<td>100</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PB15</td>
<td>Suction cup movement (load standby - load suction)</td>
<td>CCW</td>
<td>100</td>
<td>500</td>
<td>300</td>
<td>100</td>
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</tr>
<tr>
<td></td>
<td>MD10</td>
<td>Conveyance (secondary reading)</td>
<td>CCW</td>
<td>772</td>
<td>480.011308</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>70% (2430 HR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MD11</td>
<td>Initialization conveyance (down direction)</td>
<td>CCW</td>
<td>64</td>
<td>1000.011308</td>
<td>480.011308</td>
<td>63</td>
<td>63</td>
<td>10</td>
<td>0</td>
<td>100% (14317)</td>
</tr>
<tr>
<td></td>
<td>MD12</td>
<td>Initialization conveyance (up direction)</td>
<td>CW</td>
<td>64</td>
<td>1000.011308</td>
<td>480.011308</td>
<td>63</td>
<td>63</td>
<td>10</td>
<td>0</td>
<td>100% (14317)</td>
</tr>
<tr>
<td></td>
<td>MD13</td>
<td>Initialization conveyance (side-positioning conveyance direction)</td>
<td>CW</td>
<td>772</td>
<td>480.011308</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>70% (2430 HR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MD14</td>
<td>Initialization conveyance (side-positioning)</td>
<td>CW</td>
<td>772</td>
<td>480.011308</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>70% (2430 HR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MD15</td>
<td>Recovery conveyance (fast load conveyance)</td>
<td>CW</td>
<td>772</td>
<td>480.011308</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>70% (2430 HR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PD16</td>
<td>Conveyance grip (HP)</td>
<td>CW</td>
<td>144</td>
<td>1500.003508</td>
<td>300</td>
<td>70</td>
<td>100</td>
<td>10</td>
<td>0</td>
<td>100% (14317)</td>
</tr>
<tr>
<td></td>
<td>PE12</td>
<td>Conveyance (after-reading conveyance)</td>
<td>CCW</td>
<td>256</td>
<td>1500.003508</td>
<td>300</td>
<td>100</td>
<td>70</td>
<td>10</td>
<td>0</td>
<td>100% (14317)</td>
</tr>
<tr>
<td></td>
<td>PE13</td>
<td>Conveyance (after-reading conveyance)</td>
<td>CCW</td>
<td>64</td>
<td>1000.002336</td>
<td>600</td>
<td>100</td>
<td>70</td>
<td>10</td>
<td>0</td>
<td>100% (14317)</td>
</tr>
<tr>
<td></td>
<td>PE14</td>
<td>Conveyance (after-reading conveyance)</td>
<td>CCW</td>
<td>772</td>
<td>480.011308</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>70% (2430 HR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PE15</td>
<td>Conveyance (after-reading conveyance)</td>
<td>CCW</td>
<td>1715</td>
<td>480.011308</td>
<td>70</td>
<td>70</td>
<td>54</td>
<td>0</td>
<td>70% (2430 HR)</td>
<td></td>
</tr>
</tbody>
</table>

**MD - 175.1**
9. Unit Location Information

9.1 Unit Locations

- **Vertical Conveyor, Before-Side-Positioning Conveyor, and Side-Positioning Conveyor**

  ![Diagram of Vertical Conveyor](FR1H1700.EPS)

  *Side plate of vertical conveyor*
  *0.5 mm or less*
  *Side plate of before-side-positioning conveyor*
  *0.5 mm or less*
  *Side plate of side-positioning conveyor*

- **Erasure Conveyor and After-Reading Conveyor**

  ![Diagram of Erasure Conveyor](FR1H1701.EPS)

  *Side plate of erasure conveyor*
  *0.5 mm or less*
  *Side plate of after-reading conveyor*
### Cassette Set Unit

- **Top view**
  - Side plate of cassette set unit
  - Side plate of vertical conveyor
  - Side plate of up-down IP removal conveyor
  - Frame

- **Front view**
  - Right-hand side plate of cassette set unit (machine-specific label side)
  - Cassette set unit tray

- **Top view**
  - Positioning bracket
  - One-plane alignment
  - Two-plane alignment

- Scale

- Cassette set unit
- Cassette set unit tray
**Vertical Conveyor**

Vertical conveyor

![Diagram of vertical conveyor](FR1H1612.EPS)

**Erasure Conveyor**

Erasure conveyor

Before-side-positioning conveyor

![Diagram of erasure conveyor](FR1H1613.EPS)

**Side-Positioning Conveyor**

Side-positioning conveyor

![Diagram of side-positioning conveyor](FR1H1617.EPS)
Subscanning Unit

Top view

A = 74 – 1, B = 74 – 1, C = 100 – 1

Shock-absorbing rubber x4
Loosen two screws

After-Reading Conveyor

A - B = 0.5 mm or less
9.2 Roller Locations

NOTES:
¥ denotes a rubber roller.
¥ An alphabet in parentheses denotes a unit symbol.
9.3 IP Conveyance Locations

Vertical conveyor

Side plate of vertical conveyor

Measure between them

3–2mm
9.4 Home Position Values

When the machine is booted, the initialization sequence is performed so that all the mechanisms are initialized to their home position. Subsequently, power OFF the machine and then check the home position.

**IP removal unit**

![Diagram of IP removal unit with dimensions and components labeled]

- **Bracket**: Check at the topmost stage
- **Arm**: 10–1mm
- **Shock absorber**: 86.5–1mm
- **Left-hand side plate**
- **Shaft**: 86.5–1mm
- **Bearing flange**
- **Actuator**: Timing belt wheel
- **SB1**: Up-down IP removal unit
■ Cassette set unit and IP removal unit

Cassette set unit

IP removal unit

■ Side-positioning conveyor

Actuator

Actuator

CLOSE condition

CLOSE condition
## Subscanning unit

Subscanning unit

- **SZ2**: CLOSE condition
  - Light-blocking plate for SZ2
  - Cam

- **MZ2**

- **SZ3**: OPEN condition
  - Light-blocking plate for SZ3
  - Cam

## After-Reading Conveyor

After-reading conveyor

- **SE1**: CLOSE condition
  - Actuator
9.5 Installation Locations for Members in Contact with IP Fluorescent Face
9.6 Data on Grip Springs

CONTENTS

9.6 Data on Grip Springs

Controller

Cassette set unit

IP removal unit

Vertical conveyor

Before-side-positioning conveyor

Power supply

Erasure conveyor

Side-positioning conveyor

After-reading conveyor

Subscanning unit

Scanning optics unit

388N2395

388N2395
<table>
<thead>
<tr>
<th>Mounting location</th>
<th>Part No.</th>
<th>Wire diam. (mm)</th>
<th>Coil O.D. (mm)</th>
<th>Free length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>0.6</td>
<td>4</td>
<td>104.8</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2407</td>
<td></td>
<td>4</td>
<td>117.5</td>
</tr>
<tr>
<td>Left side</td>
<td>388N2306</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>B</td>
<td></td>
<td>0.55</td>
<td>4</td>
<td>89.7</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2390</td>
<td></td>
<td>4</td>
<td>84.4</td>
</tr>
<tr>
<td>Left side</td>
<td>388N2391</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>0.5</td>
<td>4</td>
<td>78.4</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2384</td>
<td></td>
<td>4</td>
<td>91.9</td>
</tr>
<tr>
<td>Left side</td>
<td>388N2385</td>
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<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>0.5</td>
<td>4</td>
<td>78.4</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2384</td>
<td></td>
<td>4</td>
<td>91.9</td>
</tr>
<tr>
<td>Left side</td>
<td>388N2385</td>
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<td></td>
<td></td>
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<tr>
<td>E</td>
<td></td>
<td>0.5</td>
<td>4</td>
<td>115.9</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2386</td>
<td></td>
<td>4</td>
<td>137.9</td>
</tr>
<tr>
<td>Left side</td>
<td>388N2387</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>0.5</td>
<td>5</td>
<td>121.0</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2395 x2</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Left side</td>
<td>388N2395</td>
<td></td>
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<tr>
<td>G</td>
<td></td>
<td>0.5</td>
<td>5</td>
<td>121.0</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2395 x2</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Left side</td>
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<td>4</td>
<td>118.8</td>
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<tr>
<td>H</td>
<td></td>
<td>0.5</td>
<td>5</td>
<td>121.0</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2395 x2</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Left side</td>
<td>388N2395</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td>0.5</td>
<td>4</td>
<td>78.4</td>
</tr>
<tr>
<td>Right side (reference plane)</td>
<td>388N2384</td>
<td></td>
<td>4</td>
<td>91.9</td>
</tr>
<tr>
<td>Left side</td>
<td>388N2385</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. Information on Board LEDs

DMC08A Board (DMS I/F Board)

- Immediately after power-on reset: Both of the two LEDs are lit.
- Idle condition after DSP initialization: The two LEDs are lit alternately (at intervals of 0.1 sec).
- While the DSP is implementing image processing: The two LEDs represent two bits of the process line number.
- The DSP detects an error: The two LEDs are all turned ON and OFF twice (at intervals of 0.5 sec).
11. Interlock

The interlock requirements for machine protection provide that the up-down drive motor (MB3) must not operate while the suction cup home position sensor (SB1) is OPEN.
12. Description of Initialization Self-Diagnostic Steps and Shutdown Operation

General descriptions of initialization self-diagnostic steps and shutdown operation are provided below.

Initialization Self-Diagnostic Steps

When the machine starts up, step numbers appear on the operation panel to indicate the subsystems that are being initialized. If the machine hangs up during initialization, you can locate a troubled subsystem by noting the displayed step number.

- Step 99: Panel control
- Step 95: Log information control
- Step 90: Conveyance control
- Step 80: Read control
- Step 70: DMS FINP output control
- Step 65: ID information input control
- Step 60: CSL control
- Step 55: Image distribution control
- Step 40: LP output control
- Step 35: DMS E-IF control
- Step 30: DMS FINP input control
- Step 15: Base on DICOM output control
- Step 5: Image management system control

Shutdown operation

Information required by each subsystem when power is turned ON next time is written to the backup memory or HD.

Control of the remote power supply unit is also executed as needed.
CR-IR341/CR-IR341P
Service Manual

Troubleshooting (MT)
<table>
<thead>
<tr>
<th>Issue date</th>
<th>Revision number</th>
<th>Reason</th>
<th>Pages affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/31/99</td>
<td>04</td>
<td>Corrections due to change in configuration (FM2460)</td>
<td>All pages</td>
</tr>
<tr>
<td>11/20/99</td>
<td>05</td>
<td>Corrections (FM2638)</td>
<td>MT-32–34, 49, 51–53, 56, 64, 70–72</td>
</tr>
<tr>
<td>08/30/2001</td>
<td>07</td>
<td>Support for “plus” (support for software version A14) (FM3115)</td>
<td>MT-26, 28, 44, 46, 52, 60, 60.1, 60.2, 61–63, 70, 72, 179, 198–216</td>
</tr>
</tbody>
</table>
When the machine experiences any trouble, troubleshoot it based on error codes, abnormal images, abnormal phenomena, and so forth to take remedial measures as appropriate.
2. Troubleshooting Procedures Based on Error Codes

2.1 How to Understand Error Code

A format of error code is shown below.

```
[XX][YY][ZZ]
```

- **XX**: Reference number according to error classification
  - 00-FF: Error classification
  - 0-9, A-F: Error level

- **YY**: Error classification
  - 0: OS (operating system software), CPU, library
  - 1: Overall control, information gathering function, output destination control function
  - 2: Panel control
  - 3: Conveyor-related control
  - 4: Image processing related (reading)
  - 5: Scanner control
  - 6: Image processing related (printer)
  - 7: IDT interface control

- **ZZ**: Reference number
  - Managed according to the error classification

**X**: Error level
- **FATAL** error: 0
  - Error where the normal processing cannot be resumed.
  - It is necessary to troubleshoot and take remedial action immediately.
- **WARNING**: 1, 2, 3
  - Errors where the processing may be resumed by performing retry operation, etc.
  - This category includes an error that is merely logged as history information and an error where the processing is resumed but its error code is displayed on screen.

**Y**: Error classification

**Z**: Reference number

---

8: Printer interface control
9: DMS interface control
A: ID information setup function
B: Network output image processing
C: FINP control
D: DICOM control
E: Undefined
F: Other (software install, version update, etc.)
## 2.2 Error Codes List

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Significance/Occurrence Condition</th>
<th>Probable Cause/Remedy</th>
<th>Detail</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>Failure to discard image in a queue</td>
<td>Using U-Utility, an attempt is made to discard an image in a queue, but fails.</td>
<td>The HDD itself is faulty.</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>0100</td>
<td>Board inserted location error</td>
<td>When the board's inserted slot location is checked, an error occurs.</td>
<td>Each board, which must be inserted in its specific location on the motherboard, is inserted in a wrong location.</td>
<td>A-8</td>
<td>—</td>
</tr>
</tbody>
</table>
| 0101 | ID information management system initialization error | An error occurs during initialization of the ID information management system. | An attempt is made to load a file during initialization of the ID information management system, but an error occurs.  
• No file  
• Improper file content/file corrupted.  
• HD failure | F      | —        |
| 0102 | Shared data management system initialization error | An error occurs during initialization of the shared data management system. | An attempt is made to load a file during initialization of the shared data management system, but an error occurs.  
• No file  
• Improper file content/file corrupted.  
• HD failure | F      | —        |
| 0110 | Image management system initialization error | An error occurs during initialization of the image management system. | HD failure | F      | —        |
| 0111 | HD image area initialization error | An error occurs during initialization of the HD image area. | HD failure | F      | —        |
| 0112 | No valid option | Allocation of shared memory to a bare minimum optional configuration fails. | • Insufficient shared memory  
• Shared memory failure | F      | —        |
| 0120 | File open error | An attempt to open a file fails. (netmasks) | • No file  
• HD failure  
• Failure to reserve memory | A-1    | —        |
<p>| 0121 | File read error | An attempt to read a file fails. (netmasks) | HD failure | A-1    | —        |
| 0122 | File close error | An attempt to close a file fails. (netmasks) | HD failure | A-1    | —        |</p>
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Significance/Occurrence Condition</th>
<th>Probable Cause/Remedy</th>
<th>Detail</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>0123</td>
<td>File format error</td>
<td>File format check error (netmasks)</td>
<td>Description of the netmasks file is improper.</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• No subnet mask (for standard LAN/for LAN board)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The IP address in IRSET.CFG is inconsistent with the netmasks file.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Network description format is illegal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Subnet mask description format is illegal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0124</td>
<td>File setup value error</td>
<td>–</td>
<td>–</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>0130</td>
<td>File open error</td>
<td>An attempt to open a file fails. (hosts)</td>
<td>• No file</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Failure to reserve memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0131</td>
<td>File read error</td>
<td>An attempt to read a file fails. (hosts)</td>
<td>HD failure</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td>0132</td>
<td>File close error</td>
<td>An attempt to close a file fails. (hosts)</td>
<td>HD failure</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td>0133</td>
<td>File format error</td>
<td>File format check error (hosts)</td>
<td>Description of the hosts file is improper.</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Illegal IP address description format</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• No host name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0134</td>
<td>File setup value error</td>
<td>File setup value check error (hosts)</td>
<td>Description of the host file is improper.</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Illegal host name</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Failure to register a host name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0140</td>
<td>Boot line-related error</td>
<td>An error related to the following own information (IP address, subnet mask) occurs.</td>
<td>• Boot line corrupted</td>
<td></td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• OS network environment error</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Boot line corrupted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0141</td>
<td>Routing information-related error</td>
<td>Failure to register OS for routing information</td>
<td>• Router description (host name/IP address) error in the route file</td>
<td></td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• OS network environment error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
<td>Refer to</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>------------------------</td>
<td>--------</td>
<td>-----------</td>
</tr>
<tr>
<td>01A0</td>
<td>ID information read error</td>
<td>A read error during ID information read</td>
<td>HD failure</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>01A1</td>
<td>ID information update error</td>
<td>A write error during ID information update</td>
<td>HD failure</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>01A2</td>
<td>Image data close error</td>
<td>Image data close error</td>
<td>HD failure</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>01A3</td>
<td>EQUIP file format error</td>
<td>Description of the EQUIP file is inconsistent.</td>
<td>LOCAL and host name are both described for OD-FILE or DISPLAY designation. (Only one of them may be designated.)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>0301</td>
<td>File open error</td>
<td>An attempt is made to open a file, but it cannot be opened.</td>
<td>• There is no file in the HDD. • The file in the HDD is corrupted. • The HDD itself is faulty, etc.</td>
<td>D-1</td>
<td></td>
</tr>
<tr>
<td>0302</td>
<td>File format error</td>
<td>A file is read, but an error is detected.</td>
<td>Improper number of characters per line of data</td>
<td>D-1</td>
<td></td>
</tr>
<tr>
<td>0303</td>
<td>File setup value error</td>
<td>A file is read, but an error is detected.</td>
<td>Improper data (characters other than 0 – 9)</td>
<td>D-1</td>
<td></td>
</tr>
<tr>
<td>0304</td>
<td>File read error</td>
<td>A file is read, but an error is detected.</td>
<td>Cannot be read per line.</td>
<td>D-1</td>
<td></td>
</tr>
<tr>
<td>0311</td>
<td>FPMC device initialization error</td>
<td>A request is made to the FPMC driver, but an error is returned.</td>
<td>Driver error</td>
<td>D-3</td>
<td></td>
</tr>
<tr>
<td>0312</td>
<td>Motor stop timeout</td>
<td>A motor drive request or stop request is made to the FPMC driver, but it does not stop, with an error returned.</td>
<td>Driver error</td>
<td>D-3</td>
<td></td>
</tr>
<tr>
<td>0322</td>
<td>SNS device initialization error</td>
<td>A request is made to the SNS driver, but an error is returned.</td>
<td>Driver error</td>
<td>D-3</td>
<td></td>
</tr>
<tr>
<td>03A2</td>
<td>Cassette hold release error</td>
<td>SOLA1-4 is turned ON during cassette hold release after occurrence of 13E1-13E5, but SA3, 7, 11, and 15 do not turn OFF so that the cassette cannot be released.</td>
<td></td>
<td>D-5</td>
<td>MD - 155, MT - 74</td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
<td>Refer to</td>
</tr>
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<td>----------</td>
</tr>
<tr>
<td>03A3</td>
<td>Degeneration for all shelves</td>
<td>Cassette hold release is performed during initialization or during machine operation, but hold release for all the shelves (SA3, 7, 11, and 15 do not turn OFF) cannot be detected.</td>
<td></td>
<td>D-5</td>
<td>MD - 61, 138, 139, 152, MT - 74</td>
</tr>
<tr>
<td>03A8</td>
<td>Out-of-spec initial IP size</td>
<td>Measurement is made on the length of the remaining IP during initialization, but the result is detected as out-of-spec.</td>
<td></td>
<td>D-5</td>
<td>MT - 76</td>
</tr>
<tr>
<td>03B0</td>
<td>Feed/load conveyance remaining IP ejection failure</td>
<td></td>
<td></td>
<td>D-5</td>
<td>MD - 136</td>
</tr>
<tr>
<td>03B1</td>
<td>Feed conveyance error</td>
<td>After the IP is conveyed from the cassette and passes over SB2, SC1 does not turn ON. Or, SC1 turns ON, but is not turned OFF.</td>
<td></td>
<td>D-5</td>
<td>MD - 72, MT - 78</td>
</tr>
<tr>
<td>03B2</td>
<td>Load conveyance error</td>
<td>The IP conveyed from the erasure conveyor turns ON SB2, but after its passage, SB2 does not turn OFF.</td>
<td></td>
<td>D-5</td>
<td>MD - 99, MT - 80</td>
</tr>
<tr>
<td>03B3</td>
<td>Side-positioning conveyor inlet conveyance error</td>
<td>During IP feed conveyance, after the IP passes over SC1, SD3 cannot detect the IP.</td>
<td></td>
<td>D-5</td>
<td>MD - 76, MT - 82</td>
</tr>
<tr>
<td>03B4</td>
<td>Recovered IP load slow conveyance error</td>
<td>The IP is conveyed toward the cassette set unit, but SB2 remains ON.</td>
<td></td>
<td>D-5</td>
<td>MD - 157, MT - 84</td>
</tr>
<tr>
<td>03B5</td>
<td>Recovered IP load fast conveyance error</td>
<td>The IP is conveyed toward the cassette set unit, but SB2 does not turn ON.</td>
<td></td>
<td>D-5</td>
<td>MD - 157, MT - 86</td>
</tr>
<tr>
<td>03B6</td>
<td>Feed/load conveyance remaining IP ejection error</td>
<td>Because SB2 is turned ON during initialization, MF1, MC1, and MB2 are driven, but SB2 does not turn OFF.</td>
<td></td>
<td>D-5</td>
<td>MD - 124, 125, 126, 135, 140, 141, MT - 88</td>
</tr>
<tr>
<td>03B7</td>
<td>Side-positioning conveyance remaining IP ejection error</td>
<td>Because SC1 is turned ON during initialization, conveyance operation is performed, but SC1 does not turn OFF.</td>
<td></td>
<td>D-5</td>
<td>MD - 131, 132, 133, MT - 90</td>
</tr>
<tr>
<td>03B8</td>
<td>IP position information error</td>
<td></td>
<td></td>
<td>D-5</td>
<td>MT - 92</td>
</tr>
</tbody>
</table>
### Code | Name | Significance/Occurrence Condition | Probable Cause/Remedy | Detail | Refer to
--- | --- | --- | --- | --- | ---
03B9 | Driven shaft grip release self-diagnostics error | Because SF3 is turned ON during initialization, the IP is conveyed toward the cassette, but SB2 cannot detect the IP. | - | D-5 | MD - 143, MT - 94
03BC | Side-positioning HP operation error | MD1 is activated during side-positioning HP detection, but SD1 cannot detect it. | - | D-5 | MD - 79, MT - 96
03BF | Side-positioning grip operation error | SD2 does not turn ON during side-positioning grip HP detection. | - | D-5 | MD - 90, MT - 98
03C0 | Read standby conveyance error | Before-reading IP preparation cannot be made. The IP is not stopped by the side-positioning stopper due to curling of the IP, so that it overruns; or other causes. | - | D-5 | MT - 100
03C1 | Read conveyance error | After IP reading conveyance starts, SD3 does not turn OFF. | - | D-5 | MD - 84, 107, MT - 102
03C2 | Read IP leading-edge detection error | When IP reading conveyance starts, SZ1 cannot detect the IP leading edge. | - | D-5 | MD - 84, MT - 104
03C6 | Driving shaft grip error | MZ2 is driven during IP reading conveyance, but SZ2 does not turn OFF. | - | D-5 | MD - 84, 106, 119, 146, MT - 106
03C7 | Driven shaft grip release error | MZ3 is driven during IP reading conveyance, but SZ3 does not turn OFF. | - | D-5 | MD - 84, 107, 147, MT - 108
03C8 | Driving shaft grip release error | MZ2 is driven during IP reading conveyance, but SZ2 does not turn ON. | - | D-5 | MD - 85, 107, 146, MT - 106
03C9 | Driven shaft grip error | MZ3 is driven during IP reading conveyance, but SZ3 does not turn ON. | - | D-5 | MD - 83, 106, 119, 147
03CA | Driven shaft grip self-diagnostics error | MZ2 is driven during initialization, but SZ2 does not turn OFF. | - | D-5 | MD - 149, MT - 106
03CB | Load standby remaining IP ejection error | MZ3 is driven during initialization, but SZ3 does not turn OFF. | - | D-5 | MD - 148, MT - 108
03CC | Mirror operation error | - | - | - | -
<table>
<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>03D1</td>
<td>After-reading conveyance error</td>
<td>After after-reading conveyance grip, the IP is conveyed, but SF1 does not turn ON.</td>
<td>D-5</td>
<td>MD - 91, MT - 110</td>
<td></td>
</tr>
<tr>
<td>03D2</td>
<td>Switchback conveyance error</td>
<td>After SF1 turns ON, the IP is conveyed, but SF2 cannot detect ON/OFF.</td>
<td>D-5</td>
<td>MD - 91, MT - 112</td>
<td></td>
</tr>
<tr>
<td>03D3</td>
<td>Before-erasure conveyance error</td>
<td>After the IP is conveyed into the inverting stocker, it is driven toward the erasure conveyor.</td>
<td>D-5</td>
<td>MD - 95, MT - 114</td>
<td></td>
</tr>
<tr>
<td>03D4</td>
<td>Branch path changeover guide operation error</td>
<td>After SOLF1 is driven, the IP is conveyed toward the erasure conveyor, but SF1 turns ON.</td>
<td>D-5</td>
<td>MD - 95, 128, 129, MT - 116</td>
<td></td>
</tr>
<tr>
<td>03D5</td>
<td>Erasure conveyance error</td>
<td>During erasure conveyance, SF3 cannot detect the IP.</td>
<td>D-5</td>
<td>MD - 96, MT - 118</td>
<td></td>
</tr>
<tr>
<td>03D6</td>
<td>After-erasure conveyance error</td>
<td>After erasure conveyance, SF3 does not turn OFF.</td>
<td>D-5</td>
<td>MD - 97, MT - 120</td>
<td></td>
</tr>
<tr>
<td>03D7</td>
<td>Convergence path changeover guide operation error</td>
<td>During erasure conveyance, after the IP passes over SF3, SC2 detects the IP, but it does not turn OFF.</td>
<td>D-5</td>
<td>MD - 97, MT - 122</td>
<td></td>
</tr>
<tr>
<td>03D8</td>
<td>After-reading conveyance remaining IP ejection error</td>
<td>SF2 does not turn OFF during initialization.</td>
<td>D-5</td>
<td>MD - 128, 129, MT - 124</td>
<td></td>
</tr>
<tr>
<td>03D9</td>
<td>Erasure conveyance remaining IP ejection error</td>
<td>Because SF2 is turned ON during initialization, the IP is conveyed toward the erasure conveyor, but SF3 cannot detect the IP. Because SF3 is turned ON during initialization, the IP is conveyed toward the cassette set unit, but SF3 does not turn OFF.</td>
<td>D-5</td>
<td>MD - 128, 129, 130, MT - 126</td>
<td></td>
</tr>
<tr>
<td>03DC</td>
<td>After-reading grip operation error</td>
<td>SE1 does not turn ON during after-reading conveyance grip HP detection.</td>
<td>D-5</td>
<td>MD - 88, MT - 128</td>
<td></td>
</tr>
<tr>
<td>03DD</td>
<td>Elevation HP movement error</td>
<td>SA17 does not turn ON during elevation HP detection.</td>
<td>D-5</td>
<td>MD - 65, MT - 130</td>
<td></td>
</tr>
<tr>
<td>03DE</td>
<td>Elevation shelf movement error</td>
<td>SB3 does not turn ON during movement of the elevation unit.</td>
<td>D-5</td>
<td>MD - 62, 66, 93, MT - 132</td>
<td></td>
</tr>
<tr>
<td>03E8</td>
<td>Suction cup movement error</td>
<td>SB1 does not turn ON during suction cup HP detection.</td>
<td>D-5</td>
<td>MD - 64, MT - 134</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
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<td>Detail</td>
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</tr>
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<td>-------</td>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| 0401  | File format error                   | The file format is improper.                                           | • The file format in the HDD is improper.  
• The file in the HDD is corrupted.  
• The HDD itself is faulty.          | E-1    |          |
| 0402  | File setup value error              | The data of the file is improper.                                      | • The data described in the file in the HDD has an out-of-range value.  
• The file in the HDD is corrupted.  
• The HDD itself is faulty.          | E-1    |          |
| 0403  | File read error                     | A file cannot be read.                                                | The HDD or MTH08A board is faulty.                                                   | E-1    |          |
| 0410  | DSP4 device initialization error    | An attempt to initialize the DSP4 device fails.                       | The CPU90E board or MTH08A board is faulty.                                           | E-2    |          |
| 0411  | DSP4 device open error              | An attempt to open the DSP4 device fails.                             | The CPU90E board or MTH08A board is faulty.                                           | E-2    |          |
| 0412  | DSP4 µ program boot error           | When a µ program is booted in DSP4, an error occurs.                  | Check if the IMG07B board or MTH08A board is faulty,  
or if µ program (DSP4M1J.S24) is present in the hard disk. | E-2    |          |
| 0413  | DSP4 µ program load error           | When a µ program is loaded in the external memory of DSP4, an error occurs. | Check if the IMG07B board or MTH08A board is faulty,  
or if µ program (DSP4M1J.S24) is present in the hard disk. | E-2    |          |
<p>| 0414  | DSP4 checksum error                 | A checksum on the DSP4 µ program results in an error.                | The IMG07B board or MTH08A board is faulty.                                           | E-2    |          |
| 0415  | DSP4 self-diagnostics error         | Self-diagnostics on the DSP4 peripheral circuitry results in an error. | The IMG07B board or MTH08A board is faulty.                                           | E-2    |          |
| 0420  | DSP4 memory write error             | A write to the DSP4 memory results in an error.                       | The IMG07B board or MTH08A board is faulty.                                           | E-2    |          |</p>
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
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<th>Probable Cause/Remedy</th>
<th>Detail</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>0421</td>
<td>DSP4 memory read error</td>
<td>A read from the DSP4 memory results in an error.</td>
<td>The IMG07B board or MTH08A board is faulty.</td>
<td>E-2</td>
<td></td>
</tr>
<tr>
<td>0422</td>
<td>DSP4 image processing error 1</td>
<td>Execution of image processing during read results in an error. (First interrupt error)</td>
<td>The IMG07B board or MTH08A board is faulty.</td>
<td>E-2</td>
<td></td>
</tr>
<tr>
<td>0423</td>
<td>DSP4 image processing error 2</td>
<td>Execution of image processing during read results in an error. (Second interrupt error)</td>
<td>The IMG07B board or MTH08A board is faulty.</td>
<td>E-2</td>
<td></td>
</tr>
<tr>
<td>0450</td>
<td>DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>The CPU90E board or MTH08A board is faulty.</td>
<td>E-5</td>
<td></td>
</tr>
<tr>
<td>0451</td>
<td>Read DMA transfer error</td>
<td>DMA transfer from the scanner to the shared memory results in an error during read.</td>
<td>The CPU90E board or MTH08A board is faulty.</td>
<td>E-5</td>
<td></td>
</tr>
<tr>
<td>0452</td>
<td>Rotation DMA transfer error</td>
<td>DMA transfer for image data rotation results in an error during 2430HR read.</td>
<td>The CPU90E board or MTH08A board is faulty.</td>
<td>E-5</td>
<td></td>
</tr>
<tr>
<td>0460</td>
<td>Image data write error</td>
<td>Write of image data to the hard disk fails read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0461</td>
<td>Monitor image write error</td>
<td>Write of the monitor image to the hard disk fails read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0462</td>
<td>EDR data write error</td>
<td>Write of the standard EDR backup data to the hard disk fails during read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0463</td>
<td>ID information write error</td>
<td>Write of the image ID information to the hard disk fails during read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0464</td>
<td>File close error 1</td>
<td>An attempt to close the file that is opened in the write mode fails.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0465</td>
<td>File close error 2</td>
<td>After image information is set again, an attempt to close the file that is opened in the read mode fails.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0466</td>
<td>ID information read error</td>
<td>During reoutput, an attempt to read the ID information fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0467</td>
<td>ID information update error</td>
<td>During reoutput, an attempt to update the ID information fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0468</td>
<td>Monitor image read error</td>
<td>During reoutput, an attempt to read the monitor image fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
<td>Refer to</td>
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</tr>
<tr>
<td>0469</td>
<td>Image file open error</td>
<td>During reading, an attempt to open the image file for write retry to the hard disk fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-4</td>
<td></td>
</tr>
<tr>
<td>046A</td>
<td>Image lock/unlock error</td>
<td>During reoutput, an attempt to lock or unlock the image fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0532</td>
<td>Polygon error 1</td>
<td>With polygon status check after initial laser power-ON, an error is detected.</td>
<td>Check and replace the polygonal mirror assembly.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>0534</td>
<td>Laser power error 1</td>
<td>With initial laser power status check, an error is detected.</td>
<td>Check and replace the light source section.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>0536</td>
<td>Analog power supply error 1</td>
<td>Analog power supply error is detected in the PMT08A board.</td>
<td>Check and replace the PMT08A board.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>0537</td>
<td>Start-point detection error 1</td>
<td>With initial start-point detection status check, an error is detected.</td>
<td>Check and replace the SYN08A board.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>0538</td>
<td>Leading-edge detection error 1</td>
<td>With initial leading-edge detection status check, an error is detected.</td>
<td>Check and replace the IP leading-edge sensor (SED08A).</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>0549</td>
<td>End-of-screen error</td>
<td>No end-of-screen interrupt occurs during read.</td>
<td>Check and replace the SCN08A board, polygonal mirror assembly, light source section, and SYN08A board.</td>
<td>E-3</td>
<td>MD - 85</td>
</tr>
<tr>
<td>0701</td>
<td>Standard LAN initial setup error</td>
<td>Initialization of the standard LAN fails.</td>
<td>• The software is faulty.</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>0702</td>
<td>LAN board option disabled</td>
<td>The CPU90F (LAN board) cannot be used.</td>
<td>• The LAN board is not inserted.</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>0703</td>
<td>System file setup value error</td>
<td>An error (irset.cfg) occurs during system file setup value check.</td>
<td>The setup value for ILA in the system file is out of range.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>0704</td>
<td>No valid IDT</td>
<td>A valid IDT is not set (equip/hosts).</td>
<td>• A host name for the IDT is not described in equip.</td>
<td>F</td>
<td></td>
</tr>
</tbody>
</table>

Detail: Denotes the detail information format.
<table>
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<tbody>
<tr>
<td>0800</td>
<td>File open error</td>
<td>The HD is faulty or the file is not registered.</td>
<td>Replace the HD or register the file.</td>
<td>I-1</td>
<td></td>
</tr>
<tr>
<td>0801</td>
<td>File format error</td>
<td>The file structure is improper.</td>
<td>Register the file again.</td>
<td>I-1</td>
<td></td>
</tr>
<tr>
<td>0802</td>
<td>File setup value error</td>
<td>The data value of the file is improper.</td>
<td>Register the file again.</td>
<td>I-1</td>
<td></td>
</tr>
<tr>
<td>0803</td>
<td>ID information read error</td>
<td>Faulty HD</td>
<td>Replace the HD or reboot.</td>
<td>I-2</td>
<td></td>
</tr>
<tr>
<td>0804</td>
<td>Image file close error</td>
<td>Faulty HD</td>
<td>Replace the HD or reboot.</td>
<td>I-2</td>
<td></td>
</tr>
<tr>
<td>0805</td>
<td>Image file read error</td>
<td>Faulty HD</td>
<td>Replace the HD or reboot.</td>
<td>I-2</td>
<td></td>
</tr>
<tr>
<td>0806</td>
<td>Format information search error</td>
<td>• Format information file in the hard disk (the data in LPFMT0J.DAT/LPFMT1J.DAT is improper).</td>
<td>• Reinstall the software. • Clear the battery backup memory.</td>
<td>I-3</td>
<td></td>
</tr>
<tr>
<td>0807</td>
<td>Format number acquisition error</td>
<td>The combination of read size and format is improper.</td>
<td>Check the read size, etc.</td>
<td>I-4</td>
<td></td>
</tr>
<tr>
<td>0809</td>
<td>DMA device initialization error</td>
<td>The DMA device cannot be opened.</td>
<td>Check the IMG08A board.</td>
<td>I-5</td>
<td></td>
</tr>
<tr>
<td>080A</td>
<td>DMA transfer error</td>
<td>DMA image transfer cannot be done.</td>
<td>Check the IMG08A board.</td>
<td>I-5</td>
<td></td>
</tr>
<tr>
<td>080B</td>
<td>Failure to reserve memory area</td>
<td>Insufficient memory area</td>
<td>Reboot.</td>
<td>I-6</td>
<td></td>
</tr>
<tr>
<td>0810</td>
<td>DSP10 device initialization error</td>
<td>The DSP device cannot be opened.</td>
<td>Check the IMG08A board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>0811</td>
<td>DSP10 μ load error</td>
<td>The DSP μ is not yet registered in the HD.</td>
<td>Register the DSP μ in the HD again.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>0812</td>
<td>DSP10 memory write error</td>
<td>Write to the DSP device cannot be done.</td>
<td>Check the IMG08A board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
<td>Refer to</td>
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<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
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<tr>
<td>0813</td>
<td>DSP11 memory read error</td>
<td>Read from the DSP device cannot be done.</td>
<td>Check the IMG08A board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>0814</td>
<td>DSP10 checksum error</td>
<td>DSP µ checksum error</td>
<td>• Check the IMG08A board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Register the DSP µ in the HD again.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>0815</td>
<td>DSP10 self-diagnostics error</td>
<td>DSP µ self-diagnostics error</td>
<td>• Check the IMG08A board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Register the DSP µ in the HD again.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>0816</td>
<td>DSP10 image processing error</td>
<td>DSP µ image parameter error</td>
<td>Check the image parameter.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>0817</td>
<td>DSP11 device initialization error</td>
<td>The DSP device cannot be opened.</td>
<td>Check the IMG08A board.</td>
<td></td>
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</tr>
<tr>
<td>0818</td>
<td>DSP11 µ load error</td>
<td>The DSP µ is not yet registered in the HD.</td>
<td>Register the DSP µ in the HD again.</td>
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<td>0819</td>
<td>DSP11 memory write error</td>
<td>Write to the DSP device cannot be done.</td>
<td>Check the IMG08A board.</td>
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<tr>
<td>081A</td>
<td>DSP11 memory read error</td>
<td>Read from the DSP device cannot be done.</td>
<td>Check the IMG08A board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>081B</td>
<td>DSP11 checksum error</td>
<td>DSP µ checksum error</td>
<td>• Check the IMG08A board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Register the DSP µ in the HD again.</td>
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<tr>
<td>081C</td>
<td>DSP11 self-diagnostics error</td>
<td>DSP µ self-diagnostics error</td>
<td>• Check the IMG08A board.</td>
<td></td>
<td>I-7</td>
</tr>
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<td></td>
<td>• Register the DSP µ in the HD again.</td>
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<tr>
<td>081D</td>
<td>DSP11 image processing error</td>
<td>DSP µ image parameter error</td>
<td>Check the image parameter.</td>
<td></td>
<td>I-7</td>
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<tr>
<td>081E</td>
<td>DSP20 device initialization error</td>
<td>The DSP device cannot be opened.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
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<tr>
<td>081F</td>
<td>DSP20 µ load error</td>
<td>The DSP µ is not yet registered in the HD</td>
<td>Register the DSP µ in the HD again.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>0820</td>
<td>DSP20 memory write error</td>
<td>Write to the DSP device cannot be done.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
<td>Refer to</td>
</tr>
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<tr>
<td>0821</td>
<td>DSP20 memory read error</td>
<td>Read from the DSP device cannot be done.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>0822</td>
<td>DSP20 checksum error</td>
<td>DSP µ checksum error</td>
<td>• Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>0823</td>
<td>DSP20 self-diagnostics error</td>
<td>DSP µ self-diagnostics error</td>
<td>• Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
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<tr>
<td>0824</td>
<td>DSP20 image processing error</td>
<td>DSP µ image parameter error</td>
<td>Check the image parameter.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>0825</td>
<td>DSP21 device initialization error</td>
<td>The DSP device cannot be opened.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>0826</td>
<td>DSP21 µ load error</td>
<td>The DSP µ is not yet registered in the HD.</td>
<td>Register the DSP µ in the HD again.</td>
<td></td>
<td>I-7</td>
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<tr>
<td>0827</td>
<td>DSP21 memory write error</td>
<td>Write to the DSP device cannot be done.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
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<tr>
<td>0828</td>
<td>DSP21 memory read error</td>
<td>Read from the DSP device cannot be done.</td>
<td>Check the IMG08B board.</td>
<td></td>
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<tr>
<td>0829</td>
<td>DSP21 checksum error</td>
<td>DSP µ checksum error</td>
<td>• Check the IMG08B board.</td>
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<tr>
<td>082A</td>
<td>DSP21 self-diagnostics error</td>
<td>DSP µ self-diagnostics error</td>
<td>• Check the IMG08B board.</td>
<td></td>
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<tr>
<td>082B</td>
<td>DSP21 image processing error</td>
<td>DSP µ image parameter error</td>
<td>Check the image parameter.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>082C</td>
<td>DSP22 device initialization error</td>
<td>The DSP device cannot be opened.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>082D</td>
<td>DSP22 µ load error</td>
<td>The DSP µ is not yet registered in the HD.</td>
<td>Register the DSP µ in the HD again.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>082E</td>
<td>DSP22 memory write error</td>
<td>Write to the DSP device cannot be done.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>082F</td>
<td>DSP22 memory read error</td>
<td>Read from the DSP device cannot be done.</td>
<td>Check the IMG08B board.</td>
<td></td>
<td>I-7</td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
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</tr>
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<td>--------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>0830</td>
<td>DSP22 checksum error</td>
<td>DSP μ checksum error</td>
<td>• Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Register the DSP μ in the HD again.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0831</td>
<td>DSP22 self-diagnostics error</td>
<td>DSP μ self-diagnostics error</td>
<td>• Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Register the DSP μ in the HD again.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0832</td>
<td>DSP22 image processing error</td>
<td>DSP μ image parameter error</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>0833</td>
<td>DSP30 device initialization error</td>
<td>The DSP device cannot be opened.</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>0834</td>
<td>DSP30 μ load error</td>
<td>The DSP μ is not yet registered in the HD.</td>
<td>Register the DSP μ in the HD again.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>0835</td>
<td>DSP30 memory write error</td>
<td>Write to the DSP device cannot be done.</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>0836</td>
<td>DSP30 memory read error</td>
<td>Read from the DSP device cannot be done.</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>0837</td>
<td>DSP30 checksum error</td>
<td>DSP μ checksum error</td>
<td>• Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Register the DSP μ in the HD again.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0838</td>
<td>DSP30 self-diagnostics error</td>
<td>DSP μ self-diagnostics error</td>
<td>• Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Register the DSP μ in the HD again.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0839</td>
<td>DSP30 image processing error</td>
<td>DSP μ image parameter error</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>083A</td>
<td>DSP31 device initialization error</td>
<td>The DSP device cannot be opened.</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>083B</td>
<td>DSP31 μ load error</td>
<td>The DSP μ is not yet registered in the HD.</td>
<td>Register the DSP μ in the HD again.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>083C</td>
<td>DSP31 memory write error</td>
<td>Write to the DSP device cannot be done.</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>083D</td>
<td>DSP31 memory read error</td>
<td>Read from the DSP device cannot be done.</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>083E</td>
<td>DSP31 checksum error</td>
<td>DSP μ checksum error</td>
<td>• Check the IMG08C board.</td>
<td>I-7</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Register the DSP μ in the HD again.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 083F DSP31 self-diagnostics error
- **Significance/Occurrence Condition**: DSP μ self-diagnostics error
- **Probable Cause/Remedy**:
  - Check the IMG08C board.
  - Register the DSP μ in the HD again.

### 0840 DSP31 image processing error
- **Significance/Occurrence Condition**: DSP μ image parameter error
- **Probable Cause/Remedy**: Check the image parameter.

### 0841 DSP32 device initialization error
- **Significance/Occurrence Condition**: The DSP device cannot be opened.
- **Probable Cause/Remedy**: Check the IMG08C board.

### 0842 DSP32 μ load error
- **Significance/Occurrence Condition**: The DSP μ is not yet registered in the HD.
- **Probable Cause/Remedy**: Register the DSP μ in the HD again.

### 0843 DSP32 memory write error
- **Significance/Occurrence Condition**: Write to the DSP device cannot be done.
- **Probable Cause/Remedy**: Check the IMG08C board.

### 0844 DSP32 memory read error
- **Significance/Occurrence Condition**: Read from the DSP device cannot be done.
- **Probable Cause/Remedy**: Check the IMG08C board.

### 0845 DSP32 checksum error
- **Significance/Occurrence Condition**: DSP μ checksum error
- **Probable Cause/Remedy**:
  - Check the IMG08C board.
  - Register the DSP μ in the HD again.

### 0846 DSP32 self-diagnostics error
- **Significance/Occurrence Condition**: DSP μ self-diagnostics error
- **Probable Cause/Remedy**:
  - Check the IMG08C board.
  - Register the DSP μ in the HD again.

### 0847 DSP32 image processing error
- **Significance/Occurrence Condition**: DSP μ image parameter error
- **Probable Cause/Remedy**: Check the image parameter.

### 0930 ID information read error
- **Significance/Occurrence Condition**: ID information read fails.
- **Probable Cause/Remedy**:
  - The file in the HD is corrupted.
  - HD failure

### 0931 Image data read error
- **Significance/Occurrence Condition**: Image data read fails.
- **Probable Cause/Remedy**:
  - The file in the HD is corrupted.
  - HD failure

### 0932 Image data close error
- **Significance/Occurrence Condition**: An attempt to close the image data file fails.
- **Probable Cause/Remedy**:
  - The file in the HD is corrupted.
  - HD failure

### 0933 DSP0 memory write error
- **Significance/Occurrence Condition**: Write to the memory of the DSP fails.
- **Probable Cause/Remedy**: DMC08A board failure.

### 0934 DSP0 image processing error 1
- **Significance/Occurrence Condition**: DSP application boot fails.
- **Probable Cause/Remedy**: DMC08A board failure.

### 0935 DSP0 image processing error 2
- **Significance/Occurrence Condition**: An error occurs during execution of DSP application.
- **Probable Cause/Remedy**: DMC08A board failure.

### 0936 DSP0 image processing error 3
- **Significance/Occurrence Condition**: An attempt to cancel the DSP command fails.
- **Probable Cause/Remedy**: DMC08A board failure.
<table>
<thead>
<tr>
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<th>Probable Cause/Remedy</th>
<th>Detail</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>0937</td>
<td>DMA transfer error</td>
<td>An hardware failure occurs during DMA transfer.</td>
<td>DMC08A board failure.</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>0950</td>
<td>ID information write error</td>
<td>ID information write fails.</td>
<td>• The file in the HD is corrupted.</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>0951</td>
<td>Image data write error</td>
<td>Image data write fails.</td>
<td>• The file in the HD is corrupted.</td>
<td>D</td>
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</tr>
<tr>
<td>0952</td>
<td>Image data close error</td>
<td>An attempt to close the image data fails.</td>
<td>• The file in the HD is corrupted.</td>
<td>D</td>
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</tr>
<tr>
<td>0953</td>
<td>DSP0 memory write error</td>
<td>Write to the memory of the DSP fails.</td>
<td>The DMC08A board is faulty.</td>
<td>B</td>
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<tr>
<td>0954</td>
<td>DSP0 image processing error 1</td>
<td>DSP application boot fails.</td>
<td>The DMC08A board is faulty.</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>0955</td>
<td>DSP0 image processing error 2</td>
<td>An error occurs during execution of a DSP application.</td>
<td>The DMC08A board is faulty.</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>0956</td>
<td>DSP0 image processing error 3</td>
<td>An attempt to cancel the DSP command fails.</td>
<td>The DMC08A board is faulty.</td>
<td>B</td>
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</tr>
<tr>
<td>0957</td>
<td>DMA transfer error</td>
<td>A hardware failure occurs during DMA transfer.</td>
<td>The DMC08A board is faulty.</td>
<td>C</td>
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<tr>
<td>0980</td>
<td>DSP0 device initialization error</td>
<td>DSP device initialization fails.</td>
<td>DMC08A board failure.</td>
<td>C</td>
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<tr>
<td>0981</td>
<td>DSP0 program boot error</td>
<td>An attempt to load the DspLoAD program fails.</td>
<td>DMC08A board failure.</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>0982</td>
<td>Output DMA device open error</td>
<td>An attempt to open the output DMA device descriptor fails.</td>
<td>DMC08A board failure.</td>
<td>B</td>
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</tr>
<tr>
<td>0983</td>
<td>Input DMA device open error</td>
<td>An attempt to open the input DMA device descriptor fails.</td>
<td>DMC08A board failure.</td>
<td>B</td>
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<tr>
<td>0984</td>
<td>DSP device open error</td>
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</table>

Detail: Denotes the detail information format.
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Significance/Occurrence Condition</th>
<th>Probable Cause/Remedy</th>
<th>Detail</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>0985</td>
<td>File read error</td>
<td>An attempt to read the DspLoAD μ program file fails.</td>
<td>• No file</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0986</td>
<td>File read error</td>
<td>An attempt to read the DspWritE μ program file fails.</td>
<td>• No file</td>
<td></td>
<td>A-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0987</td>
<td>DSP0 μ program load error</td>
<td>An attempt to load the DspWritE μ program fails.</td>
<td>• There is no file in the HD.</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The file in the HDD is corrupted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The HDD itself is faulty, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0A00</td>
<td>File open error</td>
<td>An attempt is made to open a file, but it cannot be opened.</td>
<td>• The file in the HD format is improper.</td>
<td></td>
<td>K-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The file in the HDD is corrupted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The HDD itself is faulty, etc.</td>
<td></td>
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<tr>
<td>0A01</td>
<td>File format error</td>
<td>The file format is improper.</td>
<td>• The data described in the file in the HDD has an out-of-range value.</td>
<td></td>
<td>K-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The file in the HDD is corrupted.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• The HDD itself is faulty, etc.</td>
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<tr>
<td>0A02</td>
<td>File setup value error</td>
<td>The data of the file is improper.</td>
<td>• The file described in the file in the HDD has an out-of-range value.</td>
<td></td>
<td>K-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The file in the HDD is corrupted.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• The HDD itself is faulty, etc.</td>
<td></td>
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</tr>
<tr>
<td>0A03</td>
<td>File save error</td>
<td>Cannot be saved to a file.</td>
<td>The HDD itself is faulty.</td>
<td></td>
<td>K-1</td>
</tr>
<tr>
<td>0A04</td>
<td>Online connection option setup error</td>
<td>Both the type A online connection option and type B online connection option are valid (option setups are inconsistent).</td>
<td>The type A online connection option soft-key file and type B online connection option soft-key file are both present in the hard disk.</td>
<td></td>
<td>K-2</td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
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</tr>
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<tr>
<td>0B00</td>
<td>Image data open error</td>
<td>An attempt to reserve an image area of the HD fails.</td>
<td>The HD is full.</td>
<td>L-1</td>
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<tr>
<td>0B01</td>
<td>ID information read error</td>
<td>An attempt to read the ID information from the HD to the memory fails.</td>
<td>HD failure.</td>
<td>L-1</td>
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<tr>
<td>0B02</td>
<td>ID information write error</td>
<td>An attempt to write the ID information on the memory to the HD fails.</td>
<td>HD failure.</td>
<td>L-1</td>
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<tr>
<td>0B03</td>
<td>Image data read error</td>
<td>An attempt to read the image data from the HD to the memory fails.</td>
<td>HD failure.</td>
<td>L-1</td>
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<tr>
<td>0B04</td>
<td>Image data write error</td>
<td>An attempt to write the ID information on the memory to the HD fails.</td>
<td>HD failure.</td>
<td>L-1</td>
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<tr>
<td>0B05</td>
<td>Image data read close error</td>
<td>An attempt to close after reading the image data from the HD fails.</td>
<td>HD failure.</td>
<td>L-1</td>
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<tr>
<td>0B06</td>
<td>Image data write close error</td>
<td>An attempt to close after writing the image data on the memory to the HD fails.</td>
<td>HD failure.</td>
<td>L-1</td>
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<tr>
<td>0B10</td>
<td>DSPH device open error</td>
<td>An attempt to open the DSP device fails.</td>
<td>The HCP board is faulty.</td>
<td>L-2</td>
<td></td>
</tr>
<tr>
<td>0B11</td>
<td>DSPH program file open error</td>
<td>An attempt to open the DSPH program file fails.</td>
<td>There is no dsphm1j.s24 file.</td>
<td>L-3</td>
<td></td>
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<tr>
<td>0B12</td>
<td>DSPH program read error</td>
<td>An attempt to read the DSPH program fails.</td>
<td>HD failure.</td>
<td>L-3</td>
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<tr>
<td>0B13</td>
<td>DSPH program boot error</td>
<td>An attempt to boot the DSPH program fails.</td>
<td>The HCP board is faulty.</td>
<td>L-2</td>
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<tr>
<td>0B14</td>
<td>DSPH memory write error</td>
<td>DSPH memory write fails.</td>
<td>The HCP board is faulty.</td>
<td>L-2</td>
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<tr>
<td>0B15</td>
<td>DSPH memory read error</td>
<td>DSPH memory read fails.</td>
<td>The HCP board is faulty.</td>
<td>L-2</td>
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<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
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<td>0B16</td>
<td>DSPH checksum error</td>
<td>DSPH program checksum error occurs.</td>
<td>The HCP board is faulty, or DSPH program error.</td>
<td>L-2</td>
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<td>0B17</td>
<td>DSPH self-diagnostics error</td>
<td>An error occurs during DSPH program self-diagnostic.</td>
<td>The HCP board is faulty, or DSPH program error.</td>
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<td>0B18</td>
<td>DSPH image processing error</td>
<td>Compression/decompression fails.</td>
<td>The HCP board is faulty, or DSPH program error.</td>
<td>L-2</td>
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<td>0B20</td>
<td>DMA initialization error/DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>The HCP board is faulty.</td>
<td>L-4</td>
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<tr>
<td>0B20*</td>
<td>DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>The HCP board is faulty.</td>
<td>L-4</td>
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<tr>
<td>0B21</td>
<td>DMA transfer error</td>
<td>Image data transfer from the memory to the HCP board, or from the HCP board to the memory. fails.</td>
<td>The HCP board is faulty.</td>
<td>L-4</td>
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<tr>
<td>0C00</td>
<td>DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>The CPU90E board is faulty.</td>
<td>M-1</td>
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<tr>
<td>0C00*</td>
<td>DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>The CPU90E board is faulty.</td>
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<tr>
<td>0C01</td>
<td>DMA transfer error</td>
<td>Data transfer from the memory to the CPU90F board fails.</td>
<td>The CPU90E board is faulty.</td>
<td>M-1</td>
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<tr>
<td>0C10</td>
<td>ID information read error</td>
<td>An attempt to read the ID information from the HD to the memory fails.</td>
<td>HD failure.</td>
<td>M-2</td>
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<tr>
<td>0C11</td>
<td>Image data read error</td>
<td>An attempt to read the image data from the HD to the memory fails.</td>
<td>HD failure.</td>
<td>M-2</td>
<td></td>
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<tr>
<td>0C12</td>
<td>Image data read close error</td>
<td>An attempt to close after reading the image data from the HD to the memory fails.</td>
<td>HD failure.</td>
<td>M-2</td>
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</table>

*: A06 or later

Detail: Denotes the detail information format.
<table>
<thead>
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<tr>
<td>0C80</td>
<td>DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>The CPU90E board is faulty.</td>
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<tr>
<td>0C81</td>
<td>DMA transfer error</td>
<td>An error occurs during data transfer from the CPU90F board to the memory.</td>
<td>The CPU90F board is faulty.</td>
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<td>0C90</td>
<td>IDA information write error</td>
<td>An attempt to write the FINP data received to the HD fails.</td>
<td>HD failure.</td>
<td>M-2</td>
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<tr>
<td>0C91</td>
<td>Image data read close error</td>
<td>An attempt to delete the image data during image data receive error fails.</td>
<td>HD failure.</td>
<td>M-2</td>
<td></td>
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<tr>
<td>0C92</td>
<td>Image data open error</td>
<td>There is no area to write image data on the HD.</td>
<td>The HD is full.</td>
<td>M-2</td>
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<tr>
<td>0C93</td>
<td>Image data write error</td>
<td>An attempt to write the ID information on the memory to the HD fails.</td>
<td>HD failure.</td>
<td>M-2</td>
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<tr>
<td>0C94</td>
<td>Image data write close error</td>
<td>An attempt to close the image data received fails.</td>
<td>HD failure.</td>
<td>M-2</td>
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<tr>
<td>0C95</td>
<td>ID information read error</td>
<td>During image decompression, an attempt to read the ID information fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>M-2</td>
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<tr>
<td>0C96</td>
<td>ID information update error</td>
<td>During image decompression, an attempt to update the ID information fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>M-2</td>
<td></td>
</tr>
<tr>
<td>0D10</td>
<td>Image data read error</td>
<td>An attempt to read the image data fails.</td>
<td>• No file</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
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<td></td>
</tr>
<tr>
<td>0D11</td>
<td>ID information read error</td>
<td>An attempt to read the image information fails.</td>
<td>• No file</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0D11*</td>
<td>ID information read error</td>
<td>An attempt to read the ID information fails.</td>
<td>• No file</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
<td></td>
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<tr>
<td>0D12</td>
<td>Image data close error</td>
<td>An attempt to close the image data fails.</td>
<td>HD failure.</td>
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<tr>
<td>0D13</td>
<td>Image data close error</td>
<td>An attempt to close the image data fails.</td>
<td>HD failure.</td>
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<tr>
<td>0D14</td>
<td>EDR Data read error</td>
<td>An attempt to read the EDR data fails.</td>
<td>• No file</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
<td></td>
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</tr>
<tr>
<td>0D15</td>
<td>EDR data close error</td>
<td>An attempt to close the EDR data fails.</td>
<td>HD failure.</td>
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<td></td>
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</tbody>
</table>

*: A06 or later

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<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>0D20</td>
<td>Image data conversion error</td>
<td>An attempt to compress the image fails</td>
<td>Hardware error.</td>
<td></td>
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<tr>
<td>0D30</td>
<td>DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>Insufficient memory</td>
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<tr>
<td>0D31</td>
<td>DMA transfer error</td>
<td>An hardware error occurs during DMA transfer.</td>
<td>DMA hard error</td>
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<tr>
<td>0D42</td>
<td>Image data transmission error</td>
<td>A fatal error occurs during image data transmission.</td>
<td>• An internal process error occurs with dicom_send.</td>
<td></td>
<td>G-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• A malloc error occurs with image information conversion.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• A send error occurs with sendPixelData.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• A timeout error occurs with sendPixelData.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• A select error occurs with sendPixelData.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Internal process error</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Task generation error</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Task deleted</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Message queue generation error</td>
<td></td>
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</tr>
<tr>
<td>0D61</td>
<td>File read error</td>
<td>An attempt to read the file fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
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<tr>
<td>0D62</td>
<td>File format error</td>
<td>The format of the file read is incorrect.</td>
<td>Faulty HDD, MTH board, etc.</td>
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<tr>
<td>0D70</td>
<td>File format error</td>
<td>The configuration setting is out of spec.</td>
<td>The configuration setting is improper.</td>
<td></td>
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<tr>
<td>104A</td>
<td>Image file access timeout (for analysis)</td>
<td>A timeout occurs during image file access.</td>
<td>Faulty HDD, MTH board, etc.</td>
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<td>e-6</td>
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<tr>
<td>104B</td>
<td>Image file access timeout (for SCSI analysis)</td>
<td>A timeout occurs during image file access. (The trace for the SCSI task is added to the detail information.)</td>
<td>Faulty HDD, MTH board, etc.</td>
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<td>e-6</td>
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<tr>
<td>104C</td>
<td>Image file access timeout (for IMM analysis)</td>
<td>A timeout occurs during image file access. (The trace for the IMM I/O task is added to the detail information.)</td>
<td>Faulty HDD, MTH board, etc.</td>
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<td>1103</td>
<td>Backup memory corruption</td>
<td>An error occurs during backup memory check.</td>
<td>• The backup memory is not yet initialized during bootup immediately after installation.</td>
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<tr>
<td>1113</td>
<td>HD image area uninitialized</td>
<td>An error occurs with the format data in the HD image area.</td>
<td>• The image data area in the HD is not yet formatted during bootup immediately after installation.</td>
<td></td>
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</tr>
<tr>
<td>Code</td>
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<td>--------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>1301</td>
<td>Image file open error</td>
<td>An attempt is made to reserve an HD area for image data, but fails.</td>
<td>The HD area is full.</td>
<td>D-4</td>
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<tr>
<td>1302</td>
<td>Image file close error</td>
<td>An attempt is made to free an HD area for image data, but fails.</td>
<td>There is no area to be freed (HD failure).</td>
<td>D-4</td>
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<tr>
<td>13A1</td>
<td>Cassette setting error</td>
<td></td>
<td></td>
<td>D-5</td>
<td>MD - 59, 137, MT - 136</td>
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<tr>
<td>13A2</td>
<td>Cassette hold release error</td>
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<td>D-5</td>
<td>MD - 61, MT - 138</td>
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<tr>
<td>13A3</td>
<td>Cassette shelf error</td>
<td></td>
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<td>D-5</td>
<td>MD - 138, 139, 152, MT - 140</td>
</tr>
<tr>
<td>13A4</td>
<td>Cassette setting error</td>
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<td>D-5</td>
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</tr>
<tr>
<td>13A5</td>
<td>Cassette setting error</td>
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<td>D-5</td>
<td></td>
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<tr>
<td>13A6</td>
<td>Cassette undetected</td>
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<td>D-5</td>
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<tr>
<td>13A7</td>
<td>Cassette undetected</td>
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<td>D-5</td>
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<tr>
<td>13A8</td>
<td>Out-of-spec IP size</td>
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<td>MD - 73, 81</td>
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<td>13A9</td>
<td>Barcode read error</td>
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<td>MD - 75, MT - 142</td>
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<tr>
<td>13AA</td>
<td>Erasure lamp failure</td>
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<td>MD - 102, MT - 144</td>
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<td>13AB</td>
<td>Overexposed IP not erased</td>
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<td>MD - 102, MT - 146</td>
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<td>13AC</td>
<td>ID information not registered</td>
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<td>D-5</td>
<td>MD - 80, MT - 140</td>
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<tr>
<td>13AD</td>
<td>IP with improper generation/type detected</td>
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<td>MD - 75, MT - 150</td>
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<td>13AE</td>
<td>No relevant MPM code</td>
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<td>D-5</td>
<td>MD - 80, MT - 152</td>
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<td>13AF</td>
<td>IDT line error</td>
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<td>D-5</td>
<td>MD - 80, MT - 154</td>
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<tr>
<td>Code</td>
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<td>13B8</td>
<td>IP position information error</td>
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<td>MD - 136, 142, MT - 92</td>
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<td>13E1</td>
<td>Feed IP suction error</td>
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<td>MD - 68, 110, MT - 156</td>
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<td>MD - 69, 111, MT - 158</td>
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<tr>
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<td>13E4</td>
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<td></td>
<td>D-5</td>
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<td>The ID information can be acquired before read, but its menu code is not yet registered in the machine.</td>
<td>E-8</td>
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<td>Serial-connected IDT: • While waiting for a response at the time of ID acquisition request, a timeout occurs. • A line failure occurs.</td>
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<td>1712</td>
<td>ID unregistration received</td>
<td>The ID information is not yet registered.</td>
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<td>1721</td>
<td>ID acquisition request response wait timeout/line failure</td>
<td>Serial-connected IDT: • While waiting for a response at the time of ID acquisition request, a timeout occurs. • A line failure occurs.</td>
<td>F</td>
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<td>1722</td>
<td>ID unregistration received</td>
<td>The ID information is not yet registered.</td>
<td>J</td>
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<td>The DMS refuses to output the image due to ODF full.</td>
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<td>F</td>
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<tr>
<td>2000</td>
<td>File open error</td>
<td>An error occurs when the log file is opened. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
<td>A</td>
<td>e-1</td>
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<tr>
<td>2001</td>
<td>File write error</td>
<td>An error occurs when the log file is written. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
<td>A</td>
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<td>2002</td>
<td>File close error</td>
<td>An error occurs when the log file is closed. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
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<td>File write error</td>
<td>An error occurs when the log file is written. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
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<td>An error occurs when the log file is closed. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
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<td>2020</td>
<td>File area reservation error</td>
<td>An attempt to reserve an area to output the log file fails. • The main memory is insufficient.</td>
<td>A</td>
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<td>2021</td>
<td>File open error</td>
<td>An error occurs when the log file is opened. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
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<tr>
<td>2022</td>
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<td>An error occurs when the log file is written. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
<td>A</td>
<td>e-2</td>
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</tr>
<tr>
<td>2023</td>
<td>File close error</td>
<td>An error occurs when the log file is closed. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
<td>A</td>
<td>e-1</td>
<td></td>
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<tr>
<td>2040</td>
<td>Format information error</td>
<td>The format information for the HD image area is corrupted. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
<td>A</td>
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<tr>
<td>2041</td>
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<td>Improper image management information exists when the image management information of the HD is read. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
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<td>HD cannot be formatted</td>
<td>A HD access error occurs while the image area of the HD is reformatted. • The HDD itself is faulty.</td>
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<tr>
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<td>The amount of shared memory required for a requested option is not installed. • The shared memory is insufficient. • There are too many mounted boards.</td>
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**Detail:** Denotes the detail information format.
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| 2044 | HD access error             | A HD access error occurs when the format information of the HD image area is read or when the image management information is read. | • The file in the HDD is corrupted.  
• The HDD itself is faulty.          | e-4    |          |
| 2045 | File open error             | An error occurs when the log file is opened.                                                       | • The file in the HDD is corrupted.  
• The HDD itself is faulty.          | A      |          |
| 2046 | File write error            | An error occurs when the log file is written.                                                       | • The file in the HDD is corrupted.  
• The HDD itself is faulty.          | A      |          |
| 2047 | File close error            | An error occurs when the log file is closed.                                                        | • The file in the HDD is corrupted.  
• The HDD itself is faulty.          | A      |          |
| 2048 | File area reservation error | An attempt to reserve an area to output the log file fails.                                           | The main memory is insufficient.                                                        | A      |          |
| 2049 | Image file access timeout (for analysis) | Because a timeout occurs during image file access, the SCSI is reset and image file access is retried. | • The MTH board or shared memory is faulty.  
• The shared memory is insufficient relative to the option implemented. | e-3    |          |
<p>| 204A | Image file access error     | An error is detected during image file access, so that the SCSI is reset and an image file access retry is performed. | Faulty HDD, MTH board, etc.                                                             | e-5    |          |
| 204B | Image file access timeout   | A timeout occurs during image file access.                                                           | Faulty HDD, MTH board, etc.                                                             | e-6    |          |
| 204C | Image file access retry over | The number of retries for image file access due to 204A exceeds the specified limit.               | Faulty HDD, MTH board, etc.                                                             | e-5    |          |</p>
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| 2060  | File open error           | An error occurs when the external file is opened.                       | • The file is absent in the HDD.  
• The file in the HDD is corrupted.  
• The HDD itself is faulty.                                                     |        | A        |
| 2061  | File format error         | The external file is written in an out-of-spec format.                  | Description error for the external file                                                                                                   |        | A        |
| 2062  | File setup value error    | An out-of-spec setup value for the external file is described.          | Description error for the external file                                                                                                   |        | A        |
| 2063  | File size error           | The size of the external file is greater than when it is opened.       | The content added to the ORG file can no longer be described in the CFG file.                                                             |        | A        |
| 2064  | File write error          | An error occurs when the external file is written.                     | • The file in the HDD is corrupted.  
• The HDD itself is faulty.                                                     |        | A        |
| 2065  | File close error          | An error occurs when the log output file is closed. The file is absent in the HDD, or corrupted. | • Replace the HDD.                                                                                                                             |        | A        |
| 2066  | Comment text update error | An error occurs when the comment text in the user definition file is updated to its original file, so that an attempt to update the comment text is abandoned. This error occurs due to insufficient memory, file error, too many configurations, etc. | There is no direct, practical harm.  
• Software bug  
• Replace the HD.                                                                 |        | A        |
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<td>• The file is absent in the HD. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
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<td>The file format is improper.</td>
<td>• The file format in the HDD is improper. • The file in the HDD is corrupted. • The HDD itself is faulty, etc.</td>
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<td>• The data described in the file in the HDD contains an out-of-spec value. • The file in the HDD is corrupted. • The HDD itself is faulty.</td>
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<td>2083</td>
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<td>An out-of-spec value is detected, and replaced with a default value.</td>
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<td>An out-of-spec value is detected, but cannot be replaced with a default value.</td>
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<td>An out-of-spec value is detected, and replaced with a default value.</td>
<td>External device (DMS with E-I/F connection)</td>
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• HD failure  
• Failure to reserve memory                                   | A-1    |          |
| 2151  | File read error    | An attempt to read a file fails (rmt_sw.cfg).                                                     | HD failure                                                | A-1    |          |
| 2152  | File close error   | An attempt to close a file fails (rmt_sw.cfg).                                                    | HD failure                                                | A-1    |          |
| 2153  | File format error  | An error (rmt_sw.cfg) occurs during file format check.                                            | The description format for the rmt_sw.cfg file is incorrect.  
• No user name description  
• No command description                              | A-1    |          |
| 2154  | File setup value error | An error (rmt_sw.cfg) occurs during file setup value check.                                  | The description content for the rmt_sw.cfg file is incorrect.  
• Command execution result error                   | A-1    |          |
<p>| 2160  | MTH board error    | An error is detected during bus check.                                                            | The MTH board is faulty.                                  | D-2    |          |
| 2161  | SCN board error    | An error is detected during bus check.                                                             | The SCN board is faulty.                                  | D-2    |          |
| 2162  | SNS board error    | An error is detected during bus check.                                                              | The SNS board is faulty.                                  | D-2    |          |
| 2163  | HCP board error    | An error is detected during bus check.                                                              | The HCP board is faulty.                                  | D-2    |          |
| 2164  | SCN board error    | An error is detected during bus check due to shading memory access.                               | The SCN board is faulty.                                  |        |          |</p>
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<td>An open error occurs for global data/multi-frame data/file table.</td>
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<td>21B1</td>
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<td>A write error occurs for global data/multi-frame data/file table.</td>
<td>HD failure</td>
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<td>The output destination host information is not defined in the host information file.</td>
<td>E-1</td>
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<td>The protocol is other than FINP or Base on DICOM.</td>
<td>Protocols other than FINP or Base on DICOM are defined in the host information file.</td>
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<td>21B5</td>
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<td>An attempt to open a file fails.</td>
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<td>• No file</td>
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<tr>
<td>21F0</td>
<td>File open error</td>
<td>An attempt to open a file fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>A</td>
<td></td>
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<tr>
<td>21F1</td>
<td>File read error</td>
<td>An attempt to read a file fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
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<td></td>
<td>D-5</td>
<td>MD - 78</td>
</tr>
<tr>
<td>23BB</td>
<td>Side-positioning HP detection preparation retry</td>
<td></td>
<td></td>
<td>D-5</td>
<td>MD - 77, 116</td>
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<tr>
<td>23BC</td>
<td>Side-positioning operation error</td>
<td></td>
<td></td>
<td>D-5</td>
<td>MD - 90</td>
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<tr>
<td>23BD</td>
<td>Side-positioning grip HP detection retry</td>
<td></td>
<td></td>
<td>D-5</td>
<td>MD - 89</td>
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<tr>
<td>23BE</td>
<td>Side-positioning grip HP detection preparation retry</td>
<td></td>
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<td>D-5</td>
<td>MD - 85</td>
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<tr>
<td>23BF</td>
<td>Side-positioning grip operation error</td>
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<td>D-5</td>
<td>MD - 86</td>
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<tr>
<td>23C5</td>
<td>FFM drive W.F. disorder</td>
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<td></td>
<td>D-5</td>
<td>MD - 84, 106, 146</td>
</tr>
<tr>
<td>23C6</td>
<td>Driving shaft grip operation error</td>
<td></td>
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<td>D-5</td>
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<tr>
<td>23C7</td>
<td>Driven grip release operation error</td>
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<td>D-5</td>
<td></td>
<td>MD - 84, 107, 147</td>
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<td>23C8</td>
<td>Driving shaft grip drive speed correction error</td>
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<td>D-5</td>
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<td>23C9</td>
<td>Driven shaft grip release drive speed correction error</td>
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<td>23D0*</td>
<td>Switchback retry</td>
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<td>23D2</td>
<td>Conveyance sensor error</td>
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<td>D-5</td>
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<td>MD - 91</td>
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<td>23D3*</td>
<td>Before-erasure conveyance retry</td>
<td></td>
<td>D-5</td>
<td></td>
<td></td>
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<tr>
<td>23D6*</td>
<td>After-erasure conveyance retry</td>
<td></td>
<td>D-5</td>
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<td>23DA</td>
<td>After-reading grip HP detection retry</td>
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<td>D-5</td>
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<td>MD - 88</td>
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<tr>
<td>23DB</td>
<td>After-reading grip HP detection preparation retry</td>
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<td>MD - 87</td>
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<td>23DC</td>
<td>After-reading grip operation error</td>
<td></td>
<td>D-5</td>
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<td>MD - 85</td>
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<tr>
<td>23DE</td>
<td>Elevation shelf movement error</td>
<td></td>
<td>D-5</td>
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<td>MD - 62, 66, 93</td>
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<tr>
<td>23E1</td>
<td>Feed IP suction failure retry</td>
<td></td>
<td>D-5</td>
<td></td>
<td>MD - 68, 110</td>
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<tr>
<td>23E2*</td>
<td>Feed IP drop retry</td>
<td></td>
<td>D-5</td>
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<td></td>
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<tr>
<td>23E3*</td>
<td>Feed IP grip retry</td>
<td></td>
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<tr>
<td>23E4</td>
<td>Load IP suction failure retry</td>
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<td>D-5</td>
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<td>MD - 100, 113</td>
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<tr>
<td>23E5*</td>
<td>Load IP drop retry</td>
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<td>D-5</td>
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*: A07 or later

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<tr>
<td>23E6</td>
<td>Suction cup HP detection preparation retry</td>
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<td>D-5</td>
<td>MD - 63</td>
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<tr>
<td>23E7</td>
<td>Suction cup HP detection retry</td>
<td></td>
<td></td>
<td>D-5</td>
<td>MD - 64</td>
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<tr>
<td>23E8</td>
<td>Suction cup HP return error</td>
<td></td>
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<td>D-5</td>
<td></td>
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<tr>
<td>23E9</td>
<td>IP leak error</td>
<td>A leak error occurs during IP loading.</td>
<td></td>
<td>D-5</td>
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<tr>
<td>23F1</td>
<td>Cassette detection logic failure 1 (immediately after cassette setting)</td>
<td></td>
<td></td>
<td>D-5</td>
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<tr>
<td>23F2</td>
<td>Cassette detection logic failure 2 (after up-down movement)</td>
<td></td>
<td></td>
<td>D-5</td>
<td></td>
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<tr>
<td>23F4</td>
<td>Feed conveyance motor error</td>
<td>MB3 is stopped during IP length measurement conveyance, but the pulse motor stop interrupt is not detected after a predetermined period of time has elapsed.</td>
<td></td>
<td>D-5</td>
<td>MD - 62, 65, 69, 93, 101, 111, 114, 123</td>
</tr>
<tr>
<td>23F5</td>
<td>Side-positioning conveyance motor error</td>
<td>MB3 is stopped during side-positioning conveyance, but the pulse motor stop interrupt is not detected after a predetermined period of time has elapsed.</td>
<td></td>
<td>D-5</td>
<td></td>
</tr>
<tr>
<td>23F6</td>
<td>Before-erasure conveyance motor error</td>
<td>MF1 is stopped during before-erasure conveyance, but the pulse motor stop interrupt is not detected after a predetermined period of time has elapsed.</td>
<td></td>
<td>D-5</td>
<td></td>
</tr>
<tr>
<td>23F8</td>
<td>After-erasure conveyance motor error</td>
<td>MB2 is stopped during IP length measurement conveyance, but the pulse motor stop interrupt is not detected after a predetermined period of time has elapsed.</td>
<td></td>
<td>D-5</td>
<td></td>
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<tr>
<td>23F9</td>
<td>NFB trip detection</td>
<td>1 is written to the port on the SNS board, but it is 0 during reading.</td>
<td></td>
<td>D-2</td>
<td>TR1H1247.EPS</td>
</tr>
<tr>
<td>Code</td>
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</tbody>
</table>
| 2400  | File open error                                | An attempt is made to open a file, but it cannot be opened.                                       | • The file is absent in the HDD.  
• The file in the HDD is corrupted.  
• The HDD itself is faulty, etc. | E-1    |          |
<p>| 2403  | File read error                                | A file cannot be read.                                                                             | HDD, MTH08A board                                              | E-1    |          |
| 2423  | DSP4 image processing error 2                  | Because an error occurs in image processing during reading, reading is retried.                    | Faulty IMG07B, MTH board, etc.                                 | E-2    |          |
| 2480  | EDR data transmission designation error        | When the EDR backup data is transferred during read, the target host name for the EDR data is not set. Or the host name format is improper. | Check the setup value in the configuration file.               | E-4    |          |
| 2481  | Connection establishment error                 | When the EDR backup data is transferred during read, a connection with the target for the EDR data cannot be established. | Check the network-connected units.                             | E-7    |          |
| 2482  | EDR data transmission error                    | When the EDR backup data is transferred during read, the connection is disconnected during EDR data transfer. | Check the network-connected units.                             | E-7    |          |
| 2490  | Menu replacement error                         | The ID information is acquired after the start of read, and, because its menu code is not yet registered in the machine, it is replaced with a default menu code. | Check if the menu code has been registered.                    | E-8    |          |</p>
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<tr>
<td>2530</td>
<td>Interrupt diagnostics error 1 (leading-edge detection)</td>
<td>During scanner self-diagnostics, a leading-edge detection interrupt does not occur.</td>
<td>Check and replace the IP leading-edge sensor (SED08A).</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2531</td>
<td>Interrupt diagnostics error 2 (end of screen)</td>
<td>During scanner self-diagnostics, an end-of-screen interrupt does not occur.</td>
<td>Check and replace the SCN08A board, polygonal mirror assembly, scanning optics unit, and SYN08A board.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2535</td>
<td>HV voltage error 1</td>
<td>With initial HV voltage status check, an error is detected.</td>
<td>Check and replace the PMT08A board.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2542</td>
<td>Polygon error 2</td>
<td>With polygon status check during read, an error is detected.</td>
<td>Check and replace the polygonal mirror assembly.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2543</td>
<td>Insufficient laser power error 2</td>
<td>With laser power status check during read, insufficient power is detected.</td>
<td>Check and replace the light source unit.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2544</td>
<td>Laser power error 2</td>
<td>With laser power status check during read, an error is detected.</td>
<td>Check and replace the light source unit.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2545</td>
<td>HV voltage error 2</td>
<td>With HV voltage status check during read, an error is detected.</td>
<td>Check and replace the PMT08A board.</td>
<td>E-3</td>
<td></td>
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<tr>
<td>2546</td>
<td>Analog power supply error 2</td>
<td>Analog power supply error is detected in the PMT08A board.</td>
<td>Check and replace the PMT08A board.</td>
<td>E-3</td>
<td></td>
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<tr>
<td>2547</td>
<td>Start-point detection error 2</td>
<td>With start-point detection status check during read, an error is detected.</td>
<td>Check and replace the SYN08A board.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2548</td>
<td>Leading-edge detection error 2</td>
<td>With leading-edge detection status check during read, an error is detected.</td>
<td>Check and replace the IP leading-edge sensor (SED08A).</td>
<td>E-3</td>
<td></td>
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<tr>
<td>2549</td>
<td>End-of-screen error</td>
<td>Because an end-of-screen interrupt does not occur during reading and thus a timeout occurs, reading is retried.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
<td></td>
</tr>
<tr>
<td>2550</td>
<td>Overexposure detection</td>
<td>An overexposed IP is detected during read.</td>
<td>It is because an IP was exposed under overexposure-equivalent conditions.</td>
<td>E-4</td>
<td></td>
</tr>
<tr>
<td>2570</td>
<td>Polygon error 3</td>
<td>With status check during system shutdown after reading error, an error is detected.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
<td></td>
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<tr>
<td>2571</td>
<td>Insufficient laser power error 4</td>
<td>With status check after reading condition setup, an error is detected.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
<td></td>
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<tr>
<td>2572</td>
<td>Laser error 4</td>
<td>With status check after reading condition setup, an error is detected.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
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<tr>
<td>2573</td>
<td>Insufficient laser power error 3</td>
<td>With status check during system shutdown after reading error, an error is detected.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
<td></td>
</tr>
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<tr>
<td>2574</td>
<td>Laser error 3</td>
<td>With status check during system shutdown after reading error, an error is detected.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
<td></td>
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<tr>
<td>2575</td>
<td>Start-point detection error 3</td>
<td>With status check during system shutdown after reading error, an error is detected.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
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<tr>
<td>2576</td>
<td>Leading-edge detection error 3</td>
<td>With status check during system shutdown after reading error, an error is detected.</td>
<td>Faulty SCN board, scanner hardware, etc.</td>
<td>E-3</td>
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<tr>
<td>2713</td>
<td>Unexpected command received</td>
<td>An illegal command is received with SMCU.</td>
<td>• A failure occurs on the IDT.</td>
<td>F</td>
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<tr>
<td>2714</td>
<td>Serial line test error</td>
<td>The serial line test result is improper.</td>
<td>The SMCU driver is faulty.</td>
<td>F</td>
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</tr>
<tr>
<td>2716</td>
<td>File write error</td>
<td>An error occurs while opening, writing, or closing the SMCU log file.</td>
<td>HD failure.</td>
<td>A-1</td>
<td></td>
</tr>
<tr>
<td>271C</td>
<td>SMCU driver hard error</td>
<td>A hard error occurs with the SMCU driver.</td>
<td>CPU board is failure.</td>
<td>E</td>
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<tr>
<td>2723</td>
<td>Unexpected command received</td>
<td>An illegal command is received over the network.</td>
<td>• A failure occurs on the IDT.</td>
<td>H</td>
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<tr>
<td>2725</td>
<td>Connection establishment error</td>
<td>An attempt to establish a connection to receive a command fails.</td>
<td>The network environment is faulty.</td>
<td>H</td>
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<tr>
<td>2726</td>
<td>Connection establishment error</td>
<td>An attempt to establish a connection with the IDT in IDT Utility mode fails.</td>
<td>The network environment is faulty.</td>
<td>H</td>
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<tr>
<td>2727</td>
<td>Connection establishment error</td>
<td>An attempt to establish a connection for command reception fails.</td>
<td>The network environment is faulty.</td>
<td>H</td>
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<tr>
<td>2751</td>
<td>File open error</td>
<td>An attempt to open a file fails.</td>
<td>• No file</td>
<td>A-1</td>
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<tr>
<td>2752</td>
<td>File format error</td>
<td>File format check error</td>
<td>File description is improper.</td>
<td>A-1</td>
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<tr>
<td>2753</td>
<td>File write error</td>
<td>An attempt to write a file fails.</td>
<td>HD failure</td>
<td>A-1</td>
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<tr>
<td>2754</td>
<td>File read error</td>
<td>An attempt to read a file fails.</td>
<td>HD failure</td>
<td>A-1</td>
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<tr>
<td>2755</td>
<td>File close error</td>
<td>An attempt to close a file fails.</td>
<td>HD failure</td>
<td>A-1</td>
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<td>2756</td>
<td>Image processing parameter error</td>
<td>Parameter file checksum error</td>
<td>The IDT setup value is improper.</td>
<td>A-1</td>
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<tr>
<td>2757</td>
<td>Image processing parameter error</td>
<td>Parameter file format error</td>
<td>The IDT setup value is improper.</td>
<td>A-1</td>
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<tr>
<td>2758</td>
<td>Image processing parameter error</td>
<td>Parameter file setup value error</td>
<td>The IDT setup value is improper.</td>
<td>A-1</td>
<td></td>
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<tr>
<td>2800</td>
<td>Serial line test error</td>
<td>During line test, the character string transmitted is inconsistent with the character string received.</td>
<td>Check the serial line.</td>
<td>I-8</td>
<td></td>
</tr>
<tr>
<td>2801</td>
<td>Undefined/unexpected command received</td>
<td>An unexpected command is received.</td>
<td>It this phenomenon occurs frequently, check the LP.</td>
<td>I-8</td>
<td></td>
</tr>
<tr>
<td>2802</td>
<td>No response from LP</td>
<td>There is no response to transmission.</td>
<td>• Check the LP cable&lt;br&gt;• Restart the LP</td>
<td>I-8</td>
<td></td>
</tr>
<tr>
<td>2803</td>
<td>LP receive command parameter error</td>
<td>The content of the text received is inconsistent.</td>
<td>• Check the LP cable&lt;br&gt;• Restart the LP</td>
<td>I-8</td>
<td></td>
</tr>
<tr>
<td>2804</td>
<td>Old I/F 14&quot; x 17&quot;/B4 unit judgement error</td>
<td>The film used on the LP cannot be judged.</td>
<td>• Check the LP cable&lt;br&gt;• Check the LP</td>
<td>I-8</td>
<td></td>
</tr>
<tr>
<td>2805</td>
<td>HYPER-DRC+USM image processing ignored</td>
<td>The HYPER-DRC+USM image parameter is inputted, but the IMG08B board is not installed.</td>
<td>Check the image parameter, or install the IMG08B board.</td>
<td>I-9</td>
<td></td>
</tr>
<tr>
<td>2806</td>
<td>HYPER-USM image processing ignored</td>
<td>The HYPER-USM image parameter is inputted, but the IMG08B board is not installed.</td>
<td>Check the image parameter, or install the IMG08B board.</td>
<td>I-9</td>
<td></td>
</tr>
<tr>
<td>2807</td>
<td>PEM image processing ignored</td>
<td>The PEM image parameter is inputted, but the IMG08B board is not installed.</td>
<td>Check the image parameter, or install the IMG08B board.</td>
<td>I-9</td>
<td></td>
</tr>
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</tr>
<tr>
<td>2808</td>
<td>Output warning 1</td>
<td>For B4 film, there is a request for 4-image output.</td>
<td>Nothing is done. At present, after all the other films under request are outputted, it is converted to a single image for output.</td>
<td>I-6</td>
<td></td>
</tr>
<tr>
<td>2809</td>
<td>Output warning 2</td>
<td>At present, a 4-image output request is converted to a single image, and nothing is done during output.</td>
<td>Nothing is done.</td>
<td>I-6</td>
<td></td>
</tr>
<tr>
<td>280B</td>
<td>No UID at time of DST output reservation designation</td>
<td>There is no UID that corresponds to the number of frames, but it is ignored.</td>
<td>It should be ignored.</td>
<td>I-10</td>
<td></td>
</tr>
<tr>
<td>280C</td>
<td>LIF backup memory clear</td>
<td>The backup memory is cleared, and nothing is done.</td>
<td>Nothing is done.</td>
<td></td>
<td></td>
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<tr>
<td>2814</td>
<td>DSP10 checksum error</td>
<td>DSP checksum error (minor).</td>
<td>Check the IMG08A board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2815</td>
<td>DSP10 self-diagnostics error</td>
<td>DSP diagnostics error (minor).</td>
<td>Check the IMG08A board.</td>
<td>I-7</td>
<td></td>
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<tr>
<td>2816</td>
<td>DSP10 image processing error</td>
<td>DSP image parameter error (minor).</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>281B</td>
<td>DSP11 checksum error</td>
<td>DSP checksum error (minor).</td>
<td>Check the IMG08A board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>281C</td>
<td>DSP11 self-diagnostics error</td>
<td>DSP diagnostics error (minor).</td>
<td>Check the IMG08A board.</td>
<td>I-7</td>
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<tr>
<td>281D</td>
<td>DSP11 image processing error</td>
<td>DSP image parameter error (minor).</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2822</td>
<td>DSP20 checksum error</td>
<td>DSP checksum error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2823</td>
<td>DSP20 self-diagnostics error</td>
<td>DSP diagnostics error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
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<tr>
<td>2824</td>
<td>DSP20 image processing error</td>
<td>DSP image parameter error (minor).</td>
<td>Check the image parameter.</td>
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<td></td>
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<tr>
<td>2829</td>
<td>DSP21 checksum error</td>
<td>DSP checksum error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
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<td>Code</td>
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<tr>
<td>282A</td>
<td>DSP21 self-diagnostics error</td>
<td>DSP µ diagnostics error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>282B</td>
<td>DSP21 image processing error</td>
<td>DSP µ image parameter error (minor).</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2830</td>
<td>DSP22 checksum error</td>
<td>DSP µ checksum error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
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<tr>
<td>2831</td>
<td>DSP22 self-diagnostics error</td>
<td>DSP µ diagnostics error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2832</td>
<td>DSP22 image processing error</td>
<td>DSP µ image parameter error (minor).</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
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<tr>
<td>2837</td>
<td>DSP30 checksum error</td>
<td>DSP µ checksum error (minor).</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
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</tr>
<tr>
<td>2838</td>
<td>DSP30 self-diagnostics error</td>
<td>DSP µ diagnostics error (minor).</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2839</td>
<td>DSP30 image processing error</td>
<td>DSP µ image parameter error (minor).</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>283E</td>
<td>DSP31 checksum error</td>
<td>DSP µ checksum error (minor).</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>283F</td>
<td>DSP31 self-diagnostics error</td>
<td>DSP µ diagnostics error (minor).</td>
<td>Check the IMG08C board.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2840</td>
<td>DSP31 image processing error</td>
<td>DSP µ image parameter error (minor).</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2845</td>
<td>DSP32 checksum error</td>
<td>DSP µ checksum error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
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<tr>
<td>2846</td>
<td>DSP32 self-diagnostics error</td>
<td>DSP µ diagnostics error (minor).</td>
<td>Check the IMG08B board.</td>
<td>I-7</td>
<td></td>
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<tr>
<td>2847</td>
<td>DSP32 image processing error</td>
<td>DSP µ image parameter error (minor).</td>
<td>Check the image parameter.</td>
<td>I-7</td>
<td></td>
</tr>
<tr>
<td>2850</td>
<td>Failure to transfer image to LP</td>
<td>Image transfer to the LP fails.</td>
<td>Nothing is done immediately. After all the films that have already been requested for output are outputted, reoutput is generated.</td>
<td>I-11</td>
<td></td>
</tr>
</tbody>
</table>
| 2922  | Unexpected command received       | An undefined command is received while the operation is stopped. | • A failure occurs on the DMS.  
• The SMCU driver is faulty. | G      |          |
<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>2940</td>
<td>SMCU transmission error</td>
<td>A transmission of a command to the DMS fails during output.</td>
<td>• Timeout • Break state on the target end • Break state on the source end</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>2941</td>
<td>Receive line break detection</td>
<td>A receive line break-ON is received during output.</td>
<td>• The serial line is disconnected. • A failure occurs on the DMS.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2942</td>
<td>Unexpected command received</td>
<td>An undefined command is received during output.</td>
<td>• A failure occurs on the DMS. • The SMCU driver is faulty.</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>2943</td>
<td>MCU receive error</td>
<td>A reception of a command from the DMS fails during output.</td>
<td>• Command wait timeout • Break state on the target end • Break state on the source end</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>2944</td>
<td>Image output terminated</td>
<td>An image input termination notification is received from the DMS.</td>
<td>The DMS issues an image input termination notification.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2945</td>
<td>Output interrupted by abort instruction</td>
<td>The output is interrupted by an abort instruction.</td>
<td>The power switch is OFF.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2946</td>
<td>DSP application execution error</td>
<td>A timeout occurs during startup of a DSP application.</td>
<td>The DMC08A board is faulty.</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>2947</td>
<td>Image data output error</td>
<td>While waiting for an image transfer reservation response, a timeout occurs.</td>
<td>The DMC08A board is faulty.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2948</td>
<td>Image data output error</td>
<td>While waiting for an image information transfer request, a timeout occurs.</td>
<td>The DMC08A board is faulty.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2949</td>
<td>Image data output error</td>
<td>While waiting for an image data transfer standby response, a timeout occurs.</td>
<td>The DMC08A board is faulty.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>294A</td>
<td>Image data output error</td>
<td>While waiting for an image data transfer completion report, a timeout occurs.</td>
<td>The DMC08A board is faulty.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>294B</td>
<td>Image data output error</td>
<td>While waiting for an image output completion response, a timeout occurs.</td>
<td>The DMC08A board is faulty.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Code</td>
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<td>------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
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<td>----------</td>
</tr>
<tr>
<td>294C</td>
<td>Image data output error</td>
<td>An error occurs in an image transfer completion status.</td>
<td>Hardware failure</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>294C*</td>
<td>Image data output error</td>
<td>The end of image transfer status is in error (output in progress).</td>
<td>The DMC08A board is faulty.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>294D</td>
<td>Image transfer not allowed</td>
<td>The DMS refuses to output an image.</td>
<td>A failure occurs on the DMS.</td>
<td>d</td>
<td></td>
</tr>
<tr>
<td>294E</td>
<td>High-resolution image cannot be outputted</td>
<td>The DMS refuses to output the image due to non-accumulatable size.</td>
<td>Because the DMS refuses to output the high-resolution image, the image is accumulated in standard-resolution mode.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>294F</td>
<td>Image cannot be outputted due to use by another system</td>
<td>The DMS refuses to output the image due to use by another system.</td>
<td>In use by another system.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2950</td>
<td>DSP application execution error</td>
<td>A WARNING occurs with a DSP application.</td>
<td>The DMC08A board is faulty.</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>2960</td>
<td>SMCU transmission error</td>
<td>A command transmission to the DMS fails during input.</td>
<td>• Command wait timeout</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Break state on the target (receiving) end</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Break state on the source (sending) end</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2961</td>
<td>Receive line break detection</td>
<td>A receive line break-ON is received during input.</td>
<td>• The serial line is disconnected.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• A failure occurs on the DMS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2962</td>
<td>Unexpected command received</td>
<td>An undefined command is received during input.</td>
<td>• A failure occurs on the DMS.</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The SMCU driver is faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2963</td>
<td>SMCU receive error</td>
<td>A reception of a command from the DMS fails.</td>
<td>• Timeout</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Break state on the target end</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Break state on the source end</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2964</td>
<td>Image data input error</td>
<td>While waiting for an image data transfer preparation request, a timeout occurs.</td>
<td>The DMC08A board is faulty.</td>
<td>F</td>
<td></td>
</tr>
</tbody>
</table>

*: A06 or later

Detail: Denotes the detail information format.
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>0421</td>
<td>DSP4 memory read error</td>
<td>A read from the DSP4 memory results in an error.</td>
<td>The IMG07B board or MTH08A board is faulty.</td>
<td>E-2</td>
<td></td>
</tr>
<tr>
<td>0422</td>
<td>DSP4 image processing error 1</td>
<td>Execution of image processing during read results in an error. (First interrupt error)</td>
<td>The IMG07B board or MTH08A board is faulty.</td>
<td>E-2</td>
<td></td>
</tr>
<tr>
<td>0423</td>
<td>DSP4 image processing error 2</td>
<td>Execution of image processing during read results in an error. (Second interrupt error)</td>
<td>The IMG07B board or MTH08A board is faulty.</td>
<td>E-2</td>
<td></td>
</tr>
<tr>
<td>0450</td>
<td>DMA device open error</td>
<td>An attempt to open the DMA device fails.</td>
<td>The CPU90E board or MTH08A board is faulty.</td>
<td>E-5</td>
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</tr>
<tr>
<td>0451</td>
<td>Read DMA transfer error</td>
<td>DMA transfer from the scanner to the shared memory results in an error during read.</td>
<td>The CPU90E board or MTH08A board is faulty.</td>
<td>E-5</td>
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</tr>
<tr>
<td>0452</td>
<td>Rotation DMA transfer error</td>
<td>DMA transfer for image data rotation results in an error during 2430HR read.</td>
<td>The CPU90E board or MTH08A board is faulty.</td>
<td>E-5</td>
<td></td>
</tr>
<tr>
<td>0460</td>
<td>Image data write error</td>
<td>Write of image data to the hard disk fails during read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0461</td>
<td>Monitor image write error</td>
<td>Write of the monitor image to the hard disk fails during read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
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</tr>
<tr>
<td>0462</td>
<td>EDR data write error</td>
<td>Write of the standard EDR backup data to the hard disk fails during read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0463</td>
<td>ID information write error</td>
<td>Write of the image ID information to the hard disk fails during read.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0464</td>
<td>File close error 1</td>
<td>An attempt to close the file that is opened in the write mode fails.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0465</td>
<td>File close error 2</td>
<td>After image information is set again, an attempt to close the file that is opened in the read mode fails.</td>
<td>The HDD or CPU90E board or MTH08A board is faulty.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0466</td>
<td>ID information read error</td>
<td>During reoutput, an attempt to read the ID information fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0467</td>
<td>ID information update error</td>
<td>During reoutput, an attempt to update the ID information fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-6</td>
<td></td>
</tr>
<tr>
<td>0468</td>
<td>Monitor image read error</td>
<td>During reoutput, an attempt to read the monitor image fails.</td>
<td>Faulty HDD, MTH board, etc.</td>
<td>E-6</td>
<td></td>
</tr>
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</tr>
<tr>
<td>2991</td>
<td>File open error</td>
<td>An attempt to open the log file fails.</td>
<td>• The file in the HD is corrupted. • HD failure</td>
<td>A-1</td>
<td></td>
</tr>
<tr>
<td>2992</td>
<td>File write error</td>
<td>An attempt to write the log file fails.</td>
<td>• The file in the HD is corrupted. • HD failure</td>
<td>A-1</td>
<td></td>
</tr>
<tr>
<td>2993</td>
<td>File close error</td>
<td>An attempt to close the log file fails.</td>
<td>HD failure</td>
<td>A-1</td>
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<tr>
<td>2994</td>
<td>SMCU driver hard error</td>
<td></td>
<td></td>
<td>A-1</td>
<td></td>
</tr>
<tr>
<td>2994*</td>
<td>SMCU error</td>
<td>An error status is returned by the SMCU driver.</td>
<td>SMCU failure. Replace the DMC08A board.</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>2A00</td>
<td>File open error</td>
<td>An attempt is made to open a file, but it cannot be opened.</td>
<td>• The file is absent in the HDD. • The file in the HDD is corrupted. • The HDD itself is faulty, etc.</td>
<td>K-1</td>
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</tr>
<tr>
<td>2A01</td>
<td>File format error</td>
<td>The file format is improper.</td>
<td>• The file format in the HDD is improper. • The file in the HDD is corrupted. • The HDD itself is faulty, etc.</td>
<td>K-1</td>
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</tr>
<tr>
<td>2A02</td>
<td>File setup value error</td>
<td>The data of the file is improper.</td>
<td>• The data described in the file in the HDD has an out-of-range value. • The file in the HDD is corrupted. • The HDD itself is faulty, etc.</td>
<td>K-1</td>
<td></td>
</tr>
<tr>
<td>2A10</td>
<td>Magnetic card reader inoperative</td>
<td>The magnetic card reader is inoperative with the machine configuration that uses the magnetic card reader.</td>
<td>SNS08A board, magnetic card reader</td>
<td>K-2</td>
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</tr>
</tbody>
</table>

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<table>
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<tr>
<td>2A11</td>
<td>Menu selection method inconsistent</td>
<td>Although the routine menu display setup file is absent, the &quot;menu selection method” stored in the backup memory is &quot;routine menu selection.&quot;</td>
<td>HDD, backup memory</td>
<td></td>
<td>K-2</td>
</tr>
<tr>
<td>2A20</td>
<td>Patient information data error</td>
<td>Improper data is set in the patient information sent from the online-connected unit.</td>
<td>External unit (online-connected unit), CPU90E board</td>
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<td>K-3</td>
</tr>
<tr>
<td>2A21</td>
<td>Undefined command received</td>
<td>A command that is not defined in the interface specification, or an unimplemented command, is received from the online-connected unit.</td>
<td>External unit (online-connected unit), CPU90E board</td>
<td></td>
<td>K-4</td>
</tr>
<tr>
<td>2A22</td>
<td>Unexpected command received</td>
<td>An unexpected command is received from the online-connected unit.</td>
<td>External unit (online-connected unit), CPU90E board</td>
<td></td>
<td>K-4</td>
</tr>
<tr>
<td>2A23</td>
<td>Serial line test error</td>
<td>An error occurs in the serial line test with the online-connected unit.</td>
<td>External unit (online-connected unit), CPU90E board, line cable</td>
<td></td>
<td>K-2</td>
</tr>
<tr>
<td>2A24</td>
<td>No response from external unit</td>
<td>A response to the command requested in the communication with the online-connected unit does not arrive within a certain time.</td>
<td>External unit (online-connected unit), CPU90E board, line cable</td>
<td></td>
<td>K-4</td>
</tr>
<tr>
<td>2A25</td>
<td>Patient information search error (not found)</td>
<td>A response indicating that patient information relevant to a search key not found is received from the type B online-connected unit.</td>
<td>External unit (online-connected unit)</td>
<td></td>
<td>K-2</td>
</tr>
<tr>
<td>2A26</td>
<td>Patient information search timeout</td>
<td>A response indicating that a timeout occurs in the search for patient information based on a search key is received from the type B online-connected unit.</td>
<td>External unit (online-connected unit)</td>
<td></td>
<td>K-2</td>
</tr>
<tr>
<td>2A30</td>
<td>Patient information data error</td>
<td>Improper data is set in the patient information data read by the magnetic card reader.</td>
<td>Magnetic card, magnetic card reader, SNS08A board</td>
<td></td>
<td>K-5</td>
</tr>
<tr>
<td>2A31</td>
<td>Card read error</td>
<td>Improper data is set in the patient information data read by the magnetic card reader.</td>
<td>Magnetic card, magnetic card reader, SNS08A board</td>
<td></td>
<td>K-6</td>
</tr>
<tr>
<td>2A32</td>
<td>Card without relevant search key data item</td>
<td>The card read by the magnetic card reader does not contain search key data specified by the user.</td>
<td>Inconsistency between the magnetic card and search key type selection (operation error)</td>
<td></td>
<td>K-7</td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
<td>Refer to</td>
</tr>
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<td>----------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
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<td>----------</td>
</tr>
<tr>
<td>2A40</td>
<td>Barcode data error</td>
<td>The data read by the barcode reader is improper (without STX or EXT code).</td>
<td>Barcode reader, SNS08A board</td>
<td>K-2</td>
<td></td>
</tr>
<tr>
<td>2B18</td>
<td>DSP H image processing error</td>
<td>An error occurs during compression/decompression processing.</td>
<td>Faulty HDD, MTH board, HCP board, etc.</td>
<td>L-2</td>
<td></td>
</tr>
<tr>
<td>2B30</td>
<td>Compressed/decompressed image left</td>
<td>Although image data is left to be compressed or decompressed, the compression/decompression is completed.</td>
<td>The image data is corrupted.</td>
<td>L-1</td>
<td></td>
</tr>
<tr>
<td>2C40</td>
<td>Unexpected command received</td>
<td>An unexpected command is received.</td>
<td>Check the sending/receiving status on the target end.</td>
<td>M-3</td>
<td></td>
</tr>
<tr>
<td>2C41</td>
<td>Image transfer error</td>
<td>An error occurs during image data transfer.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; or check the sending/receiving status on the target end.</td>
<td>M-5</td>
<td></td>
</tr>
<tr>
<td>2C42</td>
<td>Switching IDT connection to CPU90E</td>
<td>Because the CPU90F board does not boot normally, the connection to the IDT is switched from CPU90F to CPU90E in the configuration setting.</td>
<td>• The CPU90F board does not boot normally.</td>
<td>D-2</td>
<td></td>
</tr>
<tr>
<td>2CC0</td>
<td>Unexpected command received</td>
<td>An unexpected command is received.</td>
<td>Check the sending/receiving status on the unit connected.</td>
<td>M-3</td>
<td></td>
</tr>
<tr>
<td>2CD0</td>
<td>20 line/mm image acceptance</td>
<td>Because the machine cannot handle 20 line/mm images, input is rejected.</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>2D00</td>
<td>SCU-related information is illegal</td>
<td>There is no “Base on DICOM” information for the own host (DICOM Storage Service SCU).</td>
<td>• No host file&lt;br&gt;• Base on DICOM information definition is incorrect.&lt;br&gt;• HD failure</td>
<td>G-1</td>
<td></td>
</tr>
<tr>
<td>2D02</td>
<td>SCP-related information is illegal</td>
<td>There is no “Base on DICOM” information corresponding to the output designation host (DICOM Storage Service SCP).</td>
<td>• No host file&lt;br&gt;• Base on DICOM information definition is incorrect.&lt;br&gt;• HD failure</td>
<td>G-1</td>
<td></td>
</tr>
<tr>
<td>2D03</td>
<td>PRINT output not allowed</td>
<td>The output destination attribute in the device information is PRINT only.</td>
<td>An attempt is made to provide output to a device that only supports the PRINT service.</td>
<td>G-1</td>
<td></td>
</tr>
<tr>
<td>2D04</td>
<td>Soft key invalid</td>
<td>There is no “Base on DICOM” information for the own host (DICOM Storage Service SCU).</td>
<td>• No host file&lt;br&gt;• Base on DICOM information definition is incorrect.&lt;br&gt;• HD failure</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2D05</td>
<td>SOP class designation is illegal</td>
<td>The “Base on DICOM” soft key is inconsistent with the SOP class designation for the output designation host in the “Base on DICOM” information file.</td>
<td>• Base on DICOM information definition is incorrect.&lt;br&gt;• Base on DICOM soft key has been installed improperly.</td>
<td>G-1</td>
<td></td>
</tr>
<tr>
<td>2D06</td>
<td>Older version of HCP board</td>
<td>The HCP board is not a version that supports 11bit output (QA-WS output is 11bit).</td>
<td>Replace the HCP board with its version G or later.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Ocurrence Condition</td>
<td>Probable Cause/Remedy</td>
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<td>----------</td>
</tr>
<tr>
<td>2D41</td>
<td>Compressed image cannot be accepted</td>
<td>Transmission of a compressed image is refused by the target device.</td>
<td>The target device does not receive any compressed image.</td>
<td>G-2</td>
<td></td>
</tr>
<tr>
<td>2D43</td>
<td>HD full</td>
<td>The HD of the output destination unit is full.</td>
<td>Free up the HD of the output destination unit.</td>
<td>G-2</td>
<td></td>
</tr>
<tr>
<td>2D44</td>
<td>Improper DICOM setup</td>
<td>Negotiation for association with the output destination fails.</td>
<td>• Based on DICOM information definition is incorrect.</td>
<td>G-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• There is no setting for the own host on the output destination.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The transfer syntax or abstract syntax proposed cannot be accepted by the output destination.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D45</td>
<td>Image data transmission error</td>
<td>An error occurs during image data transmission.</td>
<td>• DMA transfer error</td>
<td>G-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Timeout error</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Message queue generation error</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• PDC driver device open error (*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D50</td>
<td>File open error</td>
<td>The file cannot be opened.</td>
<td>• No file</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HD failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D51</td>
<td>File write error</td>
<td>An attempt to write a file fails.</td>
<td>HD failure</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>2D52</td>
<td>File close error</td>
<td>An attempt to close a file fails.</td>
<td>HD failure</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>3080</td>
<td>User setup standard gamma parameter</td>
<td>Because the GP parameter is not defined when the HIPUMN.PRM file is created during version update, the default GP parameter is created (since only the MPF GP parameter has been created).</td>
<td>When parameters for any additional menu are present in the user setup standard gamma parameter data.</td>
<td>A-7</td>
<td></td>
</tr>
<tr>
<td>3717</td>
<td>SMCU transmission error</td>
<td>Command transmission fails at the SMCU.</td>
<td>The SMCU driver is faulty.</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>3718</td>
<td>Receive line break detection</td>
<td>A receive line break-ON is received.</td>
<td>• The serial line is disconnected.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• A failure occurs on the IDT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3719</td>
<td>Serial line test error</td>
<td>While waiting for a control line test response, a timeout occurs.</td>
<td>• A failure occurs on the IDT.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The SMCU driver is faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>371A</td>
<td>Serial line test error</td>
<td>While waiting for an operation permission command response, a timeout occurs.</td>
<td>• A failure occurs on the IDT.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The SMCU driver is faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>371B</td>
<td>SMCU transmission error</td>
<td>While waiting for a data block transfer response, a timeout occurs.</td>
<td>• A failure occurs on the IDT.</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The SMCU driver is faulty.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*: "PDC" = DMA controller on the CPU90F board (PCI DMA controller)
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Significance/Occurrence Condition</th>
<th>Probable Cause/Remedy</th>
<th>Detail</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>3728</td>
<td>Network reception error</td>
<td>Data reception over the network fails.</td>
<td>The network environment is faulty.</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>3729</td>
<td>ID delete response wait timeout</td>
<td>While waiting for an ID delete response to the network IDT, a timeout occurs.</td>
<td>The network environment is faulty.</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>372A</td>
<td>File transfer</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>372B</td>
<td>Network transmission error</td>
<td>An ID acquisition request transmission to the network IDT fails.</td>
<td>The network environment is faulty.</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>372C</td>
<td>Network transmission error</td>
<td>An ID delete request transmission to the network IDT fails.</td>
<td>The network environment is faulty.</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>372D</td>
<td>Network transmission error</td>
<td>A utility information transmission to the network IDT fails.</td>
<td>The network environment is faulty.</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>3751</td>
<td>File setup value error</td>
<td>A file setup value check error (siosetup.idt) occurs.</td>
<td>The parameter value for the data-link layer parameter file is out of range.</td>
<td>A-1</td>
<td></td>
</tr>
<tr>
<td>3800</td>
<td>Receive line break detection</td>
<td>A receive line break occurs.</td>
<td>Check the line.</td>
<td>I-6</td>
<td></td>
</tr>
<tr>
<td>3801</td>
<td>LP status error</td>
<td>An LP line status error is detected.</td>
<td>Check the line.</td>
<td>I-6</td>
<td></td>
</tr>
<tr>
<td>3802</td>
<td>LP level 0 error</td>
<td>Level 0 error (system down) for the LP is detected.</td>
<td>Check the LP.</td>
<td>I-6</td>
<td></td>
</tr>
<tr>
<td>3803</td>
<td>LP error recovery failure</td>
<td>Recover from level 1 error of the LP fails.</td>
<td>Check the LP.</td>
<td>I-6</td>
<td></td>
</tr>
<tr>
<td>3804</td>
<td>Character string transmission error</td>
<td>When a character string is transmitted, an end-of-transmission error occurs.</td>
<td>Check the LP.</td>
<td>I-8</td>
<td></td>
</tr>
<tr>
<td>3805</td>
<td>No FINP ID</td>
<td>The ID information (Finp) for the designating tag (group/element) does not exist.</td>
<td>Check the ID information.</td>
<td>I-12</td>
<td></td>
</tr>
<tr>
<td>3806</td>
<td>Board insertion error</td>
<td>The IMG08M board (for 5000MA) is inserted inadvertently into the machine.</td>
<td>Board insertion mistake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
<td>Detail</td>
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</tr>
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</tr>
</tbody>
</table>
| 3910  | SMCU transmission error       | A command transmission to the DMS fails.                                                          | • Command wait timeout  
• Break state on the target end  
• Break state on the source end                                                  | E      |          |
| 3911  | Receive line break detection  | A receive line break-ON is received.                                                               | • The serial line is disconnected.  
• A failure occurs on the DMS.                                                       | F      |          |
| 3913  | SMCU receive error            | A command reception from the DMS fails.                                                             | • Command wait timeout  
• Break state on the target end  
• Break state on the source end                                                  | E      |          |
| 3920  | SMCU transmission error       | A transmission fails.                                                                               | The DMC08A board is faulty.                                                        | E      |          |
| 3921  | Receive line break detection  | A receive line break-ON is detected while the operation is stopped.                                | • The serial line is disconnected.  
• A failure occurs on the DMS.                                                       | F      |          |
| 3923  | SMCU receive error            | A command reception from the DMS fails.                                                             | • Command wait timeout  
• Break state on the target end  
• Break state on the source end                                                  | E      |          |
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Significance/Occurrence Condition</th>
<th>Probable Cause/Remedy</th>
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</thead>
<tbody>
<tr>
<td>3A50</td>
<td>Transmission line data-link layer error</td>
<td>A message transmission ends in error.</td>
<td>• During command transmission, the line is disconnected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Power of the online-connected unit is shut down.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The line is broken from the online-connected unit for some reason.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• An error occurs at the data-link layer level.</td>
</tr>
<tr>
<td>3A51</td>
<td>Receive line break-ON detection</td>
<td>A receive line break is detected.</td>
<td>• The line is disconnected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Power of the online-connected unit is shut down.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The line is broken from the online-connected unit for some reason.</td>
</tr>
<tr>
<td>3C60</td>
<td>Socket acquisition function error</td>
<td>An error occurs with the socket acquisition function (js_socket).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3C61</td>
<td>Connect function error</td>
<td>An error occurs with the connect function (js_connect).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
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<td>------</td>
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<td>-------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3C62</td>
<td>BIND function error</td>
<td>An error occurs with the BIND function (js_bind).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3C63</td>
<td>LISTEN function error</td>
<td>An error occurs with the LISTEN function (js_listen).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3C64</td>
<td>ACCEPT function error</td>
<td>An error occurs with the ACCEPT function (js_accept).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3C65</td>
<td>Connect error</td>
<td>A request for control line connection fails.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; or the CPU90F board is faulty.</td>
</tr>
<tr>
<td>3C66</td>
<td>Transmission completion error</td>
<td>A transmission of the FINP command fails.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; or the CPU90F board is faulty.</td>
</tr>
<tr>
<td>3C67</td>
<td>Reception completion error</td>
<td>An error occurs during data reception from the target end.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; or the CPU90F board is faulty.</td>
</tr>
<tr>
<td>3C68</td>
<td>Socket number zero</td>
<td>The socket number acquired with the socket acquisition function (js_socket) is zero.</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3C69</td>
<td>Not transferable to transmission task</td>
<td>A message cannot be transferred to the transmission task due to illegal socket number.</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3C6A</td>
<td>Error on the receiving end</td>
<td>An error occurs on the target end.</td>
<td>Check the status on the target end.</td>
</tr>
<tr>
<td>3C70</td>
<td>LAN initialization timeout</td>
<td>No LAN board initialization response</td>
<td>Check if the CPU90F board is installed.</td>
</tr>
<tr>
<td>3C71</td>
<td>LAN board initialization error</td>
<td>An error occurs during LAN board initialization.</td>
<td>Information for troubleshooting the LAN board initialization error.</td>
</tr>
<tr>
<td>3CE0</td>
<td>Socket acquisition function error</td>
<td>An error occurs with the socket acquisition function (js_socket).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3CE1</td>
<td>Connect function error</td>
<td>An error occurs with the connect function (js_connect).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Significance/Occurrence Condition</td>
<td>Probable Cause/Remedy</td>
</tr>
<tr>
<td>------</td>
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<td>---------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3CE2</td>
<td>BIND function error</td>
<td>An error occurs with the BIND function (js_bind).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3CE3</td>
<td>LISTEN function error</td>
<td>An error occurs with the LISTEN function (js_listen).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3CE4</td>
<td>ACCEPT function error</td>
<td>An error occurs with the ACCEPT function (js_accept).</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3CE5</td>
<td>Connect error</td>
<td>A request for control line connection fails.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; or the CPU90F board is faulty.</td>
</tr>
<tr>
<td>3CE6</td>
<td>Transmission completion error</td>
<td>A transmission of the FINP command fails.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; or the CPU90F board is faulty.</td>
</tr>
<tr>
<td>3CE7</td>
<td>Reception completion error</td>
<td>An error occurs during data reception from the target end.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; or the CPU90F board is faulty.</td>
</tr>
<tr>
<td>3CE8</td>
<td>Socket number zero</td>
<td>The socket number acquired with the socket acquisition function (js_socket) is zero.</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3CE9</td>
<td>Not transferable to reception task</td>
<td>A message cannot be transferred to the reception task due to illegal socket number.</td>
<td>Information for LAN task analysis</td>
</tr>
<tr>
<td>3CEA</td>
<td>Multi-frame timeout</td>
<td>More than 90 seconds have elapsed until the next frame of data is received after one frame of data is received during multi-frame image reception.</td>
<td>Check the Ethernet cable; the Ethernet cable is faulty; the CPU90F board is faulty; or check the sending status of the multi-frame data on the target end.</td>
</tr>
<tr>
<td>3CEB</td>
<td>All image data not received</td>
<td>Image data to be received has not yet been received for all sizes, but the receive process is completed.</td>
<td>The CPU90F board is faulty.</td>
</tr>
<tr>
<td>3D40</td>
<td>Line error</td>
<td>The TCP/IP connection is disconnected.</td>
<td>• Check the Ethernet cable connection.</td>
</tr>
</tbody>
</table>

Detail: Denotes the detail information format.
2.3 Format of Detail Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Format</th>
<th>Description of Each Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>AAAA.BBBB.BBBB.CCC.DDDD</td>
<td><strong>Form</strong></td>
</tr>
<tr>
<td></td>
<td>AAAA</td>
<td>Four hexadecimal digits</td>
</tr>
<tr>
<td></td>
<td>BBBBBB</td>
<td>Character string of variable length (up to 8 characters)</td>
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| I-4  | AAAAA,BBBBBB,CC,DD,EE,FF,GG,HH,II, JJ,KK,LLLL,MMMM,NN,OO | EE   | Two hexadecimal digits | 90-degree rotation flag | 00: 90-degree rotation OFF  
01: 90-degree rotation ON |
|      |        | FF   | Two hexadecimal digits | Film format | 00: S (one-image output)  
01: LR (simultaneous output of left and right of one image)  
02: L-R (individual output of left or right of one image)  
03: AB (two-image output, with different size or different image number)  
04: SS (two-image output, with same size and same image number)  
05: ABCD (four-image) |
|      |        | GG   | Two hexadecimal digits | Film character location change | 00: No location change  
01: Changed (correspond to FC1 of FilmFmt.Cfg)  
02: Changed (correspond to FC2 of FilmFmt.Cfg)  
03: Changed (correspond to FC3 of FilmFmt.Cfg)  
04: Changed (correspond to FC4 of FilmFmt.Cfg)  
05: Changed (correspond to FC5 of FilmFmt.Cfg)  
06: Changed (correspond to FC6 of FilmFmt.Cfg) |
|      |        | HH   | Two hexadecimal digits | Area type | 00: Image area  
01: Film character area |
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<th>Format</th>
<th>Description of Each Parameter</th>
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</thead>
</table>
| I-4  | AAAA.BBBBBB.CC.DD.EE.FF.GG.HH.II.JJ.KK.LLLL.MMMMM.NN.OO | **II**  
Two hexadecimal digits  
Area number  

00: Image area 0 (first frame)  
01: Image area 1 (second frame)  
02: Image area 2 (third frame)  
03: Image area 3 (fourth frame)  
10: Character area 0-0 (top of first frame)  
11: Character area 0-1 (bottom of first frame)  
12: Character area 1-0 (top of second frame)  
13: Character area 1-1 (bottom of second frame)  
14: Character area 2-0 (top of third frame)  
15: Character area 2-1 (bottom of third frame)  
16: Character area 3-0 (top of fourth frame)  
17: Character area 3-1 (bottom of fourth frame)  

| **JJ**  
Two hexadecimal digits  
180-degree rotation flag  

00: 180-degree rotation OFF  
01: 180-degree rotation ON  

| **KK**  
Two hexadecimal digits  
LR flag  

00: S (one-image output)  
01: LR (simultaneous output of left and right of one image)  
02: L-R (individual output of left or right of one image)  
03: AB (two-image output, with different size or different image number)  
04: SS (two-image output, with same size and same image number)  
05: ABCD (four-image)  
For LR, a detail determination is made to discriminate between LR and L-R. |
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</table>
|      | LLLL   | Four hexadecimal digits Format management number | Below 0FFF: B4 format  
1000–1FFF: 14”×17” format  
2000–2FFF: 14”×14” format  
5000–5FFF: 8”×10” format |
|      | MMMMM  | Character string of 5 digits Format search code | First digit: Film used  
0: B4  
1: 14”×17”  
2: 14”×14”  
5: 8”×10”  
Second digit: Reading image size code  
Same as the reading size code for DD  
Third digit: 90-degree rotation designation  
0: 90-degree rotation OFF/  
90-degree rotation ON  
Fourth digit: Search format  
0: S image character, AB character  
1: LR/L_R/SS image character, AB image  
2: Different-size 1843 AB image character  
4: 14”×17” or 8”×10”, with ABCD image character  
5: Other than 14”×17” or 8”×10”, with ABCD image character  
6: 10% magnification 18cm-x-24cm AB image character  
Fifth digit: Film background  
0: Transparent  
1: Black |
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</table>
| I-4  | AAAA.BBBBBB.CC.DD.EE.FF.GG.HH.II.JJ.KK.LLLL.MMMMM.NN.OO | NN          | Two hexadecimal digits | Format classification code | 00: One-image normal for B4/8"x10" film  
01: Two-image normal for B4  
02: One-image 8"x10" landscape for B4/8"x10" film  
03: Two-image pantomo for B4  
05: Character position change for B4 film  
06: Different-size 1843 AB for B4  
07: Two-image special for B4 film  
10: One-image normal for 14"x17"/14"x14" film  
11: Two-image normal for 14"x17"  
12: One-image 8"x10" landscape for 14"x17"  
13: Two-image pantomo for 14"x17"  
14: Four-image for 14"x17"  
15: Film character position change for 14"x17"/14"x14"/8"x10"  
16: Different-size 1843 AB for 14"x17"  
17: Two-image special for 14"x17" |
|      |                   | OO          | Two hexadecimal digits | Image number (Detail number within format classification code) | For B4/14"x14"/8"x10" film  
01_08  
For 14"x17" film  
01_08: 14"x17" area is used.  
08_10: B4 area is used. |
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<td></td>
<td></td>
<td>CCCC</td>
</tr>
<tr>
<td>P</td>
<td>AAAA.BB-BB.</td>
<td>AAAA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BBBB</td>
</tr>
</tbody>
</table>
## 2.3.1 Supplementary Explanation of Detail Information

### Sensor Number Correspondence Table (Applicable to Type: “D-5”, Format Symbol “B”)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SA1</td>
<td>6</td>
<td>SA6</td>
<td>11</td>
<td>SA11</td>
<td>16</td>
<td>SA16</td>
<td>21</td>
<td>SB4</td>
<td>26</td>
<td>SD2</td>
<td>31</td>
<td>SF3</td>
</tr>
<tr>
<td>2</td>
<td>SA2</td>
<td>7</td>
<td>SA7</td>
<td>12</td>
<td>SA12</td>
<td>17</td>
<td>SA17</td>
<td>22</td>
<td>SB5</td>
<td>27</td>
<td>SD3</td>
<td>32</td>
<td>SF4</td>
</tr>
<tr>
<td>3</td>
<td>SA3</td>
<td>8</td>
<td>SA8</td>
<td>13</td>
<td>SA13</td>
<td>18</td>
<td>SB1</td>
<td>23</td>
<td>SC1</td>
<td>28</td>
<td>SE1</td>
<td>33</td>
<td>SZ2</td>
</tr>
<tr>
<td>4</td>
<td>SA4</td>
<td>9</td>
<td>SA9</td>
<td>14</td>
<td>SA14</td>
<td>19</td>
<td>SB2</td>
<td>24</td>
<td>SC2</td>
<td>29</td>
<td>SF1</td>
<td>34</td>
<td>SZ3</td>
</tr>
<tr>
<td>5</td>
<td>SA5</td>
<td>10</td>
<td>SA10</td>
<td>15</td>
<td>SA15</td>
<td>20</td>
<td>SB3</td>
<td>25</td>
<td>SD1</td>
<td>30</td>
<td>SF2</td>
<td>35*</td>
<td>SZ4</td>
</tr>
</tbody>
</table>

NOTE: 35* SZ4 is not used with the CR-IR341. The sensor information always reads 0 (OPEN).

### Motor Number Correspondence Table (Applicable to Type: “D-5”, Format Symbols “G”, “H”, and “I”)

<table>
<thead>
<tr>
<th>No.</th>
<th>Motor name</th>
<th>No.</th>
<th>Motor name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>MB1</td>
<td>5</td>
<td>MD2</td>
</tr>
<tr>
<td>1</td>
<td>MB2</td>
<td>6</td>
<td>MD3</td>
</tr>
<tr>
<td>2</td>
<td>MB3</td>
<td>7</td>
<td>ME1</td>
</tr>
<tr>
<td>3</td>
<td>MC1</td>
<td>8</td>
<td>ME2</td>
</tr>
<tr>
<td>4</td>
<td>MD1</td>
<td>9</td>
<td>MF1</td>
</tr>
</tbody>
</table>
2.3.2 Format of Abort Code

If any trouble occurs on the machine with an abort message displayed on the machine’s display panel, take remedial action in accordance with the following procedures.

Example of Abort Message

<table>
<thead>
<tr>
<th>Abort message</th>
<th>Abort code</th>
<th>Significance</th>
<th>Probable cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDM:CdmInit:Could not allocate memory for config data.</td>
<td>02120000</td>
<td>Failure to reserve the machine configuration area</td>
<td>Insufficient main memory</td>
</tr>
<tr>
<td>matrix_select:Undefined event Matrix =AAAAAAAA EVENT=BBBBBBBB</td>
<td>02010001</td>
<td>Undefined event received</td>
<td>Illegal function call</td>
</tr>
<tr>
<td>&quot;Memory overflow.&quot;</td>
<td>05050001</td>
<td>Failure to reserve memory</td>
<td>Insufficient main memory</td>
</tr>
</tbody>
</table>

Remedy

(1) Write down the top three lines of the message displayed, and notify them to the Service Headquarters.

(2) Reset the machine.
### 2.3.3 Locations to be First Checked When Trouble Occurs Immediately After Startup

If an error (trouble) occurs during machine startup or during initial IP conveyance after startup, check the priority checkpoints in accordance with the following table before performing routine troubleshooting procedures.

#### Troubles during Machine Startup and their Corresponding Priority Checkpoints (1/2)

<table>
<thead>
<tr>
<th>Troubles</th>
<th>Priority checkpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not powered up (not activated by switches; no lamp illumination or operation)</td>
<td>Power supply (located on the left-hand side): CN4</td>
</tr>
<tr>
<td>Stopped with &quot;Could not initialize SCSI device&quot; displayed</td>
<td>MTH08A: CN22, CN25, CN27, HDD: CN1, CN2</td>
</tr>
<tr>
<td>Stopped with &quot;VxWorks version 5.3&quot; displayed</td>
<td>SNS08A: CN4, Power supply (located on the right-hand side): DCOUT2</td>
</tr>
<tr>
<td>Bus error</td>
<td>MTH08A: CN19, CN20, SCN08A: CN7, CN9, SNS08A: CN1, Power supply (located on the right-hand side): DCOUT6</td>
</tr>
<tr>
<td>CRT screen flicker</td>
<td>CPU90E (VGA90E): CN7, CRT: CN2, SNS08A: NFB1</td>
</tr>
<tr>
<td>No CRT screen display</td>
<td>CPU90E (VGA90E): CN19, CRT: CN4, LED08A: CN9, Power supply (located on the right-hand side): DCOUT1</td>
</tr>
<tr>
<td>Shutdown process display (stopped at Step 99)</td>
<td>CPU90E: CN6, Power supply (located on the left-hand side): CN3</td>
</tr>
<tr>
<td>Cassette shelf error (13A3)</td>
<td>Cassette set unit: SA3, 7, 11, 15, SOLA1-4</td>
</tr>
<tr>
<td>Shelf failure (shelf 1 → 2 → 3 → 4 → 03A3)</td>
<td>DRV08A: CN4, Cassette set unit: CNA3, Power supply fuse: F10</td>
</tr>
<tr>
<td>Erasure lamp error (13AA)</td>
<td>SCN08A: CN13, Power supply (located on the left-hand side): CN5, Power supply (located on the right-hand side): ACOUT1, 2 DCOUT4</td>
</tr>
<tr>
<td>Serious error → 03C8</td>
<td>Subscanning unit: CN8, CN9</td>
</tr>
<tr>
<td>FANG1-3 not rotated</td>
<td>DRV08A: CN16</td>
</tr>
<tr>
<td>03BC</td>
<td>Side-positioning conveyor: SD1, CNMD1</td>
</tr>
<tr>
<td>03BF</td>
<td>DRV08A: CN1, CN12, SNS08A: CN9, Side-positioning conveyor: CNMD2, SD2, CN1, CN2, Subscanning unit: CNZ2, CNZ6, Power supply (located on the right-hand side): DCOUT3</td>
</tr>
<tr>
<td>03C7</td>
<td>Subscanning unit: CNMZ3</td>
</tr>
<tr>
<td>03C8</td>
<td>DRV08A: CN14, Subscanning unit: CNMZ2, SZ2, Power supply fuse: F2</td>
</tr>
<tr>
<td>03C9</td>
<td>Subscanning unit: CNZ3, SZ3</td>
</tr>
<tr>
<td>03DC</td>
<td>DRV08A: CN15, After-reading conveyor: CNME1, SE1, Subscanning unit: CNZ10</td>
</tr>
<tr>
<td>03DD</td>
<td>DRV08A: CN6, SNS08A: CN6, Cassette set unit: SA17, CAN2, Up-down IP removal unit: CNMB3, CNB4</td>
</tr>
</tbody>
</table>
## Troubles during Machine Startup and their Corresponding Priority Checkpoints (2/2)

<table>
<thead>
<tr>
<th>Troubles</th>
<th>Priority checkpoints</th>
<th>Connectors</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>03DE</td>
<td></td>
<td>Up-down IP removal unit: SB3</td>
<td></td>
</tr>
<tr>
<td>03E8</td>
<td></td>
<td></td>
<td>SCN08A: NFB5</td>
</tr>
<tr>
<td>0532/0537/0538</td>
<td>SCN08A: CN3 Scanning optics unit POL DRV:CN1</td>
<td></td>
<td>SCN08A: NFB1, NFB3</td>
</tr>
<tr>
<td>0534/0537/0538</td>
<td>SCN08A: CN1 Scanning optics unit LDD08A:CN1</td>
<td></td>
<td>SCN08A: NFB1, NFB3</td>
</tr>
<tr>
<td>0534/0537/0538/0536</td>
<td></td>
<td>Power supply fuse: F7, F8</td>
<td>SCN08A: NFB2, NFB4</td>
</tr>
<tr>
<td>0536</td>
<td>SCN08A: CN5 PMT08A: CN1</td>
<td></td>
<td>SCN08A: NFB2, NFB4</td>
</tr>
<tr>
<td>0537</td>
<td>SCN08A: CN2 Scanning optics unit SYNO8A:CN1</td>
<td></td>
<td>SCN08A: NFB6, NFB7, NFB9, NFB10</td>
</tr>
<tr>
<td>0537/0538</td>
<td></td>
<td>Power supply fuse: F6</td>
<td>SCN08A: NFB8</td>
</tr>
<tr>
<td>0538</td>
<td>SCN08A: CN4 Subscanning unit: SZ1, CNZ11</td>
<td></td>
<td>SCN08A: NFB8</td>
</tr>
<tr>
<td>Troubles</td>
<td>Priority checkpoints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No click tone/alarm sound generated, and cassette IN/OUT LED not illuminated</td>
<td>VOL08A: CN1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SNS08A: CN11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multi-stage cassette loading cover: CNT1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cassette IN/OUT LED not illuminated</td>
<td>SNS08A: CN11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multi-stage cassette loading cover: CNT1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cassette cannot be locked (the lock pin remains withdrawn)</td>
<td>SNS08A: CN5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cassette set unit: CNA1, SA2, SA6, SA10, SA14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch panel inoperative</td>
<td>SNS08A: CN15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PNL: CN3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation lamps unit (Ready, Error lamps, etc.)</td>
<td>SNS08A: CN10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED08A: CN1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed erasure lamp (13AA) Erasure lamp fan (FANF1) not rotated</td>
<td>Power supply (located on the right-hand side): DCOUT5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power supply fuse: F5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP jam/freeze (offensive noise from the IP removal unit)</td>
<td>Up-down IP removal unit: SVB1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cassette Setting Error (13A1)</td>
<td>Up-down/before-side-positioning belt dislocated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power supply fuse: F11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out-of-spec IP size (13A8)</td>
<td>Suction cup/air piping dislocated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barcode Read Error (13A9)</td>
<td>SNS08A: CN22, CN23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPU90E: CN11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BCR08A: CN1, CN2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subscanning unit: CNZ1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed IP Suction Error (13E1)</td>
<td>Up-down IP removal unit: SB5, CNPB1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed IP Grip Error (13E3)</td>
<td>Up-down IP removal unit: SB2, CNMB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03B1</td>
<td>DRV08A: CN8, CN13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SNS08A: CN8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erasure conveyor: CNFI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Side-positioning conveyor: CNMD3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Before-side-positioning conveyor: CNC1, CNMC1, SC1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03B3</td>
<td>Side-positioning conveyor: SD3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03C1</td>
<td>SNS08A: CN14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FFM (MZ1): CN1, CN2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subscanning unit: CNZ4, CNZ5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power supply (located on the right-hand side): DCOUT7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03D1</td>
<td>After-reading conveyor: CNME2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erasure conveyor: SF1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03D2</td>
<td>DRV08A: CN10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erasure conveyor: SF2, CNMF1, CNF2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03D4</td>
<td>DRV08A: CN11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erasure conveyor: CNSOLF1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03D5</td>
<td>Erasure conveyor: SF3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03D6</td>
<td>Erasure/before-side-positioning belt dislocated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0422</td>
<td>SNS08A: CN8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MTH08A: CN21</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MTH08A: NFB3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power supply fuse: F3, F4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.4 Troubleshooting flow

03A2 Cassette hold release error / 03A3 Degeneration for all shelves

Cause

03A2: SOLA1-4 is turned ON during cassette hold release after occurrence of 13E1-13E5, but SA3, 7, 11, and 15 do not turn OFF so that the cassette cannot be released.

03A3: Cassette hold release is performed during initialization or during machine operation, but hold release for all the shelves (SA3, 7, 11, and 15 do not turn OFF) cannot be detected.

Supplementary explanation

- Upon initialization or cassette ejection, SOLA1-4 turn ON for releasing the cassette hold.
- When the SOLA1-4 turn ON, the hold pin is withdrawn, so that SA3, 7, 11, and 15 turn OFF, thereby detecting the release of the hold pin.
- An error message is displayed for a shelf where cassette hold release fails.
- This error occurs when the entire cassette hold release is not detected during the above operation.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

**Power OFF**

- Are the hold pin holes for all the cassettes normal? Check to ensure that there is no flash, deformation, or foreign matter.

**Power OFF**

- Is the operation of the solenoid arm and hold pin normal? Lower the solenoid arm by hand to check that it strokes properly.

**Power ON**

- Are SOL1—4 turned ON and the hold pin released during initialization self-diagnostics?

**Power OFF**

- Is the fuse NFB1 on the SNS08A board normal?

**Power OFF**

- Are the connector connections between SOLA1—4 and DRV08A board normal?

**Power OFF**

- Is the fuse (F10) in the power supply unit (JPS-1) normal?

**Power OFF**

- Are the connector connections from SA3, 7, 11, and 15 to SNS08A board normal?

**Power OFF**

- Remove dust or soil from the sensors. Power ON again to check the sensors again. Are SA3, 7, 11, and 15 normal?

**Power OFF**

- Are the connector connections from SA3, 7, 11, and 15 to SNS08A board normal?

**Power OFF**

- Check the error-related system block diagram and connect the connectors as appropriate.
03A8  Out-Of-Spec Initialization IP Size/13A8 Out-Of-Spec IP Size

Cause
03A8: Measurement is made on the length of the IP during IP feed, but the result is detected as out-of-spec.
13A8: Measurement is made on the length of the remaining IP during initialization, but the result is detected as out-of-spec.

Supplementary Explanation
03A8:
- Each motor is activated during initialization, and each sensor is used to detect any remaining IP left in the machine.
- The remaining IP in the machine is conveyed, and IP length measurement is performed by SC1.
- The size of the IP is determined according to the ON/OFF status of SA4, 8, 12, and 16 (mammo/ST sensor), and SB4 (inch/metric sensor), as well as the time taken for the IP to pass over SC1.
- This error occurs when the size of the remaining IP is out of spec as a result of the above operation.

13A8:
- IP length measurement is performed by SC1 during IP conveyance.
- The size of the IP is determined according to the ON/OFF status of SA4, 8, 12, and 16 (mammo/ST sensor), and SB4 (inch/metric sensor), as well as the time taken for the IP to pass over SC1.
- This error occurs when the size of the IP conveyed is out of spec as a result of the above operation.

Sensor related ON: Close, OFF: Open

● Error-related I/O locations

● Error-related system block diagram
CAUTION: Before remedying this error, remove the cause of the IP jam, and then troubleshoot the 13A8 error.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF
Is the drive mechanism normal?
Rotate the MC1/MD3 driving belts by hand to check that the conveyor rollers rotate smoothly.

Y
N
Adjust/replace the following parts.
- Belt/tension
- Conveyor roller/shaft/bearing

Power ON
Are SA4, 8, 12, and 16 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the sensor status.
By turning ON/OFF the SW, make sure that they are normal.

Y
N
Power OFF
Are the connector connections from SA4, 8, 12, 16 to SNS08A board normal?

Y
N
Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SA4, 8, 12, 16 (faulty SW only)
- SNS08A board

Power ON
Is SC1 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the sensor status.
With a slip of paper or the like, block the sensor light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Y
N
Power OFF
Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.
Is SC1 normal?

Y
N
Restart the machine and check its status.

Y
N
Power OFF
Is the connector connection from SC1 to SNS08A board normal?

Y
N
Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SC1
- SNS08A board

FR1H0006.EPS
03B1 Feed Conveyance Error

Cause
After the IP, which is removed from the cassette and conveyed to the elevation unit, passes over SB2, SC1 does not turn ON. Or, SC1 turns ON, but is not turned OFF.

Supplementary explanation
- The IP removed from the cassette is conveyed to the up-down IP removal unit by the driving of MB2 and passes over SB2. (SB2: OFF to ON)
- The IP conveyed to the up-down IP removal unit is conveyed to the before-side-positioning conveyor by the driving of MC1, and passes over SC1. (SC1: OFF to ON)
- IP length measurement is performed according to the time taken to pass over SC1, thereby determining the IP size.
- This error occurs when the IP that is conveyed from the cassette fails to pass over SC1 (SC1 status does not transition from OFF to ON) after it passes over SB2, or when it does not completely pass over SC1 (SC1 status does not transition from ON to OFF) during the above operation.

Sensor related ON: Close, OFF: Open

● Error-related I/O locations

● Error-related system block diagram
03B1

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Are the connection belts for the elevation unit and before-side-positioning conveyor installed properly?

Y

Replace the belts, or install them properly.

N

Power OFF

Is the drive mechanism of MC1 normal?
Rotate the MC1 driving belt by hand to check that the conveyor roller rotates smoothly.

Y

Adjust/replace the following parts.
- Belt/belt tension
- Conveyor roller/shaft/bearing

N

Power OFF

Is the drive mechanism of MD3 normal?
Rotate the MD3 driving belt by hand to check that the conveyor roller rotates smoothly.

Y

Adjust/replace the following parts.
- Belt/belt tension
- Conveyor roller/shaft/bearing

N

Power OFF

Does the convergence path changeover function normally?

Y

Replace the following parts.
- SOLC1/spring
- Shaft/bearing

N

Power ON

Does SOLC1 operate during initialization self-diagnostics?

Y

Replace the following parts.
- SOLC1
- DRV08A board

N

Power ON

Do MC1/MD3 rotate along with the conveyor rollers during initialization self-diagnostics?

Y

Are the following connector connections normal?
- MC1 — DRV08A — JPS-1
- MD3 — DRV08A — JPS-1

N

Power OFF

Is the fuse (F11) in the power supply unit (JPS-1) normal?
If the fuse (F11) is faulty, MC1 does not rotate.

Y

Replace the following parts.
- Fuse (F11)
- DRV08A board
- Power supply unit

N

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.

Power OFF

Is SC1 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SC1 status.
With a slip of paper or the like, block the SC1 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Y

N

Restart the machine and check its status.

Check the error-related system block diagram and connect the connectors as appropriate.

Is the connector connection from SC1 to SNS08A board normal?

Y

Replace the following parts in order named.
- SC1
- SNS08A board

N

Check the error-related system diagram and connect the connector as appropriate.

Is the convergence path changeover function normal?

Y

Replace the following parts.
- MC1/MD3 (faulty motor only)
- DRV08A board

N

Is SC1 normal?

Y

Power OFF

Is the connector connection from SC1 to SNS08A board normal?
03B2 Load Conveyance Error

Cause

After the reading is completed, the IP conveyed from the erasure conveyor does not turn ON SB2. Or it remains ON, or it does turn ON but does not turn OFF.

Supplementary explanation

- The IP conveyed from the erasure conveyor is conveyed to the up-down IP removal unit by the driving of MC1/MB2.
- The IP conveyed to the IP removal unit passes over SB2. (SB2: OFF to ON)
- In order to return the conveyed IP back into the cassette, suction conveyance is performed.
- The IP is conveyed toward the cassette, and completely passes over SB2. (SB2: ON to OFF)
- This error occurs when the IP has been conveyed to the up-down IP removal unit but fails to pass over SB2 (SB2 status does not transition from OFF to ON), or when it does not completely pass over SB2 (SB2 status does not transition from ON to OFF), during the above operation.

Sensor related ON: Close, OFF: Open

- Error-related I/O locations

- Error-related system block diagram
03B2

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

---

Power OFF

Is the IP normal? Check to see that it is not curled, bent, or warped.

Y

Power OFF

Are the conveyance systems of the erasure conveyor, before-side-positioning conveyor, and up-down IP removal unit normal?
Rotate the MC1/MB2 driving belts by hand to check that the conveyor rollers rotate smoothly.

N
Adjust/replace the following parts.
- Belt/belt tension
- Grip spring
- Conveyor roller/shaft/bearing
- Path changeover guide (Section 6.7.4 of Chapter 6)

N

Y

Do MC1/MB2 rotate along with the conveyor rollers during initialization self-diagnostics?

Power ON

Is SB2 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SB2 status.
With a slip of paper or the like, block the SB2 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

N

Y

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB2 normal?

N

Y

Power OFF

Restart the machine and check its status.

---

Is the connector connection from SB2 to SNS08A board normal?

N

Y

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SB2
- SNS08A board
**03B3 Side-Positioning Conveyor Inlet Conveyance Error**

**Cause**
During IP feed conveyance, SD3 does not turn ON after the IP passes over SC1.

**Supplementary explanation**
- The IP conveyed from the up-down IP removal unit is conveyed to the before-side-positioning conveyor by the driving of MC1, and passes over SC1. (SC1: OFF to ON)
- IP length measurement is performed according to the time taken to pass over SC1, thereby determining the IP size. The latch assembly of the side-positioning conveyor is activated so that the top stopper moves up. For 14"x17" and 14"x14" sizes, however, the top stopper remains in the down position.
- The IP is conveyed to the side-positioning conveyor by the driving of MD3, so that BCR reading is performed.
- For the IP that is conveyed toward the top stopper, the IP leading edge is detected by SD3. (SD3: OFF to ON)
- Only for 14"x17" and 14"x14" sizes, the IP is conveyed in reverse direction after BCR reading, so that the top stopper is moved up. For the IP that is conveyed again toward the top stopper, the IP leading edge is detected by SD3. (SD3: OFF to ON)
- This error occurs when SD3 fails to detect the IP (SD3 status does not transition from OFF to ON) during the above operation.

**Sensor related ON: Close, OFF: Open**

**Error-related I/O locations**

**Error-related system block diagram**
Is SD3 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SD3 status.
With a slip of paper or the like, block the SD3 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Power OFF
- Y
  - Replace the IP.
- N
  - Adjust/replace the following parts.
    - Belt/belt tension
    - Conveyor roller/shaft/bearing
    - Grip release mechanism

Power ON
- Y
- N
  - Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- MD3
- DRV08A board

Is SD3 installed normally?
Install the sensor properly.

Is SD3 normal?
With "6. MECH" of M-Utility, execute sensor monitoring again to check the SD3 status.

Power OFF
- Y
  - Check the error-related system block diagram and connect the connectors as appropriate.
- N
  - Replace the following parts in order named.
    - SD3
    - SNS08A board

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.

Restart the machine and check its status.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Is the IP normal?
Check to see that it is not curled or bent.
The IP runs over the shaft due to its curling.

Power OFF
- Y
- N
  - Replace the IP.

Power OFF
- Y
- N
  - Adjust/replace the following parts.
    - Belt/belt tension
    - Conveyor roller/shaft/bearing
    - Grip release mechanism

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.

Restart the machine and check its status.

Is the drive mechanism of the side-positioning conveyor normal?
- Rotate the MD3 driving belt by hand to check that it rotates smoothly.
- Make sure that the grip release wire functions properly.

Power ON
- Y
- N
  - Replace the following parts in order named.
    - MD3
    - DRV08A board

Are the connector connections from MD3 to DRV08A to JPS-1 board normal?

Power OFF
- Y
- N
  - Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- MD3
- DRV08A board

Is the IP normal?
Check to see that it is not curled or bent.
The IP runs over the shaft due to its curling.

Power OFF
- Y
- N
  - Replace the IP.

Power OFF
- Y
- N
  - Replace the following parts in order named.
    - MD3
    - DRV08A board

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- MD3
- DRV08A board

Power OFF
- Y
- N
  - Replace the following parts in order named.
    - SD3
    - SNS08A board

Replace the following parts in order named.
- MD3
- DRV08A board

Check the error-related system block diagram and connect the connectors as appropriate.
03B4 Recovered IP Load Slow Conveyance Error

Cause
After the IP that experienced before-reading error is conveyed in fast speed mode to the elevation unit, SB turns ON; the IP is then conveyed in slow speed mode toward the cassette set unit, but SB2 remains ON. (When 03B4 error occurs, remedy the before-reading error as well.)

Supplementary explanation
- The IP is conveyed from the up-down IP removal unit to the side-positioning conveyor, but before-reading error (IDT line error, etc.) occurs.
- The IP that caused the before-reading error is conveyed (returned) from the side-positioning conveyor to the up-down IP removal unit.
- The IP conveyed is conveyed from the up-down IP removal unit toward the cassette by the driving of MB2, and passes over SB2. (SB2: OFF to ON)
- The IP is conveyed into the cassette and completely passes over SB2. (SB2: ON to OFF)
- This error occurs when the IP does not completely pass over SB2 (SB2 status does not transition from ON to OFF) during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03B4

CAUTION: Before remedying this error, remove the cause of the before-reading error, and then troubleshoot this 03B4 error.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the IP normal?
Check to see that it is not curled, bent, or warped.

Y
- Replace the IP.
N

Power OFF

With all the cassettes set into all the shelves, does the cassette cover open properly?

Y
- Adjust/replace the following parts.
- Movable roll
- Hold pin
- Cassette
N

Power OFF

Is the drive system of the up-down IP removal unit normal?
Rotate the MB2 driving belt by hand to check that it rotates smoothly.

Y
- Adjust/replace the following parts.
- Belt/belt tension
- Conveyor roller/ shaft/bearing
N

Power ON

Does MB2 rotate along with the conveyor roller during initialization self-diagnostics?

Y
N

Power ON

Is SB2 normal?
With “6. MECH” of M-Utility, execute sensor monitoring to check the SB2 status.
With a slip of paper or the like, block the SB2 light path to check that the sensor status is as follows.
- Light blocked: “close”
- Light transmitted: “open”

Y
N

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB2 normal?

Y
N

Power OFF

Is SB2 installed normally?

N
- Install the sensor properly.
Y

Power OFF

Is the connector connection from SB2 to SNS08A board normal?

N
- Check the error-related system block diagram and connect the connectors as appropriate.
Y

Replace the following parts in order named.
- SB2
- SNS08A board

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03B5 Recovered IP Load Fast Conveyance Error

Cause
The IP that experienced before-reading error is conveyed toward the cassette set unit, but SB2 does not turn ON. (When 03B5 occurs, the cause of the IP jam should also be remedied.)

Supplementary explanation
- The IP is conveyed from the up-down IP removal unit to the side-positioning unit, but before-reading error (IDT line error, etc.) occurs.
- The IP that caused the before-reading error is conveyed (returned) from the side-positioning conveyor to the up-down IP removal unit.
- The IP conveyed is conveyed from the up-down IP removal unit toward the cassette by the driving of MB2, and passes over SB2. (SB2: OFF to ON)
- This error occurs when the IP fails to pass over SB2 (SB2 status does not transition from OFF to ON) during the above operation.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03B5

CAUTION: Before remedying this error, remove the cause of the before-reading error, and then troubleshoot this 03B5 error.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Are the drive systems of the up-down IP removal unit/side-positioning conveyor normal? Rotate the MB2/MC1 driving belts by hand to check that they rotate smoothly.

Power ON

Do MB2/MC1 rotate along with the conveyor rollers during initialization self-diagnostics?

Power ON

Is SB2 normal? With "6. MECH" of M-Utility, execute sensor monitoring to check the SB2 status. With a slip of paper or the like, block the SB2 light path to check that the sensor status is as follows.

- Light blocked: "close"
- Light transmitted: "open"

Y N

Power ON

Restart the machine and check its status.

N

Power OFF

Is SB2 installed normally?

N

Install the sensor properly.

Y

Power OFF

Is the connector connection from SB2 to SNS08A board normal?

Y

Check the error-related system block diagram and connect the connectors as appropriate.

N

Replace the following parts in order named.

- SB2
- SNS08A board

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03B6 Feed/Load Conveyance Remaining IP Ejection Error

Cause
During initialization, an IP is detected within the machine as a result of IP search, and it is loaded to the cassette, but SB2 remains OFF, or it turns ON but does not turn OFF. (When 03B6 occurs, the cause of the IP jam should be checked and remedied.)

Supplementary explanation
- During initialization, each motor is activated, and each sensor is used to search for any remaining IP left in the machine.
- If any IP is detected in the machine, the IP ejection process is executed.
- The IP is conveyed toward the cassette by the driving of MF1, MC1, and MB2.
- The IP is conveyed from the up-down IP removal unit toward the cassette, and passes over SB2. (SB2: OFF to ON)
- This error occurs when the IP fails to pass over SB2 (SB2 status does not transition from OFF to ON), or when it does not completely pass over SB2 (SB2 status does not transition from ON to OFF), during the above operation.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
CAUTION: Before remedying this error, check the cause of IP jam and remedy it.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the IP normal? Take out the IP and check to see that it is not curled, bent, or warped.

Y

N
Replace the IP.

Power OFF

Are the conveyance systems of the erasure conveyor, before-side-positioning conveyor, and up-down IP removal unit normal?

Y

N
Adjust/replace the following parts.
- Belt/belt tension
- Grip spring
- Conveyor roller/shaft/bearing
- Path changeover guide

Power ON

With all the cassettes set into all the shelves, does the cassette cover open properly?

Y

N
Adjust/replace the following parts.
- Movable roll
- Hold pin
- Cassette

Power ON

Do MF1/MC1/MB2 rotate along with the conveyor rollers during initialization self-diagnostics?

Y

N
Check the error-related system block diagram and connect the connectors as appropriate.

Are the following connector connections normal?
- MF1 — DRV08A — JPS-1
- MC1 — DRV08A — JPS-1
- MB2 — DRV08A — JPS-1

Y

N
Replace the following parts in order named.
- MF1/MC1/MB2 (faulty motor only)
- DRV08A board

Power OFF

Is SB2 normal?

With "6. MECH" of M-Utility, execute sensor monitoring to check the SB2 status. With a slip of paper or the like, block the SB2 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Y

N
Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB2 normal?

Y

N
Restart the machine and check its status.

N
Check the error-related system block diagram and connect the connectors as appropriate.

Is the connector connection from SB2 to SNS08A board normal?

Y

N
Replace the following parts in order named.
- SB2
- SNS08A board
03B7 Side-Positioning Conveyance Remaining IP Ejection Error

Cause
During initialization, a remaining IP is detected in the side-positioning conveyor or subscanning unit, and it is conveyed toward the before-side-positioning conveyor by the driving of MD3/MZ1, but SC1 does not turn ON. Or, after the IP trailing edge is detected by SZ1, the IP is conveyed to the side-positioning conveyor, but SD3 does not turn ON. (When 03B7 occurs, the cause of the JP jam should also be remedied.)

Supplementary explanation
- During initialization, each motor is activated, and each sensor is used to search for any remaining IP left in the machine.
- A remaining IP is detected by SD3/SZ1 of the side-positioning conveyor.
- In order to execute the IP ejection process, the IP is conveyed to the before-side-positioning conveyor by the driving of MD3/MZ1.
- When the IP conveyed to the before-side-positioning conveyor is detected by SC1, the conveyance direction is switched to the side-positioning conveyor.
- When SD3 of the side-positioning conveyor detects the IP, the IP is conveyed again toward the before-side-positioning conveyor, so that the ejection process is executed.
- This error occurs when SC1 fails to detect the IP, or when SD3 fails to detect the IP after SC1 detects it, during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
CAUTION: Before remedying this error, check the cause of IP jam and remedy it.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

---

Is the IP normal?
Check to see that it is not curled, bent, or warped.

- Y: Replace the IP.
- N: Power OFF

Is the drive mechanism of the side-positioning conveyor normal?
Rotate the MD3 driving belt by hand to check that it rotates smoothly. Also make sure that the grip release mechanism functions properly.

- Y: Adjust/replace the following parts:
  - Belt/belt tension
  - Conveyor roller/shaft/bearing
  - Grip release mechanism
- N: Power OFF

Does MD3 rotate along with the conveyor roller during initialization self-diagnostics?

- Y: Power OFF
- N: Are the connector connections from MD3 to DRV08A to JPS-1 board normal?

  - Y: Replace the following parts in order named:
    - MD3
    - DRV08A board
  - N: Check the error-related system block diagram and connect the connectors as appropriate.

Are SD3/SC1 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SD3/SC1 status. With a slip of paper or the like, block the SD3/SC1 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

- Y: Power ON
- N: Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Are SD3/SC1 normal?

- Y: Power OFF
  - N: Install the sensor properly.
  - Y: Are SD3/SC1 installed normally?
    - Y: Check the error-related system block diagram and connect the connectors as appropriate.
    - N: Replace the following parts in order named:
      - SD3/SC1 (faulty sensor only)
      - SNS08A board

---

CAUTION: Before remedying this error, check the cause of IP jam and remedy it.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

---
03B8/13B8IP Position Information Error

Cause

During initialization, it is determined according to the CMOS information that an IP is found, but no IP is detected as a result of IP search.

Supplementary explanation

- During initialization, it is determined according to the CMOS information whether an IP is found or not in the machine.
- During initialization, each motor is activated, and each sensor is used to search for any remaining IP left in the machine.
- This error occurs when no IP is detected as a result of IP search, although it is determined according to the CMOS information that an IP is found in the machine, during the above operation.

Reference: This error occurs when the IP located in the machine is intentionally removed. If the IP is manually removed, clear the backup memory through “8. BACK UP MEMORY” of M-Utility. Note, however, that when backup memory is cleared, all the error codes stored are also cleared as well.
03B8/13B8

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF

- Is there any remaining IP left in the machine?
  - Y: Power ON and clear "8. BACK UP MEMORY" of M-Utility. Restart the machine again and check its status.
  - N: Power ON and clear "8. BACK UP MEMORY" of M-Utility. Restart the machine again and check its status.

Power ON

- Is the remaining IP ejected during initialization self-diagnostics?
  - Y: Restart the machine and check its status.
  - N: Manually eject the IP left in the machine. Power ON and clear "8. BACK UP MEMORY" of M-Utility. Restart the machine again and check its status.
03B9 Load Standby Remaining IP Ejection Error

Cause
Because SF3 is turned ON during initialization, the IP is conveyed toward the cassette, but SB2 does not turn ON. (When 03B9 occurs, the cause of the IP jam should be checked and remedied.)

Supplementary explanation
- During initialization, each motor is activated, and each sensor is used to search for any remaining IP left in the machine.
- A remaining IP is detected by SF3 of the erasure conveyor.
- In order to execute the IP ejection process, the IP is conveyed from the erasure conveyor toward the up-down IP removal unit by the driving of MF1, MC1, and MB2.
- The IP is conveyed to the up-down IP removal unit, and it passes over SB2. (SB2: OFF to ON)
- This error occurs when the IP fails to pass over SB2 (SB2 status does not transition from OFF to ON), or when it does not completely pass over SB2 (SB2 status does not transition from ON to OFF), during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
CAUTION: Before remedying this error, check the cause of IP jam and remedy it.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF
Are the drive systems of the up-down IP removal unit/erasure conveyor normal?
Rotate the MB2/MC1/MF1 driving belts by hand to check that they rotate smoothly.

Power ON
Do MB2/MC1/MF1 rotate along with the conveyor rollers during initialization self-diagnostics?

Power OFF
Is SB2 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SB2 status.
With a slip of paper or the like, block the SB2 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Power OFF
Are the following connectors normal?
- MB2, MC1 — DRV08A — JPS-1 board
- MF1 — DRV08A — JPS-1 board

Replace the following parts in order named.
- MB2/MC1/MF1 (faulty motor only)
- DRV08A board

Check the error-related system block diagram and connect the connectors as appropriate.

Power OFF
Is SB2 installed normally?
Install the sensor properly.

Power OFF
Is the connector connection from SB2 to SNS08A board normal?
Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SB2
- SNS08A board

Before side-positioning conveyor
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The screw is tightened in place.
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Adjust/replace the following parts.
- Belt/belt tension
- Conveyor roller/shaft/bearing
- Grip release mechanism

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB2 normal?

Y
N

Restart the machine and check its status.

Y
N

03B9
03BC Side-Positioning Operation Error

Cause
MD1 is activated in order to detect the side-positioning home position (HP), but SD1 cannot detect the HP. (When SD1 is ON, it is detected as it transitions from ON to OFF to ON. When SD1 is OFF, a transition from OFF to ON is detected.)

Supplementary explanation
- During initialization, MD1 is driven to detect the HP of the latch assembly.
- When SD1 is OFF during initialization, MD1 is driven in the HP direction, thereby turning ON SD1.
- When SD1 is ON during initialization, MD1 is once driven in the side-positioning direction, thereby turning OFF SD1. MD1 is then driven in the HP direction again to turn ON SD1.
- As SD1 turns ON, the HP of the latch assembly is detected.
- This error occurs when SD1 does not transition from ON to OFF, or from OFF to ON, or from ON to OFF to ON, during the above operation.

Reference: If any trouble occurs on MD1/SD1 during side-positioning operation, “0422 DSP Image Processing Error 1” occurs. After that, during initialization upon power-ON again, 03BC error occurs.
If any trouble occurs on the MD1/latch assembly before side-positioning operation during reading, “03C0 Reading Preparation Conveyance Error” occurs. After that, during initialization upon power-ON again, 03BC error occurs.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03BC

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the side-positioning conveyor normal? Move the side-positioning conveyor by hand to check that it moves smoothly.

N
Adjust/replace the following parts.
- Belt/belt tension
- Rail
- Latch assembly
- Positions of actuator and SD1

Y

Power ON

Does MD1 rotate and the side-positioning conveyor move during initialization self-diagnostics?

Y

Latch assembly
SD1 side-positioning mechanism HP sensor
Actuator for SD1

Y

Is SD1 normal? With "6. MECH" of M-Utility, execute sensor monitoring to check the SD1 status. Move the side-positioning conveyor to its home position by hand and block the SD1 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"
(The sensor status is "close" at the home position.)

N
Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SD1 normal?

Y

Power OFF

Is the connector connection from SD1 to SNS08A board normal?

N
Check the error-related system block diagram and connect the connectors as appropriate.

Y

Replace the following parts in order named.
- SD1
- SNS08A board

Y

Restart the machine and check its status.

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03BF Side-Positioning Grip Operation Error

Cause
SD2 does not turn ON during the side-positioning grip HP detection.

Supplementary explanation
- During initialization, MD2 is driven to turn ON SD2, thereby detecting the HP.
- When MD2 is driven, the actuator causes SD2 to detect ON/OFF.
- When SD2 is ON during initialization, MD2 is driven to turn OFF SD2. The HP is detected by driving MD2 again to turn ON SD2.
- When SD2 is OFF during initialization, MD2 is driven to turn ON SD2.
- This error occurs when SD2 fails to turn ON, or when it does not transition from ON to OFF to ON, during the above operation.

Reference: If any trouble occurs on MD2 prior to side-positioning operation, “03C1 Reading Conveyance Error” occurs. After that, during initialization upon power-ON again, 03BF error occurs.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

![Error-related I/O locations diagram]

Error-related system block diagram

![Error-related system block diagram]
03BF

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive gear of MD2 installed properly?

Y  Install it properly.

N

Power OFF

Is the grip drive system of the side-positioning conveyor normal?

Y  Adjust/replace the following parts.

N  Belt

Grip release mechanism

Conveyor roller/shaft/bearing

Power OFF

Is the sensor arm that blocks SD2 normal?

Y  Install it normally.

N

Power ON

Does MD2 rotate along with the cam during initialization self-diagnostics?

Y  Power OFF

Is the breaker fuse NFB2 of the SNS08A board normal?

N  Reset the fuse.

Y

Power OFF

Is the drive gear (F9/F12) of the power supply unit (JPS-1) normal?

N  Replace the following parts in order named.

Y  Fuse (F9/F12)

SNS08A board

MD2

Power OFF

Are the connector connections from MD2 to DRV08A to JPS-1 board normal?

Y  Replace the following parts in order named.

N  MD2

DRV08A board

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.

Is SD2 normal?

Y  Power OFF

Is the connector connection from SD2 to SNS08A board normal?

N  Check the error-related system block diagram and connect the connectors as appropriate.

Y

Power OFF

Is SD2 normal?

Y  Restart the machine and check its status.

N
03C0 Reading Preparation Conveyance Error

Cause
SZ1 turns ON prior to IP reading preparation.

Supplementary explanation
- The IP conveyed to the side-positioning conveyor is temporarily stopped by the side-positioning stopper to perform side-positioning operation, and then moved to the side guide.
- Once the IP side-positioning operation is completed, the side-positioning stopper is released, so that the IP is conveyed toward the subscanning unit.
- The IP is conveyed to the subscanning unit, and passes over SZ1. (SZ1: OFF to ON)
- As the IP passes over SZ1 (SZ1: OFF to ON), the IP leading edge is detected.
- This error occurs when the IP overruns the side-positioning stopper prior to the side-positioning operation and passes over SZ1 of the subscanning unit (SZ1: OFF to ON) during the above operation.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the side-positioning conveyor normal?
- Move the side-positioning conveyor by hand to check that the latch assembly pushes up the stopper.
  - Y
  - N Adjust/replace the following parts.
    - Belt/belt tension
    - Roller
    - Spring

Power OFF

Is the IP normal?
- Make sure that the IP is not curled, bent, or warped. If it is curled, it moves beyond the stopper and is conveyed into the subscanning unit. Check all the IPs as needed.
  - Y
  - N Replace the IP(s).

Power OFF

Does the initialization self-diagnostics end normally?
- Troubleshoot it based on a new error code displayed.
  - Y
  - N Replace the SCN08A board.
03C1 Reading Conveyance Error

Cause

After IP reading conveyance is initiated, SD3 does not turn OFF.

Supplementary explanation

- After the IP side-positioning operation is completed, the side-positioning stopper is released, and the IP is conveyed toward the subscanning unit by the driving of MD3.
- MZ3 of the subscanning unit is driven to perform the grip/grip release operation of the driven shaft, so that the IP is conveyed.
- The IP is conveyed as MZ2 is driven, and the grip/grip release operation of the driving shaft is performed.
- For the IP conveyed, its leading edge is detected by SZ1, so that IP reading is initiated.
- IP reading conveyance is performed by the driving of MZ1, so that the IP is conveyed from the subscanning unit to the after-reading conveyor, and completely passes over SD3. (SD3: ON to OFF)
- This error occurs when the IP does not completely pass over SD3 (SD3 status does not transition from ON to OFF) during the above operation.

Error-related I/O locations

Error-related system block diagram
03C1

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Remove the scanning optics unit.
4. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF
Is the drive system of the subscanning unit normal?
Rotate the driving shaft by hand to check that the driving shaft rotates smoothly.
Move the cam to check that the upper rubber roller moves down.

Y

Adjust/replace the following parts.
- Kapton® belt
- SUS belt/rubber belt
- Tensioner
- Upper rubber roller/shaft/grip spring
- Grip arm/cam

N

Power ON
Is the operation of MZ1 (FFM) normal?
Referring to the (MZ1) check/replacement procedures described in Section 6.10.23 of Chapter 6, perform the following checks.
- FFM (MZ1) operation check 1
- FFM (MZ1) operation check 2

Y

Power OFF
Is the connector connection from MZ1 to SNS08A board normal?

N

Check the error-related system block diagram and connect the connectors as appropriate.

Y

Power OFF
Is the fuse (F3/F4) of the power supply unit (JPS-1) normal?

N

Replace the following parts in order named.
- Fuse (F3/F4)
- DRV08A board
- Power supply unit

Y

Power ON
Is SD3 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SD3 status.
With a slip of paper or the like, block the SD3 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

N

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SD3 normal?

Y

Restart the machine and check its status.
## 03C2 Reading IP Leading-Edge Detection Error

### Cause
When IP reading conveyance is initiated, SZ1 cannot detect the IP leading edge.

### Supplementary explanation
- After the IP side-positioning operation is completed, the side-positioning stopper is released, and the IP is conveyed toward the subscanning unit by the driving of MD3.
- MZ3 of the subscanning unit is driven to perform the grip/grip release operation of the driven shaft.
- The IP is conveyed to the subscanning unit, and passes over SZ1. (SZ1: OFF to ON)
- As the IP passes over SZ1 (SZ1: OFF to ON), the IP leading edge is detected.
- This error occurs when the IP fails to pass over SZ1 (SZ1 status does not transition from OFF to ON) during the above operation.

Sensor related ON: Close, OFF: Open

#### Error-related I/O locations

#### Error-related system block diagram
Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

**Power OFF**

- Is the IP normal?
  - N: Replace the IP.
  - Y: Make sure that the IP is not curled, bent, or warped. The IP runs over the shaft due to its curling.

- Is the drive system of the side-positioning conveyor normal?
  - N: Replace the following parts.
    - Belt/belt tension
    - Removal of foreign matter
  - Y: Rotate the MD3 driving belt by hand to check that it rotates smoothly. Also make sure that the IP conveyance path is free of any foreign matter.

**Power OFF**

- Is the drive system of the subscanning unit normal?
  - N: Replace the following parts.
    - Kapton* belt
    - SUS belt/rubber belt
    - Tensioner
    - Upper rubber roller/upper shaft/grip spring
    - Grip arm
  - Y: Rotate the driving shaft by hand to check that it rotates smoothly.

**Power ON**

- Is the operation of MZ1 (FFM) normal?
  - Y: Referring to the (MZ1) check/replacement procedures described in Section 6.10.21 of Chapter 6, perform the checks.
  - N: Perform the checks as described in Section 6.10.10 of Chapter 6.

**Power OFF**

- Are the connector connections from MZ1 to SNS08A to JPS-1 board normal?
  - Y: Replace the following parts in order named.
    - MZ1
    - SNS08A board
  - N: Replace the following parts in order named.
    - SED08A board
    - SCN08A board
    - Laser assembly

**Power OFF**

- Is the connection from SED08A to SCN08A board normal?
  - Y: Check the error-related system block diagram and connect the connectors as appropriate.
  - N: Restart the machine and check its status.

---

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03C6 Driving Shaft Grip Error / 03C8 Driving Shaft Grip Release Error
03CA Driving Shaft Grip Self-Diagnostics Error

Cause
03C6: MZ2 is driven before IP reading conveyance, but SZ2 does not turn OFF (IP not ungripped).
03C8: MZ2 is driven before IP reading conveyance, but SZ2 does not turn ON (IP not gripped).
03CA: MZ2 is driven during initialization, but SZ2 does not turn OFF.

Supplementary explanation
- During IP reading conveyance or during initialization, MZ2 is driven to perform the grip/grip release operation.
- Either grip or grip release is detected as SZ2 turns ON/OFF.
- When SZ2 is OFF, it is detected as grip; when SZ2 is ON, it is detected as grip release.
- This error occurs when SZ2 does not transition from ON to OFF, or from OFF to ON, during the above operation.

Sensor related
ON: Close, OFF: Open

● Error-related I/O locations

● Error-related system block diagram
03C6 / 03C8 / 03CA

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the grip mechanism of the subscanning unit normal? Rotate MZ2 by hand to check that it rotates smoothly.

Y

Adjust/replace the following parts.
- Cam
- MZ2

NOTE: When checking the operation, put an Allen wrench into the cam to check the operation of the grip arm.

N

Power OFF

Does MZ2 rotate during initialization self-diagnostics?

Y

Power ON

Is SZ2 normal?

With "6. MECH" of M-Utility, execute sensor monitoring to check the SZ2 status. Put an Allen wrench into the cam of MZ2 and rotate it to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

N

Restart the machine and check its status.

Y

Power ON

Is the connector connection from MZ1 to SNS08A board normal?

N

Replace the following parts in order named.
- MZ2
- DRV08A board

Y

Power OFF

Is the fuse (F2) of the power supply unit (JPS-1) normal?

N

Replace the following parts in order named.
- Fuse (F2)
- SNS08A board
- Power supply unit

Y

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SZ2 normal?

N

Power OFF

Is the connector connection from SZ2 to SNS08A board normal?

N

Replace the following parts in order named.
- SZ2
- SNS08A board

Check the error-related system block diagram and connect the connectors as appropriate.

Y

N

Check the error-related system block diagram and connect the connectors as appropriate.

Power OFF

Does MZ2 rotate during initialization self-diagnostics?

Y

Power ON

Is SZ2 normal?

With "6. MECH" of M-Utility, execute sensor monitoring to check the SZ2 status. Put an Allen wrench into the cam of MZ2 and rotate it to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"
03C7 Driven Shaft Grip Error / 03C9 Driven Shaft Grip Release Error
03CB Driven Shaft Grip Self-Diagnostics Error

Cause
03C7: MZ3 is driven during IP reading conveyance, but SZ3 does not turn OFF (IP not ungripped).
03C09: MZ3 is driven during IP reading conveyance, but SZ3 does not turn ON (IP not gripped).
03CB: MZ2 is driven during initialization, but SZ3 does not turn OFF.

Supplementary explanation
- During IP reading conveyance or during initialization, MZ3 is driven to perform the grip/grip release operation.
- Either grip or grip release is detected as SZ3 turns ON/OFF.
- When SZ3 is OFF, it is detected as grip; when SZ3 is ON, it is detected as grip release.
- This error occurs when SZ3 does not transition from ON to OFF, or from OFF to ON, during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

- Is the grip mechanism of the subscanning unit normal?
  - Rotate MZ3 by hand to check that it rotates smoothly.
    - Y
    - N
      - Adjust/replace the following parts.
        - Cam
        - MZ3

- Power ON
  - Does MZ3 rotate during initialization self-diagnostics?
    - Y
    - N
      - Replace the following parts in order named.
        - MZ3
        - DRV08A board

- Power OFF
  - Is the connector connection from MZ3 to SNS08A board normal?
    - Y
    - N
      - Remove dust or soil from the sensor.
      - Put an Allen wrench into the cam of MZ3 and rotate it to check that the sensor status is as follows.
        - Light blocked: "close"
        - Light transmitted: "open"

- Power OFF
  - Is SZ3 normal?
    - Y
    - N
      - Replace the following parts in order named.
        - SZ3
        - SNS08A board

- Power OFF
  - Is the connector connection from SZ3 to SNS08A board normal?
    - Y
    - N
      - Check the error-related system block diagram and connect the connectors as appropriate.

- Power OFF
  - Is the connector connection from MZ3 to SNS08A board normal?
    - Y
    - N
      - Check the error-related system block diagram and connect the connectors as appropriate.

NOTE: When checking the operation, put an Allen wrench into the cam to check the operation of the grip arm.

Is SZ3 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SZ3 status.
Put an Allen wrench into the cam of MZ3 and rotate it to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"
03D1 After-Reading Conveyance Error

Cause
After after-reading conveyance grip, the IP is conveyed toward the inverting stocker, but SF1 does not turn ON.

Supplementary explanation
- After the IP reading conveyance is completed, ME1 of the after-reading conveyor is driven to grip the IP.
- The IP gripped is conveyed from the after-reading conveyor to the erasure conveyor by the driving of ME2.
- The IP conveyed is conveyed toward the inverting stocker and passes over SF1. (SF1: OFF to ON)
- This error occurs when the IP fails to pass over SF1 (SF1 status does not transition from OFF to ON) during the above operation.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03D1

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

<table>
<thead>
<tr>
<th>Is the grip release mechanism of the after-reading conveyor normal?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move each portion of the grip release mechanism by hand for checking.</td>
</tr>
</tbody>
</table>

Y

- Adjust/replace the following parts.
  - Grip release mechanism
  - Cam
  - ME1 drive gear

N

Power OFF

<table>
<thead>
<tr>
<th>Is the drive system of the after-reading conveyor normal?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotate the ME2 driving belt by hand to check that it rotates smoothly.</td>
</tr>
</tbody>
</table>

Y

- Adjust/replace the following parts.
  - Belt/belt tension
  - Conveyor roller/shaft/bearing

N

Power ON

<table>
<thead>
<tr>
<th>Does ME2 rotate along with the conveyor roller during initialization self-diagnostics?</th>
</tr>
</thead>
</table>

Y

Power OFF

<table>
<thead>
<tr>
<th>Are the connector connections from ME2 to DRV08A to JPS-1 board normal?</th>
</tr>
</thead>
</table>

Y

- Check the error-related system block diagram and connect the connectors as appropriate.

N

Power ON

<table>
<thead>
<tr>
<th>Is SF1 normal?</th>
</tr>
</thead>
<tbody>
<tr>
<td>With &quot;6. MECH&quot; of M-Utility, execute sensor monitoring to check the SF1 status. With a slip of paper or the like, block the SF1 light path to check that the sensor status is as follows.</td>
</tr>
<tr>
<td>Light blocked: &quot;close&quot;</td>
</tr>
<tr>
<td>Light transmitted: &quot;open&quot;</td>
</tr>
</tbody>
</table>

Y

Power OFF

<table>
<thead>
<tr>
<th>Is SF1 installed normally?</th>
</tr>
</thead>
</table>

Y

- Install the sensor properly.

N

Power OFF

<table>
<thead>
<tr>
<th>Is the connector connection from SF1 to SNS08A board normal?</th>
</tr>
</thead>
</table>

Y

- Replace the following parts in order named.
  - SF1
  - SNS08A board

N

Power OFF

| Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SF1 normal? |

Y

- Restart the machine and check its status.

N

Power OFF

| Is SF1 installed normally? |

Y

- Install the sensor properly.

N

Power OFF

| Is the connector connection from SF1 to SNS08A board normal? |

Y

- Check the error-related system block diagram and connect the connectors as appropriate.

N

Replace the following parts in order named.
- SF1
- SNS08A board
03D2 Switchback Conveyance Error

Cause
After SF1 is turned ON, the IP is conveyed toward the inverting stocker, but SF2 cannot detect ON/OFF.

Supplementary explanation
- The IP conveyed from the after-reading conveyer is conveyed toward the inverting stocker of the erasure conveyer.
- When the IP is conveyed to the erasure conveyer, it passes from SF1 to SF2 to SF4 in this order.
- After the IP passes over SF2, the path changeover guide is activated to switch the conveyance direction to the erasure unit.
- This error occurs when the IP fails to pass over SF2 (SF2 status does not transition from OFF to ON) or when it does not completely pass over SF2 (SF2 status does not transition from ON to OFF) during the above operation. Alternatively, this error occurs when the IP passes over SF4 (SF4 status transitions from ON to OFF).

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03D2

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the after-reading conveyor normal? Rotate the MF1 driving belt by hand to check that it rotates smoothly.

Y

Adjust/replace the following parts.
- Belt/belt tension
- Conveyor roller/ shaft/bearing

N

Is SF2 normal?

With "6. MECH" of M-Utility, execute sensor monitoring to check the SF2 status.

Y

With a slip of paper or the like, block the SF2 light path to check that the sensor status is as follows.

G Light blocked: "close"
G Light transmitted: "open"

N

Power OFF

Do ME2/MF1 rotate along with the conveyor rollers during initialization self-diagnostics?

Y

Power OFF

Is the drive gear of MF1 installed properly?

Y

Install it properly.

N

Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.

N

Power ON

Do ME2/MF1 rotate along with the conveyor rollers during initialization self-diagnostics?

Y

N

Are the connector connections from MF1 to DRV08A to JPS-1 board normal?

Y

Replace the following parts in order named.
- MF1
- DRV08A board

N

Power OFF

Is SF2 normal? With "5. MECH" of M-Utility, execute sensor monitoring to check the SF2 status. With a slip of paper or the like, block the SF2 light path to check that the sensor status is as follows.

Y

G Light blocked: "close"
G Light transmitted: "open"

N

Power OFF

Is SF2 installed normally?

Y

Install the sensor properly.

N

Power OFF

Is the connector connection from SF2 to SNS08A board normal?

Y

Check the error-related system block diagram and connect the connectors as appropriate.

N

Replace the following parts in order named.
- SF2
- SNS08A board

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Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.

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03D3 Before-Erasure Conveyance Error

Cause
After the IP is conveyed into the inverting stocker, it is conveyed toward the erasure conveyor, but SF2 does not turn ON.

Supplementary explanation
- The IP conveyed from the after-reading conveyor is conveyed into the inverting stocker of the erasure conveyor.
- After the IP passes over SF2 (SF2: ON to OFF), SOLF1 is driven and the path changeover guide is activated.
- As the path changeover guide is activated, the IP conveyance direction is switched to the erasure lamp unit.
- After the conveyance direction is switched, the IP is conveyed toward the erasure lamp by the driving of MF1, and the IP passes over SF2 again. (SF2: OFF to ON)
- This error occurs when the IP fails to pass over SF2 (SF2 status does not transition from OFF to ON) after the activation of the path changeover guide during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

- Is the drive system of the erasure conveyor normal?
  - Rotate the MF1 driving belt to check that it rotates smoothly.

Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.

Power ON

- Does MF1 rotate along with the conveyor roller during initialization self-diagnostics?
  - Y

Power OFF

- Are the connector connections from MF1 to DRV08A to JPS-1 board normal?
  - Y

Replace the following parts in order named.
- MF1
- DRV08A board

Power OFF

- Is SF2 normal?
  - With "6. MECH" of M-Utility, execute sensor monitoring to check the SF2 status.
  - With a slip of paper or the like, block the SF2 light path to check that the sensor status is as follows.
    - Light blocked: "close"
    - Light transmitted: "open"

Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.

Power ON

- Does MF1 rotate along with the conveyor roller during initialization self-diagnostics?
  - Y

Power OFF

- Are the connector connections from MF1 to DRV08A to JPS-1 board normal?
  - Y

Replace the following parts in order named.
- MF1
- DRV08A board

Power OFF

- Is SF2 installed normally?
  - N

Install the sensor properly.

Power OFF

- Is the connector connection from SF2 to SNS08A board normal?
  - Y

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SF2
- SNS08A board
03D4 Branch Path Changeover Guide Operation Error

**Cause**

After SOLF1 is activated, the IP is conveyed toward the erasure lamp, but SF1 turns ON.

**Supplementary explanation**

- The IP conveyed from the after-reading conveyor is conveyed into the inverting stocker of the erasure conveyor.
- After the IP passes over SF2 (SF2: ON to OFF), SOLF1 is driven and the path changeover guide is activated.
- As the path changeover guide is activated, the IP conveyance direction is switched to the erasure lamp unit.
- After the conveyance direction is switched, the IP is conveyed toward the erasure lamp by the driving of MF1, and the IP passes over SF2 again. (SF2: OFF to ON)
- This error occurs when the IP passes over SF1 (SF1: OFF to ON) during the above operation. (Normally, SF1 does not turn ON once the path is changed.)

**Sensor related ON: Close, OFF: Open**

**Error-related I/O locations**

**Error-related system block diagram**
03D4

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF
Check for any remaining IP left in the erasure conveyor. Does the IP block the SF1 light path?

Y

Power OFF
Is the path changeover of the erasure conveyor normal? Actuates the SOLF1 solenoid by hand to check that it actuates smoothly. Also make sure that tension is applied by the spring.

N

Power ON
Is SF1 normal? With "6. MECH" of M-Utility, execute sensor monitoring to check the SF1 status. With a slip of paper or the like, block the SF1 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

A

Power OFF
Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SF1 normal?

N

Power OFF
Install the sensor properly.

Y

Power OFF
Is the connector connection from SF1 to SNS08A board normal?

N

Check the error-related system block diagram and connect the connectors as appropriate.

Y

Replace the following parts in order named.
- SF1
- SNS08A board

N

Y

Check the error-related system block diagram and connect the connectors as appropriate.

Power OFF
Are the following connector connections normal?
- SOLF1 — DRV08A — JPS-1

Y

Replace the following parts in order named.
- SOLF1
- DRV08A board

N

Power OFF
Does SOLF1 operates during initializations self-diagnostics?

Y

Restart the machine and check its status.

N

Power OFF

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SOLF1 spring

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03D5 Erasure Conveyance Error

Cause
During erasure conveyance, SF2 remains ON, or SF3 does not turn ON, or OFF.

Supplementary explanation
- The IP conveyed from the after-reading conveyor is conveyed into the inverting stocker of the erasure conveyor.
- After the IP passes over SF2 (SF2: ON to OFF), SOLF1 is driven and the path changeover guide is activated.
- As the path changeover guide is activated, the IP conveyance direction is switched to the erasure lamp unit.
- After the conveyance direction is switched, the IP is conveyed toward the erasure lamp by the driving of MF1, and the IP passes over SF2 again. (SF2: OFF to ON)
- The IP is conveyed as erased by the erasure lamp unit, and passes over SF3. (SF3: OFF to ON)
- This error occurs when the IP fails to pass over SF3 (SF3 status does not transition from OFF to ON), or when it does not completely pass over SF3 (SF3 status does not transition from ON to OFF), during the above operation. Alternatively, this error also occurs when the IP does not completely pass over SF2 (SF2 status does not transition from ON to OFF).

Sensor related ON: Close, OFF: Open

• Error-related I/O locations

• Error-related system block diagram
03D5

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the erasure conveyor normal?
- Rotate the MF1 driving belt to check that it rotates smoothly.
  - N: Adjust/replace the following parts.
    1. Belt/belt tension
    2. Roller/grip spring
    3. Conveyor roller/shaft/bearing
  - Y: Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.

Power OFF

Is there any foreign matter under the erasure lamp?
- Remove the erasure lamp and check the conveyance path.
  - N: Remove any foreign matter.
  - Y: Power ON

Does MF1 rotate along with the conveyor roller during initialization self-diagnostics?
  - N: Are the connector connections from MF1 to DRV08A to JPS-1 board normal?
  - Y: Check the error-related system block diagram and connect the connectors as appropriate.

Power ON

Is SF2/SF3 normal?
- With “6. MECH” of M-Utility, execute sensor monitoring to check the SF2/SF3 status.
  - With a slip of paper or the like, block the SF2/SF3 light path to check that the sensor status is as follows.
    1. Light blocked: “close”
    2. Light transmitted: “open”
  - N: Replace the following parts in order named.
    1. MF1
    2. DRV08A board
  - Y: Power OFF

Power OFF

Is SF2/SF3 installed normally?
  - N: Install the sensor properly.
  - Y: Check the error-related system block diagram and connect the connectors as appropriate.

Power OFF

Is the connector connection from SF2/SF3 to SNS08A board normal?
  - N: Replace the following parts in order named.
    1. SF3/SF2
    2. SNS08A board
  - Y: Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.
03D6 After-Erasure Conveyance Error

Cause
After erasure conveyance, SF2 turns ON, but SF3 does not turn OFF. Or, SF3 turns
OFF, but SB2 does not turn ON.

Supplementary explanation
- By the driving of MF1, the IP that was erasure conveyed completely passes over SF3.
  (SF3: ON to OFF)
- After the erasure is completed, SOLC1 is driven to effect path changeover in order to
  convey the IP toward the cassette.
- The IP is conveyed from the erasure conveyor toward the cassette by the driving of
  MC1, and it passes over SB2. (SB2: OFF to ON)
- This error occurs when the IP fails to pass over SF3 (SF3 status does not transition
  from OFF to ON), or when the IP fails to pass over SB2 (SB2 status does not transition
  from OFF to ON) after it passes over SF3, during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03D6

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF
Are the drive systems of the up-down IP removal unit/erasure conveyor normal? Rotate the MB2/MC1/MF1 driving belts to check that they rotate smoothly.

- Y: Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.
  - Adjust/replace the following parts.
    - Belt/belt tension
    - Conveyor roller/shaft/bearing

N: Are the drive systems of the up-down IP removal unit/erasure conveyor normal? Rotate the MB2/MC1/MF1 driving belts to check that they rotate smoothly.

Power OFF
Is the path changeover of the before-side-positioning conveyor normal? Actuate SOLC1 by hand to check that it actuates smoothly.

Y: Power ON
Do MB2 and MC1/MF1 rotate along with the conveyor rollers during initialization self-diagnostics?

Y: Power OFF
Are the following connector connections normal?
- MB2, MC1 — DRV08A — JPS-1 board
- MF1 — DRV08A — JPS-1 board

N: Check the error-related system block diagram and connect the connectors as appropriate.

Y: Replace the following parts in order named.
- MB2/MC1/MF1 (faulty motor only)
- DRV08A board

N: Power OFF
Is the connector connection from SOLC1 to DRV08A board normal?

Y: Replace the following parts in order named.
- SOLC1
- DRV08A board

N: Power OFF
Are SB2/SF3 normal? With "6. MECH" of M-Utility, execute sensor monitoring to check the SB2/SF3 status. With a slip of paper or the like, block the sensor light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Y: Power OFF
Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB2/SF3 normal?

N: Install the sensor properly.

N: Y: Restart the machine and check its status.

Y: Power OFF
Is SB2/SF3 installed normally?

N: Check the error-related system block diagram and connect the connectors as appropriate.

Y: Y: Replace the following parts in order named.
- SB2/SF3
- SNS08A board

N: Power OFF
Is the connector connection from SB2/SF3 to SNS08A board normal?

N: Check the error-related system block diagram and connect the connectors as appropriate.

Y: Replace the following parts in order named.
- SB2/SF3
- SNS08A board
03D7 Convergence Path Changeover Guide Operation Error

Cause
During erasure conveyance, the IP turns ON SF3, so that SC2 is turned ON, but both SF3 and SC2 do not turn OFF.
Alternatively, SF3 turns OFF, but SC2 does not turn ON within a certain period of time.

Supplementary explanation
- By the driving of MF1, the IP that was erasure conveyed completely passes over SF3. (SF3: ON to OFF)
- After the erasure is complete, SOLC1 is driven to effect path changeover in order to convey the IP toward the cassette.
- The IP conveyed from the erasure conveyor to the before-side-positioning conveyor passes over SC2. (SC2: OFF to ON)
- This error occurs when the IP does not completely pass over SC2 (SC2 status does not transition from ON to OFF) during the above operation.

Sensor related ON: Close, OFF: Open

- Error-related I/O locations

- Error-related system block diagram
03D7

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the before-side-positioning conveyor normal?
Rotate the MF1 and MC1 driving belts by hand to check that the conveyor rollers rotate smoothly.

Y

Adjust/replace the following parts.
- Belt/belt tension
- Connection belt
- Conveyor roller/shaft/bearing
- Grip spring

N

Is the path changeover of the before-side-positioning conveyor normal?
Actuate the SOLC1 by hand to check that it actuates smoothly.

N

Adjust/replace the following parts.
- Path changeover guide

Y

Power ON

Do MF1/MC1 rotate along with the conveyor rollers during initialization self-diagnostics?

Y

N

Power OFF

Are the following connector connections normal?
- MF1 — DRV08A — JPS-1 board
- MC1 — DRV08A — JPS-1 board

N

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- MF1/MC1 (faulty motor only)
- DRV08A board

Y

Power ON

Does SOLC1 actuate during initialization self-diagnostics?

Y

Power OFF

Is the following connector connection normal?
- SOLC1 — DRV08A — JPS-1

N

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SOLC1
- DRV08A board

Y

Is SC2 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SC2/SC3 status.
With a slip of paper or the like, block the SC2 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Y

Restart the machine and check its status.

N

Install the sensor properly.

Power OFF

Is SC2 installed normally?

Y

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SC2
- SNS08A board

N

Replace the following parts in order named.
- MF1/MC1 (faulty motor only)
- DRV08A board
03D8 After-Reading Conveyance Remaining IP Ejection Error

Cause

During initialization, an IP is detected in the machine as a result of IP search, and it is conveyed toward the inverting stocker, but SF2 does not turn OFF, Or, SF2 does not turn ON, and SF4 transitions from ON to OFF.

Supplementary explanation

- During initialization, each motor is activated, and each sensor is used to search for any remaining IP left in the machine.
- If any IP is detected in the machine, MF1 is driven to perform the IP ejection process.
- The remaining IP detected is conveyed toward the inverting stocker of the erasure conveyor, and the IP passes over SF2 and SF4 in this order.
- After the IP passes over SF2 (SF2: ON to OFF), the driving of MF1 is stopped.
- This error occurs when the IP does not completely pass over SF2 (SF2 status does not transition from ON to OFF), or when the IP passes over SF4 (SF4: ON to OFF) without being detected by SF2, during the above operation.

Sensor related

ON: Close, OFF: Open

- Error-related I/O locations

- Error-related system block diagram
03D8

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF
Are the conveyance systems of the erasure conveyor/after-reading conveyor normal?
Rotate the ME2 driving belt by hand to check that it rotates smoothly.

Power ON

Does ME2 rotate along with the conveyor roller during initialization self-diagnostics?

Power ON

Is SF2/SF4 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SF2/SF4 status.
With a slip of paper or the like, block the SF2/SF4 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Power OFF

Are the connector connections from ME2 to DRV08A to JPS-1 board normal?

Power OFF
Check the error-related system block diagram and connect the connectors as appropriate.

Power OFF

Is SF2/SF4 installed normally?

Power OFF

Is the connector connection from SF2/SF4 to SNS08A board normal?
Check the error-related system block diagram and connect the connectors as appropriate.

Power OFF

Install the sensor properly.

Y

Replace the following parts in order named.
- ME2
- DRV08A board

N

Replace the following parts in order named.
- SF4/SF2 (faulty sensor)
- SNS08A board

Y

Power OFF

Are the connector connections from ME2 to DRV08A to JPS-1 board normal?

N

Check the error-related system block diagram and connect the connectors as appropriate.

Y

Replace the following parts in order named.
- ME2
- DRV08A board

Y

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.

Is SF2/SF4 normal?

N

Adjust/replace the following parts.
- Belt/belt tension
- Shaft/bearing
- Grip release mechanism

Y

Power OFF

Is SF2/SF4 installed normally?

Y

Install the sensor properly.

N

Replace the following parts in order named.
- SF4/SF2 (faulty sensor)
- SNS08A board

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FR1H9087.EPS
03D9 Erasure Conveyance Remaining IP Ejection Error

Because SF2 is ON during initialization, the IP is conveyed to the erasure conveyor, but SF3 does not turn ON.

Or, because SF3 is ON, the IP is conveyed to the cassette set unit, but SF3 does not turn OFF.

Supplementary explanation
- During initialization, each motor is activated, and each sensor is used to search for any remaining IP left in the machine.
- The remaining IP is detected by SF4, SF2, and SF3 of the erasure conveyor, so the IP ejection process is performed.
- When SF2 detects the IP, MF1 is driven to convey the IP toward the erasure lamp unit, thereby causing it to pass over SF3. (SF3: OFF to ON)
- When SF3 detects the IP, MF1 is driven to convey the IP toward the cassette, thereby causing it to pass over SF3. (SF3: ON to OFF)
- This error occurs when the IP fails to pass over SF3 (SF3 status does not transition from OFF to ON), or when it does not completely pass over SF3 (SF3 status does not transition from ON to OFF), during the above operation.

Sensor related ON: Close, OFF: Open

● Error-related I/O locations

● Error-related system block diagram
03D9

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the erasure conveyor normal?
Rotate the MF1 driving belts to check that it rotates smoothly.

N  Adjust/replace the following parts.
  ● Belt/belt tension
  ● Roller/grip spring
  ● Conveyor roller/teeth/bearing

Y

Power OFF

Is there any foreign matter under the erasure lamp?
Remove the erasure lamp and check the conveyance path.

N  Remove any foreign matter.

Y

Power ON

Does MF1 rotate along with the conveyor roller during initialization self-diagnostics?

N

Y

Power OFF

Are the connector connections from MF1 to DRV08A to JPS-1 board normal?

N

Y

Replace the following parts in order named.
  ● MF1
  ● DRV08A board

Power ON

Is SF2/SF3 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SF2/SF3 status.
With a slip of paper or the like, block the SF2/SF3 light path to check that the sensor status is as follows.
  ● Light blocked: "close"
  ● Light transmitted: "open"

N

Y

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB2/SF3 normal?

N

Y

Restart the machine and check its status.

Reference: When operating the erasure conveyor by hand, the procedures are facilitated by removing the belt that connects the erasure conveyor and before-side-positioning conveyor.

FR1H0090.EPS
03DC  After-Reading Conveyance Grip Operation Error

Cause
SE1 does not turn ON during after-reading conveyance grip HP detection.

Supplementary explanation
- During IP conveyance, ME1 is driven in order to grip the after-reading conveyor.
- When ME1 is driven, SE1 is turned ON/OFF by the actuator.
- As SE1 turns ON, the HP is detected, resulting in the grip condition. As SE1 turns OFF, the grip release condition is entered.
- This error occurs when SE1 does not turn ON or OFF during the above operation. Alternatively, this error occurs when SE1 fails to detect ON/OFF during initialization.

Sensor related ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03DC

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive gear of MF1 installed properly?

Y Install it properly.

N

Power OFF

Is the grip release mechanism of the after-reading conveyor normal?

Rotate the cam by hand to check that it rotates smoothly.

Y

N

Adjust/replace the following parts.
- Belt
- Grip release mechanism
- Shaft/bearing

Power OFF

Is the sensor arm that blocks the SE1 light path normal?

Y Install it properly.

N

Power ON

Does ME1 rotate along with the cam during initialization self-diagnostics?

Y

N

Power OFF

Are the connector connections from ME1 to DRV08A to JPS-1 board normal?

Y

Replace the following parts in order named.
- ME1
- DRV08A board

N

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.

Is SE1 normal?

Y

N

Power OFF

Is the connector connection from SE1 to SNS08A board normal?

Y

Replace the following parts in order named.
- SE1
- SNS08A board

N

Check the error-related system block diagram and connect the connectors as appropriate.

Restart the machine and check its status.
03DD Elevation HP Movement error

Cause
SA17 does not turn ON during elevation HP detection.

Supplementary explanation
- During initialization, MD3 is driven to move the elevation unit, thereby turning ON SA17.
- As SA17 turns ON, the HP of the elevation unit is detected.
- When SA17 turns ON, the elevation unit is subsequently moved for detection of SB3 (shelf 1).
- This error occurs when SA17 does not turn ON during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
03DD

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the up-down IP removal unit normal?
Rotate the MB3 driving belt of the elevation unit by hand to check that the elevation unit moves up and down smoothly.

Y  N

Adjust/replace the following parts.
- Installed condition of drive gear, damage, or wear on it
- Shaft/bearing
- Slide rails at both ends of elevation unit

Power OFF

Is the actuator that blocks the SA17 light path normal?

N  Y

Adjust/replace the following parts.
- Actuator
- Cassette set unit position adjustment
- Elevation unit position adjustment

Power ON

Is MB3 driven with the elevation unit activated during initialization self-diagnostics?

N  Y

Power ON

Are the connector connections from MB3 to DRV08A to JPS-1 board normal?

N  Y

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- MB3
- DRV08A board

Power OFF

Is SA17 normal?

With “6. MECH” of M-Utility, execute sensor monitoring to check the SA17 status.
With a slip of paper or the like, block the SA17 light path to check that the sensor status is as follows.
- Light blocked: “close”
- Light transmitted: “open”

Y  N

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring.

Is SA17 normal?

Y  N

Power OFF

Is the connector connection from SA17 to SNS08A board normal?

N  Y

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SA17
- SNS08A board

Power OFF

Y

Restart the machine and check its status.
03DE Elevation Movement Error

Cause
SB3 does not turn ON or OFF during elevation HP movement.

Supplementary explanation
- During initialization, MD3 is driven to move the elevation unit, thereby turning ON SA17.
- As SA17 turns ON, the HP of the elevation unit is detected.
- When SA17 turns ON, the elevation unit is subsequently moved for detection of SB3 (shelf 1).
- The stop position of the elevation unit is determined as SB3 detects a transition from ON to OFF to ON.
- This error occurs when SB3 does not turn ON, or when it does not transition from ON to OFF to ON, during the above operation.

Sensor related
ON: Close, OFF: Open

● Error-related I/O locations

● Error-related system block diagram
03DE

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the up-down IP removal unit normal?
Rotate the MB3 driving belt of the elevation unit by hand to check that the elevation unit moves up and down smoothly.

Y

N

Adjust/replace the following parts.
- Installed condition of drive gear, damage, or wear on it
- Shaft/bearing
- Slide rails at both ends of elevation unit

Power OFF

Is the actuator that blocks the SB3 light path normal?

Y

N

Adjust/replace the following parts.
- Actuator
- Cassette set unit position adjustment
- Elevation unit position adjustment

Power ON

Is MB3 driven with the elevation unit activated during initialization self-diagnostics?

N

Y

Check the error-related system block diagram and connect the connectors as appropriate.

Power ON

Are the connector connections from MB3 to DRV08A to JPS-1 board normal?

N

Y

Replace the following parts in order named.
- MB3
- DRV08A board

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB3 normal?

N

Y

Restart the machine and check its status.

Power OFF

Is the connector connection from SB3 to SNS08A board normal?

N

Y

Check the error-related system block diagram and connect the connectors as appropriate.

N

Y

Replace the following parts in order named.
- SB3
- SNS08A board

FR1H0100.EPS
03E8  Suction Cup Movement Operation Error

Cause

SB1 does not turn ON or OFF during suction cup HP detection.

Supplementary explanation

- The suction cups are moved by the driving of MB1, thereby turning ON SB1.
- In order to detect the suction cup HP, SB1’s transition from ON to OFF to ON is detected to confirm the suction cup position.
- MB1 is driven, and the suction cups are stopped at an accurate position by pulse driving.
- This error occurs when SB1 does not turn ON, or when it does not transition from ON to OFF to ON, during the above operation.

Sensor related

| ON: Close, OFF: Open |

Error-related I/O locations

Error-related system block diagram
03E8

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Is the drive system of the IP removal unit normal?  
Move the suction cups by hand to check that there is nothing abnormal with them.  
Also rotate the MB1 driving belt by hand to check that the suction cups move smoothly.  

Y  
N

Adjust/replace the following parts.  
- Installed condition of MB1  
- Suction arm (deformation, misaligned parallelism, misaligned phase, loosened screw, etc.)  
- Shaft/bearing at both ends of IP removal arm  
- Link arm at both ends of IP removal arm (deformation, foreign matter trapped, etc.)  
- Side plate (deformation, foreign matter trapped, etc.)

Power ON

Does MB1 rotate during initialization self-diagnostics?  

Y  
N

Power OFF

Are the connector connections from MB1 to DRV08A to DCOUT3 of JPS-1 board normal?  

Y  
N

Replace the following parts in order named.  
- MB1  
- DRV08A board

Power ON

Is SB1 normal?  
With "6. MECH" of M-Utility, execute sensor monitoring to check the SB1 status.  
With a slip of paper or the like, block the SB1 light path to check that the sensor status is as follows.  
- Light blocked: "close"  
- Light transmitted: "open"

Y  
N

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB1 normal?  

Y  
N

Power OFF

Is the actuator that blocks the SB1 light path normal?  
Make sure that it is free from distortion or twisting.

Y  
N

SB1 sensor position adjustment  
Actuator adjustment

Power OFF

Is the connector connection from SB1 to SNS08A board normal?  

Y  
N

Replace the following parts in order named.  
- SB1  
- SNS08A board

Check the error-related system block diagram and connect the connectors as appropriate.

FR1H5103.EPS
13A1 Cassette Setting Error

Cause
The cassette is inserted into the cassette set unit, but SA3, 7, 11 and 15 do not turn OFF.

Supplementary explanation
- When the cassette is inserted into the cassette set unit, either SA2, 65, 10 or 15 (relevant shelf) is turned ON.
- To hold the cassette inserted, SOLA1-4 are turned OFF.
- As SOLA1-4 turn OFF, the hold pin is raised, so that SA3, 7, 11, and 15 turn ON, thereby detecting the hold.
- This error occurs when SOLA1-4 turn OFF but SA3, 7, 11, and 15 fail to turn ON so that the cassette hold cannot be detected during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
13A1

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF

Are the hold pin holes the cassettes normal? N Replace the cassette
Y

Power OFF

Are the operation of the solenoid arm and hold pin normal? Lower the solenoid arm by hand to check that it strokes properly.
N Adjust/replace the solenoid portion.
Y

Power ON

Are SA2, 6, 10, 14 (relevant shelf) installed normally? N Adjust SA2, 6, 10, 14.
Y

Power OFF

Are SOLA1-4 (relevant shelf) turned ON and the hold pin released during initialization self-diagnostics? N Check the error-related system block diagram and connect the connectors as appropriate.
Y

Power ON

Are SA3, 7, 11, and 15 (relevant shelf) normal? Refer to Chapter 6 Section 6.2.2 to perform sensor checks.
N
Y

Power OFF

Are the connector connections from SA3, 7, 11, and 15 to SNS08A board normal? N
Y

Replace the following parts in order named.
- SOLA1—4 (relevant shelf)
- DRV08A board

Power OFF

Are SA3, 7, 11, and 15 (relevant shelf) normal?
N
Y

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SA3, 7, 11, 15 (relevant shelf)
- SNS08A board

Restart the machine and check its status.
13A2 Cassette Hold Release Error

Cause
Because the IP is returned into the cassette, SOLA1-4 are turned ON to release the cassette hold, but SA3, 7, 11, or 15 does not turn OFF, so that the cassette hold cannot be detected.

Supplementary explanation
- In order to release the cassette hold, SOLA1-4 are turned ON.
- As SOLA1-4 turn ON, the hold pin is withdrawn, and SA3, 7, 11, and 15 turn OFF, so that the hold pin release is detected.
- This error occurs when either SA3, 7, 11, or 15 does not turn OFF (a shelf where the cassette hold cannot be released) during the above operation.

Sensor related
ON: Close, OFF: Open

● Error-related I/O locations

● Error-related system block diagram
13A2

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

**Power OFF**

Are the hold pin holes for all the cassettes normal? Check to ensure that there is no flash, deformation, or foreign matter.

- **N** Replace the cassette
- **Y**

**Power OFF**

Is the operation of the solenoid arm and hold pin normal? Lower the solenoid arm by hand to check that it strokes properly.

- **N** Adjust/replace the solenoid portion.
- **Y**

**Power ON**

Are SOLA1-4 turned ON and the hold pin released during initialization self-diagnostics?

- **N**
- **Y**

**Power OFF**

Is the fuse NFB1 of the SNS08A board normal?

- **N** Reset the NFB1.
- **Y**

**Power OFF**

Are the connector connections between SOLA1-4 and DRV08A board normal?

- **N** Check the error-related system block diagram and connect the connectors as appropriate.
- **Y**

**Power OFF**

Is the fuse (F10) in the power supply unit (JPS-1) normal?

- **N** Replace the following parts.
  - Fuse (F10)
  - Power supply unit
- **Y**

**Power OFF**

Are SA3, 7, 11, and 15 normal? Refer to Chapter 6 to perform sensor checks.

- **N** Replace the DRV08A board.
- **Y**

**Power OFF**

Remove dust or soil from the sensors. Power ON again to check the sensors again.

- **N**
- **Y**

**Power OFF**

Are the connector connections from SA3, 7, 11, and 15 to SNS08A board normal?

- **N** Check the error-related system block diagram and connect the connectors as appropriate.
- **Y**

Replace the SNS08A board.

**Check the error-related system block diagram and connect the connectors as appropriate.**
13A3 Cassette Shelf Error

Cause
During cassette ejection for initialization or at the end of initialization, cassette hold release is effected (SOLA1-4 are turned ON), but either SA3, 7, 11 or 15 fails to turn OFF, so that the cassette hold release cannot be achieved.

Supplementary explanation
If there is a cassette during initialization:
- During cassette ejection, SOLA1-4 are turned ON to effect cassette hold release.
- As SOLA1-4 turn ON, the hold pin is lowered, so that SA3, 7, 11, and 15 are turned OFF, thereby detecting the hold pin release.
- This error occurs when either of the relevant shelves (SA3, 7, 11, 15) fails to turn OFF so that the cassette hold release cannot be achieved during the above operation.

If there is no cassette during initialization:
- During initialization, SOLA1-4 are turned ON to effect cassette hold release.
- As SOLA1-4 turn ON, the hold pin is lowered, so that SA3, 7, 11, and 15 are turned OFF, thereby detecting the hold pin release.
- This error occurs when either of SA3, 7, 11, and 15 fails to turn OFF so that the cassette hold release cannot be achieved during the above operation.

Reference: If all of SA3, 7, 11 and 15 do not turn OFF during the above operation, level 0 error “degeneration for all shelves" occurs.

Sensor related ON: Close, OFF: Open

- Error-related I/O locations
- Error-related system block diagram
13A3

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF
Are the hold pin holes the cassettes normal?
N Replace the cassette

Is the operation of the relevant shelf solenoid arm and hold pin normal?
N Adjust/replacement the solenoid portion.
Lower the solenoid arm by hand to check that it strokes properly.

Power ON
Are SOLA1-4 (relevant shelf) turned ON and the hold pin released during initialization self-diagnostics?
Y

Power OFF
Is the connector connection between SOLA1-4 (relevant shelf) and DRV08A board normal?
Y Replace the following parts in order named.
● SOLA1—4 (relevant shelf)
● DRV08A board

Power OFF
Are SA3, 7, 11, and 15 (relevant shelf) normal?
Refer to Chapter 6 Section 6.2.2 to perform sensor checks.

Are SA3, 7, 11, and 15 normal?
Y

Check the error-related system block diagram and connect the connectors as appropriate.

Restart the machine and check its status.

Are the connector connections from SA3, 7, 11, and 15 to SNS08A board normal?
Y

Replace the following parts in order named.
● SA3, 7, 11, 15 (relevant shelf)
● SNS08A board

Check the error-related system block diagram and connect the connectors as appropriate.
13A9 Barcode Read Error

Cause

The barcode of the IP conveyed cannot be read.

Supplementary explanation

- The barcode of the IP that is set is read during feed conveyance.
- The barcode is read by the BCR of the side-positioning conveyor.
- This error occurs when the barcode of the IP cannot be read during the above operation.

Error-related I/O locations

Error-related system block diagram

![Block Diagram](FR1H0113.EPS)

![Block Diagram](FR1H0114.EPS)
13A9

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF

- Is the IP normal?
  - Make sure that it is not curled or bent.
  - Make sure that the barcode display portion is free of soil.

  N → Replace the IP.

  Y → Power OFF

  Is the BCR reading face normal?
  - Make sure that the BCR reading face is free of soil.

  N → Clean the BCR reading face.

  Y → Power ON

  Is the BCR reading face lit?
  - Make sure that the BCR reading face is lit in red.

  N → Are the connector connections from BCR to SNS08A board normal?

    N → Check the error-related system block diagram and connect the connectors as appropriate.

    Y → Y

  Y → Replace the following parts in order named.
  - BCR
  - SNS08A board

  N → Power OFF

  Restart the machine and check its status.
13AA Erasure Lamp Failure

Cause
During initialization or during erasure conveyance, the erasure lamp unlit condition is detected.

Supplementary explanation
- The erasure lamp, which consists of five fluorescent lamps, is turned on to erasure the data of the IP.
- This error occurs when the unlit condition or blinking condition of any one of the fluorescent lamps is detected during the above operation.

● Error-related I/O locations

● Error-related system block diagram
13AA

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power ON

Is the erasure lamp lit during initialization self-diagnostics? Make sure that the erasure lamp is not blinking or unlit.

N

Y

Restart the machine and check its status.

Power OFF

Are the connector connections from LAMP (1—5) to JPS-1 board normal?

N

Y

Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- Failed lamp (LAMP1-5)
- Power supply unit (JPS-1)
13AB Overexposed IP Unerased

Cause
Because the IP dosage detected during reading is greater than 400 mR, it is detected as overexposure.

Supplementary explanation
- While the IP is read by the subscanning unit, its IP dosage is also checked.
- The exposed IP is erased by the erasure conveyor.
- This error occurs when an IP dosage of 400 mR or greater is detected during the above operation.
13AB

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

<table>
<thead>
<tr>
<th>Power ON</th>
<th>Does an error occurs when another IP (IP with different dosage) is used?</th>
<th>Y</th>
<th>Leave the error-causing IP alone for about 16 hours, and then perform primary erasure before using it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power ON</td>
<td>Y</td>
<td>N</td>
<td>From M-Utility, select &quot;2. CONFIGURATION SETTING&quot; and &quot;1. SYSTEM&quot; in sequence to change the sensitivity setting (SFC/SFD).</td>
</tr>
</tbody>
</table>

Replace the following parts in order named.
- PMT board
- SCN board
13AC  ID Information Not Registered

Cause

The ID corresponding to the IDT is checked during IP reading conveyance, but it has not been registered yet.

Supplementary explanation

- Before IP reading conveyance is performed, the ID card of the patient is read by the ID terminal.
- The barcode in the cassette exposed is read by the barcode reader of the ID terminal.
- IP reading conveyance is performed.
- The barcode of the IP is read by the barcode reader of the side-positioning conveyor, and is checked against the ID information read by the ID terminal for confirmation.
- This error occurs when the patient's ID has not yet registered in the IDT during the above operation.
13AC

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power ON

Is the relevant ID card is read by the ID terminal?

Y

Enter the ID information

N

Power OFF

Is the IP normal?
Make sure that the barcode indication is free of soil.

Y

N

Clean the IP barcode indication.

Power OFF

Is the BCR reading face normal?
Make sure that the BCR reading face is free of soil.

Y

N

Clean the BCR reading face.

N

Clean the IP barcode indication.

Restart the machine and check its status.
13AD IP with Improper Generation or Type Detected

Cause
The barcode of the IP conveyed is read, but the spec of the IP type is different.

Supplementary explanation
- The barcode of the IP is read by the BCR of the side-positioning conveyor to determine the IP type.
- The IP type supported shall be type V.
- This error occurs when an IP type other than type V is detected during the above operation.

Error-related I/O locations
13AD

CAUTION: Before remediying this error, remove the cause of the before-reading error and then troubleshoot the 03B5 error.

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF
Is the IP generation within spec?
Make sure that the IP type complies with type V.

Y

N  Replace the IP.

Power OFF
Is the IP normal?
Make sure that the barcode indication is free of soil.

N  Clean or replace the IP.

Y

Power OFF
Is the BCR reading face normal?
Make sure that the BCR reading face is free of soil.

N  Clean the BCR reading face.

Y

Restart the machine and check its status.
13AE No MPM Code Available

Cause
An attempt is made to perform image processing with the information of the patient exposed, but no relevant image processing conditions of the machine are found.

Supplementary explanation
- The exposure information of the patient (exposure anatomical region, exposure menu, modality) is inputted to the ID terminal via an ID card.
- During IP reading conveyance, the barcode of the IP is read by the BCR of the side-positioning conveyor to search for image processing corresponding to the exposure information of the patient.
- This error occurs when image processing corresponding to the exposure information of the patient is not found.
### Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

#### Flowchart:

- **Does the exposure information of the patient correspond to the image processing conditions of the machine?**
  - **Y**  
  - **N** → Check the exposure information of the patient and the image processing of the machine, and execute it again.

- **Power OFF**
  - **Is the IP normal?**
    - **N** → Clean the IP barcode indication.
    - **Y**

- **Power OFF**
  - **Is the BCR reading face normal?**
    - **N** → Clean the BCR reading face.
    - **Y** → Restart the machine and check its status.
13AF  IDT Line Error

Cause
During IP reading conveyance, the IDT is inquired about the relevant ID, but there is no response from the IDT.

Supplementary explanation
- Before IP reading conveyance is performed, the ID card of the patient is read by the ID terminal.
- The barcode in the cassette exposed is read by the barcode reader of the ID terminal.
- IP reading conveyance is performed.
- The IP barcode is read by the barcode reader of the side-positioning conveyor, and is checked against the ID information read by the ID terminal for confirmation.
- This error occurs when there is no response from the IDT when the IDT is inquired about the patient's ID during the above operation.
Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

```
Power OFF
Is the IDT connected properly to the machine?
  Y
  Make sure that the modular jack is connected on the machine and IDT sides as appropriate.
N  Connect the IDT to the machine and execute it again.

Power OFF
Is the cable connecting between the machine and IDT normal?
  Y
  Make sure that the cable is free of defect.
N  Replace the connection cable.
  Y
Restart the machine and check its status.
```
13E1 Feed IP Suction Error

Cause
To convey the IP in the cassette, PB1 is turned ON to suck the IP with the suction cups, but SB5 does not turn ON.

Supplementary explanation
- To suck the IP in the cassette, the suction cups are moved from the home position toward the cassette by the driving of MB1.
- To suck the IP with the suction cups, PB1 is turned ON.
- When the suction of the IP by the suction cups is detected, SB5 is turned ON.
- This error occurs when SB5 does not turn ON during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
13E1

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF

Is the IP normal?
Make sure that its sucked surface is not soiled, curled, or bent.

Y → Clean or replace the IP.

N → Adjust/replace the following parts.
- Movable roll
- Hold pin
- Cassette

Power OFF

With the cassette set in the relevant shelf, does the cassette cover open properly?

Y → Clean/adjust/replace the following parts.
- Suction cup rubber
- Suction cup hose

N → Adjust/replace the following parts.
- Suction cup arm/shaft/bearing

Power OFF

Are the suction cups of the IP removal unit normal?
- Check if the suction cups are installed properly.
- Check the suction cups for any soil or deformation.

Y → Power OFF

Are the connector connections from PB1 to DRV08A to JPS-1 board normal?

Y → Check the error-related system block diagram and connect the connectors as appropriate.

N → Replace the following parts in order named.
- PB1
- DRV08A board

Power OFF

Is SB5 normal?
With "6. MECH" of M-Utility, execute sensor monitoring to check the SB5 status.

Y → Power OFF

Is SB5 installed normally?

Y → Install the sensor properly.

N → Check the error-related system block diagram and connect the connectors as appropriate.

Restart the machine and check its status.

With the cassette set in the relevant shelf, does the cassette cover open properly?

Y → Power OFF

Is SB5 installed normally?

Y → Install the sensor properly.

N → Check the error-related system block diagram and connect the connectors as appropriate.

Replace the following parts in order named.
- SB5
- SNS08A board
13E2 Feed IP Dropped/13E5 Load IP Dropped

Cause
13E2: While the IP is being sucked and conveyed by the suction cups, SB5 is turned OFF.
13E5: While the IP that has been loaded is being sucked and conveyed into the cassette, SB5 is turned OFF.

Supplementary explanation
13E2:
- The IP in the cassette is sucked and conveyed so that the IP is fed to the grip roller.
- While the IP is sucked by the suction cups, SB5 is ON.
- This error occurs when SB5 is turned OFF while the IP is being moved by predetermined pulses to the grip rollers during the above operation.

13E5:
- The IP that has been loaded is sucked and conveyed back into the cassette.
- While the IP is sucked by the suction cups, SB5 is ON.
- This error occurs when SB5 is turned OFF while the IP is being moved by predetermined pulses to the grip roller during the above operation.

Sensor related
ON: Close, OFF: Open

- Error-related I/O locations

- Error-related system block diagram
13E2/13E5

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF

Is the IP normal? Make sure that its sucked surface is not soiled, curled, or bent.

N → Clean or replace the IP.

Y →

Power OFF

Are the suction cups of the IP removal unit normal?
● Check if the suction cups are installed properly.
● Check the suction cups for any soil or deformation.

N → Clean/adjust/replace the following parts.
● Suction cup rubber
● Suction cup retaining screw

Y →

Power OFF

Is the air hose of the IP removal unit normal?
● Check if the air hose/hose joint are installed properly.

Y →

Power ON

Is SB5 normal? With "6. MECH" of M-Utility, execute sensor monitoring to check the SB5 status.

Y →

Power OFF

Is SB5 installed normally?

N → Install the sensor properly.

Y →

Power OFF

Is the connector connection from SB5 to SNS08A board normal?

N → Check the error-related system block diagram and connect the connectors as appropriate.

Y → Replace the following parts in order named.
● SB5
● SNS08A board

 Restart the machine and check its status.
13E3  IP Grip Error

Cause
The IP that has been sucked and conveyed from the cassette is fed to the grip roller, but SB2 does not turn ON.

Supplementary explanation
- The IP that has been sucked and conveyed from the cassette is fed to the grip roller.
- The IP fed to the grip roller is conveyed to SB2 by the driving of MB2.
- As SB2 turns ON, the leading edge of the IP is detected.
- This error occurs when the IP is fed to the grip roller but SB2 does not turn ON during the above operation.

Sensor related
ON: Close, OFF: Open

Error-related I/O locations

Error-related system block diagram
13E3

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF

Is the IP normal? Make sure that it is not soiled, curled, or bent.

Y
 Replace the IP.

N

Power OFF

Is the drive mechanism of the IP removal unit normal? Rotate the MB2 driving belt by hand to check that the conveyor roller rotates smoothly.

Y
 Adjust/replace the following parts.
- Belt/belt tension
- Conveyor roller/shaft/bearing

N

Power OFF

Does MB2 rotate along with the conveyor roller during initialization self-diagnostics?

Y

Power ON

Is SB2 normal? With "6. MECH" of M-Utility, execute sensor monitoring to check the SB2 status. With a slip of paper or the like, block the SB2 light path to check that the sensor status is as follows.
- Light blocked: "close"
- Light transmitted: "open"

Y

N

Power OFF

Remove dust or soil from the sensor. Power ON again to execute sensor monitoring. Is SB2 normal?

Y

N

Restart the machine and check its status.

Power OFF

Is the connector connection from SB2 to SNS08A board normal?

Y
 Replace the following parts in order named.
- SB2
- SNS08A board

N

Power OFF

Check the error-related system block diagram and connect the connectors as appropriate.

N

Are the connector connections from MB2 to DRV08A to JPS-1 board normal?

Y
 Replace the following parts in order named.
- MB2
- DRV08A board

N

Check the error-related system block diagram and connect the connectors as appropriate.
13E4 Load IP Suction Error

Cause
To return into the cassette the IP that has been load conveyed, PB1 is turned ON to suck the IP with the suction cups, but SB5 does not turn ON.

Supplementary explanation
- The IP that has been erasure conveyed is conveyed through the before-side-positioning conveyor to the up-down IP removal unit.
- To suck the IP that is conveyed to the IP removal unit, the suction cups are moved from the load standby position to the load suction position by the driving of MB1.
- To suck the IP with the suction cups, PB1 is turned ON.
- When the suction of the IP by the suction cups is detected, SB5 turns ON.
- This error occurs when SB5 does not turn ON during the above operation.

Sensor related: ON: Close, OFF: Open

- Error-related I/O locations

- Error-related system block diagram
13E4

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and if any, remove it all.

Power OFF

- Is the IP normal?
  - Make sure that its sucked surface is not soiled, curled, or bent.
  - N: Clean/replace the IP.
  - Y: Are the suction cups of the IP removal unit normal?
    - N: Clean/adjust/replace the following parts.
      - Suction cup rubber
      - Suction cup hose
    - Y: Is the drive mechanism of the IP removal unit normal?
      - N: Adjust/replace the following parts.
        - Suction cup arm/shaft/bearing
      - Y: Does PB1 rotate along during initialization self-diagnostics?

Power ON

- Is SB5 normal?
  - With "6. MECH" of M-Utility, execute sensor monitoring to check the SB5 status.
  - Y: Are the connector connections from PB1 to DRV08A to JPS-1 board normal?
    - Y: Replace the following parts in order named.
      - PB1
      - DRV08A board
    - N: Is SB5 installed normally?
      - Y: Install the sensor properly.
      - N: Is the connector connection from SB5 to SNS08A board normal?
        - Y: Check the error-related system block diagram and connect the connectors as appropriate.
        - N: Restart the machine and check its status.
          - Replace the following parts in order named.
            - SB5
            - SNS08A board
2.5 IP Jam Handling Procedures

**CAUTIONS**

- Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.
- Before returning a jammed IP to the machine, thoroughly make sure that the IP is not scratched, scaled off, or seriously warped due to rubbing.
- Do not leave a jammed IP bent in the conveyance path for prolonged periods of time because machine malfunction or IP breakage may occur.
- IP conveyance checkout must be performed after the machine is restored to normal with a jammed IP removed.

---

### Removing a Jammed IP

When an IP jam error occurs, you should basically complete the following procedure.

1. Turn OFF the machine.
2. Turn the machine back ON.
   - The initialization sequence is performed.
3. Check whether the jammed IP is discharged in the initialization sequence.
   - When the IP is not discharged
     - Perform steps (4) and beyond.
   - When the IP is discharged
     - Check for improper IP conveyance.
6. Note the error code and remove the IP in a manner appropriate for the error encountered.
   - The tables on the subsequent pages indicate the relationship between the displayed error codes and IP removal procedures. Note the tables to determine the IP removal procedures to be performed. Remove the IP in accordance with the remedies (1 through 10) set forth in section 5.3.2, Detailed IP Removal Procedures.
4. Restore the machine to normal.
5. Check for improper IP conveyance.
6. Find the indicated IP removal procedures to complete the procedure.
<table>
<thead>
<tr>
<th>Error code</th>
<th>Error name</th>
<th>Reference to IP removal procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>03B0</td>
<td>Feed/load conveyance remaining IP ejection error</td>
<td>- IP Jam Locations and Detailed Procedures for IP Jam Removal</td>
</tr>
<tr>
<td>03B1</td>
<td>Feed conveyance error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>03B2</td>
<td>Load conveyance error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>03B3</td>
<td>Side-positioning conveyor inlet conveyance error</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>03B4</td>
<td>Recovered IP load slow conveyance error</td>
<td>- IP Jam Locations and Detailed Procedures for IP Jam Removal</td>
</tr>
<tr>
<td>03B5</td>
<td>Recovered IP load fast conveyance error</td>
<td>- IP Jam Locations and Detailed Procedures for IP Jam Removal</td>
</tr>
<tr>
<td>03B6</td>
<td>Feed/load conveyance remaining IP ejection error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>03B7</td>
<td>Side-positioning conveyance remaining IP ejection error</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>03B8</td>
<td>IP position information error</td>
<td>- IP Jam Locations and Detailed Procedures for IP Jam Removal</td>
</tr>
<tr>
<td>03B9</td>
<td>Load standby remaining IP ejection error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>03BC</td>
<td>Side-positioning HP operation error</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>03BF</td>
<td>Side-positioning grip operation error</td>
<td>Remedy 4/5/6</td>
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<tr>
<td>03C1</td>
<td>Read conveyance error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03C2</td>
<td>Read IP leading-edge detection error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03C6</td>
<td>Driving shaft grip error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03C7</td>
<td>Driven shaft grip release error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03C8</td>
<td>Driving shaft grip release error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03C9</td>
<td>Driven shaft grip error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03CA</td>
<td>Driven shaft grip self-diagnostics error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03CB</td>
<td>Driven shaft grip release self-diagnostics error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>03D1</td>
<td>After-reading conveyance error</td>
<td>Remedy 6/7</td>
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<tr>
<td>03D2</td>
<td>Before-erasure conveyance error</td>
<td>Remedy 7/8/9/10</td>
</tr>
<tr>
<td>03D4</td>
<td>Branch path changeover guide operation error</td>
<td>Remedy 7/8/9/10</td>
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<tr>
<td>03D5</td>
<td>Erasure conveyance error</td>
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<tr>
<td>03D6</td>
<td>After-erasure conveyance error</td>
<td>Remedy 7/8/9/10</td>
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<tr>
<td>03D7</td>
<td>Convergence path changeover guide operation error</td>
<td>Remedy 3/4/5/10</td>
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<tr>
<td>03D8</td>
<td>After-reading conveyance remaining IP ejection error</td>
<td>Remedy 6/7</td>
</tr>
<tr>
<td>03D9</td>
<td>Erasure conveyance remaining IP ejection error</td>
<td>Remedy 7/8/9/10</td>
</tr>
<tr>
<td>03DC</td>
<td>After-reading grip operation error</td>
<td>Remedy 6/7</td>
</tr>
<tr>
<td>03DD</td>
<td>Elevation HP movement error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>03DE</td>
<td>Elevation shelf movement error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>03E8</td>
<td>Suction cup movement error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>0538</td>
<td>Leading-edge detection error 1</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13A2</td>
<td>Cassette hold release error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13A3</td>
<td>Cassette shelf error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>Error code</td>
<td>Error name</td>
<td>Reference to IP removal procedure</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>13A8</td>
<td>Out-of-spec IP size</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13AD</td>
<td>IP with improper generation/type detected</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13AE</td>
<td>No relevant MPM code</td>
<td>?</td>
</tr>
<tr>
<td>13B8</td>
<td>IP position information error</td>
<td>?</td>
</tr>
<tr>
<td>13E1</td>
<td>Feed IP suction error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13E2</td>
<td>Feed IP dropped</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13E3</td>
<td>Feed IP grip error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13E4</td>
<td>Load IP suction error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>13E5</td>
<td>Load IP dropped</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23A1</td>
<td>Cassette hold failure retry</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23A2</td>
<td>Cassette hold release failure retry</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23A3</td>
<td>Degeneration for relevant cassette shelf</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23A9</td>
<td>Barcode read retry</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>23BA</td>
<td>Side-positioning HP detection retry</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>23BB</td>
<td>Side-positioning HP detection preparation retry</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>23BC</td>
<td>Side-positioning operation error</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>23BD</td>
<td>Side-positioning grip HP detection retry</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>23BE</td>
<td>Side-positioning grip HP detection preparation retry</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>23BF</td>
<td>Side-positioning grip operation error</td>
<td>Remedy 4/5/6</td>
</tr>
<tr>
<td>23C5</td>
<td>FFM drive W.F. disorder</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>23C6</td>
<td>Driving shaft grip operation error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>23C7</td>
<td>Driven shaft grip release operation error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>23C8</td>
<td>Driving shaft grip drive speed correction error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>23C9</td>
<td>Driven shaft grip release drive speed correction error</td>
<td>Remedy 6</td>
</tr>
<tr>
<td>23D2</td>
<td>Conveyance sensor error</td>
<td>?</td>
</tr>
<tr>
<td>23DA</td>
<td>After-reading grip HP detection retry</td>
<td>Remedy 6/7</td>
</tr>
<tr>
<td>23DB</td>
<td>After-reading grip HP detection preparation retry</td>
<td>Remedy 6/7</td>
</tr>
<tr>
<td>23DC</td>
<td>After-reading grip operation error</td>
<td>Remedy 6/7</td>
</tr>
<tr>
<td>23DE</td>
<td>Elevation shelf movement error</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23E1</td>
<td>Feed IP suction failure retry</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23E4</td>
<td>Load IP suction failure retry</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23E6</td>
<td>Suction cup HP detection preparation retry</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23E7</td>
<td>Suction cup HP detection retry</td>
<td>Remedy 1/2/3/4</td>
</tr>
<tr>
<td>23E8</td>
<td>Suction cup HP return error</td>
<td>Remedy 1/2/3/4</td>
</tr>
</tbody>
</table>
IP Jam Locations and Detailed Procedures for IP Jam Removal

Referring to the illustration below, check the IP jam locations and take their remedial steps as appropriate.
Remedy 1

Jam location: Cassette set unit or up-down IP removal unit
Cause: Removal failure or loading failure
IP status:
   a) The IP cannot be conveyed forward but can be conveyed backward.
   b) The IP cannot be conveyed forward or backward.

Recovery procedure
Gain access from the front or right-hand side of the machine.

a
   (1) Remove the upper front cover.
   (2) Remove the tray of cassette set unit.
      "4.1 Pulling Out and Pushing In Tray of Cassette Set Unit"
   (3) Rotate the up-down IP removal unit rollers by hand to remove the IP

b
   (1) Remove the upper front cover and cassette set unit.
      "4.2 Removing and Reinstalling Cassette Set Unit"
   (2) Pull out the tray of cassette set unit and remove the IP.
      "4.1 Pulling Out and Pushing In Tray of Cassette Set Unit"
Remedy 2

Jam location: Up-down IP removal unit
Cause: Conveyance failure
IP status:

The IP leading edge or trailing edge has not reached the before-side-positioning conveyor.

a) The IP cannot be conveyed forward but can be conveyed backward.
b) The IP cannot be conveyed forward or backward.

Recovery procedure

a

Gain access from the front or right-hand side of the machine.

(1) Remove the upper front cover.
(2) Remove the tray of cassette set unit.
   "4.1 Pulling Out and Pushing In Tray of Cassette Set Unit"
(3) Rotate the up-down IP removal unit rollers by hand to remove the IP.

b

Gain access from the front, right-hand, or left-hand side of the machine.

(1) Remove the upper front cover.
(2) Pull out the tray of cassette set unit.
   "4.1 Pulling Out and Pushing In Tray of Cassette Set Unit"
(3) Remove the up-down conveyance guide of the up-down IP removal unit to take out the IP.
Remedy 3

Jam location:  Up-down IP removal unit or before-side-positioning conveyor
Cause:  Conveyance failure
IP status:

A certain portion of the jammed IP is located in the up-down IP removal unit with the remaining portion placed in the before-side-positioning conveyor. Therefore, these two units cannot be pulled out.

a) The IP cannot be conveyed forward but can be conveyed backward.
b) The IP cannot be conveyed forward or backward.

Recovery procedure

● a
Gain access from the front or right-hand side of the machine.

(1) Remove the right-hand side cover.
(2) Rotate the before-side-positioning conveyor drive shaft by hand to convey the IP to the up-down IP removal unit.
(3) Remove the upper front cover.
(4) Pull out the tray of cassette set unit.
(5) Rotate the up-down IP removal unit rollers by hand to remove the IP.

● b
Gain access from the rear or right-hand side of the machine

(1) Remove the rear cover from the machine.
(2) Remove the rear guide from the before-side-positioning conveyor.
(3) Rotate the before-side-positioning conveyor rollers by hand to remove the IP.
Remedy 4

Jam location: Up-down IP removal unit, before-side-positioning conveyor, or side-positioning conveyor

Cause: Conveyance failure

IP status:
A certain portion of the jammed IP is located in the up-down IP removal unit with the remaining portions placed in the before-side-positioning conveyor and in the side-positioning conveyor. Therefore, these three units cannot be pulled out.

a) The IP cannot be conveyed forward but can be conveyed backward.
b) The IP cannot be conveyed forward or backward.

Recovery procedure

a
Gain access from the front or right-hand side of the machine.

(1) Remove the right-hand side cover.
(2) Release the side-positioning conveyor grip.
(3) Rotate the before-side-positioning conveyor rollers by hand to convey the IP to the up-down IP removal unit.
(4) Remove the upper front cover.
(5) Pull out the tray of cassette set unit.
   "4.1 Pulling Out and Pushing In Tray of Cassette Set Unit"
(6) Rotate the up-down IP removal unit rollers by hand to remove the IP.

b
Gain access from the rear or right-hand side of the machine.

(1) Remove the rear cover.
(2) Remove the rear guide from the before-side-positioning conveyor.
(3) Release the side-positioning conveyor grip.
(4) Rotate the before-side-positioning conveyor rollers by hand to remove the IP.
Remedy 5

Jam location: Before-side-positioning conveyor or side-positioning conveyor
Cause: Conveyance failure
IP status:
A certain portion of the jammed IP is located in the before-side-positioning conveyor with the remaining portion placed in the side-positioning conveyor. Therefore, these two units cannot be pulled out.

a) The IP cannot be conveyed forward but can be conveyed backward.
b) The IP cannot be conveyed forward or backward.

Recovery procedure

• a
Gain access from the front or right-hand side of the machine.
(1) Remove the upper front cover.
(2) Pull out the tray of cassette set unit.
(3) Release the side-positioning conveyor grip.
(4) Rotate the before-side-positioning conveyor rollers by hand to remove the IP from the top (frame slit) of the before-side-positioning conveyor.

• b
Gain access from the rear or right-hand side of the machine.
(1) Remove the rear cover.
(2) Remove the rear guide from the before-side-positioning conveyor.
(3) Release the side-positioning conveyor grip.
(4) Rotate the before-side-positioning conveyor rollers by hand to remove the IP.

Remedy 6

Jam location: Side-positioning conveyor, subscanning unit, or after-reading conveyor
Cause: Conveyance failure
IP status:

a) The IP cannot be conveyed forward but can be conveyed backward.
b) The IP cannot be conveyed forward or backward.

Recovery procedure

The same recovery procedure is to be performed no matter whether the IP is stopped in the side-positioning conveyor, subscanning unit, or after-reading conveyor.
Gain access from the right-hand side of the machine.
(1) Remove the right-hand side cover from the machine.
(2) Pull out the scanner unit and then remove the IP.
If the IP in the subscanning unit cannot directly be accessed, first remove the light-collecting guide and then the IP.
Remedy 7

Jam location: After-reading conveyor or erasure conveyor  
Cause: Conveyance failure  
IP status: 
A certain portion of the jammed IP is located in the after-reading conveyor with the remaining portion placed in the erasure conveyor. Therefore, these two units cannot be pulled out.

a) The IP cannot be conveyed forward but can be conveyed backward.

b) The IP cannot be conveyed forward or backward.

Recovery procedure

Gain access from the front or right-hand side of the machine.

a

(1) Rotate the rollers in the after-reading conveyor and erasure conveyor by hand to position the entire IP in the after-reading conveyor. The alternative is to manually release the after-reading conveyor roller grip and then rotate the erasure conveyor rollers by hand to position the entire IP in the after-reading conveyor.

(2) Remove the right-hand side cover.

(3) Pull out the scanner unit and take out the IP.

If you cannot directly access the IP in the subscanning unit, first remove the light-collecting guide and then the IP.

b

(1) Manually release the after-reading conveyor roller grip.

(2) Remove the erasure conveyor front guide and then manually convey the IP until it is entirely positioned in the after-reading conveyor.

Remedy 8

Jam location: Erasure conveyor  
Cause: Conveyance failure  
IP status: 
The IP is stopped at a position immediately before the erasure conveyor switchback point.

a) The IP cannot be conveyed forward but can be conveyed backward.

b) The IP cannot be conveyed forward or backward.

Recovery procedure

Gain access from the front or right-hand side of the machine.

The same recovery procedure is to be performed no matter whether the IP status is a or b.

(1) Remove the front guide from the erasure conveyor.

(2) Remove the IP by pulling it forward until it comes off the machine.
# Remedy 9

**Jam location:** Erasure conveyor  
**Cause:** Conveyance failure  
**IP status:**

The IP is stopped at a position immediately after the erasure conveyor switchback point.

- a) The IP cannot be conveyed forward but can be conveyed backward.  
- b) The IP cannot be conveyed forward or backward.

**Recovery procedure**

Gain access from the front of the machine.

- a
  
  1. Rotate the erasure conveyor rollers by hand to convey the IP to a position immediately before the temporary standby position.
  
  2. Remove the front guide from the erasure conveyor.
  
  3. Remove the IP by pulling it forward until it comes of the machine.

- b
  
  1. Remove the guide from the top of the erasure conveyor temporary standby section.
  
  2. Remove the IP by pulling it forward until it comes of the machine.

# Remedy 10

**Jam location:** Before-side-positioning conveyor or erasure conveyor  
**Cause:** Conveyance failure  
**IP status:**

A certain portion of the jammed IP is located in the before-side-positioning conveyor with the remaining portion placed in the erasure conveyor. Therefore, these two units cannot be pulled out.

- a) The IP cannot be conveyed forward but can be conveyed backward.  
- b) The IP cannot be conveyed forward or backward.

**Recovery procedure**

Gain access from the front or right-hand side of the machine. The same recovery procedure is to be performed no matter whether the IP status is a or b.

1. Reach into the side plate hole in the before-side-positioning conveyor and properly position the IP (so that it can be conveyed forward).

2. Pull out the up-down IP removal unit.

   "4.2 Removing and Reinstalling Tray of Cassette Set Unit"

3. Rotate the before-side-positioning conveyor rollers by hand and remove the IP from the top of the before-side-positioning conveyor.
2.6 Checking for Improper IP Conveyance

Allow the machine to convey various sizes of IP (five sizes including the mammo type or four sizes without it) about 10 times each to check whether an IP jam error occurs.

■ Items to Be Prepared

Provide on hand the IP cassettes of the following sizes and their corresponding IPs.
• 14" x 14" (35cm x 35cm)
• 14" x 17" (35cm x 43cm)
• 10" x 12" (24cm x 30cm)
• 8" x 10" (18cm x 24cm)
• – (18 cm x 24 cm mammo) ◦ Required only when the mammo type is in use

■ Checkout Procedure

(1) Turn ON the machine.
(2) Touch the U-Utility button.
◦ The display switches to the U-Utility screen.
(3) Sequentially touch the upper left corner and upper right corner of the operation panel.
◦ M-Utility starts.

NOTES: ¥ For the IDT type, the "menu selecting icon" does not appear.
¥ For the initial setting, the "Multiframe forced output" button will not appear.
(4) Sequentially select “3. TEST MODE”, “2. AUTO MODE”, and “2. PRIMARY ERASURE”.

ؤول A message appears to prompt for IP conveyance count input.

(5) Set the IP conveyance count to 10.

(6) Repeatedly select “0. QUIT” to exit M-Utility.
(7) Position the following four types (five types if a mammo type is included) of cassettes on arbitrary shelves.

- IP conveyance starts.
  - 14" x 14" (35 cm x 35 cm)
  - 14" x 17" (35 cm x 43 cm)
  - 10" x 12" (24 cm x 30 cm)
  - 8" x 10" (18 cm x 24 cm)
  - – (18 cm x 24 cm mammo)

(8) Conduct the following checks during IP conveyance.

- Check that the machine does not emit any abnormal sound or odor.
- Check that the IPs are conveyed in the order of cassette positioning.
- Check that the erasure lamp cooling fan (FANF1) operates.

(9) After completion of IP conveyance, remove all the cassettes to verify that the IPs are not scratched.

(10) Change the positional relationships between the cassettes and shelves, and then repeat steps (7) through (9).

- The machine comes to an automatic stop when it repeats the IP conveyance sequence 10 times.

(11) Remove the cassettes.

(12) Press the reset button.

- The machine restarts and becomes ready for normal use.
3. Troubleshooting Procedures Based on Abnormal Images

For image troubleshooting, it is necessary to identify a trouble spot in the machine, judging from the characteristics of the image. In an image artifact or abnormality occurs, perform troubleshooting in accordance with the basic analytical flow described below.

Note, however, that troubleshooting procedures for the image output system and X-ray exposure system are omitted in this chapter.

3.1 Troubleshooting for Scanner-Related Errors

**Procedures**

1. Check the error log for the time when the abnormal image occurred.

   View the error log to check for any error whose occurrence time indicated in its detail information corresponds to the time when the abnormal image occurred.

   - 23BA-23BE: Error codes for the subscanning mechanism
   - 2500's: Error codes for the scanner mechanism

   If an error is found, take remedial action as appropriate with reference to the probable cause and troubleshooting procedures described in the error code list.

   6.1 Displaying Error Log: 1. LIST” in Maintenance Utility

**SUPPLEMENTARY NOTE**

The detail information format of the error code contains chronological information, from the time when image reading started to the time when an error occurred. Reference should be made as needed to this detail information format.

**NOTE**

An error for the scanner subscanning mechanism that does not accompany any abnormal image need not be analyzed or troubleshooting, and thus be ignored.
(2) With reference to the examples of abnormal images described in this section, take remedial action as appropriate in accordance with <Probable Causes> and <Check and Reference>.

(3) Use the virtual image generation mode (quasi-reading) to analyze the cause of the abnormal image. Perform image reading by generating quasi-image signals from various portions of the scanner. Based on the results of the virtual image generation mode, isolate the cause of the abnormal image.

"10.10 Setting in Virtual Generation Mode for Image Signal" in Maintenance Utility

<table>
<thead>
<tr>
<th>Result of virtual image generation mode</th>
<th>Isolation of problem</th>
<th>Probable cause</th>
</tr>
</thead>
</table>
| No abnormal image occurs with "LIGHT".  | The cause of the problem is present before the IP-generated light enters the photomultiplier. (The IP-generated light is already abnormal.) | • Optics (including the laser)  
• Light-collecting guide/light-collecting mirror  
• Subscanning  
• X-ray source  
• IP  
• Conveyors  
• Erasure failure  
• Extraneous noise to the laser, etc. |
| An abnormal image occurs with "LIGHT", but not with "LOG AMP". | The cause of the problem is present between light admittance to the photomultiplier and photomultiplier current output (to the PMT board). Alternatively, it is present in the high-voltage applied to the photomultiplier. | • Photomultiplier  
• High-voltage power supply (located on the PMT board)  
• Erasure or extraneous leak light  
• Optical noise due to electrostatic buildup on the IP  
• Magnetic noise  
• SCN08A board |
| An abnormal image occurs with "LIGHT" and "LOG AMP", but not with "SCN08 INPUT". | The cause of the problem is present between PMT board input and SCN board input. | • PMT board  
• Extraneous electric noise to the PMT board (static noise on the IP, power supply noise, motor noise, etc.)  
• Cables between PMT board and SCN board |
| An abnormal image occurs with "LIGHT", "LOG AMP", and "SCN08 INPUT". | The cause of the problem is present in the image signal lines after image signal input for the SCN board. | • SCN08A board  
• Extraneous electric noise to the SCN08A board (electric noise, motor noise, etc.)  
• Image-related boards after SCN08 (IMG board, etc.)  
• Cables to such boards |
## Examples of Abnormal Images

<table>
<thead>
<tr>
<th>No. 101</th>
<th>Tree ring-like ununiformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Tree ring-like ununiformity is developed.</td>
<td></td>
</tr>
</tbody>
</table>

### <Probable Causes>
- Leaked rays of light from LAMP1 through LAMP5 may be admitted into the scanner unit. (Improper installation of the covers, damage on the light-tight member located inside the cover, etc.)
- The PMT08A board is faulty.

### <Check and Reference>
- Check if an error (2545: HV voltage error 2) occurs concurrently with the abnormal image. Note, however, that it will not be detected if the noise is minuscule.

<table>
<thead>
<tr>
<th>No. 102</th>
<th>Horizontal streaks (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Banding-like streaks are developed such that intermittent thin horizontal streaks appear with a gradual inclination to the main-scan direction (from upper left to lower right).</td>
<td></td>
</tr>
</tbody>
</table>

### <Probable Cause>
- Leaked rays of light externally coming into the machine may fall on the scanner unit. (Improper installation of covers to the machine, especially the lower front cover, improper installation of the light-tight members around the light-collecting guide assembly, etc.)

### <Check and Reference>
No. 103  Horizontal streaks (2)  

• Horizontal streaks are developed about 40 mm from the top edge and about 30 mm from the bottom edge.

<Probable Cause>
• Operation of the driving-side grip motor (MZ2) or driven-side grip motor (MZ3) is improper.

<Check and Reference>

No. 104  Horizontal streaks (3)  

• A horizontal streak is developed about 60 mm from the top edge.

<Probable Cause>
• The subscanning mechanism is faulty (improper location relative to after-reading conveyance)

<Check and Reference>
• Check for interference between the subscanning turn guide plate and the center guide plate.
No. 105  Horizontal streaks (4)

• A horizontal streak is developed randomly.

Probable Causes:
- The PMT08A board is faulty.
- The subscanning motor and subscanning mechanism are faulty.
- The subscanning motor is faulty.
- The polygonal mirror assembly is faulty.

Check and Reference:
- Check if a scanner error (2500's) or wow-flutter error (23C5) occurred when the abnormal image occurred.
- Use the virtual image generation mode to isolate the cause.

No. 106  Horizontal streaks (5)

• Horizontal streaks are developed over the entire surface at a pitch of 0.6 mm.

Probable Causes:
- Proper shading correction has not been performed.
- “3. SHADING/POLYGON CORRECTION” is turned OFF.
- The polygonal mirror is soiled.

Check and Reference:
- Perform shading correction properly.
- Set “3. SHADING/POLYGON CORRECTION” to ON.
- Replace the polygonal mirror.

→ “9.5 Checking and Replacing Polygon Assembly”
No. 107  Blank image

- A white blank image is generated.

<Probable Causes>
- The high-voltage switch (S1) of the SCN08A board and the software switch are in the OFF position.
- The PMT08A board is faulty.

<Check and Reference>
- Set the SCN08A board's high-voltage switch (S1) and the software switch in the ON position.
- "Checking SCN08A Board"
- "Checking PMT08A Board"

No. 108  Uniformly exposed image with midtone

- A uniformly exposed image with midtone density (gray) is generated.

<Probable Causes>
- The connector (CN2) is not connected to the PMT08A board.
- The connector (CN5) is not connected to the SCN08A board.
- Quasi-reading mode is set.

<Check and Reference>
- Connect the unplugged connector to the PMT08A board or SCN08A board.
- Cancel the quasi-reading mode.
No. 109  Vertical white streak

• Streaks occur in the subscanning direction.

<Probable Causes>
• Relatively thin streak
  Dust deposited on the light-collecting guide or light-collecting mirror may block the laser beam.
• Relatively thick streak
  The light-collecting guide is faulty; shading correction is improper; the lens mirror (especially, the dust window) of the scanning optics unit is soiled.

<Check and Reference>
• Remove the dust deposits using a blower.
• Clean the light-collecting guide or light-collecting mirror.
• Perform shading correction properly.

No. 303  Jitters

• Sync is misaligned by one or several pixels in the main-scan direction.
• Such jitters may sometimes occur in the middle of the scan line.

<Probable Causes>
• The rotation of the polygon is improper.
• The incident beam of the SYN08A board is misaligned.
• Decrease in the laser power.

<Check and Reference>
• Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate that any board is faulty, then replace that board.
  ➔ “Replacing SYN08A Assembly”
• If the error (polygon error 2: 2542) occurred simultaneously, check and replace the polygonal mirror assembly.
### 3.2 Image Troubleshooting for Controller

<table>
<thead>
<tr>
<th>No. 201</th>
<th>Improper image (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Although the film characters and border are outputted normally, an image itself is not generated.</td>
<td></td>
</tr>
</tbody>
</table>

**<Probable Causes>**
- The reading system is faulty. (The high voltage is not applied; the connector is not connected, etc.)
- The photomultiplier or HV (PMT08A board) is faulty.
- Any of the SCN08A, IMG07B, IMG08A, IMG08B, IMG08C, and MTH08A boards is faulty, or the HDD and/or image memory is faulty.

**<Check and Reference>**
- Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board.
- **“SCN08A Board”**
- Check connection between each of the SCN08A, IMG07B, IMG08A, IMG08B, IMG08C, and MTH08A boards and their corresponding connectors.
- Use the virtual image generation mode to isolate the cause.
  - **"10.10 Setting in Virtual Generation Mode for Image Signal” in Maintenance Utility**

<table>
<thead>
<tr>
<th>No. 202</th>
<th>Improper image (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• An image with β=0 is outputted normally. However, the image is disturbed otherwise.</td>
<td></td>
</tr>
</tbody>
</table>

**<Probable Cause>**
- The IMG08A board is faulty (the unsharp mask memory is faulty).

**<Check and Reference>**
- Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board.
| No. 203 | Improper image (3) | <Probable Cause>  
|---|---|---  
| • Although IP conveyance is normal and the film characters are outputted normally, the image and border are not generated. | • The IMG08A board is faulty. |  
| | | <Check and Reference>  
| | • Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board. |

| No. 204 | Improper image (4) | <Probable Cause>  
|---|---|---  
| • A full image in each size of 14” x 17” (35cm x 43cm), 14” x 14” (35cm x 35cm), and 10” x 12” (18cm x 24cm), as well as a two-in-one image of 8” x 10” (18cm x 24cm) size, is disturbed. | • The contents of the memory containing enlargement/reduction ratios in the IMG08A board is corrupted. |  
| | | <Check and Reference>  
<p>| | • Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board. |</p>
<table>
<thead>
<tr>
<th>No. 205</th>
<th>Improper image (5)</th>
</tr>
</thead>
</table>

- Although the film characters and border are outputted normally, the image itself is not generated properly, with the same data appearing continuously in the vertical direction.

**<Probable Cause>**
- Any of the SCN08A, IMG07B, IMG08A, IMG08B, IMG08C, and MTH08A boards is faulty.

**<Check and Reference>**
- Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board.
  ⇨ “SCN08A Board”

<table>
<thead>
<tr>
<th>No. 206</th>
<th>Improper film characters (1)</th>
</tr>
</thead>
</table>

- Although the image and border are outputted normally, the film characters are not generated properly.

**<Probable Causes>**
- The Kanji ROM on the CPU90E board and/or the font file is corrupted.
- The memory on the IMG08A board is faulty.

**<Check and Reference>**
- Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board.
  ⇨ “Replacing and Adjusting CPU90E Board”
No. 207  Improper film characters (2)

- Although the film characters, border, and image are outputted normally, only a portion of film characters consisting of Japanese text is disturbed.

<Probable Cause>
- The CPU90E board and/or MTH08A board is faulty.

<Check and Reference>
- Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board.
  ⇒ “Replacing and Adjusting CPU90E Board”

No. 208  Halos

- Multiple halos are developed outside the proper contour of the image.

<Probable Cause>
- Any of the SCN08A, IMG07B, IMG08A, IMG08B, IMG08C, and MTH08A board is faulty or image signal cable on the board is faulty.

<Check and Reference>
- Reset the machine, or power OFF the machine and then back ON again, to perform self-diagnostics during machine initialization. If the results of the self-diagnostics indicate an error, replace the relevant board and cable.
  ⇒ “SCN08A Board”
### 3.3 Other Image Troubleshooting

<table>
<thead>
<tr>
<th>No. 301</th>
<th>White spots or speckles</th>
</tr>
</thead>
</table>
| • One pixel or several pixels in one line have a markedly lower density, so white spots or speckles are developed.  
• Regular patterns of such white spots or speckles frequently appear. | <Probable Causes>  
• Electromagnetic noise emitted from the motor, etc. may be introduced into the image signal.  
• Electrostatic or optical noise coming from the IP, etc.  
• Dot defects in the IP. |

<table>
<thead>
<tr>
<th>No. 301</th>
<th>White spots or speckles</th>
</tr>
</thead>
</table>
| • One pixel or several pixels in one line have a markedly lower density, so white spots or speckles are developed. | <Check and Reference>  
• Use the virtual image generation mode to isolate the cause.  
⇒ "10.10 Setting in Virtual Generation Mode for Image Signal" in Maintenance Utility |

<table>
<thead>
<tr>
<th>No. 302</th>
<th>Black spots or speckles</th>
</tr>
</thead>
</table>
| • Black spots or speckles are developed randomly over the entire image. The black spots come in various sizes, such as those extending over several vertical lines, or as small as one line. | <Probable Cause>  
• An IP that has been stored unused outside the machine for a long period of time (one week or longer) might have been used without secondary erasure. |

<table>
<thead>
<tr>
<th>No. 302</th>
<th>Black spots or speckles</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Black spots or speckles are developed randomly over the entire image. The black spots come in various sizes, such as those extending over several vertical lines, or as small as one line.</td>
<td>&lt;Check and Reference&gt;</td>
</tr>
</tbody>
</table>
### No. 304 Improper format (1)

- The right or left edge of the image is missing.

**<Probable Causes>**
- The right or left edge of the image is missing.
- The position of the scanning optics unit is improper (in the main-scan direction).
- The side-positioning operation is improper.
- The irradiation field is improper.
- The parameter for adjusting the main-scan format is improper.

**<Check and Reference>**

![Image](FR1H1870.EPS)

### No. 305 Improper format (2)

- The bottom or top edge of the image is missing.

**<Probable Causes>**
- The IP feed by FFM (MZ1) is improper when the IP is fed into the subscanning unit.
- The IP leading-edge sensor (SZ1) is faulty.
- The rpm of the FFM (MZ1) is improper.
- The irradiation field is improper.

**<Check and Reference>**

![Image](FR1H1871.EPS)
<table>
<thead>
<tr>
<th>No. 306</th>
<th>Format slanting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• The right or left edge of the image is aslant.</td>
</tr>
</tbody>
</table>

### Probable Causes
- The side-positioning operation is improper.
- The side-positioning location is improper.
- The subscanning unit and side-positioning unit are misaligned.
- The subscanning grip is unbalanced.
- The side-positioning conveyance grip is unbalanced.

### Check and Reference

![Image](FR1H1872.EPS)
4. Troubleshooting Procedures Based on Improper Operation

4.1 Remedy When Cassette Cannot be Removed

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

![Flowchart Diagram]

- **Power OFF**: Visually check inside the up-down IP removal unit to ensure that the IP has been returned to the cassette completely.
- **Branch 1**: Return the IP to the cassette completely. Or, remove the IP.
- **Branch 2**: Visually check to see that there is nothing abnormal with SOLA1 — 4 of the up-down IP removal unit.

**Branch 1**
- **Power OFF**: Perform the procedures described in "I Cassette Removal" (see below on this page).
- **Branch 2**: Is the breaker fuse nn of the DRV08A board normal?
  - **Y**: Are the connector connections from SOLA1 to DRV08A to JPS-1 board normal?
    - **Y**: Replace the following parts in order named.
      - DRV08A board
      - SOLA1 — 4
    - **N**: See Chapter Z to check the wiring.
      - To check for harness continuity, the machine should be powered OFF beforehand.
  - **N**: Restore it. Then, restart the machine and check its status.

**I Cassette Removal (Standard Procedures)**

**Step 1**: Remove the upper right-hand side cover of the machine.
**Step 2**: Push up the cassette hold bracket for the shelf to be released.
  - Its lock pin is released.
**Step 3**: With the cassette hold bracket pushed up, pull out the cassette.
**Step 4**: Reinstall the upper right-hand side cover of the machine.

**I Cassette Removal (Simple Procedures)**

If the IP has been put back completely into the cassette and if it can be verified that the solenoid operation is faulty, then insert the cassette hold release tools into the four small holes located on the upper right-hand side cover of the machine to release it without removing any cover of the machine.
4.2 Remedy When Machine Does Not Power Up

Preliminary step 1:
1. Power OFF the machine.

Power OFF

Is AC output of the receptacle normal? Check the breaker of the commercial power supply, power distribution switchboard, and wiring of commercial power supply. 

Y

Ask the user for repair.

N

Are both ends of the power cable completely plugged into the machine and receptacle? 

Y

N

Completely plug them in.

N

Preliminary step 2:
1. Remove the covers of the machine.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Step 1

Is the 100V system normal? 

Y

Power OFF

Has the power supply fuse nn blown?

N

N

Replace the fuse.

Then, restart the machine and check its status.

Step 2

Is the 24V system normal? 

Y

N

Is the breaker fuse nn normal? 

N

Y

Restore it.

Then, restart the machine and check its status.

Step 3

Are systems other than 100V and 24V normal? + 5V, + 12V, + 15V, and – 15V systems

N

Y

Replace JPS-1.

Then, restart the machine and check its status.
4.3 Remedy When LED Is Not Lit

Preliminary steps:
1. Power OFF the machine and remove the covers.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Power OFF

Are connector connections from LEDA to DRV08A to JPS-1 board normal?

Y

Replace the following parts in order named.
- DRV08A board
- LEDA1 — 4

N

Replace the connection cable.

See Chapter Z to check the wiring. To check for harness continuity, the machine should be powered OFF beforehand.
4.4 Remedy When System Goes Down Unexpectedly during Operation

Preliminary step 1:
1. Power OFF the machine.

Power OFF

<table>
<thead>
<tr>
<th>Is the power supply normal?</th>
<th>N</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Perform the recovery procedures described in 4.2 "Remedy When Machine Does Not Power Up". Then, restart the machine and check its status.

Preliminary step 2:
1. Remove the covers of the machine.
2. Turn OFF the high-voltage switch (S1) of the SCN08A board.
3. Check for any foreign matter (lead character marking chips, etc.) inside the machine, and, if any, remove it all.

Step 1

<table>
<thead>
<tr>
<th>Are the boards set in the board rack correctly?</th>
<th>N</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Set them correctly. Then, restart the machine and check its status.

Step 2

<table>
<thead>
<tr>
<th>Are the DIP switches and jumpers set correctly?</th>
<th>N</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Set them correctly. Then, restart the machine and check its status.

Step 3

<table>
<thead>
<tr>
<th>Is the memory set in the CPU90E board correctly?</th>
<th>N</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Set it correctly. Then, restart the machine and check its status.

Replace the following boards.
- MTH08A
- CPU90E
- CPU90F + ETH90F
- DMC80A/HCP08A
- IMG08A + IMG08B + IMG08C + IMG07B
- SNS08A
- DRV08A
- SCN08A
- JPS-1
## 4.5 Main Numerical Values Used for Troubleshooting

<table>
<thead>
<tr>
<th></th>
<th>ST</th>
<th>HR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14x17 (inch)</td>
<td>14x14 (inch)</td>
</tr>
<tr>
<td><strong>Reading resolution</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main scan</td>
<td>pix/mm</td>
<td>10</td>
</tr>
<tr>
<td>Subscan</td>
<td>pix/mm</td>
<td>10</td>
</tr>
<tr>
<td><strong>Output resolution</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main scan</td>
<td>Standard</td>
<td>pix/mm</td>
</tr>
<tr>
<td></td>
<td>High-res</td>
<td>pix/mm</td>
</tr>
<tr>
<td>Subscan</td>
<td>Standard</td>
<td>pix/mm</td>
</tr>
<tr>
<td></td>
<td>High-res</td>
<td>pix/mm</td>
</tr>
<tr>
<td><strong>No. of pixels</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td></td>
<td>1760x2140</td>
</tr>
<tr>
<td>High-res</td>
<td></td>
<td>3520x4280</td>
</tr>
<tr>
<td><strong>Subscan speed</strong></td>
<td>mm/sec</td>
<td>18.94</td>
</tr>
<tr>
<td><strong>Reading time</strong></td>
<td>sec</td>
<td>22.60</td>
</tr>
<tr>
<td><strong>Main scan frequency</strong></td>
<td>Hz</td>
<td>189.39</td>
</tr>
<tr>
<td><strong>Sampling time</strong></td>
<td>sec</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Gray level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output after image processing</td>
<td>bit/pixel</td>
<td>10</td>
</tr>
</tbody>
</table>
5. Machine Circuit Diagram
6. Power Supply Circuit Diagram

(Being prepared)
Appendix 1. Supplementary Information

Appendix 1.1 Setting of Error Code to be Captured for IO Trace

If there is any error code is be captured for IO trace, it may be set as an error code to be captured for IO trace

**SUPPLEMENTARY NOTE**

*When an error code to be captured for IO trace (1XXX/2XXX) is set, the IO trace data for the error code so set is saved in a separate memory when the error occurs.*

*The IO trace data saved may be written to a floppy disk by selecting “1. ERROR LOG UTILITY” and “3. SAVE TO FD” of M-Utility in sequence.*

---

How to set an error code to be captured for IO trace is described below.

1. Start the M-Utility.
2. Insert a floppy disk into the floppy disk drive (FDD) of the machine.
   ➥ The following files are copied to the floppy disk.
   • IRSET.ORG • IRSET.OFG
   • FILMFMFT.ORG • FILMFMFT.OFG
   • IRSTATUS.ORG • IRSTATUS.CFG
4. Remove the floppy disk from the FDD of the machine and insert it into the FDD of the personal computer (PC).
   When installing the configuration data that is edited on the PC to the machine, make sure that software versions of the source and destination are the same.
   If the software versions are different, an error may occur during installation.
5. Using the editor on the PC, edit the IRSTATUS.CFG file.
   Example)
   To set the error code “1234” as the error code to be captured for IO trace, type in as follows:
   IOT_ERROR_CODE="1234"
6. Remove the floppy disk containing the edited file from the PC, and insert it into the FDD of the machine.
   ➥ The following files are copied to the HDD of the machine.
   • IRSET.CFG • FILMFMFT.CFG
   • IRSTATUS.CFG
8. Remove the floppy disk from the machine.
9. Press the RESET button to reboot the machine.
CR-IR341/CR-IR341P
Service Manual

Checks, Replacement and Adjustment of Parts (MC)
## Control Sheet

<table>
<thead>
<tr>
<th>Issue date</th>
<th>Revision number</th>
<th>Reason</th>
<th>Pages affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/31/99</td>
<td>04</td>
<td>Corrections due to change in configuration</td>
<td>All pages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(FM2460)</td>
<td></td>
</tr>
<tr>
<td>11/20/99</td>
<td>05</td>
<td>Corrections (FM2638)</td>
<td>MC-2, 6, 65, 132–138, 140, 142, 143, 144, 155, 161, 205, 255.1, 255.2</td>
</tr>
<tr>
<td>04/20/2001</td>
<td>06</td>
<td>Corrections (FM3006)</td>
<td>MC-7, 24, 25, 37, 140, 141, 143, 146, 152, 154, 157, 162, 164, 174, 179, 184, 185, 202, 205, 255, 262, 263, 273, 275, 282–287</td>
</tr>
<tr>
<td>08/30/2001</td>
<td>07</td>
<td>Design changes (FM3115)</td>
<td>MC-255, 255.1–255.4, 256, 264, 266–268, 272, 283</td>
</tr>
</tbody>
</table>
2. Common Procedures for Checks, Replacement, and Adjustment

2.1 Turning ON/OFF High-Voltage Switch

There are two methods for turning ON/OFF the high-voltage switch: one is to directly manipulate the high-voltage switch (S1) of the SCN08A board, and the other is to use M-Utility in a software-driven manner.

■ Turning ON/OFF High-Voltage Switch (Hardware Switch)

When the high-voltage switch (S1) of the SCN08A board is placed in the upper position, it is turned ON; when it is placed in the lower position, it is turned OFF.

■ Turning ON the High-Voltage Switch (Software Switch)

“9. HV OFF” is displayed when the high-voltage switch is in the ON position, while “9. HV ON” is displayed when it is in the OFF position.

1. Touch the U-Utility button.
   ➤ The screen switches to the U-Utility mode.

2. Touch the upper left and upper right corners of the operation panel in sequence.
   ➤ M-Utility is activated.

3. Select “9. HV ON”.
   ➤ The high-voltage switch is turned ON, and “9. HV ON” displayed on the screen switches to “9. HV OFF.”
Turning OFF the High-Voltage Switch (Software Switch)

“9. HV OFF” is displayed when the high-voltage switch is in the ON position, while “9. HV ON” is displayed when it is in the OFF position.

1. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.

2. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.

3. Select “9. HV OFF.”
   - The high-voltage switch is turned OFF, and “9. HV OFF” displayed on the screen switches to “9. HV ON.”
2.2 Checking Various Sensors

Flow of Checking Procedures

A flow of checking procedures common to each of the sensors is described below.

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

1. Place the high-voltage switch (software switch) in the OFF position.
   - “2.1 Turning ON/OFF High-Voltage Switch”
2. Remove the covers of the machine.
3. Place the high-voltage switch (hardware switch) in the OFF position.
   - “2.1 Turning ON/OFF High-Voltage Switch”
4. Power ON the machine.
5. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
6. Touch the upper left corner and upper right corner of the operation panel in sequence.
   - M-Utility is activated.
7. Drive the actuator, as needed for sensor checks.
   - “To Drive (DRIVE) or Stop (STOP) Actuator by Performing MECHANICAL UTILITY Operation”
8. Perform MECHANICAL UTILITY operation so that the sensor can be checked.
   - “To Enable Sensor Checks by Performing MECHANICAL UTILITY Operation”
9. Block the light path of the sensor to be checked with a cassette, cardboard or the like to check the status of the sensor (Open/Close).
10. Deactivate the actuator that was driven at step (7).
    - “To Drive (DRIVE) or Stop (STOP) Actuator by Performing MECHANICAL UTILITY Operation”
11. Select “0. QUIT”.
    - The screen switches back to “6. MECHANICAL UTILITY” menus.
12. Select “0. QUIT”.
    - The screen returns to the main menu.
13. Select “0. QUIT”.
    - M-Utility is exited.
I/O Location Diagram

NOTE: The I/O symbol has the following meaning.

- **Serial number**
- **Unit symbol (A–G, T, Z)**
  Example: D: Side-positioning conveyor
  The unit symbol may sometimes be omitted.

- **I/O type**
  - **S:** Sensor
  - **M:** Motor
  - **TSW:** Thermal switch
  - **FAN:** Fan
  - **SV:** Solenoid valve
  - and more
### I/O List (Sensor)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Symbol</th>
<th>Name</th>
<th>Panel display</th>
<th>Type</th>
<th>Function/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassette set unit (A)</td>
<td>SA2, 6, 10, 14</td>
<td>Cassette IN sensor</td>
<td>When the cassette has been inserted</td>
<td>MS</td>
<td>Recognizes the status in pair with SA3, 7, 11, and 15</td>
</tr>
<tr>
<td></td>
<td>SA4, 8, 12, 16</td>
<td>Mammo/ST sensor</td>
<td>For mammo cassette: ON (1)</td>
<td>MS</td>
<td>Detects mammo and ST cassette types.</td>
</tr>
<tr>
<td></td>
<td>SA3, 7, 11, 15</td>
<td>Cassette hold sensor</td>
<td>During cassette hold:</td>
<td>PS</td>
<td>Detects the completion of cassette hold.</td>
</tr>
<tr>
<td></td>
<td>SA1, 5, 9, 13</td>
<td>Cassette ejection sensor</td>
<td>During cassette eject: OFF (0)</td>
<td>PS</td>
<td>Detects that the cassette has been ejected.</td>
</tr>
<tr>
<td></td>
<td>SA17</td>
<td>Elevation HP sensor</td>
<td>During HP: ON (1)</td>
<td>PS</td>
<td>Elevation HP for suction conveyor.</td>
</tr>
<tr>
<td>IP removal unit (B)</td>
<td>SB1</td>
<td>Suction cup HP sensor</td>
<td>During HP: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SB2</td>
<td>Cassette IN sensor</td>
<td>When located in the shelf position: ON (1)</td>
<td>PS</td>
<td>IP width determination</td>
</tr>
<tr>
<td></td>
<td>SB3</td>
<td>Each shelf position sensor</td>
<td>During IP suction: ON (1)</td>
<td>PS (reflective type)</td>
<td>Suction sensor</td>
</tr>
<tr>
<td></td>
<td>SB4</td>
<td>Inch/metric sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SB5</td>
<td>Suction sensor</td>
<td>When located in the shelf position: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td>Before-side-positioning conveyor (C)</td>
<td>SC1</td>
<td>Before-BCR IP sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SC2</td>
<td>Convergence standby IP sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td>Side-positioning conveyor (D)</td>
<td>SD1</td>
<td>Side-positioning mechanism HP sensor</td>
<td>During HP: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SD2</td>
<td>Grip release HP sensor</td>
<td>During HP: ON (1)</td>
<td>PS</td>
<td>Variation or option</td>
</tr>
<tr>
<td></td>
<td>SD3</td>
<td>Side-positioning HP sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>BCR</td>
<td>Barcode reader</td>
<td></td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td>After-reading conveyor (E)</td>
<td>SE1</td>
<td>Grip release HP sensor</td>
<td>During HP: (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td>Erasure conveyor (F)</td>
<td>SF1</td>
<td>After-reading conveyance standby IP sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SF2</td>
<td>Changeover IP sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SF3</td>
<td>Load standby IP sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SF4</td>
<td>Overrun IP sensor</td>
<td>IP found: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>TSW1</td>
<td>Safety thermostat</td>
<td>Lamp house</td>
<td>Fan control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TSW2</td>
<td>Unit lamp sensor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety thermostat</td>
<td>LDSN1-1, 2, 3, 4, 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subscanning unit (Z)</td>
<td>SZ1 (SED08A)</td>
<td>IP leading-edge sensor</td>
<td>IP found: ON (no display)</td>
<td>PS (light-receiving type)</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SZ2</td>
<td>Driving-side grip release HP sensor</td>
<td>During HP: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
<tr>
<td></td>
<td>SZ3</td>
<td>Driven-side grip release HP sensor</td>
<td>During HP: ON (1)</td>
<td>PS</td>
<td>IP conveyance sensor</td>
</tr>
</tbody>
</table>

### Models of Sensors and Parts Codes

<table>
<thead>
<tr>
<th>Code No.</th>
<th>MS/PS</th>
<th>Model</th>
<th>Relevant sensor symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>104N0043</td>
<td>PS</td>
<td>OJ-380331-701 (5mm Type I)</td>
<td>SA1, 5, 9, 13, SB1, SB2, SE1, SZ2, 3</td>
</tr>
<tr>
<td>104N0044</td>
<td>PS</td>
<td>OJ-380331-702 (5mm Type L)</td>
<td>SA3, 7, 11, 15, 17, SB3, SD1</td>
</tr>
<tr>
<td>104Y0162</td>
<td>PS</td>
<td>Separation type</td>
<td>SF4</td>
</tr>
<tr>
<td>113Y1038</td>
<td>PS</td>
<td>19mm Type I</td>
<td>SB2, SC1, 2, SD3, SF1, 2, 3</td>
</tr>
<tr>
<td>113Y1395</td>
<td>PS</td>
<td>Reflective type</td>
<td>SB4</td>
</tr>
<tr>
<td>128S0392</td>
<td>PS</td>
<td>Suction sensor</td>
<td>SB5</td>
</tr>
<tr>
<td>128Y0241A</td>
<td>MS</td>
<td>SS-01GL111</td>
<td>SA2, 6, 8, 10</td>
</tr>
<tr>
<td>128Y0258B</td>
<td>MS</td>
<td>SS-01GL2-F + mount</td>
<td>SA4, 8, 12, 16</td>
</tr>
</tbody>
</table>
■ Description of Sensor ON/OFF

● Transmissive sensor

OFF(0) : OPEN  
ON(1) : CLOSE

● Reflective sensor

OFF(0) : OPEN  
ON(1) : CLOSE

● Microswitch (SA2, 6, 10,14)

OFF(0) : OPEN  
ON(1) : CLOSE

● Microswitch (SA4, 8, 12, 16)

ON(1) : CLOSE  
OFF(0) : OPEN

■ Sensor Monitoring Screen Under Idle Condition

SA1 – 17 : 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 1
SB1 – 5 : 1 0 1 0 0
SC1 – 2 : 0 0
SD1 – 3 : 1 1 0
SE1 : 1
SF1 – 4 : 0 0 0 0
SZ2 – 3 : 1 0
0 : QUIT

“0” and “1” denote “Open” and “Close”, respectively.
To Enable Sensor Checks by Performing MECHANICAL UTILITY Operation

There are two methods for monitoring sensors: one is to enable monitoring of all sensors, and the other is to select an individual sensor and enable its monitoring.

To enable monitoring of all sensors

1. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
2. Select “3. MONITOR ALL”.
   - A list of sensor numbers is displayed so that the machine is placed in a sensor monitoring enabled state.
To select an individual sensor to enable its monitoring

1. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
2. Select “2. MONITOR”.
   - A list of sensor numbers is displayed.
3. Type in the number of the sensor to be checked.
   - The machine is placed in a sensor monitoring enabled state.

<table>
<thead>
<tr>
<th>MU &gt; 3</th>
<th>MU:SEN &gt; 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. QUIT</td>
<td>1: SA1 2: SA2 3: SA3 4: SA4 5: SA5</td>
</tr>
<tr>
<td></td>
<td>6: SA6 7: SA7 8: SA8 9: SA9 10: SA10</td>
</tr>
<tr>
<td></td>
<td>16: SA16 17: SA17 18: SB1 19: SB2 20: SB3</td>
</tr>
<tr>
<td></td>
<td>26: SD2 27: SD3 28: SF1 29: SF1 30: SF2</td>
</tr>
<tr>
<td></td>
<td>31: SF3 32: SF4 33: SZ2 34: SZ3</td>
</tr>
</tbody>
</table>

INPUT THE NUMBER OF SENSOR
1 - 34 : 4
SA4 ----> Close
SA4 ----> Open
SA4 ----> Close

0. QUIT
1. NUMBER
2. MONITOR
3. MONITOR ALL
MU:SEN > 2

<table>
<thead>
<tr>
<th>MU:SEN &gt; 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. QUIT</td>
</tr>
<tr>
<td>1. NUMBER</td>
</tr>
<tr>
<td>2. MONITOR</td>
</tr>
<tr>
<td>3. MONITOR ALL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MU:SEN &gt; 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. QUIT</td>
</tr>
<tr>
<td>1. NUMBER</td>
</tr>
<tr>
<td>2. MONITOR</td>
</tr>
<tr>
<td>3. MONITOR ALL</td>
</tr>
</tbody>
</table>

0. QUIT
1. NUMBER
2. MONITOR
3. MONITOR ALL
MU:SEN > 2
## I/O List (Actuator)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Symbol</th>
<th>Name</th>
<th>Type</th>
<th>Function/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassette set unit (A)</td>
<td>SOLA1, 2, 3, 4</td>
<td>Cassette hold SOL</td>
<td>Power-down solenoid</td>
<td>Pulls in the cassette hold pin, when turned ON.</td>
</tr>
<tr>
<td>Multi-stage cassette loading unit (T)</td>
<td>LEDT1, 3, 5, 7 LEDT2, 4, 6, 8</td>
<td>Cassette insertable / Cassette removable</td>
<td>LED / LED</td>
<td></td>
</tr>
<tr>
<td>Up-down IP removal unit (B)</td>
<td>MB 1</td>
<td>Suction cup drive motor / IP transport motor / Up-down drive motor / IP suction / IP leak valve</td>
<td>Pulse motor / Pulse motor / Pulse motor / DC pump / Solenoid valve</td>
<td>Opens the rear cover of the cassette and moves the roller. Conveys the IP. Moves up and down the IP suction conveyor. Sucks when turned ON. Leaks when turned ON.</td>
</tr>
<tr>
<td>Before-side-positioning conveyor (C)</td>
<td>MC 1</td>
<td>IP transport motor Convergence path changeover guide drive</td>
<td>Pulse motor Power-down solenoid</td>
<td>Conveys the IP. Changes the path to the load side when turned ON.</td>
</tr>
<tr>
<td>Side-positioning conveyor (D)</td>
<td>MD 1</td>
<td>Side-positioning motor / Grip release motor / IP transport motor</td>
<td>Pulse motor / Pulse motor / Pulse motor</td>
<td>Drives the side-positioning mechanism. Roller grip/release. Conveys the IP.</td>
</tr>
<tr>
<td>After-reading conveyor (E)</td>
<td>ME 1</td>
<td>Grip release motor / IP transport motor</td>
<td>Pulse motor / Pulse motor</td>
<td>Roller grip/release. Conveys the IP.</td>
</tr>
<tr>
<td>Erasure conveyor (F)</td>
<td>MF 1</td>
<td>IP transport motor Branch path changeover guide drive Erasure lamp Erasure cooling</td>
<td>Pulse motor Power-down solenoid Fluorescent lamp DC fan</td>
<td>Conveys the IP. Changes the path to the erasure side when turned ON. Light source for erasure</td>
</tr>
<tr>
<td>Subscanning unit (Z)</td>
<td>MZ1</td>
<td>Subscanning motor Driving shaft grip Driven shaft grip</td>
<td>FFM6 DC motor DC motor</td>
<td>Conveys the IP. Driving shaft grip/release. Driven shaft grip/release.</td>
</tr>
<tr>
<td>Housing (G)</td>
<td>FANG1</td>
<td>Board cooling</td>
<td>DC fan</td>
<td>Cools down the DRV08A board.</td>
</tr>
<tr>
<td></td>
<td>FANG2</td>
<td>Board cooling</td>
<td>DC fan</td>
<td>Cools down the DRV08A board.</td>
</tr>
<tr>
<td></td>
<td>FANG3</td>
<td>Board cooling</td>
<td>DC fan</td>
<td>Cools down the DRV08A board.</td>
</tr>
<tr>
<td></td>
<td>FANG4</td>
<td>Board cooling</td>
<td>DC fan</td>
<td>Cools down the MTH.</td>
</tr>
<tr>
<td></td>
<td>FANG5</td>
<td>Board cooling</td>
<td>DC fan</td>
<td>Cools down the MTH.</td>
</tr>
</tbody>
</table>
To Drive (DRIVE) or Stop (STOP) Actuator by Performing MECHANICAL UTILITY Operation

1. To drive (DRIVE) or stop (STOP) an actuator other than FFM (MZ1):

(1) Select "6. MECHANICAL UTILITY" and "2. ACTUATOR" in sequence.
(2) Select "2. DRIVE" or "3. STOP".
   ➤ A list of sensor numbers is displayed.
(3) Enter the number of the actuator to be driven or stopped.
   ➤ The actuator selected is driven or stopped.

Example: 2. DRIVE is selected

```
0. QUIT
1. ERROR LOG UTILITY
2. CONFIGURATION SETTING
3. TEST MODE
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. FILE UTILITY
8. BACKUP MEMORY
9. HV OFF
10. MENU SETTING

0. QUIT
1. MOTOR
2. ACTUATOR
3. SENSOR
4. UNIT
5: PB1
6: SB1
7: SOL1
8: SOL2
9: SOL3
10: SOL4
11: LAMP STB
12: LAMP ON

0. QUIT
1. NUMBER
2. DRIVE
3. STOP
MU: AUT > 2
```

To drive (DRIVE) or stop (STOP) Actuator by Performing MECHANICAL UTILITY Operation

Example: 2. DRIVE is selected

```
0. QUIT
1. ERROR LOG UTILITY
2. CONFIGURATION SETTING
3. TEST MODE
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. FILE UTILITY
8. BACKUP MEMORY
9. HV OFF
10. MENU SETTING

0. QUIT
1. MOTOR
2. ACTUATOR
3. SENSOR
4. UNIT
5: PB1
6: SB1
7: SOL1
8: SOL2
9: SOL3
10: SOL4
11: LAMP STB
12: LAMP ON

0. QUIT
1. NUMBER
2. DRIVE
3. STOP
MU: AUT > 2
```

FR1H1758.EPS
To drive (DRIVE) FFM (MZ1)

1. Select “6. MECHANICAL UTILITY” and “2. ACTUATOR” in sequence.
2. Select “2. DRIVE”.
   - A list of sensor numbers is displayed.
     1: SOLA1  2: SOLA2  3: SOLA3  4: SOLA4  5: PB1
     6: SVB1  7: SOLF1  8: SOLC1  9: LAMP STB  10: LAMP ON
     11: FFM
   - INPUT THE NUMBER OF ACTUATOR.
     1 - 11:
     Meaning: Enter the actuator number.

3. Select “11. FFM”.
   - The following message appears.
     INPUT THE ROTATION DIRECTION.
     1. CW  2. CCW (FIXED=X)
     Meaning: Enter the rotation direction.
     X represents the rotation direction (either “1” or “2”) that is currently set.

4. Enter the direction rotation (either “1” or “2”).
   - The following message appears.
     INPUT THE SPEED.
     1. STANDARD SUBSCANNING
     2. RAPID SUBSCANNING
     3. CARRY OUT
     1 - 3 (FIXED=X):
     Meaning: Enter the rotation speed.
     X represents the rotation speed (1: Standard subscanning; 2: Fast subscanning; 3: Eject) that is currently set.

5. Enter the rotation speed.
   - The FFM is driven.
To stop (STOP) FFM (MZ1)

(1) Select “6. MECHANICAL UTILITY” and “2. ACTUATOR” in sequence.
(2) Select “3. STOP”.
  A list of sensor numbers is displayed.
(3) Select “11. FFM”.
  The FFM is stopped.

Example: “3. STOP” is selected
2.3 Clearing Backup Memory

(1) Touch the U-Utility button.
☞ The screen switches to the U-Utility mode.

(2) Touch the upper left and upper right corners of the operation panel in sequence.
☞ M-Utility is activated.

(3) Select “8.BACK MEMORY”.

(4) Select “1.CLEAR”.
☞ The following message appears.
ARE YOU SURE TO CLEAR ALL THE BACKUP MEMORIES?
1: YES 2: NO (DEFAULT=2) :
Meaning: Are you sure to initialize (clear) the backup memory?

(5) Select “1”.
☞ The backup memory is initialized, with the following message displayed.
BACKUP MEMORIES ARE CLEARED.
Meaning: The backup memory has been initialized.
The following files are cleared from the HD.

- **IMG**
  Set processing information, information for image number generation, HV ON/OFF information

- **IPH**
  IP position information, subscanning grip correction data

- **PNL**
  Audible click tone enabled/disabled, parallax correction data

- **DST**
  Output LP information (NET/LOCAL)

- **JNL**
  Error log information

- **LIF**
  Format frequency information

- **MFC**
  Setup options information

- **CSL** (for CSL specification only)
  Multiframe-related information, set processing-related information, menu selection information

(6) Select “0. QUIT” repeatedly.
  ↪ M-Utility is exited.
2.4 Setting Date and Time

(1) Touch the U-Utility button.

- The screen switches to the U-Utility mode.

NOTE: For the IDT type, the "menu selecting icon" does not appear.

U-Utility screen

NOTE: For the initial setting, the "Multiframe forced output" button will not appear.
(2) Touch the date/time setting.
- The date/time setting screen appears.

(3) Type in the current date and time form the keypad, as instructed in the on-screen example.

(4) After entering the date and time, touch the [ENT] key for confirmation.
- When the setting is confirmed, OK appears below the entry line.
  If the date or time is entered incorrectly, press the BS (backspace) key to return to the character to be corrected.

(5) Touch the RETURN button.
- The screen returns to U-Utility.
3. Removing and Reinstalling Covers

- Procedures

**WARNING**

In order to avoid electric shock hazards, power OFF the machine before performing any procedures.

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Power OFF the machine.
2. Lower front cover (truss M4x12, x2)
   
   Loosen the truss screws, both right and left, and while slightly pulling the top of the cover toward yourself, pull it up and out.

3. Upper right-hand side cover (truss M4x6, x4)
   
   Pull up the entire cover toward yourself and out.

4. Lower right hand side cover (truss M4x6, x9)
   
   While slightly pulling the top of the cover toward yourself, pull it up and out.

5. Make sure that the high-voltage switch (S1) of the SCN08A board is in the OFF position.

6. Upper rear cover (truss M4x12, x4)

7. Lower rear cover (truss M4x12, x5; truss M4x20, x3)
   
   While slightly pulling the top of the cover toward yourself, pull it up and out. The top three screws on the left-hand side are tightened together with the cable retaining NK clamps.

8. Upper left-hand side cover (truss M4x12, x4)

9. Lower left-hand side cover (truss M4x6, x3; truss M4x12, x6)
   
   While slightly pulling the top of the cover toward yourself, pull it up and out, exercising care to prevent the cover of the switch portion from hitting the power supply unit.

Because the three screws on the front of the machine are truss M4x6, while the six screws on the rear of the machine are truss M4x12, use care not to confuse these screws during installation.
(10) Upper front cover (BR M4x8, x2; truss M4x6, x2)
Loosen the right and left truss screws, and slightly pull the top of the cover toward yourself to pull it up and out. Because the two screws on the upper portion of the cover are BR M4x8, while the two screws on the lower portion are truss M4x6, use care not to confuse these screws during installation.

(11) Stack table (truss M4x6, x2)
Using a 2-mm Allen wrench or so forth, first remove the screw covers and then the screws.

(12) Lower front inner cover (BR M4x8, x8)
Because the topmost screw in the center is used to hook the lower front inner cover, it should not be removed.

(13) Multi-stage cassette loading cover (BR M4x8, x7)
Disconnect the connector (CNT1), and then pull the cover toward yourself and out.
Reinstallation

**CAUTION**

Before installing the cover, make sure that the high-voltage switch on the SCN08A board is ON.

◆ **NOTE** ◆

Accomplish positioning at the time of multi-stage cassette loading cover installation. If you do not complete positioning, a cassette holding failure may occur.

(1) Mount the multi-stage cassette loading cover on the machine main body, and loosely retain the four lower screws.
(2) Insert a 300 mm scale along the right-hand side of the lowermost shelf (fourth shelf). Press the manual release lever to lower the hold pin.

(3) Slide the multi-stage cassette loading cover until the scale comes into contact with the cassette set unit entry reference guide protrusion (level difference: 0.5 – 1 mm), and then tighten the four screws that were loosely retained.
(4) Insert a 300-mm rule along the right edge of the shelf.
Press the manual release lever to lower the hold pin.

(5) Secure the multi-stage cassette loading cover.
Loosely retain the two upper screws. After completing positioning steps (3) for the uppermost shelf (first shelf), tighten the screws.

◆ SUPPLEMENTARY NOTE ◆

Because of parts machining precision, the multi-stage cassette loading cover may be slightly warped when secured, though this will not pose any problem. Alignment with the cassette set unit should take first priority.

(6) Connect connector CNT1.

(7) Reinstall the rest of the covers.
Reinstall the covers in the reverse order of removal.

◆ “Removal”

(8) Make sure that the covers have been installed securely and there is no missing cover screw.
4. **Cassette Set Unit**

This section describes procedures for removing and reinstalling the cassette set unit, and procedures for checking and replacing parts of the cassette set unit to be replaced.

4.1 **Pulling Out and Pushing In Tray of Cassette Set Unit**

![Diagram of cassette set unit]

**CAUTION**

*When removing and installing the units, use care not to damage the cables.*

### Pulling Out

1. Remove the following covers.
   - Lower front cover, upper right-hand side cover, lower right-hand side cover, upper left-hand side cover, upper front cover, stack table, multi-stage cassette loading cover
   
   [“3. Removing and Reinstalling Covers”]

2. Disconnect the connectors (CNA1-3 from the cassette set unit; CNB1, 3, 4 from the up-down IP removal unit).

3. Slide the tensioner until the timing belt is removed, and then secure the tensioner in place.
   - Loosen the screw (BR M4x8) that retains the tensioner to slide the tensioner as appropriate, and then secure the tensioner in place.
   
   [“3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description]

4. Remove the timing belt.

5. Remove the two screws that retain the tray of the cassette set unit.

6. Pull out the tray, exercising care so that it is not caught by the connector cables and so forth.
Pushing In

(1) While using care to prevent the connector cables, etc. from getting caught, push the tray of the cassette set unit all the way into the machine.

(2) Secure the tray of the cassette set unit with two screws.

(3) Connect the connectors (CNA1-3 to the cassette set unit; CNB1, 3, 4 to the up-down IP removal unit).

(4) Attach the timing belt to the timing belt wheel.

(5) Put the tensioner back where it was.

Loosen the screw (BR M4x8) that retains the tensioner. Flick the timing belt several times to ensure that it snugly fits onto the timing belt wheel, and then secure the tensioner in place.

■ “3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description
4.2 Removing and Reinstalling Cassette Set Unit

**CAUTION**

When removing and reinstalling the unit, use care not to damage the cables.

**Removal**

1. Pull out the tray of the cassette set unit.
2. Remove the six screws that retain the cassette set unit.
3. Pull out the cassette set unit horizontally.

**NOTES**

- When pulling out the cassette set unit, place the IP removal in its home position or each of the four shelf positions. If the cassette set unit is pulled out from any other position, it may be damaged.
- When pulling out the cassette set unit, place the IP removal arm in the home position.
Reinstallation

For reinstallation, reverse the removal steps.

**CAUTIONS**

- Before inserting the cassette set unit into its position, place the IP removal arm in the home position. Also, adjust the IP removal height for the home position or the first to fourth shelf position. If an attempt is made to insert the cassette set unit with the up-down IP removal assembly positioned elsewhere, the machine may be damaged.
- When placing the cassette set unit in its position, insert it along the positioning brackets because the sensor may be damaged.
- When installing the cassette set unit, properly position it by pressing it against the positioning brackets. Screw down the cassette set unit while pushing its upper end toward the up-down IP removal unit.
4.3 Removing and Reinstalling Shutter Assembly

**Removal of Shutter Assembly**

1. Pull out the tray of the cassette set unit, or take out the cassette set unit.
   - \(4.1\) Pulling Out and Pushing In Tray of Cassette Set Unit, “4.2 Removing and Reinstalling Cassette Set Unit”

2. Remove the shutter assembly.
■ Replacement of Shutter

(1) Remove the shutter assembly.

☞ “■ Removal of Shutter Assembly”

(2) Remove the bracket.

(3) Remove the torsion coil spring and slide bearings from the shutter.

(4) Attach to a new shutter the torsion coil spring and slide bearings that were removed at step (2).

(5) For shutter installation, reverse the removal procedure.

■ Installing the Shutter Assembly

Reinstall the shutter assembly.

For reinstallation, check the following points before screwing it down.

- The shutter assembly is pushed against both right and left side plates of the cassette set unit.
- The cover of the shutter assembly opens and closes smoothly.
4.4 Checking and Replacing Cassette Ejection Sensors (SA1, 5, 9, 13)

■ Checks

(1) Place the machine in a sensor monitoring state so that SA1, 5, 9, and 13 can be monitored.
  “2.2 Checking Various Sensors”

(2) Set a cassette into the shelf in place.
  ✗ A message indicating that the sensor is CLOSE appears on the operation panel.

(3) Pull out the cassette.
  ✗ A message indicating that the sensor is OPEN appears on the operation panel.

(4) Repeat steps (2) and (3) several times to ensure that the messages appear as appropriate.
  If anything abnormal is found, such as no message displayed, then replace the sensor checked, and then check it again.

(5) Select “0. QUIT”.
  ✗ The monitoring is exited to return to “3. SENSOR” menu.
## Replacement

1. Remove the shutter assembly.
   - “4.3 Removing and Reinstalling Shutter Assembly”
2. Disconnect the connectors (SA1, 5, 9, 13).
3. Remove SA1, 5, 9, and 13.
   - The sensor is secured to the bracket by four latches. To remove the sensor, pinch the latches by fingers.
4. Install a new sensor.
   - “3.5 Sensors Not Requiring Adjustment of Its Mounting Position” in Machine Description
5. Connect the connectors (SA1, 5, 9, 13).
6. Reinstall the shutter assembly.
   - “4.3 Removing and Reinstalling Shutter Assembly”
7. Reinstall the cassette set unit.
   - “4.2 Removing and Reinstalling Cassette Set Unit”
8. Check the sensor replaced.
   - “Checks”
4.5 Checking, Replacing, and Adjusting Cassette IN Sensors (SA2, 6, 10, 14)

■ Checks

(1) Place the machine in a sensor monitoring state so that SA2, 6, 10, and 14 can be monitored.

☞ “2.2 Checking Various Sensors”

(2) Set a cassette into the shelf in place.

☞ A message indicating that the sensor is CLOSE appears on the operation panel.

(3) Pull out the cassette.

☞ A message indicating that the sensor is OPEN appears on the operation panel.

(4) Repeat steps (2) and (3) several times to ensure that the messages appear as appropriate.

If anything abnormal is found, such as no message displayed, then replace the sensor checked, and then check it again.

(5) Select “0. QUIT”.

☞ The monitoring is exited to return to “3. SENSOR” menu.
Replacement

(1) Remove the cassette set unit.
   "4.2 Removing an Reinstalling Cassette Set Unit"

(2) Cut the cable tie.

(3) Disconnect the connectors (SA2, 6, 10, 14).

(4) Remove SA2, 6, 10, and 14.

(5) Install new SA2, 6, 10, and 14.

(6) Connect the connectors.

(7) Restore the cable tie that was cut at step (2).

(8) Adjust the sensors replaced.
   "Adjustment"
Adjustment

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Remove the following covers.
   - Lower front cover, upper right-hand side cover, lower right-hand side cover, upper left-hand side cover, upper front cover, stack table, multi-stage cassette loading cover
   - “3. Removing and Reinstalling Covers”

2. With the cassette set unit pulled out, connect the connectors (CNA1, 2) of the cassette set unit.
   - “4.2 Removing and Reinstalling Cassette Set Unit”

3. Power ON the machine.
   - The initialization sequence is started, and, after 30 to 60 seconds have passed, a software version number (Axx) appears on the operation panel.

4. Immediately after the software version number (Axx) appears, touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
   - If “STEP 95” is indicated, any touch on the operation panel is rejected. In that case, reset the machine and wait until the software version number (Axx) appears on the operation panel.

5. Select “5. MECHANICAL UTILITY” and “1. INITIALIZE” in sequence.

6. Select “4. SENSOR” and “2. MONITOR”.
   - A list of sensor Nos. is displayed.
(7) Type in the number of the sensor to be checked (SA2, 6, 10, 14).
➢ The machine is now in the sensor monitoring enabled state.

(8) Loosen the screw on the mounting bracket of the sensor to be checked (SA2, 6, 10, 14).

(9) Secure the manual release lever of the cassette set unit in place with a cable tie, so that the hold pin is withdrawn.

(10) While pushing down the latch by hand, set a scale in such a position that the distance from the end face of the plate to the tip of the scale is 1.5 mm.

(11) With the tip of the scale in contact with the actuator of the sensor (SA2, 6, 10, 14) to be checked, slowly move the mounting bracket bit by bit toward the scale and tighten the screw in place where the sensor changes status from OPEN to CLOSE.

(12) Slide the scale until the distance between the end of the plate and the tip of the rule is 1.0 mm, and make sure that the sensor (SA2, 6, 10, 14) transitions to OPEN.

(13) Repeat steps (6) through (12) to adjust the sensor mounting position.

(14) Cut the cable tie that was attached at step (9).

(15) Select “0. QUIT”.
➢ The screen switches back to “5. MECHANICAL UTILITY” menu.

(16) Select “0. QUIT”.
➢ The screen returns to the main menu.

(17) Power OFF the machine.

(18) Check the sensor adjusted.
➢ “Checks”
4.6 Checking and Replacing Cassette Hold Sensors (SA3, 7, 11, 15)

**Checks**

With no cassette inserted, the cassette hold pin is withdrawn. As such, when checking this sensor, turn OFF the solenoid so that the cassette hold pin is protruded before executing sensor monitoring.

2. Enter the number of the solenoid (SOLA1-4) corresponding to SA3, 7, 11, 15.
   - The solenoid is activated so that it is in the cassette hold mode (the sensor is CLOSE).
3. Place the machine in a sensor monitoring state so that SA3, 7, 11, 15 can be monitored.
   - “2.2 Checking Various Sensors”
4. Insert a 1.5-mm Allen wrench straight into the hold manual release hole to push the lever.
   - A message indicating that the sensor is OPEN appears.
5. Pull out the Allen wrench.
   - A message indicating that the sensor is CLOSE appears.
6. Repeat steps (4) and (5) several times to ensure that the messages appear as appropriate.
   - If anything abnormal is found, such as no message displayed, then replace the sensor checked, and then check it again.
7. Select “0. QUIT”, “0. QUIT”, “2. ACTUATOR”, and “2. DRIVE” in sequence.
8. Enter the number of the solenoid activated at step (2).
   - The solenoid is activated so that it is in the cassette hold release mode (the sensor is OPEN).
9. Repeatedly select “0. QUIT”.
   - M-Utility is exited.
**Replacement**

1. Remove the mounting bracket together with SA3, 7, 11, 15.
2. Disconnect the connectors (SA3, 7, 11, 15).
3. Remove SA3, 7, 11, 15 from the mounting bracket.

   The sensor is secured to the bracket by four latches. To remove the sensor, pinch the latches by fingers.

4. Install a new sensor.

![Diagram of sensor and latches](image)

   “3.5 Sensors Not Requiring Adjustment of Its Mounting Position” in Machine Description

5. Connect the connectors (SA3, 7, 11, 15).
6. Attach the mounting bracket.
   Screw down the mounting bracket while pushing it upward.
7. Check the sensor replaced.

   “Checks”
4.7 Checking and Replacing Mammo/ST Sensors (SA4, 8, 12, 16)

**Checks**

1. Place the machine in a sensor monitoring state so that SA4, 8, 12, and 16 can be monitored.
   - “2.2 Checking Various Sensors”
2. Set a non-mammo-type cassette into the shelf in place.
   - A message indicating that the sensor is OPEN appears on the operation panel.
3. Pull out the cassette.
   - A message indicating that the sensor is CLOSE appears on the operation panel.
4. Set a mammo-type cassette in place.
   - When the cassette is inserted, a message indicating that the sensor is OPEN appears. Immediately after that, a message indicating that the sensor is CLOSE appears.
5. Pull out the cassette.
   - When the cassette is removed, a message indicating that the sensor is OPEN appears. Immediately after that, a message indicating that the sensor is CLOSE appears.
6. Repeat steps (4) and (5) several times to ensure that the messages appear as appropriate.
   - If anything abnormal is found, such as no message displayed, then replace SA4, 8, 12, 16, and then check it again.
7. Enter “0 (zero)”.
   - The monitoring is exited to return to “3. SENSOR” menu.
Replacement

(1) Remove the cassette set unit.
   * "4.2 Removing an Reinstalling Cassette Set Unit"

(2) Cut the cable tie.

(3) Disconnect the connectors (CNA4, 8, 12, 16).

(4) Remove the sensor bracket as a whole.

(5) Replace the sensor assembly.

(6) For reinstallation, reverse the removal steps.
   When attaching the mounting bracket for SA4, 8, 12, 16, tighten the screw while holding it down.

⚠️ **CAUTION**

When retaining the cables with ties, observe the following precautions.
- Ensure that the cables do not protrude beyond the side plates.
- Retain the cables at proper positions so that they will not be caught by rotating rollers.

(7) Check the sensor replaced.
   * "■ Checks"
4.8 Checking, Replacing, and Adjusting Cassette Hold Solenoids (SOLA1-4)

**Checks**

1. Place the machine in a cassette hold solenoid (SOLA1-4) operation enabled state.  
   - Ref. “2.2 Checking Various Sensors”
2. Set a cassette in the shelf.
(3) Select “6. MECHANICAL UTILITY” and “2. ACTUATOR” in sequence.

(4) Select “3. STOP”.
   ➥ A list of sensor numbers is displayed.

(5) Enter the number of the cassette hold solenoid to be stopped.
   ➥ The actuator selected is stopped.

Example: 3. STOP is selected

The solenoid number (1: SOLA1) is selected
(6) Slightly pull the cassette to ensure that the cassette cannot be removed.
(7) Select “2. DRIVE”.
(8) Enter the number of the solenoid selected at step (5).
\[\Rightarrow\] The actuator selected is driven.

Example: 2. DRIVE is selected

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
</tbody>
</table>

(9) Pull out the cassette.
(10) Repeat steps (2) through (9) several times to ensure that there is nothing abnormal.
If anything abnormal is found with a solenoid, replace it and then check it again.
(11) Select “0. QUIT”.
\[\Rightarrow\] The operation is exited to return to “2. ACTUATOR” menu.
Replacement

1. Remove the cassette set unit.
   ◄ “4.2 Removing and Reinstalling Cassette Set Unit”

2. Disconnect the connector for the solenoid to be replaced from the side plate.

3. Remove the three solenoid retaining screws to take out the solenoid.

(4) Install new solenoid.

(5) Connect the connector to the side plate.

(6) Adjust the solenoid replaced.
   ◄ “Adjustment”
## Adjustment

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Remove the shutter assembly.
   
   ![“4.3 Removing and Reinstalling Shutter Assembly”](image)

2. Remove the retaining bracket used for transit, which is located on the rear of the up-down IP removal unit.
3. Loosen the three mounting screws so as to allow the solenoid mounting location to be shifted.
4. Remove the spring.
5. Put the protruding portion of the retaining bracket used for transit into the cassette hold pin sliding hole, and then grip the retaining bracket used for transit with the cover-closing roller.
6. Raise the solenoid until the cassette hold pin contacts the protruding portion of the retaining bracket used for transit, and then secure the solenoid in place. The solenoid should be raised so that the retaining bracket used for transit is not lifted up.

![Fr1H108.EPS](image)

7. Remove the retaining bracket used for transit.
8. Push down the iron core of the solenoid by hand. Make sure that the cassette hold pin is located below the guide plate of the cassette set unit.
9. Reinstall the spring.
10. Check the solenoid adjusted.

![“■ Checks”](image)
4.9 Checking and Replacing Elevation HP Sensor (SA17)

![Diagram](image)

- **Checks**

  **CAUTION**
  
  Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

- (1) Power ON the machine.
- (2) Touch the U-Utility button.
  - The screen switches to the U-Utility mode.
- (3) Touch the upper left and upper right corners of the operation panel in sequence.
  - M-Utility is activated.
- (4) Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
- (5) Select “2. MONITOR”.
  - A list of sensor Nos. is displayed.
- (6) Type in the number of the elevation HP sensor (SA17).
  - The machine is now in the sensor monitoring enabled state.
- (7) Rotate the MB3 timing belt clockwise, as seen from the rear, until the actuator does not block the SA17 light path.
  
  From the hole in the side plate of the IP removal unit, visually check the actuator and SA17.
  - When the light path is no longer blocked, a message indicative of the sensor OPEN status appears on the operation panel.
(8) Rotate the MB3 timing belt counterclockwise, as seen from the rear, until the actuator blocks the SA17 light path.
	- When the light path is blocked, a message indicative of the sensor CLOSE status appears on the operation panel.

(9) Rotate the MB3 timing belt clockwise, as seen from the rear, until the actuator does not block the SA17 light path.
	- When the light path is no longer blocked, a message indicative of the sensor OPEN status appears on the operation panel.

⚠️ **CAUTION**

Be sure to position the actuator below SA17. If the machine is booted up with the actuator positioned above SA17, the home position (HP) cannot be detected during initialization, so that the IP removal unit hits the top plate of the elevation unit, probably damaging the machine.

(10) Repeat steps (7) through (9) several times.
	- If anything abnormal is found, such as no message displayed, then replace the sensor.
(11) Repeatedly select “0. QUIT”.
	- M-Utility is exited.

■ Replacement

(1) Disconnect the connector (S17).
(2) Remove the elevation HP sensor (SA17).
	- “3.5 Sensors Not Requiring Adjustment of Its Mounting Position” in Machine Description

(3) Install a new sensor.
(4) Connect the connector (SA17).
(5) Check SA17.
	- “■ Checks”
4.10 Replacing Inch/Metric Guides

(1) Remove the shutter assembly.
   "4.3 Removing and Reinstalling Shutter Assembly"

(2) Remove the rubber rollers at the stage where the inch/metric guides to be replace are located.
   "4.12 Replacing Rubber Rollers of Cassette Set Unit"

(3) While holding down the mounting bracket, remove the four hex socket head bolts from the inch/metric guides.

(4) Remove the inch/metric guides.

(5) For installation of a new inch/metric guide, reverse the removal steps.
4.11 Adjusting Movable Roll

■ Widthwise Adjustment

(1) Remove the shutter assembly.
  “4.3 Removing and Reinstalling Shutter Assembly”

(2) Loosen the two hex socket head bolts (M4x8) and one BR screw (M4x8) on the movable roll assembly retaining bracket.

(3) While pushing the manual release lever of the cassette set unit by hand to withdraw the hold pin, insert the cassette into the cassette set unit.

(4) Release the manual release lever to secure the cassette with the hold pin.

(5) Align the cassette to the reference side of the cassette set unit.

(6) With the inch/metric movable roll assembly retaining bracket and inch/metric movable roll pressed against the cassette, tighten the two hex socket head bolts (M4x8) and one BR screw (M4x8).

◆ SUPPLEMENTARY NOTE ◆

For widthwise adjustment of the 24x30 mammo movable roll, use the 24x30 mammo cassette and perform similar procedures as for the inch/metric movable roll.
(7) Adjust the rearward toppling prevention bracket.

"Adjusting Rearward Toppling Prevention Bracket"
**Adjusting Rearward Toppling Prevention Bracket**

1. Loosen the two screws that retain the metric rearward toppling prevention bracket (screwed down on its upper and lower portions).

2. Make adjustment as appropriate so that the descent of the trailing edge of the movable roll is 1 mm or less when it is slightly pushed down.

By sliding the rearward toppling prevention bracket in the direction of arrow as shown below (toward the shutter assembly), the descent of the trailing edge of the movable roll is decreased.

---

**Top view**

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**Side view**

---
(3) Loosen the single hex socket head bolt that retains the inch rearward toppling prevention bracket.

(4) Make adjustment as appropriate so that the descent of the trailing edge of the movable roll is 1 mm or less.

By sliding the rearward toppling prevention bracket in the direction of arrow as shown below (toward the trailing edge of the movable roll), the descent of the trailing edge of the movable roll is decreased.

Top view

![Diagram of top view showing the descent of the trailing edge of the movable roll decreased by sliding the rearward toppling prevention bracket.]

Side view

![Diagram of side view showing the descent of the trailing edge of the movable roll ensured to be 1 mm or less after slightly pushing it.]

Ensure that it is 1 mm or less.
(5) Loosen the single screw that retains the 24x30 mammo rearward toppling prevention bracket.

(6) Make adjustment as appropriate so that the descent of the trailing edge of the movable roll is 1 mm or less.

By sliding the rearward toppling prevention bracket in the direction of arrow as shown below (toward the shutter assembly), the descent of the trailing edge of the movable roll is decreased.

(7) Reinstall the shutter assembly.

(8) Reinstall the cassette set unit.

(9) Push in the tray of the cassette set unit.
4.12 Replacing Rubber Rollers of Cassette Set Unit

(1) Pull out the tray of the cassette set unit.

(2) Remove the two grip springs of the rubber roller to be removed.

(3) Remove the two bearings and two housings.

(4) Replace the rubber roller.

(5) For reinstallation, reverse the removal steps.
4.13 Replacing Guide Plate of Cassette Set Unit

(1) Remove the shutter assembly.

See "4.3 Removing and Reinstalling Shutter Assembly"

(2) Disconnect the connector (SA3, 7, 11, 15) at the stage where the guide plate to be removed is located.

(3) Remove the two grip springs of the rubber roller at the stage where the guide plate to be removed is located.

(4) Remove the two bearings and two housings.

(5) Remove the rubber roller.
(6) Remove the bracket.
(7) Remove the spring of the manual release lever.
(8) Remove the five screws that retain the guide plate onto the side plate.
(9) Remove the two screws that retain the guide plate onto the stay.

**NOTE**

*Use care not to confuse the screws to be removed.*
(10) Remove the four screws that retain the inch/metric guides.

(11) While slightly opening the left-hand side plate to avoid the half punches, lift up the inner side of the guide plate.

(12) With the mammo/ST sensors (SA4, 8, 12, 16) pushed in, while opening the right-hand side by about 2 mm to avoid the half punches, lift up the inner side of the guide plate.

(13) While lifting up the left front side of the guide plate, remove the guide plate from the inner side of the cassette set unit.
(14) Install a new guide plate in reverse order of removal.

**CAUTION**

After installing the guide plate, check the following points.
- The three half punches should be fitted.
- The guide plate should not interfere with the mammo/ST sensors (SA4, 8, 12, 16).
- The guide plate should not interfere with the actuators of the cassette IN sensors (SA4, 8, 12, 16).
- Bracket mounting location.
5. Up-Down IP Removal Unit

This section describes procedures for checking and replacing parts of the up-down IP removal unit to be replaced.

Unless otherwise specified, it is assumed that covers that should be removed prior to checks and replacement have been removed.

“3. Removing and Reinstalling Covers”

5.1 Checking and Replacing Suction Cup HP Sensor (SB1)

■ Checks

⚠️ CAUTION

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

If anything abnormal is found during checks, replace SB1 and then check it again.

1. Power ON the machine.

2. Make sure that the distance between the bearing flange on the left side of the IP removal arm and the left side plate is 86.5 ± 1 mm.

3. Touch the U-Utility button.

   ➥ The screen switches to the U-Utility mode.

4. Touch the upper left and upper right corners of the operation panel in sequence.

   ➥ M-Utility is activated.

5. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.

6. Select “2. MONITOR”.

   ➥ A list of sensor numbers is displayed.

7. Type in the number of the suction cup HP sensor (SB1).

   ➥ The machine is now in the sensor monitoring enabled state.

8. Rotate the timing belt wheel by hand until the actuator does not block the SB1 light path.

   ➥ A message indicating that the sensor is OPEN appears on the operation panel.
(9) Rotate the timing belt wheel by hand until the actuator blocks the SB1 light path.

.hours A message indicating that the sensor is CLOSE appears on the operation panel.

If anything abnormal is found, such as no message indicative of the sensor OPEN or CLOSE status displayed, then replace the sensor.

(10) Repeatedly select “0. QUIT”.

.hours M-Utility is exited.

Replacement

(1) Remove the cassette set unit.

.hours “4.2 Removing the Reinstalling Cassette Set Unit”

(2) Disconnect the connector (SB1).

◆ NOTE ◆

If it is difficult to disconnect the connector, rotate the MB3 timing belt to move the IP removal unit to such a position as to facilitate its disconnection.

When moving the IP removal unit, locate the IP removal arm in its home position to prevent damage to it.

(3) Pull the IP removal arm toward yourself.

(4) Remove the suction cup HP sensor (SB1).

.hours “3.5 Sensors Not Requiring Adjustment of Its Mounting Position” in Machine Description

(5) Install a new sensor.

(6) Connect the connector (SB1).

(7) Check SB1.

.hours " ■ Checks"
5.2 Checking and Replacing Cassette Inlet IP Sensor (SB2)

■ Checks

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Power ON the machine.
   - The initialization starts, and after an elapse of about 30 to 60 seconds, “the software version number (Axx)” appear on the operation panel.

2. Immediately after the software version number (Axx) appears, sequentially touch the operation panel upper left corner and upper right corner.
   - M-Utility is activated.
   When the screen reads STEP95, the operation panel is inoperative and does not respond at all even if you touch it. In such an instance, perform a reset and wait until the software version number (Axx) appears.

3. Select “5. MECHANICAL UTILITY”, “1. INITIALIZE” and “4. SENSOR” in sequence.

4. Select “2. MONITOR”.
   - A list of sensor Nos. is displayed.

5. Type in the number of the cassette inlet IP sensor (SB2).
   - The machine is now in the sensor monitoring enabled state.

6. Using a slip of paper or the like, block the sensor light path.
   - A message indicating that the sensor is CLOSE is displayed on the operation panel.

7. Remove the slip of paper or the like that has blocked the sensor light path.
   - A message indicating that the sensor is OPEN is displayed on the operation panel.

8. Repeat steps (6) and (7) several times.
   
   If anything abnormal is found, such as no message displayed, then replace the sensor.
(9) Select “0. QUIT”.
    ➥ The screen returns to “6. MECHANICAL UTILITY”.

(10) Select “0. QUIT”.
    ➥ The screen returns to the main menu.

(11) Select “0. QUIT”.
    ➥ Exit M-Utility.

### Replacement

(1) Disconnect the connector bracket.

(2) Rotate the MB3 timing belt to lower the up-down IP removal unit until the connector (CNSB2) is visible through the window.

(3) Remove the protective bracket.

(4) Remove the cassette inlet IP sensor (SB2).

(5) Disconnect the connector (SB2).

(6) For reinstallation, reverse the removal steps.

(7) Check SB2.

[“■ Checks”](#)
5.3 Checking, Replacing, and Adjusting Each Shelf Position Sensor (SB3)

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

If anything abnormal is found during checks, replace or adjust SB3.

1. Power ON the machine.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
4. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
5. Select “2. MONITOR”.
   - A list of sensor numbers is displayed.
6. Type in the number of the each shelf position sensor (SB3).
   - The machine is now in the sensor monitoring enabled state.
7. Make sure that the IP removal arm is accommodated.
   - If not, accommodate the IP removal arm.
8. Rotate the MB3 timing belt counterclockwise, as seen from the rear, until the actuator does not block the SB3 light path.
   - Visually check the actuator and SB3 through the hole located on the side plate of the up-down IP removal assembly.
   - A message indicating that the sensor is OPEN appears on the operation panel.
(9) Rotate the MB3 timing belt wheel clockwise, as seen from the rear, until the actuator blocks the SB3 light path.
   ➲ A message indicating that the sensor is CLOSE appears on the operation panel.
(10) Repeat steps (8) and (9) several times.
   If anything abnormal is found, such as no message displayed, then replace the sensor.
(11) Repeatedly select “0. QUIT”.
   ➲ M-Utility is exited.

■ Replacement (replacement should be performed without removing the bracket where possible)

If the SB3-attached bracket is removed during replacement, be sure to adjust SB3.
(1) While holding it up, remove the each shelf position sensor (SB3).

 CFR “3.5 Sensors Not Requiring Adjustment of Its Mounting Position” in Machine Description
(2) Disconnect the connector (SB3).

(3) Connect the connector (SB3).
(4) Install a new sensor.
(5) Check SB3.

 CFR “■ Checks”

■ Adjustment

(1) Loosen the screw on the SB3 mounting bracket.
(2) Tighten the screw on the SB3 mounting bracket in place so that the distance between the lower portion of the side plate of the IP removal unit and the bottom of SB3 is 99.5 to 100.0 mm.

(3) Check SB3.

 CFR “■ Checks”
5.4 Checking and Adjusting Inch/Metric Sensor (SB4)

■ Checks

If anything abnormal is found during checks, replace SB4.

☞ "2.2 Checking Various Sensors"

■ Replacement

(1) Remove the bracket that retains SB4 in place.

◆ NOTE ◆

Remove the bracket before disconnecting the connector (SB4). If you attempt to disconnect the connector with the bracket fixed, moment is applied to the connector, thus damaging the connector.

(2) Disconnect the connector (SB4).

(3) Remove the bracket from SB4.

(4) For reinstallation, reverse the removal steps.

◆ NOTES ◆

• When mounting connector SB4 on the bracket, ensure that the SB4 lower surface is flush with the bracket cut surface.

• When mounting the bracket in the up-down IP removal unit, screw it down while pressing it downward.

(5) Check SB4.

☞ "■ Checks"
5.5 Checking and Replacing Suction Sensor (SB5)

Check

If anything abnormal is found during checks, replace SB5.

NOTE

When monitoring SB5, make sure, with PB1 driven, that the sensor is CLOSE when the suction hose is pinched and OPEN when it is released.

Replacement

(1) Remove the SB5 retaining bracket.
(2) Remove the hose and FAST-ON terminal from SB5.
(3) Remove SB5 from the bracket.
(4) For reinstallation, reverse the removal steps.
(5) Check SB5.
5.6 Replacing Suction Pump (PB1)

(1) Rotate the timing belt until the IP removal unit is moved up (away about 250 mm from the tray of the cassette set unit) to facilitate PB1 removal.
(2) Cut the cable clamp.
(3) Remove the bracket.
(4) Cut the cable tie.
(5) Disconnect the connectors (CNPB1).
(6) Remove the hose from the PB1.
(7) Remove the two screws (one of them should be merely loosened) that retain PB1, and take out the PB1 from the pump assembly.

(8) Install a new PB1 to the pump assembly.
(9) Restore the cable tie cut at step (4).
(10) Attach the hose removed at step (6).

◆ NOTE ◆

When attaching the hose, connect it to the suction nozzle (upper one of the two nozzles arranged) of the PB1.

(11) Connect the connector (CNPB1).
(12) Attach the bracket that was removed at step (3).
(13) Restore the cable clamp that was cut at step (2).
5.7 Replacing IP Leak Valve (SVB1)

(1) Rotate the timing belt until the IP removal unit is moved up (away about 250 mm from the tray of the cassette set unit) to facilitate SVB1 removal.
(2) Disconnect the connector (CNSVB1).
(3) Cut the cable tie that retains the hose in place.
(4) Pull out the hose from SVB1.
(5) Remove SVB1.

Remove the two SVB1 retaining screws behind the machine, and take out SVB1.

(6) For reinstallation, reverse the removal steps.
5.8 Replacing Suction Cups

(1) Pull out the IP removal arm toward yourself.

◆ **NOTE◆

When pulling out the IP removal arm, do not grasp its center. If its center is grasped, the IP removal arm may be bent.
(2) Remove the guide.
Remove either of the right and left brackets that retain the guide, and then remove the guide.

(3) Replace the two suction cups and the two packings.

◆ NOTES ◆
- **Do not rotate the suction cup retaining screws while holding the suction cup rubber portions. Rotate the suction cup retaining screws with a thin-blade screwdriver while holding the pipe joint with a wrench or like tool.**
- **Exercise care to avoid hose disconnection.**

(4) Put the IP removal arm back to the rear side.
5.9 Replacing Suction Cup Drive Motor (MB1)

(1) Rotate the timing belt until the IP removal unit is moved up (away about 250 mm from the tray of the cassette set unit) to facilitate PB1 removal.
(2) Cut the cable clamp.
(3) Remove the bracket.
(4) Remove the cable clamp.
(5) Disconnect the connector (CNMB1).
(6) Remove the suction cup drive motor (MB1).
(7) Remove the timing belt from the MB1 so removed, and attach it to a new MB1.
(8) Secure MB1 in place with three hex socket head bolts. At this time, put the timing belt onto the timing belt wheel.

(9) Connect the connector (CNMB1).

(10) Install the bracket.

(11) Put the cable clamp back where it was.

◆ NOTE ◆

After putting the cable clamp back where it was, make sure that the motor cable does not interfere with the vertical conveyor and so forth by allowing the IP removal unit to move up and down.
5.10 Replacing IP Transport Motor (MB2)

(1) Rotate the timing belt until the IP removal unit is moved up (away about 150 mm from the tray of the cassette set unit) to facilitate MB2 removal.

(2) Remove the cable clamp from the connector (CNMB2).

(3) Disconnect the connector (CNMB2).

(4) Take out MB2.

(5) Remove the timing belt pulley and wheel from the MB2 taken out, and attach them to a new MB2.

(6) Secure MB2 in place with two screws.

   At this time, put the timing belt onto the timing belt wheel, and fit the protruding portion of the motor into the hole of the bracket.

(7) Connect the connector (CNMB2).

(8) Put the cable clamp back where it was.
5.11 Replacing Up-Down Drive Motor (MB3)

(1) Rotate the MB3 timing belt to raise the up-down IP removal assembly to its topmost position.

(2) Secure the IP removal unit in place with a cable tie so that it will not fall down.

**CAUTION**

Be sure to secure the IP removal unit in place. If not, the IP removal unit may fall down, because the worm gear becomes free when MB3 is removed.

(3) Remove the cable clamp.

(4) Disconnect the connector (CNMB3).

(5) From the rear of the machine, remove the two MB3 retaining screws, and take out MB3.

(6) Remove the timing belt wheel from the MB3 taken out, and attach it to a new MB3.

(7) From the rear of the machine, secure MB3 in place with two screws.

At this time, put the timing belt onto the timing belt wheel.

(8) Put the cable clamp back where it was.

(9) Connect the connector (CNMB3).

(10) Cut the cable tie that retains the IP removal unit in place.
5.12 Replacing Elevation Timing Belt

(1) Rotate the MB3 timing belt to raise the IP removal unit to its topmost position.
(2) Secure the up-down IP removal assembly in place with a cable tie so that it will not fall down.

⚠️ CAUTION

Be sure to secure the IP removal unit in place. If not, the up-down IP removal unit may fall down, because the worm gear becomes free when MB3 is removed.

(3) Remove the cable clamp.
(4) Disconnect the connector (CNMB3).
(5) From the rear of the machine, remove the two MB3 retaining screws, and take out MB3.
(6) Remove the timing belt.
(7) Put a new timing belt onto the timing belt wheel.

(8) From the rear of the machine, secure MB3 in place with two screws.
(9) Put the cable clamp back where it was.
(10) Connect the connector (CNMB3).
(11) Cut the cable tie that retains the IP removal unit in place.
5.13 Checking and Replacing Shock Absorbers of IP Removal Unit

- **Check and Replacement**

- **Checking and replacing shock absorbers located under IP removal arm**

  1. Rotate the timing belt to move up the IP removal unit to nearly the middle stage (away about 150 mm from the tray of the cassette set unit).
  2. Check if the shock absorber is not peeled or frayed.
     - If the shock absorber is peeled or frayed, proceed to step (3) to replace the whole guide to which the shock absorber is attached.
  3. Remove the spring from the wire.
  4. Remove the wire from the roller.
  5. Remove the left roller assembly from the shock absorber-attached guide plate.
  6. Remove the four screws (two of them should be merely loosened) that retain the right roller assembly, and take out the roller assembly from the bracket.

![Diagram of IP removal unit and shock absorbers](FR-I1427.EPS)

  7. Pull out the IP removal arm toward the front.

**NOTE**

When pulling out the IP removal arm, do not grasp its center. If the center is grasped, the IP removal arm may be bent.
(8) Remove the two screws (one of them should be merely loosened) that retain the shock absorber-attached guide plate (A), and take out the shock absorber-attached guide plate (A) from the stay.

(9) Loosen the two screws that retain the shock absorber-attached guide plate (B), and take out the shock absorber-attached guide plate (B) from the stay.

(10) Remove the two screws (one of them should be merely loosened) that retain the shock absorber-attached guide plate (C), and take out the shock absorber-attached guide plate (C) from the stay.

(11) Attach new shock absorber-attached guide plates A, B, and C to the stay.

When installing the guide, tighten the screws while pushing the guide against the stay.

(12) Reinstall the roller assembly removed at steps (5) and (6).

(13) Hook the wire removed at step (4) into the groove of the roller.

(14) Attach the spring removed at step (3) to the wire.
Checking and replacing shock absorbers located under IP removal unit

1. Take out the four shock absorber-attached guides from under the IP removal unit.
2. Check if the shock absorber is not peeled or frayed.
   If it is peeled or frayed, replace the whole guide to which the shock absorber is attached.
3. Reinstall the shock absorber-attached guides.
   Fit the lower portion of the guide into the groove of the lower shaft, and push the upper portion of the guide against the upper shaft to secure it in place.

![Diagram of shock absorber-attached guides and IP removal unit]
Checking and replacing shock absorbers located on rear of IP removal unit

(1) Rotate the timing belt to move the IP removal unit up to the topmost position.

(2) Remove from the rear of the machine the three screws that retain the shock absorber-attached guide plate.

(3) Take out the shock absorber-attached guide plate from the front of the machine.

(4) Check if the shock absorber is not peeled or frayed.

   If it is peeled or frayed, replace the whole guide to which the shock absorber is attached.

(5) Reinstall the shock absorber-attached guide plate.

   For reinstallation, reverse the removal steps.
5.14 Checking and Replacing Elevation Changeover Guide

Check and Replacement

(1) Check if the shock absorber of the elevation changeover guide is not peeled or frayed. If it is peeled or frayed, proceed to step (2) to replace the whole elevation changeover guide to which the shock absorber is attached.

(2) Remove the spring of the elevation changeover guide.

(3) Remove the single screw that retains the elevation changeover guide to the arm.
   Using a Phillips stubby screwdriver or the like, remove the screw.

(4) Remove the arm.

(5) Remove both the right and left E-rings that retain the elevation changeover guide.
   First remove the E-ring located on the left side of the machine.

(6) Remove both the right and left slide bearings.
(7) Remove the elevation changeover guide, using care to avoid interference with the side plate of the vertical conveyor and so forth.

(8) Install a new elevation changeover guide.
(9) Reinstall both the right and left slide bearings removed at step (6).
(10) From the front side of the machine, reinstall both the right and left E-rings removed at step (5).
    First install the E-ring on the right-hand side of the machine.
(11) Reinstall the arm removed at step (4).
(12) Secure the elevation changeover guide to the arm in place with the single screw removed at step (3).
(13) Reinstall the spring removed at step (2).
5.15 Replacing Vertical Conveyor Guide

Perform the procedures from the rear of the machine.

1) Remove the idler gear from the vertical conveyor and then the timing belt.

2) Remove the six grip springs located on both right and left of the vertical conveyor.
   Do not remove the lowermost grip spring. Also, keep in mind that the right- and left-hand grip springs differ in length.

3) Remove the gear.  
   “3.1 E-ringless Housing Employed“ in Machine Description

4) Remove the housing and bearing.
   Remove the right and left housings and bearings of the vertical conveyor that retain the rubber roller in place. Do not remove the housing and bearing located at the bottom.
(5) Remove the rubber rollers.  
Dislodge the shaft on one side of the four rubber rollers (right as seen from the rear) so that the vertical conveyor guide can be removed.

(6) Remove the elevation changeover guide.  
☞ “5.14 Replacing and Adjusting Elevation Changeover Guide”

(7) Remove the vertical conveyor guide.

(8) For reinstallation, reverse the removal steps.  
To install the vertical conveyor guide, tighten screws while pushing down the guide.
6. Before-Side-Positioning Conveyor

This section describes procedures for removing and reinstalling the before-side- positioning conveyor, and procedures for checking and replacing parts of the before-side-positioning conveyor to be replaced.

Unless otherwise specified, it is assumed that covers that should be removed prior to checks and replacement have been removed.

“3. Removing and Reinstalling Covers”

6.1 Removing and Reinstalling Before-Side-Positioning Conveyor

■ Removal

(1) Shift the two tensioners until the timing belt can be removed.

Loosen the two screws (BR M4x8) that retain the tensioner to slide the tensioner as appropriate, and then secure the tensioner in place.

“3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description

(2) Remove the two timing belts.

(3) Disconnect the connectors (CNC1, CNC2, CNSOLC1).

(4) Remove the two screws that retain the before-side-positioning conveyor.

(5) Pull out the before-side-positioning conveyor horizontally.

Slowly pull out the unit so that it is not caught by the connectors (CNC1, CNC2, CNSOLC1).
### Installation

1. Insert the before-side-positioning conveyor along the rail into the machine. Align the before-side-positioning conveyor against the positioning pin located on the left side of the machine (into the machine as seen from the direction of insertion) and against the positioning bracket located on the rear side of the machine.

2. Secure the before-side-positioning conveyor in place with two mounting screws (BR M4x8).

3. Connect the connectors (CNC1, CNC2, CNSOLC1).

4. Attach the two timing belt to the timing belt wheel.

5. Put the tensioner back where it was.

   Loosen the two screws (BR M4x8) that retain the tensioner. Flick the timing belt two or three times with your fingers to ensure that the belt snugly engages with the timing belt pulley. Screw down the tensioner in place where a proper tension is attained.

   > “3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description
6.2 Checking and Replacing Before-BCR IP Sensor (SC1)

**Checks**

1. Remove the SC1 and spacer with the connector attached.

2. Place the machine in an SC1 monitoring enabled state.
   - “2.2 Checking Various Sensors”
3. Using a cardboard or the like, block the SC1 light path.
   - A message indicating that the sensor is CLOSE appears on the operation panel.
4. Remove the cardboard or the like that has blocked the SC1 light path.
   - A message indicating that the sensor is OPEN appears on the operation panel.
5. Repeat steps (3) and (4) several times.
6. Power OFF the machine.
7. Reinstall the SC1.
Replacement

(1) Disconnect the connector (SC1).

(2) Remove SC1.

(3) Install a new SC1.

(4) Connect the connector (SC1).
6.3 Checking and Replacing Convergence Standby IP Sensor (SC2)

Checks

(1) Remove the SC2 and spacer with the connector attached.

(2) Place the machine in an SC2 monitoring enabled state.

(3) Using a cardboard or the like, block the SC2 light path.
   ➥ A message indicating that the sensor is CLOSE appears on the operation panel.

(4) Remove the cardboard or the like that has blocked the SC2 light path.
   ➥ A message indicating that the sensor is OPEN appears on the operation panel.

(5) Repeat steps (3) and (4) several times.

(6) Power OFF the machine.

(7) Reinstall the SC2.
■ Replacement

(1) Disconnect the connector (SC2).
(2) Remove SC2.
(3) Install a new SC2.
(4) Connect the connector (SC2).
(5) Attach a cable clamp.
(6) Check SC2.

‘‘ ‘‘ ‘‘ ‘‘ ‘‘ ‘‘ Checks”
6.4 Checking, Replacing, and Adjusting Convergence Path Changeover Guide Drive Solenoid (SOLC1)

If anything abnormal is found during checks, adjust or replace SOLC1. When replaced, adjust and check it again.

■ Checks

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

1. Power ON the machine.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
4. Select “6. MECHANICAL UTILITY” and “2. ACTUATOR” in sequence.
5. Select “2. DRIVE”.
   - A list of actuator Nos. is displayed.
6. Enter the number for SOLC1.
   - SOLC1 is driven.
   If SOLC1 is not driven, it is likely that cable connection is faulty. Check the cable connection, and select “2. DRIVE” again.
   If it is not driven even after that, replace SOLC1.
7. Repeatedly select “0. QUIT” to exit M-Utility.
   - A message prompting you to reset the machine is displayed.
8. Press the RESET button.
## Replacement

1. Power OFF the machine.
2. Remove the SOLC1 and bracket as a whole.
   - The SOLC1 shaft should also be removed along with them.
3. Remove SOLC1 from the bracket.
4. Attach a new SOLC1 to the bracket.
5. Install the SOLC1 and bracket as a whole with two screws.
   - While fitting the SOLC1 shaft pin into the actuator of the guide driving shaft, install the SOLC1 and bracket as a whole.
6. Adjust SOLC1.

### Adjustment

Adjust the mounting position of the convergence path changeover guide drive solenoid (SOLC1) so that the distance between the side face of the before-side-positioning changeover guide and the back of the guide plate is 1 mm or less.
6.5 Replacing Before-Side-Positioning Conveyor IP Transport Motor (MC1)

(1) Remove the before-side-positioning conveyor.
   "6.1 Removing and Reinstalling Before-Side-Positioning Conveyor"

(2) Disconnect the connector (CNMC1).
   Because the MC1 connector is secured to the bracket, pinch its latches to disconnect it.

(3) Remove MC1.
   Remove the MC1 while dislodging the timing belt that is located inside the before-positioning conveyor side plate.

(4) Remove the timing belt wheel from the shaft of MC1.

(5) Install a new MC1.
   While putting the timing belt onto the pulley, install MC1 with three screws.

(6) Attach the connector (CNMC1) to the bracket.

(7) Connect the connector (CNMC1).

(8) Install the before-side-positioning conveyor.
   "6.1 Removing and Reinstalling Before-Side-Positioning Conveyor"
6.6 Replacing and Adjusting Before-Side-Positioning Conveyor Drive Timing Belt

There are two before-side-positioning conveyor drive timing belts. One is driven by the IP transport motor (MC1) of the before-side-positioning conveyor, while the other is driven by the IP transport motor (MF1) of the erasure conveyor.

Replacement of MC1-related Timing Belt

(1) Loosen the screw that retains the tensioner.
(2) Remove the timing belt.
(3) Attach a new timing belt.
(4) Adjust the MC1-related timing belt.

Adjustment of MC1-related Timing Belt

(1) Loosen the screw that retains the tensioner.
(2) While checking the belt tension with a push-pull gauge, adjust the position of the tensioner.

Adjust the position of the tensioner until a proper tension is attained, and then tighten the screw to secure the tensioner in place. The tension is as follows.

500g, 6±1mm
■ Replacement of MF1-related Timing Belt

(1) Loosen the screw that retains the tensioner.
(2) Remove the timing belt.
(3) Attach a new timing belt.
(4) Adjust the MF1-related timing belt.

Adjustment of MF1-related Timing Belt

(1) Loosen the screw that retains the tensioner.
(2) While checking the belt tension with a push-pull gauge, adjust the position of the tensioner.

Adjust the position of the tensioner until a proper tension is attained, and then tighten the screw to secure the tensioner in place. The tension is as follows:

500g, 6 ± 1mm
6.7 Replacing Cleaning Roller

(1) Remove the single screw that retains the cleaning roller assembly of the before-side-positioning conveyor.

(2) Pull out the cleaning roller assembly horizontally.

(3) Remove the bracket.

Loosen the four screws located on right and left sides of the cleaning roller assembly and remove the bracket.

(4) Remove the cleaning roller.

(5) Clean dust deposited within the cleaning roller assembly.
(6) Remove the spur gear, two spacers, two slide bearings, and E-ring from the cleaning roller.

(7) Install the spur gear, two spacers, two slide bearings, and E-ring removed at step (6) to a new cleaning roller.

(8) Reinstall the cleaning roller to the cleaning roller assembly.

(9) Reinstall the cleaning roller assembly in reverse order of removal.
6.8 Replacing Before-Side-Positioning Conveyor Rubber Rollers

(1) Remove the before-side-positioning conveyor.
   “6.1 Removing and Reinstalling Before-Side-Positioning Conveyor”

(2) Remove the grip spring for the rubber roller to be replaced.

(3) Remove the drive gear.
   “3.1E-ringless Housing Employed” in Machine Description

(4) Remove the guide plate.
   “6.9 Checking and Replacing Shock Absorber-Attached Guide of Before-Side-Positioning Conveyor”

(5) Remove the bearing and take out the rubber roller.

(6) For reinstallation, reverse the removal steps.

**NOTES**

When installing the rubber rollers, observe the following precautions.
- Ensure that the flat machined surfaces of a pair of rubber rollers face each other.
- Be sure that the Bearing rotation prevention bracket is positioned toward the 20 mm diameter roller.

- When installing the grip spring, exercise care not to erroneously orient it because its left-hand portion is longer than the right-hand portion.
6.9 Checking and Replacing Shock Absorber-Attached Guide of Before-Side-Positioning Conveyor

Check and Replacement

- Checking and replacing shock absorbers located above before-side-positioning conveyor and under cleaning roller

1. Remove the before-side-positioning conveyor.
   - "6.1 Removing and Reinstalling Before-Side-Positioning Conveyor"
2. Remove the cover of the before-side-positioning conveyor.
3. Loosen the single screw that retains the bracket.
4. Remove the shock absorber-attached guide plate (A).
5. Remove the cleaning roller assembly.
6. Remove the shock absorber-attached guide plate (B).
7. Check if the shock absorber is not peeled or frayed.
   - If it is peeled or frayed, replace the whole guide to which the shock absorber is attached.
(8) Install the guide plate.
(9) Tighten the screw loosened at step (3).
(10) Reinstall the cover removed at step (2).
(11) Reinstall the before-side-positioning conveyor.

“6.1 Removing and Reinstalling Before-Side-Positioning Conveyor”
Checking and replacing shock absorbers of before-side-positioning changeover guide and before-side-positioning retention guide

(1) Remove the before-side-positioning conveyor.
   “6.1 Removing and Reinstalling Before-Side-Positioning Conveyor”

(2) Remove the guide plate.

(3) Check if the shock absorbers on the before-side-positioning changeover guide and before-side-positioning retention guide.

   If it is peeled or frayed, proceed to step (4) to replace the whole guide plate to which the shock absorber is attached. If it is not peeled or frayed, proceed to step (14).

(4) Remove the spring.

(5) Remove the arm.

(6) Remove the bearing.

(7) Remove the shock absorber-attached before-side-positioning changeover guide.
(8) Install a new before-side-positioning changeover guide in reverse order of removal steps (4) through (7).

When installing the arm, tighten the screw with the arm pushed against the flat machined surface.

(9) Adjust the mounting position of the convergence path changeover guide drive solenoid (SOLC1) so that the distance between the side face of the before-side-positioning changeover guide and the back of the guide plate is 1 mm or less.
(10) Remove the two screws and two spacers that retain the shaft of the before-side-positioning retention guide, and take out the before-side-positioning retention guide assembly.

(11) Remove the four screws and four spacers that retain the before-side-positioning retention guide, and take out the before-side-positioning retention guide from the shaft.

(12) Install new before-side-positioning retention guides to the shafts.

(13) Install the before-side-positioning retention guide assembly to the side-positioning conveyor.

◆ NOTES ◆

- When installing the shafts, position their grooves on the right-hand side of the machine.
- When installing the before-side-positioning retention guide assembly, screw it down while retaining the shafts with an Allen wrench lodged in the shaft hole.

(14) Reinstall the guide plate removed at step (2).

(15) Reinstall the before-side-positioning conveyor.

☞ “6.1 Removing and Reinstalling Before-Side-Positioning Conveyor”
7. Pulling Out and Pushing In Scanner Unit

■ Pulling Out

⚠ CAUTIONS

- Before pulling out the scanner unit, be sure to remove the two bracket retaining screws located on the upper portion of the SCN08A board and disconnect the connectors. If pulled out without removing them, the SCN08A board may be damaged.
- When pulling out the scanner unit, be sure to lower the adjustable feet down to the floor. If not, the bolts of the adjustable feet would interfere with the cable cover.
- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Remove the following covers in order named.
   Lower front cover, lower right-hand side cover
   "3. Removing and Reinstalling Covers"

(2) Disconnect the connectors (CN7-9, CNZ6-8, 10 on the SCN08A board, and CN1, 2, 4, 5 on the subscanning unit).

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Subscanning unit

\[2\]

SCN08A board

\[2\]

Remove screw (BR M4x8, x2)
The cables connected to the SCN08A board should be pushed aside to the right and top sides of the scanner unit, while the cables connected to the subscanning unit, both front and back of them, should be pushed beneath the cable cover.

(3) Remove the two screws that retain the bracket located on the upper portion of the SCN08A board.

(4) Remove the two screws that retain the scanner unit.

(5) Pull out the scanner unit.

**NOTE**

When pulling out the scanner unit, use care so that it is not caught by the disconnected connectors and cables.
Push-In

**CAUTIONS**

- When removing and installing the units, exercise care not to damage the cables.
- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) While pushing the stopper located on the front of the machine, put the scanner unit back into the machine until the stopper located on the rear side of the machine is activated.

(2) While pushing the stopper located on the rear side of the machine, put the scanner unit all the way into the machine.

◆ **NOTE◆**

*When putting the scanner unit back where it was, use care so that it is not caught by the connectors and cables disconnected.*
(3) Using two screws, secure the bracket located on the upper portion of the SCN08A board.

(4) Secure the scanner unit in place with two screws.

(5) Connect the connectors (CN7-9, CNZ6-8, 10 on the SCN08A board; CNZ1, 2, 4, 5 on the subscanning unit).
8. Side-Positioning Conveyor

8.1 Removing and Reinstalling Side-Positioning Conveyor

■ Removal

⚠️ **CAUTION**
When removing and installing the units, exercise care not to damage the cables.

(1) Pull out the scanner unit.
   *(Ref. "7. Pulling Out and Pushing in Scanner Unit")*

(2) Disconnect the connectors (CND1, BCRCN1, CNMD1-3).

(3) Remove the five screws that retain the side-positioning conveyor.

(4) Remove the side-positioning conveyor by taking it out in a horizontal direction.

◆ **NOTE◆
Make sure that the scanner unit has been pulled all the way out. If not, MD3 will interfere with the machine frame when the side-positioning conveyor is removed.
Reinstallation

**CAUTION**

When removing and installing the units, exercise care not to damage the cables.

**NOTE**

Make sure that the scanner unit has been pulled all the way out. If not, MD3 will interfere with the machine frame when the side-positioning conveyor is removed.

1. Reinstall the side-positioning conveyor.
   
   While pressing the bracket of the side-positioning conveyor against the block section of the subscanning unit and the reference side, secure the side-positioning conveyor in place with five screws.

2. Connect the connectors (CND1, BCRCN1, CNMD1-3).

3. Push in the scanner unit.
   
   “7. Pulling Out and Pushing in Scanner Unit”
8.2 Checking and Replacing Side-Positioning Mechanism HP Sensor (SD1)

**Checks**

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

(1) Remove the following covers in order named.
   - Lower rear cover
     "3. Removing and Reinstalling Covers"
(2) Power ON the machine.
(3) Place the machine in a state where the side-positioning mechanism HP sensor (SD1) can be monitored.
   "2.2 Checking Various Sensors"
(4) Shift the actuator of the side-positioning mechanism by hand to dislocate it from the sensor.
   ➥ A message indicating that the sensor is OPEN is displayed on the operation panel.
(5) Shift the actuator of the side-positioning mechanism by hand until the sensor is CLOSE.
   ➥ A message indicative of the sensor CLOSE status is displayed on the operation panel.
(6) Repeat steps (4) and (5) several times.
   If no message is displayed, it is likely that the sensor is faulty. So, replace the sensor.

(7) Enter “0 (zero)”.  
   ➥ The monitoring is quitted, and the screen returns to the “3. SENSOR” menu.
(8) Press the RESET button.
### Replacement

1. Remove the following covers in order named:
   - Lower rear cover
     - Refer to “3. Removing and Reinstalling Covers”
2. Remove the SD1 together with the bracket, with CNSD1 attached.
3. Disconnect the CNSD1.
4. Remove the SD1 from the bracket.
5. Attach a new SD1 to the bracket.
6. Connect the CNSD1.
7. Install the SD1 together with the bracket to the side-positioning conveyor.
8.3 Checking and Replacing Grip Release HP Sensor (SD2)

**Checks**

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**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

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1. Remove the following covers in order named.
   - Lower rear cover
   - “3. Removing and Reinstalling Covers”

2. Power ON the machine.

3. Place the machine in a state where the side-positioning mechanism HP sensor (SD1) can be monitored.
   - “2.2 Checking Various Sensors”

4. Rotate the cam of the grip mechanism to dislocate the actuator from the sensor.
   - A message indicating that the sensor is OPEN is displayed on the operation panel.

5. Rotate the cam of the grip mechanism until the actuator causes the sensor to be CLOSE.
   - A message indicative of the sensor CLOSE status is displayed on the operation panel.

6. Repeat steps (4) and (5) several times.
   - If no message is displayed, it is likely that the sensor is faulty. So, replace the sensor.

7. Enter “0 (zero)”.
   - The monitoring is quitted, and the screen returns to the “3. SENSOR” menu.

8. Press the RESET button.
Replacement

(1) Remove the following covers in order named.
   Lower rear cover
   "3. Removing and Reinstalling Covers"

(2) Rotate the cam of the grip mechanism to dislocate the actuator from SD2.

(3) Remove the SD2 together with the bracket, with CNSD2 attached.

(4) Disconnect the CNSD2.

(5) Remove the SD2 from the bracket.

(6) Attach a new SD2 to the bracket.

(7) Connect the CNSD12

(8) Install the SD2 together with the bracket to the side-positioning conveyor.
8.4 Checking and Replacing Side-Positioning IP Sensor (SD3)

- Checks

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

1. Remove the side-positioning conveyor.
   -  "8.1 Removing and Reinstalling Side-Positioning Conveyor"
2. Remove the SD3 and spacer with the connector (CNSD3) attached.
3. Connect CND1.
4. Power ON the machine.
   - The initialization sequence starts, and after an elapse of about 30 to 60 seconds, the software version number (Ax) appears on the operation panel.
5. Immediately after the software version number (Ax) appears, touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
   
   When “STEP 95” appears on screen, any subsequent touch on the operation panel is rejected. In that case, reset the machine and wait until the software version number (Ax) appears.
6. Make the side-positioning IP sensor (SD3) to be in the sensor monitoring enabled state.
   - "2.2 Checking Various Sensors"
7. Using a piece of cardboard, block the SD3 light path.
   - A message indicating that the sensor is CLOSE is displayed on the operation panel.
8. Remove the piece of cardboard that blocks the SD3 light path.
   - A message indicating that the sensor is OPEN is displayed on the operation panel.
9. Repeat steps (7) and (8) several times.
   - If anything abnormal is found, such as no message displayed, then replace the sensor.
(10) Enter “0 (zero)”.  
➢ The monitoring is quitted, and the screen returns to the “3. SENSOR” menu.
(11) Power OFF the machine.  
(12) Attach SD3 and spacer.  
(13) Reinstall the side-positioning conveyor.  
➢ “8.1 Removing and Reinstalling Side-Positioning Conveyor”

■ Replacement

(1) Remove the side-positioning conveyor.  
➢ “8.1 Removing and Reinstalling Side-Positioning Conveyor”
(2) Remove the SD3 and the spacer together with CNSD3.  
(3) Disconnect the CNSD3.
(4) Attach a new SD3 and the spacer removed at step (2).  
(5) Connect CNSD3.  
(6) Reinstall the side-positioning conveyor.  
➢ “8.1 Removing and Reinstalling Side-Positioning Conveyor”
8.5 Replacing Side-Positioning Motor (MD1)

**Replacement**

1. Remove the following cover.
   
   Lower rear cover

2. Cut the cable tie.

3. Disconnect CNMD1.

4. Remove MD1 together with the bracket.

5. Remove MD1 from the bracket.

6. Remove the timing belt wheel from MD1.

7. Install to a new MD1 the timing belt wheel that was removed at step (6).

8. For reinstallation, reverse the removal steps.
   
   Put the timing belt onto the timing belt wheel of MD1 and then secure MD1 in place.
8.6 Replacing Grip Release Motor (MD2)

Replacement

(1) Remove the side-positioning conveyor.

“8.1 Removing and Reinstalling Side-Positioning Conveyor”

(2) Cut the cable tie.

(3) Disconnect CNMD2.

(4) Remove MD2 together with the bracket.

(5) Remove MD2 from the bracket.

(6) Remove the timing belt wheel and stay from MD2.

(7) Install to a new MD2 the timing belt wheel that was removed at step (6).

(8) For reinstallation, reverse the removal steps.

Put the timing belt onto the timing belt wheel of MD2 and then secure MD2 in place.
8.7 Replacing IP Transport Motor (MD3)

Replacement

(1) Remove the following cover.
   Lower rear cover
   [3. Removing and Reinstalling Covers]

(2) Cut the cable tie.

(3) Disconnect CNMD3.

(4) Remove MD3 together with the bracket.

(5) Remove MD3 from the bracket.

(6) Remove the timing belt wheel from MD3.

(7) Install to a new MD3 the timing belt wheel that was removed at step (6).

(8) For reinstallation, reverse the removal steps.
   Put the timing belt onto the timing belt wheel of MD3 and then secure MD3 in place.
8.8 Replacing Barcode Reader (BCR)

Replacement

(1) Remove the side-positioning conveyor.
  (2) Cut the four cable ties.
  (3) Disconnect BCRCN2.
  (4) Remove the barcode reader.
  (5) Remove the four screws and take out the bracket.

(6) Reverse the removal steps to reinstall a new barcode reader.
8.9 Checking and Replacing Side-Positioning Conveyor Grip Mechanism

Checks

⚠️ CAUTION  
Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Remove the following covers.
   Lower right-hand cover, lower rear cover
   ➤ “3. Removing and Reinstalling Covers”
2. Power ON the machine.
3. Make the side-positioning IP sensor (SD2) to be in the sensor monitoring enabled state.
   ➤ “2.2 Checking Various Sensors”
4. Make sure that “1” is indicated for SD2 (CLOSE status).
5. Make sure that the rubber roller is gripped.
6. Repeatedly select “0. QUIT”.
   ➤ M-Utility is exited.
Replacement

(1) Remove the side-positioning conveyor.
   - “8.1 Removing and Reinstalling Side-Positioning Conveyor”

(2) Remove the E-ring.

(3) Take out the triangular-shaped cam from the shaft.

(4) Remove the wire and shaft from the triangular-shaped cam.

(5) Install the wire and shaft removed at step (4) to a new triangular-shaped cam.

**NOTE**

When installing the triangular-shaped cam to the shaft, use care not to confuse the orientation of the triangular-shaped cam.

(6) Reinstall the triangular-shaped cam to the shaft.

(7) Reinstall the E-ring.

(8) Reinstall the side-positioning conveyor.
   - “8.1 Removing and Reinstalling Side-Positioning Conveyor”

(9) Check the grip mechanism of the side-positioning conveyor.
   - “Checks”
8.10 Checking and Replacing Side-Positioning Top Stopper

**Checks**

1. Remove the side-positioning conveyor.
   
   “8.1 Removing and Reinstalling Side-Positioning Conveyor”

2. Move the side-positioning mechanism to the right (small-size side) to raise the stopper.

3. Make sure that the distance from the guide plate to the tip of the stopper is 6 ± 1 mm.

(4) Reinstall the side-positioning conveyor.

   “8.1 Removing and Reinstalling Side-Positioning Conveyor”
Replacement

(1) Remove the side-positioning conveyor.
   "8.1 Removing and Reinstalling Side-Positioning Conveyor"
(2) Remove the spring from the stopper.
(3) Remove the four screws that retain the stopper.
(4) Remove the two slide bearings and two E-rings.
(5) Remove the shaft.
(6) Remove the stopper.

(7) Install a new stopper in reverse order of removal.
(8) Check the stopper.
   " ■ Checks"
8.11 Replacing Side-Positioning Conveyor Grip Release Timing Belt

(1) Remove the side-positioning conveyor.
   “8.1 Removing and Reinstalling Side-Positioning Conveyor”

(2) Remove MD2.
   “8.6 Replacing Grip Release Motor (MD2)”

(3) Remove MD3 together with the bracket.
   “8.7 Replacing IP Transport Motor (MD3)”

(4) Remove the single hex socket head bolt that retains the cam.

(5) Remove the single hex socket head bolt that retains the timing belt wheel.

(6) Pull out the shaft.

(7) Remove the timing belt.

(8) Install a new timing belt in reverse order of removal.
8.12 Checking, Replacing, and Adjusting Side-Positioning Conveyor IP Conveyance Timing Belt

- **Checks**

  1. Remove the side-positioning conveyor. 
    - "8.1 Removing and Reinstalling Side-Positioning Conveyor"
  2. Put a sheet or the like on the floor and place the side-positioning conveyor down on the sheet, with its side down.
  3. Measure the distance “A” of the timing belt.
  4. With a load of 500±50 g applied to the timing belt, measure the distance “B”.

![Diagram of conveyor system]

- Make sure that the deflection (A - B) is 9±1 mm.
- Reinstall the side-positioning conveyor.
  - "8.1 Removing and Reinstalling Side-Positioning Conveyor"
Replacement

(1) Remove the side-positioning conveyor.

☞ “8.1 Removing and Reinstalling Side-Positioning Conveyor”

(2) Remove MD1 together with the bracket.

☞ “8.5 Replacing Side-Positioning Motor (MD1)”

(3) Remove the retainer that retains the timing belt.

(4) Remove the timing belt.

(5) Install a new timing belt.

(6) Reinstall the retainer to the timing belt.

(7) Reinstall MD1.

☞ “8.5 Replacing Side-Positioning Motor (MD1)”

(8) Adjust the timing belt.

☞ “Adjustment”
## Adjustment

1. Loosen the screw that retains the tension roller.
2. While checking the tension of the belt by use of a push-pull gauge, adjust the position of the tension roller.
   
   Screw down the tension roller in place where an appropriate tension is attained.

The tension value is as follow.

500 ± 50g, 9 ± 1 mm

A - B = 9 – 1 (mm)
8.13 Replacing Side-Positioning Conveyor Rubber Rollers

(1) Remove the side-positioning conveyor.
   \(\textit{\textsuperscript{8.1 Removing and Reinstalling Side-Positioning Conveyor}}\)

(2) Remove the bearing, grip spring, housing, belt wheel, and timing belt wheel for the rubber roller to be removed.

(3) Replace the six side-positioning conveyor rubber rollers.

(4) Reinstall the side-positioning conveyor.
   \(\textit{\textsuperscript{8.1 Removing and Reinstalling Side-Positioning Conveyor}}\)
8.14 Checking and Replacing Shock Absorbers of Side-Positioning Conveyor

(1) Remove the side-positioning conveyor.
   “8.1 Removing and Reinstalling Side-Positioning Conveyor”
(2) Remove the three shock absorber-attached guide plates.
(3) Check if the shock absorber is not peeled or frayed.
   If it is peeled or frayed, replace the whole guide plate to which the shock absorber is attached.
(4) Reinstall the shock absorber-attached guide plates.
(5) Reinstall the side-positioning conveyor.
   “8.1 Removing and Reinstalling Side-Positioning Conveyor”
9. Scanning Optics Unit

This section describes procedures for removing and reinstalling the scanning optics unit, procedures for adjusting the scanning optics unit, and procedures for checking and replacing parts of the scanning optics unit to be replaced.

9.1 Adjusting Read Start Position and Read Width

Adjustments of the read start position and read width should be performed in the following sequence.

1. Check on Image Trimming
2. Initialization of Format Set Data
3. Input of Read Width Adjustment Value
4. Input of Read Start Position Adjustment Value
5. Check on Adjustment Results
6. Fine Adjustment of Read Width and Read Start Position

If anything abnormal is found in the adjustment results, or if it is desired to adjust with greater accuracy, perform [6] Fine Adjustment of Read Width and Read Start Position. After fine adjustment of read width and read start position, perform [5] Check on Adjustment Results again.

CAUTIONS

• After completing the adjustment of read start position and read width, back up the scanner set data.
• Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

Activating and Exiting M-Utility

In this section, M-Utility is activated and exited very often. Thus, their respective procedures are not described in detail. Refer to the following steps as needed.

● How to activate M-Utility

1. Power ON the machine.
2. Touch the U-Utility button.
   ➥ The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   ➥ M-Utility is activated.

● How to exit M-Utility

Repeatedly select “0. QUIT” to exit M-Utility.
   ➥ M-Utility is exited.
[1] Checks on Image Trimming

**CAUTION**

*Before adjusting the read start position and read width, set the image trimming to 0. If it is not set to 0, the IP edge may be invisible; if so, the distance between the image frame and IP edge cannot be measured.*

1. Activate M-Utility.
   - “Activating and Exiting M-Utility”
2. Select “2. CONFIGURATION SETTING” and “2. PRINT” in sequence.
   - The FILMFMT.CFG file is opened to reveal its contents.
3. Make sure that the image trimming (TE) is 0.
   - If it is 0, touch the CANCEL button to take the steps described in “[2] Initialization of Format Set Data.”
   - If it is not 0, write down the displayed value on your notepad, and touch the setup value area.
4. Set the image trimming (TE) to 0.
   - **CAUTION**
     *If the image trimming is changed by entering value 0, be sure to revert the trimming back to its original value noted on your notepad after completing the adjustment of read start position and read width.*
5. Touch the SAVE button.
   - The FILMFMT.CFG file is saved, and the screen returns to M-Utility.
6. Take the steps described in “[2] Initialization of Format Set Data.”

[2] Initialization of Format Set Data

Initialization of format set data should be performed when format-related setting has been changed. It should also be performed when the scanning optics unit or any part in the scanning optics unit is replaced.

1. Activate M-Utility.
   - “Activating and Exiting M-Utility”
   - The format set data is initialized.
[3] Input of Read Width Adjustment Value

(1) Activate M-Utility.

"Activating and Exiting M-Utility"

(2) Select “5. SCANNER UTILITY”, “6. FORMAT” and “2. FREQ ADJUST” in sequence.

(3) Enter the read width adjustment value and press the [ENT] key.

➺ The read width is adjusted.

Type in the value indicated on the label located on the side of a new scanning optics unit.

![Scanning optics unit](image1)

(4) Select “5. SCANNER UTILITY”, “8. DATA MANAGEMENT” and “3. SAVE FORMAT DATA” in sequence.

➺ The read width adjustment value so adjusted is saved in the hard disk.

[4] Input of Read Start Position Adjustment Value

(1) Uniformly expose a 14” x 14” (35cm x 35cm) or 14” x 17” (35cm x 43cm) IP at about 10 mR.

Note that figures in parentheses are applicable when the machine is set in metric unit of measure.

(2) Perform recording under SENSITIVITY of the IDT’s Test Menu, and generate image output.

(3) Measure the white blank portion of the output film, in steps of 2 mm, from the outermost corner of the image frame.

For measurement, use the steel rule or graduated loupe.

![Image frame](image2)

![White blank](image3)
(4) Determine the actual dimension of the white blank on the IP.
The distance measured on film may not correspond to the actual size on the IP depending on the reading size. For example, since a two-in-one image of 14” x 14” (35cm x 35cm) size has a reduction ration of 50%, the distance measured on film, multiplied by 2, represents the actual size on the IP.
The correspondence between reading sizes and reduction factors is presented below.

<table>
<thead>
<tr>
<th>Reading size</th>
<th>Two-in-one image</th>
<th>Full image</th>
</tr>
</thead>
<tbody>
<tr>
<td>14” x 17” (35cm x 43cm)</td>
<td>1/2</td>
<td>2/3</td>
</tr>
<tr>
<td>14” x 14” (35cm x 35cm)</td>
<td>1/2</td>
<td>2/3</td>
</tr>
<tr>
<td>10” x 12” (24cm x 30cm)</td>
<td>2/3</td>
<td>1/1</td>
</tr>
<tr>
<td>8” x 10” (18cm x 24cm)</td>
<td>6/7</td>
<td>1/1</td>
</tr>
</tbody>
</table>

(5) Calculate the correction value for the read start position using the following formula.
Note that “A” represents the actual size (in millimeters) determined in step (4) above.
Correction value = A x 10 + 10

(6) Activate M-Utility.
Activating and Exiting M-Utility

(7) Select “5. SCANNER UTILITY”, “6. FORMAT” and “2. PIXEL ADJUST” in sequence.

(8) Enter the correction value determined in step (5).
The read width is adjusted.
If the correction value entered is positive, the resulting image is shifted to right, while it is to left if the value is negative.

(9) Select “5. SCANNER UTILITY”, “8. DATA MANAGEMENT” and “3. SAVE FORMAT DATA” in sequence.
The read width adjustment value so adjusted is saved in the hard disk.

(10) Exit M-Utility.

(11) Power OFF the machine.

(12) Turn OFF the circuit breaker.

(13) Make sure that the high-voltage switch of the SCN08A board is in the ON position.

(14) Reinstall all the covers of the machine.

(15) Turn ON the circuit breaker.
[5] Checks on Adjustment Results

Have on hand two 150mm steel rules, and measure their outer lengths.

1. Power ON the machine.
   - Make sure that the machine starts up normally.

2. With the steel rules placed in the same position on the cassette as during adjustment, uniformly expose a 14" x 14" (35cm x 35cm) or 14" x 17" (35cm x 43cm) IP at about 1 mR.

3. Perform recording under SENSITIVITY of the IDT’s Test Menu, and generate image output.

4. Check the following points with the output film.
   - Measure the dimension of the image of the steel rules to check that the image length in the main-scan direction has an error of ±1mm or less relative to the following correction value.
     \[
     \text{Correction value} = 150 \text{ (mm)} \times (1 + 23.5/d)
     \]
     where d (mm) is the distance from the tube to the front cover of the exposure unit.
   - Check that the top/bottom and right/left blank portions around the image are all 2mm or less in actual size on the IP.

   **SUPPLEMENTARY NOTE**
   The white blank portions can be adjusted by setting the image trimming.

5. Quit the adjustment of the read width and read start position.
   - Only if anything abnormal is found with the output film, or the adjustment result is out of specification, perform the steps described in “[6] Fine Adjustment of Read Width and Read Start Position” below.

[6] Fine Adjustment of Read Width and Read Start Position

The procedures for finely adjusting the read width and read start position are described below.

After fine adjustment, perform the steps described in “[5] Check on Adjustment Results” again.

**NOTE**

After the adjustment, be sure to save the data to the hard disk by selecting “MAINTENANCE UTILITY”, “5. SCANNER UTILITY”, “8. DATA MANAGEMENT”, and “3. SAVE FORMAT DATA” in sequence.

**Adjustment of read width**

1. Activate M-Utility.
   - “Activating and Exiting M-Utility”

2. Select “5. SCANNER UTILITY”, “6. FORMAT” and “2. FREQ ADJUST” in sequence.

3. Enter the correction value and press the [ ENT ] key.
   - Use the following input data.
     - To increment the current read width by N% (0 < N ≤ 5) (to enlarge the image)
     - To decrement the current read width by N% (-5 < N ≤ 0) (to reduce the image)
Adjustment of invalid pixels

1. Activate M-Utility.
   
   * Activating and Exiting M-Utility*


3. Enter the correction value.
   
   Use the following input data. Note that 10 pixels correspond to 1mm in actual size on the IP.
   
   - To increment the current read start position by N pixels (0 < N ≤ 999)
     
     Value of N: The image is shifted rightward relative to the image frame.
   
   - To decrement the current read start position by N pixels (0 < N ≤ 999)
     
     Value of -N: The image is shifted leftward relative to the image frame.

**SUPPLEMENTARY NOTE**

The MP (invalid pixel) value, N, must be set so that the value after correction ranges from 60 to 180. Thus, if the MP value is 150, up to 30 may be set for positive quantity of N, and up to 90 may be set for negative quantity of N.

To check the MP value, use “5. SCANNER UTILITY”, “8. DATA MANAGEMENT” and “4. DISPLAY DATA” menus.

If an out-of-range value is set, an error results. If an error occurs, check to see that the procedures have been performed as instructed, and check if each of the parts is connected properly.
9.2 Shading/Sensitivity Correction

Shading/sensitivity correction should be performed in the following sequence.

1. Initial setting for shading correction data recording
2. Uniform exposure of IP
3. Conveyance of IP
4. Correction for shading and sensitivity
5. Check on correction results
6. Set Sensitivity Correction

If the correction results are abnormal or an increased degree of sensitivity correction accuracy is called for, make a machine shipment control sensitivity correction. After machine shipment control sensitivity correction, verify the correction results.

**CAUTION**

After completing the shading/sensitivity correction, back up the scanner set data.

For shading/sensitivity correction, use the following jigs and external devices.
- V-type and ST IP: Use an IP of 14” x 14” (35cm x 35cm) or 14” x 17” (35cm x 43cm) size, free from soil or scratch.
- X-ray source
- Dosimeter: Used to measure the dosage during uniform exposure.
- Stopwatch: Used to check the elapsed time after uniform exposure.
- ULP or LPII.

**[1] Initial Setting for Shading Correction Data Recording**

1. Activate M-Utility.
2. Select “5. SCANNER UTILITY”, “7. SHADING/SENSITIVITY” and “1. REC MODE” in sequence.
   - The machine is set in the mode for recording the shading correction data.
3. Exit M-Utility and switch to the Routine Mode.

**[2] Uniform Exposure of IP**

1. Uniformly expose an IP of 14” x 14” (35cm x 35cm) or 14” x 17” (35cm x 43cm) size at 0.5 to 9.99 mR (1 mR recommended).
   - At this time, measure the dosage with a dosimeter. The voltage should be aligned to 80 kV.

   **SUPPLEMENTARY NOTE**

   The dosage value of the X-ray exposure represents a value at the center of an IP. However, the dosimeter cannot be located at the center of the IP during uniform exposure. The dosage values at the center and outer periphery of the IP should be measured in advance, and the difference between them should then be calculated to determine the correction dosage value.

2. Determine the correction dosage value.
   - Round off the measured dosage value in mR to the second decimal place, and write down the resulting value on your notepad.
[3] Conveyance of IP

Convey the IP in primary erasure mode 10 minutes after its uniform exposure.

1. Change the processing mode to Primary Erasure.
   - While in Routine Mode, touch the CHANGE key to select Primary Erasure.

2. Set in the machine the cassette containing the uniformly exposed IP.
   - Primary erasure (reading and erasing without image output) is performed.

◆ NOTE ◆

If shading is out of the correctable range, an error results. If an error occurs, take any of the following actions.

• If any white blank is found on screen, perform fine adjustment of invalid pixels.
  “9.1 Adjusting Read Start Position and Read Width, [4] Input of Read Start Position Adjustment Value”

• Check for anything abnormal with the X-ray exposure.
• Check to see if the mounting location of the light-collecting guide is improper or it is soiled.
  “10.2 Servicing Light-Collecting Guide”

(1) Activate M-Utility.
  “9.1 Adjusting Read Start Position and Read Width, ■ Activating and Exiting M-Utility”

(2) Select “5. SCANNER UTILITY”, “7. SHADING/SENSITIVITY” and “2. CALCULATION” in sequence.

(3) Select any of menu items 1 through 6.
   Normally, select “1. SHD., POLY. AND SENSITIVITY”.
   Select either of the items 2 through 6 according to the purpose.
   • If uniform exposure cannot be done so that normal shading data cannot be obtained
     2. SHD., POLY. AND SENSITIVITY FOR BAD CONDITION
   • If sensitivity correction is not performed
     3. SHD. AND POLY.
   • If uniform exposure cannot be done and if sensitivity correction is not performed
     4. SHD. AND POLY. FOR BAD CONDITION
   • If only polygon is to be calculated
     5. POLYGON ONLY
   • If only sensitivity is to be calculated
     6. SENSITIVITY ONLY

(4) For either 1, 2, or 6, enter the corrected dosage value. Otherwise, proceed to the next step.
(5) Select “5. SCANNER UTILITY”, “8. DATA MANAGEMENT”, and “1. SAVE SHADING AND POLYGON DATA” in sequence.

.gateway The shading data and polygon data so corrected is saved in the HD.

(6) If sensitivity correction has been made, select “2. SAVE SENSITIVITY DATA.”

.gateway The sensitivity data so corrected is saved in the HD.

(7) Exit M-Utility.

[5] Checks on Correction Results

(1) Uniformly expose a 14” x 14” (35cm x 35cm) or 14” x 17” (35cm x 43cm) IP at about 1 mR.

At this time, measure the dosage with a dosimeter. The voltage should be aligned to 80 kV.

◆ SUPPLEMENTARY NOTE ◆

The dosage value of the X-ray exposure represents a value at the center of an IP. However, the dosimeter cannot be located at the center of the IP during uniform exposure. The dosage values at the center and outer periphery of the IP should be measured in advance, and the difference between them should then be calculated to determine the correction dosage value.

(2) Determine the correction dosage value.

Write down the resulting value on your notepad.

(3) Perform recording under SENSITIVITY of the IDT’s Test Menu, and generate image output.

◆ NOTE ◆

Image output should be generated 10 minutes after the uniform exposure of IP.

(4) After checking the film output, take out the IP used for shading correction.

(5) Check the following points on the output film.

• Shading in the main scan direction has been corrected appropriately.

• There are no variations or nonuniformity between polygonal facets in the subscanning direction.

• The S value on film is within the following range:

182 \leq S \text{ value} \times \text{correction dosage value} \leq 220

(6) Quit the shading and sensitivity corrections.

If anything abnormal is found on the output film, or it is desired to correct sensitivity with greater accuracy, take the steps described in “[6] Set Sensitivity Correction” below.
[6] Set Sensitivity Correction

◆ NOTE ◆

When set sensitivity correction is performed such that sensitivities of several readers are adjusted to a consistent level, the same IP should be used. It should also be verified in advance that there is no variation in dosage when several exposures are performed with the same output. If the dosage varies from one exposure to another, set sensitivity correction cannot be accomplished.

After set sensitivity correction, perform the steps described in “[5] Checks on Correction Results” again.

1. Uniformly expose a 14” x 14” (35cm x 35cm) or 14” x 17” (35cm x 43cm) IP at 0.5 to 9.99 mR.

2. Perform recording under SENSITIVITY of the IDT’s Test Menu, and generate image output.

◆ NOTE ◆

Image output should be generated 10 minutes after the uniform exposure of the IP.

3. After checking the film output, take out the IP used for shading correction.

4. Select “5. SCANNER UTILITY”, “7. SHADING/SENSITIVITY” and “4. SENSITIVITY DATA” in sequence.

5. Enter the current value and a desired correction value in sequence.

➮ The correction value is set.

6. Generate film output and confirm the correction result.

7. Select “5. SCANNER UTILITY”, “8. DATA MANAGEMENT” and “2. SAVE SENSITIVITY DATA” in sequence.

➮ The sensitivity data after correction is saved to the hard disk.

8. Exit M-Utility.
9.3 Removing and Reinstalling Scanning Optics Unit

**CAUTIONS**

- Do not remove the top cover of the scanning optics unit.
- Carefully handle the scanning optics unit to avoid any shock to it.
- Do not tilt the scanning optics unit.
- Never put your fingers into the projection outlet located on the bottom of the scanning optics unit.
- During removal and installation, exercise care not to let any screw drop into the subscanning unit.

**Removal**

1. Pull out the scanner unit.
   
   "7. Pulling Out and Pushing In Scanner Unit"

2. Write down on your notepad the read width adjustment value indicated on the label located on one side of a new scanning optics unit.
   This read width adjustment value will be used to adjust the read start position and read width.

3. Disconnect the connectors (CN1-3).

4. Remove the ground wire.

5. Carefully take out the scanning optics unit, while using care to avoid shock to it.

**NOTE**

The scanning optics unit of the service parts does not contain the LD assembly. When replacing the scanning optics unit, reattach the existing LD assembly to a new scanning optics unit.

"9.4 Checking and Replacing LD Assembly"
Reinstallation

NOTE

To install the scanning optics unit, loosely tighten the four screws, and position the scanning optics unit by aligning it against the three reference pins located on the top of the subscanning unit.

1. Reverse the removal steps to reinstall the scanning optics unit.

2. Take the steps described in “Check after Scanning Optics Unit Replacement.”

Checks after Scanning Optics Unit Replacement

1. Reinstall all the covers.
2. Power ON the machine.
   Make sure that the machine starts up normally.
3. Adjust the read start position and read width.
   “9.1 Adjusting Read Start Position and Read Width”
4. Perform shading/sensitivity correction.
   “9.2 Shading/Sensitivity Correction”
5. Generate image output, and verify that there is nothing abnormal with scanner control.
   Uniformly expose IPs of each size at about 1 mR. Then, check the film image recorded under SENSITIVITY from the Test Menu for scanner control failures, such as format misalignment and shading, which may cause diagnostic problems.
9.4 Checking and Replacing LD Assembly

- Checks

⚠️ CAUTION

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

First check the SCN08A board before performing the procedures described in this section.

“10.1 Checking and Replacing SCN08A Board”

⚠️ CAUTIONS

- Do not disconnect the connectors CN2 and 3 from the LDD08A board. If they are disconnected, the LD protection is disabled, so that the LD may fail.
- Do not touch the patterns and ICs of the LDD08A board.
- Carefully handle the scanning optics unit, exercising care to avoid shock to it.
- When servicing the board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Power OFF the machine.
(2) Make sure that the high-voltage switch (S1) is in the OFF position.
(3) Pull out the scanner unit.
   7 Pulling Out and Pushing In Scanner Unit

(4) Make sure that the connectors (CN1-4) of the LDD08A board are locked.
   If not, securely connect the connectors to lock them in place.

**CAUTION**

When servicing the LD board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(5) Push in the scanner unit.
   7 Pulling Out and Pushing In Scanner Unit

(6) Make sure that connector (CN1) of the SCN08A board is locked.
   If not, securely connect the connector to lock it in place.

**CAUTION**

When connecting CN1, use care not to touch the C33 and C94 capacitors.

(7) Make sure that the no-fuse breakers (NFB1, 3) of the SCN08A board are in their shorted condition (button depressed).

Push the no-fuse breaker button several times to place the breaker in its shorted condition.

◆ **NOTE** ◆

With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.
(8) Power ON the machine.
➾ [HV-OFF] appears on the operation panel.
(9) Touch the U-Utility button.
➾ The screen switches to the U-Utility mode.
(10) Touch the upper left and upper right corners of the operation panel in sequence.
➾ M-Utility is activated.
(11) Select “5. SCANNER UTILITY”, “3. LASER”, and “2. ON” in sequence.
  • When ended normally:
    If the machine starts up normally, the LDD08A board is normal.
  • When ended in error (LD down error or LD warning error occurs):
    Replace the LDD08A board.
Replacement

**CAUTIONS**

- Do not disconnect the connectors CN2 and 3 from the LDD08A board. If they are disconnected, the LD protection is disabled, so that the LD may fail.
- Do not touch the patterns and ICs of the LDD08A board.
- When the top cover of the scanning optics unit is removed, use care to prevent admittance of dust.
- When performing the procedures with the top cover removed, wear a mask to prevent saliva from sputtering around.
- Use care to avoid shock to the scanning optics unit.
- Do not remove the LD assembly cover, because the LD may be damaged by static electricity.
- Never touch the optical lens and mirror.

(1) Power ON the machine.
(2) Pull out the scanner unit.
   (☞ “7. Pulling Out and Pushing In Scanner Unit”)
(3) Disconnect the connector (CN1) of the LDD08A board.
(4) Remove the top cover from the scanning optics unit.
(5) Remove the ground wire.
(6) Replace the LD assembly.
(7) For reinstallation, reverse the removal steps.

◆ NOTE ◆

When installing the LD assembly, align the LD assembly against the three positioning brackets for proper positioning.

(7)

Top view

Positioning bracket

Scanning optics unit

LD assembly

(8) Take the steps described in “Check after LD Assembly Replacement” below.
Checks after LD Assembly Replacement

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

(1) Power ON the machine.

Make sure that the machine starts up normally.
If the machine does not start up normally, take the following steps to perform self-diagnostics of Scanner Utility.
1. Touch the U-Utility button.
   ➥ The screen switches to the U-Utility mode.
2. Touch the upper left and upper right corners of the operation panel in sequence.
   ➥ M-Utility is activated.
   Verify that no error occurs.

(2) Check image performance.

☞ “3.2 Checking Image” in Preventive Maintenance Volume
9.5 Checking and Replacing Polygonal Mirror Assembly

If anything abnormal is found with the polygonal mirror assembly as result of checks, replace the polygonal mirror assembly and check it again.

⚠️ CAUTIONS

- Do not touch the patterns and ICs of various boards.
- When the top cover of the scanning optics unit is removed, use care to prevent admittance of dust.
- When performing the procedures with the top cover removed, wear a mask to prevent saliva from sputtering around.
- Use care to avoid shock to the scanning optics unit.
- Do not remove the LD assembly cover, because the LD may be damaged by static electricity.
- Never touch the optical lens and mirror.
- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

■ Checks To Determine If There Is Anything Abnormal with Polygonal Mirror Assembly

- Check to see that no error occurs during polygon self-diagnostics.
  Self-diagnostics is automatically performed during initialization after the machine starts up.

- Scan the image and check for any image anomaly.
  Scan the IP with a rule exposed, and check to see that there is no image anomaly, such as jitters, fluctuations, or ununiformity.
Checks to Determine If Replacement of Polygonal Mirror Assembly Is Required

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Power OFF the machine.
2. Turn OFF the high-voltage switch (S1) located on the SCN08A board.
3. Check the SCN08A board.
   - "10.1 Checking and Replacing SCN08A Board"
4. Make sure that the connector (CN1) on the polygon driver board and the connector (CN3) on the SCN08A board are locked securely.
5. Verify that the no-fuse breaker (NFB5) of the SCN08A board is in its shorted condition (button depressed).
   - Push the NFB5 button several times to place the breaker in its shorted condition.

**NOTE**

With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.

6. Power ON the machine.
7. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
8. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
9. Select "5. SCANNER UTILITY", "2. POLYGON" and "2. ON" in sequence.
(10) Make sure that D13 located on the SCN08A board is lit.

- When D13 is lit:
  
  Turn OFF the polygon and back ON again. If D13 is lit again, the polygonal mirror assembly is normal. If it is not lit second time, it is conceivable that the polygonal mirror assembly may be faulty. So, replace the polygonal mirror assembly.

- When D13 is not lit:
  
  It is conceivable that the polygonal mirror assembly may be faulty. So, replace the polygonal mirror assembly.
**Replacement of Polygonal Mirror Assembly**

**CAUTIONS**

- Use care not to let the polygonal mirror assembly fall or bump. If the polygonal mirror assembly is shocked, its axis of rotation may be misaligned and thus it may become useless.
- Never touch the mirror face of the polygonal mirror (even when you are wearing gloves). If the mirror face of the polygonal mirror is touched, the polygonal mirror will become unusable.

1. Power OFF the machine.
2. Pull out the scanner unit.
   - "7. Pulling Out and Pushing In Scanner Unit"
3. Remove the scanning optics unit.
   - "9.3 Removing and Reinstalling Scanning Optics Unit, ■ Removal"
4. Remove the clamp.
5. Cut the cable tie that retains the filter, and then remove the filter.
6. Replace the polygon driver.
   - Remove the polygon driver with the shield case attached.
7. Disconnect the connector (CN1) on the LDD08A board.
8. Remove the top cover from the scanning optics unit.
9. Remove the polygon cover.
10. Remove the polygonal mirror assembly.
(11) Remove the cover from a new polygonal mirror assembly.
Release the latches of the cover, and lift up the cover so as to avoid contact with the mirror face of the polygonal mirror.

(12) Install the new polygonal mirror assembly in reverse order of removal.

◆ NOTE ◆

When installing the polygon, pay attention to its direction. Orient the polygon so that its narrower edge width faces front, as seen from above.

(13) Take the steps described in “Checks after Polygonal Mirror Assembly Replacement” below.

■ Checks after Polygonal Mirror Assembly Replacement

(1) Turn ON the high-voltage switch (S1) of the SCN08A board.
(2) Reinstall all the covers.
(3) Power ON the machine.

Make sure that the machine starts up normally.

(4) Perform shading/sensitivity correction.

“9.2 Shading/Sensitivity Correction”

(5) Generate image output, and check if there is anything abnormal with scanner control.

Uniformly expose IPs of each size at about 1 mR. Then, check the film image recorded under SENSITIVITY from the Test Menu for scanner control failures, such as format misalignment and shading, which may cause diagnostic problems.

If anything abnormal is found, make the following adjustment.

(6) Adjust the read start position and read width.

“9.1 Adjusting Read Start Position and Read Width, [6] Fine Adjustment of Read Width and Read Start Position”
9.6 Checking and Replacing SYN08A Board

First check the SCN08A board, LDD08A board, and polygonal mirror assembly before checking the SYN08A board.

> “10.1 Checking and Replacing SCN08A Board,” “9.4 Checking and Replacing LD Assembly,” “9.5 Checking and Replacing Polygonal Mirror Assembly”

**CAUTIONS**

- Do not disconnect the connectors CN2 and 3 from the LDD08A board. If they are disconnected, the LD protection is disabled, so that the LD may fail.
- Do not touch the patterns and ICs of the LDD08A board.
- Carefully handle the scanning optics unit, exercising care to avoid shock to it.
- When the top cover of the scanning optics unit is removed, use care to prevent admittance of dust.
- When performing the procedures with the top cover removed, wear a mask to prevent saliva from sputtering around.
- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

### Checks

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

If anything abnormal is found during checks, replace the SYN08A board, and then check it again.

1. Power ON the machine.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
4. Select “9. HV OFF.”
   - The software switch is turned OFF, and “9. HV ON” is displayed on the screen.
5. Power OFF the machine.
6. Pull out the scanner unit.
   > “7. Pulling Out and Pushing In Scanner Unit”
7. Place the high-voltage switch (S1) of the SCN08A board in the OFF position.
(8) Disconnect the connector (CN1) of the LDD08A board.

(9) Remove the top cover from the scanning optics unit.

(10) Make sure that the connector (CN1) of the SYN08A board is locked. If not, securely connect the connector to lock it in place.

(11) Attach the top cover to the scanning optics unit.

(12) Connect the connector (CN1) of the LDD08A board.

(13) Push in the scanner unit.

“7. Pulling Out and Pushing In Scanner Unit”

(14) Make sure that the connector (CN2) of the SCN08A board is locked. If not, securely connect the connector to lock it in place.

(15) Make sure that the no-fuse breakers (NFB6, NFB7, NFB9, NFB10) of the SCN08A board are in their shorted conditions (button depressed).

Push the no-fuse breaker button several times to place the breaker in its shorted condition.

◆ NOTE ◆

With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.

(16) Power ON the machine.

Make sure that “HV-OFF” is displayed on the operation panel.
(17) Touch the U-Utility button.

▷ The screen switches to the U-Utility mode.

(18) Touch the upper left and upper right corners of the operation panel in sequence.

▷ M-Utility is activated.

(19) Select “5. SCANNER UTILITY”, “3. LASER”, and “2. ON” in sequence.

(20) Select “5. SCANNER UTILITY”, “2. POLYGON”, and “2. ON” in sequence.

(21) Check if D14 of the SCN08A board is lit (blinking quickly).

- If it is lit, set “LASER” and “POLYGON” to OFF, and restart the machine.
  - If the machine starts up normally, the SYN08A board is normal.
  - If the machine does not start up normally, replace the SYN08A board.
- If it is not lit or is blinking (blinking but not quickly), replace the SYN08A board.
Replacement

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Power OFF the machine.
2. Pull out the scanner unit.
   - See "7. Pulling Out and Pushing In Scanner Unit"
3. Disconnect the connector (CN1) of the LDD08A board.
4. Remove the top cover from the scanning optics unit.
5. Disconnect the connector (CN1) of the SYN08A board.
6. Replace the SYN08A assembly.
(7) Reverse the removal steps to reinstall the SYN08A assembly.

**NOTES**

- When installing the SYN08A assembly, align the SYN08A assembly against the reference face of the mounting bracket for proper positioning.
- The spacer that was attached before replacement should be used for reinstallation.
- Fit the cable into the cable guide.

(8) Perform the procedures described in “Check after SYN08A Assembly Replacement.”
**Checks after SYN08A Assembly Replacement**

1. Reinstall all the covers.
2. Power ON the machine.
   - Make sure that the machine starts up normally.
3. Generate image output, and check if there is anything abnormal with scanner control.
   - Uniformly expose IPs of each size at about 1 mR. Then, check the film image recorded under SENSITIVITY from the Test Menu for scanner control failures, such as format misalignment and shading, which may cause diagnostic problems.
   - If anything abnormal is found, make the following adjustments.
4. Adjust the invalid pixels
   - [9.1 Adjusting Read Start Position and Read Width, [6] Fine Adjustment of Read Width and Read Start Position]
4. Check the SYN08A board.
   - [Checks]
10. Subscanning Unit

This section describes procedures for checking and replacing parts of the subscanning unit to be replaced.

10.1 Checking and Replacing SCN08A Board

The SCN08A board is intended to control the scanner.

Because the SCN08A board has no memory for storing scanner control parameters, parameter setting or DIP switch setting associated with replacement is not required.

**CAUTION**

*When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.*

**Checks**

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

(1) Power OFF the machine.
(2) Remove the following covers.
   - Lower front cover, lower right-hand side cover
   - “3. Removing and Reinstalling Covers”
(3) Put the high-voltage switch (S1) of the SCN08A board in the OFF position.
(4) Make sure that the no-fuse breakers (NFB1-10) are in their shorted condition. Push the no-fuse breaker button several times to put the button in its depressed condition (breaker shorted condition), and then take the following steps.

**NOTE**

*With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.*
(5) Power ON the machine.

(6) Measure the voltage for test pins (related to the connector cables and power supply unit) on the SCN board.

- TP1 (VCC) - TP2 (GND): +5 V ± 0.25V
- TP4 (+ 15AS) - TP28 (ASG): +15 V ± 0.75V
- TP8 (-15AS) - TP28 (ASG): -15 V ± 0.75V
- TP3 (+ 24PS) - TP38 (PGND): +24 V ± 1.2V

If the voltage measured is outside the above reference value range, check the connector cables and power supply unit. If there is nothing abnormal with the connector cables and power supply unit, replace the SCN board.

(7) Measure the voltage for test pins (related to the SCN board) on the SCN board.

- TP5 (+ 5AS) - TP28 (ASG): +5V ± 0.25V
- TP27 (+ 5AS2) - TP28 (ASG): +5V ± 0.25V
- TP8 (-5AS) - TP28 (ASG): -5V ± 0.25V
- TP3 (-5AS2) - TP28 (ASG): -5V ± 0.25V

If the voltage measured is outside the above reference value range, replace the SCN board.
Replacement

(1) Power OFF the machine.
(2) Pull out the scanner unit.
(3) Disconnect the connectors (CN1-6) from the SCN08A board.
(4) Remove the SCN08A board (BR M4x8, x6).
(5) Make sure that the high-voltage switch (S1) of a new SCN08A board is in the ON position.
(6) Make sure that the no-fuse breaker of the new SCN08A board is in its shorted condition.

Push the no-fuse breaker button several times to put the button in its depressed condition.

◆ NOTE ◆

With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.

(7) Mount the new SCN08A board (BR M4x8, x6).
(8) Push in the scanner unit.
(9) Connect the connectors (CN1-6) to the SCN08A board.

Securely connect the connectors until they are locked in place.

⚠️ CAUTION ⚠️

When connecting CN1, use care not to touch the C33 and C94 capacitors.

(10) Reinstall all the covers.
(11) Power ON the machine.
(12) Check image performance.

“3.2 Checking Image” in Preventive Maintenance Volume
10.2 Servicing Light-Collecting Guide

**CAUTIONS**

- Wear gloves during servicing. Otherwise, the light-collecting guide may be soiled or damaged.
- Never touch the light-receiving face of the light-collecting guide, even when you are wearing gloves.
- Carefully handle the light-collecting guide to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.
Removal

(1) Pull out the scanner unit.

- “7. Pulling Out and Pushing In Scanner Unit”

(2) Disconnect the connectors. (PMT08A CN1, 2)

(3) Remove the brace that retains the light-collecting guide assembly retaining bracket.

(4) Remove the arm retaining screw, and lift up the arm.

By lifting up the arm, the lock on the light-collecting guide assembly is released.

(5) Take out the light-collecting guide assembly.

Carefully place the removed light-collecting guide assembly down onto a soft sheet or the like, using care not to damage it.

CAUTIONS

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Never touch the light-receiving face of the light-collecting guide, even when you are wearing gloves.
- Carefully handle the light-collecting guide to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.
Reinstallation

(1) Carefully install the light-collecting guide assembly onto the subscanning unit, exercising care to avoid contact with surrounding units.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- *Never touch the light-receiving face of the light-collecting guide, even when you are wearing gloves.*
- Carefully handle the light-collecting guide to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.
- When inserting the light-collecting guide assembly, align the protrusions located at both ends of the light-receiving face of the light-collecting guide assembly against the reference plane in the subscanning direction, and the front protrusion against the reference pin in the main scan direction.
(2) While supporting the light-collecting guide assembly, secure it with the light-collecting guide assembly retaining arm in place.

While pushing the shaft of the light-collecting guide assembly retaining arm, rotate it. Make sure that the stopper hooks the inner protrusion of the light-collecting guide assembly, and then screw it down.

**NOTE**

When pushing the light-collecting guide assembly retaining arm, be sure to push its shaft portion. If the arm portion is pushed, the arm itself may be deformed.

(3) Secure the light-collecting guide assembly retaining bracket with the brace.

**CAUTION**

If the light-collecting guide assembly leaves its fixed position (i.e., position as instructed in the side view illustrated at step (1), where the right- and left-hand light-receiving edges of the light-collecting guide must be in close contact with both the bottom and the reference plane in the subscan direction) when an attempt is made to secure the light-collecting guide with the brace, adjust the mounting location of the light-collecting guide assembly retaining bracket.
(4) Make sure that the socket of the PMT08A board is fitted into the socket of the light-collecting guide and that the sockets of the PMT08A board and light-collecting guide are parallel to each other.

If anything abnormal is found, remove the single screw that retains the light-collecting guide retaining bracket. While holding the light-collecting guide, push in the PMT08A board assembly, and adjust the position of the sockets of the PMT08A board and light-collecting guide as appropriate.

After the brace is fixed with the screw, verify again that the sockets are parallel, and then proceed to the next step.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.

(5) Connect the connectors (CN1, 2 to the PMT08A board).

(6) Push in the scanner unit.

"7. Pulling Out and Pushing In Scanner Unit"
## Checks

1. Remove the light-collecting guide.
   - **Removal**
2. Using a blower, remove dust deposits on the light-collecting guide.
3. Check the light-collecting guide for any soil or scratch.
   - If there is not any soil or scratch, reinstall the light-collecting guide in the reverse order of removal.
   - If there is any soil:
     - Clean the light-collecting guide with an ethanol-moistened lens cleaner.
     - **Cleaning**
   - If there is any scratch about 0.8mm in width on the light-receiving face of the light-collecting guide:
     - Generate image output and check to see that there is no ununiformity on the resulting image due to the scratch.
     - **Adjustment**
   - If ununiformity is observed on the image due to scratches
     - **Replacement**

## Replacement

1. Remove the light-collecting guide assembly.
   - **Removal**
2. Take out the light-collecting guide from the PMT08A board assembly.
(3) Install a new light-collecting guide to the PMT08A board assembly.

(4) Make sure that the socket of the PMT08A board is fitted into the socket of the light-collecting guide and that the sockets of the PMT08A board and light-collecting guide are parallel to each other.

If anything abnormal is found, push in the PMT08A board assembly while holding the light-collecting guide, and adjust the position of the sockets of the PMT08A board and light-collecting guide as appropriate.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.

(5) Reinstall the light-collecting guide assembly.

**Adjustment**

(1) Reinstall all the covers.

(2) Power ON the machine.

Make sure that the machine starts up normally.

(3) Generate image output, and check if there is anything abnormal with scanner control.

Uniformly expose IPs of each size at about 1 mR. Then, check the film image recorded under SENSITIVITY from the Test Menu for scanner control failures, such as format misalignment and shading, which may cause diagnostic problems.

If anything abnormal is found, make the following adjustments.

(4) Perform shading/sensitivity correction.

**“9.2 Shading/Sensitivity Correction”**
Cleaning

(1) Remove the light-collecting guide assembly, and place it on a sheet or the like so as to avoid contact with its light-receiving face.

(2) Fold three sheets of lens cleaning paper by half, and wipe the entire light-collecting guide with the sheets moistened with ethanol.

**CAUTIONS**

- Wipe the light-collecting guide in one direction at a constant rate.
- Do not wipe the photomultiplier bonding surface.
- If the lens cleaning paper becomes soiled, replace it with a new one.

(3) Fold five new sheets of lens cleaning paper by half, and wipe the light-collecting guide dry.

After wiping it dry, make sure that it has been cleaned uniformly.

![Diagram of Cleaning Range](FR1H1801.EPS)
(4) Verify that the PMT08A board socket section is in close contact with the light-collecting guide.

If anything abnormal is found, push in the PMT08A board assembly while holding the light-collecting guide, and adjust the position of the sockets of the PMT08A board and light-collecting guide as appropriate.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.

---

(5) Reinstall the light-collecting guide assembly.

\[
\text{Reinstallation}
\]
10.3 Checking and Replacing PMT08A Board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

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**Checks**

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

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To check the PMT08A board, the SCN08A board should be first checked before checking the log amp and high-voltage power supply sections of the PMT08A board.

If any of the voltages measured is out of spec as a result of the checks on the log amp and high-voltage power supply sections of the PMT08A board, then replace the PMT08A board.

**Checks on log amp section**

1. Check the SCN08A board.
   
   "10.1 Checking and Replacing SCN08A Board"
   
   If the SCN08A board is normal, proceed to step (2).
   
   If the SCN08A board is faulty, replace it.

2. Make sure that the connectors (CN5, CN6) of the SCN08A board have been locked.

3. Verify that the no-fuse breakers (NFB2, 4) of the SCN08A board are in their shorted condition.

   Push the no-fuse breaker button several times to place the breaker in its depressed condition.

   **NOTE**

   With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.
(4) Measure the voltage between the terminals of the PMT08A board.
PMTH-PGND: +2 – 3V

(5) Power ON the machine.
(6) Touch the U-Utility button.
➮ The screen switches to the U-Utility mode.
(7) Touch the upper left corner and upper right corner of the operation panel in sequence.
➮ M-Utility is activated.
(8) Select “5. SCANNER UTILITY”, “10. VIRTUAL IMAGE”, and “2. LOG AMP” in sequence.
(9) Measure the voltage between the terminals of the PMT08A board.
PMTH-PGND: -0.5 – +0.5V
(10) Select “5. SCANNER UTILITY”, “10. VIRTUAL IMAGE”, and “4. ROUTINE” in sequence.

⚠️ **CAUTION**

After checks, be sure to select “ROUTINE” under “VIRTUAL IMAGE” of “SCANNER UTILITY” to reset the scanner back to its initial condition. If it is not reset to its initial condition, an image with lower contrast will be outputted.

● Checks on high-voltage power supply section

(1) Make sure that the high-voltage switch (S1) of the SCN08A board is in the OFF position.

(2) Remove the light-collecting guide assembly.  
   ⚫ “10.2 Servicing Light-Collecting Guide”

(3) Take out the light-collecting guide from the PMT08A board assembly.
(4) Connect the connectors (CN1, 2) to the PMT08A board.

(5) Power ON the machine.

(6) Touch the U-Utility button.
   ➥ The screen switches to the U-Utility mode.

(7) Touch the upper left corner and upper right corner of the operation panel in sequence.
   ➥ M-Utility is activated.

(8) Select “5. SCANNER UTILITY” and “5. HV DATA” in sequence.

(9) Type in “250” as a high-voltage setup value.
   ➥ The high voltage is set to 250 V.

(10) With the terminals (HV135, PGND) touched by the probes of the tester, turn ON the high-voltage switch (S1) of the SCN08A board.

⚠️ CAUTION

When making voltage measurements on the PMT08A board, be sure to touch the terminals of the board by the tester probes with the high-voltage switch in its OFF position, and then turn ON the high-voltage switch. It is dangerous if the high-voltage switch is turned ON, because high voltage is applied to the PMT08A board.

(11) Measure the voltage between the terminals of the PMT08A board.
   HV135-PGND: -17.8 ± 2V
(12) Place the high-voltage switch (S1) of the SCN08A board in its OFF position.
(13) Select “5. SCANNER UTILITY” and “5. HV DATA” in sequence.
(14) Type in “0” as a high-voltage setup value.
➤ The high-voltage setting is turned OFF.

■ Replacement

(1) Remove the light-collecting guide assembly.
   C “10.2 Servicing Light-Collecting Guide”
(2) Remove the four screws.
(3) Remove the three spacers and nut.
(4) Remove the PMT08A board.
(5) Install a new PMT08A board in reverse order of removal.

◆ NOTES◆
• Do not forget to tighten the PMT08A board retaining nut. If the nut is left loose, abnormal images (irregular rings) may occur.
• Use care not to confuse the orientation for installing the clip washer located between the PMT08A board and nut (the clipped side of the washer faces the PMT08A board). If it is put in a wrong orientation, an abnormal image (fine-grained pattern, etc.) may result.
(6) Check the PMT08A board.

"Checks"

**NOTE**

After replacement of the PMT08A board, be sure to check the PMT08A board.

(7) Place the high-voltage switch (S1) of the SCN08A board in its ON position.

(8) Reinstall all the covers.

(9) Power ON the machine.

(10) Check image performance.

"3.2 Checking Image" in Preventive Maintenance Volume

### Check on Short Pin (TN1)

#### Function of short pin (TN1)

It sets connection of a command value to the high-voltage power supply. By shorting 1-2 of TN1, an upstream command value is connected to GND.

#### Short pin setting

Make sure that the short pin (TN1) is set as follows.

![Diagram of short pin setting](image)

**SUPPLEMENTARY NOTE**

For TN1, the following steps may be taken to check its condition.

1. Start the M-Utility.
2. Select "5. SCANNER UTILITY", "10. VIRTUAL IMAGE", and "2. LOG AMP" in sequence.
   - The virtual image output is set.
3. Return to the Routine Mode.
4. Read an erased IP (of any size), using the sensitivity of the test.
5. Start the M-Utility.
   - The error log is displayed.
7. Check if TN1 is normal.
   - HV voltage error occurred: TN1 abnormal
   - HV voltage error did not occurred: TN1 normal
10.4 Servicing Light-Collecting Mirror

CAUTIONS

- When removing and installing the unit, use care not to damage the cables.
- Wear gloves during checks and replacements. If not, the light-collecting mirror may be soiled or damaged.
- Never touch the reflection face of the light-collecting mirror even when you wear gloves.
- Carefully handle the light-collecting mirror to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting mirror.

Removal

1. Remove the light-collecting guide assembly.
   - Refer to "10.2 Servicing Light-Collecting Guide"
2. Remove the after-reading conveyor.
   - Refer to "11.1 Removing and Reinstalling After-Reading Conveyor"
3. Disconnect the connectors (CN1-3 from the SCN08A board).
4. Remove the ground wire.
5. Remove the four screws that retain the scanning optics unit.
6. Carefully remove the scanning optics unit, using care not to shock it.
7. Remove the two screws (one of them should be merely loosened) that retain the dust cover, and remove the dust cover.
   - Slide the dust cover to the right (right-hand side of the machine), thereby taking out the dust cover.
(8) Attach the two take-out screws to the light-collecting mirror.
They facilitate grasping the light-collecting mirror to prevent it from dropping into a gap.

(9) Remove the two screws that retain the light-collecting mirror in place.

(10) Remove the light-collecting mirror.
Grasp the take-out screws and remove the light-collecting mirror while using care to
avoid contact with surrounding objects.
Reinstallation

(1) Attach the light-collecting mirror.

Align the right and left positioning pins of the light-collecting mirror to the respective supports of the subscanning unit, and secure it in place with two screws.

(2) Remove the take-out screws (M3).

(3) Attach the dust cover.

While aligning the sponge located at the bottom of the dust cover against the bracket of the light-collecting mirror, snugly fit the top sponge by hand into the scanning optics unit.

(4) Reinstall the scanning optics unit in reverse order of removal.

(5) Install the light-collecting guide assembly.

“10.2 Servicing Light-Collecting Guide”

(6) Reinstall the after-reading conveyor.

“11.1 Removing and Reinstalling After-Reading Conveyor”

Checks

(1) Remove the light-collecting mirror.

“■ Removal”

(2) Check the light-collecting mirror for any soil or scratch.

• If there is any soil:
  
  Clean the light-collecting mirror with an ethanol-moistened lens cleaner.

“■ Cleaning”

• If the light-collecting mirror surface is scratched:
  
  Generate image output and check to see that there is no ununiformity on the resulting image due to the scratch.

“■ Adjustment”

• If the ununiformity persists even after the shading/sensitivity correction:

“■ Replacement”
**Replacement**

1. Remove the light-collecting mirror.
   - “Replacement”
2. Attach a new light-collecting mirror.
   - “Reinstallation”

**Adjustment**

If anything abnormal is found even after the adjustments, replace the light-collecting mirror.

1. Reinstall all the covers.
2. Power ON the machine.
   - Make sure that the machine starts up normally.
3. Generate image output, and check if there is anything abnormal with scanner control.
   - Uniformly expose IPs of each size at about 1 mR. Then, check the film image recorded under SENSITIVITY from the Test Menu for scanner control failures, such as format misalignment and shading, which may cause diagnostic problems.
   - If anything abnormal is found, make the following adjustments.
4. Perform shading/sensitivity correction.
   - “9.2 Shading/Sensitivity Correction”

**Cleaning**

1. Remove the light-collecting mirror.
   - “Removal”
2. Fold two thicknesses of lens cleaning paper into four, and dampen the paper with ethanol.
3. Wipe the reflection face of the light-collecting mirror with the ethanol-moistened lens cleaning paper.

**CAUTIONS**

- Do not wipe the light-collecting mirror with dry paper because the reflection face of the mirror may be scratched.
- If the lens cleaning paper becomes soiled, replace it with a new one.
- Clean the light-collecting mirror until the lens cleaning paper is no longer soiled.

(4) Attach the light-collecting mirror.
   - “Reinstallation”
10.5 Checking and Replacing IP Leading-Edge Sensor (SZ1/SED08A)

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

### Checks

Check the SCN08A board first, before checking the SZ1/SED08A board.

1. Pull out the scanner unit.
2. Remove the light-collecting guide assembly.
3. Make sure that there is no IP left in the scanner unit.
4. Install the light-collecting guide assembly.
5. Set the scanner unit in position.
6. Make sure that the connector (CN4) of the SCN08A board has been locked.
7. Make sure that the no-fuse breaker (NFB) 8 of the SCN08A board is shorted (in the ON position).

**NOTE**

*With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.*

8. Turn OFF the light in the room where the machine is placed.
9. Power ON the machine.
10. Make sure that the LD (laser) is not emitting light.
11. Touch the U-Utility button.
12. Touch the upper left and upper right corners of the operation panel in sequence.
(14) Block the sensor hole of the SED08A board with a piece of cardboard or the like. Verify that D15 on the SCN08A board is not lit. If D15 is lit, replace the SED08A board.
(15) Remove the piece of cardboard that blocks the sensor hole. Verify that D15 on the SCN08A board is lit. If D15 is not lit, replace the SED08A board.

■ Replacement

(1) Pull out the scanner unit.
  “7. Pulling Out and Pushing In Scanner Unit”
(2) Remove the light-collecting guide assembly.
  “10.2 Servicing Light-Collecting Guide”
(3) Remove the scanning optics unit.
  “9.3 Removing and Reinstalling Scanning Optics Unit”
(4) Remove the subscanning unit guide.
  “10.15 Replacing Subscanning Unit Guide”
(5) Remove the cable clamp.
(6) Disconnect the connector (SZ1).
(7) Remove SZ1.
(8) Install a new SZ1 by reversing the removal steps.
  When installing SZ1, screw it down while pressing it against the front side.
10.6 Checking and Replacing Driving-Side Grip Release HP Sensor (SZ2)

■ Checks

If anything abnormal is found during checks, replace SZ2.

« 2.2 Checking Various Sensors

◆ NOTE ◆

When monitoring SZ2, insert an Allen wrench into the cam of MZ2 and rotate it clockwise to check the OPEN/CLOSE status of SZ2.

■ Replacement

(1) Pull out the scanner unit.

« 7. Pulling Out and Pushing In Scanner Unit

(2) Remove the light-collecting guide assembly.

« 10.2 Servicing Light-Collecting Guide

(3) Remove the after-reading conveyor.

« 11.1 Removing and Reinstalling After-Reading Conveyor

(4) Disconnect the connector (SZ2).

(5) Remove the SZ2 bracket.

(6) Take out SZ2 from the bracket.

(7) Reverse the removal steps to reinstall a new SZ2.

(8) Check SZ2.

« ■ Checks"
10.7 Checking and Replacing Driven-Side Grip Release HP Sensor (SZ3)

■ Checks

If anything abnormal is found during checks, replace SZ3.

"2.2 Checking Various Sensors"

◆ NOTE ◆

When monitoring SZ3, insert an Allen wrench into the cam of MZ3 and rotate it clockwise to check the OPEN/CLOSE status of SZ3.

■ Replacement

1. Pull out the scanner unit.
   "7. Pulling Out and Pushing In Scanner Unit"
2. Remove the light-collecting guide assembly.
   "10.2 Servicing Light-Collecting Guide"
3. Remove the side-positioning conveyor.
   "8.1 Removing and Reinstalling Side-Positioning Conveyor"
4. Disconnect the connector (SZ3).
5. Remove the SZ3 bracket.
6. Take out SZ3 from the bracket.

7. Reverse the removal steps to reinstall a new SZ3.
8. Check SZ3.
   " ■ Checks"
10.8 Checking and Replacing Subscanning Motor (MZ1)

CAUTION

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

Checks

(1) Remove the following covers.
   Lower front cover, lower left-hand side cover, lower left-hand side transparent cover
   “3. Removing and Reinstalling Covers”
(2) Power ON the machine.
(3) Touch the U-Utility button.
   The screen switches to the U-Utility mode.
(4) Touch the upper left and upper right corners of the operation panel in sequence.
   M-Utility is activated.
(5) Select “6. MECHANICAL UTILITY” and “2. ACTUATOR” in sequence.
(6) Select “2. DRIVE”.
   A list of actuator Nos. is displayed.
(7) Type in the number of MZ1 (FFM).
(8) Set up an operation parameter as instructed by the onscreen message.
   MZ1 operation starts.
(9) Measure the voltage between OK and 5G on MZ1.

(10) Select “3. STOP”.
    A list of sensor Nos. is displayed.
(11) Type in the number of MZ1 (FFM).
    MZ1 stops.
(12) Change the operation parameter for MZ1 at step (7) as follows, and repeat steps (5) through (10).
    • Rotation in normal direction
    • Rotation in reverse direction
    If MZ1 rotates for all of the operation parameters and the voltage between OK and 5G on MZ1 is less than 1 V, then the check is completed.
    If MZ1 does not rotate or the voltage between OK and 5G on MZ1 is greater than 1 V for any of the operation parameters, then check the SLC08A board.
## Replacement

1. Remove the following covers.
   Lower front cover, lower left-hand side cover, lower left-hand side transparent cover
   - 3. Removing and Reinstalling Covers

2. Remove the Kapton® belt.
   - 10.12 Checking and Replacing Kapton® Belt/Tensioner/Flywheel

3. Disconnect the connectors (CN1-3) of MZ1.

4. Remove MZ1.

5. Install a new MZ1 by reversing the removal steps.

   **NOTE**

   *When installing MZ1, the same settings for S1-S6 of a new MZ1 should be made as those for the older one.*

6. Perform the procedures described in “Check after MZ1 Replacement.”

## Check after MZ1 Replacement

1. Power ON the machine.
   Make sure that the machine starts up normally.

2. Check MZ1 again to ensure that the motor operates normally.

3. Check image performance.
   - 3.2 Checking Image” in Preventive Maintenance Volume
10.9 Replacing Driving Shaft Grip Motor (MZ2)

**Removal**

1. Pull out the scanner unit.
   - “7. Pulling Out and Pushing In Scanner Unit”
2. Remove the after-reading conveyor.
   - “11.1 Removing and Reinstalling After-Reading Conveyor”
3. Remove the FAST-ON terminals (MZ2(+), MZ2(-)).
4. Remove the right-hand side transparent cover.
5. Remove the SZ2-attached bracket as a whole.
6. Remove the ring and cam from the MZ2 shaft.
7. Remove MZ2.

8. Reverse the removal steps to reinstall a new MZ2.
   - When installing the MZ2 bracket, screw it down while pressing it against the positioning bracket.
10.10 Replacing Driven Shaft Grip Motor (MZ3)

**Removal**

1. Pull out the scanner unit.
   - "7. Pulling Out and Pushing In Scanner Unit"
2. Remove the side-positioning conveyor.
   - "8.1 Removing and Reinstalling Side-Positioning Conveyor"
3. Remove the FAST-ON terminals (MZ2(+), MZ2(-)).
4. Remove the right-hand side transparent cover.
5. Remove the MZ3-attached bracket as a whole.
6. Remove the ring and cam from the MZ3 shaft.
7. Remove MZ3.

(8) Reverse the removal steps to reinstall MZ3.

When installing the MZ3 bracket, screw it down while pressing it against the positioning bracket.
10.11 Checking and Replacing SUS Belt/Rubber Belt/Tensioner

**CAUTIONS**

- Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.
- Wear gloves during checks and replacement, because the SUS belt may be soiled or damaged.

**Checks**

1. Remove the following covers.
   - Lower front cover, lower right-hand side cover
   - "3. Removing and Reinstalling Covers"

2. Remove the transparent cover located on the right-hand side.
   - Using a blower, remove dust deposited on the transparent cover.

3. While rotating the drive shaft, check the SUS belt, rubber belt, pulley, and tensioner for any soil or flaw.
   - If any soil is found, clean it off.
     - SUS belt: Clean any soil off with an ethanol-moistened cloth.
     - Rubber belt: Clean any soil off with a moistened cloth.
   - If any flaw is found, replace the SUS belt or rubber belt.

4. Reinstall the right-hand side transparent cover.
**Replacement**

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

### Replacement of SUS belt/rubber belt

1. Remove the following covers.
   Lower front cover, lower right-hand side cover
   - “3. Removing and Reinstalling Covers”
2. Remove the transparent cover located on the right-hand side.
   Using a blower, remove dust deposited on the transparent cover.
3. Remove the tensioner spring located on the right-hand side.
4. Replace the SUS belt or rubber belt.
   To remove the rubber belt, rotate the drive shaft while keeping the center of the belt tense, and take out the belt.
5. Install new SUS and rubber belts in reverse order of removal.

**NOTES**

- After installing the SUS belt or rubber belt, rotate the drive shaft to check that the SUS belt or rubber belt does not come off the pulley.
- After replacing the SUS or rubber belt, check MZ1.
  - “10.8 Checking and Replacing Subscanning Motor (MZ1)”

6. Reinstall the right-hand side transparent cover.
7. Check image performance.
   - “3.2 Checking Image” in Preventive Maintenance Volume
● Replacement of tensioner

(1) Remove the following covers.
   Lower front cover, lower right-hand side cover
   "3. Removing and Reinstalling Covers"

(2) Remove the transparent cover located on the right-hand side.
   Using a blower, remove dust deposited on the transparent cover.

(3) Remove the tensioner spring located on the right-hand side.

(4) Replace the SUS belt.

(5) Replace the tensioner.

(6) For reinstallation, reverse the removal steps.

◆ NOTE ◆

After installing the right-hand side tensioner and SUS belt, rotate the drive shaft to check that the SUS belt or rubber belt does not come off the pulley.

(7) Power ON the machine.

(8) Check MZ1.
   Make sure that the motor rotates normally.
   "10.8 Checking and Replacing Subscanning Motor (MZ1)"

(9) Check image performance.
   "3.2 Checking Image" in Preventive Maintenance Volume
10.12 Checking and Replacing Kapton® Belt/Tensioner/Flywheel

CAUTIONS

• Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.
• Wear gloves during checks and replacement, because the Kapton® belt may be soiled or damaged.

Checks

(1) Remove the following covers.
   Lower front cover, lower left-hand side cover
   "3. Removing and Reinstalling Covers"

(2) Remove the transparent cover located on the left-hand side.
   Using a blower, remove dust deposited on the transparent cover.

(3) Check the Kapton® belt, tensioner, and flywheel for any soil or flaw.
   If any soil is found, clean it off with an ethanol-moistened cloth.
   If any flaw is found, replace the flawed part.

(4) Reinstall the left-hand side transparent cover.

(5) Power ON the machine.

(6) Check MZ1.
   Make sure that the motor rotates normally.
   "10.8 Checking and Replacing Subscanning Motor (MZ1)"

(7) Check image performance.
   "3.2 Checking Image" in Preventive Maintenance Volume


### Replacement

#### NOTES

- To install the Kapton® belt, orient the belt with the arrow printed on its front facing the subscanning unit.
- The arrow mark on the front of the Kapton® belt may disappear over a certain period of time. When removing or reinstalling the existing Kapton® belt, you may mark an arrow on the belt surface with a marker so as not to confuse its mounting orientation.
- After installation of the Kapton® belt, rotate the flywheel to ensure that the belt does not come off the pulley.

#### Replacement of Kapton® belt

1. Remove the following covers.
   - Lower front cover, lower left-hand side cover
   - “3. Removing and Reinstalling Covers”
2. Remove the transparent cover located on the left-hand side.
   - Using a blower, remove dust deposited on the transparent cover.
3. Remove the spring.
4. Replace the Kapton® belt.
5. For reinstallation, reverse the removal steps.
6. Power ON the machine.
7. Check MZ1.
   - Make sure that the motor rotates normally.
   - “10.8 Checking and Replacing Subscanning Motor (MZ1)”
8. Check image performance.
   - “3.2 Checking Image” in Preventive Maintenance Volume
● Replacement of tensioner

(1) Remove the following covers.
   Lower front cover, lower left-hand side cover
   “3. Removing and Reinstalling Covers”

(2) Remove the transparent cover located on the left-hand side.
   Using a blower, remove dust deposited on the transparent cover.

(3) Remove the spring.

(4) Remove the Kapton® belt.

(5) Replace the tensioner.

(6) For reinstallation, reverse the removal steps.

(7) Power ON the machine.

(8) Check MZ1.
   Make sure that the motor rotates normally.
   “10.8 Checking and Replacing Subscanning Motor (MZ1)”

(9) Check image performance.
   “3.2 Checking Image” in Preventive Maintenance Volume
● Replacement of flywheel

(1) Pull out the scanner unit.
  "7. Pulling Out and Pushing in Scanner Unit"
(2) Remove the light-collecting guide assembly.
  "10.2 Servicing Light-Collecting Guide"
(3) Remove the after-reading conveyor.
  "11.1 Removing and Reinstalling After-Reading Conveyor"
(4) Remove the transparent cover located on the left-hand side.
(5) Remove the spring.
(6) Remove the Kapton® belt.
(7) Insert an Allen wrench or so forth into the hole of the shaft located inside the side plate to secure it in place, and remove the nut that retains the flywheel.
(8) Replace the flywheel.

(9) Install a new flywheel by reversing the removal steps.

◆ NOTE ◆
After installing the flywheel, rotate it by hand to ensure that the Kapton® belt does not come off the pulley.

(10) Power ON the machine.
(11) Check MZ1.
  Make sure that the motor rotates normally.
  "10.8 Checking and Replacing Subscanning Motor (MZ1)"
(12) Check image performance.
  "3.2 Checking Image" in Preventive Maintenance Volume
10.13 Replacing Rubber Roller Located Above Subscanning Unit

(1) Remove the light-collecting guide assembly.
   \("10.2 Servicing Light-Collecting Guide\"

(2) Remove the after-reading conveyor.
   \("11.1 Removing and Reinstalling After-Reading Conveyor\"

(3) Remove the light-collecting mirror
   \("10.4 Servicing Light-Collecting Mirror\"

(4) Lift up the brace that retains the rubber roller and slide it to a position that facilitates removal of the rubber roller.

(5) Remove the rubber roller from the subscanning unit.

(6) Remove the shaft, bearings, E-rings, and caps from the rubber roller.

(7) Install the shaft, bearings, E-rings, and caps removed at step (6) to a new rubber roller, and reinstall the rubber roller to the subscanning unit.
(8) Secure the rubber roller in place with the brace.
Make sure that the brace is located between the E-ring and cap.

◆ NOTE ◆

If the spring that should be attached to the lower portion of the brace has been dislocated, be sure to reattach the spring to the lower portion of the brace and to the pin located on the back of the side plate of the subscanning unit.
10.14 Replacing Grip Arms

(1) Remove the rubber roller located above the subscanning unit.
   “10.13 Replacing Rubber Roller Located Above Subscanning Unit”

(2) Remove the light-collecting mirror.
   “10.4 Servicing Light-Collecting Mirror”

(3) Remove MZ1 (FFM).
   “10.8 Checking and Replacing Subscanning Motor (MZ1)”

(4) Remove the flywheel.
   “10.12 Checking and Replacing Kapton® Belt/Tensioner/Flywheel, ● Replacement of flywheel”

(5) Remove the right-hand side transparent cover.

(6) Remove the two screws that retain each of the two grip arms.
   “10.15 Replacing Guide Plate of Subscanning Unit”

(7) Take out the grip arm from the subscanning unit.

(8) Remove the bearing and shaft from the grip arm.

(9) Attach the bearing and shaft removed at step (8) to a new grip arm.

(10) Reinstall the grip arm to the subscanning unit.

(11) Reinstall the right-hand side transparent cover.

(12) Reinstall the flywheel.
   “10.12 Checking and Replacing Kapton® Belt/Tensioner/Flywheel, ● Replacement of flywheel”

(13) Reinstall the MZ1 (FFM).
   “10.8 Checking and Replacing Subscanning Motor (MZ1)”

(14) Reinstall the light-collecting mirror.
   “10.4 Servicing Light-Collecting Mirror”

(15) Reinstall the rubber roller located above the subscanning unit.
   “10.13 Replacing Rubber Roller Located Above Subscanning Unit”
(16) Make sure that there is a gap between the upper rubber roller and lower rubber roller. If there is no gap, make adjustment as appropriate by rotating the adjustment screw.

10.15 Replacing Guide Plate of Subscanning Unit

(1) Remove the rubber roller located above the subscanning unit.
   *“10.13 Replacing Rubber Roller Located Above Subscanning Unit”*
(2) Remove the light-collecting mirror.
   *“10.4 Servicing Light-Collecting Mirror”*
(3) Remove the right-hand side transparent cover.
(4) Remove the two screws that retain the grip arm located on the right-hand side of the machine.
(5) Remove the four screws and one spacer that retain the subscanning unit guide plate.
(6) Slide the right-hand-side grip arm removed at step (4) to remove the subscanning unit guide plate.
(7) Install a new subscanning unit guide plate in reverse order of removal.

**NOTES**

- To install the subscanning unit guide plate, loosely tighten the four screws and then align the guide plate in the arrow directions illustrated below to position it as appropriate.

- After installing the subscanning unit guide plate, place a rule or the like on the lower rubber rollers, and rotate the drive shaft to check if the rule is moved, thereby verifying that the surface of the lower rubber rollers is above the subscanning unit guide plate (at six locations).

(8) Power ON the machine.
(9) Check image performance.

* Tip: “3.2 Checking Image” in Preventive Maintenance Volume
10.16 Replacing Lower Rubber Rollers of Subscanning Unit

(1) Remove the guide plate of the subscanning unit.
   ▶ “10.15 Replacing Guide Plate of Subscanning Unit”

(2) Remove the SUS belt and rubber belt.
   ▶ “10.11 Checking and Replacing SUS Belt/Rubber Belt/Tensioner”

(3) Remove the two respective screws that retain the bearings of the lower rubber rollers.

(4) Pull out the two lower rubber rollers.

(5) Remove the two bearings and two wave washers.

(6) Attach to a new rubber roller the two bearings and two wave washers removed at step (5).

(7) Reinstall the rubber roller in reverse order of removal.
10.17 Replacing and Adjusting Shock-Absorbing Rubbers

When replacing the shock-absorbing rubbers, be sure to replace all the four shock-absorbing rubbers.

The shock-absorbing rubbers should be removed and installed one by one.

**Replacement**

- **On the after-reading conveyor side**
  1. Remove the after-reading conveyor.
     - “11.1 Removing and Reinstalling After-Reading Conveyor”
  2. Remove the three screws and two spacers that retain the shock-absorbing rubber.
  3. While lifting up the subscanning unit slightly, take out the shock-absorbing rubber.
  4. Reinstall the shock-absorbing rubber in reverse order of removal.
  5. Make adjustment after replacement of the shock-absorbing rubber.
     - “Adjustment”

- **On the side-positioning conveyor side**
  1. Remove the side-positioning conveyor.
     - “8.1 Removing and Reinstalling Side-Positioning Conveyor”
  2. Remove the three screws and two spacers that retain the shock-absorbing rubber.
  3. While lifting up the subscanning unit slightly, take out the shock-absorbing rubber.
  4. Reinstall the shock-absorbing rubber in reverse order of removal.
  5. Make adjustment after replacement of the shock-absorbing rubber.
     - “Adjustment”
Adjustment

(1) Loosen the two respective retaining screws on the four shock-absorbing rubbers. The screw that retains the stay of the subscanning unit and the shock-absorbing rubber should not be loosened.

(2) Adjust the position of the subscanning unit so that its distances from the tray are as indicated by adjustment values (A, B, and C) shown below.

(3) Tighten the screws that were loosened at step (1).

(4) Check again the distances from the subscanning unit to the tray.

   If the adjustment values (A, B, and C) are out of range, repeat steps (1) through (3) all over again.
11. After-Reading Conveyor

This section describes procedures for removing and reinstalling the after-reading conveyor, and procedures for checking and replacing parts of the after-reading conveyor to be replaced.

Unless otherwise specified, it is assumed that covers that should be removed prior to checks and replacement have been removed.

“3. Removing and Reinstalling Covers”

11.1 Removing and Reinstalling After-Reading Conveyor

Remove the after-reading conveyor with the scanner unit pulled out.

“7. Pulling Out and Pushing In Scanner Unit”

There are two types of the after-reading conveyor: old and new types. Removal and reinstallation procedures for each specific type should be employed.

Old type

New type

Two screw retaining brackets are added.

A screw retaining stay is added.
## Removal

1. Remove the light-collecting guide assembly.
   
   ⇨ "10.2 Servicing Light-Collecting Guide"

2. Disconnect the connectors (CNSE1, CNME1, CNME2).

3. Remove the five screws (four screws for the old type) that retain the after-reading conveyor.

4. Pull out the after-reading conveyor horizontally.

◆ **NOTE◆

Make sure that the scanner unit has been pulled all the way out. If not, ME2 will interfere with the machine frame when the after-reading conveyor is removed.

**<New type>**

![New type diagram]

**<Old type>**

![Old type diagram]
Reinstallation

◆ NOTE ◆

Make sure that the scanner unit has been pulled all the way out. If not, ME2 will interfere with the machine frame when the after-reading conveyor is removed.

● New type

(1) Reinstall the after-reading conveyor.

The four bumps of the right and left brackets of the after-reading conveyor should be aligned against the block sections of the subscanning unit.

(2) Secure the right-hand side of the after-reading conveyor to the subscanning unit by tightening the two screws in order from (2)-1 to (2)-2 as illustrated below.

(3) Make sure that the three bumps (two bumps on the right-hand side and one of the two bumps on the left-hand side) are aligned against the block sections of the subscanning unit.

◆ SUPPLEMENTARY NOTE ◆

Both of the two bumps on the right-hand side should be brought into contact with the block section. At least one of the two bumps on the left-hand side may be in contact with the block section.

If any of the bumps is detached from the block section of the subscanning unit, loosen the two screws and repeat step (2) all over again.
(4) Tighten the three screws on the left bracket of the after-reading conveyor.

If the bumps are detached from the block section of the subscanning unit, loosen the three screws and repeat step (4) all over again.

(5) Connect the connectors (CNSE1, CNME1, CNME2).

(6) Reinstall the light-collecting guide assembly.

("10.2 Servicing Light-Collecting Guide")
Old type

(1) Reinstall the after-reading conveyor.
   Secure the after-reading conveyor in place with four screws, while pressing the bracket of the after-reading conveyor against the block section of the subscanning unit and reference side.

(2) Connect the connectors (CNSE1, CNME1, CNME2).

(3) Reinstall the light-collecting guide assembly.

“10.2 Servicing Light-Collecting Guide”
11.2 Checking and Replacing Grip Release HP Sensor (SE1)

If anything abnormal is found during checks, replace SE1 and then check it again.

■ Checks

⚠️ CAUTION

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Power ON the machine.
2. Touch the U-Utility button. ➥ The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence. ➥ M-Utility is activated.
4. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
5. Select “2. MONITOR”. ➥ A list of sensor Nos. is displayed.
6. Type in the number of SE1. ➥ The machine is now in the sensor monitoring enabled state.
7. Using a rule or the like, block the SE1 light path. ➥ A message indicating that the sensor is CLOSE is displayed on the operation panel.
8. Remove the rule that blocks the SE1 light path. ➥ A message indicating that the sensor is OPEN is displayed on the operation panel.
9. Repeat steps (7) and (8) several times.
   If no message appears, it is likely that the sensor is faulty. So, replace the sensor.

10. Repeatedly select “0. QUIT” to exit M-Utility. ➥ A message prompting you to reset the machine is displayed.
11. Press the RESET button.
### Replacement

1. Disconnect the connector (SE1).
2. Remove the bracket.
3. Remove SE1 from the bracket.
4. Install a new SE1.
   - **“3.5 Sensors Not Requiring Adjustment of Its Mounting Position” in Machine Description**
5. Connect the connector (SE1).
6. Attach the mounting bracket.
7. Check SE1.
   - **“■ Checks”**
11.3 Replacing Grip Release Motor (ME1)

The grip release motor (ME1) must be replaced with the lower front cover and lower front inner cover removed. It is not necessary to pull out the scanner unit.

1. Remove the cable clamp.
2. Disconnect the connector (CNME1).
3. Remove ME1.
   Remove the two screws that retain the front side of the ME1. Also remove the single screw that retains the stay on the inner side of the ME1 by accessing it from the side plate.
4. Remove the stay and timing belt wheel from ME1.

5. Reverse the removal steps to reinstall a new ME1.
11.4 Replacing IP Transport Motor (ME2)

The IP transport motor (ME2) must be replaced with the scanner unit pulled out.

(1) Remove the after-reading conveyor.

“11.1 Removing and Reinstalling After-Reading Conveyor”

(2) Disconnect the connector (CNME2).

(3) Remove ME2.

(4) Remove the timing belt wheel from ME2.

(5) Install a new ME2 by reversing the removal steps.
11.5 Checking and Replacing Shock Absorber of After-Reading Conveyor

(1) Remove the after-reading conveyor.

(2) Remove the shock absorber-attached guide plate.

(3) Check if the shock absorber is not peeled or frayed.

If it is peeled or frayed, replace the whole guide plate to which the shock absorber is attached.

(4) Reinstall the shock absorber-attached guide plate.

(5) Reinstall the after-reading conveyor.

FR1H1605.EPS

Shock absorber-attached guide plate
Sems M3x6, x3

After-reading conveyor
12. Erasure Conveyor

This section describes procedures for removing and reinstalling the erasure lamp and erasure conveyor, and procedures for checking and replacing parts of the erasure conveyor to be replaced.

Unless otherwise specified, it is assumed that covers that should be removed prior to checks and replacement have been removed.

“3. Removing and Reinstalling Covers”

12.1 Removing and Reinstalling Erasure Lamp Assembly

■ Removal

1. Disconnect the connectors (ACOUT1, ACOUT2, DCOUT4, DCOUT5).
2. Remove the single screw that retains the erasure lamp assembly.
3. Pull out the erasure lamp assembly horizontally.

CAUTION

Carefully handle the erasure lamp. If it is hit, the erasure lamp may be broken, so you may get injured.
Reinstallation

(1) Reinstall the erasure lamp assembly to the erasure conveyor.

**CAUTION**

Carefully handle the erasure lamp. If it is hit, the erasure lamp may be broken, so you may get injured.

**SUPPLEMENTARY NOTE**

When installing the erasure lamp assembly, align the positioning pin located on the right-hand side of the inlet into the hole of the erasure lamp assembly, and push it all the way into the erasure conveyor.

(2) Connect the connectors (DCOUT 4, 5; ACOUT 1, 2).
12.2 Removal and Reinstallation of Erasure Conveyor

**Removal**

1. Remove the erasure lamp assembly.
   
   See “12.1 Removal and Reinstallation of Erasure Lamp Assembly”

2. Disconnect the connectors (CNC1, CNF1, CNF2, CNSOLF1).

3. Slide the tensioner until the timing belt can be removed.
   
   Loosen the one retaining screw and slide the tensioner as appropriate, and then tighten the screw.

4. See “3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description

5. Remove the timing belt.

6. Remove the two screws that retain the erasure conveyor, and take out the erasure conveyor horizontally.
## Reinstallation

1. Install the erasure conveyor along the shock absorber-attached cover into the machine.
   Align the erasure conveyor against the positioning bracket located on the left side of the machine (into the machine as seen from the direction of insertion), and secure it in place.

2. Attach the timing belt onto the timing belt wheel.

3. Put the tensioner back where it was.
   Loosen the single screw that retains the tensioner. Flick the timing belt several times to ensure that it snugly fits onto the belt wheel, and then tighten the screw on the tensioner in place where appropriate tension is attained.

4. Connect the connectors (CNF1, 2, CNSOLF1 to the erasure conveyor; CNC1 to the before-side-positioning conveyor).
12.3 Checking and Replacing After-Reading Conveyance Standby IP Sensor (SF1)

If anything abnormal is found during checks, replace SF1 and then check it again.

### Checks

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

1. Power ON the machine.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
4. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
5. Select “2. MONITOR”.
   - A list of sensor Nos. is displayed.
6. Type in the number of the after-reading conveyance IP sensor (SF1).
   - The machine is now in the sensor monitoring enabled state.
7. Using a piece of cardboard or the like, block the SF1 light path.
   - A message indicating that SF1 is CLOSE is displayed on the operation panel.
8. Remove the piece of cardboard that blocks the SF1 light path.
   - A message indicating that SF1 is OPEN is displayed on the operation panel.
9. Repeat steps (7) and (8) several times.
   If anything abnormal is found, such as no message displayed, then replace the sensor.

10. Repeatedly select “0. QUIT”.
    - M-Utility is exited.
Replacement

1. Disconnect the connector (SF1).
2. Remove SF1.
3. Install a new SF1.
4. Connect the connector (SF1).
5. Check SF1.

(1) Disconnect the connector (SF1).
(2) Remove SF1.
(3) Install a new SF1.
(4) Connect the connector (SF1).
(5) Check SF1.

---

Notes:
- **Erasure conveyor**
- **Connector**
- **Spacer**
- **Pan-head M3x10, x2**
- **Pan-head M3x10, x2**
12.4 Checking and Replacing Changeover IP Sensor (SF2)

If anything abnormal is found during checks, replace SF2 and then check it again.

**Checks**

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

1. Power ON the machine.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
4. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
5. Select “2. MONITOR”.
   - A list of sensor Nos. is displayed.
6. Type in the number of the changeover IP sensor (SF2).
   - The machine is now in the sensor monitoring enabled state.
7. Using a piece of cardboard or the like, block the sensor light path.
   - A message indicating that the sensor is CLOSE is displayed on the operation panel.
8. Remove the piece of cardboard that blocks the SF2 light path.
   - A message indicating that the sensor is OPEN is displayed on the operation panel.
9. Repeat steps (7) and (8) several times.
   - If anything abnormal is found, such as no message displayed, then replace the sensor.
10. Repeatedly select “0. QUIT”.
    - M-Utility is exited.
Replacement

(1) Remove SF2.
(2) Disconnect the connector (SF2).
(3) Install a new SF2.
(4) Connect the connector (SF2).
(5) Check SF2.

“Checks”
12.5 Checking and Replacing Load Standby IP Sensor (SF3)

If anything abnormal is found during checks, replace SF3 and then check it again.

Checks

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

1. Remove SF3 without disconnecting the connector.
2. Power ON the machine.
3. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
4. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
5. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.
6. Select “2. MONITOR”.
   - A list of sensor Nos. is displayed.
7. Type in the number of the load standby IP sensor (SF3).
   - The machine is now in the sensor monitoring enabled state.
8. Using a piece of cardboard or the like, block the SF3 light path.
   - A message indicating that the sensor is CLOSE is displayed on the operation panel.
9. Remove the cardboard that blocks the SF3 light path.
   - A message indicating that the sensor is OPEN is displayed on the operation panel.
10. Repeat steps (8) and (9) several times.
    If anything abnormal is found, such as no message displayed, then replace the sensor.

11. Repeatedly select “0. QUIT”.
    - M-Utility is exited.
12. Power OFF the machine.
13. Install SF3.
Replacement

(1) Disconnect the connector (SF3)
(2) Remove SF3.
(3) Install a new SF3.
(4) Connect the connector (SF3).
(5) Check SF3.

“■ Checks”
12.6 Checking and Replacing Overrun IP Sensor (SF4)

If anything abnormal is found during checks, replace SF4 and then check it again.

**Checks**

**CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

1. Remove the SF4-attached bracket as a whole.
   
   (Replacement)

2. Power ON the machine.

3. Touch the U-Utility button.
   
   - The screen switches to the U-Utility mode.

4. Touch the upper left and upper right corners of the operation panel in sequence.
   
   - M-Utility is activated.

5. Select “6. MECHANICAL UTILITY” and “3. SENSOR” in sequence.

6. Select “2. MONITOR”.
   
   - A list of sensor Nos. is displayed.

7. Type in the number of the overrun IP sensor (SF4).
   
   - The machine is now in the sensor monitoring enabled state.

8. Using a rule or the like, block the SF4 light path.
   
   - A message indicating that the sensor is CLOSE is displayed on the operation panel.

9. Remove the piece of cardboard that blocks the SF4 light path.
   
   - A message indicating that the sensor is OPEN is displayed on the operation panel.

10. Repeat steps (8) and (9) several times.

   If anything abnormal is found, such as no message displayed, then replace the sensor.

11. Repeatedly select “0. QUIT”.

   - M-Utility is exited.
(12) Power OFF the machine.
(13) Install the SF4-attached bracket as a whole.

**Replacement**

1. Disconnect the connector (SF4).
2. Remove the SF4-attached bracket as a whole.
3. Cut the cable tie.
4. Disconnect the connector (SF4) from the bracket.
5. Remove SF4 (both on the light emitting and light receiving sides).
6. Reverse the removal steps to reinstall a new SF4.
7. Check SF4.
12.7 Replacing IP Transport Motor (MF1)

(1) Remove the erasure conveyor.
   See “12.2 Removal and Reinstallation of Erasure Conveyor”

(2) Cut the cable tie.

(3) Disconnect the connector (CNMF1).

(4) Remove the connector from the side plate.
   Because the connector portion of the motor is secure by a latch onto the side plate of
   the erasure conveyor, push down the latch to remove the connector.

(5) Remove MF1.

(6) Using an Allen wrench, remove the set screw, and take out the wheel from MF1.

(7) Remove the E-ring and take out the timing belt wheel.

(8) Reverse the removal steps to reinstall a new MF1.
12.8 Replacing Erasure Lamp

(1) Remove the erasure lamp assembly.
   "12.2 Removing and Reinstalling Erasure Conveyor"

(2) Remove the bracket.

(3) Remove the five erasure lamps.

(4) Wipe the white reflection face within the erasure lamp assembly and the white reflection face behind the bracket with a dry cloth.

(5) Install five new erasure lamps.

(6) Attach the bracket.

(7) Reinstall the erasure lamp assembly.
   "12.2 Removing and Reinstalling Erasure Conveyor"
12.9 Replacing Thermal Switches (TSW1, TSW2)

■ Replacement of TSW1

(1) Remove the erasure lamp assembly.

("12.2 Removing and Reinstalling Erasure Conveyor"

(2) Remove the bracket of the erasure lamp assembly.

(3) Remove the FAST-ON terminals (TSW1COM, TSW1NO).

(4) Replace TSW1.

(5) For reinstallation, reverse the removal steps.
Replacement of TSW2

1. Remove the erasure lamp assembly.

   "12.2 Removing and Reinstalling Erasure Conveyor"

2. Remove the bracket.

3. Remove the five erasure lamps.

4. Remove the leaf spring.

5. Remove the FAST-ON terminals (TSW2COM, TSW2NO).

6. Remove TSW2.

7. For reinstallation, reverse the removal steps.
12.10 Replacing Erasure Cooling Fan (FANF1)

(1) Power OFF the machine.
(2) Remove the erasure lamp assembly.
(3) Remove the bracket.
(4) Remove the cable clamp.
(5) Disconnect the connector (CNFANF1).
(6) Remove the four screws that retain the fan assembly.
(7) Replace the FANF1.

(8) For reinstallation, reverse the removal steps.
12.11 Replacing Erasure Cooling Fan Air Filter

(1) Power OFF the machine.
(2) Remove the lower front cover and lower right-hand side cover.
(3) Remove the air filter.

(4) Attach a new air filter.
   Attach the air filter so as to cover the Velcro tape located on the lower right-hand side cover.
12.12 Checking, Replacing, and Adjusting Erasure Unit IP Conveyance Timing Belt

**Checks**

If anything abnormal is found during checks, replace or adjust the erasure unit IP conveyance timing belt.

1. Power OFF the machine.
2. Remove the erasure conveyor.
   - Refer to “12.2 Removal and Reinstallation of Erasure Conveyor”
3. Measure the tension value for the erasure unit IP conveyance timing belt.
   
   With a load of 300 ± 50g applied, the deflection should be 11 ± 1mm.
**Replacement**

1. Remove the erasure conveyor.
   - “12.2 Removal and Reinstallation of Erasure Conveyor”
2. Remove MF1.
   - “12.7 Replacing IP Transport Motor (MF1)”
3. Remove the timing belt.
4. Attach a new erasure unit IP conveyance timing belt.
5. Adjust the tension.
   - “Adjustment”
## Adjustment

1. Measure the tension value for the timing belt. With a load of 300 ± 50g applied, the deflection should be 11 ± 1mm.

2. Shift the tensioner position to adjust the tension of the timing belt until the specification is met.
12.13 Replacing Erasure Conveyor Rubber Rollers

(1) Remove the erasure conveyor.
  ℹ️ “12.2 Removing and Reinstalling Erasure Conveyor”

(2) Remove the grip spring for the rubber roller to be replaced.

(3) Remove the drive gear.
  ℹ️ “3.1 E-ringless Housing Employed” in Machine Description

(4) Remove the simple bearing.
  ℹ️ “3.3 Simple Bearing Employed” in Machine Description

(5) Replace the erasure conveyor rubber roller.

(6) Accomplish reassembly by reversing the removal steps.
12.14 Checking and Replacing Branch Path Changeover Guide

■ Check

⚠️ **CAUTION**

*Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.*

(1) Power ON the machine.
(2) Touch the U-Utility button.
   ⚪ The screen switches to the U-Utility mode.
(3) Touch the upper left and upper right corners of the operation panel in sequence.
   ⚪ M-Utility is activated.
(4) Select “6. MECHANICAL UTILITY”, “2. ACTUATOR” and “2. DRIVE” in sequence.
   ⚪ A list of actuator Nos. is displayed.
(5) Select “7. SOLF1”.
   ⚪ The branch path changeover guide is driven to the front of the machine.
   If the branch path changeover guide is not driven, it is likely that the cable connection or sensor is faulty. So, check the cable connection, and then select “2. DRIVE” again.
   If it is not driven after that, replace SOLF1.
(6) Repeatedly select “0. QUIT”.
   ⚪ M-Utility is exited.
Replacement

After replacement, be sure to check.

(1) Remove the spring.
(2) Disconnect the connector (CNSOLF1).
(3) Remove the changeover guide drive solenoid assembly (SOLF1).
(4) Loosely retain the positioning bracket by loosening its retaining screw.

(5) Loosely attach a new changeover guide drive solenoid assembly.

   Be sure that the spring pin is lodged in the U-shaped groove in the arm.

(6) Install the spring.

(7) Connect the connector (CNSOLF1).

(8) Move the changeover guide drive solenoid assembly along the guide and then fully tighten it.

   Pull the changeover guide drive solenoid assembly to the left and above by sliding it along the guide. When the arm begins to leave the stopper support, return the changeover guide drive solenoid assembly until the arm comes into contact with the stopper support, and then fully tighten the assembly.

---

**SUPPLEMENTARY NOTE**

Ensure that the arm is in contact with the stopper support but not depressed.

---

(9) Screw down the positioning bracket while pressing it against the changeover guide drive solenoid assembly.
12.15 Checking and Replacing Shock Absorber of Erasure Conveyor

CAUTION
When removing and installing the units, use care not to damage the cables.

Checking and Replacing Shock Absorber on Before-Side-Positioning Conveyor Side

1. Remove the erasure conveyor.
   - See “12.2 Removing and Reinstalling Erasure Conveyor”
2. Remove the shock absorber-attached guide plate.
3. Check if the shock absorber is not peeled or frayed.
   - If it is peeled or frayed, replace the whole guide plate to which the shock absorber is attached.

4. Reinstall the guide plate in reverse order of removal.
Checking and Replacing Shock Absorber of Filter

1. Remove the erasure conveyor.
   "12.2 Removing and Reinstalling Erasure Conveyor"

2. Remove the grip spring.

3. Remove the two bracket retaining screws (one of them should be merely loosened) and remove the bracket.

4. Remove the lamp house assembly.

   **NOTE**

When removing the lamp house assembly, use care not to damage the shock absorber.

5. Check if the shock absorber is not peeled or frayed.
   If it is peeled or frayed, replace the whole filter to which the shock absorber is attached. If it is not peeled or frayed, proceed to step (8).

6. Remove the shock absorber-attached filter.

7. Attach a new shock absorber-attached filter.
(8) Reinstall the lamp assembly.
(9) Attach the bracket removed at step (2).
(10) Attach the grip spring removed at step (1).
Checking and Replacing Shock Absorber Located Above Erasure Conveyor

1. Remove the erasure conveyor.
   "12.2 Removing and Reinstalling Erasure Conveyor"
2. Disconnect the connector (CNSF4).
3. Remove SF4 together with the bracket.
4. Disconnect the connector (CNSF2).
5. Remove SF2 together with the spacer.
(6) Remove the shock absorber-attached guide plate.

(7) Check if the shock absorber is not peeled or frayed.

   If it is peeled or frayed, replace the whole guide plate to which the shock absorber is attached.

(8) Reinstall the shock absorber-attached guide plate.

(9) Reinstall the SF2 together with the spacer.

(10) Connect the connector (CNSF2).

(11) Reinstall the SF4 together with the bracket.

(12) Connect the connector (CNSF4).
Checking and Replacing Shock Absorber of Branch Path Changeover Guide

(1) Remove the erasure conveyor.
   → “12.2 Removing and Reinstalling Erasure Conveyor”

(2) Remove the guide plate.

(3) Check if the shock absorber is not peeled or frayed.
   If it is peeled or frayed, replace the whole guide plate to which the shock absorber is attached.
   If it is not peeled or frayed, reinstall the guide plate in reverse order of removal.

(4) Remove the spring.

(5) Remove the two screws that retain the stopper support, and remove the stopper support.

(6) Remove SF1 without disconnecting the connector.
(7) Remove the bearing.

(8) Remove the branch path changeover guide assembly.

The arm should be removed as attached to the shaft of the branch path changeover guide assembly.

(9) Remove the arm, bearing, and slide bearing from the branch path changeover guide assembly.

(10) Attach the arm, bearing, and slide bearing removed at step (9) to a new shock absorber-attached branch path changeover guide.

(11) Fit the spring pin into the U-shaped groove of the arm.

(12) Reinstall the branch path changeover guide assembly.

(13) Attach the bearing.

(14) Install the stopper support while the branch path changeover guide is opened (the spring pin is pushed against the end surface of the square hole of the changeover guide driving solenoid).

◆ NOTES ◆

- Make sure that the spring pin is securely pushed against the end surface of the square hole.
- Make sure that the stopper support is in contact with the arm. Also, verify that the spring pin or arm does not move.
(15) Reinstall the SF1 together with the connector, which was removed at step (6).

(16) Attach the spring removed at step (4).

(17) Attach the guide plate removed at step (2).
13. Housings

This section describes procedures for replacing the power supply unit, fuses, HDD, FDD, and monitor.

Unless otherwise specified, it is assumed that covers that should be removed prior to replacement have been removed.

("3. Removing and Reinstalling Covers")

13.1 Replacing Power Supply Unit

(1) Power OFF the machine.
(2) Disconnect the connectors (AC OUT1, 2, DCOUT1-7, TB1, 2, CN1-5).
(3) Remove the four screws that retain the power supply unit.
(4) Pull out the power supply unit horizontally.

(5) Install a new power supply unit.
(6) Connect the connectors (AC OUT1, 2, DCOUT1-7, TB1, 2, CN1-5).
### 13.2 Replacing Fuses

**List of Fuses**

<table>
<thead>
<tr>
<th>Location</th>
<th>Name</th>
<th>Rated voltage and amperage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within power supply unit</td>
<td>F1</td>
<td>250V, 6.3A</td>
<td>For SCN08A +5V (DCOUT6)</td>
</tr>
<tr>
<td></td>
<td>F2</td>
<td>250V, 4A</td>
<td>For DRV08A +15V (DCOUT3)</td>
</tr>
<tr>
<td></td>
<td>F3</td>
<td>250V, 4A</td>
<td>For FFM +15V (DCOUT7)</td>
</tr>
<tr>
<td></td>
<td>F4</td>
<td>250V, 500mA</td>
<td>For FFM +5V (DCOUT7)</td>
</tr>
<tr>
<td></td>
<td>F5</td>
<td>250V, 500mA</td>
<td>For erasure lamp cooling fan +24V (DCOUT5)</td>
</tr>
<tr>
<td></td>
<td>F6</td>
<td>250V, 2A</td>
<td>For SCN08A +24V (DCOUT6)</td>
</tr>
<tr>
<td></td>
<td>F7</td>
<td>250V, 5A</td>
<td>For SCN08A +15V (DCOUT6)</td>
</tr>
<tr>
<td></td>
<td>F8</td>
<td>250V, 5A</td>
<td>For SCN08A -15V (DCOUT6)</td>
</tr>
<tr>
<td></td>
<td>F9</td>
<td>250V, 4A</td>
<td>For DRV08A +24V (DCOUT3)</td>
</tr>
<tr>
<td></td>
<td>F10</td>
<td>250V, 4A</td>
<td>For DRV08A +24V (DCOUT3)</td>
</tr>
<tr>
<td></td>
<td>F11</td>
<td>250V, 4A</td>
<td>For DRV08A +24V (DCOUT3)</td>
</tr>
<tr>
<td></td>
<td>F12</td>
<td>250V, 4A</td>
<td>For DRV08A +24V (DCOUT3)</td>
</tr>
<tr>
<td></td>
<td>F13</td>
<td>250V, 5A</td>
<td>For SNS08A +5V (DCOUT2)</td>
</tr>
<tr>
<td>Between power supply unit and CRT</td>
<td>F1</td>
<td>250V, 3A</td>
<td>+24V</td>
</tr>
</tbody>
</table>

**Replacing Fuse within Power Supply Unit**

1. Remove the power supply unit horizontally.
   - **Refer to “13.1 Replacing Power Supply Unit”**

2. Remove the six screws and take out the cover of the power supply unit.
(3) Replace the fuse.

(4) Attach the cover of the power supply unit.

(5) Reinstall the power supply unit.
13.3 Replacing HDD

**CAUTION**
When the HDD is replaced, HDD formatting and software reinstallation should be performed.

16.1 Installing the Software (Application) in the Maintenance Utility Volume
16.2 Formatting the Hard Disk in the Maintenance Utility Volume

### Removal

1. Disconnect the connectors (CNJ1, 2)
2. Loosen the two screws that retain the bracket.
3. Slide the HDD together with the bracket toward yourself, and take it out.
4. Remove the HDD from the bracket.
Installation

(1) Peel the dark-blue film off the sheet.
(2) Attach the sheet to the parts-mounted surface of the HDD.

**NOTE**

Make sure that the sheet does not cover any of the bumps (x4) on the HDD.

**CAUTION**

Do not attach the light-blue film face of the sheet to the parts-mounted surface of the HDD. If it is attached, a short-circuit may occur.
(3) Peel the light-blue film off the sheet attached at step (2).
(4) Attach the sheet retaining plate to the sheet.

◆ **NOTES◆

- When attaching the sheet retaining plate, align the sheet retaining plate to the edge of the sheet.
- Align the sheet retaining plate to the side of the HDD.

---

Align the sheet retaining plate to the side of the HDD.

Align the sheet retaining plate to the edge of the sheet.

---

(4) Sheet retaining plate

(3) Light-blue film

---

Sheet retaining plate

Adhesive-coated surface

HDD

Sheet retaining plate

HDD

Light-blue film

Sheet
(5) Install the HDD to the bracket.

◆ **NOTES◆

- **When inserting the HDD into the bracket, use care to avoid contact between the adhesive-coated surface of the sheet and the bracket.**
- **Secure the HDD in place such that the sheet retaining plate of the HDD is in contact with the bracket.**
(6) Install the HDD together with the bracket.
(7) Connect the connectors (CNJ1, 2).
(8) Format the HDD.
(9) Install the software.
REFERENCE

Short-pin settings for each HDD are illustrated below.

<For 850S0107>
HDD bottom

<For 850S0121>
HDD bottom

<For 850S0080, 850S0085>
HDD bottom

<For 850Y0112>
HDD bottom
13.4 Replacing FDD and Checking Boards Setting

Replacement and Checks

(1) Remove the following covers.
   Lower front cover, upper right-hand side cover, upper left-hand side cover, upper front cover

   “3. Removing and Reinstalling Covers”

(2) Disconnect the connectors (CN1, 2 from the VOL08A board; CNJ1, 2 from the FDD).

(3) Remove the FDD together with the bracket.

(4) Remove the FDD from the bracket.
(5) Attach a new FDD to the bracket.
(6) Make sure that the short-plug setting on the FDD is at initial setting.
(7) Reinstall the FDD together with the bracket.
(8) Connect the connectors (CN1, 2 from the VOL08A board; CNJ1, 2 from the FDD).
13.5 Replacing the Monitor

**WARNINGS**

- When replacing the monitor, be sure to turn OFF the circuit breaker. If you replace the monitor with the circuit breaker ON, you could receive a shock.
- Since the monitor contains high-voltage generating parts (see the figure below), never touch them. If any foreign matter enters the monitor, be sure to remove it. If it is allowed to stay, a risk of fire or electric shock will be caused.

Remove the upper left-hand side cover, upper right-hand side cover, and front cover.

1. Remove the power switch cover. Even when the power switch cover is removed, the connectors are still connected.
2. Disconnect connectors LED08A CN1 and CN2.
3. Open the bracket after removing two screws.

![Diagram of monitor components](image-url)
(4) Disconnect connectors PNL CN3 and CRT CN1 through CN4.

(5) Remove the monitor together with the bracket.

(6) Separate the two mounting brackets from the monitor.

(7) Accomplish monitor installation by reversing the removal steps.
13.6 Cleaning Monitor Screen

(1) Wipe the monitor screen with a soft cloth moistened with a neutral-detergent solution. Sufficiently wring the cloth before wiping the monitor screen.

◆ NOTE ◆

Do not use alcohol. Alcohol is strongly permeative, so that if there is any small scratch or crack in the acrylic plate, it may accelerate such a scratch or crack.

(2) Clean the monitor screen with a dry cloth.
14. Cleaning IP

After cleaning the IP, use the IP cleaned to perform IP conveyance checks.

Cleaning Procedures

(1) Take out the IP from the cassette.

(2) Wipe the fluorescent surface of the IP with gauze.

   After moving the gauze in a straight fashion, move the gauze in small circles, as
   illustrated below, to wipe the IP clean.
   If soils persist after cleaning with dry gauze, proceed to step (3). If soils are cleaned
   off, proceed to step (4).

(3) Wipe the IP with ethanol-moistened gauze.

   After wiping the IP with ethanol-moistened gauze, immediately wipe it with dry gauze
   to remove traces of alcohol left on the fluorescent surface of the IP, and wait until it is
   completely dry.

(4) Put the IP into the cassette with its fluorescent surface down.

IP Conveyance Check

(1) Power ON the machine.

(2) Touch the U-Utility button.

   ➥ The screen switches to the U-Utility mode.

(3) Touch the upper left corner and upper right corner of the operation panel.

   ➥ M-Utility is activated.

(4) Select “3. TEST MODE”, “2. AUTO MODE”, and “2. PRIMARY ERASURE” in se-

   quence.

   ➥ A message prompting for the number of conveyances appears on screen.

(5) Enter the number of IPs cleaned as a value.

(6) Repeatedly select “0. QUIT” to exit M-Utility.

(7) Touch the “RETURN” button.

(8) Insert the cassette that contains the cleaned IPs into each of the shelves.

   ➥ IP conveyance starts.

(9) Make sure that there is no offensive noise or odor from the machine during IP

   conveyance.

(10) After the IP conveyance, take out the cassette and verify that the IPs are free of

      scratch or other damage.
(11) Touch the U-Utility button.
    ⇆ The screen switches to U-Utility.
(12) Touch the upper left corner and upper right corner of the operation panel in sequence.
    ⇆ M-Utility is activated.
(13) Select “3. TEST MODE” and “1. ROUTINE MODE” in sequence.
(14) Repeatedly select “0. QUIT” to exit M-Utility.
## 15. Tools

### 15.1 Standard Tools

**NOTE**

To service the machine, use the servicing instruments and tools that have been inspected and calibrated.

If the machine were serviced using servicing instruments and tools that have not been inspected and calibrated, proper performance of the machine could not be guaranteed.

<table>
<thead>
<tr>
<th>Tool Description</th>
<th>Type</th>
<th>Manufacturer</th>
<th>Qty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable wrench 150mm</td>
<td>W-120</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Nippers 150mm</td>
<td>N-25</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Long-nose pliers 150mm</td>
<td>P-22</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pliers 150mm</td>
<td>JP-200</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Water pump pliers</td>
<td>P-245</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Tweezers 125mm</td>
<td>P-87</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phillips screwdriver No. 1</td>
<td>NO.6300-1</td>
<td>VESSEL</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phillips screwdriver No. 2</td>
<td>NO.6300-2</td>
<td>VESSEL</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Qty.</td>
<td>Type</td>
<td>Manufacturer</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td>------------</td>
<td>--------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Thin-blade screwdriver</td>
<td>1</td>
<td>NO.110-4</td>
<td>PB</td>
<td>Thin-blade screwdriver</td>
</tr>
<tr>
<td>Thin-blade stubby screwdriver</td>
<td>1</td>
<td>NO.195-2</td>
<td>PB</td>
<td>Thin-blade stubby screwdriver</td>
</tr>
<tr>
<td>Jeweler’s screwdriver set</td>
<td>1</td>
<td>NO.146</td>
<td>ENGINEER</td>
<td>Jeweler’s screwdriver set</td>
</tr>
<tr>
<td>Combination box-open-end wrench (5.5mm)</td>
<td>1</td>
<td>M41-5.5</td>
<td>KTC</td>
<td>Combination box-open-end wrench (5.5mm)</td>
</tr>
<tr>
<td>Combination box-open-end wrench (7mm)</td>
<td>1</td>
<td>M41-7</td>
<td>KTC</td>
<td>Combination box-open-end wrench (7mm)</td>
</tr>
<tr>
<td>Combination box-open-end wrench (10mm)</td>
<td>1</td>
<td>M41-10</td>
<td>KTC</td>
<td>Combination box-open-end wrench (10mm)</td>
</tr>
<tr>
<td>Combination box-open-end wrench (13mm)</td>
<td>1</td>
<td>M41-13</td>
<td>KTC</td>
<td>Combination box-open-end wrench (13mm)</td>
</tr>
<tr>
<td>Phillips stubby screwdriver</td>
<td>1</td>
<td>NO.135-4</td>
<td>PB</td>
<td>Phillips stubby screwdriver</td>
</tr>
<tr>
<td>High-frequency screwdriver</td>
<td>1</td>
<td>D-29</td>
<td>HOZAN</td>
<td>High-frequency screwdriver</td>
</tr>
<tr>
<td>Combination box-open-end wrench (8mm)</td>
<td>1</td>
<td>M41-8</td>
<td>KTC</td>
<td>Combination box-open-end wrench (8mm)</td>
</tr>
<tr>
<td>Item Description</td>
<td>Qty.</td>
<td>Type</td>
<td>Manufacturer</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------------------</td>
<td>------</td>
<td>-------</td>
<td>------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>Allen wrench set</td>
<td>1</td>
<td>BLX-9</td>
<td>Boudhus</td>
<td></td>
</tr>
<tr>
<td>Midget ratchet set</td>
<td>1</td>
<td>7331</td>
<td>CHAPMAN</td>
<td></td>
</tr>
<tr>
<td>Digital tester</td>
<td>1</td>
<td>FLUKE77</td>
<td>FLUKE</td>
<td>Inspection and calibration required</td>
</tr>
<tr>
<td>Crimp pliers</td>
<td>1</td>
<td>P-73</td>
<td>HOZAN</td>
<td></td>
</tr>
<tr>
<td>Wire stripper</td>
<td>1</td>
<td>P-95</td>
<td>HOZAN</td>
<td></td>
</tr>
<tr>
<td>Scissors</td>
<td>1</td>
<td>—</td>
<td>Any commercially available one</td>
<td></td>
</tr>
<tr>
<td>Cutter</td>
<td>1</td>
<td>—</td>
<td>Any commercially available one</td>
<td></td>
</tr>
<tr>
<td>Calipers</td>
<td>1</td>
<td>N-15</td>
<td>Mitutoyo</td>
<td>Inspection required A block gauge for use in inspection requires calibration.</td>
</tr>
<tr>
<td>Steel rule (150mm)</td>
<td>1</td>
<td>Type C</td>
<td>YAMAYO</td>
<td>Inspection required</td>
</tr>
<tr>
<td>Steel rule (300mm)</td>
<td>1</td>
<td>Type C</td>
<td>YAMAYO</td>
<td>Inspection required</td>
</tr>
</tbody>
</table>
### Steel tape measure (5.5 m)
- **Type:** WS5005
- **Manufacturer:** NEOLOCK
- **Qty.:** 1
- **Remarks:**

### Soldering iron (30W)
- **Type:** Dash15
- **Manufacturer:** HAKKO
- **Qty.:** 1
- **Remarks:**

### Solder
- **Type:** NO.66
- **Manufacturer:** HAKKO
- **Qty.:** 1
- **Remarks:**

### Desoldering tool with a vacuum attachment
- **Type:** US140
- **Manufacturer:** EDSYN
- **Qty.:** 1
- **Remarks:**

### Adapter plug
- **Type:** 999-1
- **Manufacturer:** HAKKO
- **Qty.:** 1
- **Remarks:**

### Penlight
- **Type:** BF-318
- **Manufacturer:** MATSUSHITA ELECTRIC
- **Qty.:** 1
- **Remarks:**

### Loupe
- **Type:** 10X
- **Manufacturer:** PEAK
- **Qty.:** 1
- **Remarks:**

### Blower
- **Type:** JUMBO
- **Manufacturer:** HURRICANE
- **Qty.:** 1
- **Remarks:**

### Cloth
- **Type:** —
- **Manufacturer:** —
- **Qty.:** 1
- **Remarks:**
### 15.2 Special Tools and Measuring Instruments

#### NOTE

To service the machine, use the servicing instruments and tools that have been inspected and calibrated. If the machine were serviced using servicing instruments and tools that have not been inspected and calibrated, proper performance of the machine could not be guaranteed.

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Quantity</th>
<th>Manufacturer</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum cleaner</td>
<td></td>
<td>1</td>
<td>Any commercially available one</td>
<td></td>
</tr>
<tr>
<td>Kim Wipe (dustless paper)</td>
<td>S-200</td>
<td>1</td>
<td>Jujo Kimberley</td>
<td></td>
</tr>
<tr>
<td>Push-pull gauge</td>
<td></td>
<td>1</td>
<td></td>
<td>For 1kg. Inspection and calibration required</td>
</tr>
<tr>
<td>Dosimeter</td>
<td></td>
<td>1</td>
<td></td>
<td>Calibration required</td>
</tr>
</tbody>
</table>
## 15.3 Special Consumables

### Electrical tape
- **Type:** 33+
- **Manufacturer:** 3M
- **Qty.:** 1
- **Remarks:**

### Cable tie
- **Type:** PLT1M
- **Manufacturer:** KITAGAWA KOGYO
- **Qty.:** 50
- **Remarks:**

### Cable tie
- **Type:** PLT1.5S
- **Manufacturer:** KITAGAWA KOGYO
- **Qty.:** 50
- **Remarks:**

### Cable tie
- **Type:** PLT2M
- **Manufacturer:** KITAGAWA KOGYO
- **Qty.:** 50
- **Remarks:**

### Loktite
- **Type:**
- **Manufacturer:**
- **Qty.:**
- **Remarks:**
15.4 Semi-Standard Tools

Semi-standard tools are tools that are not needed normally, but improve ease of servicing when available.

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Type</th>
<th>Qty.</th>
<th>Manufacturer</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box driver (7 mm)</td>
<td>D-50 (2757)</td>
<td>1</td>
<td>HOZAN</td>
<td></td>
</tr>
<tr>
<td>IC clip</td>
<td>TC-16</td>
<td>1</td>
<td>3M</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Type</th>
<th>Qty.</th>
<th>Manufacturer</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box driver (8 mm)</td>
<td>D-50 (2758)</td>
<td>1</td>
<td>HOZAN</td>
<td></td>
</tr>
<tr>
<td>IC clip</td>
<td>TC-24</td>
<td>1</td>
<td>3M</td>
<td></td>
</tr>
</tbody>
</table>

[Images of tools provided for visual reference]
16. Setting Boards and HDD

16.1 Board Arrangement Diagram

The boards and HDD in the machine are laid out as illustrated below.
16.2 MTH08A Board

![CAUTION]
When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

- **MTH08A board**

- **How to Check Fuse**

  - **For no-fuse breaker (NFB)**

    The no-fuse breakers (NFB1-NFB6) are to be shorted (ON) at factory prior to shipment and must be so at installation. However, since they may unexpectedly turn OFF due to vibration during transit, press all the no-fuse breaker buttons two or three times to ensure that they are depressed to ON.

  - **For directly-mounted fuse**

    With board version D or later, the no-fuse breaker (NFB) is replaced with the fuse. “16.14 How to Check the Fuse on the Board”
16.3 CPU90E Board

**CAUTIONS**

- After the CPU90E board is replaced, clear the contents of the backup memory and set the date and time.
  
  "2.3 Clearing Backup Memory, 2.4 Setting Date and Time"

- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

- If the lithium cell is drained, replace the board as a whole.

- The old board replaced should be sent back to the Parts Center (factory).

- If the cell is replaced improperly, it may explode. When the lithium cell is to be replaced, a cell designated by Fuji or its equivalent should be used. The drained cell should be disposed of in accordance with the instructions provided by Fuji.

### Setting CPU90E Board

![Diagram of CPU90E Board Settings]

- **S1**: OFF position & ON position
- **S7**: OFF position & ON position
- **S2**: OFF position & ON position

- **S5**: STRAIGHT position & CROSS position
- **S6**: RS-422 position & RS-232C position
### Setting Switch

<table>
<thead>
<tr>
<th>Switch</th>
<th>Function</th>
<th>Factory setup</th>
<th>Setup at installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>General-purpose setup switch. The software reads the setting of this switch.</td>
<td>All bits OFF</td>
<td>Installation style dependent</td>
</tr>
<tr>
<td>S2</td>
<td>1) S2-1 and S2-2 (to be set up in the same manner) Performs battery backup function ON/OFF setup.</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td>2) S2-3 Turns ON or OFF the MTH08A NMI signal issuance function. The OFF position must be selected because the MTH08A does not currently have the NMI signal issuance function.</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td>3) S2-4 Turns ON or OFF the boot ROM write function. This function is not going to be used for the time being because it is operative only when the flash EEPROM is used as the boot ROM.</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>S3</td>
<td>Issues a manual reset.</td>
<td>——</td>
<td>——</td>
</tr>
<tr>
<td>S4</td>
<td>Issues a manual NMI.</td>
<td>——</td>
<td>——</td>
</tr>
<tr>
<td>S5</td>
<td>Effects ID-Network line connection style (CROSS/STRAIGHT) changeover.</td>
<td>STRAIGHT position</td>
<td>Installation style dependent</td>
</tr>
<tr>
<td>S6</td>
<td>Effects IDT communication line signal level (RS-422/RS-232C) changeover.</td>
<td>RS-422 position</td>
<td>Installation style dependent</td>
</tr>
<tr>
<td>S7</td>
<td>Turns ON or OFF the power remote control function for the IDT. 1) S7-1 and S7-2 (to be simultaneously set up) Turns ON or OFF the IR-to-IDT power remote control function. 2) S7-3 and S7-4 (to be simultaneously set up) Turns ON or OFF the IDT-to-IR power remote control function.</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

### How to Check Fuse

#### ● For no-fuse breaker (NFB)

The no-fuse breakers (NFB1-NFB4) are to be shorted (ON) at factory prior to shipment and must be so at installation. However, since they may unexpectedly turn OFF due to vibration during transit, press all the no-fuse breaker buttons two or three times to ensure that they are depressed to ON.

![ON position](ONposition.png) ![OFF position](OFFposition.png)

#### ● For directly-mounted fuse

With board version G or later, the no-fuse breaker (NFB) is replaced with the fuse.  

![“16.14 How to Check the Fuse on the Board”](16.14.png)
16.4 IMG07B Board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

- **Setting IMG07B Board**

  Make sure that the switch (S1) on the IMG07B board is set to “4”.

![Diagram of IMG07B Board](FR1B1195.EPS)
CAUTION

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

Setting IMG08A Board

Make sure that the switch (S1) on the IMG08A board is set to “1”.

![Diagram showing IMG08A Board with switch S1 set to "1" ]
16.6 IMG08B Board

CAUTION

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

Setting IMG08B Board

Make sure that the switch (S1) on the IMG08B board is set to “2”.
16.7 IMG08C Board

⚠️ CAUTION

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

- Setting IMG08C Board
  Make sure that the switch (S1) on the IMG08C board is set to “3”.
16.8 DMC08A Board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

**Setting DMC08A Board**

Make sure that the switch (S1) on the DMC08A board is set to “0”.

![Flowchart of DMC08A Board](FR1B1107.EPS)
16.9 HCP08A Board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

- **Setting HCP08A Board**

  Make sure that the switch (SW1) on the HCP08A board is set to “5”.

![Diagram showing the setting of HCP08A board](FR1B1105.EPS)
16.10 CPU90F Board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

◆ **NOTE** ◆

With board version N or later, the software version of the machine should be updated to A09 or later. Earlier software versions do not support a newer LSI (discontinuation supported) on the daughter board (ETH90F board) of the CPU90F board.

### Setting CPU90F Board

Make sure that the CPU90F board is set as follows.

- CNSIO: No short pin (open)
- T1, T2: Nos. 2 and 3 are shorted.
- DIS1: Nos. 1, 3, and 4 are OFF; only No. 2 is ON.
- DIS2: All OFF
- SW1: “6”
### How to Check Fuse

#### For no-fuse breaker (NFB)

The no-fuse breakers (NFB1-NFB2) are to be shorted (N) at factory prior to shipment and must be so at installation. However, since they may unexpectedly turn OFF due to vibration during transit, press all the no-fuse breaker buttons two or three times to ensure that they are depressed to ON.

![ON position and OFF position](FR1H363.EPS)

#### For directly-mounted fuse

With board version M or later, the no-fuse breaker (NFB) is replaced with the fuse. See "16.14 How to Check the Fuse on the Board"

### 16.10a LAN90B Board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

### LAN90B Board Setting

Make sure that the LAN90B board has been set as shown below.

![LAN90B board diagram](FR1B165.EPS)

<table>
<thead>
<tr>
<th>S2 setting</th>
<th>bit</th>
<th>Description</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3, 5, 6</td>
<td>To be determined</td>
<td>Always OFF</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>ON: Function test (FT)</td>
<td>Always OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF: OS boot (NORMAL)</td>
<td></td>
</tr>
</tbody>
</table>
CAUTION

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

DRV08A Board

How to Check Fuse

- For no-fuse breaker (NFB)

The no-fuse breakers (NFB12) are to be shorted (ON) at factory prior to shipment and must be so at installation. However, since they may unexpectedly turn OFF due to vibration during transit, press all the no-fuse breaker buttons two or three times to ensure that they are depressed to ON.

- For directly-mounted fuse

With board version K or later, the no-fuse breaker (NFB) is replaced with the fuse.

16.14 How to Check the Fuse on the Board
16.12 SNS08A Board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

- **SNS08A board**

- **How to Check Fuse**
  
  - **For no-fuse breaker (NFB)**

    The no-fuse breakers (NFB1-NFB3) are to be shorted (ON) at factory prior to shipment and must be so at installation. However, since they may unexpectedly turn OFF due to vibration during transit, press all the no-fuse breaker buttons two or three times to ensure that they are depressed to ON.

    ![ON position and OFF position](FR1H1352.EPS)

  - **For directly-mounted fuse**

    With board version E or later, the no-fuse breaker (NFB) is replaced with the fuse. For more information, refer to “16.14 How to Check the Fuse on the Board”
16.13 Other Boards

- LDD08A board
  
  “9.4 Checking and Replacing LD Assembly, 9.5 Checking and Replacing Polygonal Mirror Assembly”

- SCN08A board
  
  “10.1 Checking and Replacing SCN08A Board”

- PMT08A board
  
  “10.3 Checking and Replacing PMT08A Board”

No setup procedures need be performed for the following boards at the time of machine installation or board replacement.

- BCR08A board
- LED08A board
- LED08B board
- VGA90E board
- VOL08A board
16.14 How to Check the Fuse on the Board

The procedures for checking the fuse that is directly mounted on the board are described below.

■ How to Check If Fuse is Blown

(1) Remove the board.

(2) Measure the resistance value across the leads of the fuse.

If the resulting resistance value is 100 Ω or greater, it is judged that the fuse has been blown.

SUPPLEMENTARY NOTES

• It is impossible to accurately determine whether the fuse has been blown or not while the board is installed in the machine. However, if the resistance value across the leads of the fuse, while the board is installed in the machine, is 1 Ω or greater, it is likely that the fuse has been blown. In that case, remove the board and check to ensure that the fuse has actually been blown.

• For the tester, measure its probe resistance (resistance value observed when the probes are shorted) before measurement, and make compensation as appropriate for the measurement value of the fuse.

■ Action to be Taken When Fuse is Blown

Replace the board.
Maintenance Utility (MU)
## Control Sheet

<table>
<thead>
<tr>
<th>Issue date</th>
<th>Revision number</th>
<th>Reason</th>
<th>Pages affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/31/99</td>
<td>04</td>
<td>Corrections due to change in configuration (FM2460)</td>
<td>All pages</td>
</tr>
<tr>
<td>11/20/99</td>
<td>05</td>
<td>Corrections (FM2638)</td>
<td>MU-12, 14–171</td>
</tr>
<tr>
<td>04/20/2001</td>
<td>06</td>
<td>Software update (FM3006)</td>
<td>MU-19, 33–41, 41.1–41.4, 42–47, 56, 57, 61, 66, 67, 70, 73, 93, 96, 126</td>
</tr>
<tr>
<td>08/30/2001</td>
<td>07</td>
<td>Support for “plus” (support for software version A14) (FM3115)</td>
<td>MU-7, 20, 33, 35, 38, 40, 41, 41.1, 41.2, 41.4–41.8, 42, 44, 45, 53, 54, 57, 59, 60, 62, 63, 66, 70, 71, 75, 76, 119, 121, 122, 154</td>
</tr>
</tbody>
</table>
1. Functional Organization of Service Utility

The Service Utility consists of three functions: Maintenance Utility, Configuration Setting, and Image Processing Parameter Adjustment.

■ Maintenance Utility
It provides functionality necessary for maintenance of the FCR5000 (machine), such as display of error log, and mechanical and electrical operations.

Menus are displayed through special manipulation (not open to the user) of the machine’s operation panel to perform various functions.

The menu hierarchy of the Maintenance Utility varies depending on whether the machine is in normal operation or otherwise (i.e., in the initialization sequence or in serious error).

■ Configuration Setting
It provides various functions required to set up and change configuration settings of the machine.

Because reading and writing of files that can be edited on a personal computer (PC) is supported, configuration setting may be performed on a PC running Windows 95. Setup can be done efficiently by taking advantage of PC’s ease of use, when, for example, initial configuration setting is done or multiple items are changed collectively.

Configuration setting may also be implemented (settings may be changed) through manipulation on the machine’s operation panel.

■ Image Processing Parameter Adjustment
It provides various functions required to set up and change image processing parameters.

A PC running Windows 95 may be connected on-line to the machine to rewrite various image processing parameters.

Rewriting of image processing parameters that require repeated setting changes can be implemented efficiently by registering several setting patterns in the PC, for example.
2. Maintenance Utility Mode Transition Diagrams

The following diagrams show the mode transitions to the machine's maintenance utility (abbreviated M-Utility).

2.1 Mode Transitions in Normal State

(NOTE) Precaution about selection of "QUIT"
The "QUIT" command works when the mode is switched from the utility mode to the maintenance utility mode. If the mode is switched from the version display mode, the system does not transition to the utility mode.
2.2 Mode Transitions upon Abnormality Occurrence

NOTE 1: When a line failure occurs in the IDT utility mode, the system simply switches to the routine process mode.

NOTE 2: When "system shutdown" is selected upon the occurrence of an IP search abnormality.
3. How to Activate and Exit M-Utility

3.1 Activating M-Utility

M-Utility can be started in one of the following different manners.

- **When the software version number is displayed during initialization process**
  
  Touch the upper left-hand corner of the operation panel, and then, within two seconds, touch the upper right-hand corner.

  ➤ M-Utility starts.

  When the screen reads STEP95, the operation panel is inoperative and does not respond at all even if you touch it. In such an instance, perform a reset and wait until the software version number appears on the screen.

![Software Version Number](image)
When the routine screen is displayed

(1) Press the U-Utility button.
   ➥ The display switches to the U-Utility screen.

(2) Touch the upper left-hand corner of the touch panel, and then, within two seconds, touch the upper right-hand corner.
   ➥ The M-Utility screen opens.

![Diagram of routine screen and U-Utility screen]

Menu selecting icon

U-Utility button

NOTES:
- For the IDT type, the "menu selecting icon" does not appear.
- For the initial setting, the "Multiframe forced output" button will not appear.
- The IDT type includes CR-IR348CL connection.
When an error screen is displayed

Touch the upper left-hand corner of the operation panel, and then, within two seconds, touch the upper right-hand corner.

- Call maintenance personnel.
- 03D2 Switchback conveyance error.
- Stop alarm
- System down

[Area to be touched]
3.2 Exiting M-Utility

To quit M-Utility, select “0. QUIT” while the main menu is displayed. If the configuration file has been edited using M-Utility, make your editing effective by resetting the machine after you exit M-Utility.

◆ NOTE ◆

If M-Utility is entered during the initialization sequence, “0. QUIT” does not appear. Thus, after quitting M-Utility, the machine should be reset.

(1) While the M-Utility main menu is displayed, select “0. QUIT”.
   ✰ The display switches to the U-Utility screen.
(2) Press the reset button.
   The reset button should basically be pressed. You may touch the “Return” button only in cases where the automatic transport mode setup would be invalidated by a reset.
4. Common Operating Procedures for M-Utility

The same selection and closing procedures apply to all the M-Utility menus.

4.1 Selecting a Menu

There are two methods to select a menu in M-Utility.

- **While the “>” cursor is displayed, enter a menu number.**
  
  The system displays the lower-level menu or immediately executes the designated menu and shows the result.

- **Automatic menu selection upon a menu selection**
  
  When you select a menu, the system automatically selects the associated menu.

  **Example**  When you select “6. MECHANICAL UTILITY”, “3. SENSOR”, and “2. MONITOR” in sequence

  The sensor list menu appears.
4.2 Quitting a Menu

■ Selecting “QUIT”

When you select “QUIT” on a menu, one of the following results follows.

- When a menu item is displayed, the system returns to the upper-level menu.
- When the main menu is displayed, the system exits M-Utility and switches to the U-Utility.
- The system stops the current menu execution (operation).
- The system returns to the upper-level menu while continuing with the current menu execution (operation).

■ Selecting “STOP”

When you select “STOP”, the actuator or motor operation (DRIVE) ends.

Example: 3. STOP is selected
4.3 Entering a Numerical Value

When a menu, such as an IP conveyance menu, is executed, it is necessary to enter parameters, such as the number of IP conveyances. In M-Utility, touch the virtual keyboard displayed on the right side of the operation panel to enter a value.

Displaying Desired Keyboard for Entry

Three types of virtual keyboards are available; by touching the ▲ or ▼ key, one of the three virtual keyboards can be selected. Also, by touching the [Caps] key, the caps mode can be toggled to the lower-cap display corresponding to the three types of virtual keyboards.

Correcting a value entry

You can correct a value entry with the [DEL] or [BS] key.

- [DEL] key: Each time you touch this key, it erases the character located above the cursor.
- [BS] key: Each time you touch this key, it erases the character preceding (positioned to the left of) the cursor position.

Example) Changing the numerical entry from 1244 to 1134

1) Touch the operation panel to position the cursor under “4”.
2) Touch the [BS] key twice to delete “24”.
3) Touch 1 and then 3.
5. Menu Hierarchy of M-Utility

The menu hierarchy of M-Utility varies depending on whether the machine is in normal operation or otherwise (i.e., in the initialization sequence or in serious error).

5.1 Menu Hierarchy of M-Utility during Normal Operation

During normal operation (when the mode switches from U-Utility to M-Utility), the menus shown below may be used.

### MAINTENANCE UTILITY

<table>
<thead>
<tr>
<th>0.QUIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.ERROR LOG UTILITY: Displays, deletes, or saves the error log.</td>
</tr>
<tr>
<td>0.QUIT</td>
</tr>
<tr>
<td>1.LIST: Displays the error log on screen.</td>
</tr>
<tr>
<td>0.QUIT</td>
</tr>
<tr>
<td>1.ALL: Displays all the error messages generated, in reverse chronological order.</td>
</tr>
<tr>
<td>0.QUIT</td>
</tr>
<tr>
<td>1.ERROR: Displays serious errors only.</td>
</tr>
<tr>
<td>2.WARNING: Displays warning errors only.</td>
</tr>
<tr>
<td>3.BOTH: Displays all errors.</td>
</tr>
<tr>
<td>2.SUMMARY: Groups the generated errors according to error codes and displays the number of occurrences (in four digits) for those errors.</td>
</tr>
<tr>
<td>0.QUIT</td>
</tr>
<tr>
<td>1.ERROR: Displays serious errors only.</td>
</tr>
<tr>
<td>2.WARNING: Displays warning errors only.</td>
</tr>
<tr>
<td>3.BOTH: Displays all errors.</td>
</tr>
<tr>
<td>2.CLEAR: Clears the entire error logs.</td>
</tr>
<tr>
<td>0.QUIT</td>
</tr>
<tr>
<td>1.ERROR LOG</td>
</tr>
<tr>
<td>3.SAVE TO FD: Saves error log data and trace data to a floppy disk.</td>
</tr>
<tr>
<td>0.QUIT</td>
</tr>
<tr>
<td>1.ERROR LOG: Saves the error log to a floppy disk.</td>
</tr>
<tr>
<td>2.TRACE DATA: Copies the trace data upon occurrence of error to a floppy disk.</td>
</tr>
<tr>
<td>3.IOT DATA: Saves the latest IO trace data in memory to a floppy disk.</td>
</tr>
<tr>
<td>4.SAVE TO HD: Saves error log data to the hard disk.</td>
</tr>
<tr>
<td>0.QUIT</td>
</tr>
<tr>
<td>1.ERROR LOG: Copies ERROR messages to the error0.log file and WARNING messages to the ERRORX.LOG file.</td>
</tr>
</tbody>
</table>

NOTE: Numerals in brackets denote a relevant chapter in this manual.
2. CONFIGURATION SETTING: Views or changes the setup in the configuration file.

- 0. QUIT
- 1. SYSTEM: Defines the overall setup information for the machine.
- 2. PRINT: Defines the setup information related to film output formats.
- 3. REMOTE SWITCH: Remote switch ON/OFF setting for the intelligent hub.
- 4. EQUIPMENT: Defines the setup information related to connected equipment.
- 5. LOCAL INTERFACE: Defines the setup information for communication requirements of serial line connection. Not setting is needed because its default setting should be used.
- 6. NETWORK HOST INTERFACE: Defines the setup information for network connection and communication.
- 7. HOSTS ADDRESS: Sets an address of network connection.
- 8. DISTRIBUTION: Sets a destination of network connection.
- 10. NETMASKS: Sets a subnet mask of network connection.
- 11. DICOM: Base on DICOM.

3. TEST MODE: Used to check IP conveyance operation and so forth.
   Settings for auto conveyance and test processing are made.

- 0. QUIT
- 1. ROUTINE: Cancels the settings made in "2. AUTO MODE" and reverts back to the state suited for routine processing.
- 2. AUTO MODE

   - 0. QUIT
   - 1. READING & ERASURE: Performs an automatic conveyance sequence a designated number of times to execute the reading and erasure processes.
   - 2. PRIMARY ERASURE: Performs an automatic conveyance sequence a designated number of times to execute the reading (no image output) and erasure processes.
   - 3. SECONDARY ERASURE: Performs an automatic conveyance sequence a designated number of times to execute the erasure process only.

NOTE: Numerals in brackets denote a relevant chapter in this manual.
4. ELECTRICAL UTILITY: Conducts electrical-related diagnostic checks on the erasure lamp, image memory, image processing board, etc. [9.1]

0. QUIT

1. ERASURE LAMP TEST: Conducts an erasure lamp illumination test. [9.1]

2. IMAGE MEMORY TEST: Conducts an image memory capacity diagnostic check and marching test. [9.2]

3. DSP TEST: Performs self-diagnostic checks of all the image processing boards mounted in the machine. [9.3]

4. LAN: Conducts network-related diagnostic checks. [9.4]

0. QUIT

1. ETHERNET MAC ADDRESS: Displays the Ethernet MAC addresses of the CPU90E and CPU90F.

2. PING: Executes "ping" by designating the LANC used (CPU90E or CPU90F) and the host name of its connection designation (or IP address).

3. CPU90F DMA: This menu should not be used.

5. HDD: Conducts hard disk drive diagnostic checks. [9.5]

0. QUIT

1. WRITE-READ VERIFY: Writes 1 Kbytes of monotonously increasing data onto the hard disk, and reads it back to verify that the written data and read data agree with each other.

6. FDD: Conducts floppy disk drive diagnostic checks. [9.6]

0. QUIT

1. WRITE-READ VERIFY: Writes 1 Kbytes of monotonously increasing data onto a floppy disk, and reads it back to verify that the written data and read data agree with each other.

NOTE: Numerals in brackets denote a relevant chapter in this manual.
5. SCANNER UTILITY : Conducts main-scan system diagnostic checks and setups.
   Used during checking or after replacement of main-scan system parts. [10.]

   0. QUIT

   1. INITIALIZE : Loads main-scan system parameters and performs initial setting for the main-scan system. [10.1]

   2. POLYGON : Rotates and stops the polygonal mirror individually. [10.2]
   - 0. QUIT
   - 1. ON
   - 2. OFF

   3. LASER : Turns ON/OFF the laser individually. [10.3]
   - 0. QUIT
   - 1. ON
   - 2. OFF

   4. HV : Checks whether the high-voltage switch (software switch) is turned ON/OFF normally. [10.4]
   - 0. QUIT
   - 1. ON
   - 2. OFF

   5. HV DATA : Sets the high voltage applied to the photomultiplier. Its setting range is from 250 to 1000 V.
   When it is set to 0, its setting is turned OFF. [10.5]

   6. FORMAT : Temporarily sets the IP read start position (PIXEL) and read width (FREQ).
   Writing the settings to the hard disk is done in "8. DATA MANAGEMENT."
   "9.1 Adjusting Read Start Position and Read Width" in Checks, Replacement and Adjustment Volume [10.6]

   0. QUIT

   1. DEFAULT : Sets the read start position and read width to their initial values.
   - 0. QUIT
   - 1. PIXEL AND FREQ
   - 2. PIXEL ONLY
   - 3. FREQ ONLY

   2. FREQ ADJUST : Adjusts the read width.

   3. PIXEL ADJUST : Adjust the read start position.

   7. SHADING/SENSITIVITY : Temporarily records, calculates, and sets the shading or sensitivity data in order to determine it.
   Writing the settings to the hard disk is done in "8. DATA MANAGEMENT."
   "9.2 Shading/Sensitivity Correction" in Checks, Replacement and Adjustment Volume [10.7]

   0. QUIT

   1. REC MODE : Makes the shading correction data recordable.

   2. CALCULATION : Calculates the shading, polygon or sensitivity correction data.
   - 0. QUIT
   - 1. SHADING, POLYGON AND SENSITIVITY
   - 2. SHADING, POLYGON AND SENSITIVITY FOR BAD CONDITION
   - 3. SHADING AND POLYGON
   - 4. SHADING AND POLYGON FOR BAD CONDITION
   - 5. POLYGON ONLY
   - 6. SENSITIVITY ONLY

NOTE: Numerals in brackets denote a relevant chapter in this manual.
3. SHADING / POLYGON CORRECTION: It is set to ON when the corrected data is to be enabled in routine mode.
   - 0. QUIT
   - 1. ON
   - 2. OFF

4. SENSITIVITY DATA: Performs set sensitivity correction (e.g., leveling the sensitivities of multiple readers).
   Writing the correction value to the hard disk is done in "8. DATA MANAGEMENT."

5. HV DATA: Should not be used in the market.

6. PMT DATA: Should not be used in the market.

8. DATA MANAGEMENT: Displays and writes to the hard disk the setup values for "6. FORMAT" and "7. SHADING/SENSITIVITY." ........................................ [10.8]
   - 0. QUIT
   - 1. SAVE SHADING AND POLYGON DATA: Writes the shading or polygon data to the hard disk.
   - 2. SAVE SENSITIVITY DATA: Writes the sensitivity correction data to the hard disk.
   - 3. SAVE FORMAT DATA: Writes the format data to the hard disk.
   - 4. DISPLAY DATA: Displays set data for the format or sensitivity.  NOTE 2
   - 5. LOAD FROM FD: Reads the data in the floppy disk into the primary memory. The data read is lost when the machine is reset.
     - 0. QUIT
     - 1. SHADING/POLYGON
     - 2. SENSITIVITY
   - 6. SAVE TO FD: Writes to a floppy disk the shading, polygon, or sensitivity data in the hard disk.

9. DIAGNOSTIC: Executes all the diagnostic items. ........................................... [10.9]

10. VIRTUAL IMAGE: Causes the scanner hardware to generate a virtual image signal, so that the resulting image is read to isolate the cause of trouble.  ........ [10.10]
    - 0. QUIT
    - 1. LIGHT: Generates virtual light.
    - 2. LOG AMP: Turns OFF the HV to generate an image signal of fixed output.
    - 3. SCN08 INPUT: Causes the SCN08 board to generate an image signal.
    - 4. ROUTINE: Cancel the virtual image signal generation mode to revert back to the initial state.
      It should always be performed after the checks are completed in the virtual image signal generation mode.

NOTE 1: Numerals in brackets denote a relevant chapter in this manual.

NOTE 2: The abbreviated alphabets displayed have the following meanings.

<table>
<thead>
<tr>
<th>MP:</th>
<th>Number of invalid pixels</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP:</td>
<td>Total number of invalid pixels</td>
</tr>
<tr>
<td>TML:</td>
<td>Total number of invalid lines</td>
</tr>
<tr>
<td>RCNT:</td>
<td>Reference frequency division value</td>
</tr>
<tr>
<td>NCNT:</td>
<td>Oscillation frequency setup value</td>
</tr>
<tr>
<td>HVCNT:</td>
<td>Center-sensitivity HV value</td>
</tr>
<tr>
<td>HVDATA:</td>
<td>Reading HV value</td>
</tr>
<tr>
<td>PMTK:</td>
<td>PMT sensitivity coefficient</td>
</tr>
<tr>
<td>SAIP:</td>
<td>IP sensitivity during sensitivity adjustment</td>
</tr>
<tr>
<td>Xe:</td>
<td>Erasure level dosage</td>
</tr>
<tr>
<td>Z:</td>
<td>Erasure level QL value</td>
</tr>
<tr>
<td>SMD:</td>
<td>SHD/polygon correction mode default value</td>
</tr>
</tbody>
</table>

FR1H1387.EPS
6. MECHANICAL UTILITY: Monitors individual operation of the motor, sensor status, etc.
   Used for checking the motors and sensors. .......................... [11.1]
   0. QUIT
   1. MOTOR: Sets the pulse motor drive parameters and conducts pulse motor drive/stop tests.  .... [11.2]
       0. QUIT
       1. NUMBER
       2. PARAMETER
       3. DRIVE
       4. STOP
   2. ACTUATOR: Conducts solenoid, valve, pump, erasure lamp, and FFM drive/stop tests. ....... [11.3]
       0. QUIT
       1. NUMBER
       2. DRIVE
       3. STOP
   3. SENSOR: Monitors the sensor status. Two monitoring methods are available:
      one is for monitoring the sensors on an individual basis, and the other is
      for monitoring all sensors at a time. ......................................... [11.4]
       0. QUIT
       1. NUMBER
       2. MONITOR
       3. MONITOR ALL
   4. UNIT
       0. QUIT
       1. IP FEED/LOAD UNIT: Performs operation tests on the IP removal mechanism.
      Displays a message if any abnormality is encountered. .......................... [11.5]
       0. QUIT
       1. ARM HOME POSITION
       2. FEED/LOAD
       2. UP-DOWN UNIT: Performs operation tests on the elevation unit. Displays a
      message if any abnormality is encountered. ........................................ [11.6]
       0. QUIT
       1. HOME POSITION
       2. SETTING UNIT POSITION
       3. SIDE-POSITIONING GRIP: Performs operation tests on the side-positioning
      conveyance grip mechanism. Displays a message if any abnormality is encountered. .......................... [11.7]
       0. QUIT
       1. HOME POSITION
       2. GRIP
       3. RELEASE
       4. SIDE-POSITIONING UNIT: Performs operation tests on the side-positioning
      mechanism. Displays a message if any abnormality is encountered. .......................... [11.8]
       0. QUIT
       1. HOME POSITION
       2. ACTUATION
       5. AFTER-READING GRIP: Performs operation tests on the after-reading
      conveyance grip. Displays a message if any abnormality is encountered. .......................... [11.9]
       0. QUIT
       1. HOME POSITION
       2. GRIP
       3. RELEASE

NOTE: Numerals in brackets denote a relevant chapter in this manual.
7. FILE UTILITY: Performs file-related operations such as saving parameter files to and reading data from floppy disks. Used when the configuration data is edited on a personal computer or when optional software is installed.  

- FORMAT FD: Formats a floppy disk according to the 1.44MB MS-DOS format.  
- FORMAT IMAGE PARTITION: Formats an image storage partition of the hard disk.  
- BACKUP: Writes each setup file to a floppy disk.  
- SCANNER DATA: Saves the scanner setup files to a floppy disk.  
- CONFIGURATION DATA: Saves setup files (IRSET.CFG, FILFMT.CFG) to a floppy disk.  
- NETWORK DATA: Saves network-related setup files (RMT_SW.CFG, EQUIP, DEVICE, HOSTS, CODEDSTB, ROUTE, NETMASKS, Base on DICOM) to a floppy disk.  
- IMAGE PROCESSING DATA: Saves image processing parameter files to a floppy disk.  
- CSL MENU DATA: Saves to a floppy disk the setup files related to CSL type menu screens and magnetic card formats.  
- EDR PROCESSING DATA: Saves EDR parameter files to a floppy disk.  
- RESTORE: Reads each setup file from the floppy disk to the hard disk.  
- SCANNER DATA: Reads the scanner setup files from a floppy disk to the hard disk.  
- CONFIGURATION DATA: Reads setup files (IRSET.CFG, FILFMT.CFG) from the floppy disk to the hard disk.  
- NETWORK DATA: Reads network-related setup files (RMT_SW.CFG, EQUIP, DEVICE, HOSTS, CODEDSTB, ROUTE, NETMASKS, Base on DICOM) from the floppy disk to the hard disk.  
- IMAGE PROCESSING DATA: Loads image processing parameter files from a floppy disk to the hard disk.  
- CSL MENU DATA: Loads the setup files related to CSL type menu screens and magnetic card formats from a floppy disk to the hard disk.  
- EDR PROCESSING DATA: Reads EDR parameter files from a floppy disk to the hard disk.  
- EDR DATA:  
- PREVIOUS SYSTEM SOFTWARE: Reverts back to the immediately preceding version of system software.  

NOTE: Numerals in brackets denote a relevant chapter in this manual.
8. BACKUP MEMORY: Initializes the backup memory. [13.]
   0. QUIT
   1. CLEAR

9. HV ON/OFF: Turns ON and OFF the high-voltage switch (software switch).
   If reading is performed with the covers opened, the photomultiplier may be damaged. Thus, be sure to turn
   OFF the high-voltage switch. [14.]

10. MENU SETTING: Sets various parameters for the exposure menu. [15.]
   0. QUIT
   1. LIST: Display menus. [15.1]
   2. MOVE: Changes the display location of the menu. [15.2]
   3. ROUTINE: Registers and deletes the routine menu. [15.3]
   4. EDIT: Edits the menu name and various parameters. [15.4]
   5. COPY: Copies menus. [15.5]
   6. DELETE: Deletes menus. [15.6]
   7. FILMMARK: Edits film marks. [15.7]

NOTE: Numerals in brackets denote a relevant chapter in this manual.
5.2 Menu Hierarchy of M-Utility in Initialization Sequence or in Serious Error

During the initialization sequence or upon occurrence of serious error (i.e., when the mode switches from the error message displayed status to M-Utility), the basic menu structure is the same as in normal operation, except some of the menus are omitted.

For your reference, the upper menu hierarchy is shown below.

Menu Hierarchy in Initialization Sequence or in Serious Error

- **MAINTENANCE UTILITY**
  - 0.QUIT (not displayed during initialization)
  - 1.ERROR LOG UTILITY
  - 2.CONFIGURATION SETTINGS
  - 3.ELECTRICAL UTILITY
  - 4.SCANNER UTILITY
  - 5.MECHANICAL UTILITY
    - 0.QUIT
    - 1.INITIALIZE: Loads and initializes the conveyance parameter. ······ [11.1]
    - 2.MOTOR
    - 3.ACTUATOR
    - 4.SENSOR
    - 5.UNIT
  - 6.FILE UTILITY
  - 7.BACKUP MEMORY
  - 8.MENU SETTING
6.  1. ERROR LOG UTILITY: Error Log Utility

With the error log utility (ERROR LOG UTILITY), the error log is displayed, cleared, and saved. The trace data residing in the memory is also saved to a floppy disk.

6.1  1. LIST: Displaying Error Log

The content of the error log is displayed.

Two modes of display are available: “ALL” for displaying all error messages generated in reverse chronological order, and “SUMMARY” for displaying them according to error codes.

- 1. ALL: Displaying All Error Messages

All error messages generated are displayed.

Error messages are presented in reverse chronological order.

The display content includes the date and time of an error code generated and detail information.

An example of its display is shown below.

<table>
<thead>
<tr>
<th>CODE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>081D</td>
<td>1998.04.16 14:36</td>
</tr>
<tr>
<td></td>
<td>11.E738.000002.8A0AC1.000000.000C19.8</td>
</tr>
<tr>
<td></td>
<td>000001.000009.00001B</td>
</tr>
<tr>
<td></td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>.</td>
</tr>
<tr>
<td>1722</td>
<td>1998.04.16 09:58</td>
</tr>
<tr>
<td></td>
<td>85AA1319.05972166</td>
</tr>
<tr>
<td>0.END</td>
<td>1.NEXT 2.BEFORE (DEFAULT=1) :</td>
</tr>
</tbody>
</table>

● Selection of error level

One of the following error levels may be selected for display.

1. ERROR  (Error level 0, 1)
2. WARNING (Error level 2, 3)
3. BOTH   (Error level 0 to 3)

● Page flip

Type in one of the following numbers and press the [ENT] key.

0.END    (Exit the display function.)
1.NEXT    (Display the next page.)
2.BEFORE  (Display the previous page.)
2. SUMMARY: Displaying According to Error Code

Error messages are grouped and displayed according to error codes. An example of its display is shown below.

<table>
<thead>
<tr>
<th>CODE</th>
<th>DATE</th>
<th>COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>081D</td>
<td>1998.04.16 14:36</td>
<td>0012</td>
</tr>
<tr>
<td>1722</td>
<td>1998.04.16 10:12</td>
<td>0006</td>
</tr>
<tr>
<td>23E6</td>
<td>1998.04.16 09:58</td>
<td>0213</td>
</tr>
<tr>
<td>0.END</td>
<td>1.NEXT 2.BEFORE (DEFAULT=1)</td>
<td></td>
</tr>
</tbody>
</table>

Selection of error level

Select one of the following error levels to display the error log.

1. ERROR  (Error level 0, 1)
2. WARNING (Error level 2, 3)
3. BOTH    (Error level 0 to 3)

Page flip

Type in one of the following numbers and press the [ENT] key.

0.END     (Exit the display function.)
1.NEXT     (Display the next page.)
2.BEFORE   (Display the previous page.)
6.2 2. CLEAR: Clearing Error Log

All the error logs are cleared.

(1) Select “2. CLEAR” and “1. ERROR LOG” in sequence.
  ➥ The following message appears.

  ARE YOU SURE TO CLEAR ALL ERROR LOGS ?
  1. YES  2. NO  (DEFAULT=2) :

(2) Select “1. YES”.
  ➥ The following message appears, with all the error logs cleared.

  ERROR LOGS ARE CLEARED.

When “2. NO” is selected, the menu display reverts back without clearing the error log.
6.3 3. SAVE TO FD: Saving Error Log to Floppy Disk

Error log data and trace data is saved to a floppy disk.

(1) Select “3. SAVE TO FD”.
☞ The following messages appear.
0. QUIT (Exit the menu.)
1. ERROR LOG (Overwrite an error log file onto the floppy disk.)
2. TRACE DATA (Overwrite trace data files having extensions ".001" through ".005" onto the floppy disk.)
3. IOT DATA (Save a file with a file name represented by the time it is saved, with an extension ".IOT".)

(2) Select the type of error log to be saved, using one of the numbers, 1 through 3.
☞ The following message appears.

PLEASE SET A FD.
ARE YOU SURE TO SAVE ERROR LOGS TO THE FD?
1. YES 2. NO (DEFAULT=2) :

⚠️ CAUTION
While a file is being saved, never power OFF the machine or press the FD eject button because the floppy disk or floppy disk drive may be damaged.

(3) Put a floppy disk into the machine and select “1. YES”.
☞ The following message appears, with all the error logs saved to the floppy disk.

XXXXXXXXXX IS SAVED.
(XXXXXXXXXX represents the file name.)
☞ If all the files cannot be contained in a single floppy disk, the following message appears.

THE FD IS FULL. EXCHANGE OTHER ONE.
1. CONTINUE 2. CANCEL (DEFAULT=2) :
Additionally, type in one of the following numbers and press the [ENT] key.
1. CONTINUE Continue to write the error log file to the floppy disk.
2. CANCEL Stop writing the error log file to the floppy disk.
6.4 4. SAVE TO HD: Saving Error Log to HD

The error logs are saved to the hard disk.

(1) Select “4. SAVE TO HD” and “1. ERROR LOG” in sequence.
   ➥ The following message appears.
   ARE YOU SURE TO SAVE ERROR LOGS TO THE HD?
   1.YES 2.NO (DEFAULT=2) :

   CAUTION
   While a file is being saved, never power OFF the machine because the hard disk may be damaged.

(2) Select “1. YES”.
   ➥ Then, the following message appears.

   XXXXXXXXX IS SAVED.
   (XXXXXXXXXX represents the file name.)
7. 2. CONFIGURATION SETTING: Configuration Utility

With the configuration utility (CONFIGURATION SETTING), various setup files may be viewed or modified.

To view or modify various setup files, use the simple screen editor of the machine. Setup files may also be edited on a personal computer running Windows 95 and then installed.

### Menu Hierarchy and Configuration Files

#### 2 CONFIGURATION SETTING: View or change the setup in the configuration file.

- **1. SYSTEM (IRSET.CFG)**: Define overall setup information regarding the machine.  [7.2]
- **2. PRINT (FILMFMT.CFG)**: Define setup information related to the film output format.  [7.3]
- **3. REMOTE SWITCH (RMT_SW.CFG)**: Remote switch ON/OFF setting for the intelligent hub.  [7.5]
- **4. EQUIPMENT (EQUIP)**: Define setup information related to equipment connected.  [7.6]
- **5. LOCAL INTERFACE (INTERFACE)**: Define setup information for communication requirements over serial line connection.  [7.7]
- **6. NETWORK HOST INTERFACE (DEVICE)**: Define setup information for network-connected communication.  [7.8]
- **7. HOSTS ADDRESS (HOSTS)**: Set up the address for network connection.  [7.9]
- **8. DISTRIBUTION (CODEDSTB)**: Set up the distribution destination for network connection.  [7.10]
- **9. ROUTING (ROUTE)**: Set up the routing for network connection.  [7.11]
- **10. NETMASKS (NETMASKS)**: Set up the subnet mask for network connection.  [7.12]
- **11. DICOM (DICOM)**: Base on DICOM.

**NOTE 1:** Titles in parentheses denote file names to be edited.

**NOTE 2:** Numerals in brackets denote a relevant chapter in this manual.
7.1 Editing Various Setup Files

A specific editing method is described below, using “1. SYSTEM (IRSET.CFG)” by way of example.

◆ SUPPLEMENTARY NOTES ◆

• “#” at the beginning of a sentence means that the sentence is a comment, so the description thereafter does not provide configuration setting. A comment describes remarks, such as explanation about a setup item and choices of items.
• “↵” represents a carriage return.

(1) Select “2. CONFIGURATION SETTING” and “1. SYSTEM”.

➾ The contents of SYSTEM (IRSET.CFG) are displayed.
(2) Touch the location to be edited.

⇒ The cursor appears at the location touched.

The cursor can be moved by touching the ↑, ↓, ←, or → key.

(3) Using a virtual keyboard, edit it.

• Display a desired virtual keyboard for entry.

Three types of virtual keyboards are available; by touching the ▲ or ▼ key, one of the three virtual keyboards can be selected. Also, by touching the [Caps] key, the caps mode can be toggled to the lower-cap display corresponding to the three types of virtual keyboards.

• Using the [DEL] or [BS] key, modify the value.

[DEL] key: Each time you touch this key, it erases the character located above the cursor.

[BS] key: Whenever it is touched once, a character immediately before (to the left of) the cursor is deleted.

◆ SUPPLEMENTARY NOTE ◆

If it is difficult to undo the editing with the [DEL] or [BS] key, touch the [CANCEL] key and repeat from step (1) all over again.

(4) Press the [SAVE] key.

⇒ The edited contents are saved to the HD.

(5) Back up the configuration file that has been set up.

⇒ "7.13 Backing Up Configuration File"

(6) Press the RESET button.

⇒ The machine is reset, so that the file that has been set up is effective.

◆ SUPPLEMENTARY NOTE ◆

If there is any other configuration item to be set up, do not press the RESET button. The RESET button should be pressed after all the setups are finished.
7.2 SYSTEM (IRSET.CFG)

Of the setup items of SYSTEM, some are only supported for the IDT type (IDT connection and CR-IR348CL connection). For the machine of the IDT type, items marked by “❍” in the “IDT type” column shown in “7.2.1 List of Setup Items for SYSTEM (IRSET.CFG)” should only be set.

List of SYSTEM Configuration File Setup Items

1. SYSTEM
   1. IDT: System Type
   2. FNT: FONT (LANGUAGE)
   3. IPS: IP Address (CPU90E) (Length=15)
   4. IPI: IP Address (CPU90F) (Length=15)
   5. ILA: IDT Network Port
   6. SCD: System Code (Length=2)
   7. SMJ: System Name (Length=6)
   8. SID: System ID (Length=1)
   9. SFC: Manual Sensitivity Setting (CSL Type)
   10. SFD: Manual Sensitivity Default (CSL Type)
   11. LGR: Logical Reading (CSL Type)
   12. XRY: OverXray Flag
   13. U_MF: User UTILITY Multi-Frame Button Control
   14. SS1: Screen Save Timer
   15. ITV: Time Put at Each Image Store for Accept Reprinting (E-IF)
   16. CPS: The Number of Sheets of Continues Image Store (E-IF)
   17. ID_EDR: Edr Mode Variation (CSL Type)
   18. ID_FUNC: Function Setting (CSL Type)
   19. ID_FILING: Filing Mode
   20. ID_BIRTH: Birthday Format (CSL Type)
   21. ID_SEARCH: Search Key (CSL Type)
   22. ID_LENGTH: Patient's ID Length (CSL Type)
   23. ID_PADDING: Patient's ID Padding method (CSL Type)
   24. RECEPT_LENGTH: Reception No. Length (CSL Type)
   25. RECEPT_PADDING: Reception No. Padding method (CSL Type)
   26. EXAM_LENGTH: Examination No. Length (CSL Type)
   27. EXAM_PADDING: Examination No. Padding method (CSL Type)
   28. IFT: Reserve
   29. PRO: Function Protect
   30. SF1: Read Sensitivity Semi-h
   31. SF2: Read Sensitivity High
   32. GRP: Film Sorting Group Code
   33. PTR: FilmChar1/MenuName Start Pointer
   34. UNQ: Film Sort Unique Code
   35. PCD: I/F Pixel Clock Rate for DMS
   36. PCL: I/F Pixel Clock Rate for LP
   37. C1M: IP Size Code Setting
   38. EBK: EDR Backup Flag
   39. EBA: EDR Backup Server Address (Length=15)
   40. EM1,2,3,4,5: EDR Backup Menu Code (Length=4)
   41. U_LP: The Following Buttons & Icon Control (FOR OEM)
   42. ID_AP: Image Reversal Mode Variation (CSL Type)
   43. ID_DST: Distribution Code Setting
   44. UID_STI: UID Issuance Type
   45. DEF_DENSITY: Image Density Device Default
   46. JSSTFY: Right/Left justify of long character type
   47. HQ_FUNC: HQ Function Setting
   48. DRC_FUNC: DRC Function Setting
   49. ID_INFO_TYPE: ID info. Type(CSL Type)
   50. ID_CODE_SET: ID info. code set (CSL Type:ID-ONLINE)
   51. SSS: Select Screen Save Display
   52. DST_PADDING: Distribution Code Padding method
   53. ENV: Equipment name for version display (Max 9 character)
   54. UID: UID Issuance
   55. ID_RET: Select retrieve key input timing
   56. EXAM: Examination Number Field
   57. L2430: Logical reading (15cm*30cm size) of 24cm*30cm IP
   58. PN_DC: DICOM COMPOSITION
   59. PN_DD: DICOM COMPONENT DELIMITER
   60. PN_FDM: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   61. PN_FCS1: FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
   62. PN_FCS2: FINP COMPONENT DELIMITER FOR SINGLE BYTE REPRESENTATION
   63. PN_FCS3: FINP COMPONENT DELIMITER FOR SINGLE BYTE REPRESENTATION
   64. PN_FCS4: FINP COMPONENT DELIMITER FOR SINGLE BYTE REPRESENTATION
   65. PN_FCS5: FINP COMPONENT DELIMITER FOR SINGLE BYTE REPRESENTATION
   66. PN_FCM1: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   67. PN_FCM2: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   68. PN_FCM3: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   69. PN_FCM4: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   70. PN_FCM5: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   71. PN_FCM6: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   72. PN_FCM7: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   73. PN_FCM8: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   74. PN_FCM9: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   75. PN_FCM10: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   76. PN_FCM11: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   77. PN_DD: DICOM COMPONENT DELIMITER
   78. PN_FCM12: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   79. PN_FCM13: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
   80. BCR: BCR TYPE
   81. LIM810: 8*10/18*24 single format output film
   82. FLMW: Film size confirm window open
**NOTE**

Be sure to observe the LENGTH (digits) requirements specified for the following items. If a wrong LENGTH is used, the setup results in error, so that the machine may not operate properly.

- 3.IPS: IP Address (CPU90E) (Length=15)
- 4.IPI: IP Address (CPU90F) (Length=15)
- 40.EBA: EDR Backup Server Address (Length=15)
- 41.EM1,2,3,4,5: EDR Backup Menu Code (Length=4)
### 7.2.1 List of Setup Items for SYSTEM (IRSET.CFG)

#### System Setup (Item Numbers 1-12)

<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>○</td>
<td>IDT</td>
<td>1</td>
<td>IDT connection type/CSL function incorporated type changeover</td>
<td>0: CSL 1: IDT</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>○</td>
<td>IPS</td>
<td>172.16.0.1</td>
<td>IP address for standard LAN (CPU90E)</td>
<td>Its IP address should be described in fifteen digits stuffed to the left. If the number of digits is less than 15, space should be added to the end to meet the 15-digit requirement.</td>
<td>LENGTH = 15</td>
</tr>
<tr>
<td>4</td>
<td>○</td>
<td>IPI</td>
<td>172.16.0.2</td>
<td>IP address for LAN board (CPU90F)</td>
<td>• Its IP address should be described in fifteen digits stuffed to the left. If the number of digits is less than 15, space should be added to the end to meet the 15-digit requirement. • Even if the CPU90F board is not available as an option, be sure to set its IP address.</td>
<td>LENGTH = 15</td>
</tr>
<tr>
<td>5</td>
<td>○</td>
<td>ILA</td>
<td>1</td>
<td>ID acquisition destination LAN Setup of destination to which ID-T is connected.</td>
<td>0: standard LAN (CPU90E) 1: option LAN (CPU90F/LAN90B)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>○</td>
<td>SCD</td>
<td>D1</td>
<td>Unit code (2 characters)</td>
<td>D1: CR-IR341 D2: CR-IR342</td>
<td>Change prohibited.</td>
</tr>
<tr>
<td>7</td>
<td>○</td>
<td>SMJ</td>
<td>5000</td>
<td>Unit character string (6 characters)</td>
<td>5000: CR-IR341 5000R: CR-IR342</td>
<td>Change prohibited.</td>
</tr>
<tr>
<td>8</td>
<td>○</td>
<td>SID</td>
<td>A</td>
<td>Reader number</td>
<td>A – Z</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>SFC</td>
<td>0</td>
<td>Manual sensitivity setup/menu setup</td>
<td>0: OFF 1: ON (Standard,Semi-High-Speed) 2: ON (Standard,Semi-High-Speed, High-Speed)</td>
<td>*</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>SFD</td>
<td>0</td>
<td>Manual sensitivity default setup</td>
<td>0: Standard 1: Semi-High-Speed 2: High-Speed 3: Menu Default (=Memory)</td>
<td>*</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>LGR</td>
<td>0</td>
<td>Logical reading setup</td>
<td>0: OFF 1: ON</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>○</td>
<td>XRY</td>
<td>0</td>
<td>Overexposure handling</td>
<td>0: LOG &amp; MESSAGE 1: LOG ONLY 2: NONE</td>
<td>Caution: Change</td>
</tr>
</tbody>
</table>

✽: If “SFC” or “LGR” is ON, ID/Menu cannot be inputted after screen preview.
### ID Setup (Item Numbers 13-28)

<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>✘</td>
<td>U_MF</td>
<td>0</td>
<td>Multiframe (2-in-1/4-in-1) key ON/OFF in UTL</td>
<td>0: OFF 1: ON</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>✘</td>
<td>SS1</td>
<td>5</td>
<td>Screen saver timer setting (variable in 1 minute increments) When a cassette is inserted, the screen saver, even if activated, is automatically disabled.</td>
<td>0 — 60 [min] (0: screen saver disabled).</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>✘</td>
<td>ITV</td>
<td>30</td>
<td>Wait time for DMS E-I/F reoutput request interrupt</td>
<td>0-60 [sec]</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>✘</td>
<td>CPS</td>
<td>5</td>
<td>Consecutive storage process count for DMS E-I/F reoutput request interrupt</td>
<td>0-10 [sheets]</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>✘</td>
<td>ID_EDR</td>
<td>0</td>
<td>EDR setup range Used to select the display range for EDR process mode key.</td>
<td>0: AUTO, SEMI, FIX 1: AUTO, SEMI, FIX, SEMI-X 2: AUTO, SEMI, FIX, SEMI-X, MANUAL</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>✘</td>
<td>ID_FILING</td>
<td>0</td>
<td>FILING setup range</td>
<td>0: DISABLE 1: OFF, ON 2: OFF, ON*, ON</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>IDFUNC</td>
<td>10</td>
<td>Function setup enabled/disabled</td>
<td>0: DISABLE 1: ENABLE</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>ID_FILMC</td>
<td>2</td>
<td>FILM character setting enabled/disabled</td>
<td>0: OFF 1: ON</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>ID_SEARCH</td>
<td>0</td>
<td>Search key type for ID online (TYPE_B) Used to select either ID number, receipt number, or examination number to be displayed as a search key during connection with HIS.</td>
<td>0: ID# 1: ID#, RECEPT# 2: ID#, EXAM# 3: ID#, RECEPT#, EXAM#</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>ID_LENGTH</td>
<td>10</td>
<td>Setting of ID number character string length</td>
<td>1 — 10: ID_INFO_TYPE=0 1 — 64: ID_INFO_TYPE=1</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>ID_PADDING</td>
<td>10</td>
<td>Setting of ID number padding scheme</td>
<td>0: Pad with space to the head (Ex.&quot; 123456&quot;) 1: Pad with zero to the head (Ex.&quot;00123456&quot;) 2: Pad with space to the tail (Ex.&quot;123456&quot;) 3: Pad with zero to the tail (Ex:&quot;123456700&quot;)</td>
<td></td>
</tr>
<tr>
<td>Item number</td>
<td>IDT type</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters</td>
<td>Remarks</td>
</tr>
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<td>------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 25          | RECEPT_LENGTH | 5     |               | Setting of receipt number character string length | 1 — 5: ID_INFO_TYPE=0  
1 — 16: ID_INFO_TYPE=1                                                      |                                                                          |
| 26          | RECEPT_PADDING  | 0     |               | Setting of receipt number padding scheme         | 0: Pad with space to the head  
1: Pad with zero to the head  
2: Pad with space to the tail  
3: Pad with zero to the tail  
(Ex.: "123")  
(Ex.: "00123")  
(Ex.: "123")  
(Ex.: "12300")                                                      |                                                                          |
| 27          | EXAM_LENGTH     | 10    |               | Setting of examination number character string length | 1 — 10: ID_INFO_TYPE=0  
1 — 16: ID_INFO_TYPE=1                                                      |                                                                          |
| 28          | EXAM_PADDING    | 0     |               | Setting of examination number padding scheme     | 0: Pad with space to the head  
1: Pad with zero to the head  
2: Pad with space to the tail  
3: Pad with zero to the tail  
(Ex.: "1234567")  
(Ex.: "0001234567")  
(Ex.: "1234567")  
(Ex.: "1234567000")                                                      |                                                                          |
### I/F Setup (Item Numbers 29-82)

<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td></td>
<td>IFT</td>
<td>0</td>
<td>I/F type</td>
<td>RESERVE</td>
<td>No change required.</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>PRO</td>
<td>0</td>
<td>Function image protect (image protect on HIC)</td>
<td>0: NONE 1: TS (Temporary subtraction) 2: ES (Energy subtraction) 3: MS (Multi-layer tomography) 4: MX (Multi-integrated processing) 5: WS (Whole spine) 6: PS (IVP) 7: TM (Tomography) 8: TX (Temporary subtraction, overall processing) 9: WX (Whole spine, overall processing) 10: EX (Energy subtraction, overall processing) 11: AS (Inter-image operation) 99: ALL</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td></td>
<td>SF1</td>
<td>50</td>
<td>Sensitivity median shift 1 (relatively high sensitivity)</td>
<td>0 — 299</td>
<td>No change required.</td>
</tr>
<tr>
<td>32</td>
<td></td>
<td>SF2</td>
<td>100</td>
<td>Sensitivity median shift 2 (high sensitivity)</td>
<td>0 — 299</td>
<td>No change required.</td>
</tr>
<tr>
<td>33</td>
<td></td>
<td>GRP</td>
<td>0</td>
<td>Group information setup method for sorting</td>
<td>0: space (10) 1: space (2) + department name (8) 2: department name (4) + menu (6) 3: department name (4) + film mark (6) 4: unit code (1) + space (9) 5: space (4) + MPM (4) + space (2) 6: space (4) + film mark (6) 7: department name (4) + MPM (4) + space (2)</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td>PTR</td>
<td>0</td>
<td>Position of film mark or menu character string outputted with GRP (valid when GRP = 2, 3, 6)</td>
<td>0 — F (hexadecimal notation)</td>
<td>Indent</td>
</tr>
<tr>
<td>35</td>
<td></td>
<td>UNQ</td>
<td>0</td>
<td>Unique information setup method for sorting</td>
<td>0: Space (10) 1: patient ID number (10)</td>
<td>Indent</td>
</tr>
<tr>
<td>36</td>
<td></td>
<td>PCD</td>
<td>1</td>
<td>Clock during DMS-I/F output</td>
<td>0: 1 sec 1: 2 sec</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
<td>PCL</td>
<td>0</td>
<td>Clock during LP-I/F output</td>
<td>0: 1 sec (&lt; 60m) 1: 2 sec (&gt; 60m)</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
<td>CIM</td>
<td>0</td>
<td>DMS output code selection when &quot;inch&quot; and &quot;metric&quot; physical sizes differ</td>
<td>0: Inch 1: Metric</td>
<td>It should be set according to the processing at the DMS.</td>
</tr>
<tr>
<td>39</td>
<td></td>
<td>EBK</td>
<td>0</td>
<td>Selection of a menu to transmit EDR backup information to the IP address that is set with EBA</td>
<td>0: OFF (not transmitted) 1: MENU (menu selected with EM is selected) 2: Full (all menus)</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td>EBA</td>
<td>0</td>
<td>Transfer destination IP address for the transmission of EDR backup data through a network The transmission port is fixed at 90E.</td>
<td>Transfer destination IP address The IP address should be described in fifteen digits stuffed to the left. If the number of digits is less than 15, space should be added to the end to meet the 15-digit requirement.</td>
<td>LENGTH =15</td>
</tr>
<tr>
<td>Item number</td>
<td>IDT type</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters</td>
<td>Remarks</td>
</tr>
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</tr>
<tr>
<td>41</td>
<td>☜</td>
<td>EM1</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation. LENGTH = 4</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>☜</td>
<td>EM2</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation. LENGTH = 4</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>☜</td>
<td>EM3</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation. LENGTH = 4</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>☜</td>
<td>EM4</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation. LENGTH = 4</td>
<td></td>
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<tr>
<td>41</td>
<td>☜</td>
<td>EM5</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation. LENGTH = 4</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>☜</td>
<td>U_LP</td>
<td>1</td>
<td>OEM printer setting</td>
<td>0: OFF 1: ON</td>
<td>No change required.</td>
</tr>
<tr>
<td>43</td>
<td></td>
<td>ID_AP</td>
<td>0</td>
<td>Image reversal mode (orientation) setting range</td>
<td>0: L-R reversal 1: T-B reversal 2: L-R,T-B reversal 3: L-R reversal/90-deg.Rotation 4: L-R,T-B reversal/90-deg.Rotation</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>☜</td>
<td>ID_DST</td>
<td>0</td>
<td>Distribution code setting</td>
<td>0: DISABLE 1: ENABLE</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>☜</td>
<td>UID_STI</td>
<td>3</td>
<td>Setting of study instance UID type</td>
<td>Setting used to issue study information for QA-DICOM output. Used to customize, on a hospital-by-hospital basis, how to bind images per study on the QA side</td>
<td>0: &lt;org root&gt;.2.0.&lt;Private Image UID’ (IDT Type) 1: &lt;org root&gt;.2.1.&lt;MAC Address&gt;.&lt;Time Stamp&gt;.&lt;Unique ID&gt; (CSL Type) 0: &lt;org root&gt;.2.1.&lt;Accession Number’ 2: &lt;org root&gt;.2.2.&lt;Study Date + Modality(CR)&gt;.&lt;Accession Number’ 3: &lt;org root&gt;.2.3.&lt;Study Date + Modality(CR)&gt;.&lt;Patient ID’ 4: &lt;org root&gt;.2.4.&lt;Study Date&gt; &lt;Patient ID’2&gt; &lt;Requesting Service’&gt;</td>
</tr>
<tr>
<td>46</td>
<td>☜</td>
<td>DEF_DENSITY</td>
<td>0</td>
<td>Default setting of image processing density</td>
<td>Used to designate the machine’s default processing density. This setting is effective only when a setting other than 0 or 1 is registered from IDT3 or the like (in cases where IDT3, which cannot designate the processing density, is connected via IDT4, or where the processing density is not designated due to a software bug of IDT4). Normally, the value that is set on the IDT side or by the internal menu of the CSL type is effective, so its initial value need not be changed.</td>
<td>0: Standard Density 1: High Quality Density</td>
</tr>
<tr>
<td>47</td>
<td>☜</td>
<td>JSTFY</td>
<td>0001000000001111</td>
<td>Definition of right or left justification for long format</td>
<td>0: Left justified; 1: Right justified &lt;Corresponding to each digit of the variable part&gt; a: Patient ID b: Patient name c: Exposure menu name d: Examination number e: Department name (alphanumeric) f-i: Reserved (default: left justified) m-p: Reserved (default: right justified) Common to DMS output, CRT display, and FILM output.</td>
<td></td>
</tr>
<tr>
<td>Item number</td>
<td>IDT type</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters</td>
<td>Remarks</td>
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<td>---------------</td>
<td>-------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>48</td>
<td></td>
<td>HQ FUNC</td>
<td>1</td>
<td>HQ function setting</td>
<td>0: disabled; 1: enabled</td>
<td>No change required except for USA</td>
</tr>
<tr>
<td>49</td>
<td></td>
<td>DRC FUNC</td>
<td>1</td>
<td>DRC function setting</td>
<td>0: disabled; 1: enabled</td>
<td>No change required except for USA</td>
</tr>
<tr>
<td>50</td>
<td></td>
<td>ID INFO TYPE</td>
<td>0</td>
<td>ID# input type for CSL type</td>
<td>0: Stand. 1: Long</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td></td>
<td>ID CODE SET</td>
<td>0</td>
<td>Acceptable character set during ID online for CSL type</td>
<td>0: CP850 1: ISO8859-1</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td></td>
<td>SSS</td>
<td>0</td>
<td>Screen saver selection</td>
<td>0: Blank screen (Screen saver is disabled) 1: Pictures (Multiple pictures are displayed at regular intervals.)</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td></td>
<td>DST PADDING</td>
<td>2</td>
<td>Distribution code padding setting</td>
<td>0: Pad with space to the head (EX.&quot;   1234&quot;) 1: Pad with zero to the head (EX.&quot;00001234&quot;) 2: Pad with space to the tail (EX.&quot;1234   &quot;) 3: Pad with zero to the tail (EX.&quot;12340000&quot;)</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>ENV</td>
<td>CR-IR341</td>
<td></td>
<td>Machine type display switching setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td></td>
<td>ID RET</td>
<td>0</td>
<td>Patient information acquisition setting during ID online</td>
<td>0: The patient ID is automatically cleared when the cassette is set or when the menu select key is pressed, and the patient information is acquired from the online destination. 1: The patient ID is cleared when it is necessary to change the patient ID, and the patient information is acquired from the online destination.</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td></td>
<td>UID</td>
<td>0</td>
<td>Study/Series information numbering setting</td>
<td>&lt;CSL type&gt; 0: Study/Series information is not numbered on the reader side. 1: Study/ Series information is numbered on the reader side. &lt;IDT type&gt; 0: Study/ Series information is not numbered on the IDT side. 1: Study/ Series information is numbered on the IDT side.</td>
<td></td>
</tr>
<tr>
<td>Item number</td>
<td>IDT type</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters/Remarks</td>
<td></td>
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<td>------------------------------------------------------------</td>
<td>---------------------------------------------</td>
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<tr>
<td>57</td>
<td>EXAM</td>
<td></td>
<td>0</td>
<td>Examination/receipt number display setting</td>
<td>0: Examination number</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Receipt number</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>L2430</td>
<td></td>
<td>0</td>
<td>24x30 cm IP pantomo logical reading setting</td>
<td>0: Pantomo size (15x30 cm) reading disabled</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Pantomo size (15x30 cm) reading enabled</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>ID_EXAM</td>
<td></td>
<td>0</td>
<td>CSL-type examination number display setting</td>
<td>0: Examination number display/input disabled</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Examination number display/input enabled</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>ID_DEPT</td>
<td></td>
<td>0</td>
<td>CSL-type department name display setting</td>
<td>0: Department name display/input disabled</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Department name display/input enabled</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>DEPT_LENGTH</td>
<td>8</td>
<td></td>
<td>CSL-type department name character count setting</td>
<td>1- 8: ID_INFO_TYPE=0</td>
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<td></td>
<td></td>
<td></td>
<td>1-64: ID_INFO_TYPE=1</td>
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</tr>
<tr>
<td>62</td>
<td>MES_LENGTH</td>
<td>1</td>
<td></td>
<td>CSL-type communication message character string length setting during ID online</td>
<td>0: Maximum length of send/receive message characters is 128 bytes</td>
<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>1: Maximum length of send/receive message characters is 256 bytes</td>
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</tr>
<tr>
<td>63</td>
<td>SCS</td>
<td></td>
<td>0</td>
<td>Character code of special symbols with UK/US language setting (FNT=1) (Only for Base on DICOM setting)</td>
<td>0: ISO-IR 6 (ISO646)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: ISO-IR 100 (ISO8859-1)</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>PN_CS</td>
<td></td>
<td>0</td>
<td>Setting for converting patient name components from FINP to DICOM</td>
<td>0: Not converted</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Converted</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>PN_FDS</td>
<td></td>
<td>0</td>
<td>Setting of delimiter for patient name components in FINP (patient name in languages other than Japanese)</td>
<td>0: Space &quot; &quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Caret &quot;^^&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2: Comma &quot;,&quot;</td>
<td></td>
</tr>
<tr>
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<td>PN_FDM</td>
<td></td>
<td>0</td>
<td>Setting of delimiter for patient name components in FINP (patient name in Japanese language)</td>
<td>0: Space &quot; &quot;</td>
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<td></td>
<td></td>
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<td></td>
<td>1: Caret &quot;^^&quot;</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>2: Comma &quot;,&quot;</td>
<td></td>
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<tr>
<td>67</td>
<td>PN_FCS1</td>
<td>&quot;F&quot;</td>
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<td>Setting of patient name components (for one component in FINP)</td>
<td>F: Family name</td>
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<td></td>
<td>G: Given name</td>
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<td></td>
<td></td>
<td></td>
<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td>S: Suffix</td>
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<tr>
<td>68</td>
<td>PN_FCS2</td>
<td>&quot;FG&quot;</td>
<td></td>
<td>Setting of patient name components (for two components in FINP)</td>
<td>F: Family name</td>
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</tr>
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<td></td>
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<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td>S: Suffix</td>
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<td>IDT type</td>
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<td>Initial value</td>
<td>Setup description</td>
<td>Parameters/Remarks</td>
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</tr>
<tr>
<td>69</td>
<td>☑</td>
<td>PN_FCS3</td>
<td>&quot;FGM&quot;</td>
<td>Setting of patient name components (for three components in FINP)</td>
<td>F: Family name</td>
<td></td>
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<td></td>
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<td></td>
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<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td></td>
<td>S: Suffix</td>
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</tr>
<tr>
<td>70</td>
<td>☑</td>
<td>PN_FCS4</td>
<td>&quot;FGMP&quot;</td>
<td>Setting of patient name components (for four components in FINP)</td>
<td>F: Family name</td>
<td></td>
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<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td></td>
<td>S: Suffix</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>☑</td>
<td>PN_FCS5</td>
<td>&quot;FGMPS&quot;</td>
<td>Setting of patient name components (for five components in FIN)</td>
<td>F: Family name</td>
<td></td>
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<td></td>
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<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td></td>
<td></td>
<td>S: Suffix</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>☑</td>
<td>PN_FCM1</td>
<td>&quot;F&quot;</td>
<td>Setting of multi-byte patient name components (for one component in FINP)</td>
<td>F: Family name</td>
<td></td>
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<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td>S: Suffix</td>
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</tr>
<tr>
<td>73</td>
<td>☑</td>
<td>PN_FCM2</td>
<td>&quot;FG&quot;</td>
<td>Setting of multi-byte patient name components (for two components in FINP)</td>
<td>F: Family name</td>
<td></td>
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<td></td>
<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td>S: Suffix</td>
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<tr>
<td>74</td>
<td>☑</td>
<td>PN_FCM3</td>
<td>&quot;FGM&quot;</td>
<td>Setting of multi-byte patient name components (for three components in FINP)</td>
<td>F: Family name</td>
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<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>S: Suffix</td>
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<tr>
<td>75</td>
<td>☑</td>
<td>PN_FCM4</td>
<td>&quot;FGMP&quot;</td>
<td>Setting of multi-byte patient name components (for four components in FINP)</td>
<td>F: Family name</td>
<td></td>
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<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td></td>
<td>S: Suffix</td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>☑</td>
<td>PN_FCM5</td>
<td>&quot;FGMPS&quot;</td>
<td>Setting of multi-byte patient name components (for five components in FINP)</td>
<td>F: Family name</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td></td>
<td>S: Suffix</td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>☑</td>
<td>PN_DD</td>
<td>1</td>
<td>Setting of delimiter for patient name components in DICOM</td>
<td>0: Space &quot; &quot;</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Caret &quot;^&quot;</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2: Comma &quot;,&quot;</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>☑</td>
<td>PN_DC</td>
<td>&quot;FGMPS&quot;</td>
<td>Setting of patient name components in DICOM</td>
<td>F: Family name</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G: Given name</td>
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<td>M: Middle name</td>
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<td>P: Prefix</td>
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<td>S: Suffix</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td></td>
<td>MON</td>
<td>1</td>
<td>Monitor display mode setting</td>
<td>0: Type 1 (old type: LUT = linear)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Type 2 (new type: LUT = nonlinear; change in standardized image display mode)</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td>BCR</td>
<td>0</td>
<td>Barcode reader type setting</td>
<td>0: BCR5242-STB (DENSEI)(~#5000)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: NFT7175/F01RL (OPTOELECTRONICS)(#5001~)</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td></td>
<td>LIM810</td>
<td>0</td>
<td>Designation of film size supported by the printer</td>
<td>0: any (either 14&quot;x17&quot;, B4, or 8&quot;x10&quot;)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Only 8&quot;x10&quot;</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td></td>
<td>FLMW</td>
<td>1</td>
<td>Setting to determine whether to display a window that requests the user to replace the film tray, when DRY PIX is used</td>
<td>0: No (output instruction is reserved without displaying a window)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: Yes (window displayed)</td>
<td></td>
</tr>
</tbody>
</table>

TR185392.EPS
### Detailed Explanation of SYSTEM (IRSET.CFG) Setup Items

Items that are not fully described in “List of SYSTEM Setup Items” are explained in detail below. They should be referred to as needed.

#### “3. IPS” (standard LAN address)

The IP address of the CPU90E board that comes standard with the CR-IR341. “172.16.0.1 △ △ △ △ △” is set as its initial value (△ denotes half-width space). When the CR-IR341 is connected to a network for operation, it is necessary to determine a unique (non-duplicate) IP address over the single network and change it to that address.

Typically, because the IP address is also determined as the system configuration is determined, the IP address assigned to the CPU90E board should be checked.

#### “4. IPI” (LAN board address)

The IP address of the CPU90F/LAN90B board that comes as an option with the CR-IR341. “172.16.0.2 △ △ △ △ △” is set as its initial value (△ denotes half-width space). When the CR-IR341/CR-IR361 is connected to a network for operation, it is necessary to determine a unique (non-duplicate) IP address over the single network and change it to that address.

Typically, because the IP address is also determined as the system configuration is determined, the IP address assigned to the CPU90F board should be checked. Even if the CPU90F board is not available, it should always be set; thus, an IP address should be assigned to it.

#### “5. ILA” (selection of board for acquisition from IDT)

The board that acquires ID information from the IDT is switched by a value of “0” or “1”.

- “0” : Standard LAN board (CPU90E board)
- “1” : Optional LAN board (CPU90F board/LAN90B board)

The setup of “5. ILA” is effective for the IDT type only; thus, for the CSL type, its initial value should be used as is.

#### “8. SID” (reader number)

Symbol (number), from A through Z, used when several readers (FCR series machines, including FCR3000) are installed. A unique symbol is assigned to each of the readers.

Because this symbol is appended to the first digit of the image number, it can be seen from which reader the image data has been read.

#### “9. SFC” (manual sensitivity setup selection menu)

Used to determine whether manual setting of sensitivity is enabled.

- 0: OFF (Manual sensitivity setting is disabled.)
- 1: Standard/Semi-High-Speed can be selected.
- 2: Standard/Semi-High-Speed/High-Speed can be selected.
**“10. SFD” (default value used when manual sensitivity setting is enabled)**

The default value is switched when manual sensitivity setting is enabled in “9. SFC”.

- 0: Standard
- 1: Semi-High-Speed
- 2: High-Speed
- 3: Menu Default (The content previously selected in the menu is stored in memory.)

**“14. SS1” (screen saver timer)**

The time until the screen saver is activated. Its initial value is “5” (minutes), and its setting may be changed between 0 and 60 (in minutes).

When it is set to “0”, the screen saver is disabled.

◊ **SUPPLEMENTARY NOTE◊**

Screen saver: In order to protect burning of the operation panel screen, this function turns OFF the screen after a certain period of time has elapsed with no user operation.

**“17. ID_EDR” (EDR setup range)**

The selection range for AUTO/SEMI/FIX/SEMI-X/MANUAL options of EDR function is switched.

- 0: AUTO/SEMI/FIX can be selected.
- 1: AUTO/SEMI/FIX/SEMI-X can be selected.
- 2: AUTO/SEMI/FIX/SEMI-X/MANUAL can be selected.

**“18. ID_FILING” (selection menu for image resolution during OD-F filing)**

The menu for selecting the image resolution during OD-F filing is switched.

- 0: DISABLE (always saved in high resolution)
- 1: OFF/ON selectable
- 2: OFF/ON*/ON

ON*: The HQ image is reduced to the standard before transmission.

ON: The image is transmitted without reduction. For example, the HQ image is transmitted as is.

**“47. JSTFY” (definition of right or left justification for long format)**

It is valid when “1. YES (long format used)” is set for “40. LTC” in “PRINT (FILMFMT.CFG).”

Here, a 16-digit variable value (0: left justified; 1: right justified) is set. Each of the 16 digits is assigned to “a” (patient name), “b” (patient name), “c” (exposure menu name), “d” (examination number), “e” (department name), and “f”-“p” (reserved).

By default, the first five digits are “00010”. Thus, “a” (patient ID), “b” (patient name), and “c” (exposure menu name) are left justified; “d” (examination number) is right justified; and “e” (department name) is left justified.
“50. ID_INFO_TYPE” (ID# input type for CSL type)
If ID# input or type C of ID online is used with the CSL type, “1: Long” should be set.
If type C of ID online is not used, “1: Long” should not be set because it may cause trouble.

◇ SUPPLEMENTARY NOTE ◇
If the long type format is used with ID online, the host needs to support information type C.

“51. ID_CODE_SET” (acceptable character set for the CSL-type magnetic card and during ID online)
It should be set according to the character code used for the patient ID.
• CP850: Character code specified by IBM. It includes special characters (such as umlaut) used in Europe.
• ISO8859-1: Character code specified by ISO.

“56. UID” (Study/Series information numbering setting): Software version A10 or later
If the Study/Series information is not numbered on the IDT, or no numbering is performed, it is set to determine whether the Study/Series information is to be numbered or not on the machine.
• “0”: Numbering is not performed on the machine.
• “1 (default value)”: Numbering is performed on the machine (according to the format that is set in “45. UID_STI”).
If numbering is performed on the IDT, the Study/Series information numbered on the IDT is effective anyway.
“64. PN_CS” through “78. PN_DC” (software version A12 or later)

The following settings are made regarding the patient name information for the image that is subject to DICOM output (Base on DICOM) to QA-WS or CR-IR348CL.

- Definition of components of the name (Family name, Given name, Middle name, Prefix, Suffix).
- Delimiter between components

<DICOM output with FINP input intact>
- PN_CS=0
  Name components and delimiters are not converted.
  Settings for PN_FDS/PN_FDM/.../PN_DC are ignored.

<Separated by delimiter when DICOM output is generated>
- PN_CS=1
  Name components and delimiters are converted.
  Settings for PN_FDS/PN_FDM/.../PN_DC are effective. Cases where the setting for each of the items is at its initial value are described below.

- PN_FDS=0
  Space is handled as a delimiter.

- PN_FDM=0
  Full-width space is handled as a delimiter for a patient name in Kanji.

- PN_FCS1=F
- PN_FCS2="FG"
- PN_FCS3="FGM"
- PN_FCS4="FGMP"
- PN_FCS5="FGMPS"
  PN_FCS1 through PN_FCS5 set components of a name (single-byte). If PN_FCS1 through PN_FCS5 are set as described above, they are defined as follows.

PN_FCS1: If there is only one component, it is interpreted as Family name. Assume that the patient name is “Fuji Taro”. Then, if only “Fuji” is entered, “Fuji” is interpreted as Family name.

PN_FCS2: If there are two components, they are interpreted as Family name and Given name. Assume that the patient name is “Fuji Taro”. Then, if “Fuji Taro” is entered, “Fuji” is interpreted as Family name and “Taro” as Given name (when the delimiter is a half-width space).

PN_FCS3: Assume that the patient name is “Rev. John M Smith Ph. D.”. Then, if “Smith John M” is entered, “Smith” is interpreted as Family name, “John” as Given name, and “M” as Middle name (when the delimiter is a half-width space).
PN_FCS4: If there are four components, they are interpreted as Family name, Given name, Middle name, and Prefix. Assume that the patient name is “Rev. John M Smith Ph. D.”. Then, if “Smith John M Rev. Ph. D.” is entered, “Smith” is interpreted as Family name, “John” as Given name, “M” as Middle name, and “Rev.” as Prefix (when the delimiter is a half-width space).

PN_FCS5: If there are five components, they are interpreted as Family name, Given name, Middle name, Prefix, and Suffix. Assume that the patient name is “Rev. John M Smith Ph. D.”. Then, if “Smith John M Rev. Ph. D.” is entered, “Smith” is interpreted as Family name, “John” as Given name, “M” as Middle name, “Rev.” as Prefix, and “Ph. D.” as Suffix (when the delimiter is a half-width space).

• PN_FCM1=F
• PN_FCM2=“FG”
• PN_FCM3=“FGM”
• PN_FCM4=“FGMP”
• PN_FCM5=“FGMPS”

PN_FCM1 through PN_FCM5 set components of a name (double-byte). If PN_FCM1 through PN_FCM5 are set as described above, they are defined as follows.

PN_FCM1: If there is only one component, it is interpreted as Family name.
PN_FCM2: If there are two components, they are interpreted as Family name and Given name.
PN_FCM3: If there are three components, they are interpreted as Family name, Given name, and Middle name.
PN_FCM4: If there are four components, they are interpreted as Family name, Given name, Middle name, and Prefix.
PN_FCM5: If there are five components, they are interpreted as Family name, Given name, Middle name, Prefix, and Suffix.

• PN_DD=1 [change prohibited]
  It defines the delimiter for the patient name when DICOM output is generated.

• PN_DD=“FGMPS” [change prohibited]
  It defines the arrangement of the components of the patient name when DICOM output is generated.
7.2.2 For Installation by Copying Configuration Files

If several CR-IR341 machines are installed within the same network, installation can be done by copying the setup contents of one machine to another. Note, however, that the settings should be changed as appropriate for the following three items of SYSTEM.

- **Items that Should be Changed for Second and Subsequent Machines**
  
  - **3. IPS: Standard LAN IP address**
    
    IP addresses that are not duplicated within the same network should be assigned.
  
  - **4. IPI: LAN board IP address**
    
    IP addresses that are not duplicated within the same network should be assigned.
  
  - **8. SID: Reader number**
    
    Reader numbers that are not duplicated within the same network should be assigned.
7.3 PRINT (FILMFMT.CFG)

Settings are common both to the IDT type (IDT connection and CR-IR348CL connection) and CSL type.

**List of PRINT Setup Items**

### 2.PRINT

- 1.BF: Print barcode
- 2.EF: Print EDR mode
- 3.IF: Print image process condition
- 4.CF: Print L,S,CS,SS condition
- 5.EF: Print shot time
- 6.HN: Institution name (Max Length=60)
- 7.HP: 2byte code character (Japanese, Korean) Institution name (Max Length=30)
- 8.GF: Print set process
- 9.GJ: Print engineer ID
- 10.MF: Print Menu
- 11.A1: Maximum age of monthly representation
- 12.A2: Maximum age of daily representation
- 13.TE: Trimming (mammo)
- 14.TE: Trimming (others)
- 15.CL: Representation of date
- 16.AB: Representation of age
- 17.FR1: Print image frame
- 18.FR2: Print image frame
- 19.FR4: Print image frame
- 20.CR: Print compression rate
- 21.MM: Margin
- 22.SG: Print Standard Image on 14*17, 14*14 film like HQ Image
- 23.HG: Size selection of 14*17, 14*14 film character (Single format)
- 24.OS: DR compression in reprint
- 25.RF: Print reverse mark
- 26.CE: Print 14*17, 14*14, 8*10 film character field
- 27.CS0: Character Area0 (Standard) horizontal size
- 28.CY0: Character Area0 (Standard) vertical size
- 29.CX1: Character Area1 (Standard) horizontal size
- 30.CY1: Character Area1 (Standard) vertical size
- 31.CL0: Character Area0 (Large) horizontal size
- 32.CL0: Character Area0 (Large) vertical size
- 33.CL1: Character Area1 (Large) horizontal size
- 34.CL1: Character Area1 (Large) vertical size
- 35.FD1417: 14*17, 14*14, B4, 8*10 film character field position & rotation
- 35.FD1417: 14*17, 14*14, B4, 8*10 film character field position & rotation
- 35.FD1843: 14*17, 14*14, B4, 8*10 film character field position & rotation
- 35.FD0810: 14*17, 14*14, B4, 8*10 film character field position & rotation
- 35.FD1008: 14*17, 14*14, B4, 8*10 film character field position & rotation
- 35.FD1417: 14*17, 14*14, B4, 8*10 film character field position & rotation
- 35.FD1417: 14*17, 14*14, B4, 8*10 film character field position & rotation
- 35.FC1: 14*17, 14*14, B4, 8*10 film character fields position & rotation
- 35.FC2: 14*17, 14*14, B4, 8*10 film character fields position & rotation
- 35.FC3: 14*17, 14*14, B4, 8*10 film character fields position & rotation
- 35.FC4: 14*17, 14*14, B4, 8*10 film character fields position & rotation
- 35.FC5: 8*10 film character fields position & rotation
- 35.FC6: 8*10 film character fields position & rotation
- 37.FRSC: No Print Scale
- 38.IN: Print film char2/examination number
- 39.EM: Image area move to the top of 14*17 film. (only for 15*30, 35*35, 43*43)
- 40.LTC: Long type character format
- 41.FRSC: No Print Scale

**NOTE**

Be sure to observe the LENGTH (digits) requirements specified for the following items. If a wrong LENGTH is used, the setup results in error, so that the machine may not operate properly.

- 6.HN: Institution name (Max Length=60)
- 7.HP: 2 byte code character (Japanese, Korean) Institution name (Max Length=30)
### Film Setup (Item Numbers 1-41)

<table>
<thead>
<tr>
<th>Item number</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BF</td>
<td>1</td>
<td>IP barcode display switching</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>EF</td>
<td>1</td>
<td>EDR mode display switching</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>IF</td>
<td>1</td>
<td>Image condition display switching</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>CF</td>
<td>1</td>
<td>Correction item display switching</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>ET</td>
<td>1</td>
<td>Exposure time display switching</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>HN</td>
<td>FUJI FILM HOSPITAL</td>
<td>Institution name</td>
<td>60Char</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>HP</td>
<td>9578 8E6D 8374 8343 8388 8380 9561 8940 8140 8140 8140 8140 8140 8140</td>
<td>Institution name in Kanji</td>
<td>S-JIS 30 Bytes (up to 15 Kanji characters)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>GF</td>
<td>1</td>
<td>Set processing information display switching</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>GJ</td>
<td>0</td>
<td>Menu character string display switching</td>
<td>0: NO 1: YES</td>
<td>Indent</td>
</tr>
<tr>
<td>10</td>
<td>MF</td>
<td>1</td>
<td>Menu character string display switching</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>A1</td>
<td>7</td>
<td>Upper-limit age in years for age display in months</td>
<td>0 — 99</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>A2</td>
<td>0</td>
<td>Upper-limit age in months for age display in days</td>
<td>0 — 12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>TH</td>
<td>0</td>
<td>Trimming amount (mammo) The trimming amount (mammo) for four sides of the IP image in HR is set.</td>
<td>0 — 25 (mm)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>TE</td>
<td>0</td>
<td>Trimming amount (other than mammo) The numeral value for trimming of four sides of the IP image in ST is set.</td>
<td>0 — 25 (mm)</td>
<td></td>
</tr>
<tr>
<td>Item number</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
<td>---------------</td>
<td>-------------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>16</td>
<td>AB</td>
<td>0</td>
<td>Age/birth date display switching</td>
<td>0: AGE 1: Date of Birth</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>FR1</td>
<td>0</td>
<td>14x17 film: 14x17, 14x14, 18x43 single image frame display 14x14 film: 14x14 single image frame display 8x10 film: 8x10 single image frame display</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>FR2</td>
<td>0</td>
<td>14x17 film: 18x43 LR/2on1 image frame display</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>FR4</td>
<td>0</td>
<td>14x17 film: 14&quot;x17&quot;, 18x43, 8x10 4on1 image frame display</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>CR</td>
<td>0</td>
<td>Compression ratio display switching Used to determine whether the compression ratio for the image for reoutput is display.</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>MM</td>
<td>0</td>
<td>Margin designation switching</td>
<td>0: image information dependent (default = transparent margin) 1: image information dependent (default = black margin) 2: fixed to transparent margin 3: fixed to black margin</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>SG</td>
<td>0</td>
<td>14x17/14x14 magnification mode</td>
<td>0: NO (Normal) 1: YES (Magnify)</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>HG</td>
<td>0</td>
<td>14x17 single character size on 14x17/14x14 film</td>
<td>0: Standard 1: Large</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>OS</td>
<td>0</td>
<td>DR compression enabled/disabled for reoutput</td>
<td>0: Depending on Image Information 1: Depending on System Setting &quot;1&quot; cannot be used.</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>RF</td>
<td>2</td>
<td>Left/right character display reversal</td>
<td>0: NO 1: YES (&quot;R-reverse&quot;) 2: YES (&quot;AP&quot;or&quot;PA&quot;)</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>CE</td>
<td>0</td>
<td>Display selection for film character area 0 and/or 1</td>
<td>0: both displayed 1: Only area 0 displayed 2: Only area 1 displayed 3: not displayed</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>CSX0</td>
<td>500</td>
<td>Horizontal size for standard size area 0</td>
<td>2 - 500 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>CSY0</td>
<td>268</td>
<td>Vertical size for standard size area 0</td>
<td>2 - 268 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>CSX1</td>
<td>458</td>
<td>Horizontal size for standard size area 1</td>
<td>2 - 458 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>CSY1</td>
<td>174</td>
<td>Vertical size for standard size area 1</td>
<td>2 - 174 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>CLX0</td>
<td>980</td>
<td>Horizontal size for large size area 0</td>
<td>2 - 980 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>CLY0</td>
<td>268</td>
<td>Vertical size for large size area 0</td>
<td>2 - 268 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>CLX1</td>
<td>668</td>
<td>Horizontal size for large size area 1</td>
<td>2 - 668 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>CLY1</td>
<td>180</td>
<td>Vertical size for large size area 1</td>
<td>2 - 180 (0.1mm)</td>
<td></td>
</tr>
<tr>
<td>Item number</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
<td>---------------</td>
<td>-------------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>35</td>
<td>FD 1417</td>
<td>0010</td>
<td>Position rotation designation for 14&quot; x 17&quot; (35 x 43cm) areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD 1714</td>
<td>1131</td>
<td>Position rotation designation for landscape 14&quot; x 17&quot; (35 x 43cm) areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD 1843</td>
<td>0010</td>
<td>Position rotation designation for 1843 areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD 0810</td>
<td>0010</td>
<td>Position rotation designation for 8&quot;x10&quot; areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD 1008</td>
<td>1131</td>
<td>Position rotation designation for landscape 8&quot;x10&quot; areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD 1414</td>
<td>0010</td>
<td>Position rotation designation for 8&quot;x10&quot; areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC1</td>
<td>XXXX: 1234 2345 3456 4567 5678 6789 7890 8901</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 - - MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC2</td>
<td>XXXX: 1234 2345 3456 4567 5678 6789 7890 8901</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 - - MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC3</td>
<td>XXXX: 1234 2345 3456 4567 5678 6789 7890 8901</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 - - MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC4</td>
<td>XXXX: 1234 2345 3456 4567 5678 6789 7890 8901</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 - - MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC5</td>
<td>0020: 0317</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 - - MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC6</td>
<td>1030: ?3??</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 - - MPM8</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>EM</td>
<td>0</td>
<td>&quot;Ene.-Sub.&quot; parameter/PEM parameter output.</td>
<td>0; NO 1; YES (Ene.-Sub.) 2; YES (PEM)</td>
<td>Check for necessity to display this item before it is set.</td>
</tr>
<tr>
<td>38</td>
<td>IN</td>
<td>0</td>
<td>Examination number display</td>
<td>0; NO 1; YES</td>
<td>Supported by A05 or later; supported only for 15°30, 35°35, and 43°43.</td>
</tr>
<tr>
<td>39</td>
<td>IM</td>
<td>0</td>
<td>FCR9000-compatible format support setting for 14&quot;x14&quot; 100% magnification/pantomo</td>
<td>0; NO (FCR9000 compatible) 1; YES</td>
<td>Supported by A05 or later; supported only for 15°30, 35°35, and 43°43.</td>
</tr>
<tr>
<td>40</td>
<td>LTC</td>
<td>0</td>
<td>Use of long type format</td>
<td>0; NO (not used) 1; YES (used)</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>FRSC</td>
<td>XXXX: XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX</td>
<td>Setting of MPM code for output with frame/without ruler</td>
<td>Up to eight four-digit MPM codes are set.</td>
<td>A wildcard may be used.</td>
</tr>
</tbody>
</table>
Detailed Explanation of Setup Items

Items that are not fully described in “List of Setup Items” are explained in detail below. They should be referred to as needed.

- **“6. HN” (institution name)**
  
  Institution name displayed when “2. FNT” of SYSTEM is set to other than “0” (Japanese).

- **“7. HP” (institution name in Kanji)**
  
  Institution name in Kanji displayed when “2. FNT” of SYSTEM is set to “0” (Japanese).
  
  To enter an institution name in Kanji, the Shift-JIS code should be entered with every four digits delimited by space.
  
  It should be noted that if 15 characters of Shift-JIS space code (8140) are entered in “7. HP” (institution name in Kanji), the institution name that is set in “6. HN” (institution name) is displayed.

- **“13. TH” (trimming amount for mammo type)**
  
  The four sides of the IP image for HR is trimmed.

- **“14. TE” (trimming amount for other than mammo type)**
  
  The four sides of the IP image for ST is trimmed.

- **“15. CL” (date display type)**
  
  A display sample is indicated.

- **“17. FR1” (14"x17”/14"x14”/18*43 single image frame display)**
  
  The frame is not displayed if the format is misaligned.

- **“18. FR2” (18*43 twin/2-in-1 image frame display)**
  
  The frame is not displayed if the format is misaligned.

- **“20. CR” (compression ratio display switching)**
  
  Used to switch whether the compression ratio of the image is displayed or not during image reoutput.

- **“21. MM” (margin designation switching)**
  
  Used to specify whether the margin is transparent or black.
  
  - 0: The margin is either transparent or black depending on the image information. When not designated in the image information, it is transparent by default.
  
  - 1: The margin is either transparent or black depending on the image information. When not designated in the image information, it is black by default.
  
  - 2: Always transparent.
  
  - 3: Always black.

- **“22. SG” (14x17/14x14 LP magnification mode)**
  
  Used to switch whether the output is magnified to 14"x17”/14"x14” LP before output. Permission from the Service Headquarters is required before changing this parameter.
● “24. OS” (DR compression enabled/disabled for reoutput)

Use to switch whether enable/disable of DR compression for image reoutput complies with image information or with machine setting.

● “25. RF” (right/left character display reversal)

When set to 1, a reversed character of “R” is displayed with reversal enabled. When set to 2, either “AP” or “PA” is displayed for all images according to the exposure unit and method used.

● “38. IN” (examination number display)

Used to set whether to display the examination number within the ID card. Permission from the Service Headquarters is required before changing the parameter.

● “40. LTC” (use of long type format)

It sets whether to use the long type format as the film character format. When it is set to “1: YES”, the long type format is used, so that right or left justification of characters complies with the selection in “47. JSTFY” of “SYSTEM (IRSET.CFG)”.

◆ SUPPLEMENTARY NOTE ◆

The long type format function is intended to extend the number of characters outputted to the HI-C655QA, film, and operation panel. When this function is used, the long character output is enabled in the setting of IDT-IV (A07/B07 or later).

● “41. FRSC” (setting of film output with frame/without ruler): Software version A10 or later

Used to determine whether to output film with frame/without ruler. It is set by the MPM code.

Up to eight MPM codes may be set. However, if “without frame” is set in FRT1/FR2/FR4, the resulting film output is without frame/without ruler.

Only when “with frame” is set in FRT1/FR2/FR4, the setting defined in FRSC is effective.

Setup example 1)
FRSC= “0000 0200 XXXX XXXX XXXX XXXX”
With MPM codes of 0000 and 0200 only, the film output is “with frame/without ruler”.

Setup example 2)
FRSC= “???? XXXX XXXX XXXX XXXX XXXX”
With all the MPM codes, the film output is “with frame/without ruler”.

Setup example 3)
FRSC= “020? XXXX XXXX XXXX XXXX XXXX”
With MPM codes of 0200-020F only, the film output is “with frame/without ruler”.

# Detailed Explanation about Area Indication

Area indications for closely related ones of the PRINT setup items are detailed below.
There are two types of area indications.

## Area 0

The hospital name, patient name, sex, patient ID, age or birth date, exposure date, exposure time, set processing information, and department name are indicated.

Example)

<table>
<thead>
<tr>
<th>Hospital name</th>
<th>Patient name</th>
<th>Sex, patient ID, age</th>
<th>Exposure date, exposure time</th>
<th>Set processing information</th>
<th>Department name</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXXX</td>
<td>XXXXX</td>
<td>[X] 7901900000 2</td>
<td>1998.10.16 [10:00]</td>
<td>L-&gt;R***</td>
<td>ES 102-01</td>
</tr>
<tr>
<td>XXXXX</td>
<td></td>
<td>XXXXX-A000000</td>
<td></td>
<td></td>
<td>FR1B1244.EPS</td>
</tr>
</tbody>
</table>

## Area 1

The IP number, EDR mode/menu code, system ID/image number, image condition, normalization condition, correction item, engineer code, exposure bed information, and compression code are indicated.

Example)

<table>
<thead>
<tr>
<th>Frequency processing</th>
<th>IP number</th>
<th>EDR mode</th>
<th>Menu code</th>
<th>System ID</th>
<th>Image number</th>
<th>Gradation processing</th>
<th>System sensitivity</th>
<th>Data compression code</th>
<th>Exposure table information</th>
<th>Latitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1D-USM</td>
<td>03012246</td>
<td>A</td>
<td>0200</td>
<td>A</td>
<td>0200</td>
<td>0G#1.6-0.20</td>
<td>80KV10mAs</td>
<td>3V1.0</td>
<td>XX: 22</td>
<td></td>
</tr>
</tbody>
</table>
## Output Format of Area 0 and Area 1

For areas 0 and 1, their output position and display position (rotational position) on each film may be set.

### Selection of area indication

With item 26. CE, indication of either area 0 or area 1 is selected.

### Designation of area size

For the standard size, it is designated with 27. CSX0, 28. CSY0, 29. CSZ1, and 30. CSY1.

![Diagram of Area 0 and Area 1: CSX0, CSY0, CSX1, CSY1](FR1B1245.EPS)

For the large size, it is designated with 31. CLX0, 32. CLY0, 33. CLX1, and 34. CLY1.

![Diagram of Area 0 and Area 1: CLX0, CLY0, CLX1, CLY1](FR1B1246.EPS)

### Definition of area position and rotation

The definition of area position and rotation is as follows.

![Diagram of Film area of one frame with Definition of position and Definition of rotation](FR1B1241.EPS)
With items “36. FC1” through “36. FC4” of Film Setup, four types of area displays may be set. For each of the types, up to eight MPM codes may be set.

For image data with MPM code that is not set, the setting of “35. FD1417” is used (for 14”x17”).

◊ SUPPLEMENTARY NOTE ◊

A wildcard “?” may be used for one letter of a MPM code that may be set with items FC1 through FC4. “?” denotes any letter, from 0 to F.

Example) “123?” → Represents a MPM code, from 1230 to 123F.

● How to set up

<table>
<thead>
<tr>
<th>Position/rotation definition</th>
<th>MPM code (Up to eight codes may be set)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0031 : 0123 1234 2345 3456 4567 5678 6789 789A</td>
<td></td>
</tr>
</tbody>
</table>

- 90° rotation for area 1 (0: disabled, 1: enabled)
- Position of area 1 (0: upper left, 1: upper right, 2: lower left, 3: lower right)
- 90° rotation for area 0 (0: disabled, 1: enabled)
- Position for area 1 (0: upper left, 1: upper right, 2: lower left, 3: lower right)

Setup example)

FC1=0031:0123 1234 2345 3456 4567 5678 6789 789A

Area 0 = position (0), rotation disabled (0)
Area 1 = position (3), 90° rotation enabled (1)
7.4 Network-Related Setup Items

When a network connection is to be made, the following configuration utility setup data must be entered.

2. CONFIGURATION SETTING

- 0. QUIT
- 1. SYSTEM
- 2. PRINT
- 3. REMOTE SWITCH
- 4. EQUIPMENT
- 5. LOCAL INTERFACE
- 6. NETWORK HOST INTERFACE
- 7. HOSTS ADDRESS
- 8. DISTRIBUTION
- 9. ROUTING
- 10. NETMASKS
- 11. DICOM (Base on DICOM)
## 7.5 REMOTE SWITCH (RMT_SW.CFG)

It sets remote switch ON/OFF of the intelligent hub. Because it is an “indent” item, it may not be typically set.

**SUPPLEMENTARY NOTE**

Intelligent hub: A hub that complies with SNMP (Simple Network Management Protocol).

### Format

```
IP address,root,"parameter"
```

- **IP address (IP address)**

  IP address that is set in the HOSTS file.

  - **“Parameter”**

  - When ON  “NOPK △ 1000”
  - When OFF  “NOPK △ 0000”

  "△" denotes a space.

### Setup Example

REMOTE SWITCH is set to ON.

An example of description (bold faced) for the above setup is presented below.

```
#  #RMT_SW.CFG #
# [ON]
#172.16.0.128,root,"NOPK 1000"

[OFF]
#172.16.0.128,root,"NOPK 0000"

172.16.0.128,root,"NOPK 1000"
```
7.6 EQUIPMENT (EQUIP)

It sets to determine which HOST is requested to process filing function, display function, print function, and ID information acquisition function.

Format

Function △ HostName (△ HostName · · · )

“△” denotes a space.

● Function (function)

Function requested for the host that is set in “HostName (host name)”.

- “OD_FILE” Filing function
- “DISPLAY” Display function
- “PRINT” Print function
- “IDT” ID information acquisition function

● HostName (host name)

A host that is responsible for the function specified by “Function (function)” may be set.

If multiple hosts are set with “IDT”, the host that is first set is used preferentially. The next host will be used when its immediately preceding host experiences failure or any other trouble.

If multiple units are connected with “PRINT”, “OD_FILE”, and “DISPLAY”, the output designation can be designated by user setting.

With the CR-IR341, the number of hosts that may be set for one function is restricted as follows.

- IDT Up to five IDTs
- PRINT LOCAL and one host name, or up to two host names
- Other Up to two

It should be noted that the setup for HostName (host name) is as follows.

- LOCAL
  A host connected over an E-I/F or serial line. It is designated when direct connection is to be established.
- LOCAL_S
  A host connected over an E-I/F or serial line. It is designated when direct connection is to be established. Note, however, that high-resolution data transfer is not supported.
- LOCAL_R
  It is designated when print output is to be provided only during reoutput, without generating printout during reading.

During reading, images are transferred only to the HIC/QA-WS, where image checks/adjustments are performed, and then they are routed from the HIC/QA-WS, to the CR-IR341, and to the printer for reoutput.

◆NOTE◆

No output can be generated directly to the printer from the CR-IR341 where “LOCAL_R” setting is made.
• Host name that is set in the HOSTS file
  A network-connected host. It is designated when network connection is to be estab-
  lished.
  
“7.9 HOST ADDRESS (HOSTS)”

### Setup Example

<table>
<thead>
<tr>
<th>EQUIP</th>
<th>Function</th>
<th>Host Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD_FILE</td>
<td>OD_FILE</td>
<td>odf624</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>DISPLAY</td>
<td>hic654, hic655</td>
</tr>
<tr>
<td>PRINT</td>
<td>PRINT</td>
<td>LOCAL fn-ps551</td>
</tr>
<tr>
<td>IDT</td>
<td>IDT</td>
<td>fcridt4-1, fcridt4-2</td>
</tr>
</tbody>
</table>

An example of description (bold faced) for the above setup is presented below.

```plaintext
# EQUIP
# Function Host Name  [Host Name]...
# Function = OD_FILE or DISPLAY or PRINT or IDT
OD_FILE  odf624
DISPLAY  hic654, hic655
PRINT    LOCAL fn-ps551
IDT      fcridt4-1, fcridt4-2
```

### Precaution When Used as CR-IR341P System

The CR-IR341P is only connectable to the CR-IR348CL, so that only “DISPLAY” and “IDT” may be described as function names in the configuration.

A setup example is presented below.

```plaintext
# EQUIP
# Function Host Name  [Host Name]...
# Function = OD_FILE or DISPLAY or PRINT or IDT
IDT      iip-1, iip-2
DISPLAY  iip-1
```
7.7 LOCAL INTERFACE (INTERFACE)

It defines the setup information for communication requirements over serial line connection. No change is necessary because the initial value is used as is.

◆ NOTE ◆

Only when CR-LP414N/FL-IM2636N or FL-IM3543N is connected to CR-IR341 (A07 or later) (including cases where it is connected as a backup printer), the setup value for “N1” in the “2. LIF: siosetup.lp” file should be changed from “005” to “010”.
7.8 NETWORK HOST INTERFACE (DEVICE)

It may define functions, communication protocols, and transfer rates of each host. The host must be a device that is connected to a network.

Format

HostName : Attr\Attr,[Protocol ID],[System code],[Speed]

- **HostName (host name)**
  - Host name that is set in the HOSTS file.
  - “7.9 HOSTS ADDRESS (HOSTS)”

- **Attr (attribute)**
  One of the following should be designated. Multiple attributes can be designated by delimiting them by “|”:
  - PRINT Film output enabled
  - HD_FILE Active file enabled
  - DISPLAY Display function
  - OD_FILE Archive file enabled

- **Protocol ID (protocol identification number)**
  It is set in four hexadecimal digits. It may be omitted by entering “,”. When it is omitted, it is set to “0100 (FINP)”. If it is necessary to use the image processing exclusive selection flag, the protocol identification number needs to be set to either “0100”, “0110”, or “0200”.
  - 0001 DMSP
  - 0100,0110 FINP (Fuji integrated network protocol)
  - 0200 Base on DICOM

- **System code (system type code)**
  It is set in two hexadecimal digits. It may be omitted by entering “,”.

- **Speed (transfer speed)**
  It is set in decimal notation. It may be omitted by entering “,”. When it is omitted, it is set to “8”.
Setup Example

● hic654 setup content

Attributes of “display function (DISPLAY)” and “active file enabled (HD_FILE)” are set. The protocol is set to FINP, with the system code and transfer speed omitted.

● odf624 setup content

An attribute of “archive file enabled (OD_FILE)” is set. The protocol is set to FINP, with the system code and transfer speed omitted.

● fn-ps551 setup content

Attributes of “film output enabled (PRINT)” are set. The protocol is set to FINP, with the system code and transfer speed omitted.

An example of description (bold faced) for the above setup is presented below.

<table>
<thead>
<tr>
<th>DEVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Name: Attr, [Protocol ID], [System code], [Speed]</td>
</tr>
<tr>
<td>Attr        = PRINT or HD_FILE or DISPLAY or OD_FILE</td>
</tr>
<tr>
<td>Protocol ID = 0100(FINP) or 0110(FINP) or 0200(DICOM)</td>
</tr>
<tr>
<td>System code = Hex 2 figures</td>
</tr>
<tr>
<td>Speed       = Dec [Kbytes/sec] (default 8Kbytes/sec)</td>
</tr>
<tr>
<td>hic654: DISPLAY</td>
</tr>
<tr>
<td>odf624: OD_FILE,0100,,</td>
</tr>
<tr>
<td>fn-ps551: PRINT,0100,,</td>
</tr>
</tbody>
</table>

Precaution When Used as CR-IR341P System

The CR-IR341P is only connectable to the CR-IR348CL, so that only “HD-FILE” and “DISPLAY” may be described as attribute names in the configuration.

A setup example is presented below.

<table>
<thead>
<tr>
<th>DEVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Name: Attr, [Protocol ID], [System code], [Speed]</td>
</tr>
<tr>
<td>Attr        = PRINT or HD_FILE or DISPLAY or OD_FILE</td>
</tr>
<tr>
<td>Protocol ID = 0100(FINP) or 0110(FINP) or 0200(DICOM)</td>
</tr>
<tr>
<td>System code = Hex 2 figures</td>
</tr>
<tr>
<td>Speed       = Dec [Kbytes/sec] (default 8Kbytes/sec)</td>
</tr>
<tr>
<td>iip: DISPLAY</td>
</tr>
</tbody>
</table>
7.9 HOSTS ADDRESS (HOSTS)

For all the hosts connected over the same network, their IP addresses should be set. One host should be defined per line. Up to 127 hosts can be defined.

**Format**

<table>
<thead>
<tr>
<th>IP Addr △ Host Name</th>
</tr>
</thead>
</table>

“△” denotes a space.

**IP Addr (IP address)**

An IP address is set in the form of “xxx.xxx.xxx.xxx“, using numerals ranging from 0 to 255. “xxx” denotes 0 through 255.

**NOTES**

- To one CR-IR341 machine, be sure to assign both a standard LAN IP address (CPU90E) and a LAN board IP address (CPU90F).
  
  Example) 172.16.0.1 fcr5000a ... CR-IR341#1 (CPU90E)
  
  172.16.0.2 fcr5000a-1 ... CR-IR341#1 (CPU90F)

- Be sure to match the standard LAN IP address (CPU90E) and LAN board IP address (CPU90F) to the IP addresses set in item No. 3 “IPS” and item No. 4 “IPI” of SYSTEM: IRSET.CFG, respectively.

**Host Name (host name)**

A host name is set within 10 characters, using lowercase alphabets (a through z), numerals (0 through 9), and hyphen (-).

**NOTES**

- If any alphabet is used in a host name, be sure to use lowercase letters.
- The initial letter of a host name should always be a lowercase alphabet.
Setup Example

CR-IR341  2 units
IDT-IV    2 units
HI-C      1 unit
OD-F      1 unit
FN-PS551  1 unit

An example of description (bold faced) for the above setup is presented below.

```
# # HOSTS
# # Host Name = Max 10 characters
# #(Available Character:’a’-’z’ ‘0’-’9’ ‘-’[37chars])
# IP Addr  Host Name
172.16.0.1  fcr5000a
172.16.0.2  fcr5000a-1
172.16.0.11 fcr5000b
172.16.0.12 fcr5000b-1
172.16.0.21 fcr4dt4-1
172.16.0.22 fcr4dt4-2
172.16.0.101 hic654
172.16.0.102 odf624
172.16.0.103 fn-ps551
```

Precaution When Used as CR-IR341P System

The CR-IR341P is only connectable to the CR-IR348CL, so that the host name (IP address) that may be described in the configuration is only for itself and the CR-IR348CL.

A setup example is presented below.

```
# # HOSTS
# # Host Name = Max 10 characters
# #(Available Character:’a’-’z’ ‘0’-’9’ ‘-’[37chars])
# IP Addr  Host Name
172.16.0.1  fcr5000
172.16.0.2  fcr5000-n
172.16.1.20 iip
```
7.10 DISTRIBUTION (CODEDSTB)

It sets the distribution destination for network connection. One distribution code should be defined per line. Up to 128 lines of distribution code can be defined.

- **Format**

<table>
<thead>
<tr>
<th>Code △ Host Name (△ HostName ···)</th>
</tr>
</thead>
</table>

  “△” denotes a space."

- **Code (distribution destination code)**

  A distribution destination code is set in eight alphanumeric characters or “?”.

- **Host Name (host name)**

  The host name that is set in the HOSTS file should be set. Up to four host names can be set by delimiting them with a space.

  > “7.9 HOSTS ADDRESS (HOSTS)”

- **Setup Example**

  The distribution code is set.

  HI-C       AA0123??

  An example of description (bold faced) for the above setup is presented below.

  ```
  # # Codedstb
  # # Code Host Name [HostName]...
  AA0123?? hic654
  ```

- **Precaution When Used as CR-IR341P System**

  When connected as the CR-IR341P to the CR-IR348CL, DISTRIBUTION is used in a different manner than with the CR-IR341 system (setting of distribution for network connection).

  With the CR-IR341P, DISTRIBUTION is set only if multiple CR-IR348CL units are connected to the CR-IR341P.

  > “Appendix 9 Procedures for Connecting with CR Console (CR-IR348CL)” in “Installation Volume”
7.11 ROUTING (ROUTE)

It sets the information about the router address in the network and about the network connection, when a router is used for connection to another network.

■ Format (A07 or Earlier)

Dst Addr △ [Host Name] △ [Host IP], [Seg Size], [Win Size], [Delay Timer], [Rate]

“△” denotes a space.

● **Dst Addr (transfer destination IP address)**

An IP address of a transfer destination. For the IP address of the transfer destination, a transfer destination address of an individual host or a transfer destination network address should be set. When the transfer destination network address is set, the host number portion of the IP address should be set to “0”.

● **Host Name (name of router)**

It may be omitted when “Host IP (IP address of router)” is set.

● **Host IP (IP address of router)**

“Host IP” may be omitted when “Host Name” that is set in the “HOST” file is set.

● **Seg Size (TCP segment size)**

The TCP segment size is set in bytes. “Seg Size” may be omitted.

● **Win Size (TCP window size)**

The TCP window size is set in bytes. “Win Size” may be omitted.

● **Delay Timer (TCP ACK delay timer)**

The TCP ACK delay timer value is set in multiples of the reference value. “Delay Timer” may be omitted.

● **Rate (transfer rate)**

The overall transfer rate, up to the destination including any router, is set in bytes/sec. “Rate” may be omitted.

■ Format (A08 or Later)

(Dst-Addr △ Dst-Network-Addr) △ (Router-Name △ Router-Addr),...,

“△” denotes a space.

● **Dst-Addr △ Dst-Network-Addr (destination IP address or destination network IP address)**

Either the destination IP address or the destination network IP address is set.

● **Router-Name △ Router-Addr (router name or router IP address)**

Either the “Host Name” of the router or the IP address of the router is set.
7.12 NETMASKS (NETMASKS)

It sets the network number and subnet mask when connection is established with another network.

The subnet mask indicate a range the network number portion represents in the IP address ("xxx.xxx.xxx.xxx" where “xxx” denotes 0 to 255).

| Format |

```
Network △ netmask
```

“△” denotes a space.

- **Network (network number)**
  - It sets a network number of the network to which the CR-IR341 is connected.

- **netmask (subnet mask)**
  - It specifies a range the network number portion represents in the IP address.
  - It is set in the form of “xxx.xxx.xxx.xxx” (where “xxx” denotes a decimal numeral ranging from 0 to 255), and the bit of the portion handled as the network number is set to “1”, while the bit of the portion handled as the host number is set to “0”.
  - It is classified into the following network classes according to the range of the network number portion.
    - Class A 255.0.0.0
    - Class B 255.255.0.0
    - Class C 255.255.255.0

The narrower the range of the network number portion, the greater portion may be handled as the host number (the greater for classes C, B, and A in this order). Thus, more host addresses (IP addresses) may be assigned within the same network (that is, a larger network may be implemented).

**NOTE**

*If the networks for the CPU90E and CPU90F are the same, the same net mask should be set for both. If the CPU90F is not available, the net mask for the CPU90F is left on its default, regardless of its setting value.*

| Setup Example |

```
Network  172.16.0.0
netmask  255.255.0.0
```

An example of description (bold faced) for the above setup is presented below.

```
# Network masks database
#
# only non-default subnet masks need to be defined here
#
# Network netmask
172.16.0.0  255.255.0.0
```
7.13 Backing Up Configuration File

The configuration file that has been set is backed up.

**CAUTIONS**

- Never power OFF the machine or press the FD eject button during file saving. The FD or FD drive may be damaged.
- Once a setup file is edited, be sure to reset the machine after exiting M-Utility.

(1) Put a backup floppy disk into the floppy disk drive.
(2) Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
(3) Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.

NOTES: • For the IDT type, the "menu selecting icon" does not appear.
• For the initial setting, the "Multiframe forced output" button will not appear.
• The IDT type includes CR-IR348CL connection.
(4) Select “7. FILE UTILITY”.

![Diagram of menu options]

(5) Select “3. BACK UP” and “2. CONFIGURATION DATA” and “1.YES” in sequence.

![Diagram of menu options]

> Of the setup files, the following files are saved to the floppy disk.

- SYSTEM (IRSET.CFG,IRSET.ORG)
- PRINT (FILFMT.CFG,FILFMT.ORG)
- IRSTATUS (IRSTATUS.CFG,IRSTATUS.ORG)

◆ NOTE ◆

The menu parameters saved in the floppy disk also contain the language setting for the machine. Thus, if the language setting differs during RESTORE and during BACK UP, the file cannot be read during RESTORE.
(6) Select “3. BACK UP”, “3. NETWORK DATA” and “1.YES” in sequence.

> 7
0.QUIT
1.FORMAT FD
2.FORMAT IMAGE PARTITION
3.BACK UP
4.RESTORE
5.EDR DATA
6.PREVIOUS SYSTEM SOFTWARE
7.EXECUTION
FUT> 3

Of the setup files, the following files are saved to the floppy disk.

- REMOTE SWITCH (RMT_SW.CFG)
- EQUIPMENT (EQUIP)
- NETWORK HOST INTERFACE (DEVICE)
- HOSTS ADDRESS (HOST)
- DISTRIBUTION (CODEDSTB)
- ROUTING (ROUTE)
- NETMASKS (NETMASKS)
- DICOM (DICOM)

**NOTE**

The menu parameters saved in the floppy disk also contain the language setting for the machine. Thus, if the language setting differs during RESTORE and during BACK UP, the file cannot be read during RESTORE.

(7) Select “0. QUIT” repeatedly.

The screen returns to the U-Utility mode.
7.14 Network-Related Setup Example

An example of how to change the settings of the network-related configuration file is presented below. Referring to this example, configuration file settings should be made as appropriate for each system configuration.

Setup Example 1

- Two units of the IDT-IV are connected to the CPU90E board of the machine via a 10Base-T hub.
- The OD-F624, HI-C654 and FN-PS551 are connected to the CPU90F board of the machine via a 10Base-T hub.
- The machine and FL-IMD are connected via the E-i/f (IMG08A).
- The host is temporarily connected (including virtual equipment).

The “Hostname” of each CR unit installed at a hospital, including the CR-IR341 itself, should be registered so that the configuration file can easily copied and restored to other units.

A example of description (bold faced) for the above setup is presented below.

REMOTE SWITCH (RMT_SW.CFG)

```
# RMT_SW.CFG
# 172.16.0.128,root,"NOPK 1000"
```

EQUIPMENT (EQUIP)

```
# EQUIP
# Function Host Name [Host Name]...
# Function = OD_FILE or DISPLAY or PRINT or IDT
OD_FILE odf624
DISPLAY hic654
PRINT LOCAL fn-ps551
IDT fcridt4-1 fcridt4-2
```
### NETWORK HOST INTERFACE (DEVICE)

```
# DEVICE
# Host Name:Attr|Attr,[Protocol ID],[System code],[Speed]
# Attr = PRINT or HD_FILE or DISPLAY or OD_FILE
# Protocol ID = 0100(FINP) or 0110(FINP) or 0200(DICOM)
# System code = Hex 2 figures
# Speed = Dec [Kbytes/sec] (default 8Kbytes/sec)

hic654:DISPLAY|HD_FILE,0100,,
odf624:OD_FILE,0100,,
fn-ps551:PRINT,0100,,
```

### HOSTS ADDRESS (HOSTS)

```
HOSTS

# Host Name = Max 10 characters
# (Available Character:’a’–’z’ ‘0’–’9’ ‘‐’[37chars])
# IP Addr Host Name
172.16.0.1 fcr5000a
172.16.0.2 fcr5000a-1
172.16.0.11 fcr5000b
172.16.0.12 fcr5000b-1
172.16.0.21 fcridt4-1
172.16.0.22 fcridt4-2
172.16.0.101 hic654
172.16.0.102 odf624
172.16.0.103 fn-ps551
```

### DISTRIBUTION (CODEDSTB)

```
# Codedstb
# Code Host Name [HostName]...
AA0123?? hic654
```
<table>
<thead>
<tr>
<th>Network masks database</th>
</tr>
</thead>
<tbody>
<tr>
<td>only non-default subnet masks need to be defined here</td>
</tr>
<tr>
<td>Network</td>
</tr>
<tr>
<td>172.16.0.0</td>
</tr>
</tbody>
</table>
Setup Example 2: QA-WS Connection

For the QA-WS connection, perform the following setup procedures.

**NOTES**

- The HCP08A board (optional) and CPU90F board (optional) must be installed in the control rack.
- The Fuji Base-on-DICOM option software must be installed.

**SYSTEM (IRSET.CFG)**

- For “2. IPS” and “3. IPI”, set appropriate IP addresses.
- For “45. UID_STI”, set an appropriate examination instance user ID.

**EQUIPMENT (EQUIP)**

Set the transfer destination QA-WS host name (“qa-ws1”) as the DISPLAY attribute.

To deliver the re-output from the QA-WS to the printer instead of directly delivering the output from the image reader to the printer, set “LOCAL_R” as the PRINT attribute.

```
#  DISPLAY qa-ws1
#  PRINT LOCAL_R
```

**NETWORK HOST INTERFACE (DEVICE)**

Set the host information about the transfer destination QA-WS.

```
#  qa-ws1:DISPLAY,0200,,
```

**HOSTS ADDRESS (HOSTS)**

Set the IP address and host name of the local machine and transfer destination QA-WS.

```
#  172.16.0.100  fcr5000n-1
#  172.16.0.200  qa-ws1
```

**ROUTING (ROUTE)**

If the transfer destination 5000 Series image reader is not within the same network, set the IP address of the router that serves as the exit of the local network. If the destination image reader is within the same network, this setting is not required.
● NETMASKS (NETMASKS)

If the transfer destination QA-WS is not within the same network, set the subnet mask. If the transfer destination QA-WS is within the same network, there is no need to make this entry again.

● DICOM (Base on DICOM)

Perform “Base on DICOM” setup for both the local machine and transfer destination QA-WS. The format to be used is indicated below.

<table>
<thead>
<tr>
<th>HostName,ServiceName:AEName,[PortNo.],[SOPType],[CompType],[Timeout1],[Timeout2],[DensityType]</th>
</tr>
</thead>
</table>

- **HostName**
  Enter the host name that is defined by HOSTS or DEVICE.

- **ServiceName**
  Set “STORAGE_U” for the local machine and “STORAGE_P” for the QA-WS.

- **AEName**
  Set the DICOM standard Application Entity name (consisting of up to 16 ASCII characters).

- **PortNo.**
  Set the TCP port number that the Base-on-DICOM application uses. This entry is meaningless for the transmitting end. The default setting is “104”.

- **SOPType (SOP Class Type definition)**
  Although two options are selectable (1: FINP; 2: OEM), choose “1”.

- **CompType (image data compression definition)**
  Although two options are selectable (0: no compression; 1: JPEG compression), choose “1”.

- **Timeout1**
  Set the timeout time (in seconds) for the TCP socket connect/recv command.

- **Timeout2**
  Set the timeout time (in seconds) for one-image transfer.

- **DensityType**
  Set the output density for each output destination unit. “1” should always be set.

The following example (bolded entry portion) shows how to enter the above settings.

```
<table>
<thead>
<tr>
<th>HostName,ServiceName:AEName,[PortNo.],[SOPType],[CompType],[Timeout1],[Timeout2],[DensityType]</th>
</tr>
</thead>
<tbody>
<tr>
<td>fcr5000n-1,STORAGE_U :5000_DICOM,,1,1,100,600,1</td>
</tr>
<tr>
<td>qa-ws1,STORAGE_P :hic655qa-scp,5045,1,1,100,600,1</td>
</tr>
</tbody>
</table>
```
Setup Example 3: Printer Output Setup for Each Network Connection

**NOTE**

The HCP08A board (optional) and CPU90F board (optional) must be installed in the control rack.

Perform network-specific printer output setup as indicated below.

**SYSTEM (IRSET.CFG)**

For “2. IPS” and “3. IPI”, set appropriate IP addresses.

**EQUIPMENT (EQUIP)**

Set the transfer destination 5000 Series image reader host name as the PRINT attribute. Note that only one 5000 Series image reader unit can be added.

```
#
PRINT LOCAL fcr5000n-2
```

**NETWORK HOST INTERFACE (DEVICE)**

Set the host information about the 5000 Series image reader at the transfer destination.

```
#
  fcr5000n-2:PRINT,0100,,
```

**HOSTS ADDRESS (HOSTS)**

Set the IP address of the 5000 Series image reader at the transfer destination.

```
#
  172.16.0.100 fcr5000n-2
```

**ROUTING (ROUTE)**

If the transfer destination 5000 Series image reader is not within the same network, set the IP address of the router that serves as the exit of the local network. If the destination image reader is within the same network, this setting is not required.

**NETMASKS (NETMASKS)**

If the transfer destination QA-WS is not within the same network, set the subnet mask. If the transfer destination QA-WS is within the same network, there is no need to make this entry again.

Setup Example 4: CR-IR348CL Connection

“Appendix 9 Procedures for Connecting with CR Console (CR-IR348CL)” in “Installation volume”
8. **3. TEST MODE: Operation Setup**

It is used when the IP conveyance operation is to be checked and for other purposes. After checking the conveyance operation, “1: ROUTINE” should be selected to return the machine back to the state suitable for routine processing.

8.1 **1. ROUTINE: Setting Operation Mode of Routine Processing**

The settings made in “2. AUTO MODE” are canceled and the machine is rendered into a state appropriate for routine processing.

Be sure to perform this setup before performing routine processing after “2. AUTO MODE” is selected.

8.2 **2. AUTO MODE: Setting Operation Mode of Conveyance Test**

With the settings of the operation mode and the number of conveyance, when the IP cassette is put into the cassette set unit in the routine processing mode, IPs are automatically conveyed a set number of times.

Three types of operation modes are available as follows.

- **1. READING & ERASURE**
  
  Reading operation is performed as usual to output an image, while the image on the IP is erased.
  
  This mode is used to test the image reading function, along with the IP conveyance function.

- **2. PRIMARY ERASURE**
  
  The image is read to detect the dosage on the IP, and IP erasure is performed according to the dosage.
  
  The image so read is not outputted because the objective of this mode is to detect the amount of erasure for the IP.
  
  This mode is used when it is not necessary to test the image reading function but the image on the IP used for conveyance is to be erased.

- **3. SECONDARY ERASURE**
  
  The IP is conveyed through the reading unit without reading the image, and its erasure is performed quickly regardless of the dosage on the IP.
  
  This mode is used to merely check the mechanism of the IP conveyance function.
Setup Example of Conveyance Test Operation Mode

An example of how to set the operation mode for checking the mechanism of the IP conveyance function is presented below.

◆ NOTE ◆

When “2. AUTO MODE” is selected, be sure to set the operation mode of routine processing (1. ROUTINE) before executing the routine processing. If the routine processing is executed without this setting, operation error may result.

1. Select “3. TEST MODE”.
2. Select “2. AUTO MODE”.
   ➥ The operation modes are displayed.
3. Select “3. SECONDARY ERASURE”.
   ➥ A prompt asking you to enter the number of times appears.
4. Enter 5 (the number of times it is executed).
5. Select “0. QUIT” to return to the U-Utility screen.
6. Touch the “RETURN” button.
   ➥ The mode returns to the routine screen.
7. Put the cassette into the machine.
   ➥ IPs are conveyed the number of times that was set in step (4).
4. ELECTRICAL UTILITY: Electrical Diagnostics

Diagnostic checks are performed to determine whether there is anything abnormal with the electrical-related parts.

- Erasure lamp
- Image memory
- Image processing board
- Network
- HDD
- FDD

1. ERASURE LAMP TEST: Erasure Lamp Turn-On Test

It can be checked to see whether the erasure lamp turns on or off.
Once executed, this mode ends with the No. of erasure lamp selected and its test result displayed.

2. IMAGE MEMORY TEST: Image Memory Test

This mode is used to test the image memory that is a shared portion of the memory, and ends with its test result displayed.
If an error is detected, the mode ends with the error-causing memory address indicated in X, Y coordinates on the memory.

3. DSP TEST: Self Diagnostics of Image Processing Board

An image processing board is self-diagnosed, with the device name and diagnostic result indicated for each board. If an error is detected, the mode continues with diagnostics of the next board, with the device name and error code displayed.

- **Device name (device name of image processing board)**

  /dsp/lp1, /dsp/lp2, /dsp/hy1, /dsp/hy2, /dsp/hy3, /dsp/pm1, /dsp/pm2, /dsp/dms, /dsp/scn, /dsp/hcp

  - **lp1,lp2**: IMG08A
  - **hy1,hy2,hy3**: IMG08B
  - **pm1,pm2**: IMG08C
  - **dms**: DMC08A
  - **scn**: IMG07B
  - **hcp**: HCP08A

- **Diagnostic result**

  - **OK**: Normal
  - **ERROR (ZZZZZZ)**: Abnormal
  - **NO EXISTENCE**: DSP (board) is not available.
9.4  4. LAN: LAN Test

◇ SUPPLEMENTARY NOTE◇
For the machine with the LAN90B installed as a network board, those described or displayed as “CPU90F” should be read as “LAN90B”.

■ 1. ETHERNET MAC ADDRESS: To Display MAC Address of CPU Board
For the CPU90E and CPU90F boards, their Ethernet MAC addresses are displayed. If the CPU90F board is not installed, only the MAC address of the CPU90E is displayed.

■ 2. PING: To Execute ping
Diagnostic checks are performed to determine whether communication can be established between the destination host and the LAN (CPU90E/CPU90F) of the machine.

(1) Execute 2.PING.
➢ The following message appears.

INPUT THE CONNECTED HOST-NAME OR IP ADDRESS.
Meaning: Enter the host name or IP address of the host connected.

(2) Enter the host name or IP address of the host connected.
➢ If the CPU90F board has been installed in the machine, the following message appears after input.

SELECT BOARD.
1.CPU90E  2.CPU90F :
Meaning: Select the board.
➢ If the CPU90F board has not been installed in the machine, the following message appears.

CPU90F BOARD HAS NOT MOUNTED.
Meaning: The CPU90F board is not available.

(3) Type in either “1” or “2”.
➢ A ping test is initiated, with the following message displayed.

PING TEST IS IN PROGRESS.
RESULT – OK (or RESULT – ERROR)
Meaning: A ping test is now being performed.
3. CPU90F DMA

This menu should not be used.
9.5 5. HDD: HDD Test

1. WRITE-READ VERIFY: Write and Read Tests to HD

Diagnostic checks are performed to determine whether the hard disk drive is operating normally.

Execute “1. WRITE-READ VERIFY”.

✧ Once the test is executed, the following message appears.

**HDD WRITE–READ VERIFY TEST IS IN PROGRESS.**
RESULT – OK (or RESULT – ERROR)
Meaning: HDD WRITE-READ VERIFY is now being executed.

✧ If anything abnormal is found during HDD device initialization, the process is interrupted, with the following message displayed.

**FILE I/O ERROR. (FILE=XXXXXXXXXX)**

XXXXXXXXXX represents the file name.

9.6 6. FDD: FDD Test

1. WRITE-READ VERIFY: Write and Read Tests to FD

Diagnostic checks are performed to determine whether the floppy disk drive is operating normally.

1) Put a floppy disk (1.44MB) into the floppy disk drive.
2) Execute “1. WRITE-READ VERIFY”.

✧ Once the test is executed, the following message appears.

**FDD WRITE–READ VERIFY TEST IS IN PROGRESS.**
RESULT – OK (or RESULT – ERROR)
Meaning: FDD WRITE-READ VERIFY is now being executed.

✧ If anything abnormal is found during FDD device initialization, the process is interrupted, with the following message displayed.

**FILE I/O ERROR. (FILE=XXXXXXXXXX)**

XXXXXXXXXX represents the file name.
10. 5. SCANNER UTILITY: Scanner Diagnostics and Setting

It is used during checking or after replacement of main-scan system parts.

10.1 1. INITIALIZE: Initial Setting of Main-Scan System

Execute “1. INITIALIZE”.

鹠 The following message appears.

SCANNER INITIALIZATION IS IN PROGRESS.
RESULT – OK (or RESULT – ERROR)
Meaning: Scanner initial setting is now being performed.

10.2 2. POLYGON: Polygon Stop/Rotation

The polygon is activated individually. It is used during checking of the polygonal mirror.

“9.5 Checking and Replacing Polygonal Mirror Assembly” in Checks, Adjustment and Replacement of Parts Volume

(1) Select “2. POLYGON” and “1. OFF” in sequence.

 louis THE POLYGON IS TURNED OFF.

(2) Select “2. POLYGON” and “2. ON” in sequence.

 louis THE POLYGON IS TURNED ON.

10.3 3. LASER: Laser ON/OFF

The laser is generated individually. It is used during checking of the SYN08A board.

“9.6 Checking and Replacing SYN08A Board” in Checks, Adjustment and Replacement of Parts Volume

(1) Select “3. LASER” and “1. OFF” in sequence.

 louis THE LASER IS TURNED OFF.

(2) Select “3. LASER” and “2. ON” in sequence.

 louis The laser is turned OFF.

 louis As the laser is turned ON, the following message appears.

TURNNING ON THE LASER IS IN PROGRESS.
RESULT – OK
Meaning: Laser turn-ON is now being performed.

 louis If anything abnormal is found during execution, either of the following messages appears.

RESULT – LASER POWER INSUFFICIENT
Meaning: The laser power is insufficient.

RESULT – LASER POWER ERROR
Meaning: The laser power is faulty.
10.4 4. HV: HV ON/OFF

It is checked whether the HV switch turns ON/OFF normally.

(1) Select “4. HV” and “1.OFF” in sequence.

➮ When the HV switch (software switch) is turned OFF, the following message appears.

THE HV IS TURNED OFF.

(2) Select “4. HV” and “2.ON” in sequence.

➮ The following message appears, with the HV (software switch) turned ON.

TURNING ON THE HV IS IN PROGRESS.

RESULT - OK
Meaning: HV turn-ON is now being performed.

➮ If anything abnormal is found during execution, either of the following messages appears.

RESULT - HV ERROR Meaning: High-voltage power supply failure
ANALOG POWER SUPPLY ERROR Meaning: Analog power supply failure
HV OFF Meaning: HV switch OFF

10.5 5. HV DATA: High-Voltage Setting

The high-voltage applied to the photomultiplier is set. It is used during checking of the PMT08A board.

“10.3 Checking and Replacing PMT08A Board” in Checks, Adjustment and Replacement of Parts Volume

(1) Select “5. HV DATA”.

➮ The following message appears.

INPUT HV VALUE.

250 - 1000 :

➮ Meaning: Enter the HV value.

(2) Enter the HV value within a range from 250 to 1000.

↘ If the HV value is entered outside the range from 250 to 1000, a prompt appears asking you to enter the value again.

Once a value within the range from 250 to 1000 is set, the following message appears, with HV turned ON.

SETTING INPUTED HV VALUE IS IN PROGRESS.
Meaning: HV value setting is now being performed.
10.6 6. FORMAT: Setting Read Start Position and Read Width

The IP read start position (PIXEL) and the read width (FREQ) are temporarily set. Note, however, that because the setup value in the hard disk is not overwritten, the data so obtained is lost upon resetting.

Writing the settings to the hard disk is done in “8. DATA MANAGEMENT.”

For more detail about the procedures for adjusting the read start position and read width, see the Checks, Replacement and Adjustment Volume.

➤ “9.1 Adjusting Read Start Position and Read Width” in Checks, Replacement and Adjustment Volume

![Diagram of format settings]

1. DEFAULT: To Display Result after Setting Read Start Position and Read Width to Their Default

The read start position (PIXEL) and read width (FREQ) are set to their default. The setup values are not written to the hard disk.

1. Execute “1. PIXEL AND FREQ”, “2. PIXEL ONLY”, or “3. FREQ ONLY”.

➤ When it is executed normally, the following message appears.

FORMAT DATA IS SET TO THE DEFAULT VALUE.

Meaning: The format data is set to the default value.
2. FREQ ADJUST: To Adjust Read Width

The read width is adjusted. The setup value is not written to the hard disk.

(1) Select “2. FREQ ADJUST”.
   ➥ The following message appears.
   **INPUT MAIN SCAN LENGTH ADJUSTMENT VALUE.**
   -5.00 - +5.00 :

(2) Enter the read width adjustment value over a range from -5.00 to 5.00 (in %).
   Enter an incremental or decremental value in percentage relative to the current read width.

   <Example>
   To increment the read width on the output screen from 172 mm to 175 mm:
   \[
   (175 - 172)/172 \times 100 = 1.74
   \]
   Thus, enter “1.74”.
   ➥ The result is displayed.
   **RESULT - XXXXXXXXXX**
   **XXXXXXXXXX** represents the result (OK: normal, ERROR: error)

3. PIXEL ADJUST: To Adjust Read Start Position

The read start position is adjusted. The setup value is not written to the hard disk.

(1) Select “3. PIXEL ADJUST”.
   ➥ The following message appears.
   **INPUT INVALID PIXELS.**
   -999 - 999 :

(2) Enter the number of pixels shifted for the read start position over a range from -999 to 999 (in pixels).
   Ten pixels correspond to 1 mm in actual measurement on the IP.
   To shift rightward on the output image, enter a positive value, and to shift leftward, enter a negative value.

   <Example>
   Shifting the two-in-one image of 14”x17” leftward by 1 mm means that it is shifted leftward by 2 mm on the IP because the reduction ratio is 1/2.
   Thus, enter “-20”.
   ➥ The result is displayed.
   **RESULT - XXXXXXXXXX**
   **XXXXXXXXXX** represents the result (OK: normal, ERROR: error).
10.7  7. SHADING/SENSITIVITY: Setting Shading and Sensitivity Correction Data

The shading and sensitivity correction data is recorded, calculated, and set. Note, however, that because the setup value in the HD is not overwritten, the data so obtained is lost upon resetting.

Writing the settings to the hard disk is done in “8. DATA MANAGEMENT.”

For more detail about the procedures for shading and sensitivity correction, see the Checks, Replacement and Adjustment Volume.

❖ “9.2 Shading/Sensitivity Correction” in Checks, Replacement and Adjustment Volume

■ 1. REC MODE: To Make Correction Data Recordable

The shading, polygon, and sensitivity correction data is made recordable.

Execute “1. REC MODE”.

➢ The correction data is now recordable, with the following message displayed.

THE SPECIAL MODE TO RECORD ADJUSTMENT DATA IS SET.

Meaning: The correction data recording mode is set.

◆ NOTE ◆

REC MODE (recording of correction data) is effective for a single reading. To record correction data repeatedly, execute “1. REC MODE” again.

■ To Test to Check If Image Size is as Specified

: 2.CALCULATION: 1.SHADING, POLYGON AND SENSITIVITY
: 2.CALCULATION: 2.SHADING, POLYGON AND SENSITIVITY FOR BAD CONDITION
: 2.CALCULATION: 6.SENSITIVITY ONLY

(1) Select “1. SHADING, POLYGON AND SENSITIVITY”.

➢ When the recorded data is correct, a prompt for input of dosage value appears as follows.

INPUT DOSAGE VALUE.

0.50 - 9.99 :
The unit is in mR.

➢ If the recorded data is incorrect, the following message appears.

THE DATA IS RECORDED WITH INCORRECT SIZE.

Meaning: The data has been recorded with wrong size.

(2) Enter the dosage value.

➢ The calculation of the correction data is initiated, with the following message displayed.

CALCULATION IS IN PROGRESS.

RESULT - OK (or RESULT - ERROR)

Meaning: Correction data calculation is now being performed.
To Calculate Correction Data

: 2.CALCULATION : 3.SHADING AND POLYGON

: 2.CALCULATION : 4.SHADING AND POLYGON FOR BAD CONDITION

: 2.CALCULATION : 5.POLYGON ONLY

Execute “3. SHADING AND POLYGON”, “4. SHADING AND POLYGON FOR BAD CONDITION” or “5. POLYGON ONLY”.

☞ When the recorded data is correct, the following message appears.

CALCULATION IS IN PROGRESS.

RESULT – OK (or RESULT – ERROR)

Meaning: Correction data calculation is now being performed.

☞ If the recorded data is incorrect, the following message appears.

THE DATA IS RECORDED WITH INCORRECT SIZE.

Meaning: The data has been recorded with wrong size.

3. SHADING/POLYGON CORRECTION: To Apply Correction to Image

When “2. ON” is executed, the corrected data becomes effective in the routine mode.

Execute “3. SHADING/POLYGON CORRECTION: 2. ON”.

☞ Once the shading/polygon correction mode is set to ON, the following message appears

THE NORMAL MODE WITH SHADING & POLYGON CORRECTION IS SET.

Meaning: Shading/polygon correction mode is set to ON.

☞ If the process ends in error, the following message appears.

FILE I/O ERROR. (FILE=XXXXXXXXXX)

XXXXXXXXXX represents the file name.

4. SENSITIVITY DATA: To Enter S Value

It is used for set sensitivity correction (e.g., leveling the sensitivities of multiple readers).

(1) Select “4. SENSITIVITY DATA”.

☞ A message asking you to enter the current S value appears.

INPUT CURRENT S VALUE.

1 - 999 :

(2) Enter the current S value within a range from 0 to 999.

☞ A message asking you to enter a desired S value appears.

INPUT EXPECTED S VALUE.

1 - 999 :

(3) Enter the desired S value within a range from 0 to 999.

☞ The calculation of set sensitivity correction value is initiated, with the following message displayed.

INPUTTED S VALUE IS SET.
10.8 8. DATA MANAGEMENT: Displaying Data Setup Values and Writing to HD

The setup value in “6. FORMAT” or “7. SHADING/SENSITIVITY” is displayed or written to the hard disk.

■ 1. SAVE SHADING AND POLYGON DATA: To Copy Invalid Pixels and Other Data into Secondary Memory

It is used when shading or polygon correction is performed in “7. SHADING/SENSITIVITY”.

- Execute “1. SAVE SHADING AND POLYGON DATA”.
  - Once it is executed normally, the following message appears.
  
  \[
  \text{XXXXXXXXXX IS SAVED.}
  \]

  Meaning: The file \text{XXXXXXXXXX} is saved.

  - If it ends in error, the following message appears.
  
  \[
  \text{FILE I/O ERROR. (FILE=XXXXXXXXXX)}
  \]

  \text{XXXXXXXXXX} represents the file name.

■ 2. SAVE SENSITIVITY DATA: To Write Sensitivity Data to Hard Disk

It is used when sensitivity correction is performed in “7. SHADING/SENSITIVITY”.

- Execute “2. SAVE SENSITIVITY DATA”.
  - Once it is executed normally, the following message appears.
  
  \[
  \text{XXXXXXXXXX IS SAVED.}
  \]

  Meaning: The file \text{XXXXXXXXXX} is saved.

  - If it ends in error, the following message appears.
  
  \[
  \text{FILE I/O ERROR. (FILE=XXXXXXXXXX)}
  \]

  \text{XXXXXXXXXX} represents the file name.

■ 3. SAVE FORMAT DATA: To Write Read Start Position or Read Width Setup Value to Hard Disk

It is used when the read start position or read width is set in “6. FORMAT”.

- Execute “3. SAVE FORMAT DATA”.
  - Once it is executed normally, the following message appears.
  
  \[
  \text{XXXXXXXXXX IS SAVED.}
  \]

  Meaning: The file \text{XXXXXXXXXX} is saved.

  - If it ends in error, the following message appears.
  
  \[
  \text{FILE I/O ERROR. (FILE=XXXXXXXXXX)}
  \]

  \text{XXXXXXXXXX} represents the file name.
4. DISPLAY DATA: To List Up Format/Set Sensitivity Data

Execute “4. DISPLAY DATA”.

・ The following message appears.

```
MP     = XXXX  TMP  = XXXX  TML   = XXXX
RCNT   = XXXX  NCNT = XXXX  HVCNT   = XXXX
HVDATA = XXXX  PMTK = XXXX  SAIP   = XXXX
Xe     = XXXX  Z    = XXXX  SMD    = XXXX
```

Meanings of the displayed data are as follows, where XXXX denotes four decimal digits.

- **MP**: Number of invalid pixels
- **TMP**: Total number of invalid pixels
- **TML**: Total number of invalid lines
- **RCNT**: Reference frequency division value
- **NCNT**: Oscillation frequency setup value
- **HVCNT**: Center-sensitivity HV value
- **HVDATA**: Reading HV value
- **PMTK**: PMT sensitivity coefficient
- **SAIP**: IP sensitivity during sensitivity adjustment
- **Xe**: Erasure level dosage value
- **Z**: Erasure level QL value
- **SMD**: Correction mode default value
5. LOAD FROM FD: To Read or Write Content of Primary Memory

The shading, polygon, and sensitivity data in the floppy disk is loaded into the memory. It is used when factory default data in the floppy disk is loaded, for example.

1) Execute “5. LOAD FROM FD: 1. SHADING/POLYGON/2. SENSITIVITY”.
   - The following message appears.
     PLEASE SET A FD.
     ARE YOU SURE TO LOAD SHADING/POLYGON DATA FILES FROM THE FD?
     1. YES 2. NO (DEFAULT=2) :
     Meaning: A floppy disk should be put into the floppy disk drive.
     Are you sure to load the shading or polygon correction data from the floppy disk?

2) Put the floppy disk into the floppy disk drive and type in “1”.
   - Once the file is loaded from the floppy disk, the following message appears.
     XXXXXXXXXX IS LOADED.
   - If the process ends in error, the following message appears.
     FILE I/O ERROR. (FILE=XXXXXXXXXX)
     XXXXXXXXXX represents the file name.

6. SAVE TO FD: To Write Shading/Polygon/Sensitivity Data on Primary Memory to FD

It is used when the shading, polygon, and sensitivity data is backed up.

1) Execute “6. SAVE TO FD”.
   - The following message appears.
     PLEASE SET A FD.
     ARE YOU SURE TO SAVE SHADING/POLYGON & SENSITIVITY DATA FILES TO THE FD?
     1. YES 2. NO (DEFAULT=2) :
     Meaning: A floppy disk should be put into the floppy disk drive.
     Are you sure to save the shading or polygon correction data to the floppy disk?

2) Put the floppy disk into the floppy disk drive and type in “1”.
   - Once the file is saved to the floppy disk, the following message appears.
     XXXXXXXXXX IS LOADED.
   - If the process ends in error, the following message appears.
     FILE I/O ERROR. (FILE=XXXXXXXXXX)
     XXXXXXXXXX represents the file name.
10.9 9. DIAGNOSTIC: Self Diagnostics of Scanner

A sequence of self-diagnostic checks related to the scanner are performed. If an error occurs during execution, the error is displayed and the diagnostics continues.

Execute “9. DIAGNOSTIC”.

ywać If it is executed normally, the following message appears.

SCANNER DIAGNOSTIC IS IN PROGRESS.

RESULT – OK
Meaning: Scanner self-diagnostics is now being performed.

螭 If it ends in error, either of the following messages appears.

START POINT DETECTION ERROR  Meaning: Start-point detection failure
EDGE DETECTION ERROR  Meaning: Leading-edge detection failure
HV ERROR  Meaning: High-voltage power supply failure
ANALOG POWER SUPPLY ERROR  Meaning: Analog power supply failure
POLYGON MIRROR ERROR  Meaning: Polygon failure
LASER POWER ERROR  Meaning: Laser power failure
LASER POWER INSUFFICIENT  Meaning: Insufficient laser power
10.10 10. VIRTUAL IMAGE: Setting in Virtual Generation Mode for Image Signal

When an abnormal image occurs, a quasi-reading image is used to isolate its cause. When this item is set and then IP conveyance is performed, a virtual image may be read and outputted to film.

◆ NOTES ◆

• To obtain a quasi-reading image, set either “1. LIGHT”, “2. LOG AMP”, or “3. SCN08 INPUT” and then return to the routine screen, before performing IP reading.
• After the quasi-reading is completed, be sure to select “4. ROUTINE” to cancel the quasi-reading mode.
• Judging from the virtual image, isolate the cause of the abnormal image.

SUPPLEMENTARY NOTE

• For PMT electrical input quasi-reading (LOGAMP), HV is forced to OFF. Thus, a “HV-OFF warning” occurs when exiting M-Utility. However, it is not an error. So, press the CONFIRM button and proceed with the operation.
• For PMT electrical input quasi-reading (LOGAMP), a completely different signal than a normal X-ray image is inputted as a quasi-image signal. Thus, minute flickering, which will not pose any problem for a typical image, may appear as nonuniformity, depending on image processing requirements. Even if nonuniformity occurs as a result of quasi-reading, no nonuniformity is often found on a typical X-ray image.
  If any nonuniformity is found during quasi-reading, adjustment should be made with a usual X-ray image.
• The IP conveyed should be completely erased. ID information and so forth should also be registered in a similar manner to the routine processing.

1. LIGHT: Virtual Image for Injecting Virtual Light of LED into Photomultiplier (LED on PMT Board)

(1) Select “1. LIGHT”.
  ➤ The following message appears.

  INPUT THE LED’S LUMINESCENCE QUANTITY.
  1. EQUIVALENT TO 2-3[microR]
  2. EQUIVALENT TO 2-3[mR]
  1 - 2 :

  Meaning: Enter the luminescence quantity of the LED.

(2) Type in a value either “1” or “2”.
  ➤ The luminescence quantity of the LED is set, with the following message displayed.

THE SPECIAL MODE FOR VIRTUAL IMAGE IS SET.

Meaning: The quasi-reading mode is now set.

2. LOG AMP: Virtual Image for Inputting Fixed Current into PMT Board (VH OFF on PMT)

Select “2. LOG AMP”.
  ➤ The following message appears.

THE SPECIAL MODE FOR VIRTUAL IMAGE IS SET.

Meaning: The quasi-reading mode is now set.
3. SCN08 INPUT: Virtual Image for Generating Image Signal on SCN08 Board

Select “3. SCN08 INPUT”.
➮ The following message appears.

THE SPECIAL MODE FOR VIRTUAL IMAGE IS SET.

Meaning: The quasi-reading mode is now set.

4. ROUTINE: To Cancel Virtual Generation Mode for Image Signal

Select “4. ROUTINE”.
➮ The following message appears.

THE NORMAL MODE WITHOUT VIRTUAL IMAGE IS SET.

Meaning: The quasi-reading mode is now canceled.
11. 6. MECHANICAL UTILITY: Mechanical Diagnostics

It is used during checking of the motors and sensors.

11.1 1. INITIALIZE: Initialization of Motors, Actuators, and Sensors

◆ NOTE ◆

When the mode is transitioned to M-Utility during initialization or while an error message is displayed, be sure to execute “1. INITIALIZE”. If it is not executed, tests cannot be performed because the motors, actuators, and sensors have not been initialized.

1. Execute “1. INITIALIZE”.

➢ The motors, actuators, and sensors are initialized, so that tests can be performed.
11.2 2. MOTOR: Operation Tests on Motor

It is used during checking of the pulse motors.

■ 1. NUMBER: To List Up No. of Pulse Motor

Execute “1. NUMBER”.

娆 A list of pulse motor numbers is displayed as follows.

1:MB1 2:MB2 3:MB3 4:MC1 5:MD1
6:MD2 7:MD3 8:ME1 9:ME2 10:MF1

■ 2. PARAMETER: To Set Drive Parameter

(1) Select “2. PARAMETER”.

娆 The following message appears.

1:MB1 2:MB2 3:MB3 4:MC1 5:MD1
6:MD2 7:MD3 8:ME1 9:ME2 10:MF1

INPUT THE NUMBER OF MOTOR.
1 - 10 :
Meaning: Enter the number of motor.

(2) Type in the number of motor from 1 through 10.

娆 The following message appears.

INPUT THE ROTATION DIRECTION.
1.CW 2.CCW (FIXED=X)
Meaning: Enter the rotation direction.

“X” denotes the rotation direction (either “1” or “2”) that is currently set.

(3) Type in the rotation direction (either “1” or “2”).

娆 The following message appears.

INPUT THE TOTAL NUMBER OF PULSES.
0 - 8388607 (FIXED=XXXXXXXX) :
Meaning: Enter the total number of pulses.

“XXXXXXXX” denotes the total number of pulses that is currently set.

(4) Type in the total number of pulses.

娆 The following message appears.

INPUT THE HI-SPEED.
16 - 7200 (FIXED=XXXX) :
Meaning: Enter the high-speed value.

“XXXX” denotes the high-speed value that is currently set.
(5) Type in the high-speed value.
> The following message appears.

**INPUT THE LOW-SPEED.**
16 - 7200 (FIXED=XXXX) :
Meaning: Enter the low-speed value.
“XXXX” denotes the low-speed value that is currently set.

(6) Type in the low-speed value.
> The following message appears.

**INPUT THE SLEW UP TIME.**
1000/LOW-SPEED - 3000 (FIXED=XXXX) :
Meaning: Enter the slew-up time.
“XXXX” denotes the slew-up time that is currently set.

(7) Type in the slew-up time.
> The following message appears.

**INPUT THE SLEW DOWN TIME.**
1000/LOW-SPEED - 3000 (FIXED=XXXX) :
Meaning: Enter the slew-down time.
“XXXX” denotes the slew-down time that is currently set.

(8) Type in the slew-down time.
> The following message appears.

**INPUT POWER DOWN DELAY TIME.**
0 - 255 (FIXED=XXX) :
Meaning: Enter the power-down delay time.
“XXX” denotes the power-down delay time that is currently set.

(9) Type in the power-down delay time.
> The following message appears.

**INPUT THE MAGNETIC PHASE.**
1. 2 PHASE 2 1-2 PHASE
3. W1-2 PHASE 4.2W1-2 PHASE
1 - 4 (FIXED=X) :
Meaning: Enter the magnetic phase.
“X” denotes the value of magnetic phase (1: 2-phase magnetization, 2: 1-2-phase magnetization, 3: W-1-2-phase magnetization, 4: 2W-1-2-phase magnetization) that is currently set.
(10) Type in the value of magnetic phase.

☞ The following message appears.

**INPUT THE MOVE AND STOP MODE.**

1. **HI-POWER/ENERGIZED STOP AFTER DELAY**
2. **LOW-POWER/ENERGIZED STOP AFTER DELAY**
3. **HI-POWER/DEENERGIZED STOP AFTER DELAY**
4. **LOW-POWER/DEENERGIZED STOP AFTER DELAY**
5. **HI-POWER/ENERGIZED STOP**
6. **LOW-POWER/ENERGIZED STOP**
7. **HI-POWER/DEENERGIZED STOP**
8. **LOW-POWER/DEENERGIZED STOP**

1 - 8 (FIXED=X) :

Meaning: Enter the move and stop mode.

1: High power driving/energized stop, with power-down delay
2: Low power driving/energized stop, with power-down delay
3: High power driving/deenergized stop, with power-down delay
4: Low power driving/deenergized stop, with power-down delay
5: High power driving/energized stop, without power-down delay
6: Low power driving/energized stop, without power-down delay
7: High power driving/deenergized stop, without power-down delay
8: Low power driving/deenergized stop, without power-down delay

(11) Type in the move/stop mode (“1” through “8”).

☞ The following message appears.

**INPUT THE STOP MODE.**

1. **HALT**
2. **LIMIT**

1 - 2 (FIXED=X) :

Meaning: Enter the stop mode.

“X” denotes the stop mode (1: HALT stop, 2: LIMIT stop) that is currently set.
3. DRIVE: To Drive Motor

(1) Select “3. DRIVE”.
   ➥ The following message appears.
   
   1:MB1 2:MB2 3:MB3 4:MC1 5:MD1
   6:MD2 7:MD3 8:ME1 9:ME2 10:MF1

   INPUT THE NUMBER OF MOTOR.

   1 – 10 :
   Meaning: Enter the number of motor.

   (2) Type in the number of motor.
   ➥ The motor is driven.

4. STOP: To Stop Motor

(1) Select “4. STOP”.
   ➥ The following message appears.
   
   1:MB1 2:MB2 3:MB3 4:MC1 5:MD1
   6:MD2 7:MD3 8:ME1 9:ME2 10:MF1

   INPUT THE NUMBER OF MOTOR.

   1 – 10 :
   Meaning: Enter the number of motor.

   (2) Type in the number of motor.
   ➥ The motor is stopped.
11.3 3. ACTUATOR: Operation Tests on Solenoids, Pumps, etc.

It is used during checking of the erasure lamp, FFM, etc.

■ 1. NUMBER: To List Up No. of Erasure Lamp, FFM and Other Actuators

Execute “1. NUMBER”.

↬ A list of erasure lamps, FFM and other actuators is displayed as follows.

1: SOLA1  2: SOLA2  3: SOLA3  4: SOLA4  5: PB1
6: SVB1  7: SOLF1  8: SOLC1  9: LAMP STB  10: LAMP ON
11: FFM

■ 2. DRIVE: To Drive Actuator

● When “11: FFM” is selected

(1) Select “2. DRIVE”.

↬ The following message appears.

1: SOLA1  2: SOLA2  3: SOLA3  4: SOLA4  5: PB1
6: SVB1  7: SOLF1  8: SOLC1  9: LAMP STB  10: LAMP ON
11: FFM

INPUT THE NUMBER OF ACTUATOR.  
1 - 11 :
Meaning: Enter the number of actuator.

(2) Type in “11”.

↬ The following message appears.

INPUT THE ROTATION DIRECTION.  
1. CW  2. CCW (FIXED=X)
Meaning: Enter the rotation direction.

“X” denotes the rotation direction (either “1” or “2”) that is currently set.

(3) Type in the rotation direction (either “1” or “2”).

↬ The following message appears.

INPUT THE SPEED.  
1. STANDARD SUBSCANNING  
2. RAPID SUBSCANNING  
3. CARRY OUT  
1 - 3 (FIXED=X) :
Meaning: Enter the rotation speed.

“X” denotes the rotation speed (1: standard subscanning, 2: fast subscanning, 3: ejection) that is currently set.

(4) Type in the rotation speed.

↬ FFM is driven.
When other than “11: FFM” is selected

(1) Select “2. DRIVE”.
   ➥ The following message appears.
   
   1:SOLA1  2:SOLA2  3:SOLA3  4:SOLA4  5:PB1
   6:SVB1   7:SOLF1   8:SOLC1  9:LAMP STB  10:LAMP ON
   11:FFM
   INPUT THE NUMBER OF ACTUATOR.
   1 - 11 :
   Meaning: Enter the number of actuator.

(2) Type in the number of actuator (either 1 through 11).
   ➥ The actuator is driven.

3. STOP: To Stop Actuator

(1) Select “3. STOP”.
   ➥ The following message appears.
   
   1:SOLA1  2:SOLA2  3:SOLA3  4:SOLA4  5:PB1
   6:SVB1   7:SOLF1   8:SOLC1  9:LAMP STB  10:LAMP ON
   11:FFM
   INPUT THE NUMBER OF ACTUATOR.
   1 - 11 :
   Meaning: Enter the number of actuator.

(2) Type in the number of actuator.
   ➥ The actuator is stopped.
11.4 4. SENSOR: Operation Tests on Sensors

It is used during checking of the sensors. Operation tests on the sensors are performed. When the sensor status changes, an audible beep alert is generated. If anything abnormal is detected, an error message is displayed.

■ 1. NUMBER: To Display Sensor No. List

Execute “1. NUMBER”.

➮ A list of sensor numbers is displayed as follows.

6:SA6  7:SA7  8:SA8  9:SA9  10:SA10
16:SA16 17:SA17 18:SB1  19:SB2  20:SB3
26:SD2  27:SD3  28:SE1  29:SF1  30:SF2
31:SF3  32:SF4  33:SZ2  34:SZ3

■ 2. MONITOR: To Monitor Individual Sensor

(1) Select “2. MONITOR”.

➮ The following message appears.

INPUT THE NUMBER OF SENSOR.

1 - 34 :

Meaning: Enter the number of sensor.

(2) Type in the number of sensor.

➮ Sensor monitoring is initiated, and, when the sensor status changes, the following message appears.

XXXXX ----> Open
XXXXX ----> Close

Meaning: Sensor xxxxx becomes OPEN.
Sensor xxxxx becomes CLOSE.
3. MONITOR ALL: To Monitor All Sensors

(1) Select “3. MONITOR ALL”.
   ✷ A list indicating the numbers and status (0: OPEN, 1: CLOSE) of sensors are displayed.
   
   SA1 -17 : 0 0 0 0 1 0 0 1 0 0 0 1 0 0 0 1 1
   SB1 - 5 : 1 0 1 0 0
   SC1 - 2 : 0 0
   SD1 - 3 : 1 1 0
   SE1     : 1
   SF1 - 4 : 0 0 0 0
   SZ2 - 3 : 1 0

   ✷ When the sensor status changes, the following message appears.
   
   XXXXX ----> Open
   XXXXX ----> Close
   
   Meaning: Sensor XXXXX becomes OPEN.
             Sensor XXXXX becomes CLOSE.

(2) Select “0. QUIT”.
   ✷ The sensor monitoring is exited.
11.5 5. UNIT: 1. IP FEED/LOAD UNIT: Operation Tests on IP Removal Mechanism

■ 1. ARM HOME POSITION: To Locate HP of IP Removal Arm Mechanism
   Execute “1. ARM HOME POSITION”.
   ➥ The following message appears.
   **ARM H.P. SETTING IS IN PROGRESS.**
   **RESULT - OK** (or **RESULT - ERROR**)
   Meaning: IP removal arm home positioning is now being performed.

■ 2. FEED/LOAD: To Feed or Load IP Removal Mechanism
   (1) Execute “2. FEED/LOAD”.
   ➥ The following message appears.
   **INPUT THE MODE.**
   1. **NORMAL MODE**
   2. **STEP MODE**
   1 - 2 :
   Meaning: Select the operation mode.
   1. NORMAL MODE (normal mode)
   2. STEP MODE (step mode)
   (2) Enter the operation mode (either “1” or “2”) of the IP removal arm.
   ➥ The following message appears.
   **SET THE CASSETTE TO SHELF1.**
   Meaning: Set a cassette into the topmost shelf.
   (3) Set a cassette.
   ● When “1. NORMAL MODE” is selected
   ➥ Once a sequence of operations is started, the following message appears.
   **THE FEED/LOAD PROCESS IS IN PROGRESS.**
   Meaning: Feed/load operation is now being performed.
   ● When “2. STEP MODE” is selected
   ➥ Once the operation is started stepwise, the following message appears.
   **THE FEED/LOAD PROCESS IS IN PROGRESS.**
   **ARE YOU SURE TO MOVE ON NEXT STEP?**
   Meaning: Are you sure to proceed to the next step?
   Hit the ENT key to proceed to the next step (there are six steps).
   (4) When the operation is completed, pull out the cassette.
   ➥ The following message appears.
   **RESULT - OK**
   ➥ If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.
11.6 5. UNIT: 2. UP-DOWN UNIT: Operation Tests on Elevation Unit

■ 1. HOME POSITION: To Locate HP of IP Removal Unit

Execute “1. HOME POSITION”.
➤ The following message appears.
UP/DOWN UNIT H.P. SETTING IS IN PROGRESS.
RESULT – OK (or RESULT – ERROR)
Meaning: IP removal unit home positioning is now being performed.

■ 2. MOVE POSITION: To Input Unit Position

(1) Select “2. MOVE POSITION”.
➤ The following message appears.
INPUT THE UNIT POSITION.
1 – 4 :
Meaning: Enter the unit position.

(2) Type in the unit position.
➤ The following message appears.
MOVED–UP/DOWN IS IN PROGRESS.
RESULT – OK (or RESULT – ERROR)
Meaning: The elevation unit is now being moved.
11.7 5. UNIT: 3. SIDE-POSITIONING GRIP: Operation Tests on Side-Positioning Mechanism Grip

■ 1. HOME POSITION: To Locate HP of Side-Positioning Mechanism Grip
   Execute “1. HOME POSITION”.  
   ➸ The following message appears.  
   MOVED TOWARD THE HOME POSITION IS IN PROGRESS.  
   RESULT – OK (or RESULT – ERROR)  
   Meaning: Side-positioning mechanism grip home positioning is now being performed.

■ 2. GRIP: To Effect Grip Operation for Side-Positioning Mechanism
   Execute “2. GRIP”.  
   ➸ Once it is executed normally, the following message appears.  
   MOVED TOWARD THE NIPPING POSITION IS IN PROGRESS.  
   RESULT – OK  
   Meaning: Grip operation of the side-positioning mechanism is now being performed.
   ➸ If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.

■ 3. RELEASE: To Perform Grip Release Operation for Side-Positioning Mechanism
   Execute “3. RELEASE”.  
   ➸ The following message appears.  
   MOVED TOWARD THE NON-NIPPING POSITION IS IN PROGRESS.  
   RESULT – OK (or RESULT – ERROR)  
   Meaning: Grip release operation of the side-positioning mechanism is now being performed.
11.8 5. UNIT: 4. SIDE-POSITIONING UNIT: Operation Tests on Side-Positioning Mechanism

1. HOME POSITION: To Locate HP of Side-Positioning Mechanism

Execute “1. HOME POSITION”.
	- The following message appears.

MOVED TOWARD THE HOME POSITION IS IN PROGRESS.
RESULT – OK (or RESULT – ERROR)
Meaning: Side-positioning mechanism home positioning is now being performed.

2. ACTUATION: To Effect Side-Positioning Operation

1) Select “2. ACTUATION”.
	- The following message appears.

1. NORMAL  2. STEP :

2) Enter the side-positioning operation mode (either “1” or “2”).

- When “1. NORMAL” is selected
  - When a series of side-positioning operations is initiated, the following message appears.

SIDE-POSITIONING PROCESS IS IN PROGRESS.
ARE YOU SURE TO MOVE ON NEXT STEP?
Meaning: Side-positioning operation is now being performed.

  - If it ends in error, “ERROR (XXXX)” is displayed. “XXXX” denotes an error code.

- When “2. STEP” is selected
  - When the side-positioning operation is initiated in steps, the following message appears.

SIDE-POSITIONING PROCESS IS IN PROGRESS.
ARE YOU SURE TO MOVE ON NEXT STEP?
Meaning: Are you sure to proceed to the next step?
Hit the ENT key to proceed to the next step (there are four steps).

  - When the operation is completed, the following message appears.
RESULT – OK

  - If it ends in error, “ERROR (XXXX)” is displayed. “XXXX” denotes an error code.
11.9 5. UNIT: 5. AFTER-READING GRIP: Operation Tests on After-Reading Conveyor Grip

■ 1. HOME POSITION: To Locate HP of After-Reading Conveyor Grip Mechanism

Execute “1. HOME POSITION”.
☞ The following message appears.

AFTER-READING GRIP UNIT H.P. SETTING IS IN PROGRESS.
RESULT – OK (or RESULT – ERROR)
Meaning: After-reading conveyor grip home positioning is now being performed.

■ 2. GRIP: To Effect Grip Operation for After-Reading Conveyor Grip Mechanism

Execute “2. GRIP”.
☞ Once it is executed normally, the following message appears.

MOVED TOWARD THE NIPPING POSITION IS IN PROGRESS.
RESULT – OK
Meaning: Grip operation of the after-reading conveyor mechanism is now being performed.

☞ If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.

■ 3. RELEASE: To Release Grip Operation of After-Reading Conveyance Grip Mechanism

Execute “3. RELEASE”.
☞ Once it is executed normally, the following message appears.

MOVED TOWARD THE NON-NIPPING POSITION IS IN PROGRESS.
RESULT – OK
Meaning: Grip release operation of the after-reading conveyor mechanism is now being performed.

☞ If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.
11.10 5. UNIT: 6. DRIVING GRIP: Operation Tests on Subscanning Driving Grip Mechanism

### 1. GRIP: To Effect Driving Shaft Grip Operation

1. Execute “1. GRIP”.
   - The following message appears.
   
   **INPUT THE GRIP SPEED.**
   
   1. ST
   2. HR
   
   1 - 2 :
   
   Meaning: Enter the grip speed.

2. Type in either “1” or “2”.
   - The following message appears.
   
   **MOVED TOWARD THE NIPPING POSITION IS IN PROGRESS.**
   
   **DRIVE TIME : XXX**
   
   **RESULT - OK**
   
   Meaning: Grip operation of the driving shaft is now being performed.
   
   DRIVE TIME is displayed in units of 10 msec.

   - If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.

### 2. RELEASE: To Release Driving Shaft Grip

1. Execute “2. RELEASE”.
   - The following message appears.
   
   **INPUT THE RELEASE SPEED.**
   
   1. HIGH
   2. LOW
   
   1 - 2 :
   
   Meaning: Enter the release speed.

2. Type in either “1” or “2”.
   - The following message appears.
   
   **MOVED TOWARD THE NON-NIPPING POSITION IS IN PROGRESS.**
   
   **DRIVE TIME : XXX**
   
   **RESULT - OK**
   
   Meaning: Grip operation of the driving shaft is now being performed.
   
   DRIVE TIME is displayed in units of 10 msec.

   - If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.
3. D/A DATA: To Display Data Related to Driving Shaft Grip Operation

Execute “3. D/A DATA”.

rega The following message appears.

<table>
<thead>
<tr>
<th>DRIVING</th>
<th>GRIP</th>
<th>D/A DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DEFAULT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CURRENT</td>
</tr>
<tr>
<td>RELEASE</td>
<td>HIGH</td>
<td>xxxx</td>
</tr>
<tr>
<td></td>
<td>xxxx</td>
<td>xxxxxx</td>
</tr>
<tr>
<td>LOW</td>
<td>xxxx</td>
<td>xxxxxx</td>
</tr>
<tr>
<td>GRIP</td>
<td>ST</td>
<td>xxxx</td>
</tr>
<tr>
<td></td>
<td>xxxx</td>
<td>xxxxxx</td>
</tr>
<tr>
<td>HR</td>
<td>xxxx</td>
<td>xxxxxx</td>
</tr>
</tbody>
</table>

Each item of the data is indicated in four decimal digits (xxxx).
11.11.5. UNIT: 7. DRIVEN GRIP: Operation Tests on Subscanning Driven Grip Mechanism

■ 1. GRIP: To Effect Driven Shaft Grip Operation

(1) Execute “1. GRIP”.

⇒ The following message appears.

**INPUT THE NIPPING SPEED.**

1. HIGH
2. LOW
1 - 2 :
Meaning: Enter the grip speed.

(2) Type in either “1” or “2”.

⇒ The following message appears.

**MOVED TOWARD THE NIPPING POSITION IS IN PROGRESS.**

**DRIVE TIME : XXX**

**RESULT - OK**
Meaning: Grip operation of the driven shaft is now being performed.

DRIVE TIME is displayed in units of 10 msec.

⇒ If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.

■ 2. RELEASE: To Release Driven Shaft Grip

(1) Execute “2. RELEASE”.

⇒ The following message appears.

**INPUT THE NON-NIPPING SPEED.**

1. ST
2. HR
1 - 2 :
Meaning: Enter the release speed.

(2) Type in either “1” or “2”.

⇒ The following message appears.

**MOVED TOWARD THE NON-NIPPING POSITION IS IN PROGRESS.**

**DRIVE TIME : XXX**

**RESULT - OK**
Meaning: Grip release operation of the driven shaft is now being performed.

DRIVE TIME is displayed in units of 10 msec.

⇒ If it ends in error, “ERROR (XXXX)” appears. “XXXX” denotes an error code.
3. D/A DATA: To Display Data Related to Driven Shaft Grip Operation

Execute “3. D/A DATA”.

The following message appears.

<table>
<thead>
<tr>
<th>DRIVING</th>
<th>GRIP</th>
<th>D/A DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DEFAULT CURRENT</td>
</tr>
<tr>
<td>RELEASE</td>
<td>HIGH</td>
<td>xxxx</td>
</tr>
<tr>
<td></td>
<td>LOW</td>
<td>xxxx</td>
</tr>
<tr>
<td>GRIP</td>
<td>ST</td>
<td>xxxx</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>xxxx</td>
</tr>
</tbody>
</table>

Each item of the data is indicated in four decimal digits (xxxx).

11.12 5. UNIT : 8. MIRROR UP/DOWN: Operation Tests on Light-Collecting Mirror

This command does not function with the CR-IR341.
12. 7. FILE UTILITY: File Operation

File-related operation is performed. It is used when the configuration data is edited on a personal computer.

12.1 1. FORMAT FD: Formatting FD

◆ NOTES ◆

• Before formatting a floppy disk, make sure that it does not contain any necessary data. Once it is formatted, the data in the floppy disk is completely lost.
• If the floppy disk is "write-protected," it should be "write-enabled" before putting it into the floppy disk drive. Under the "write-protected" condition, the floppy disk cannot be formatted.

1. FORMAT FD: To Format FD

(1) Select “1. FORMAT FD”.

⇒ The following message appears.

PLEASE SET A FD. ARE YOU SURE TO FORMAT THE FD ?
1. YES 2. NO (DEFAULT=2) :

Meaning: Put a floppy disk into the floppy disk drive. Are you sure to format the floppy disk?

(2) Put the floppy disk into the floppy disk drive, and select “1”.

⇒ Once it is formatted, the following message appears.

FORMATTING THE FD IS COMPLETED.
Meaning: The floppy disk has been completely formatted.

⇒ If the formatting ends in error, the following message appears.

FORMATTING THE FD IS INCOMPLETED.
Meaning: The floppy disk formatting failed.
12.2 2. FORMAT IMAGE PARTITION: Formatting HD Image Storage Partition

Format image storage partition of hard disk.

(1) Select “2. FORMAT IMAGE PARTITION”.
  ➥ The following message appears.

**ARE YOU SURE TO FORMAT THE IMAGE PARTITION ?
1 . YES 2 . NO (DEFAULT=2) :**
Meaning: Are you sure to format the image storage partition?

(2) Select “1”.
  ➥ Once it is formatted, the following message appears.

**FORMATTING THE IMAGE PARTITION IS COMPLETED.**
Meaning: The image storage partition of the hard disk has been completely formatted.

  ➥ If the formatting ends in error, the following message appears.

**FORMATTING THE IMAGE PARTITION IS INCOMPLETED.**
Meaning: The HD image storage partition formatting failed.
12.3 3. BACKUP: Backing Up Various Data

Various setup files are written to a floppy disk.

■ 1. SCANNER DATA: To Save Scanner Setup File to FD

(1) Select “1. SCANNER DATA”.
   ➤ The following message appears.

   PLEASE SET A FD.
   ARE YOU SURE TO COPY SCANNER DATA FILES TO THE FD ?
   1.YES 2.NO (DEFAULT=2) :

   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the scanner data to the floppy disk?

   ➤ When the floppy disk becomes full, the following message appears.

   THE FD IS FULL. EXCHANGE OTHER ONE.
   1.CONTINUE 2.CANCEL (DEFAULT=2) :

   Meaning: The floppy disk is full. Swap it for another floppy disk.

   Swap the floppy disk, and select “1”.
   ➤ Writing to the floppy disk continues, and once all the files are copied, the menu is displayed.

   ➤ For any file that cannot be written to the floppy disk, the following message appears.

   FILE I/O ERROR. (FILE=XXXXXXXXXX)
   XXXXXXXXXX denotes the file name.

   The following files are saved to the floppy disk.
   • SCN_ELVL.DAT     • SCN_IFMT.DAT
   • SCN_INT.DAT      • SCN_MAIN.DAT
   • SCN_POLY.DAT     • SCN_ISEN.DAT
   • SCN_SHDG.DAT
2. CONFIGURATION DATA: To Save Machine Setup File to FD

(1) Select “2. CONFIGURATION DATA”.
  ➤ The following message appears.

**PLEASE SET A FD.**
**ARE YOU SURE TO COPY CONFIGURATION FILES TO THE FD?**
1. YES 2. NO (DEFAULT=2) :

Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the machine setup files to the floppy disk?

(2) Put the floppy disk into the floppy disk drive, and select “1”.
  ➤ Coping to the floppy disk is initiated, with the following messages displayed as files are copied to the floppy disk.

```
XXXXXXXXXX IS COPIED.
XXXXXXXXXX IS COPIED.
. .
XXXXXXXXXX IS COPIED.
```

Meaning: `XXXXXXXXXX` is copied.

➤ When the floppy disk becomes full, the following message appears.

**THE FD IS FULL. EXCHANGE OTHER ONE.**
1. CONTINUE 2. CANCEL (DEFAULT=2) :

Meaning: The floppy disk is full. Replace it with another floppy disk.

Replace the floppy disk, and select “1”.
  ➤ Writing to the floppy disk continues, and once all the files are copied, the menu is displayed.

➤ For any file that cannot be written to the floppy disk, the following message appears.

**FILE I/O ERROR. (FILE=XXXXXXXXXX)**

`XXXXXXXXXX` denotes the file name.

The following files are saved to the floppy disk.

- IRSET.CFG
- IRSET.ORG
- FILMFMT.CFG
- FILMFMT.ORG
- IRSTATUS.CFG
- IRSTATUS.ORG
3. NETWORK DATA: To Save Network-Related Setup File to FD

(1) Select “3. NETWORK DATA”.
   ➤ The following message appears.

   PLEASE SET A FD.
   ARE YOU SURE TO COPY NETWORK DATA FILES TO THE FD ?
   1.YES 2.NO (DEFAULT=2) :

   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the network data to the floppy disk?

(2) Put the floppy disk into the floppy disk drive, and select “1”.
   ➤ Coping to the floppy disk is initiated, with the following messages displayed as files are copied to the floppy disk.

   XXXXXXXXXXX IS COPIED.
   XXXXXXXXXXX IS COPIED.
   .
   .
   XXXXXXXXXXX IS COPIED.

   Meaning: XXXXXXXXXXX is copied.
   ➤ When the floppy disk becomes full, the following message appears.

   THE FD IS FULL. EXCHANGE OTHER ONE.
   1.CONTINUE 2.CANCEL (DEFAULT=2) :

   Meaning: The floppy disk is full. Replace it with another floppy disk.

   Replace the floppy disk, and select “1”.
   ➤ Writing to the floppy disk continues, and once all the files are copied, the menu is displayed.

   ➤ For any file that cannot be written to the floppy disk, the following message appears.

   FILE I/O ERROR. (FILE=XXXXXXXXXX)
   XXXXXXXXXXX denotes the file name.

The following files are saved to the floppy disk.

- RMT_SW.CFG
- EQUIP
- DVICE
- HOSTS
- CODEDSTB
- ROUTE
- NETMASKS
- DICOM
4. IMAGE PROCESSING DATA: To Save Image Processing Parameter File to FD

(1) Select “4. IMAGE PROCESSING DATA”.
➢ The following message appears.

PLEASE SET A FD.
ARE YOU SURE TO COPY IMAGE PROCESSING DATA FILES TO THE FD ?
1.YES 2.NO (DEFAULT=2) :
Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the image processing parameters to the floppy disk?

(2) Put the floppy disk into the floppy disk drive, and select “1”.
➢ Coping to the floppy disk is initiated, with the following messages displayed as files are copied to the floppy disk.

XXXXXXXXXX IS COPIED.
XXXXXXXXXX IS COPIED.
.
.

XXXXXXXXXX IS COPIED.
Meaning: XXXXXXXXX is copied.

➢ When the floppy disk becomes full, the following message appears.

THE FD IS FULL. EXCHANGE OTHER ONE.
1.CONTINUE 2.CANCEL (DEFAULT=2) :
Meaning: The floppy disk is full. Replace it with another floppy disk.

Replace the floppy disk, and select “1”.
➢ Writing to the floppy disk continues, and once all the files are copied, the menu is displayed.

➢ For any file that cannot be written to the floppy disk, the following message appears.

FILE I/O ERROR. (FILE=XXXXXXXXXX)

XXXXXXXXXX denotes the file name.

The following files are saved to the floppy disk.

• HIPMENU.PRM  • HIPUMN.PRM
• HIPMNRL.PRM  • HP.PRM
• HIPOP.PRM  • HPT.PRM
• HIPOPT.PRM  • HPTU.PRM
• HIPOPTU.PRM  • HPU.PRM
• HIPOPU.PRM  • PEM.PRM
• HIPSTD.PRM  • PEMT.PRM
• HIPSTDU.PRM  • PEMTU.PRM
• PEMU.PRM
5. CSL MENU DATA: To Save CSL Type Setup File to FD

(1) Select “5. CSL MENU DATA”.
   ➥ The following message appears.
   **PLEASE SET A FD.**
   **ARE YOU SURE TO COPY CSL MENU DATA FILES TO THE FD?**
   1. YES 2. NO (DEFAULT=2) :
   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the console menu data to the floppy disk?

(2) Put the floppy disk into the floppy disk drive, and select “1”.
   ➥ Coping to the floppy disk is initiated, with the following messages displayed as files are copied to the floppy disk.
   
   XXXXXXXXXXXX IS COPIED.
   XXXXXXXXXXXX IS COPIED.
   .
   .
   XXXXXXXXXXXX IS COPIED.
   Meaning: XXXXXXXXXXX is copied.
   ➥ When the floppy disk becomes full, the following message appears.
   **THE FD IS FULL. EXCHANGE OTHER ONE.**
   1. CONTINUE 2. CANCEL (DEFAULT=2) :
   Meaning: The floppy disk is full. Replace it with another floppy disk.

   Replace the floppy disk, and select “1”.
   ➥ Writing to the floppy disk continues, and once all the files are copied, the menu is displayed.

   ➥ For any file that cannot be written to the floppy disk, the following message appears.
   **FILE I/O ERROR. (FILE=XXXXXXXXXX)**
   XXXXXXXXXXXX denotes the file name.

   The following files are saved to the floppy disk.
   • MPM_DEF.PRM   • FILMMARK.PRM
   • CDFORM.DAT    • BODYDISP.CFG
   • MENUDISP.CFG  • RTN_DISP.CFG
6. EDR PROCESSING DATA: To Save EDR Parameter File to FD

1. Select “6. EDR PROCESSING DATA”.
   ✜ The following message appears.
   
   **PLEASE SET A FD.**
   **ARE YOU SURE TO COPY EDR PROCESSING DATA FILES TO THE FD ?**
   1.YES 2.NO (DEFAULT=2) :
   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the EDR parameters to the floppy disk?

2. Put the floppy disk into the floppy disk drive, and select “1”.
   ✜ Coping to the floppy disk is initiated, with the following messages displayed as files are copied to the floppy disk.
   
   XXXXXXXXXX IS COPIED.
   XXXXXXXXXX IS COPIED.
   .
   .
   XXXXXXXXXX IS COPIED.
   Meaning: XXXXXXXXXX is copied.

   ✜ When the floppy disk becomes full, the following message appears.
   
   **THE FD IS FULL. EXCHANGE OTHER ONE.**
   1.CONTINUE 2.CANCEL (DEFAULT=2) :
   Meaning: The floppy disk is full. Replace it with another floppy disk.
   Replace the floppy disk, and select “1”.
   ✜ Writing to the floppy disk continues, and once all the files are copied, the menu is displayed.

   ✜ For any file that cannot be written to the floppy disk, the following message appears.
   
   **FILE I/O ERROR. (FILE=XXXXXXXXXX)**
   XXXXXXXXXX denotes the file name.

The following files are saved to the floppy disk.

- IRMUMN.PRM
- MPMUMN.PRM
- NNUMN.PRM
- EDR.ABS
12.4 4. RESTORE: Reading Various Data

Various setup files are loaded from the floppy disk to the hard disk.

◆ NOTE ◆

*NOTE*

Before installing the configuration data that was edited on the PC or the like, make sure that
the software versions for the machine where the data was extracted and the machine where
it is to be installed are the same. If the software versions are different, error may occur
during installation.

[1. SCANNER DATA: To Read Scanner Data from FD to HD]

(1) Select “1. SCANNER DATA”.

➞ The following message appears.

**PLEASE SET A FD.**

ARE YOU SURE TO COPY SCANNER DATAS TO THE HD ?

1.YES 2.NO (DEFAULT=2) :

Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the scanner
data to the hard disk?

(2) Select “1”.

➞ Once the data is copied to the hard disk, the following message appears.

**XXXXXXXXXX IS COPIED.**

Meaning: XXXXXXXXXX is copied.

➞ If the coping ends in error, the following message is displayed.

**FILE I/O ERROR. (FILE=XXXXXXXXXX)**

**XXXXXXXXXX** denotes the file name.

The following files are read from the floppy disk to the hard disk.

- SCN_IFMT.DAT
- SCN_INIT.DAT
- SCN_POLY.POL
- SCN_ISEN.DAT
- SCN_SHDG.SHD
2. CONFIGURATION DATA: To Read Machine Setup File form FD to HD

(1) Select “2. CONFIGURATION DATA”.
   ✦ The following message appears.
   
   PLEASE SET A FD.
   ARE YOU SURE TO COPY CONFIGURATION FILES TO THE HD ?
   1. YES 2. NO (DEFAULT=2) :
   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the machine setup files to the hard disk?

(2) Select “1”.
   ✦ Once the data is copied to the hard disk, the following message appears.
   XXXXXXXXXX IS COPIED.
   Meaning: XXXXXXXXXX is copied.

   ✦ If the coping ends in error, the following message is displayed.

   FILE I/O ERROR. (FILE=XXXXXXXXXX)
   XXXXXXXXXX denotes the file name.

The following files are read from the floppy disk to the hard disk.

- IRSET.CFG
- FILMFMT.CFG
- IRSTATUS.CFG
3. NETWORK DATA: To Read Network-Related Setup File from FD to HD

(1) Select “3. NETWORK DATA”.
   ✐ The following message appears.
   
   PLEASE SET A FD.
   ARE YOU SURE TO COPY NETWORK DATA FILES TO THE HD?
   1.YES 2.NO (DEFAULT=2) :
   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the network data to the hard disk?

(2) Select “1”.
   ✐ Once the data is copied to the hard disk, the following message appears.
   XXXXXXXXXX IS COPIED.
   Meaning: XXXXXXXXXX is copied.

   ✐ If the coping ends in error, the following message is displayed.
   FILE I/O ERROR. (FILE=XXXXXXXXXX)
   XXXXXXXXXX denotes the file name.

The following files are read from the floppy disk to the hard disk.

- RMT_SW.CFG  •  EQUIP
- DVICE  •  HOSTS
- CODEDSTB  •  ROUTE
- NETMASKS  •  DICOM
4. IMAGE PROCESSING DATA: To Read Image Processing Parameter File from FD to HD

(1) Select “4. IMAGE PROCESSING DATA”.
-> The following message appears.

**PLEASE SET A FD.**
**ARE YOU SURE TO COPY IMAGE PROCESSING DATA FILES TO THE HD ?**
1.YES 2.NO (DEFAULT=2) :
Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the image processing parameters to the hard disk?

(2) Select “1”.
-> Once the data is copied to the hard disk, the following message appears.

**XXXXXXXXXX IS COPIED.**
Meaning: XXXXXXXXXX is copied.

-> If the coping ends in error, the following message is displayed.

**FILE I/O ERROR. (FILE=XXXXXXXXXX)**

**XXXXXXXXXX** denotes the file name.

The following files are read from the floppy disk to the hard disk.

- HIPMENU.PRM
- HIPMNRL.PRM
- HIPOPR.MRM
- HIPOPT.PRM
- HIPOPTU.PRM
- HIPPOPU.PRM
- HIPSTD.PRM
- HIPSTDU.PRM
- PEMU.PRM

- HIPUMN.PRM
- HPRM
- HPT.PRM
- HPTU.PRM
- HPU.PRM
- PEM.PRM
- PEMT.PRM
- PEMTU.PRM
5. CSL MENU DATA: To Read CSL Type Setup File from FD to HD

(1) Select “5. CSL MENU DATA”.
   ➤ The following message appears.
   **PLEASE SET A FD.**
   **ARE YOU SURE TO COPY CSL MENU DATA FILES TO THE HD ?**
   **1.YES 2.NO (DEFAULT=2) :**
   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the console menu data to the hard disk?

(2) Select “1”.
   ➤ Once the data is copied to the hard disk, the following message appears.
   **XXXXXXXXXX IS COPIED.**
   Meaning: XXXXXXXXXX is copied.

   ➤ If the coping ends in error, the following message is displayed.
   **FILE I/O ERROR. (FILE=XXXXXXXXXX)**
   XXXXXXXXXX denotes the file name.

6. EDR PROCESSING DATA: To Read EDR Parameter File from FD to HD

(1) Select “6. EDR PROCESSING DATA”.
   ➤ The following message appears.
   **PLEASE SET A FD.**
   **ARE YOU SURE TO COPY EDR PROCESSING DATA FILES TO THE HD ?**
   **1.YES 2.NO (DEFAULT=2) :**
   Meaning: Put a floppy disk into the floppy disk drive. Are you sure to copy the EDR parameters to the hard disk?

(2) Select “1”.
   ➤ Once the data is copied to the hard disk, the following message appears.
   **XXXXXXXXXX IS COPIED.**
   Meaning: XXXXXXXXXX is copied.

   ➤ If the coping ends in error, the following message is displayed.
   **FILE I/O ERROR. (FILE=XXXXXXXXXX)**
   XXXXXXXXXX denotes the file name.

The following files are read from the floppy disk to the hard disk.

- IRMUMN.PRM
- MPMUMN.PRM
- NNUMN.PRM
- EDR.ABS
12.5 5. EDR DATA: Saving EDR Calculation to FD

**NOTE**

The following menus should not be used.
• 3. PARAMETER ONLY (SAVE TO HD)
• 4. FULL (SAVE TO HD)
• 3. DELETE EDR BACKUP ON HD

1. PARAMETER ONLY (SAVE TO FD): To Save EDR Calculation to FD

(1) Select “1. PARAMETER ONLY”.

> A list of up to ten images stored in the HD is displayed according to the following format.

XXX) YYYY.MM.DD:ZZZZ

Meanings of the items are as follows.
• XXX: Reference number (1 to 999)
• YYYY.MM.DD: Image exposure date
• ZZZZ: Image number (A001 to A999)

It should be noted that the display format of the last line in the list varies depending on whether the previous page and/or next page is available.

(2) Type in “1 through 10”, “11”, or “12” to select an image to be saved to a floppy disk (i.e., an image for which EDR calculated value is to be saved).

> When either “1” through “10” is typed in, the following message appears.

PLEASE SET A FD.
ARE YOU SURE TO Save EDR PARAMETER DATA FILES TO THE FD ?
1. YES 2. NO (DEFAULT=2) :

Meaning: Put a floppy disk into the floppy disk drive. Are you sure to save EDR calculation to the floppy disk?

(3) Select “1”.

> Once the data is copied to the floppy disk, the following message appears.

XXXXXXXXXX IS COPIED.

Meaning: XXXXXXXXX is copied.

> If the coping ends in error, the following message is displayed.

FILE I/O ERROR. (FILE=XXXXXXXXXX)

XXXXXXXXXX denotes the file name.
2. FULL (SAVE TO FD): To Save EDR Calculation and Image Data to FD

(1) Select “2. FULL”.
  ✠ A list of up to ten images stored in the HD is displayed according to the following format.

```
XXX) YYYY.MM.DD:ZZZZ
XXX) YYYY.MM.DD:ZZZZ
  .
  .
XXX) YYYY.MM.DD:ZZZZ
```

0.END 1-10.SELECT 11.NEXT 12.BEFORE (DEFAULT=11) :

Meanings of the items are as follows.

- **XXX**: Reference number (1 to 999)
- **YYYY.MM.DD**: Image exposure date
- **ZZZZ**: Image number (A001 to A999)

It should be noted that the display format of the last line in the list varies depending on whether the previous page and/or next page is available.

(2) Type in “1 through 10”, “11”, or “12” to select an image to be saved to a floppy disk (i.e., an image for which EDR calculated value and image data are to be saved).
  ✠ When either “1” through “10” is typed in, the following message appears.

```
PLEASE SET A FD.
ARE YOU SURE TO SAVE EDR DATA FILES TO THE FD ?
1.YES 2.NO (DEFAULT=2) :
```

Meaning: Put a floppy disk into the floppy disk drive. Are you sure to save both EDR calculation and image data to the floppy disk?

(3) Select “1”.
  ✠ Once the data is copied to the floppy disk, the following message appears.

```
XXXXXXXXXX IS COPIED.
```

Meaning: XXXXXXXXXX is copied.

✠ If the coping ends in error, the following message is displayed.

```
FILE I/O ERROR. (FILE=XXXXXXXXXX)
```

XXXXXXXXXX denotes the file name.
12.6  6. PREVIOUS SYSTEM SOFTWARE: Reverting Back to Previous Version of System Software

(1) Select “6. PREVIOUS SYSTEM SOFTWARE”.
   ∗ The following message appears.

   **ARE YOU SURE TO INSTALL PREVIOUS VERSION ?**
   1. YES  2. NO (DEFAULT=2) :
   Meaning: Are you sure to revert back to the previous version?

(2) Select “1”.
   ∗ Once the system software reverts back to its immediately preceding version, the following message appears.

   **PREVIOUS VERSION SOFTWARE IS INSTALLED.**
   Meaning: The system software reverts back to its previous version.

(3) Reset the machine.
12.7 7. EXECUTION: Loading and Executing File

Used for installing optional files and for other purposes.

(1) Select “7. EXECUTION”.

 peny A list of up to ten files stored in the floppy disk is displayed according to the following format.

XXX) YYYYYYYYYYYYY
XXX) YYYYYYYYYYYYY
.
.
XXX) YYYYYYYYYYYYY
0.END 1-10.SELECT 11.NEXT 12.BEFORE (DEFAULT=11) :

Meanings of the items are as follows.

• XXX: Reference number (1 to 999)
• YYYYYYYYYYYYY: File name

It should be noted that the display format of the last line in the list varies depending on whether the previous page and/or next page is available.

(2) Type in “1 through 10”, “11”, or “12” to select a file to be loaded.

 peny When either “1” through “10” is typed in, the following message appears.

ARE YOU SURE TO EXECUTE SELECTED FILE ?
1.YES 2.NO (DEFAULT=2) :

Meaning: Put a floppy disk into the floppy disk drive. Are you sure to execute the selected file?

(3) Select “1”.

 peny Once the file is executed, the following message appears.

XXXXXXXXXX IS EXECUTED.

Meaning: XXXXXXXXXX is executed.

 peny If the execution ends in error, the following message is displayed.

FILE I/O ERROR. (FILE=XXXXXXXXXX)

XXXXXXXXXX denotes the file name.
13. 8. BACKUP MEMORY: Backing Up Memory

◆ NOTE ◆

Be sure to reset the machine after clearing the backup memory. Unless the machine is reset, the backup memory is not cleared.

It is used when the backup memory is cleared.

1. Select “1. CLEAR”.
   ➥ The following message appears.
   **ARE YOU SURE TO CLEAR ALL THE BACKUP MEMORIES?**
   1: YES 2: NO (DEFAULT=2) :
   Meaning: Are you sure to initialize the backup memory?

2. Select “1”.
   ➥ The backup memory is initialized, with the following message displayed.
   **BACKUP MEMORIES ARE CLEARED**.
   Meaning: The backup memory is initialized.

3. Repeat “0. ENT”.
   ➥ M-Utility is exited.

4. Press the RESET switch of the machine.

The following files are cleared.

- **IMG**
  Set processing information, information for image number generation, HV ON/OFF information
- **IPH**
  IP position information, subscanning grip correction information
- **PNL**
  Audible click tone enabled/disabled, parallax correction data
- **DST**
  Output LP information (NET/LOCAL)
- **JNL**
  Error log information
- **LIF**
  Format frequency information
- **MFC**
  Setup options information
- **CSL** (for CSL specification only)
  Multiframe-related information, set processing-related information, menu selection information
14. 9. HV ON/OFF: High-Voltage Switch (Software Switch)

It should be turned OFF before opening the covers for checking. If not, the photomultiplier may be damaged.

For the high-voltage switch, “9. HV OFF” is displayed when menu number “9” is in ON status, while “9. HV ON” is displayed when it is in OFF status.

■ To turn high-voltage switch OFF

When the high-voltage switch is in the ON position, menu item 9 is displayed as “9. HV OFF”.

0. QUIT
1. ERROR LOG UTILITY
2. CONFIGURATION SETTING
3. TEST MODE
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. FILE UTILITY
8. BACKUP MEMORY
9. HV OFF
10. IP UTILITY

(1) Select “9. HV OFF”.

ediator The high-voltage switch is set to OFF, with the following message displayed.

THE HV IS TURNED OFF.

(2) Select “0. QUIT”.
To turn HV ON

When the HV switch is in the OFF position, menu item 9 is displayed as “9. HV ON”.

0. QUIT
1. ERROR LOG UTILITY
2. CONFIGURATION SETTING
3. TEST MODE
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. FILE UTILITY
8. BACKUP MEMORY
9. HV ON
10. IP UTILITY

(1) Select “9. HV ON”.

➢ When the high-voltage switch is set to ON, the following message appears.

TURNING ON THE HV IS IN PROGRESS.
RESULT - OK
Meaning: The HV is now being turned ON.

➢ If any error occurs, either of the following messages is displayed.

HV ERROR Meaning: High-voltage power supply failure
ANALOG POWER SUPPLY ERROR Meaning: Analog power supply failure
HV OFF Meaning: HV switch OFF

(2) Select “0. QUIT”.
15. 10. MENU SETTING: Menu Setting

The menu configuration displayed on the operation screen is changed, and the image processing (including optional) parameters are edited.

◆ NOTES ◆

• The current settings must always be backed up to the FD before modifying the menu.
  “12.3 BACKUP: Backing Up Various Data ◆ 5. CSL MENU DATA: To Read CSL Type Setup File from FD to HD”
• For the menu setting to be effective, it is necessary to reset the machine.

■ Summary of Function

With the menu setting, the menu displayed on the operation screen, parameters, and the display locations and setup contents of the icons may be edited through seven commands.

- The routine menu for which an image parameter has been set is registered.
- The routine menu is displayed and edited.

Exposure menu selection screen (Example: Head)

Parameter selection screen (Example: Chest)

Anatomical region selection screen (Example: 1st page)

The display locations of the icons on the anatomical region selection screen are changed.
1. LIST

Displays the content of each of anatomical region menus and routine menus. The content of the menus that are not displayed (non-display menus) may also be displayed.

2. MOVE

Changes the display location (display order) of the menu. Whether the menu is displayed or not may also be set.

3. ROUTINE

Registers or delete the menu to or from the routine menu.

4. EDIT

Edits the content of the parameter, such as EDR or IP that is set for each menu group.

5. COPY

Copies (duplicates) the existing menu to add a new menu.

6. DELETE

Deletes menus.

7. FILMMARK (edit film mark)

Adds or deletes a film mark. The display location of the film mark may also be set.

Display Format and Meaning

- Display menu

Example: The mandible is denoted by “013: MANDIBLE”.
Non-display menu

*XX : YYYYYYYYYYYYY

Example: The tenth item of the non-display menu is denoted by "10: CHEST, LYMPHA, FRN:C".

Relevant Files

Each command for menu setting is implemented to read and/or write its relevant configuration files.

A list of configuration files that are read and/or written by each command is summarized below.

<table>
<thead>
<tr>
<th>Command</th>
<th>Relevant file and operation (R = read; W = write)</th>
<th>File content</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST</td>
<td>BODYDISP.CFG R</td>
<td>Exposure anatomical region display location information</td>
</tr>
<tr>
<td></td>
<td>MENUDISP.CFG R</td>
<td>Exposure menu display location information</td>
</tr>
<tr>
<td></td>
<td>RTM_DISP.CFG R</td>
<td>Routine menu display location information</td>
</tr>
<tr>
<td></td>
<td>MPM_DEF.PRM R</td>
<td>Exposure parameter</td>
</tr>
<tr>
<td>MOVE</td>
<td>BODYDISP.CFG R/W</td>
<td>Routine menu display location information</td>
</tr>
<tr>
<td></td>
<td>MENUDISP.CFG R/W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MPM_DEF.PRM R</td>
<td></td>
</tr>
<tr>
<td>ROUTINE</td>
<td>RTM_DISP.CFG R/W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BODYDISP.CFG R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MENUDISP.CFG R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MPM_DEF.PRM R</td>
<td></td>
</tr>
<tr>
<td>EDIT</td>
<td>BODYDISP.CFG R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MENUDISP.CFG R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MPM_DEF.PRM R/W</td>
<td>STDUMN,PRM,OPU,PRM,HPU,PRM,PEMU,PRM</td>
</tr>
<tr>
<td></td>
<td>Fuji Standard image processing parameter R</td>
<td>STDUMN,PRM,OPU,PRM,HPU,PRM,PEMU,PRM</td>
</tr>
<tr>
<td></td>
<td>User-defined image processing parameter R/W</td>
<td></td>
</tr>
<tr>
<td>COPY</td>
<td>BODYDISP.CFG R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MENUDISP.CFG R/W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MPM_DEF.PRM R/W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuji Standard image processing parameter R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>User-defined image processing parameter R/W</td>
<td></td>
</tr>
<tr>
<td>DELETE</td>
<td>BODYDISP.CFG R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MENUDISP.CFG R/W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MPM_DEF.PRM R/W</td>
<td></td>
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<tr>
<td></td>
<td>Fuji Standard image processing parameter R</td>
<td></td>
</tr>
<tr>
<td></td>
<td>User-defined image processing parameter R/W</td>
<td></td>
</tr>
<tr>
<td>FILM MARK</td>
<td>FILMMARK R/W</td>
<td>Film mark and display location information</td>
</tr>
</tbody>
</table>
15.1 1. LIST: Displaying Menu

The setting of each menu is displayed in list form.
The detailed procedures for displaying the menu “CHEST” are described below.

(1) Select “1. LIST”.

COMMAND>1

➮ The following message appears.

0. HEAD   1. NECK   2. CHEST   3. BREAST
4. ABDOMEN 5. PELVIS  6. UP. EXT  7. LOW. EXT
8. TEST    *. ROUTINE

TYPE POSITION NUMBER OF SOURCE OR
* TO SPECIFY ROUTINE
LIST>

Meaning: Select the number of the anatomical region to be displayed on screen. To
display the routine menu, type in “*”.

(2) Select “2. CHEST”.

LIST>2

➮ The following message appears.

011: CHEST, GENERAL
012: THORA. SPINE, FRN
013: UPPER RIB
014: LOWER RIB
015: CLAVICLE

Meaning: Display menu of the first page.

021: SCAPULA
022: STERNUM
023: CHEST, PEDIATRICS
024: THORA. SPINE, LAT
025: CHEST, SOFT TISSUE

Meaning: Display menu of the second page.

031: SHOULDER JNT, FRN
032: SHOULDER JNT, AXL
033: WHOLE SPINE
034: CHEST, GENERAL-2
035: CHEST, PORTABLE

Meaning: Display menu of the third page.
*1: CHEST, SPECIAL-1
*2: THORA.SPINE, AXL
*3: CHEST, PED. -1
*4: CHEST, SPECIAL-2
*5: CHEST, BL. VESSEL:C
*6: BRONCHUS:C
*7: CHEST, ESOPHAGUS:C
*8: CHEST, MYELO., LAT:C
*9: CHEST, MYELO., FRN:C
*10: CHEST, LYMPHA, FRN:C
*11: CHEST, LYMPHA, LAT:C
*12: SHLD. JNT, ARTHRO:C
*13: LUNG:T
*14: MEDIASTINUM:T
*15: STERNUM:T
*16: THORA.SPINE, FRN:T
*17: THORA.SPINE, LAT:T
*18: SHOULDER JOINT:T
*19: CHEST, MAG:M

Meaning: Non-display menu

◆ SUPPLEMENTARY NOTE ◆

When the ENT key is touched with a message displayed, its subsequent message that is not displayed, if any, is displayed. When the ENT key is touched with the entire message displayed, the LIST command is quitted, with a prompt displayed.
15.2  2. MOVE: Changing Menu Display Location

The display location of the anatomical region and menu is changed, and the display status of the anatomical region and menu is changed to either display or non-display mode.

■ Changing Menu Display Location

The detailed procedures for changing the non-display menu “*1: OPEN MOUTH” of “NECK” to a display menu and for moving its display location to the first position on the second page are described below.

(1) Select “2. MOVE”.

COMMAND>2

The following message appears.

0.HEAD  1.NECK  2.CHEST  3.BREAST
4.ABDOMEN  5.PELVIS  6.UP.EXT  7.LOW.EXT
8.TEST     * .MOVE

TYPE POSITION NUMBER OR * TO MOVE POSITIONS

MOVE>

Meaning: Select the number of the anatomical region to be changed. To change the display location of the icon on the anatomical region selection screen, type in “*”.

“■ Changing Display Location of Icon on Anatomical Region Selection Screen”

(2) Select “1. NECK”.

MOVE>1

The following message appears.

011:CERVICAL, GENERAL
012:CERVICAL SPINE
013:PHARYNX/LARYNX
014:CERVIC.PEDIATRICS
015:LARYNX (<35KV)

Meaning: Display menu of the first page.

*1:OPEN MOUTH
*2:CERVIC.,PED.-1
*3:CERVIC.BL.VESSEL:C
*4:PHARYNX/LARYNX:C
*5:CERVIC.ESOPHAGUS:C
*6:CERVICAL,MYELO.:C
*7:CERVICAL,LYMPHA:C
*8:THORA C.,MYELO:C
*9:CERVICAL SPINE:T
*10:PHARYNX/LARYNX:T
*11:CERVIC.,MAG:M

Meaning: Non-display menu
TYPE LOCATION NUMBER OF THE SOURCE,
PAGE NUMBER OR * TO LIST 2ND LEVEL
(P01)
Meaning: Select the display menu number to be moved. To confirm the display menu again, type in “P + page number”, and to confirm the non-display menu again, type in “*”.
Example: To display the menu on the first page, type in “P01”.

(3) Select “*1”.
MOVE>*1
▷ The following message appears.

TYPE LOCATION NUMBER OF THE DESTINATION
OR PAGE NUMBER
MOVE>
Meaning: Type in the page number and display location of the destination to which the selected menu is to be moved. To display the menu, type in “P + page number”.
Example: To display the menu on the first page, type in “P01”.

(4) Type in “021” and touch ENT.
MOVE>021
▷ After quitting the menu and restarting, the non-display menu “*1: OPEN MOUTH” changes its status to a display menu and is displayed in the first position on the second page.

◆ SUPPLEMENTARY NOTE ◆

With similar procedures, the display menu may be moved within the same page (its display location may be changed), a display menu may be moved (changed) to a non-display menu, and so forth.
### Changing Display Location of Icon on Anatomical Region Selection Screen

The detailed procedures for moving the HEAD icon on the first page to the left position on the top of the second page are described below.

Anatomical region selection screen: 1st page

#### HEAD icon

2. **FUJI YARO***
   - ID#1234564756

Anatomical region selection screen: 2nd page

#### Destination

2. **FUJI YARO***
   - ID#1234564756

1. **ROUTE**

---

(1) Select “2. MOVE”.

#### COMMAND>2

> The following message appears.

0. **HEAD**   1. **NECK**   2. **CHEST**   3. **BREAST**
4. **ABDOMEN**   5. **PELVIS**   6. **UP.EXT**   7. **LOW.EXT**
8. **TEST**   * .**MOVE**

#### TYPE POSITION NUMBER OR * TO MOVE POSITIONS

MOVE>

**Meaning:** Select the number of the anatomical region to be changed. To change the display location of the icon on the anatomical region selection screen, type in “**”.

---
(2) Select “*.MOVE”.

MOVE> *
RoutingModule
The following message appears.

11: HEAD 12: NECK
13: CHEST 14: BREAST
15: ABDOMEN 16: PELVIS
17: UP. EXT 18: LOW. EXT

21: - - - - - - - - - - 22: TEST
23: - - - - - - - - - - 24: - - - - - - - - - -
25: - - - - - - - - - - 26: - - - - - - - - - -
27: - - - - - - - - - - 28: - - - - - - - - - -

SPECIFY TWO LOCATIONS TO EXCHANGE
TYPE FIRST LOCATION
MOVE>
RoutingModule
Meaning: Select the menu number of the icon to be moved.

(3) Select “11: HEAD”.

MOVE> 11
RoutingModule
The following message appears.

TYPE ANOTHER ONE
MOVE>
RoutingModule
Meaning: Select the destination menu number for the menu selected.

(4) Select “21: - - - - - - - - - -”.

MOVE> 21
RoutingModule
After quitting the menu and restarting, the HEAD icon on the first page is moved to the left position on the top of the second page.
15.3 3. ROUTINE: Registering and Deleting (Disselecting) Routine Menu

Registering Routine Menu

The detailed procedures for registering “011: CERVICAL, GENERAL” to the routine menu of “NECK” are described below.

(1) Select “3. ROUTINE”.

COMMAND>3

⇒ The following message appears.

0. HEAD 1. NECK 2. CHEST 3. BREAST
4. ABDOMEN 5. PELVIS 6. UP. EXT 7. LOW. EXT
8. TEST  * ROUTINE

TYPE POSITION NUMBER OF THE SOURCE OR
* TO SPECIFY ROUTINE

ROUTINE>

Meaning: Select the number of the anatomical region for registration of the routine menu. To display the routine menu, type in “*”.

(2) Select “1. NECK”.

ROUTINE>1

⇒ The following message appears.

011: CERVICAL, GENERAL
012: CERVICAL SPINE
013: PHARYNX/LARYNX
014: CERVICAL PEDIATRICS
015: LARYNX (<35KV)
*1: OPEN MOUTH
*2: CERVICAL, PED.-1
*3: CERVICAL. BL. VESSEL: C
*4: PHARYNX/LARYNX: C
*5: CERVICAL. ESOPHAGUS: C
*6: CERVICAL, MYELO.: C
*7: CERVICAL, LYMPHA: C
*8: THORACIC, MYELO: C
*9: CERVICAL SPINE: T
*10: PHARYNX/LARYNX: T
*11: CERVICAL, MAG: M

TYPE LOCATION NUMBER OF THE SOURCE
OR PAGE NUMBER
(P01)

ROUTINE>

Meaning: Select the menu to be registered. To display the menu, type in “P + page number”.

Example: To display the menu on the first page, type in “P01”.
(3) Select “011: CERVICAL, GENERAL”.

ROUTINE>011

▷ The following message appears.

011: SKULL, GENERAL
012: PARANASAL SINUS
013: MANDIBLE
014: ORBIT
015: HEAD, SOFT TISSUE


061: HEAD, MAG:M
062: ---------------
063: AVE5CM16
064: ---------------
065: ---------------

TYPE NEW LOCATION NUMBER OR PAGE NUMBER
(P01~P06)

ROUTINE>

Meaning: Specify where “011: CERVICAL, GENERAL” selected is registered in the routine menu.

(4) Type in “034” and touch ENT.

ROUTINE>034

▷ After quitting the menu and restarting, the routine menu of “011: CERVICAL, GENERAL” is registered in the fourth position on the third page.
Deleting (Disselecting) Routine Menu

The detailed procedures for deleting (disselecting) a routine menu are described below.

1. Select “3. ROUTINE”.

   COMMAND>3

   ↳ The following message appears.

   0. HEAD  1. NECK  2. CHEST  3. BREAST
   4. ABDOMEN  5. PELVIS  6. UP. EXT  7. LOW. EXT
   8. TEST  * . ROUTINE

   TYPE POSITION NUMBER OF THE SOURCE OR
   * TO SPECIFY ROUTINE

   ROUTINE>

   Meaning: Select the number of the anatomical region for registration of the routine
   menu. To display the routine menu, type in “*”.

2. Type in “*”.

   ROUTINE>*

   ↳ The following message appears.

   011: SKULL, GENERAL
   012: PARANASAL SINUS
   013: MANDIBLE
   014: ORBIT
   015: HEAD, SOFT TISSUE
   .
   .
   .
   061: HEAD, MAG:M
   062: ---------------------
   063: AVE5CM16
   064: ---------------------
   065: ---------------------

   TYPE LOCATION NUMBER OF THE SOURCE
   OR PAGE NUMBER
   (P01~P06)

   ROUTINE>

   Meaning: Select the routine menu to be deleted (disselected). To display the menu,
   type in “P + page number”.

   Example: To display the menu on the first page, type in “P01”.
(3) Type in “034”.

ROUTINE>034

网站地图 appears.

TYPE LOCATION NUMBER OF THE DESTINATION,
* TO DISSELECT OR PAGE NUMBER
(P01~P06)

ROUTINE>

Meaning: To delete (disselect) the menu selected, type in “*”. To display the menu, type in “P + page number”.

Example: To display the menu on the first page, type in “P01”.

(4) Type in “*” and touch ENT.

ROUTINE>*

After quitting the menu and restarting, the routine menu of 034 is deleted (disselected).
15.4 4. EDIT: Editing Menu Names and Various Parameters

Menu names and various parameters are edited.

The detailed procedures for editing “NECK, 011: CERVICAL, GENERAL, [01] IP” are described below.

(1) Select “4. EDIT”.

COMMAND>4

➤ The following message appears.

0.HEAD    1.NECK   2.CHEST  3.BREAST
4.ABDOMEN 5.PELVIS 6.UP.EXT 7.LOW.EXT
8.TEST

TYPE POSITION NUMBER
EDIT>

Meaning: Select the number of the anatomical region to be edited.

(2) Select “1. NECK”.

EDIT>1

➤ The following message appears.

011:CERVICAL, GENERAL
012:CERVICAL SPINE
013:PHARYNX/LARYNX
014:CERVICAL.PEDIATRICS
015:LARYNX(<35KV)
*1:OPEN MOUTH
*2:CERVIC.,PED.-1
*3:CERVIC.BL.VESSEL:C
*4:PHARYNX/LARYNX:C
*5:CERVIC.ESOPHAGUS:C
*6:CERVICAL,MYEO.:C
*7:CERVICAL,LYMPHA:C
*8:THORA C.,MYELO:C
*9:CERVICAL SPINE:T
*10:PHARYNX/LARYNX:T
*11:CERVIC.,MAG:M

TYPE LOCATION NUMBER OR PAGE NUMBER
(P01)
EDIT>

Meaning: Select the menu to be edited.

(3) Select “011: CERVICAL, GENERAL”.

EDIT>011

➤ The current setup values appear.

[00]EDR=0 [01]IP=0 [02]PICTURE=0
[03]FRAME=1 [04]U/D=0 [05]SPOT=0
[06]FILING=0 [07]L/R=0 [08]FILM2=
11. S/H = 1
12. MENU = CERVICAL, GENERAL
13. FILM =
14. Skfix =
15. S-SHIFT = *1.0
16. R-POSI = 01
17. FORMAT = 0
18. M-MODE = RT
19. COPY = 01
20. C-SHIFT = *1.0
21. EDGE = 0
22. DIRECTION =
23. TURN = 0
24. S-CENTER = 0
25. MENU-J = \375B\4974\3335\3451\2121\2121\2121\2121\2121\2121\2121\2121
GA GT GC GS
L [26] = 0.9 [27] = F [28] = 0.6 [29] = 0.30
R [30] = 1.0 [31] = A [32] = 0.7 [33] = 0.10
S [34] = 0.9 [35] = F [36] = 0.6 [37] = 0.30

RN RT RE
L [38] = 4 [39] = R [40] = 0.5
R [41] = 4 [42] = R [43] = 5.0
S [44] = 4 [45] = R [46] = 0.5

DRN DRT DRE ORN ORD ORE
R [53] = 5 [54] = A [55] = 0.0 [56] = 5 [57] = 1 [58] = 0.0
S [59] = 5 [60] = A [61] = 0.0 [62] = 5 [63] = 1 [64] = 0.0

HDN HDT HDE HRN HRT HRE
S [77] =-

PRN PRE a-edge a-calc
L [83] =-
R [87] =-
S [91] =-

Sstd Lstd
L [95] =-
R [97] =-
S [99] =-

[*] = LIST [E/Q] = END

TYPE ITEM NUMBER (DEFAULT = 00)
OR PAGE NUMBER (P1~P5)
EDIT>

Meaning: Select the item number to be edited. To display all the item numbers, type in “*”. To display the item numbers on a page-by-page basis, type in “P + page number”.

Example: To display the menu on the first page, type in “P01”.
To quit EDIT, type in “E/Q”.

[type item number]
(4) Select "[01] IP".

EDIT>01
.getSelection: The following message appears.

IP (0~9, A~F) = 0
EDIT>

(5) Type in "2".

EDIT>2
.getSelection: The value of IP is changed from "0" to "2", with the following message displayed.

TYPE ITEM NUMBER(DEFAULT=00)
OR PAGE NUMBER(P1~P5)
EDIT>

Meaning: Select the item number to be edited. To display all the item numbers, type in "*". To display the item numbers on a page-by-page basis, type in "P + page number".

Example: To display the menu on the first page, type in "P01".

To quit EDIT, type in "E/Q".

◆ SUPPLEMENTARY NOTE ◆

By touching the ENT key while a "EDIT>" prompt for input is displayed, the setting of the next item number can be edited. For example, if the ENT key is touched without typing in "2" at step (5) above, then item "[02] PICTURE" subsequent to "[01] IP" can be edited.

(6) Type in "E/Q".

EDIT>E/Q
.getSelection: "4, EDIT" is exited.
15.5 5. COPY: Copying Menu

A menu is copied.

The detailed procedures for copying the menu “NECK, 011: CERVICAL, GENERAL” are described below.

(1) Select “5. COPY”.

COMMAND>5
 Gä The following message appears.

0.HEAD 1.NECK 2.CHEST 3.BREAST
4.ABDOMEN 5.PELVIS 6.UP.EXT 7.LOW.EXT
8.TEST

TYPE POSITION NUMBER
COPY>
Meaning: Select the number of the anatomical region to be copied.

(2) Select “1. NECK”.

COPY>1
 Gä The following message appears.

011:CERVICAL, GENERAL
012:CERVICAL SPINE
013:PHARYNX/LARYNX
014:CERVIC.PEDIATRICS
015:LARYNX(<35KV)
*1:OPEN MOUTH
*2:CERVIC.,PEDI.-1
*3:CERVIC.BL. VESSEL:C
*4:PHARYNX/LARYNX:C
*5:CERVIC.ESOPHAGUS:C
*6:CERVICAL,MYELO.:C
*7:CERVICAL,LYMPHA:C
*8:THORA C.,MYELO:C
*9:CERVICAL SPINE:T
*10:PHARYNX/LARYNX:T
*11:CERVIC.,MAG:M

TYPE LOCATION NUMBER OR PAGE NUMBER
(P01)
COPY>
Meaning: Select the copy source. To display the menu, type in “P + page number”.
Example: To display the menu on the first page, type in “P01”.

(3) Select “011: CERVICAL, GENERAL”.

COPY>011

▷ The following message appears.

TYPE LOCATION NUMBER OF THE DESTINATION
OR PAGE NUMBER
(P01)
COPY>

Meaning: Select the copy destination. To display the menu, type in “P + page number.”
Example: To display the menu on the first page, type in “P01”.

(4) Type in “021”.

COPY>021

▷ After quitting the menu and restarting, “011: CERVICAL, GENERAL” is copied to the first position on the second page.
15.6 6. DELETE: Deleting Menu

A menu is deleted.
The detailed procedures for deleting the menu “NECK, 021: CERVICAL, GENERAL” are described below.

(1) Select “6. DELETE”.

COMMAND>6
➮ The following message appears.

0. HEAD 1. NECK 2. CHEST 3. BREAST
4. ABDOMEN 5. PELVIS 6. UP. EXT 7. LOW. EXT
8. TEST

TYPE POSITION NUMBER

DELETE>
Meaning: Select the number of the anatomical region to be deleted.

(2) Select “1. NECK”.

DELETE>1
➮ The following message appears.

011: CERVICAL, GENERAL
012: CERVICAL SPINE
013: PHARYNX/LARYNX
014: CERVIC. PEDIATRICS
015: LARYNX (<35KV)
021: CERVICAL, GENERAL
022: - - - - - - - - - - - -
023: - - - - - - - - - - - -
024: - - - - - - - - - - - -
025: - - - - - - - - - - - -
*1: OPEN MOUTH
*2: CERVIC., PED.-1
*3: CERVIC. BL. VESSEL:C
*4: PHARYNX/LARYNX:C
*5: CERVIC. ESOPHAGUS:C
*6: CERVICAL, MYELO.:C
*7: CERVICAL, LYMPHA:C
*8: THORA C., MYELO:C
*9: CERVICAL SPINE:T
*10: PHARYNX/LARYNX:T
*11: CERVIC., MAG:M

TYPE LOCATION NUMBER OR PAGE NUMBER
(P01)

DELETE>
Meaning: Select the menu to be deleted.
(3) Select “021: CERVICAL, GENERAL”.

DELETE>21

▷ The following message appears.

DELETE
NECK–021 "CERVICAL, GENERAL \ (Y/N)
DELETE>

Meaning: Are you sure to delete the menu selected?

(4) Type in “Y”.

DELETE>Y

▷ After quitting the menu and restarting, the menu “021: CERVICAL, GENERAL” is deleted.
15.7 7. FILMMARK: Editing Film Mark

The film mark is edited.
The detailed procedures for editing the film mark are described below.

■ 0. ENTRY: Registering Film Mark

(1) Select “7. FILMMARK”.

COMMAND>7
-> The following message appears.

0.ENTRY 1.MOVE 2.EDIT 3.DELETE

TYPE FUNCTION NUMBER

FILMMARK>
Meaning: Select a film mark edit menu.

(2) Select “0. ENTRY”.

FILMMARK>0
-> The following message appears.

12:AP
13:PA 14:L->R
15:R->L 16:L
21:R 22:LAT
23:OBL 24:---------
25:--------- 26:---------
31:--------- 32:---------
33:--------- 34:---------
35:---------

TYPE NEW LOCATION NUMBER

FILMMARK>
Meaning: Select the menu number for registration of the film mark.

(3) Select “24:---------”.

FILMMARK>24
-> The following message appears.

TYPE NEW MARK STRING(MAX10CHAR)

FILMMARK>
Meaning: Type in a new film mark name within 10 half-width alphanumeric characters.

(4) Type in “ABC”.

FILMMARK>ABC
-> “ABC” is registered in “24:”.
1. MOVIE: Moving Film Mark

(1) Select “7. FILMMARK”.

COMMAND> 7

➮ The following message appears.

0. ENTRY 1. MOVE 2. EDIT 3. DELETE
TYPE FUNCTION NUMBER
FILMMARK>
Meaning: Select a film mark edit menu.

(2) Select “1. MOVE”.

FILMMARK> 1

➮ The following message appears.

12: AP
13: PA 14: L->R
15: R->L 16: L
21: R 22: LAT
23: OBL 24: ABC
25: -------- 26: --------
31: -------- 32: --------
33: -------- 34: --------
35: --------
TYPE LOCATION NUMBER OF THE SOURCE
FILMMARK>
Meaning: Select the menu number to be moved.

(3) Select “24: ABC”.

FILMMARK> 24

➮ The following message appears.

TYPE LOCATION NUMBER OF THE DESTINATION,
FILMMARK>
Meaning: Select the number of the destination for the menu selected.

(4) Select “26: --------”.

FILMMARK> 26

➮ After quitting the menu and restarting, “24” ABC” selected at step (2) is displayed as “24: --------”, while the “26: --------” selected at step (3) is displayed as “26: ABC”.

0. ENTRY 1. MOVE 2. EDIT 3. DELETE
TYPE FUNCTION NUMBER
FILMMARK>
2. EDIT: Editing Film Mark

(1) Select “7. FILLMARK”.

COMMAND>7
→ The following message appears.

0. ENTRY 1. MOVE 2. EDIT 3. DELETE
TYPE FUNCTION NUMBER
FILLMARK>
Meaning: Select a film mark edit menu.

(2) Select “2. EDIT”.

FILMMARK>2
→ The following message appears.

12: AP
13: PA
14: L→R
15: R→L
16: L
21: R
22: LAT
23: OBL
24: --------
25: --------
26: ABC
31: --------
32: --------
33: --------
34: --------
35: --------

TYPE LOCATION NUMBER OF THE SOURCE
FILMMARK>
Meaning: Select the menu number to be edited.

(3) Select “26: ABC”.

FILMMARK>26
→ The following message appears.

SOURCE MARK STRING=ABC
TYPE NEW MARK STRING(MAX10CHAR)
FILMMARK>
Meaning: Type in a new film mark name within 10 half-width alphanumeric characters.

(4) Type in “DEF”.

FILMMARK>DEF
→ After quitting the menu and restarting, “ABC” is changed to “DEF”.
3. DELETE: Deleting Film Mark

(1) Select “7. FILMMARK”.

COMMAND>7

 gà The following message appears.

0. ENTRY 1. MOVE 2. EDIT 3. DELETE
TYPE FUNCTION NUMBER
FILMMARK>
Meaning: Select a film mark edit menu.

(2) Select “3. DELETE”.

FILMMARK>3

 gà The following message appears.

12: AP
13: PA
14: L->R
15: R->L
16: L

21: R
22: LAT
23: OBL
24: ------------
25: -----------
26: DEF

31: -----------
32: -----------
33: -----------
34: -----------
35: -----------
TYPE LOCATION NUMBER OF THE SOURCE
FILMMARK>
Meaning: Select the menu number to be deleted.

(3) Select “26: DEF”.

FILMMARK>26

 gà The following message appears.

DELETE 26"DEF " (Y/N)
FILMMARK>
Meaning: Are you sure to delete the menu selected?

(4) Type in “Y”.

FILMMARK>Y

 gà After quitting the menu and restarting, the menu “26: DEF” is deleted.
16. Software Installation Procedures

The software is supplied on floppy disks (abbreviated FDs). If the hard disk has been replaced, format it before installing the software.

**Installation FDs**

All the installation FDs are DOS 1.44MB formatted, 3.5-inch floppy disks. Two system disks are supplied in addition to data disks. The number of data disks varies with the software version.

Before installing the software, check that the installation FDs are supplied as indicated in the following list.

<table>
<thead>
<tr>
<th>Name</th>
<th>Storage device number</th>
<th>Quantity</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>System disk</td>
<td>Format</td>
<td>1 disk (1st disk of the 2-disk set)</td>
<td>For hard disk formatting</td>
</tr>
<tr>
<td></td>
<td>Install</td>
<td>1 disk (2nd disk of the 2-disk set)</td>
<td>For installation</td>
</tr>
<tr>
<td>Data disk</td>
<td>Appl</td>
<td>One set (This number varies with the software version.)</td>
<td>For application software</td>
</tr>
<tr>
<td>PC MENU EDITOR</td>
<td></td>
<td>One set (This number varies with the software version.)</td>
<td>Software for editing the image processing parameters and CSL type menu settings</td>
</tr>
</tbody>
</table>
16.1 Installing the Software (Application)

Installation Procedures

If the hard disk has been replaced, format it before installing the software.

“16.2 Formatting the Hard Disk”

Install the software (application) by sequentially inserting the “INSTALL” system disk and data disks into the floppy disk drive in compliance with the message appearing on the operation panel.

If any error occurs during the installation process, start all over again.

(1) Make sure that the machine is OFF.

If the power is ON, place the circuit breaker in the OFF position to turn OFF the machine.

(2) Insert the “INSTALL” system disk into the floppy disk drive.

⚠️ CAUTION

Do not erroneously interchange the “INSTALL” system disk and “FORMAT” system disk. If you turn ON the machine with the “FORMAT” disk set in position, the system automatically starts formatting the hard disk so that you will lose all the data that have been saved on the hard disk.

(3) Turn ON the machine.

› The following messages appear on the operation panel.

  Attaching to DMA device...done.
  Attaching to <floppy> device...done.
  Loading /fd0/VXWORKS.ST...43992 + 66184 + 29428
  Starting at 0x1001000...

The following messages appear and the software installation process starts.

  → Install utility. Version A00.
  Attaching to <floppy> device...done.
  Attaching to <SCSI> device...done.

Upon completion of SCSI device initialization, the following message appears.

Insert data floppy disk.
(4) Remove the "INSTALL" system disk, and insert data disk #1 into the floppy disk drive.

➢ As indicated in the example below, messages appear to indicate that software files are copied to the hard disk.

Copy </fd0/bootrom.sys> To </sd0/TEMP/BOOTROM.SYS>
Copy </fd0/vxworks.st> To </sd0/TEMP/VXWORKS.ST>
Copy </fd0/version.dat> To </sd0/TEMP/VERSION.DAT>
Copy </fd0/script.txt> To </sd0/TEMP/SCRIPT.TXT>

.....

.....

Insert next data floppy disk.

(5) Insert the remaining data disks in numerical order.

➢ As indicated in the example below, messages appear to indicate that software files are copied to the hard disk.

Create </sd0/LOG/CORE.DMP>
Create </sd0/LOG/IOT.001>
Create </sd0/LOG/TCB.001>
Create </sd0/LOG/ISC.001>

.....

.....

Upon completion of log file initialization, the following message appears to indicate the end of installation.

Install is complete.
List of install utility error messages

If an error occurs during installation, the install utility displays the following error messages. When an error message appears, grasp its meaning, take proper remedial action, and resume the installation process.

**Could not initialize DMA device.**
- An abnormality was detected during DMA device initialization.
  - The MTH08A or CPU90E board is faulty.

**Could not initialize floppy device.**
- An abnormality was detected during floppy device initialization.
  - The CPU90E board is faulty.

**Cannot open </fd0/bootrom.sys>, please setting boot disk.**
- The disk placed in the disk drive is not the installation system disk or the contents of the disk are damaged.

**Error loading file </fd0/bootrom.sys>**
- The contents of the file named “bootrom.sys” are illegal.

**Cannot open </fd0/VXWORKS.ST>, please setting boot disk.**
- The disk placed in the disk drive is not the installation system disk or the contents of the disk are damaged.

**Error loading file </fd0/VXWORKS.ST>**
- The contents of the file named “VXWORKS.ST” are illegal.

**Could not initialize SCSI device.**
- The hard disk drive was not successfully mounted or formatted.
  - The MTH08A board, CPU90E board, or SCSI hard disk drive is faulty.

**Could not access HD device.**
- The hard disk drive was not successfully accessed.
  - The MTH08A or SCSI hard disk drive is faulty.

**error make directory: status= <********>**
- The directory was not successfully made (the “********” portion is a detail code).
  - The SCSI hard disk drive is faulty.

**Cannot open <********>**
- The file could not be opened (the “********” portion is a filename).
  - The floppy disk or SCSI hard disk drive is faulty.

**error copy file: status= <********>**
- The file could not be copied (the “********” portion is a detail code).
  - The floppy disk or SCSI hard disk drive is faulty.

**error rename directory: status= <********>**
- The directory name could not be changed (the “********” portion is a detail code).
  - The SCSI hard disk drive is faulty.
error open directory: status= <********>
  ✗ The directory was not found (the “********” portion is a detail code).
  The SCSI hard disk drive is faulty.

error create file: status= <********>
  ✗ The file could not be generated (the “********” portion is a detail code).
  The SCSI hard disk drive is faulty.

error file size.
  ✗ The file size is illegal.
  The floppy disk is faulty.
16.2 Formatting Hard Disk

**CAUTION**

For the CSL-type machine for use in the U.S., if the hard disk is formatted and software is reinstalled, be sure to install the “Menu default FD for USA” setup file as well.

**Formatting Procedures**

The hard disk should be formatted only when a hard disk access error frequently occurs or the data on the hard disk is lost wholly or partly.

1. Make sure that the machine is powered OFF.
   - If the power is ON, place the circuit breaker in the OFF position to power OFF the machine.
2. Put the “FORMAT” disk into the floppy disk drive.

**CAUTION**

If you change your mind and do not want to format the hard disk, remove the “FORMAT” disk from the floppy disk drive before doing anything. If you power ON the machine with the “FORMAT” disk inserted into the floppy disk drive, the system automatically initiates the hard disk formatting sequence without asking for the user's confirmation.
16.3 Installing “Menu Default FD for USA” Setup File (Only for Use in USA/CSL Type)

For the CSL-type machine for use in the U.S., if the hard disk is formatted and software is installed, be sure to install the “Menu default FD for USA” setup file as well.

**Installation**

1. Put the “Menu default FD for USA” setup file floppy disk into the FD drive.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
4. Select “2. CONFIGURATION SETTING” and “1. SYSTEM” in sequence.

   ![Diagram](FR1BA037.EPS)

5. Set the language setting item, FNT, to 1.

   ![Diagram](FR1BA038.EPS)

6. Touch the [SAVE] key.
   - The edited content is saved to the HD.
(7) Select “7. FILE UTILITY”, “4. RESTORE” and “5. CSL MENU DATA” in sequence.

(8) Remove the “Menu default FD for USA” setup file floppy disk from the FD drive.

(9) Select “0. QUIT” repeatedly.
   ¬ The screen returns to the U-Utility mode.

(10) Press the RESET button.
    ¬ The machine is reset so that the setting of the file installed becomes effective.
17. List of Software Files

17.1 SYSTEM

### SYSTEM

- **BOOTROM.SYS**: Boot file
- **SCRIPT.TXT**: Startup script
- **VXWORKS.ST**: “OS, BSP”
- **VERSION.DAT**: Version information definition file
  - For application startup opening screen
- **DPR.ABS**: Main program file
- **FFASC8.FNT**: ASCII fonts (8 dots)
- **FFASCW8.FNT**: ASCII white fonts (8 dots)
- **FFASC16.FNT**: ASCII fonts (16 dots)
- **FFASC24.FNT**: ASCII fonts (24 dots)
- **FFASCE8.FNT**: ASCII external fonts (8 dots)
- **FFRMN8.FNT**: CodePage850 (8 dots)
- **FFRMN16.FNT**: CodePage850 (16 dots)
- **FFRMN24.FNT**: CodePage850 (24 dots)
- **FFANK8.FNT**: JIS X0201 (half-width 8 dots)
- **FFANK16.FNT**: JIS X0201 (half-width 16 dots)
- **FFANK24.FNT**: JIS X0201 (half-width 24 dots)
- **FFKNJ16.FNT**: JIS X0208 (Kanji 16 dots)
- **FFKNJ24.FNT**: JIS X0208 (Kanji 24 dots)
<table>
<thead>
<tr>
<th><strong>ETC</strong></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRSET.ORG</td>
<td>Machine definition file (original)</td>
</tr>
<tr>
<td></td>
<td>Definition of machine status, etc. (setup value, default value described)</td>
</tr>
<tr>
<td>IRSET.CFG</td>
<td>Machine setup file (user setup)</td>
</tr>
<tr>
<td>FILMFMT.ORG</td>
<td>Format setup file (original)</td>
</tr>
<tr>
<td></td>
<td>Definition of film character format (setup value, default value described)</td>
</tr>
<tr>
<td>FILMFMT.CFG</td>
<td>Format setup file (user setup)</td>
</tr>
<tr>
<td>IRSTATUS.ORG</td>
<td>Machine status-related item film (original)</td>
</tr>
<tr>
<td></td>
<td>Definition of items, such as IP conveyance mode</td>
</tr>
<tr>
<td>IRSTATUS.CFG</td>
<td>Machine status-related item file (user setup)</td>
</tr>
<tr>
<td>EOUIP</td>
<td>Connected unit candidate file</td>
</tr>
<tr>
<td></td>
<td>Definition of connected unit (IDT or LP), etc.</td>
</tr>
<tr>
<td>CODEDSTB</td>
<td>Distribution code definition file</td>
</tr>
<tr>
<td>HOSTS</td>
<td>Connected host setup file</td>
</tr>
<tr>
<td></td>
<td>Correspondence table between connected host name and IP address</td>
</tr>
<tr>
<td>DEVICE</td>
<td>Device setup file</td>
</tr>
<tr>
<td></td>
<td>Correspondence table between host name and device connected to that host</td>
</tr>
<tr>
<td>ROUTE</td>
<td>Route setup file</td>
</tr>
<tr>
<td></td>
<td>Host name that has routing capability is described.</td>
</tr>
<tr>
<td>OPTION.001</td>
<td>Soft key</td>
</tr>
<tr>
<td></td>
<td>Remote monitor function</td>
</tr>
<tr>
<td>OPTION.002</td>
<td>Soft key</td>
</tr>
<tr>
<td></td>
<td>Image processing with 2 unsharp mask sizes</td>
</tr>
<tr>
<td>OPTION.003</td>
<td>Soft key</td>
</tr>
<tr>
<td></td>
<td>Online connection</td>
</tr>
<tr>
<td>OPTION.004</td>
<td>Soft key</td>
</tr>
<tr>
<td></td>
<td>2430 mammo</td>
</tr>
<tr>
<td>NETMASKS</td>
<td>Subnet mask file</td>
</tr>
<tr>
<td></td>
<td>Subnet mask per domain/host is described.</td>
</tr>
<tr>
<td>RMT_SW.CFG</td>
<td>Remote power config file</td>
</tr>
<tr>
<td></td>
<td>Remote commands for the host applicable to remote power control are described.</td>
</tr>
<tr>
<td>DICOM</td>
<td>“Base on DICOM” connection information file</td>
</tr>
<tr>
<td></td>
<td>Connection requirements for the host applicable to “Base on DICOM” connection are described.</td>
</tr>
<tr>
<td><strong>IDM</strong></td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>HIPMENU.PRM</td>
<td>Standard image processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Fuji standard menu data (image processing with same unsharp mask size)</td>
</tr>
<tr>
<td>HPUMN.PRM</td>
<td>Standard image processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Institution-specific menu data</td>
</tr>
<tr>
<td>HIPMNRL.PRM</td>
<td>Standard image processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Fuji standard menu data (image processing with independent unsharp mask sizes)</td>
</tr>
<tr>
<td>HIPSTD.PRM</td>
<td>Mask/frequency/gradation table</td>
</tr>
<tr>
<td></td>
<td>Fuji standard table (standard image processing table)</td>
</tr>
<tr>
<td>HIPSTDU.PRM</td>
<td>Mask/frequency/gradation table</td>
</tr>
<tr>
<td></td>
<td>Institution-specific table (standard image processing table)</td>
</tr>
<tr>
<td>HIPOPRM</td>
<td>Optional image processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Fuji standard table</td>
</tr>
<tr>
<td>HIPOPU.PRM</td>
<td>Optional image processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Institution-specific table</td>
</tr>
<tr>
<td>HIPOPT.PRM</td>
<td>Optional mask filter table</td>
</tr>
<tr>
<td></td>
<td>Fuji standard table (optional image processing table)</td>
</tr>
<tr>
<td>HIPOPTU.PRM</td>
<td>Optional mask filter table</td>
</tr>
<tr>
<td></td>
<td>Institution-specific table (optional image processing table)</td>
</tr>
<tr>
<td>HP.PRM</td>
<td>Hyper image processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Fuji standard table</td>
</tr>
<tr>
<td>HPU.PRM</td>
<td>Hyper image processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Institution-specific table</td>
</tr>
<tr>
<td>HPT.PRM</td>
<td>Hyper mask filter table</td>
</tr>
<tr>
<td></td>
<td>Fuji standard table (hyper image processing table)</td>
</tr>
<tr>
<td>HPTU.PRM</td>
<td>Hyper mask filter table</td>
</tr>
<tr>
<td></td>
<td>Institution-specific table (hyper image processing table)</td>
</tr>
<tr>
<td>PEM.PRM</td>
<td>PEM processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Fuji standard table</td>
</tr>
<tr>
<td>PEMU.PRM</td>
<td>PEM processing parameter file</td>
</tr>
<tr>
<td></td>
<td>Institution-specific table</td>
</tr>
<tr>
<td>PEMT.PRM</td>
<td>PEM unsharp mask data table</td>
</tr>
<tr>
<td></td>
<td>Fuji standard table (PEM processing table)</td>
</tr>
<tr>
<td>PEMTU.PRM</td>
<td>PEM unsharp mask data table</td>
</tr>
<tr>
<td></td>
<td>Institution-specific table (PEM processing table)</td>
</tr>
</tbody>
</table>
CSL

MENU_WIN.JPN CRT display/touch panel control file
MENU_WIN.ENG CRT display/touch panel control file
MENU_WIN.GER CRT display/touch panel control file
MENU_WIN.FR N CRT display/touch panel control file
MENU_WIN.ESP CRT display/touch panel control file
MENU_WIN.ITA CRT display/touch panel control file
MENU_WIN.SWE CRT display/touch panel control file
MENU_WIN.DEN CRT display/touch panel control file
MENU_WIN.FIN CRT display/touch panel control file
BODYDISP.CFG Exposure anatomy display information setup file
MENUDISP.CFG Exposure menu display information setup file
RTN_DISP.CFG Routine menu display information setup file
MPM_DEF.PRM Exposure parameter setup file
FILMMARK.PRM Film mark character setup file
CSL_ICON.CFG Icon data file
CARDFORM.CFG Magnetic card specific information setup file
SIOSETUP.CSL Data link layer setup parameter definition file

PNL

MESSAGES.JPN Display message definition file
Message data indicated on the display (Japanese)
MESSAGES.ENG Display message definition file
Message data indicated on the display (English)
MESSAGES.ESP Display message definition file
Message data indicated on the display (Spanish)
MESSAGES.FR N Display message definition file
Message data indicated on the display (French)
MESSAGES.GER Display message definition file
Message data indicated on the display (German)
MESSAGES.ITA Display message definition file
Message data indicated on the display (Italian)
MESSAGES.SWE Display message definition file
Message data indicated on the display (Swedish)
MESSAGES.DEN Display message definition file
Message data indicated on the display (Danish)
MESSAGES.NOR Display message definition file
Message data indicated on the display (Norwegian)
ICONS.PNL Integration file for icons used on PNL
Multiple icon files are integrated into a single file.
## IPH

- **PUL_PARA.FIL**  
  Pulse motor parameter definition file  
  Pulse motor parameters complying with the mechanical control specification are defined.

- **IPH_TIM.FIL**  
  Conveyance timer file  
  Timeout times complying with the mechanical control specification are defined.

- **RETRYCNT.FIL**  
  Subscanning parameter file  
  Conveyance parameters complying with the subscanning control specification

## IMG

- **CRT_FORM.DAT**  
  Monitor character format information  
  Referenced when CRT characters are created.

- **IMG_SIZE.DAT**

- **DEL_TABL.FIL**  
  Erasure conveyance speed table determination file  
  For table determination complying with the erasure control specification

- **DEL_DEFN.FIL**  
  Erasure conveyance speed definition file  
  Conveyance speed table complying with the erasure control specification

- **CRT_TEST.DAT**  
  Test pattern file  
  Test pattern data

## EDR

- **MPMPRM.PRM**  
  EDR standard parameter  
  Parameters for each menu are defined.

- **IRMPRM.PRM**  
  EDR standard parameter  
  Histogram parameters are defined.

- **MPMUMN.PRM**  
  EDR user parameter  
  Menu parameter definition for specific institution

- **IRMUMN.PRM**  
  EDR user parameter  
  Histogram parameter definition for specific institution

- **NNPRM.PRM**  
  Standard neuro parameter  
  Standard parameter for neuro analysis

- **NNNUMN.PRM**  
  Specific neuro parameter  
  Specific parameter for neuro analysis

- **EDR.ABS**  
  EDR program  
  EDR software program
• SCN

**SCN_IFMT.DAT** Format set data file
Data regarding set-specific format

**SCN_MAIN.DAT** Main-scan control data file
Data for controlling the optics, synchronization, image signal system, light-collecting system

**SCN_INIT.DAT** Main-scan initial setup data file
Scanner initial setup parameter

**SCN_ISEN.DAT** Sensitivity set data file
Data regarding set-specific sensitivity

**SCN_ISEN.ORG** Sensitivity set data file
“Data regarding set-specific sensitivity (factory-default original, file name written to the FD with UTL)

**SCN_SHDG.SHD** Shading correction data file
Shading correction result

**SCN_SHDG.DEF** Shading correction data file (default data)
Shading correction result (for institution with poor tube conditions)

**SCN_SHDG.ORG** Shading correction data file
“Shading correction result (factory-default original, file name written to the FD with UTL)”

**SCN_POLY.POL** Polygon correction data file
Polygon correction result

**SCN_POLY.DEF** Polygon correction data file (default data)
Polygon correction result (for institution with poor tube conditions)

**SCN_POLY.ORG** Polygon correction data file
“Polygon correction result (factory-default original, file name written to the FD with UTL)”

**SCN_ELVL.DAT** Erasure level detection data file
Table for erasure dose detection

• MICRO

**DSP4M1J.S24** Image processing µ-program

**DSP4M2J.S24** Image processing µ-program
• LIF
  LPLFMT0J.DAT  B4 format file
  LPLFMT1J.DAT  14" x 17" format file
  MCFFMT0J.BIN  Film character format file

• MICRO
  DSP10M1J.S24  Image processing µ-program
  DSP10M2J.S24  Image processing µ-program
  DSP11M1J.S24  Image processing µ-program
  DSP11M2J.S24  Image processing µ-program
  DSP20M1J.S24  Image processing µ-program
  DSP20M2J.S24  Image processing µ-program
  DSP21M1J.S24  Image processing µ-program
  DSP21M2J.S24  Image processing µ-program
  DSP30M1J.S24  Image processing µ-program
  DSP30M2J.S24  Image processing µ-program
  DSP31M1J.S24  Image processing µ-program
  DSP31M2J.S24  Image processing µ-program

• DIF
  SIOSETUP.DMS  Data link layer setup parameter definition file
                  Data link layer setup parameter for DMS (E-IF) connection

• MICRO
  DSP0M1J.S24  Image processing µ-program
  DSP0M2J.S24  Image processing µ-program

• IIF
  SIOSETUP.IDT  Data link layer setup parameter definition file
                  Data link layer setup parameter for IDT (serial) connection

• HCP
  • MICRO
  DSPHM1J.S24

• LAN
  LANCONT.ABS  LAN board control program
## LOG

- **ERRLOG0.000**
  - Error log save file
  - Saved only to the FD in error log (level 0) maintenance utility.

- **ERRLOGX.000**
  - Error log save file
  - Saved only to the FD in error log (other than level 0) maintenance utility.

- **ISC.000**
  - ISC log save file
  - ISC log journal (extensions “001” to “005” denote normal logs, while “011” to “013” denote dumb logs)

- **SED_MFC.000**
  - SED log save file (MFC)
  - SED log journal

- **SED_JNL.000**
  - SED log save file (JNL)
  - SED log journal

- **SED_PNL.000**
  - SED log save file (PNL)
  - SED log journal

- **SED_IPH.000**
  - SED log save file (IPH)
  - SED log journal

- **SED_IMG.000**
  - SED log save file (IMG)
  - SED log journal

- **SED_IIF.000**
  - SED log save file (IIF)
  - SED log journal

- **SED_CSL.000**
  - SED log save file (CSL)
  - SED log journal

- **SED_DST.000**
  - SED log save file (DST)
  - SED log journal

- **SED_LIF.000**
  - SED log save file (LIF)
  - SED log journal

- **SED_DIF.000**
  - SED log save file (DIF)
  - SED log journal

- **SED_FOT.000**
  - SED log save file (FOT)
  - SED log journal

- **SED_FIN.000**
  - SED log save file (FIN)
  - SED log journal

- **SED_DOT.000**
  - SED log save file (DOT)
  - SED log journal

- **IOT.000**
  - IOT data
  - IOT data journal

- **SMCU_LIF.000**
  - External unit communication log (serial LP)
  - External unit communication log journal

- **SMCU_DIF.000**
  - External unit communication log (serial DMS)
  - External unit communication log journal
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMCU_IIF.000</td>
<td>External unit communication log (serial IIF)</td>
</tr>
<tr>
<td></td>
<td>External unit communication log journal</td>
</tr>
<tr>
<td>GD_IPH.000</td>
<td>Global data (IPH)</td>
</tr>
<tr>
<td></td>
<td>External unit communication log journal</td>
</tr>
<tr>
<td>GD_CSL.000</td>
<td>Global data (CSL)</td>
</tr>
<tr>
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<td>External unit communication log journal</td>
</tr>
<tr>
<td>GD_DST.000</td>
<td>Global data (DST)</td>
</tr>
<tr>
<td></td>
<td>External unit communication log journal</td>
</tr>
<tr>
<td>GD_LIF.000</td>
<td>Global data (LIF)</td>
</tr>
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<td>External unit communication log journal</td>
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<td>GD_FOT.000</td>
<td>Global data (FOT)</td>
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<td>External unit communication log journal</td>
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<td>GD_FIN.000</td>
<td>Global data (FIN)</td>
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<td>External unit communication log journal</td>
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<tr>
<td>GD_HCP.000</td>
<td>Global data (HCP)</td>
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<td>External unit communication log journal</td>
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<tr>
<td>GD_DOT.000</td>
<td>Global data (DOT)</td>
</tr>
<tr>
<td></td>
<td>External unit communication log journal</td>
</tr>
<tr>
<td>GD_IMM.000</td>
<td>Image management system data</td>
</tr>
<tr>
<td></td>
<td>External unit communication log journal (history information, etc.)</td>
</tr>
<tr>
<td>GD_QUM.000</td>
<td>Queue management system data</td>
</tr>
<tr>
<td></td>
<td>External unit communication log journal (history information, etc.)</td>
</tr>
<tr>
<td>CORE.DMP</td>
<td>Core dump</td>
</tr>
</tbody>
</table>
CR-IR341/CR-IR341P
Service Manual

Service Parts List (SP)
## Service Parts List (SP)

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<td>All pages</td>
</tr>
</tbody>
</table>
1. How to Use Service Parts List

**RANK**

- Handling RANK characters (parts that are handled in a special manner during parts operation, such as replacement)
  (Parts denoted by other than “R” shall be subject to normal replacement and handling.)

<table>
<thead>
<tr>
<th>Character</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Parts that may be repaired.</td>
</tr>
<tr>
<td>Q</td>
<td>Identification number for overseas use only</td>
</tr>
<tr>
<td>T</td>
<td>Identification number for overseas use only</td>
</tr>
</tbody>
</table>

- Export regulations-applicable character
  (Parts without the following character are not controlled by export regulations.)

<table>
<thead>
<tr>
<th>Character</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Parts applicable to export regulations.</td>
</tr>
</tbody>
</table>

- Fault RANK characters (which provide reference for determining the recommended stock quantity)
  All parts are assigned either A through E.

<table>
<thead>
<tr>
<th>Character</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Consumable parts or parts that will be replaced at short intervals.</td>
</tr>
<tr>
<td>B</td>
<td>Parts that may become faulty accidentally and have a relatively high failure rate.</td>
</tr>
<tr>
<td>C</td>
<td>Parts that have a sufficiently long MTBF, but are expected to have a relatively high failure rate.</td>
</tr>
<tr>
<td>D</td>
<td>Parts that have a sufficiently long MTBF, but are expected to become faulty.</td>
</tr>
<tr>
<td>E</td>
<td>Parts that are necessary for fault analysis, or parts that may be needed in case of unexpected accidents such as man-induced damage.</td>
</tr>
</tbody>
</table>

**PART NUMBER**

PART NUMBER is a code number that is unique to each part.
An alphabetic letter at the right-most position of the code number has the following meaning.

- For hardware
  The alphabet denotes the version number of a part. If parts have different version numbers, they are upward-compatible.

- For software
  The alphabet denotes a difference in the specifications.

**PART NAME**

PART NAME represents a general name of a part.

**QTY.**

- QTY. denotes the quantity of parts used in each unit.
- A parts with “-S” assigned to the end of the quantity represents a small part that is shipped in packs of 50. (Even if such a part is ordered in quantity of “1”, a pack containing 50 pieces of that part is supplied.)

**REMARKS**

The REMARKS column indicates a unique name of a part or its relevant information.

**SERIAL NUMBER**

The units may contain different parts depending on their shipment control number. SERIAL NUMBER indicates the shipment control number to which the relevant parts are applicable. If the SERIAL NUMBER column is blank, the parts are applicable to all the relevant units.

**REF.NO.**

REF. NO. is a parts number indicated in the Service Parts Exploded Views. For parts having different functions, they are clearly distinguished in the REMARKS and SERIAL NUMBER columns.
**Recommended Quantity of Spare Parts**

It is recommended as a rough guide to hold in stock a certain quantity of parts according to the rank (A, B, C, D, E) assigned to the parts, as follows. For periodically replaced parts, hold them in stock separately.

Adjust the stock quantity of service parts depending on the number of working units (N).

Quantity used in a single system : Q

- **N=1**
  - Rank A = 1 + Q x 0.3
  - Rank C = 1 + Q x 0.05
  - Rank D = 1 + Q x 0.02

- **2 ≤ N ≤ 10**
  - Rank A = 2 + N x Q x 0.3
  - Rank C = 2 + N x Q x 0.05
  - Rank D = 1 + N x Q x 0.02

- **11 ≤ N ≤ 300**
  - Rank A = 3 + N x Q x 0.3
  - Rank C = 3 + N x Q x 0.05
  - Rank D = 2 + N x Q x 0.02

**Precautions to be Observed When Returning Parts in Need of Repair**

When returning a component in need of repair, pack it in the same manner as for the supplied substitute, using the substitute packing materials.

The use of different packing materials or packing methods may incur damage to packed component during transit.
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- CONTROLLER 2

## INDEX 13
- OPTION

## INDEX 14
- CABLE

## INDEX 15
- CONNECTION DIAGRAM

## INDEX 16
- PARTS NOS. SEARCH TABLE

## INDEX 17
- TABLE OF SCREWS / WASHERS INDICATION SYMBOLS

## INDEX 18
- LIST OF QUICK WEARING PARTS

- The number in the shaded area in each unit that comes after INDEX indicates the parts list section number.
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* REF 23: Although the after-reading conveyor is not a service part, this kit is required when installing a new after-reading conveyor to an older model of the machine (~# Serial number control is required.).

* Relationship of the boards to be installed depending on the version of REF 16

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## Scanning Optics Unit

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(1) If, when REF 2.1 is to be replaced, this part is not found in stock, it should be replaced with REF 1.1 (as with REF 2.2 and REF 1.2).

(2) When REF 1.2 is employed, the version of the SCN08A board (10C-REF 16) should always be 113Y1324K or later.

(3) When REF1.1 (839Y7002C) is used, the version of the software (114Y5431003) should be updated to A10 or later. However, this is applicable only to #2001 through 3240 (CR-IR341) and #2001 through 2296 (CR-IR361).

(4) When REF1.2 (839Y0021) is used, the version of the software (114Y5431003) should be updated to A10 or later. However, this is applicable only to #2001 through 3804.

### Relationship between REF 2 and REF 5

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* REF 18 (CPU90E) is not bundled with REF 29 (BOOT ROM).
  If that ROM is needed during replacement of CPU90E, REF 29 should be ordered as well.
  If only REF 29 is ordered, the ROM that was mounted should be removed and a new ROM should be remounted on REF 18 (CPU90E).
  The same holds true for REF 30 and REF 13 (CPU90F).
* If REF 13 (CPU90F) is version N or later, the software version of the machine should always be A09 or later.
* REF 18 (CPU90E) is version A09 or later.
## CONTROLLER 2

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Connection Diagram

Housing near the JPS-1 housing

Notes on cable codes

Portions with no symbols represent (housing).

15 CONNECTION DIAGRAM
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*: Stainless-made

: Painted black
## List Of Quick Wearing Parts

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CR-IR341/CR-IR341P
Service Manual

Preventive Maintenance (PM)
CR-IR341 Service Manual – Contents

Preventive Maintenance (PM)

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<td>3.29</td>
<td>Pushing in Scanner Unit</td>
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<td>3.30</td>
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<td>1Y</td>
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<td>3.35</td>
<td>Checking Image</td>
<td>0.5Y</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
2. Preventive Maintenance Programs by Intervals

The Maintenance Utility and User Utility modes are hereinafter referred to simply as M-Utility and U-Utility, respectively.

- **Turning OFF High-Voltage Switch (Software Switch)**
  In M-Utility, turn OFF the high-voltage switch (software switch) and then restart the machine.

- **Removing Covers**
  Remove all the covers.

- **Replacing Air Filters**
  Replace the air filters located at the lower left-hand side cover and lower right-hand side cover.

- **Cleaning Suction Cups**
  Clean the suction face of the suction cups of the IP removal unit with a moistened cloth.

- **Replacing Suction Cups**
  Replace the suction cups of the IP removal unit.

- **Cleaning FD Drive and Magnetic Card Reader**
  Using the FD drive cleaner and cleaning card, clean the FD and magnetic card reader.

- **Checking Error Log**
  In M-Utility, check to see that there is no error.

- **Checking Image**
  Uniformly expose an IP at about 1 mR and generate image output in the test menu of the IDT to check the image on output film for any abnormality.

- **Cleaning FD Drive and Magnetic Card Reader**
  Using the FD drive cleaner and cleaning card, clean the FD and magnetic card reader.

- **Replacing Suction Pump (PB1)**
  Replace the suction pump.

- **Checking Shock Absorbers of Before-Side-Positioning Conveyor**
  Check to see if the shock absorbers are not peeled or frayed; if peeled or frayed, replace them.

- **Cleaning Suction Cups**
  Clean the suction face of the suction cups of the IP removal unit with a moistened cloth.

- **Replacing Suction Cups**
  Replace the suction cups of the IP removal unit.

- **Checking Shock Absorbers of Before-Side-Positioning Conveyor**
  Check to see if the shock absorbers are not peeled or frayed; if peeled or frayed, replace them.
1. Checking Shock Absorber Located Under Erasure Conveyor
   Check to see if the shock absorber is not peeled or frayed; if peeled or frayed, replace them.

2. Clearing Error Log
   In M-Utility, clear the error log.

3. Setting Date and Time
   In U-Utility, set the date and time.

4. Cleaning Rubber Rollers
   Clean the rubber rollers of each unit of the machine with a moistened cloth.

5. Reinstalling and Cleaning Covers
   Reinstall all the covers removed, check to see that there is no missing screw, and clean the covers with a moistened cloth.

6. Checking Vibration-Proof Rubbers
   Check to see if the vibration rubbers are not degraded; if degraded, replace them.

7. Turning ON High-Voltage Switch (Software Switch)
   In M-Utility, turn ON the high-voltage switch (software switch) and then restart the machine.

8. Checking Image
   Uniformly expose an IP at about 1 mR and generate image output in the test menu of the IDT to check the image on output film for any abnormality.

END
3. Details of Procedures

The details of preventive maintenance procedures are described in the order of programs listed in “1. LIST OF PREVENTIVE MAINTENANCE PROGRAMS.” To facilitate the understanding of the inspection intervals of each preventive maintenance item, the item is indicated by one of the following icons in this chapter. Before going ahead with the procedure, check the icon that represents one of the four types according to the inspection intervals.

- Indicates that the procedures should be performed at intervals of 0.5Y (half year).
- Indicates that the procedures should be performed at intervals of 1Y (one year).
- Indicates that the procedures should be performed at intervals of 2Y (two years).
- Indicates that the procedures should be performed at intervals of 3Y (three years).

3.1 Checking Error Log

**Procedures**

1. Power ON the machine.
2. Touch the USER UTILITY BUTTON. The screen switches to the User Utility mode.
3. Touch the upper left corner and upper right corner of the operation panel in sequence. M-Utility is activated.
4. Select “1. ERROR LOG UTILITY” and “1. LIST” in sequence.
5. Designate the format for the error log to be displayed on the screen.
   - One of the following may be selected for the type of error messages to be outputted: “Error Messages Only”, “Warning Messages Only”, and “All Messages”.
   - For the type of error messages designated, one of the following options can be selected:
     - **ALL**
       All error messages are displayed, starting from the latest one. Even if the same error message occurs several times, all the error messages generated are displayed.
     - **SUMMARY**
       Error messages generated are displayed according to the error code. Error messages and their count (four digits) are displayed.
3.2 Checking Image

Preventive maintenance procedures are described in sequence. Perform them in the order of items denoted by ■.

■ Check for ununiformity, sensitivity, and density

(1) Uniformly expose IPs of the following sizes at about 1 mR.

Note that size values in parentheses should be applied when the metric type is used.

• 14" x 14" (35cm x 35cm) or 14" x 17" (35cm x 43cm)
• 10" x 12" (24cm x 30cm)
• 8" x 10" (18cm x 24cm)

The IP exposure conditions are as follows.

• Distance: 1.8 m
• Voltage: 80 kV
• Amperage: 50 mA
• Time: 0.013 sec

(2) Make recording in SENSITIVITY from the test menu of the IDT, and generate output.

(3) Make sure that the resulting image is free from ununiformity on the output film or display monitor. If any ununiformity is found, take remedial measures as appropriate.

☞ “3. Abnormal Images” in Troubleshooting

(4) Check the sensitivity and density.

Make sure that the system sensitivity value displayed on the output film is approximately 200 and the film density is approximately 1.2. Also verify that there is no density variation in the main scanning direction.

If anything abnormal is found, take remedial measures as appropriate.

☞ “3. Abnormal Images” in Troubleshooting
Check for jitters

(1) Place 15-cm steel rules on IPs of the following sizes as illustrated, and uniformly expose them at about 1 mR.
   • 14” x 14” (35cm x 35cm) or 14” x 17” (35cm x 43cm)
   • 10” x 12” (24cm x 30cm)
   • 8” x 10” (18cm x 24cm)

The IP exposure conditions are as follows.
   • Distance: 1.8 m
   • Voltage: 80 kV
   • Amperage: 50 mA
   • Time: 0.013 sec

How to expose the steel rules is illustrated below.

(2) Make recording in SENSITIVITY from the test menu of the IDT, and generate output.

(3) Make sure that there is no jitter on the resulting image of the frame and steel rules on the output film.

If any jitter is found, take remedial measures as appropriate.

“3. Abnormal Images” in Troubleshooting
Check for format

Make sure that the white blank is 2 mm or less, as actually measured on the IP, from the outermost edge of the image frame of the film outputted in “Check for jitters.” Also make sure that the size of the image of the steel rules is reduced in scale as listed in the table below.

If the white blank exceeds 2 mm or the reduction factor is improper, take remedial measures as appropriate.

“3. Abnormal Images” in Troubleshooting

The distance measured on the film may differ from the actual size measured on the IP, depending on the reading size. For example, for a two-in-one image of 14” x 14” (35cm x 35cm) size, because its reduction factor is 50%, the actual size on the IP is twice the distance measured on the film.

The relationship between the reading size and reduction factor is shown below.

<table>
<thead>
<tr>
<th>Reading size</th>
<th>Two-in-one image</th>
<th>Full image</th>
</tr>
</thead>
<tbody>
<tr>
<td>14” x 17” (35cm x 43cm)</td>
<td>1/2</td>
<td>2/3</td>
</tr>
<tr>
<td>14” x 14” (35cm x 35cm)</td>
<td>1/2</td>
<td>2/3</td>
</tr>
<tr>
<td>10” x 12” (24cm x 30cm)</td>
<td>2/3</td>
<td>1/1</td>
</tr>
<tr>
<td>8” x 10” (18cm x 24cm)</td>
<td>6/7</td>
<td>1/1</td>
</tr>
</tbody>
</table>
Check for output characters

Make sure that the contents of the film character format information that has been set in “2. CONFIGURATION SETTING” of M-Utility are indicated accurately on the film outputted in “Check for jitters.”

If anything abnormal is found with the output characters, take remedial measures as appropriate.

“3. Abnormal Images” in Troubleshooting

Normal two-image output characters

- Above the image area
  - a: Hospital name (institution name)
  - b: IP number
  - c: EDR mode and menu code
  - d: System ID and image number

- Below the image area
  - e: Image processing conditions
  - f: Exposure menu name
  - g: Standardization conditions and amendments
  - h: Engineer code and exposure table information
  - i: Department name
  - j: Patient ID
  - k: Patient name (Kana)
  - l: Patient name (Kanji)
  - m: Exposure date and time
  - n: Film mark
  - o: Sex
  - p: Age or birth date
  - q: Image reduction ratio
  - r: Set processing information
  - s: Left-right reversal mark (R)
  - t: Data compression code
  - u: PEM information or Ene.-Sub./superposition information

Other image output patterns and character display areas

SUPPLEMENTARY NOTE

The output characters indicated in the character display areas (A and B) are variously laid out depending on the employed output pattern.
14" x 17"/8" x 10" four-image output

Four-image output of a size other than 14" x 17"/8" x 10"

18 x 43 (long) two-image output (B4LP)

18 x 43 (long) two-image output
(14" x 17"LP)
### 3.3 Cleaning FD Drive and Magnetic Card Reader

#### Tools Used
- FD drive cleaner and cleaning card

#### Procedures
How to clean the FD drive and magnetic card reader is described below, respectively.

**Cleaning the FD drive**

1. Power ON the machine.
2. Insert the FD drive cleaner into the FD drive.
   - The drive starts to read the FD, but stops in error.
3. Remove the FD drive cleaner.

**Cleaning the magnetic card reader (for CSL type only)**

1. Power ON the machine.
2. Pass the cleaning card through the card reader.
   - The reader starts to read the cleaning card, but stops in error.
3.4 Turning OFF High-Voltage Switch (Software Switch)

**Procedures**

“9. HV OFF” is displayed when the high-voltage switch is in the ON position, while “9. HV ON” is displayed when it is in the OFF position.

1. Touch the USER UTILITY BUTTON.
   - The screen switches to the User Utility mode.

2. Touch the upper left corner and upper right corner of the operation panel in sequence.
   - M-Utility is activated.

3. Select “9. HV OFF”.
   - The high-voltage switch is set to OFF, displayed on screen, and “9. HV OFF” displayed switches to “9. HV ON”.

![M-Utility Screen Diagram]

Display in ON status

0. QUIT
1. ERROR LOG UTILITY
2. CONFIGURATION SETTING
3. TEST MODE
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. FILE UTILITY
8. BACKUP MEMORY
9. HV OFF
10. MENU SETTING

Display in OFF status

0. QUIT
1. ERROR LOG UTILITY
2. CONFIGURATION SETTING
3. TEST MODE
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. FILE UTILITY
8. BACKUP MEMORY
9. HV ON
10. MENU SETTING

FR1H1416.EPS
3.5 Removing Covers

**WARNING**

In order to avoid electric shock hazards, power OFF the machine before performing any procedures.

**CAUTION**

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

### Procedures

1. Power OFF the machine.
2. Lower front cover (truss M4x12, x2)
   - Loosen the truss screws, both right and left, and while slightly pulling the top of the cover toward yourself, pull it up and out.
3. Upper right-hand side cover (truss M4x6, x4)
   - Pull up the entire cover toward yourself and out.
4. Lower right hand side cover (truss M4x6, x9)
   - While slightly pulling the top of the cover toward yourself, pull it up and out.
5. Make sure that the high-voltage switch (S1) of the SCN08A board is in the OFF position.
6. Upper rear cover (truss M4x12, x4)
7. Lower rear cover (truss M4x12, x5; truss M4x20, x3)
   - While slightly pulling the top of the cover toward yourself, pull it up and out. The top three screws on the left-hand side are tightened together with the cable retaining NK clamps.
8. Upper left-hand side cover (truss M4x12, x4)
9. Lower left-hand side cover (truss M4x6, x3; truss M4x12, x6)
   - While slightly pulling the top of the cover toward yourself, pull it up and out, exercising care to prevent the cover of the switch portion from hitting the power supply unit. Because the three screws on the front of the machine are truss M4x6, while the six screws on the rear of the machine are truss M4x12, use care not to confuse these screws during installation.
(10) Upper front cover (BR M4x8, x2; truss M4x8, x2)
Loosen the right and left truss screws, and slightly pull the top of the cover toward
yourself to pull it up and out. Because the two screws on the upper portion of the cover
are BR M4x8, while the two screws on the lower portion are truss M4x6, use care not
to confuse these screws during installation.

(11) Stack table (truss M4x6, x2)
Using a 2-mm Allen wrench or so forth, first remove the screw covers and then the
screws.

(12) Lower front inner cover (BR M4x8, x8)

(13) Multi-stage cassette loading cover (BR M4x8, x6)
Disconnect the connector, and then pull the cover toward yourself and out.
3.6 Replacing Air Filters

- **Periodically Replaced Parts**
  - Air filters

- **Procedures**

  1. Remove the filter cover located at the lower left-hand side cover. While pushing down the latches located at top of the filter cover, pull it toward yourself and out.

  2. Remove the air filter from the filter cover. Pinch the air filter attached to the filter cover and pull it off.

  3. Attach a new air filter to the filter cover. Fit the air filter firmly into the four corners of the filter cover.

  4. Reinstall the filter cover removed at step (2) onto the lower left-hand side cover.

  5. Remove the air filter located on the lower right-hand side cover.

  6. Attach a new air filter. Attach the air filter so as to cover the Velcro tape located on the lower right-hand side cover.
3.7 Pulling Out Tray of Cassette Set Unit

⚠️ CAUTION

When removing and installing the units, exercise care not to damage the cables.

■ Removal

(1) Disconnect the connectors (CNA1-3 from the cassette set unit; CNB1, 3, 4 from the up-down IP removal unit).

(2) Slide the tensioner until the timing belt can be removed.

Loosen the screw (BR M4x8) that retains the tensioner to slide the tensioner as appropriate, and then secure the tensioner in place.

“3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description

(3) Remove the timing belt.

(4) Remove the two screws that retain the tray of the cassette set unit.

(5) While using care to prevent the connector cables, etc. from getting caught, pull out the tray of the cassette set unit.
3.8 Removing Cassette Set Unit

**CAUTION**

When removing or installing units, exercise care not to damage the cables.

### Removal

1. Remove the six screws that retain the cassette set unit.
2. Pull out the cassette set unit horizontally.

### NOTES

- When pulling out the cassette set unit, be sure to move the up-down IP removal assembly to its home position or to any of the first through fourth shelf position. If the cassette set unit is pulled out at any other position, it may be damaged.
- When pulling out the cassette set unit, align the IP removal arm to its home position (where the IP removal arm is withdrawn).
3.9 Cleaning Suction Cups

If the suction cups are going to be replaced, there is no need to clean them.

**Procedures**

1. Pull out the IP removal arm toward the front.

   **NOTE**
   
   When pulling out the IP removal arm, do not grasp its center. If its center is grasped, the IP removal arm may be bent.

2. Wipe the suction face of the two suction cups with a moistened cloth.

3. Return the IP removal arm to the rear side.
3.10 Replacing Suction Cups

■ Periodically Replaced Parts
  Suction cups

■ Procedures
  (1) Pull out the IP removal arm toward the front.

  ◆ NOTE ◆

  When pulling out the IP removal arm, do not grasp its center. If its center is grasped, the IP removal arm may be bent.
(2) Remove the guide.
   Remove the right-hand guide retaining bracket and then the guide.

(3) Replace the two suction cups and the two packings.

◆ **NOTES** ◆

- Do not rotate the suction cup retaining screws while holding the suction cup rubber portions. Rotate the suction cup retaining screws with a thin-blade screwdriver while holding the pipe joint with a wrench or like tool.
- Exercise care to avoid hose disconnection.

(4) Return the IP removal arm to the rear side.
3.11 Replacing Suction Pump (PB1)

**Procedures**

1. Rotate the timing belt until the IP removal unit is moved up (away about 250 mm from the tray of the cassette set unit) to facilitate PB1 removal.
2. Cut the cable clamp.
3. Remove the bracket.
(4) Cut the cable tie.

(5) Disconnect the connector (CNPB1).

(6) Remove the hose from the PB1.

(7) Remove the two screws (one of them should be merely loosened), and take out the PB1 from the pump assembly.

(8) Install a new PB1 to the pump assembly.

(9) Restore the cable tie cut at step (4).

(10) Attach the hose removed at step (6).

**NOTE**

*When attaching the hose, connect it to the suction nozzle (upper one of the two nozzles arranged) of the PB1.*

(11) Connect the connector disconnected (CNPB1).

(12) Attach the bracket that was removed at step (3).

(13) Restore the cable clamp that was cut at step (2).
3.12 Checking Shock Absorbers of IP Removal Unit

- **Procedures**

  - **Checking shock absorbers located under IP removal arm**

    1. Rotate the timing belt to move up the IP removal unit to nearly the middle stage (away about 150 mm from the tray of the cassette set unit).
    2. Check if the shock absorber is not peeled or frayed.
       - If it is peeled or frayed, proceed to step (3) to replace the whole guide to which the shock absorber is attached. If it is not peeled or frayed, proceed to the next program of preventive maintenance.
    3. Remove the spring from the wire.
    4. Remove the wire from the roller.
    5. Remove the left roller assembly from the shock absorber-attached guide plate.
    6. Remove the four screws (two of them should be merely loosened) that retain the right roller assembly, and take out the roller assembly from the bracket.
    7. Pull out the IP removal arm toward the front.

- **NOTE**

  When pulling out the IP removal arm, do not grasp its center. If the center is grasped, the IP removal arm may be bent.
(8) Remove the two screws (one of them should be merely loosened) that retain the shock absorber-attached guide plate (A), and take out the shock absorber-attached guide plate (A) from the stay.

(9) Loosen the two screws that retain the shock absorber-attached guide plate (B), and take out the shock absorber-attached guide plate (B) from the stay.

(10) Remove the two screws (one of them should be merely loosened) that retain the shock absorber-attached guide plate (C), and take out the shock absorber-attached guide plate (C) from the stay.

(11) Attach new shock absorber-attached guide plates A, B, and C to the stay.
   When installing the guide, tighten the screws while pushing the guide against the stay.

(12) Reinstall the roller assembly removed at steps (5) and (6).

(13) Hook the wire removed at step (4) into the groove of the roller.

(14) Attach the spring removed at step (3) to the wire.
Checking shock absorbers located under IP removal unit

(1) Take out the shock absorber-attached guides from under the IP removal unit.

(2) Check if the shock absorber is not peeled or frayed.
   If it is peeled or frayed, replace the whole guide to which the shock absorber is attached.

(3) Install new shock absorber-attached guides.
   Fit the lower portion of the guide into the groove of the lower shaft, and push the upper portion of the guide against the upper shaft to secure it in place.
● Checking shock absorber located on rear of IP removal unit

(1) Rotate the timing belt to move the IP removal unit up to the topmost position.

(2) Remove from the rear of the machine the three screws that retain the shock absorber-attached guide plate.

(3) Take out the shock absorber-attached guide plate from the front of the machine.

(4) Check if the shock absorber is not peeled or frayed.
   If it is peeled or frayed, replace the whole guide to which the shock absorber is attached.

(5) Install a new shock absorber-attached guide plate.
   Reinstall it in the reverse order of removal.
3.13 Checking Shock Absorber Located Under Vertical Conveyor

Perform this check from the rear side of the machine.

**Procedures**

1. Remove the shock absorber-attached guide plate.

2. Check if the shock absorber is not peeled or frayed.
   
   If it is peeled or frayed, replace the whole guide plate to which the shock absorber is attached.

3. Install a new guide plate.
### 3.14 Checking Shock Absorbers of Vertical Conveyor

Perform this check from the rear side of the machine.

#### Procedures

1. Check if the shock absorber of the elevation changeover guide is not peeled or frayed.
   - If it is peeled or frayed, proceed to step (2) to replace the whole elevation changeover guide to which the shock absorber is attached. If it is not peeled or frayed, proceed to the next program of preventive maintenance.

2. Remove the spring of the up-down changeover guide.

3. Remove the single screw that retains the up-down changeover guide to the arm.
   - Using a Phillips stubby screwdriver or the like, remove the screw.

4. Remove the arm.

5. Remove both the right and left E-rings that retain the up-down changeover guide.
   - First remove the E-ring located on the left side of the machine.

6. Remove both right and left slide bearings.
(7) Remove the up-down changeover guide, using care to avoid interference with the side plate of the vertical conveyor and so forth.

(8) Install a new up-down changeover guide.

(9) Reinstall both the right and left slide bearings removed at step (6).

(10) From the front side of the machine, reinstall both the right and left E-rings removed at step (5).

First install the E-ring on the right-hand side of the machine.

(11) Reinstall the arm removed at step (4).

(12) Secure the up-down changeover guide to the arm in place with the single screw removed at step (3).

(13) Reinstall the spring removed at step (2).
3.15 Reinstalling Cassette Set Unit

**CAUTIONS**

- Before inserting the cassette set unit, move the IP removal arm to its home position (where the IP removal arm is withdrawn). Also align the height of the IP removal unit to its home position or to one of the first through fourth shelf position. If the cassette set unit is inserted in any other position, the machine may be damaged.
- When inserting the cassette set unit into the machine, align it along the positioning brackets. If not, the sensor may be damaged.
- When installing the cassette set unit, push it against the positioning brackets for proper positioning. Also, while pushing the upper portion of the cassette set unit against the up-down IP removal unit, screw it down in place.

1. Install the cassette set unit horizontally along the positioning brackets.
2. Secure the cassette set unit in place with six screws.
3.16 Pushing in Tray of Cassette Set Unit

**CAUTION**

When removing and installing the units, exercise care not to damage the cables.

**Push-In**

(1) While using care to prevent the connector cables, etc. from getting caught, push in the tray of the cassette set unit.

(2) Secure the tray of the cassette set unit with two screws.

(3) Connect the connectors (CNA1-3 to the cassette set unit; CNB1, 3, 4 to the up-down IP removal unit).

**SUPPLEMENTARY NOTE**

The timing belt of the vertical conveyor should be installed after completing the procedures described in “3.17 Checking Shock Absorbers of Before-Side-Positioning Conveyor.”
3.17 Checking Shock Absorbers of Before-Side-Positioning Conveyor

**CAUTION**

*When removing and installing the units, exercise care not to damage the cables.*

**Procedure**

● *Checking shock absorbers located above before-side-positioning conveyor and under cleaning roller*

(1) Disconnect the connectors (CNC1, CNC2, CNSOLC1).
(2) Slide the tensioner until the timing belt can be removed.
   - Loosen the one retaining screw and slide the tensioner as appropriate, and then tighten the screw.
   - Refer to “3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description
(3) Remove the timing belt.
(4) Remove the two screws that retain the before-side-positioning conveyor.
(5) Pull out the before-side-positioning conveyor horizontally.
   - While using care to prevent the connectors (CNC1, CNC2, CNSOLC1) from getting caught, slowly pull it out.
(6) Remove the cover of the before-side-positioning conveyor.
(7) Loosen the single screw that retains the bracket.
(8) Remove the shock absorber-attached guide plate (A).
(9) Remove the cleaning roller assembly.
(10) Remove the shock absorber-attached guide plate (B).
(11) Check if the shock absorber is not peeled or frayed.
If it is peeled or frayed, replace the whole guide to which the shock absorber is attached.

(12) Install the guide plate.
(13) Tighten the screw loosened at step (7).

◆ SUPPLEMENTARY NOTE ◆

The cover removed at step (6) should be reinstalled after completing the procedures described in “1 Checking shock absorbers of before-side-positioning changeover guide and before-side-positioning retention guide.”
Checking shock absorbers of before-side-positioning changeover guide and before-side-positioning retention guide

(1) Remove the guide plate.
(2) Check if the shock absorber of the before-side-positioning changeover guide and before-side-positioning retention guide is not peeled or frayed. If it is peeled or frayed, proceed to step (3) to replace the whole guide plate to which the shock absorber is attached. If it is not peeled or frayed, proceed to step (12).

(3) Remove the spring.
(4) Remove the arm.
(5) Remove the bearing.
(6) Remove the shock absorber-attached before-side-positioning changeover guide.
(7) Install a new before-side-positioning changeover guide in reverse order of steps (3) through (6).

When installing the arm, tighten the screw with the arm pushed against the flat machined surface.

![Diagram showing arm and flat machined surface with screw and guide plate](image1)

(8) Adjust the mounting position of the convergence path changeover guide drive solenoid (SOLC1) so that the distance between the side face of the before-side-positioning changeover guide and the back of the guide plate is 1 mm or less.

![Diagram showing guide plate with 1 mm or less clearance](image2)
(9) Remove the two screws and two spacers that retain the shaft of the before-side-positioning retention guide, and take out the before-side-positioning retention guide assembly.

(10) Remove the four screws and four spacers that retain the before-side-positioning retention guide, and take out the before-side-positioning retention guide from the shaft.

(11) Install new before-side-positioning retention guides to the shafts.

(12) Install the before-side-positioning retention guide assembly to the side-positioning conveyor.

◆ NOTESP ◆

- When installing the shafts, position their grooves on the right-hand side of the machine.
- When installing the before-side-positioning retention guide assembly, screw it down while retaining the shafts with an Allen wrench lodged in the shaft hole.
(13) Reinstall the guide plate removed at step (1).

(14) Reinstall the before-side-positioning conveyor along the rail into the machine.
   Align the before-side-positioning conveyor against the positioning pin located on the left side of the machine (into the machine as seen from the direction of insertion) and against the positioning bracket located on the rear side of the machine, and then secure it in place.

(15) Attach the timing belt to the timing belt wheel.

(16) Put the tensioner back where it was originally located.
   Loosen the single screw that retains the tensioner. Flick the timing belt several times to ensure that it snugly fits onto the timing belt wheel, and then tighten the screw on the tensioner in place where appropriate tension is attained.

(17) Connect the connectors (CNC2, CNSOLC1).

**SUPPLEMENTARY NOTE**

The timing belt of the erasure conveyor and connector (CNC1) should be installed and connected after completing the procedures described in “3.22 Checking Shock Absorber Located Under Erasure Conveyor.”
3.18 Replacing Cleaning Roller

- Periodically Replaced Parts
  Cleaning roller

- Procedures
  1. Remove the one screw that retains the cleaning roller assembly of the before-side-positioning conveyor.
  2. Pull out the cleaning roller assembly horizontally.
  3. Remove the bracket. Loosen the four screws, both right and left, of the cleaning roller assembly, and take out the bracket.
  4. Remove the cleaning roller.
  5. Remove dust and other foreign matter from the inside of the cleaning roller assembly.
(6) Remove the plain washer, two spacers, two slide bearings, and E-ring from the cleaning roller.

(7) Attach the plain washer, two spacers, two slide bearings, and E-ring removed at step (6) to a new cleaning roller.

(8) Reinstall the cleaning roller to the cleaning roller assembly.

(9) Reinstall the cleaning roller assembly in the reverse order of removal.
3.19 Cleaning Erasure Lamp Assembly and Erasure Conveyor Filter

**Procedures**

- **Cleaning erasure lamp assembly**
  
  (1) Disconnect the connectors (ACOUT1, ACOUT2, DCOUT4, DCOUT5).
  (2) Remove the one screw that retains the erasure lamp assembly.
  (3) Pull out the erasure lamp assembly horizontally.

  **CAUTION**
  
  Carefully handle the erasure lamp. If it is hit, the erasure lamp may be broken, so you may get injured.

  (4) Remove the bracket.
  (5) Remove the five erasure lamps.
  (6) Wipe the white reflection face within the erasure lamp assembly, the white reflection face behind the bracket, and the five erasure lamps with a moistened cloth wrung tightly.

  (7) Install five new erasure lamps.
  (8) Reinstall the bracket.

**SUPPLEMENTARY NOTE**

- When the erasure lamp is replaced, the erasure lamp and bracket should be installed while the procedures described in “3.20 Replacing Erasure Lamp” are performed.
- The erasure lamp assembly should be installed after completing the procedures described in “3.22 Checking Shock Absorbers Located Under Erasure Conveyor.”
Cleaning erasure conveyor filter

**CAUTION**

*When removing and installing the units, exercise care not to damage the cables.*

1. Disconnect the connectors (CNF1, 2, CNSOLF1).
2. Remove the two screws and two spacers that retain the erasure conveyor.
3. Pull out the erasure conveyor horizontally.

4. Wipe both faces of the shock absorber-attached filter with a moistened cloth wrung tightly.

**NOTE**

*When cleaning the filter, exercise care not to touch the shock absorbers.*
3.20 Replacing Erasure Lamps

■ Periodically Replaced Parts
   Erasure lamp

■ Procedures
   (1) Install five new erasure lamps to the erasure lamp assembly.
   (2) Reinstall the bracket.

◆ SUPPLEMENTARY NOTE ◆

The erasure lamp assembly should be installed after completing the procedures described in “3.22 Checking Shock Absorbers Located Under Erasure Conveyor.”
3.21 Checking Shock Absorbers of Erasure Conveyor

**Procedures**

1. Remove the shock absorber-attached guide plate.
2. Check if the shock absorber is not peeled or frayed.
   If it is peeled or frayed, replace the whole guide to which the shock absorber is attached.

3. Reinstall the shock absorber-attached guide plate.
Checking shock absorber of filter

(1) Remove the grip spring.

(2) Remove the two screws (one of them should be merely loosened) that retain the bracket, and take out the bracket.

(3) Remove the lamp house assembly.

◆ NOTE ◆
When removing the lamp assembly, use care not to damage the shock absorber.

(4) Check if the shock absorber is not peeled or frayed.
If it is peeled or frayed, replace the whole filter to which the shock absorber is attached. If it is not peeled or frayed, proceed to step (7).

(5) Remove the shock absorber-attached filter.

(6) Attach a new shock absorber-attached filter.

(7) Reinstall the lamp assembly.

(8) Reinstall the bracket removed at step (2).

(9) Attach the grip spring removed at step (1).
Checking shock absorber located above erasure conveyor

1. Disconnect the connector (CNSF4).
2. Remove the SF4 together with the spacer.
3. Disconnect the connector (CNSF2).
4. Remove the SF2 together with the bracket.
(5) Remove the shock absorber-attached guide plate.

(6) Check if the shock absorber is not peeled or frayed.

If the shock absorber is peeled or frayed, replace the whole guide to which the shock absorber is attached.

(7) Install the shock absorber-attached guide plate.

(8) Reinstall the SF2 together with the bracket.

(9) Connect the connector disconnected. (CNSF2)

(10) Reinstall the SF4 together with the spacer.

(11) Connect the connector disconnected. (CNSF4)
● Checking shock absorber of branch path changeover guide

(1) Remove the guide plate.

(2) Check if the shock absorber is not peeled or frayed.

If it is peeled or frayed, replace the whole guide to which the shock absorber is attached. If it is not peeled or frayed, reinstall it in the reverse order of removal.

(3) Remove the spring.

(4) Remove the two screws that retain the stopper support, and take out the stopper support.

(5) Remove the SF1 together with the connector.
(6) Remove the bearing.
(7) Remove the branch path changeover guide assembly.
   The arm should be removed as attached to the shaft of the branch path changeover
   guide assembly.
(8) Remove the arm, bearing, and slide bearing from the branch path changeover guide
   assembly.

(9) Attach the arm, bearing, and slide bearing removed at step (8) to a new shock ab-
    sorber-attached branch path changeover guide.
(10) Fit the spring pin into the U-shaped groove of the arm.
(11) Reinstall the branch path changeover guide assembly.
(12) Attach the bearing.
(13) Install the stopper support while the branch path changeover guide is opened (the
    spring pin is pushed against the end surface of the square hole of the changeover
    guide driving solenoid).

◆ NOTES ◆

• Make sure that the spring pin is securely pushed against the end surface of the
  square hole.
• Make sure that the stopper support is in contact with the arm. Also, verify that the
  spring pin or arm does not move.
(14) Reinstall the SF1 together with the connector, which was removed at step (5).
(15) Attach the spring removed at step (3).
(16) Reinstall the guide plate removed at step (1).
3.22 Checking Shock Absorber Located Under Erasure Conveyor

**Procedures**

1. Remove the shock absorber-attached cover.
2. Remove the anti-static member from the shock absorber-attached cover.
3. Check if the shock absorber is peeled or frayed.
   - If the shock absorber is peeled or frayed, replace the whole cover to which the shock absorber is attached.
4. Reposition the anti-static member to the shock absorber-attached cover.
5. Reinstall the shock absorber-attached cover.
(6) Install the erasure conveyor along the shock absorber-attached cover into the machine.

Align the erasure conveyor against the positioning bracket located on the left side of the machine (into the machine as seen from the direction of insertion), and secure it in place.

(7) Attach the timing belt onto the timing belt wheel.

(8) Put the tensioner back where it was.

Loosen the single screw that retains the tensioner. Flick the timing belt several times to ensure that it snugly fits onto the timing belt wheel, and then tighten the screw on the tensioner in place where appropriate tension is attached.

(9) Connect the connectors (CNF1, 2, CNSOLF1 to the erasure conveyor; CNC1 to the before-side-positioning conveyor).
(10) Reinstall the erasure lamp assembly to the erasure conveyor.

⚠️ **CAUTION**

Carefully handle the erasure lamp. If it is hit, the erasure lamp may be broken, so you may get injured.

◆ **SUPPLEMENTARY NOTE◆**

When inserting the erasure lamp assembly, align the positioning pin located on the right-hand side of the inlet into the hole of the erasure lamp assembly, and push it all the way into the erasure conveyor.

(11) Connect the connectors (DCOUT4, 5, ACOUT1, 2).

![Diagram of erasure conveyor and components](FR1H1458.EPS)
3.23 Checking and Cleaning Subscanning Unit Belts

Check and clean the SUS, rubber, and Kapton® belts.

CAUTION

Wear gloves when checking or replacing the belts. Otherwise, the SUS belt may be soiled or damaged.

Tools Used

Ethanol

Procedures

- SUS and rubber belts

  (1) Remove the transparent cover located on the right-hand side. Using a blower, remove dust deposited on the transparent cover.

  (2) While rotating the drive shaft, check the SUS belt, rubber belt, pulley, and tensioner for any soil or flaw.

    • If any soil is found, clean it off.
      
      SUS belt: Clean any soil off with an ethanol-moistened cloth.
      Rubber belt: Clean any soil off with a moistened cloth.

    After cleaning, reinstall the transparent cover removed at step (1) and proceed to the next preventive maintenance program.

    • If any flaw is found, proceed to step (3).
(3) Remove the tensioner spring

(4) Remove the SUS and rubber belts.

To remove the rubber belt, rotate the drive shaft while keeping the center of the belt tense, and take out the belt.

(5) Install new SUS and rubber belts in the reverse order of removal.

◆ **NOTES** ◆

- After replacing the SUS or rubber belt, rotate the drive shaft to ensure that the SUS or rubber belt does not come off the tensioner or shaft.
- After replacing the SUS or rubber belt, check the MZ1.

“10.8 Checking and Replacing Subscanning Motor (MZ1)” in Checks, Replacement and Adjustment of Parts

(6) Reinstall the transparent cover removed at step (1).
● Kapton® belt

(1) Remove the transparent cover located on the left-hand side. Using a blower, remove dust deposited on the transparent cover.

(2) Check the Kapton® belt for any soil or flaw.
  • If any soil is found, clean it off with an ethanol-moistened cloth.
    After cleaning, reinstall the transparent cover removed at step (1) and proceed to the next preventive maintenance program.
  • If any flaw is found, proceed to step (3).

(3) Remove the tensioner spring

(4) Remove the Kapton® belt.

(5) Install new Kapton® belt in the reverse order of removal.

◆ NOTES ◆

• After replacing the Kapton® belt, rotate the drive shaft to ensure that the Kapton® belt does not come off the tensioner or pulley.
• After replacing the Kapton® belt, check the MZ1.

☞ “10.8 Checking and Replacing Subscanning Motor (MZ1)” in Checks, Replacement and Adjustment of Parts

(6) Reinstall the transparent cover removed at step (1).
3.24 Checking Vibration-Proof Rubbers

**Procedures**

When inspecting the vibration-proof rubbers, measure the vertical distance between the scanner unit tray and the scanner to determine the degree of vibration-proof rubber deterioration. If vibration-proof rubber deterioration is indicated by an abnormal measurement, replace the affected vibration-proof rubber.

“10.17 Replacing and Adjusting Shock-Absorbing Rubbers” in Checks, Replacement and Adjustment of Parts

1. With a 150 mm scale, take measurements A and B.

   Check that both A and B measure 43 mm (+1/-3) and that the difference between measurements A and B is not greater than 1 mm.

2. With a 150 mm scale, take measurements C and D.

   Check that both C and D measure 39 mm (+1/-3) and that the difference between measurements C and D is not greater than 1 mm.
3.25 Pulling Out Scanner Unit

**CAUTIONS**

- Before pulling out the scanner unit, be sure to remove the two bracket retaining screws located on the upper portion of the SCN08A board and disconnect the connectors. If pulled out without removing them, the SCN08A board may be damaged.
- When pulling out the scanner unit, be sure to lower the adjustable feet down to the floor. If not, the bolts of the adjustable feet would interfere with the cable cover.
- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Disconnect the connectors (CN7-9, CNZ6-8, 10 on the SCN08A board, and CN1, 2, 4, 5 on the subscanning unit).

The cables connected to the SCN08A board should be push aside to the right and top sides of the scanner unit, while the cables connected to the subscanning unit should be push aside to the left side.
(2) Remove the two screws that retain the bracket located on the upper portion of the SCN08A board.

(3) Remove the two screws that retain the scanner unit.

(4) Pull out the scanner unit.

◆ NOTE ◆

When pulling out the scanner unit, use care so that it is not caught by the disconnected connectors and cables.
3.26 Cleaning Light-Collecting Guide and Light-Collecting Mirror

Tools Used
Ethanol, lens cleaning paper

Procedures

Cleaning light-collecting guide

1. Disconnect the connectors (PMT08A CN1, 2).
2. Remove the brace that retains the light-collecting guide assembly retaining bracket.
3. Remove the arm retaining screw, and lift up the arm.
   By lifting up the arm, the lock on the light-collecting guide assembly is released.
4. Take out the light-collecting guide assembly.
   Carefully put the removed light-collecting guide assembly down onto a soft sheet or the like, using care not to damage it.

CAUTIONS

- Wear gloves when handling the light-collecting guide assembly. If you handle it with bare hands, it may be soiled or damaged.
- Never touch the light-receiving face of the light-collecting guide assembly even when you are wearing the gloves.
- Carefully handle the light-collecting guide assembly to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.

![Diagram](FR1H488.EPS)
(5) Fold three sheets of lens cleaning paper by half, and wipe the entire light-collecting guide with the sheets moistened with ethanol.

**CAUTIONS**

- *Wipe the light-collecting guide in one direction at a constant rate.*
- *Do not wipe the photomultiplier bonding surface.*
- *If the lens cleaning paper becomes soiled, replace it with a new one.*

(6) Fold five sheets of lens cleaning paper by half, and wipe the light-collecting guide dry. After wiping it dry, make sure that it has been cleaned uniformly.
(7) Make sure that the socket of the PMT08A board is fitted into the socket of the light-collecting guide and that the sockets of the PMT08A board and light-collecting guide are parallel to each other.

If anything abnormal is found, push in the PMT08A board assembly while holding the light-collecting guide, and adjust the position of the sockets of the PMT08A board and light-collecting guide as appropriate.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.

**SUPPLEMENTARY NOTE**

The light-collecting guide assembly should be installed after completing the procedures described in “3.28 Checking Shock Absorbers of Side-Positioning Conveyor.”
● Cleaning light-collecting mirror

⚠️ CAUTIONS

- When removing and installing the units, use care not to damage the cables.
- Wear gloves when checking and replacing the light-collecting mirror. If not, the light-collecting mirror may be soiled or damaged.
- Never touch the reflection face of the light-collecting mirror even when you wear gloves.
- Carefully handle the light-collecting mirror to avoid damage to it due to contact with surrounding objects.
- Wear a mask so as not to inadvertently spit on the light-collecting mirror.

(1) Disconnect the connectors (CNME1, CNME2, CNSE1) from the after-reading conveyor.

(2) Remove the five retaining screws from the after-reading conveyor.

◆ SUPPLEMENTARY NOTE ◆

For the old type of the after-reading conveyor, the locations and number of mounting screws are different. 

11. Removing and Reinstalling After-Reading Conveyor” in Checks, Replacement and Adjustment of Parts

(3) Take out the after-reading conveyor horizontally.

◆ NOTE ◆

Make sure that the scanner unit has been pulled all the way out. If not, the ME2 will interfere with the machine frame when removing the after-reading conveyor.
(4) Remove the two screws (one of them should be merely loosened) that retain the dust cover, and take out the dust cover. The sponge located on top of the dust cover fits into the scanning optics unit. Slide the dust cover to the right (right-hand side of the machine). Next, while pressing the dust cover downward, pull out the top sponge from the scanning optical unit to remove the dust cover.

(5) Attach the two take-out screws (M3) to the light-collecting mirror. This facilitates holding the light collecting mirror so that it does not drop into the gap.

(6) Remove the two light-collecting mirror retaining screws.

(7) Remove the light-collecting mirror. Grasp the take-out screws and remove the light-collecting mirror while using care to avoid contact with surrounding objects.

(8) Fold two sheets of lens cleaning paper by four and moisten them with ethanol.

(9) Wipe the reflection face of the light-collecting mirror with the ethanol-moistened lens cleaning paper.

**CAUTIONS**

- Do not wipe the light-collecting mirror dry. If wiped dry, the reflection face may be scratched.
- If the lens cleaning paper becomes soiled, replace it with a new one.
- Clean the light-collecting mirror until the lens cleaning paper is no longer soiled.
(10) Install the light-collecting mirror.
Secure the light-collecting mirror with two screws while pressing its right- and left-hand positioning pins against the subscanning unit supports.

(11) Remove the take-out screws (M3).
(12) Install the dust cover.
While pressing the dust cover lower sponge against the light-collecting mirror bracket, push the upper sponge into the scanning optics unit with your fingers.

◆ SUPPLEMENTARY NOTE ◆
The after-reading conveyor should be installed after completing the procedures described in “3.27 Checking Shock Absorbers of After-Reading Conveyor.”
3.27 Checking Shock Absorber of After-reading Conveyor

**Procedures**

1. Remove the shock absorber-attached guide plate.
2. Check if the shock absorber is not peeled or frayed. If peeled or frayed, replace the whole guide plate on which the shock absorber is attached.
3. Install the shock absorber-attached guide plate.
(4) Install the after-reading conveyor.
While pushing the bracket of the after-reading conveyor to the block section of the
subscanning unit, secure the after-reading-conveyor in place with four screws.

◆ NOTE ◆
Make sure that the scanner unit has been pulled all the way out. If not, the ME2 will
interfere with the machine frame when installing the after-reading conveyor.

◆ SUPPLEMENTARY NOTE ◆
For the old type of the after-reading conveyor, the locations and number of mounting screws
are different.
“11. Removing and Reinstalling After-Reading Conveyor” in Checks, Replacement and
Adjustment of Parts

(5) Secure the right-hand side of the new after-reading conveyor to the subscanning unit
by tightening the two screws in order from (5)-1 to (5)-2 as illustrated below.

(6) Make sure that the three bumps (two bumps on the right-hand side and one of the two
bumps on the left-hand side) are aligned against the block sections of the subscanning
unit.

◆ SUPPLEMENTARY NOTE ◆
Both of the two bumps on the right-hand side should be brought into contact with the block
section. At least one of the two bumps on the left-hand side may be in contact with the block
section.

If any of the bumps is detached from the block section of the subscanning unit, loosen
the two screws and repeat step (5) all over again.
(7) Tighten the three screws on the left bracket of the after-reading conveyor.

(8) Connect the connectors (CNSE1, CNME1, CNME2).

If both of the two bumps on the left side are detached from the block section of the subscanning unit, loosen the three screws and repeat step (7) all over again.
(9) Carefully install the light-collecting guide assembly onto the subscanning unit, while exercising care to avoid contact with surrounding units.

**CAUTIONS**

- Wear gloves when installing the light-collecting guide assembly. If you install it with bare hands, it may be soiled or damaged.
- **Never touch the light-receiving face of the light-collecting guide assembly even when you are wearing the gloves.**
- Carefully handle the light-collecting guide assembly to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.
- When inserting the light-collecting guide assembly, align the protrusions located at both ends of the light-receiving face of the light-collecting guide assembly against the reference plane in the subscanning direction, and the front protrusion against the reference pin in the main scan direction.
(10) While supporting the light-collecting guide assembly, secure it with the light-collecting guide assembly retaining arm in place.

While pushing the shaft of the light-collecting guide assembly retaining arm, rotate it. Makes sure that the stopper secures the light-collecting guide assembly in place, and then tighten the screw.

◆ NOTE ◆

When pushing the light-collecting guide assembly retaining arm, be sure to push down its shaft portion. If the arm portion is pushed, the arm itself may be deformed.

(11) Secure the light-collecting guide assembly in place with the brace.

⚠️ CAUTION ⚠️

If the light-collecting guide assembly leaves its fixed position (i.e., position as instructed in the side view illustrated at step (9), where the right- and left-hand light-receiving edges of the light-collecting guide must be in close contact with both the bottom and the reference plane in the subscan direction) when an attempt is made to secure the light-collecting guide with the brace, adjust the mounting location of the light-collecting guide assembly retaining bracket.
(12) Make sure that the socket of the PMT08A board is fitted into the socket of the light-collecting guide and that the sockets of the PMT08A board and light-collecting guide are parallel to each other.

If anything abnormal is found, remove the single screw that retains the light-collecting guide retaining bracket. While holding the light-collecting guide, push in the PMT08A board assembly, and adjust the position of the sockets of the PMT08A board and light-collecting guide as appropriate.

After the brace is fixed with the screw, verify again that the sockets are parallel, and then proceed to the next step.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.

(13) Connect the connectors (CN1, 2 to the PMT08A board).
### CAUTION

When removing and installing the units, use care not to damage the cables.

(1) Disconnect the connectors (CND1, BCRCN1, CNMD1-3).
(2) Remove the five screws that retain the side-positioning conveyor.
(3) Pull out the side-positioning conveyor horizontally.

◆ NOTE ◆

Make sure that the scanner unit has been pulled all the way out. If not, the MD3 will interfere with the machine frame when removing the side-positioning conveyor.
(4) Remove the three shock absorber-attached guide plates.

(5) Check if the shock absorber is not peeled or frayed.
If it is peeled or frayed, replace the whole guide plate to which the shock absorber is attached.

(6) Attach new shock absorber-attached guide plates.
(7) Reinstall the side-positioning conveyor.
While pressing the bracket of the side-positioning conveyor against the block section of the subscanning unit and the reference side, secure the side-positioning conveyor in place with five screws.

◆ NOTE ◆
Make sure that the scanner unit has been pulled all the way out. If not, the MD3 will interfere with the machine frame when installing the side-positioning conveyor.

(8) Connect the connectors (CND1, BCRCN1, CMMD1-3).
3.29 Pushing in Scanner Unit

**CAUTIONS**

- When removing and installing the units, use care not to damage the cables.
- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

### Push-In

1. While pushing the stopper located on the front side of the machine, put the scanner unit back into the machine until the stopper located on the rear side of the machine is activated.

2. While pushing the stopper located on the rear side of the machine, put the scanner unit all the way into the machine.

**NOTE**

When putting the scanner unit back where it was, use care so that it is not caught by the connectors and cables disconnected.
(3) Secure the bracket located on the upper portion of the SCN08A board in place with two screws.

(4) Secure the scanner unit in place with two screws.

(5) Connect the connectors (CN7-9, CNZ6-8, 10 to the SCN08A board; CNZ1, 2, 4, 5 to the subscanning unit).
3.30 Cleaning Rubber Rollers

Procedures

Clean off any dirt or soil from the rubber rollers at each unit with a moistened cloth.

- **Four rubber rollers at cassette set unit**
  Take out the cassette set unit before cleaning the rollers.
  [3.8 Removing Cassette Set Unit]

- **Eight rubber rollers at IP removal unit**
  Take out the cassette set unit before cleaning the rollers.
  [3.8 Removing Cassette Set Unit]

- **Eight rubber rollers at vertical conveyor**
  Take out the cassette set unit before cleaning the rollers.
  [3.8 Removing Cassette Set Unit]

- **Eight rubber rollers at before-side-positioning conveyor**
  Take out the before-side-positioning conveyor before cleaning the rollers.
  [3.17 Checking Shock Absorbers of Before-Side-Positioning Conveyor]

- **Six rubber rollers at side-positioning conveyor**
  Take out the side-positioning conveyor before cleaning the rollers.
  [3.28 Checking Shock Absorbers of Side-Positioning Conveyor]

- **Four rubber rollers at subscanning unit**
  Take out the scanning optics unit before cleaning the rollers.
  [9.3 Removing and Reinstalling Scanning Optics Unit] in Checks, Replacement and Adjustment of Parts

- **Six rubber rollers at after-reading conveyor**
  Take out the after-reading conveyor before cleaning the rollers.
  [3.27 Checking Shock Absorber of After-reading Conveyor]

- **Thirteen rubber rollers at erasure conveyor**
  Take out the erasure conveyor before cleaning the rollers.
  [3.21 Checking Shock Absorbers of Erasure Conveyor]
CONTENTS

Power supply unit

After-reading conveyer (E)

Vertical conveyor (B)

Before-side-positioning conveyer (C)

Rubber roller x4

φ10

Subscanning unit (Z)

Side-positioning conveyer (D)

Scanning optics unit

Controller

NOTES:

•  denotes a rubber roller.
•  An alphabet in parentheses denotes a unit symbol.
3.31 Reinstalling and Cleaning Covers

■ Procedures

⚠️ CAUTION ⚠️

Before reinstalling the covers, make sure that the high-voltage switch of the SCN08A board is in the ON position.

◆ NOTE ◆

Accomplish positioning at the time of multi-stage cassette loading cover installation. If you do not complete positioning, a cassette holding failure may occur.

(1) Mount the multi-stage cassette loading cover on the machine main body, and loosely retain the four lower screws.
(2) Insert a 300 mm scale along the right-hand side of the lowermost shelf (fourth shelf). Press the manual reset lever to lower the hold pin.

(3) Slide the multi-stage cassette loading cover until the distance between the entry reference guide protrusion of the cassette set unit and the scale is 0.5-1 mm, and then tighten the four screws that were loosely retained.
(4) Insert a 300-mm scale along the right edge of the topmost shelf (first shelf).

Push the manual release lever so that the hold pin is withdrawn.

(5) Secure the multi-stage cassette loading cover in place.

Loosely tighten the three screws on top of the cover, and take positioning steps (2) and (3) for the topmost shelf (first shelf) before screwing it down.

◆ SUPPLEMENTARY NOTE ◆

- The bracket and screw that retain the multi-stage cassette loading cover are not available for units with serial numbers 2001, 2005 to 2009, 2011 to 2013, 2015 to 2019, and 2021 to 2027.
- Because of parts machining precision, the multi-stage cassette loading cover may be slightly warped when secured, though this will not pose any problem. Alignment with the cassette set unit should take first priority.

(6) Connect connector CNT1.

(7) Reinstall the other covers.

For reinstallation, reverse the steps of removing the covers.

☞ “3.5 Removing Covers”

(8) Make sure that the covers have been installed securely and there is no missing screw.

(9) Clean all the covers with a moistened cloth.
3.32 Setting Date and Time

**Procedures**

1. Power ON the machine.
   Make sure that the machine starts up normally.
2. Touch the USER UTILITY BUTTON.
   - The screen switches to the User Utility mode.

   **Routine screen**
   (screen made to CSL specification)

   **NOTE:** For the initial setting, the "Multiframe forced output" button will not appear.
(3) Touch the date/time setting on the User Utility screen.
   ➤ The date/time setting screen appears.

(4) Enter the current date and time, press the virtual keyboard.

(5) After entering the date and time, press the [ENT] key to confirm the setting.
   ➤ When the setting is confirmed, OK appears below the entry line.
   If the date or time is entered incorrectly, press the BS (backspace) key to return to
   the character to be corrected.

(6) Touch the RETURN button.
   ➤ The User Utility screen appears.
3.33 Clearing Error Log

■ Procedures

(1) Touch the upper left corner and upper right corner of the operation panel in sequence.
   ➥ M-Utility is activated.

(2) Select "1. ERROR LOG UTILITY" and "2. CLEAR" in sequence.

(3) Select "1. YES".
   ➥ The entire error log is deleted.

(4) Repeatedly select "0. QUIT".
   ➥ Exit M-Utility.

(5) Touch the RETURN button.
   ➥ The screen returns to the routine screen.
3.34 Turning ON High-Voltage Switch (Software Switch)

**Procedures**

“9. HV OFF” is displayed when the high-voltage switch is in the ON position, while “9. HV ON” is displayed when it is in the OFF position.

1. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
2. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.
3. Select “9. HV ON”.
   - The high-voltage switch is set to ON, “9. HV ON” displayed switches to “9. HV OFF”.

(4) Repeatedly select “0. QUIT”.
   - Exit M-Utility.
(5) Touch the RETURN button.
   - The screen returns to the U-Utility mode.
3.35 Checking Image

**Procedures**

☞ "3.2 Checking Images"
4. Maintenance to Be Performed in 6 Years

(Being prepared)
CR-IR341/CR-IR341P
Service Manual

Installation (IN)
# Contents Installation

**CR-IR341 Service Manual – Contents**

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1. How Installation Volume Is Organized

In the Installation volume, the configuration information that should be checked prior to installation, as well as the installation procedures, are described.

**Organization of Installation Volume**

In the Installation volume, its chapters are arranged along the flow of procedures, from determination of specs to image output after installation.

In Chapters 2 through 4, descriptions are given which should be checked in advance on the assumption that they are read prior to installation of the machine.

In Chapters 5 through 9, actual installation procedures are described in sequence.

Appendix 1 provides an original of worksheet, so that check items described in Chapters 2 through 4 should be filled in a copy of this worksheet. It is assumed in Chapters 5 through 9 that the installation procedures are performed with reference to the worksheet where necessary items are described.

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<td>Chapter 4 Preparation of Installation Environment</td>
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<th>Chapters to See during Installation</th>
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<tr>
<td>Appendix 2 Worksheet for Determination of Configuration Information</td>
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How to Use Worksheet

In the INSTALLATION volume, the worksheets for taking notes of the configuration information are provided in its appendixes.

Duplicate the attached worksheet and describe the configuration information in its copy with reference to Chapters 2 and 3 of the INSTALLATION volume.

Referring to the worksheet that provides the configuration information, perform the procedures described in “Chapter 7 Setting Configuration File.”

First machine

Copy

Worksheet

Second and subsequent machines

Copy

Worksheet

The worksheet is used when configuration setting of the machine is actually performed.

When several units of the CR-IR341 are to be installed, the worksheet for the first machine should be first filled out, and then it should be copied for the subsequent machines, so that item(s) to be changed may be red-penciled.

Supplementary Note about Machine Name

It should be understood in the Service Manual that the “CR-IR341” is the same as the “FCR5000”. 
1. How Installation Volume Is Organized
   “Appendix 1. Worksheet for Determination of System Configuration”
   “Appendix 2. For Determination of Configuration Information”

2. Determination of System Configuration
   2.1 Connectable Peripherals and Software Versions
   “Appendix 4. Requirements Regarding Locally Obtained Parts”
   “Appendix 5. Settings on Units Interfaced”
   2.2 Information on Optional Boards for CR-IR341
   2.3 Basic Pattern of System Configuration
     2.3.1 Pattern Where IDT-IV Is Connected to CPU90E
     2.3.2 Pattern Where IDT-IV Is Connected to CPU90Fa
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   2.4 IDT Type and CSL Type

3. Determination of Configuration Information
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     3.1.1 List of Setup Items of SYSTEM (IRSET.CFG)
     3.1.2 Setup Items of SYSTEM to be Changed for Second and Subsequent Machines
   3.2 PRINT (FILMFMT.CFG)
     3.2.1 List of Setup Items of PRINT (FILMFMT.CFG)

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     4.1.1 Machine Moving and Fixing Means
     4.1.2 Environmental Requirements
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   4.2 Preinstallation Work
   4.3 Tools Used
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5.2.3 Options

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6.2.3 Procedures at Erasure Conveyor and Before-Side-Positioning Conveyor

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6.3.2 MMC90A board

6.3.3 CPU90E board

6.3.4 IMG07B board

6.3.5 CPU90F board or LAN90B board

6.3.6 HCP08A board

6.3.7 DMC08A board

6.3.8 IMG08C board

6.3.9 IMG08B/H board

6.3.10 IMG08A board

6.3.11 Installing Board Retaining Plate

6.4 Cable Wiring Diagram

6.4.1 Interface Cables

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"Appendix 6. Installing Optional Software"

7.2 Editing Configuration Files

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8. Final Installation and Checks

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8.2 Reinstalling Covers

8.3 Final Placement

8.4 Checks after Machine Startup

8.5 Checking Interface Operation

8.6 Checking Image and Adjusting Image Requirements

8.7 Checking and Deleting Error Logs That Occur during Setup

8.8 Checking Machine Shutdown

8.9 Cleaning Covers

8.10 Attachment of Labels

END
2. Determination of System Configuration

The overall configuration of the network to which the machine is to be connected, as well as optional items of the machine, should be determined as requested by the user. In this chapter, the information required to determine the system configuration is summarized.

2.1 Connectable Peripherals and Software Versions

The peripherals that may be interfaced to the CR-IR341 and CR-IR341P, as well as their software versions, are described. Peripherals that are not listed here cannot be interfaced to the CR-IR341 and CR-IR341P.

CR-IR348CL Connectable to CR-IR341P

The software version of the CR-IR348CL that is connected to the CR-IR341P is A02.

Printers that can be connected to CR-IR341

Printers that can be directly connected

Models of the printers that can be directly connected to the CR-IR341 by use of the E-I/F board, and their software versions, are shown below.

It should be noted that “ULP” in the configuration is automatically set on the CR-IR341 side, so its setting is unnecessary.

<table>
<thead>
<tr>
<th>Model</th>
<th>Software version</th>
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<tbody>
<tr>
<td>CR-LP414/FL-IM2636</td>
<td>(Currently not supported)</td>
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<tr>
<td>CR-LP414N/FL-IM2636N</td>
<td>CPU68J board: A05; IF68J board: A04</td>
</tr>
<tr>
<td></td>
<td>(IF68J board: A05 cannot be used)</td>
</tr>
<tr>
<td>CR-LP415/FL-IM2636II</td>
<td>A07 or later</td>
</tr>
<tr>
<td>CR-LP416/FL-IM3543II</td>
<td>A07</td>
</tr>
<tr>
<td>CR-LP417/FL-IMD</td>
<td>A10</td>
</tr>
<tr>
<td>CR-DPL</td>
<td>A04, B00 or later (B04 or later for 8”x10” film output)</td>
</tr>
<tr>
<td>FM-DP2636</td>
<td>C05 or later</td>
</tr>
<tr>
<td>FM-DP3543</td>
<td>C01 or later</td>
</tr>
<tr>
<td>FL-IM3543</td>
<td>(Currently not supported)</td>
</tr>
<tr>
<td>FL-IM3543N (MN)*</td>
<td>CPU68J board: A06; IF68J board: A04</td>
</tr>
<tr>
<td></td>
<td>(IF68J board: A06 cannot be used)</td>
</tr>
<tr>
<td>DRYPIX1000</td>
<td>A01 or later (A01 or later for 8”x10” film output)</td>
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</table>

Connection protocol: E-I/F for all

*: If the CR-LP414N/FL-IM2636N or FL-IM3543N is connected to the CR-IR341(A07 or later) (including being connected as a backup printer), the setup value for “N1” in “2. CONFIGURATION SETTING,” “5. LOCAL INTERFACE,” “2. LIF: siosetup.lp” file should be changed from “005” to “010”
Printers that can be network-connected

Models of and software versions for the printers that can be connected over a network for image output in a standalone fashion are listed below.

It should be noted that the CR-IR341 can send image data over a network to another CR-IR341 to which a printer is connected, where images can be outputted.

<table>
<thead>
<tr>
<th>Model</th>
<th>Software version</th>
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<tbody>
<tr>
<td>FN-PS551</td>
<td>A02 or later (A03 or later, if MFP processing is to be used; A04 or later, if FINP connection is to be established)</td>
</tr>
</tbody>
</table>

Connection protocol: FINP

**NOTE**

*If the printer connection for the CR-IR341 (A05 or later) is changed from local to network, or from network to local, the printer after that change should be selected through printer selection in U-Utility.*

DMS Connectable to CR-IR341

DMS units that can be directly connected

Models of the DMS units that can be directly connected to the CR-IR341 by use of the E-I/F board, and their software versions, are shown below.

<table>
<thead>
<tr>
<th>Model</th>
<th>Software version</th>
</tr>
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<tr>
<td>ODF-613</td>
<td>No restriction</td>
</tr>
<tr>
<td>ODF-623</td>
<td>No restriction</td>
</tr>
<tr>
<td>ODF-614/624</td>
<td>D03 or later, or F01 or later</td>
</tr>
<tr>
<td>HI-C652</td>
<td>No restriction</td>
</tr>
<tr>
<td>HI-C653</td>
<td>No restriction</td>
</tr>
<tr>
<td>HI-C654</td>
<td>A12, B04, E05, F04, G03 or later (A13 or later, if MFP processing is to be used)</td>
</tr>
<tr>
<td>HI-C655</td>
<td>A04 or later (A05 or later, if MFP processing is to be used)</td>
</tr>
</tbody>
</table>

Connection protocol: E-I/F for all

DMS units that can be network-connected

Models of the DMS units that can be connected over a network at present, and their software versions, are shown below.

<table>
<thead>
<tr>
<th>Model</th>
<th>Software version</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODF-614/624</td>
<td>A09 or later, or Z00 or later (A11/Z02 or later, if FINP connection is to be established)</td>
</tr>
<tr>
<td>HI-C654</td>
<td>A12, B04, E05, F04, G03 or later (A13 or later, if MFP processing is to be used)</td>
</tr>
<tr>
<td>HI-C655</td>
<td>A04 or later (A05 or later, if MFP processing is to be used; A07 or later, if FINP connection is to be established)</td>
</tr>
<tr>
<td>HI-C655QA/QA-WS771</td>
<td>A03 or later (A07 or later, if FINP connection is to be established)</td>
</tr>
</tbody>
</table>

Connection protocol: FINP for ODF-614/624, HI-C654, HI-C655; FUJI-Private for HI-C655QA/QA-WS771
2.2 Information on Optional Boards for CR-IR341

■ IMG08B Board: Multi-frequency Processing (MFP) Board

The part numbers and software versions for the board that is required for multi-frequency processing are shown below. The board should always be used in the correspondence between the part number and software version specified below.

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>Software version</th>
</tr>
</thead>
<tbody>
<tr>
<td>113Y7038B</td>
<td>A05, 06</td>
</tr>
<tr>
<td>113Y7038E</td>
<td>A07 or later</td>
</tr>
</tbody>
</table>

The multi-frequency processing function is automatically activated by installing the IMG08B board. Thus, it is unnecessary to set this function in the configuration and so forth.

■ HCP08A Board: Compression/Decompression Board

Versions of the board and software required to provide film output for the read image data of the CR-IR341 from the printer connected via the network to the HI-C655QA/QA-WS771 in local connection mode are shown below.

<table>
<thead>
<tr>
<th>Version of HCP08A board</th>
<th>Software version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version G or later</td>
<td>A06 or later</td>
</tr>
</tbody>
</table>
2.3 Basic Pattern of System Configuration

The CR-IR341 has two types: IDT type and CSL type, whereas the CR-IR341P has three types: IDT type, CSL type, and CL connection type. As such, this section described a basic pattern of system configuration on the assumption that the IDT-IV or CR-IR348CL is network-connected.

**Basic Pattern of System Configuration**

The CR-IR341 system configuration is mainly classified into two categories: the IDT-IV is connected to the CPU90E board or to the CPU90F (HCP08A) board.

The system configuration is further classified depending on whether the DMS is connected to the DMC08A board or CPU90F (HCP08A) board.

- **Pattern where IDT-IV is connected to CPU90E**
  
  The IDT-IV is connected to the CPU90E board via a network (10BASE-T).
  
  - System configuration pattern (1)
    
    The DMS is connected to the DMC08A board.
  
  - System configuration pattern (2)
    
    The DMS is connected to the CPU90F board via a network (100BASE-TX).

- **Pattern where IDT-IV is connected to CPU90F**
  
  The IDT-IV is connected to the CPU90F board via a network (10BASE-T or 100BASE-TX).
  
  - System configuration pattern (3)
    
    The DMS is connected to the CPU90F board via a network (10BASE-T).
  
  - System configuration pattern (4)
    
    The DMS is connected to the CPU90F board via a network (100BASE-TX). Because the IDT-IV can be used exclusively over 10BASE-T, it should be connected through a 100M/10M bridge.
  
  - System configuration pattern (5)
    
    Both the IDT-IV and DMS are connected to the CPU90F board via a network. The use of a 100M/10M switching hub permits the IDT-IV and DMS to exchange data over 10BASE-T and 100BASE-TX, respectively.

- **Pattern where CR-IR348CL is connected to LAN90B**
  
  - System configuration pattern (6)
    
    The CR-IR348CL is connected to the LAN90B board via a network (100BASE-TX).
When a hub is connected, the switches of the hub should be set in accordance with the table below.

<table>
<thead>
<tr>
<th>Hub supported</th>
<th>Switch setting</th>
<th>Communication mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU90E board</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BASE-T</td>
<td>HALF DUPLEX</td>
<td>10M HALF DUPLEX</td>
</tr>
<tr>
<td>10BASE-T / 10BASE-T/100 BASE-TX selection</td>
<td>10M HALF DUPLEX AUTO NEGOTIATION</td>
<td>10M HALF DUPLEX</td>
</tr>
<tr>
<td><strong>CPU90F board</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BASE-T</td>
<td>HALF DUPLEX</td>
<td>10M HALF DUPLEX</td>
</tr>
<tr>
<td>10BASE-T / 10BASE-T/100 BASE-TX selection</td>
<td>10M HALF DUPLEX AUTO NEGOTIATION</td>
<td>100M HALF DUPLEX</td>
</tr>
<tr>
<td>(for ETH90H board)</td>
<td></td>
<td>(for ETH90H board)</td>
</tr>
</tbody>
</table>
2.3.1 Pattern Where IDT-IV Is Connected to CPU90E

The IDT-IV is connected to the CPU90E board via a network (10BASE-T).

**System Configuration Pattern (1)**

The DMS is connected to the DMC08A board.

**System Configuration Pattern (2)**

The DMS is connected to the CPU90F board via a network (100BASE-TX).
2.3.2 Pattern Where IDT-IV Is Connected to CPU90F

The IDT-IV is connected to the CPU90F board via a network (10BASE-T or 100BASE-TX).

■ System Configuration Pattern (3)

The DMS is connected to the CPU90F via a network (10BASE-T).

■ System configuration example (4)

The DMS is connected to the CPU90F board via a network (100BASE-TX). Because the IDT-IV can be used exclusively over 10BASE-T, it should be connected through a 100M/10M bridge.
■ System configuration example (5)

Both of the IDT-IV and DMS are connected to the CPU90F board via a network. The use of a 100M/10M switching hub permits the IDT-IV and DMS to exchange data over 10BASE-T and 100BASE-TX, respectively.

2.3.3 Pattern Where CR-IR348CL is Connected to LAN90B

The CR-IR348CL is connected to the LAN90B board via a network (100BASE-TX).

■ System Configuration Pattern (6)
2.4 IDT Type and CSL Type

There are two types of CR-IR341: IDT type that is connected to the IDT-IV for input of ID information and CSL (console) type that employs a card reader and barcode reader located on the machine for input of ID information.

■ Difference in Hardware between IDT Type and CSL Type

The CSL type comes standard with the card reader and barcode reader as ID information input devices. With the IDT type, the card reader and barcode reader are provided on the IDT.

■ Difference in Software between IDT Type and CSL Type

Common software is implemented in both the IDT type and CSL type. By setting the system type in the configuration file (IRSET.CFG), the CR-IR341 functions as either the IDT type or CSL type.

With the CSL type, it is necessary to make ID information-related and other setups for configuration setting. Chapter 3 “Determination of Configuration Information” provides respective descriptions of different setup procedures that depend on whether the IDT type or CSL type is applicable, so they should be referred to as needed.

■ ID Information Search Logic and IDT Registration

In order to receive ID information from the IDT-IV, the IDT-IV should be registered in the CR-IR341. Up to five units of the IDT-IV can be registered, and ID inquiries are made in order of registration.

Upon insertion of an IP cassette, the CR-IR341 scans the barcode on the IP and makes an inquiry to the IDT-IV about whether the ID information corresponding to the barcode has been registered.

Upon receipt of the ID information inquiry, the IDT-IV first searches for the relevant ID information within the IDT-IV that has directly received the inquiry. If it is not found, the inquired IDT-IV makes an inquiry to all the IDT-IV’s connected over the network.

If no ID information is found frequently in the IDT-IV inquired by the CR-IR341, the network and individual IDT-IV’s may be overloaded. Thus, it is recommended to first register in the CR-IR341 an IDT-IV that is most likely to contain the ID information (typically, the IDT-IV’s should be registered in order of their proximity to the CR-IR341).

If the IDT-IV’s are grouped for operation, they may be configured so that an ID information search can be done for different groups by registering in the CR-IR341 one IDT-IV within each group. However, this configuration should not be implemented, as a rule, because grouping itself provides a means for managing the ID information separately.
3. Determination of Configuration Information

The system configuration and hardware configuration are determined as requested by the user, and the configuration information is determined according to the configurations so determined.

In this chapter, the items required to determine the configuration information are summarized for each of the configuration files.

◊ SUPPLEMENTARY NOTE ◊

The configuration information determined should be described in copies of the worksheets of Appendixes 1 and 2. Configuration settings should be done during installation procedures with reference to those worksheets.

◆NOTE◆

For the CL connection type, setting should be made which complies with CR Console (CR-IR348CL) connection.

“Appendix 9 Procedures for Connecting with CR Console (CR-IR348CL)”

Summary of Configuration Files

The configuration information is contained in multiple configuration files. Names of the configuration files and a summary of their setup are shown below.

3.1 SYSTEM (IRSET.CFG)

It contains overall setup information for the machine (information regarding switching between IDT and CSL types, system code, etc.).

3.2 PRINT (FILMFMT.CFG)

It contains information regarding film output formats.

3.3 REMOTE SWITCH (RMT_SW.CFG)

It contains information for toggling ON and OFF the remote switch of the intelligent hub.

◊ SUPPLEMENTARY NOTE ◊

Intelligent hub: A hub that complies with SNMP (Simple Network Management Protocol).

3.4 EQUIPMENT (EQUIP)

It contains information regarding the name and function of a host that is connected to the machine to send and receive data.

3.5 LOCAL INTERFACE (INTERFACE)

It defines setup information for communication requirements over serial line connection.

◆ NOTE◆

Only when CR-LP414N/FL-IM2636N or FL-IM3543N is connected to CR-IR341 (A07 or later) (including cases where it is connected as a backup printer), the setup value for “N1” in the “2. LIF: siosetup.lp” file should be changed from “005” to “010”.

Only when CR-LP414N/FL-IM2636N or FL-IM3543N is connected to CR-IR341 (A07 or later) (including cases where it is connected as a backup printer), the setup value for “N1” in the “2. LIF: siosetup.lp” file should be changed from “005” to “010”.
3.6  NETWORK HOST INTERFACE (DEVICE)
It contains information regarding the function, communication protocol, transfer rate, and so forth of a device that is locally connected to the machine or a device that is network connected (host).

3.7  HOSTS ADDRESS (HOSTS)
It contains information regarding the correspondence between the name and IP address of a host that is connected to the machine to send and receive data.

3.8  DISTRIBUTION (CODEDSTB)
It contains information regarding the correspondence between the distribution code and distribution host name when the data is distributed.

3.9  ROUTING (ROUTE)
It contains information regarding the destination IP address and name of a router when used.

3.10  NETMASKS (NETMASKS)
It contains information regarding the network address and subnet mask.
How to Obtain Original Data of Configuration File

By accessing “7. FILE UTILITY” of M-Utility from the machine, save the original data of the configuration file to a floppy disk.

**CAUTIONS**

- Never power OFF the machine or press the FD eject button during file saving. The FD or FD drive may be damaged.
- When retrieving the configuration data from one machine and installing it to another, make sure that the source and destination machines have the same software version. If the software version is different, an error may occur during installation.

1. Put a DOS-formatted 1.44MB floppy disk into a floppy disk drive.
2. Touch the U-Utility button.
   - The screen switches to U-Utility.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.

**NOTES:**
- For the IDT type, the "menu selecting icon" does not appear.
- For the initial setting, the "Multiframe forced output" button will not appear.
- The IDT type includes CR-IR348CL connection.
(4) Select “7. FILE UTILITY”.

(5) Select “3. BACK UP”, “2. CONFIGURATION DATA” and “1.YES” in sequence.

Of the setup files, the following files are saved to the floppy disk.
- SYSTEM (IRSET.CFG,IRSET.ORG)
- PRINT (FILFMT.CFG,FILFMT.ORG)
- IRSTATUS (IRSTATUS.CFG,IRSTATUS.ORG)

**NOTE**

The menu parameters saved to the floppy disk contain the machine’s language setting. Thus, if the machine’s language setting during RESTORE is different from the one used during BACK UP, the files cannot be read during RESTORE.
(6) Select “3. BACK UP”, “3.NETWORK DATA” and “1.YES” in sequence.

Of the setup files, the following files are saved to the floppy disk.

- REMOTE SWITCH (RMT_SW.CFG)
- EQUIPMENT (EQUIP)
- NETWORK HOST INTERFACE (DEVICE)
- HOSTS ADDRESS (HOST)
- DISTRIBUTION (CODEDSTB)
- ROUTING (ROUTE)
- NETMASKS (NETMASKS)
- DICOM (DICOM)

**NOTE**

*The menu parameters saved to the floppy disk contain the machine’s language setting. Thus, if the machine’s language setting during RESTORE is different from the one used during BACK UP, the files cannot be read during RESTORE.*

(7) Repeatedly select “0. QUIT”.

- The screen returns to U-Utility.

(8) Remove the floppy disk.
 Editing Configuration File on PC

Using an editor software program on the PC, edit the configuration file.
3.1 SYSTEM (IRSET.CFG)

Of the setup items of SYSTEM, there are items that are supported only for the IDT-type machine.

For the machine of the IDT type, items marked by “❍” in the “IDT type” column shown in “3.1.1 List of Setup Items for SYSTEM (IRSET.CFG)” should only be set.

List of SYSTEM Configuration File Setup Items

1. SYSTEM

- IDT: System Type
- FNT: FONT (LANGUAGE)
- IPS: IP Address (CPU90E) (Length=15)
- IPI: IP Address (CPU90F) (Length=15)
- ILA: IDT Network Port
- SCD: System Code (Length=2)
- SMJ: System Name (Length=6)
- SID: System ID (Length=1)
- SFC: Manual Sensitivity Setting (CSL Type)
- SFD: Manual Sensitivity Default (CSL Type)
- LGR: Logical Reading (CSL Type)
- XRY: OverXray Flag
- U_MF: User UTL Muluti-Frame Button Control
- SS1: Screen Save Timer
- ITV: Time Put at Each Image Store for Accept Reprinting (E-IF)
- CPS: The Number of Sheets of Continues Image Store (E-IF)
- ITV: Time Put at Each Image Store for Accept Reprinting (E-IF)
- IPS: IP Address (CPU90E) (Length=15)
- IPI: IP Address (CPU90F) (Length=15)
- ID_EDR: Edr Mode Variation (CSL Type)
- ID_FUNC: Function Setting (CSL Type)
- ID_FILING: Filing Mode
- ID_BIRTH: Birthday Format (CSL Type)
- SEARCH: Search Key (CSL Type)
- ID_LENGTH: Patient's ID Length (CSL Type)
- ID_PADDING: Patient's ID Padding method (CSL Type)
- RECEPT_LENGTH: Reception No. Length (CSL Type)
- RECEPT_PADDING: Reception No. Padding method (CSL Type)
- EXAM_LENGTH: Examination No. Length (CSL Type)
- EXAM_PADDING: Examination No. Padding method (CSL Type)
- IFT: Reserve
- PRO: Function Protect
- SF1: Read Sensitivity Semi-high
- SF2: Read Sensitivity High
- GRP: Film Sorting Group Code
- PTR: FilmChar1/MenuName Start Pointer
- UNQ: Film Sort Unique Code
- PCD: I/F Pixel Clock Rate for DMS
- PCL: I/F Pixel Clock Rate for LP
- CIM: IP Size Code Setting
- EBK: EDR Backup Flag
- EBA: EDR Backup Server Address (Length=15)
- EM: EDR Backup Menu Code (Length=4)
- U_LP: The Following Buttons & Icon Control (FOR OEM)
- ID_AP: Image Reversal Mode Variation (CSL Type)
- ID_DST: Distribution Code Setting
- UID_STI: UID Issuance Type
- DEF_DENSITY: Image Density Device Default
- HQSFY: Right/Left justify of long character type
- HQ_FUNC: HQ Function Setting
- DRC_FUNC: DRC Function Setting
- ID_INFO_TYPE: ID info. Type (CSL Type)
- ID_CODE_SET: ID info. code set (CSL Type: ID-ONLINE)
- SSS: Select Screen Save Display
- DST_PADDING: Distribution Code Padding method
- ENV: Equipment name for version display (Max 9 character)
- ID_RET: Select retrieve key input timing
- UID: UID Issuance
- EXAM: Examination Number Field
- L2430: Logical reading (15cm*30cm size) of 24cm*30cm IP
- ID_EXAM: Examination No. Display Mode (CSL Type)
- ID_DEPT: Department Name Display Mode (CSL Type)
- DEPT_LENGTH: Department Name Length (CSL Type)
- MES_LENGTH: Maximum Text Length for On-line Connection (CSL Type)
- SCS: Select specific character to be set.
- PN_CS: CONVERSION OF PATIENT NAME
- PN_FDS: FINP COMPONENT DELIMITER FOR SINGLE BYTE REPRESENTATION
- PN_FDM: FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION
- PN_FCS1: FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
- PN_FCS2: FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
- PN_FCS3: FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
- PN_FCS4: FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
- PN_FCS5: FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
- PN_FCM1: FINP COMPOSITION FOR MULTI BYTE REPRESENTATION
- PN_FCM2: FINP COMPOSITION FOR MULTI BYTE REPRESENTATION
- PN_FCM3: FINP COMPOSITION FOR MULTI BYTE REPRESENTATION
- PN_FCM4: FINP COMPOSITION FOR MULTI BYTE REPRESENTATION
- PN_FCM5: FINP COMPOSITION FOR MULTI BYTE REPRESENTATION
- PN_DC: DICOM COMPOSITION
- MON: Display type on CRT Monitor
- BCR: BCR TYPE
- LIM810: 8*10/18*24 single format output film
- FLMW: Film size confirm window open
**NOTE**

Be sure to observe the LENGTH (digits) requirements specified for the following items. If a wrong LENGTH is used, the setup results in error, so that the machine may not operate properly.

- 3.IPS: IP Address (CPU90E) (Length=15)
- 4.IPI: IP Address (CPU90F) (Length=15)
- 40.EBA: EDR Backup Server Address (Length=15)
- 41.EM1,2,3,4,5 : EDR Backup Menu Code (Length=4)
### 3.1.1 List of Setup Items of SYSTEM (IRSET.CFG)

Copy the worksheet “SYSTEM” and read on the explanation while filling out the worksheet as needed.

“Appendix 2. Worksheet for Determination of Configuration Information”

#### System Setup (Item Numbers 1-12)

<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| 1           |          | IDT  | 1             | IDT connection type/CSL function incorporated type changeover | 0: CSL  
1: IDT      |           |      |               |                   |           |
| 2           |          | FNT  | 0             | Font setup switching/language designation | 0: Japanese  
1: English  
2: German  
3: French  
4: Spanish  
5: Italian  
6: Swedish  
7: Finnish  
8: Danish  
9: Norwegian  
10: Korean  
* “10” requires software that is separately available. |           |
| 3           |          | IPS  | 172.16.0.1    | IP address for standard LAN (CPU90E) | Its IP address should be described in fifteen digits stuffed to the left. If the number of digits is less than 15, space should be added to the end to meet the 15-digit requirement. | LENGTH = 15 |
| 4           |          | IPI  | 172.16.0.2    | IP address for LAN board (CPU90F) | • Its IP address should be described in fifteen digits stuffed to the left. If the number of digits is less than 15, space should be added to the end to meet the 15-digit requirement.  
• Even if the CPU90F board is not available as an option, be sure to set its IP address. | LENGTH = 15 |
| 5           |          | ILA  | 1             | ID acquisition destination LAN Setup of destination to which ID-T is connected. | 0: standard LAN (CPU90E)  
1: option LAN (CPU90F/LAN90B) |           |
| 6           |          | SCD  | D2            | Unit code (2 characters) | D1: CR-IR341  
D2: CR-IR342 | Change prohibited. |
| 7           |          | SMJ  | 5000          | Unit character string (6 characters) | 5000: CR-IR341  
5000R: CR-IR342 | Change prohibited. |
| 8           |          | SID  | A             | Reader number A reader number that does not duplicate within the same network should be assigned. | A – Z |           |
| 9           |          | SFC  | 0             | Manual sensitivity setup/menu setup | 0: OFF  
1: ON  
(Standard,Semi-High-Speed)  
2: ON  
(Standard,Semi-High-Speed,  
High-Speed) | * |
| 10          |          | SFD  | 0             | Manual sensitivity default setup | 0: Standard  
1: Semi-High-Speed  
2: High-Speed  
3: Menu Default (=Memory) | * |
| 11          |          | LGR  | 0             | Logical reading setup It sets to determine whether to read the data on the IP in sizes smaller than the actual IP size (to implement logical reading). | 0: OFF  
1: ON | * |
| 12          |          | XRY  | 0             | Overexposure handling | 0: LOG & MESSAGE  
1: LOG ONLY  
2: NONE | Caution: Change |
## ID Setup (Item Numbers 13-28)

<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>✔️</td>
<td>U_MF</td>
<td>0</td>
<td>Multiframe (2-in-1/4-in-1) key ON/OFF in UTL</td>
<td>0: OFF, 1: ON</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>✔️</td>
<td>SS1</td>
<td>5</td>
<td>Screen saver timer setting (variable in 1 minute increments)</td>
<td>0 — 60 [min] (0: screen saver disabled).</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>✔️</td>
<td>ITV</td>
<td>30</td>
<td>Wait time for DMS E-I/F reoutput request interrupt</td>
<td>0-60 [sec]</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>✔️</td>
<td>CPS</td>
<td>5</td>
<td>Consecutive storage process count for DMS E-I/F reoutput request interrupt</td>
<td>0-10 [sheets]</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>✔️</td>
<td>ID_EDR</td>
<td>0</td>
<td>EDR setup range</td>
<td>0: AUTO, SEMI, FIX 1: AUTO, SEMI, FIX, SEMI-X 2: AUTO, SEMI, FIX, SEMI-X, MANUAL</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>✔️</td>
<td>ID_FILING</td>
<td>0</td>
<td>FILING setup range</td>
<td>0: DISABLE 1: OFF, ON 2: OFF, ON*, ON</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>✔️</td>
<td>ID_FUNC</td>
<td>0</td>
<td>Function setup enabled/disabled</td>
<td>0: DISABLE 1: ENABLE</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>✔️</td>
<td>ID_FILMC</td>
<td>0</td>
<td>FILM character setting enabled/disabled</td>
<td>0: OFF 1: ON</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>✔️</td>
<td>ID_SEARCH</td>
<td>0</td>
<td>Search key type for ID online (TYPE_B)</td>
<td>0: ID# 1: ID#, RECEIPT# 2: ID#, EXAM# 3: ID#, RECEIPT#, EXAM#</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>✔️</td>
<td>ID_LENGTH</td>
<td>10</td>
<td>Setting of ID number character string length</td>
<td>1 —– 10: ID_INFO_TYPE=0 1 —– 64: ID_INFO_TYPE=1</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>✔️</td>
<td>ID_PADDING</td>
<td>0</td>
<td>Setting of ID number padding scheme</td>
<td>0: Pad with space to the head (Ex: &quot;1234567&quot;) 1: Pad with zero to the head (Ex: &quot;0001234567&quot;) 2: Pad with space to the tail (Ex.&quot;1234567 “) 3: Pad with zero to the tail (Ex.&quot;1234567000&quot;)</td>
<td></td>
</tr>
</tbody>
</table>
## CONTENTS

### 27 Setting of receipt number character string length

<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>RECEP_LENGTH</td>
<td>0</td>
<td>Setting of receipt number padding scheme</td>
<td>0 : Pad with space to the head (Ex.&quot;123&quot;)&lt;br&gt;1 : Pad with zero to the head (Ex.&quot;00123&quot;)&lt;br&gt;2 : Pad with space to the tail (Ex.&quot;123&quot;)&lt;br&gt;3 : Pad with zero to the tail (Ex.&quot;12300&quot;)</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>EXAM_LENGTH</td>
<td>10</td>
<td>Setting of examination number character string length</td>
<td>1 — 10: ID_INFO_TYPE=0&lt;br&gt;1 — 16: ID_INFO_TYPE=1</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>EXAM_PADDING</td>
<td>0</td>
<td>Setting of examination number padding scheme</td>
<td>0 : Pad with space to the head (Ex.&quot;1234567&quot;)&lt;br&gt;1 : Pad with zero to the head (Ex.&quot;0001234567&quot;)&lt;br&gt;2 : Pad with space to the tail (Ex.&quot;1234567&quot;)&lt;br&gt;3 : Pad with zero to the tail (Ex.&quot;1234567000&quot;)</td>
<td></td>
</tr>
</tbody>
</table>
## I/F Setup (Item Numbers 29-82)

<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td></td>
<td>IFT</td>
<td>0</td>
<td>I/F type</td>
<td>RESERVE</td>
<td>No change required.</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>PRO</td>
<td>0</td>
<td>Function image protect (image protect on HIC)</td>
<td>Use to set the type of screen that enables the screen protection function of HI-C.</td>
<td>0: NONE</td>
</tr>
<tr>
<td>31</td>
<td></td>
<td>SF1</td>
<td>50</td>
<td>Sensitivity median shift 1 (relatively high sensitivity)</td>
<td>0 — 299</td>
<td>No change required.</td>
</tr>
<tr>
<td>32</td>
<td></td>
<td>SF2</td>
<td>100</td>
<td>Sensitivity median shift 2 (high sensitivity)</td>
<td>0 — 299</td>
<td>No change required.</td>
</tr>
<tr>
<td>33</td>
<td></td>
<td>GRP</td>
<td>0</td>
<td>Group information setup method for sorting</td>
<td>0: not specified</td>
<td>1: space (2) + department name (8)</td>
</tr>
<tr>
<td>34</td>
<td></td>
<td>PTR</td>
<td>0</td>
<td>Position of film mark or menu character string outputted with GRP (valid when GRP = 2, 3, 6)</td>
<td>0 — F (hexadecimal notation)</td>
<td>Indent</td>
</tr>
<tr>
<td>35</td>
<td></td>
<td>UNQ</td>
<td>0</td>
<td>Unique information setup method for sorting</td>
<td>0: Space (10)</td>
<td>1: patient ID number (10)</td>
</tr>
<tr>
<td>36</td>
<td></td>
<td>PCD</td>
<td>1</td>
<td>Clock during DMS-I/F output</td>
<td>0: 1 sec</td>
<td>1: 2 sec</td>
</tr>
<tr>
<td>37</td>
<td></td>
<td>PCL</td>
<td>0</td>
<td>Clock during LP-I/F output</td>
<td>0: 1 sec (&lt; 60m)</td>
<td>1: 2 sec (&gt; 60m)</td>
</tr>
<tr>
<td>38</td>
<td></td>
<td>CIM</td>
<td>0</td>
<td>DMS output code selection when “inch” and “metric” physical sizes differ</td>
<td>0: Inch</td>
<td>1: Metric</td>
</tr>
<tr>
<td>39</td>
<td></td>
<td>EBK</td>
<td>0</td>
<td>Selection of a menu to transmit EDR backup information to the IP address that is set with EBA</td>
<td>0: OFF (not transmitted)</td>
<td>1: MENU (menu selected with EM is selected)</td>
</tr>
<tr>
<td>40</td>
<td></td>
<td>EBA</td>
<td>⋮</td>
<td>Transfer destination IP address for the transmission of EDR backup data through a network</td>
<td>The transmission port is fixed at 90E.</td>
<td>Transfer destination IP address</td>
</tr>
</tbody>
</table>

TR1801080.EPS
<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>o</td>
<td>EM1</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation.</td>
<td>LENGTH = 4</td>
</tr>
<tr>
<td>41</td>
<td>o</td>
<td>EM2</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation.</td>
<td>LENGTH = 4</td>
</tr>
<tr>
<td>41</td>
<td>o</td>
<td>EM3</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation.</td>
<td>LENGTH = 4</td>
</tr>
<tr>
<td>41</td>
<td>o</td>
<td>EM4</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation.</td>
<td>LENGTH = 4</td>
</tr>
<tr>
<td>41</td>
<td>o</td>
<td>EM5</td>
<td>Space</td>
<td>Menu code for executing backup when EBK = 1</td>
<td>Four hexadecimal digits are used for menu code designation.</td>
<td>LENGTH = 4</td>
</tr>
</tbody>
</table>
| 42          | o        | U_LP | 1             | OEM printer setting | 0: OFF  
1: ON | No change required. |
| 43          |         | ID_AP| 0             | Image reversal mode (orientation) setting range | 0: L-R reversal  
1: T-B reversal  
2: L-R,T-B reversal  
3: L-R reversal/90-deg.Rotation  
4: L-R,T-B reversal/90-deg.Rotation | |
| 44          | o        | ID_DST| 0            | Distribution code setting | 0: DISABLE  
1: ENABLE | |
| 45          | o        | UID_STI| 3          | Setting of study instance UID type  
Setting used to issue study information for QA-DICOM output. Used to customize, on a hospital-by-hospital basis, how to bind images per study on the QA side | 0: <org root>.2.0.<Private Image UID> (IDT Type)  
0: <org root>.2.1.<MAC Address>.<Time Stamp>.<Unique ID> (CSL Type)  
1: <org root>.2.1.<Accesion Number’>  
2: <org root>.2.2.<Study Date + Modality(CR)>  
3: <org root>.2.3.<Study Date + Modality(CR)>.<Patient ID’>  
4: <org root>.2.4.<Study Date>.<Patient ID’2>..<Requesting Service’> | <org root>=1.2.392.200036.9125 |
| 46          | o        | DEF_ DENSITY| 0        | Default setting of image processing density  
Used to designate the machine’s default processing density. This setting is effective only when a setting other than 0 or 1 is registered from IDT3 or the like (in cases where IDT3, which cannot designate the processing density, is connected via IDT4, or where the processing density is not designated due to a software bug of IDT4). Normally, the value that is set on the IDT side or by the internal menu of the CSL type is effective, so its initial value need not be changed. | 0: Standard Density  
1: High Quality Density | |
| 47          | o        | JSTFY| 00010000  
00011111 | Definition of right or left justification for long format | <Variable part>  
0: Left justified  
1: Right justified  
<Corresponding to each digit of the variable part>  
a: Patient ID  
b: Patient name  
c: Exposure menu name  
d: Examination number  
e: Department name (alphanumeric)  
f-l: Reserved (default: left justified)  
m-p: Reserved (default: right justified) | Common to DMS output, CRT display, and FILM output. |
<table>
<thead>
<tr>
<th>Item number</th>
<th>IDT type</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td></td>
<td>HQ_FUNC</td>
<td>1</td>
<td>HQ function setting</td>
<td>0: disabled; 1: enabled</td>
<td>No change required</td>
</tr>
<tr>
<td>49</td>
<td></td>
<td>DRC_FUNC</td>
<td>1</td>
<td>DRC function setting</td>
<td>0: disabled; 1: enabled</td>
<td>No change required</td>
</tr>
<tr>
<td>50</td>
<td></td>
<td>ID_INFO_TYPE</td>
<td>0</td>
<td>ID# input type for CSL type</td>
<td>0: Stand. 1: Long</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td></td>
<td>ID_CODE_SET</td>
<td>0</td>
<td>Acceptable character set during ID online for CSL type</td>
<td>0: CP850 1: ISO8859-1</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td></td>
<td>SSS</td>
<td>0</td>
<td>Screen saver selection</td>
<td>0: Blank screen (Screen saver is disabled) 1: Pictures (Multiple pictures are displayed at regular intervals.)</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td></td>
<td>DST_PADDING</td>
<td>2</td>
<td>Distribution code padding setting</td>
<td>0: Pad with space to the head (EX.&quot;    1234&quot;) 1: Pad with zero to the head (EX.&quot;00001234&quot;) 2: Pad with space to the tail (EX.&quot;1234    &quot;) 3: Pad with zero to the tail (EX.&quot;12340000&quot;)</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td></td>
<td>ENV</td>
<td>CR-IR341</td>
<td>Machine type display switching setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td></td>
<td>ID_RET</td>
<td>0</td>
<td>Patient information acquisition setting during ID online</td>
<td>0: The patient ID is automatically cleared when the cassette is set or when the menu select key is pressed, and the patient information is acquired from the online destination. 1: The patient ID is cleared when it is necessary to change the patient ID, and the patient information is acquired from the online destination.</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td></td>
<td>UID</td>
<td>0</td>
<td>Study/Series information numbering setting</td>
<td>&lt;CSL type&gt; 0: Study/Series information is not numbered on the reader side. 1: Study/Series information is numbered on the reader side. &lt;IDT type&gt; 0: Study/Series information is not numbered on the IDT side. 1: Study/Series information is numbered on the IDT side.</td>
<td></td>
</tr>
<tr>
<td>Item number</td>
<td>IDT type</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters/Remarks</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
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<td>-------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td></td>
<td>EXAM</td>
<td>0</td>
<td>Examination/receipt number display setting</td>
<td>0: Examination number 1: Receipt number</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td></td>
<td>L2430</td>
<td>0</td>
<td>24x30 cm IP pantomo logical reading setting</td>
<td>0: Pantomo size (15x30 cm) reading disabled 1: Pantomo size (15x30 cm) reading enabled</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td></td>
<td>ID_ EXAM</td>
<td>0</td>
<td>CSL-type examination number display setting</td>
<td>0: Examination number display/input disabled 1: Examination number display/input enabled</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td>ID_ DEPT</td>
<td>0</td>
<td>CSL-type department name display setting</td>
<td>0: Department name display/input disabled 1: Department name display/input enabled</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td></td>
<td>DEPT_ LENGTH</td>
<td>8</td>
<td>CSL-type department name character count setting</td>
<td>1-8: ID_INFO_TYPE=0 1-64: ID_INFO_TYPE=1</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td></td>
<td>MES_ LENGTH</td>
<td>1</td>
<td>CSL-type communication message character string length setting during ID online</td>
<td>0: Maximum length of send/receive message characters is 128 bytes 1: Maximum length of send/receive message characters is 256 bytes</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td></td>
<td>SCS</td>
<td>0</td>
<td>Character code of special symbols with UK/US language setting (FNT=1) (Only for Base on DICOM setting)</td>
<td>0: ISO-IR 6 (ISO646) 1: ISO-IR 100 (ISO8859-1)</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td></td>
<td>PN_CS</td>
<td>0</td>
<td>Setting for converting patient name components from FINP to DICOM</td>
<td>0: Not converted 1: Converted</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>PN_FDS</td>
<td>0</td>
<td>Setting of delimiter for patient name components in FINP (patient name in languages other than Japanese)</td>
<td>0: Space &quot; &quot; 1: Caret &quot;^^&quot; 2: Comma &quot;,&quot;</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td></td>
<td>PN_FDM</td>
<td>0</td>
<td>Setting of delimiter for patient name components in FINP (patient name in Japanese language)</td>
<td>0: Space &quot; &quot; 1: Caret &quot;^^&quot; 2: Comma &quot;,&quot;</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td></td>
<td>PN_FCS1</td>
<td>&quot;F&quot;</td>
<td>Setting of patient name components (for one component in FINP)</td>
<td>F: Family name G: Given name M: Middle name P: Prefix S: Suffix</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td></td>
<td>PN_FCS2</td>
<td>&quot;FG&quot;</td>
<td>Setting of patient name components (for two components in FINP)</td>
<td>F: Family name G: Given name M: Middle name P: Prefix S: Suffix</td>
<td></td>
</tr>
<tr>
<td>Item number</td>
<td>IDT type</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters/Remarks</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>------------</td>
<td>---------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| 69          | ○        | PN__FCS3   | "FGM"         | Setting of patient name components (for three components in FINP)                 | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 70          | ○        | PN__FCS4   | "FGMP"        | Setting of patient name components (for four components in FINP)                 | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 71          | ○        | PN__FCS5   | "FGMPS"       | Setting of patient name components (for five components in FIN)                  | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 72          | ○        | PN__FCM1   | "F"           | Setting of multi-byte patient name components (for one component in FINP)       | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 73          | ○        | PN__FCM2   | "FG"          | Setting of multi-byte patient name components (for two components in FINP)      | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 74          | ○        | PN__FCM3   | "FGM"         | Setting of multi-byte patient name components (for three components in FINP)    | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 75          | ○        | PN__FCM4   | "FGMP"        | Setting of multi-byte patient name components (for four components in FINP)     | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 76          | ○        | PN__FCM5   | "FGMPS"       | Setting of multi-byte patient name components (for five components in FIN)      | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 77          | ○        | PN_DD      | 1             | Setting of delimiter for patient name components in DICOM                       | 0: Space " "  
1: Caret ""  
2: Comma ","                                                  |
| 78          | ○        | PN_DC      | "FGMPS"       | Setting of patient name components in DICOM                                     | F: Family name  
G: Given name  
M: Middle name  
P: Prefix  
S: Suffix                                                    |
| 79          | MON      | 1          | Monitor display mode setting                                                     | 0: Type 1 (old type: LUT = linear)  
1: Type 2 (new type: LUT = nonlinear; change in standardized image display mode) |
| 80          | BCR      | 0          | Barcode reader type setting                                                      | 0: BCR5242-STB (DENSEI)(~#5000)  
1: NFT7175/F01RL (OPTOELECTRONICS)(#5001~)                    |
| 81          | LIM810   | 0          | Designation of film size supported by the printer                               | 0: any (either 14"x17", B4, or 8"x10")  
1: Only 8"x10"                                                  |
| 82          | FLMW     | 1          | Setting to determine whether to display a window that requests the user to replace the film tray, when DRY PIX is used | 0: No (output instruction is reserved without displaying a window)  
1: Yes (window displayed)                                       |
Detailed Explanation of SYSTEM (IRSET.CFG) Setup Items

Items that are not fully described in “List of SYSTEM Setup Items” are explained in detail below. They should be referred to as needed.

- **“3. IPS” (standard LAN address)**
  The IP address of the CPU90E board that comes standard with the CR-IR341. “172.16.0.1 △ △ △ △” is set as its initial value (△ denotes half-width space). When the CR-IR341 is connected to a network for operation, it is necessary to determine a unique (non-duplicate) IP address over the single network and change it to that address.
  Typically, because the IP address is also determined as the system configuration is determined, the IP address assigned to the CPU90E board should be checked.

- **“4. IPI” (LAN board address)**
  The IP address of the CPU90F/LAN90B board that comes as an option with the CR-IR341. “172.16.0.2 △ △ △ △” is set as its initial value (△ denotes half-width space). When the CR-IR341 is connected to a network for operation, it is necessary to determine a unique (non-duplicate) IP address over the single network and change it to that address.
  Typically, because the IP address is also determined as the system configuration is determined, the IP address assigned to the CPU90F board should be checked.
  Even if the CPU90F board is not available, it should always be set; thus, an IP address should be assigned to it.

- **“5. ILA” (selection of board for acquisition from IDT)**
  The board that acquires ID information from the IDT is switched by a value of “0” or “1”.
  - “0” : Standard LAN board (CPU90E board)
  - “1” : Optional LAN board (CPU90F/LAN90B board)
  The setup of “5. ILA” is effective for the IDT type only; thus, for the CSL type, its initial value should be used as is.

- **“8. SID” (reader number)**
  Symbol (number), from A through Z, used when several readers (FCR series machines, including FCR3000) are installed. A unique symbol is assigned to each of the readers.
  Because this symbol is appended to the first digit of the image number, it can be seen from which reader the image data has been read.

- **“9. SFC” (manual sensitivity setup selection menu)**
  Used to determine whether manual setting of sensitivity is enabled.
  - 0: OFF (Manual sensitivity setting is disabled.)
  - 1: Standard/Semi-High-Speed can be selected.
  - 2: Standard/Semi-High-Speed/High-Speed can be selected.
● “10. SFD” (default value used when manual sensitivity setting is enabled)

The default value is switched when manual sensitivity setting is enabled in “9. SFC”.

- **0**: Standard
- **1**: Semi-High-Speed
- **2**: High-Speed
- **3**: Menu Default (The content previously selected in the menu is stored in memory.)

● “14. SS1” (screen saver timer)

The time until the screen saver is activated. Its initial value is “5” (minutes), and its setting may be changed between 0 and 60 (in minutes).

When it is set to “0”, the screen saver is disabled.

◊ **SUPPLEMENTARY NOTE ◊

Screen saver: In order to protect burning of the operation panel screen, this function turns OFF the screen after a certain period of time has elapsed with no user operation.

● “17. ID_EDR” (EDR setup range)

The selection range for AUTO/SEMI/FIX/SEMI-X/MANUAL options of EDR function is switched.

- **0**: AUTO/SEMI/FIX can be selected.
- **1**: AUTO/SEMI/FIX/SEMI-X can be selected.
- **2**: AUTO/SEMI/FIX/SEMI-X/MANUAL can be selected.

● “18. ID_FILING” (selection menu for image resolution during OD-F filing)

The menu for selecting the image resolution during OD-F filing is switched.

- **0**: DISABLE (always saved in high resolution)
- **1**: OFF/ON selectable
- **2**: OFF/ON*/ON

ON*: The HQ image is reduced to the standard before transmission.
ON: The image is transmitted without reduction. For example, the HQ image is transmitted as is.

● “47. JSTFY” (definition of right or left justification for long format)

It is valid when “1. YES (long format used)” is set for “40. LTC” in “PRINT (FILMFMTCFG).

Here, a 16-digit variable value (0: left justified; 1: right justified) is set. Each of the 16 digits is assigned to “a” (patient ID), “b” (patient name), “c” (exposure menu name), “d” (examination number), “e” (department name), and “f”-“p” (reserved).

By default, the first five digits are “00010”. Thus, “a” (patient ID), “b” (patient name), and “c” (exposure menu name) are left justified; “d” (examination number) is right justified; and “e” (department name) is left justified. and “c” (exposure menu name) are left justified; “d” (examination number) is right justified; and “e” (department name) is left justified.
● “50. ID_INFO_TYPE” (ID# input type for CSL type)

If ID# input or type C of ID online is used with the CSL type, “1: Long” should be set.
If type C of ID online is not used, “1: Long” should not be set because it may cause trouble.

◇ SUPPLEMENTARY NOTE ◇

If the long type format is used with ID online, the host needs to support information type C.

● “51. ID_CODE_SET” (acceptable character set for the CSL-type magnetic card and during ID online)

It should be set according to the character code used for the patient ID.
- CP850: Character code specified by IBM. It includes special characters (such as umlaut) used in Europe.
- ISO8859-1: Character code specified by ISO.

● “56. UID” (Study/Series information numbering setting): Software version A10 or later

If the Study/Series information is not numbered on the IDT, or no numbering is performed, it is set to determine whether the Study/Series information is to be numbered or not on the machine.
- “0” : Numbering is not performed on the machine.
- “1 (default value)”: Numbering is performed on the machine (according to the format that is set in “45. UID_STI”).

If numbering is performed on the IDT, the Study/Series information numbered on the IDT is effective anyway.
● “64. PN_CS” through “78. PN_DC” (software version A07 or later)

The following settings are made regarding the patient name information for the image that is subject to DICOM output (Base on DICOM) to QA-WS or CR-IR348CL.

- Definition of components of the name (Family name, Given name, Middle name, Prefix, Suffix).
- Delimiter between components

<DICOM output with FINP input intact>

- PN_CS=0
  Name components and delimiters are not converted.
  Settings for PN_FDS/PN_FDM/.../PN_DC are ignored.

<Separated by delimiter when DICOM output is generated>

- PN_CS=1
  Name components and delimiters are converted.
  Settings for PN_FDS/PN_FDM/.../PN_DC are effective. Cases where the setting for each of the items is at its initial value are described below.

- PN_FDS=0
  Space is handled as a delimiter.

- PN_FDM=0
  Full-width space is handled as a delimiter for a patient name in Kanji.

- PN_FCS1=F
- PN_FCS2=“FG”
- PN_FCS3=“FGM”
- PN_FCS4=“FGMP”
- PN_FCS5=“FGMPS”

PN_FCS1 through PN_FCS5 set components of a name (single-byte). If PN_FCS1 through PN_FCS5 are set as described above, they are defined as follows.

PN_FCS1: If there is only one component, it is interpreted as Family name. Assume that the patient name is “Fuji Taro”. Then, if only “Fuji” is entered, “Fuji” is interpreted as Family name.

PN_FCS2: If there are two components, they are interpreted as Family name and Given name. Assume that the patient name is “Fuji Taro”. Then, if “Fuji Taro” is entered, “Fuji” is interpreted as Family name and “Taro” as Given name (when the delimiter is a half-width space).

PN_FCS3: Assume that the patient name is “Rev. John M Smith Ph. D.”. Then, if “Smith John M” is entered, “Smith” is interpreted as Family name, “John” as Given name, and “M” as Middle name (when the delimiter is a half-width space).
PN_FCS4: If there are four components, they are interpreted as Family name, Given name, Middle name, and Prefix. Assume that the patient name is "Rev. John M Smith Ph. D.". Then, if "Smith John M Rev. Ph. D." is entered, "Smith" is interpreted as Family name, "John" as Given name, "M" as Middle name, and "Rev." as Prefix (when the delimiter is a half-width space).

PN_FCS5: If there are five components, they are interpreted as Family name, Given name, Middle name, Prefix, and Suffix. Assume that the patient name is "Rev. John M Smith Ph. D.". Then, if "Smith John M Rev. Ph. D." is entered, "Smith" is interpreted as Family name, "John" as Given name, "M" as Middle name, "Rev." as Prefix, and "Ph. D." as Suffix (when the delimiter is a half-width space).

- PN_FCM1=F
- PN_FCM2="FG"
- PN_FCM3="FGM"
- PN_FCM4="FGMP"
- PN_FCM5="FGMPS"

PN_FCM1 through PN_FCM5 set components of a name (double-byte). If PN_FCM1 through PN_FCM5 are set as described above, they are defined as follows.

PN_FCM1: If there is only one component, it is interpreted as Family name.
PN_FCM2: If there are two components, they are interpreted as Family name and Given name.
PN_FCM3: If there are three components, they are interpreted as Family name, Given name, and Middle name.
PN_FCM4: If there are four components, they are interpreted as Family name, Given name, Middle name, and Prefix.
PN_FCM5: If there are five components, they are interpreted as Family name, Given name, Middle name, Prefix, and Suffix.

- PN_DD=1 [change prohibited]
  It defines the delimiter for the patient name when DICOM output is generated.

- PN_DD="FGMPS" [change prohibited]
  It defines the arrangement of the components of the patient name when DICOM output is generated.
3.1.2 Setup Items of SYSTEM to be Changed for Second and Subsequent Machines

If two or more machines are installed, some of the setup items must be set with different values than the first machine, such as IP address and reader number.

For other items, configuration setting can be achieved by copying the configuration files of the first machine and installing them to the second and subsequent machines.

Items to be Changed when Second and Subsequent Machines are Installed

Copy the worksheet of the first machine and red-pencil the items changed.

- **3. IPS: IP address for standard LAN**
  Assign an IP address that is not duplicated within the same network.

- **4. IPI: IP address for LAN board**
  Assign an IP address that is not duplicated within the same network.

- **8. SID: Reader number**
  Assign a reader number that is not duplicated within the same network.
## 3.2 PRINT (FILMFMT.CFG)

There are 41 setup items for PRINT, and their settings are common to both the IDT and CSL types.

### List of PRINT Configuration File Setup Items

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.BF:</td>
<td>Print barcode</td>
</tr>
<tr>
<td>2.EF:</td>
<td>Print EDR mode</td>
</tr>
<tr>
<td>3.IF:</td>
<td>Print image process condition</td>
</tr>
<tr>
<td>4.CF:</td>
<td>Print L.S.CS,SS condition</td>
</tr>
<tr>
<td>5.ET:</td>
<td>Print shot time</td>
</tr>
<tr>
<td>6.HN:</td>
<td>Institution name (Max Length=60)</td>
</tr>
<tr>
<td>7.HP:</td>
<td>2-byte code character (Japanese, Korean) Institution name (Max Length=30)</td>
</tr>
<tr>
<td>8.GF:</td>
<td>Print set process</td>
</tr>
<tr>
<td>9.GJ:</td>
<td>Print engineer ID</td>
</tr>
<tr>
<td>10.MF:</td>
<td>Print Menu</td>
</tr>
<tr>
<td>11.A1:</td>
<td>Maximum age of monthly representation</td>
</tr>
<tr>
<td>12.A2:</td>
<td>Maximum age of daily representation</td>
</tr>
<tr>
<td>13.TH:</td>
<td>Trimming (mammo)</td>
</tr>
<tr>
<td>14.TE:</td>
<td>Trimming (others)</td>
</tr>
<tr>
<td>15.CL:</td>
<td>Representation of date</td>
</tr>
<tr>
<td>16.AB:</td>
<td>Representation of age</td>
</tr>
<tr>
<td>17.FR1:</td>
<td>Print image frame</td>
</tr>
<tr>
<td>18.FR2:</td>
<td>Print image frame</td>
</tr>
<tr>
<td>19.FR4:</td>
<td>Print image frame</td>
</tr>
<tr>
<td>20.CR:</td>
<td>Print compression rate</td>
</tr>
<tr>
<td>21.MM:</td>
<td>Margin</td>
</tr>
<tr>
<td>22.SG:</td>
<td>Print standard image on 14<em>17, 14</em>14 film like HQ Image</td>
</tr>
<tr>
<td>23.HG:</td>
<td>Size selection of 14<em>17, 14</em>14 film character (Single format)</td>
</tr>
<tr>
<td>24.OS:</td>
<td>DR compression in reprint</td>
</tr>
<tr>
<td>25.RF:</td>
<td>Print reverse mark</td>
</tr>
<tr>
<td>26.CE:</td>
<td>Print 14<em>17, 14</em>14, 8*10 film character field</td>
</tr>
<tr>
<td>27.CS1:</td>
<td>Character Area1 (Standard) horizontal size</td>
</tr>
<tr>
<td>28.CSY0:</td>
<td>Character Area0 (Standard) vertical size</td>
</tr>
<tr>
<td>29.CS1:</td>
<td>Character Area1 (Standard) horizontal size</td>
</tr>
<tr>
<td>30.CSY1:</td>
<td>Character Area1 (Standard) vertical size</td>
</tr>
<tr>
<td>31.CS0:</td>
<td>Character Area0 (Large) horizontal size</td>
</tr>
<tr>
<td>32.CLY0:</td>
<td>Character Area0 (Large) vertical size</td>
</tr>
<tr>
<td>33.CS1:</td>
<td>Character Area1 (Large) horizontal size</td>
</tr>
<tr>
<td>34.CLY1:</td>
<td>Character Area1 (Large) vertical size</td>
</tr>
<tr>
<td>35.FD1417:</td>
<td>14<em>17, 14</em>14, 8*10 film character field position &amp; rotation</td>
</tr>
<tr>
<td>36.FC1:</td>
<td>14<em>17, 14</em>14, 8*10 film character fields position &amp; rotation</td>
</tr>
<tr>
<td>37.EM:</td>
<td>Print Energy-Subtraction Param./PEM Param.</td>
</tr>
<tr>
<td>38.IN:</td>
<td>Print film char2/examination number</td>
</tr>
<tr>
<td>39.IM:</td>
<td>Image area move to the top of 14<em>17 film. (only for 15</em>30, 35<em>35, 43</em>43)</td>
</tr>
<tr>
<td>40.LTC:</td>
<td>Long type character format</td>
</tr>
<tr>
<td>41.FRSC:</td>
<td>No Print Scale</td>
</tr>
</tbody>
</table>

**NOTE**

Be sure to observe the LENGTH (digits) requirements specified for the following items. If a wrong LENGTH is used, the setup results in error, so that the machine may not operate properly.

- 6.HN: Institution name (Max Length=60)
- 7.HP: 2-byte code character (Japanese, Korean) Institution name (Max Length=30)
### 3.2.1 List of Setup Items of PRINT (FILMFMT.CFG)

Copy the worksheet “PRINT” and read on the explanation while filling out the worksheet as needed.

*Appendix 2. Worksheet for Determination of Configuration Information*

#### Film Setup (Item Numbers 1-41)

<table>
<thead>
<tr>
<th>Item number</th>
<th>Item</th>
<th>Item Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BF</td>
<td>1</td>
<td>IP barcode display switching</td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>2</td>
<td>EF</td>
<td>1</td>
<td>EDR mode display switching</td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>3</td>
<td>IF</td>
<td>1</td>
<td>Image condition display switching</td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>4</td>
<td>CF</td>
<td>1</td>
<td>Correction item display switching</td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>5</td>
<td>ET</td>
<td>1</td>
<td>Exposure time display switching</td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>6</td>
<td>HN</td>
<td>FUJI FILM HOSPITAL</td>
<td>Institution name</td>
<td>60Char</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>HP</td>
<td>9578 8E6D 8374 8343 8388 8380 9561 8940 8140 140 8140 140 8140 8140</td>
<td>Institution name in Kanji</td>
<td>S-JIS 30 Bytes (up to 15 Kanji characters)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>GF</td>
<td>1</td>
<td>Set processing information display switching</td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>9</td>
<td>GJ</td>
<td>0</td>
<td></td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>10</td>
<td>MF</td>
<td>1</td>
<td>Menu character string display switching</td>
<td>0: NO</td>
<td>1: YES</td>
</tr>
<tr>
<td>11</td>
<td>A1</td>
<td>7</td>
<td>Upper-limit age in years for age display in months</td>
<td>0 — 99</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>A2</td>
<td>0</td>
<td>Upper-limit age in months for age display in days</td>
<td>0 — 12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>TH</td>
<td>0</td>
<td>Trimming amount (mammo) for four sides of the IP image in HR is set.</td>
<td></td>
<td>0 — 25 (mm)</td>
</tr>
<tr>
<td>14</td>
<td>TE</td>
<td>0</td>
<td>Trimming amount (other than mammo) for four sides of the IP image in ST is set.</td>
<td></td>
<td>0 — 25 (mm)</td>
</tr>
<tr>
<td>Item number</td>
<td>Item</td>
<td>Initial value</td>
<td>Setup description</td>
<td>Parameters</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
<td>---------------</td>
<td>-------------------</td>
<td>------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| 16          | AB   | 0             | Age/birth date display switching | 0: AGE  
1: Date of Birth |         |
| 17          | FR1  | 0             | 14x17 film: 14x17, 14x14, 18x43 single image frame display  
14x14 film: 14x14 single image frame display  
8x10 film: 8x10 single image frame display | 0: NO  
1: YES |         |
| 18          | FR2  | 0             | 14x17 film: 18x43 LR/2on1 image frame display | 0: NO  
1: YES |         |
| 19          | FR4  | 0             | 14x17 film: 14”x17”, 18x43, 8x10 4on1 image frame display | 0: NO  
1: YES |         |
| 20          | CR   | 0             | Compression ratio display switching  
Used to determine whether the compression ratio for the image for reoutput is display. | 0: NO  
1: YES |         |
| 21          | MM   | 0             | Margin designation switching | 0: image information dependent (default = transparent margin)  
1: image information dependent (default = black margin)  
2: fixed to transparent margin  
3: fixed to black margin |         |
| 22          | SG   | 0             | 14x17/14x14 magnification mode | 0: NO (Normal)  
1: YES (Magnify) |         |
| 23          | HG   | 0             | 14x17 single character size on 14x17/14x14 film | 0: Standard  
1: Large |         |
| 24          | OS   | 0             | DR compression enabled/disabled for reoutput | 0: Depending on Image Information  
1: Depending on System Setting | “1” cannot be used. |
| 25          | RF   | 2             | Left/right character display reversal | 0: NO  
1: YES (""or"R-reverse")  
2: YES ("AP"or"PA") |         |
| 26          | CE   | 0             | Display selection for film character area 0 and/or 1 | 0: both displayed  
1: Only area 0 displayed  
2: Only area 1 displayed  
3: not displayed |         |
<p>| 27          | CSX0 | 500           | Horizontal size for standard size area 0 | 2 - 500 (0.1mm) |         |
| 28          | CSY0 | 268           | Vertical size for standard size area 0 | 2 - 268 (0.1mm) |         |
| 29          | CSX1 | 458           | Horizontal size for standard size area 1 | 2 - 458 (0.1mm) |         |
| 30          | CSY1 | 174           | Vertical size for standard size area 1 | 2 - 174 (0.1mm) |         |
| 31          | CLX0 | 980           | Horizontal size for large size area 0 | 2 - 980 (0.1mm) |         |
| 32          | CLY0 | 268           | Vertical size for large size area 0 | 2 - 268 (0.1mm) |         |
| 33          | CLX1 | 668           | Horizontal size for large size area 1 | 2 - 668 (0.1mm) |         |
| 34          | CLY1 | 180           | Vertical size for large size area 1 | 2 - 180 (0.1mm) |         |</p>
<table>
<thead>
<tr>
<th>Item number</th>
<th>Item</th>
<th>Initial value</th>
<th>Setup description</th>
<th>Parameters</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>FD1417</td>
<td>0010</td>
<td>Position rotation designation for 14&quot; x 17&quot; (35 x 43cm) areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD1714</td>
<td>1131</td>
<td>Position rotation designation for landscape 14&quot; x 17&quot; (35 x 43cm) areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD1843</td>
<td>0010</td>
<td>Position rotation designation for 1843 areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD0810</td>
<td>0010</td>
<td>Position rotation designation for 8&quot;x10&quot; areas 0 and 1.</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD1008</td>
<td>1131</td>
<td>Position rotation designation for landscape 8&quot;x10&quot; areas 0 and 1</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>FD1414</td>
<td>0010</td>
<td>Position rotation designation for 14x14 areas 0 and 1</td>
<td>Four digits are used for area position rotation designation.</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC1</td>
<td>XXXX</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 ... MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC2</td>
<td>XXXX</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 ... MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC3</td>
<td>XXXX</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 ... MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC4</td>
<td>XXXX</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 ... MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC5</td>
<td>0020: 0317</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 ... MPM8</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>FC6</td>
<td>1030: ????</td>
<td>Position rotation designation for specific MPM code (8 max.) areas.</td>
<td>Area position rotation designation: MPM1 MPM2 ... MPM8</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>EM</td>
<td>0</td>
<td>&quot;Ene.-Sub.&quot; parameter/PEM parameter output.</td>
<td>0: NO 1: YES (Ene.-Sub.) 2: YES (PEM)</td>
<td>Check for necessity to display this item before it is set.</td>
</tr>
<tr>
<td>38</td>
<td>IN</td>
<td>0</td>
<td>Examination number display</td>
<td>0: NO 1: YES</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>IM</td>
<td>0</td>
<td>FCR9000-compatible format support setting for 14&quot;x14&quot; 100% magnification/pantomo</td>
<td>0: NO (FCR9000 compatible) 1: YES</td>
<td>Supported only for 15&quot;30, 35'35, and 43&quot;43.</td>
</tr>
<tr>
<td>40</td>
<td>LTC</td>
<td>0</td>
<td>Use of long type format</td>
<td>0: NO (not used) 1: YES (used)</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>FRSC</td>
<td>XXXX: XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX</td>
<td>Setting of MPM code for output with frame/without ruler</td>
<td>Up to eight four-digit MPM codes are set.</td>
<td>A wildcard may be used.</td>
</tr>
</tbody>
</table>
Detailed Explanation of Setup Items

Items that are not fully described in “List of Setup Items” are explained in detail below. They should be referred to as needed.

● “6. HN” (institution name)
  Institution name displayed when “2. FNT” of SYSTEM is set to other than “0” (Japanese).

● “7. HP” (institution name in Kanji)
  Institution name in Kanji displayed when “2. FNT” of SYSTEM is set to “0” (Japanese).
  To enter a institution name in Kanji, the Shift-JIS code should be entered with every four digits delimited by space.
  It should be noted that if 15 characters of Shift-JIS space code (8140) are entered in “7. HP” (institution name in Kanji), the institution name that is set in “6. HN” (institution name) is displayed.

● “13. TH” (trimming amount for mammo type)
  The four sides of the IP image for HR is trimmed.

● “14. TE” (trimming amount for other than mammo type)
  The four sides of the IP image for ST is trimmed.

● “15. CL” (date display type)
  A display sample is indicated.

● “17. FR1” (14”x17”/14”x14”/18x43 single image frame display)
  The frame is not displayed if the format is misaligned.

● “18. FR2” (18x43 twin/2-in-1 image frame display)
  The frame is not displayed if the format is misaligned.

● “20. CR” (compression ratio display switching)
  Used to switch whether the compression ratio of the image is displayed or not during image reoutput.

● “21. MM” (margin designation switching)
  Used to switch whether the margin is transparent or black.
  • 0: The margin is either transparent or black depending on the image information.
    When not designated in the image information, it is transparent by default.
  • 1: The margin is either transparent or black depending on the image information.
    When not designated in the image information, it is black by default.
  • 2: Always transparent.
  • 3: Always black.

● “22. SG” (14”x17” LP 100% magnification mode)
  Used to switch whether output is magnified to 14”x17” LP before output. Permission from the Service Headquarters is required before changing the parameter.
● “24. OS” (DR compression enabled/disabled for reoutput)

Use to switch whether enable/disable of DR compression for image reoutput complies with image information or with machine setting.

● “25. RF” (right/left character display reversal)

When set to 1, a reversed character of “R” is displayed with reversal enabled. When set to 2, either “AP” or “PA” is displayed for all images according to the exposure unit and method used.

● “38. IN” (examination number display)

Used to set whether to display the examination number within the ID card. Permission from the Service Headquarters is required before changing the parameter.

● “40. LTC” (use of long type format)

It sets whether to use the long type format as the film character format. When it is set to “1: YES”, the long type format is used, so that right or left justification of characters complies with the selection in “47. JSTFY” of “SYSTEM (IRSET.CFG)”.

◊ SUPPLEMENTARY NOTE ◊

The long type format function is intended to extend the number of characters outputted to the HI-C655QA, film, and operation panel. When this function is used, the long character output is enabled in the setting of IDT-IV (A07/B07 or later).

● “41. FRSC” (setting of film output with frame/without ruler): Software version A10 or later

Used to determine whether to output film with frame/without ruler. It is set by the MPM code.

Up to eight MPM codes may be set. However, if “without frame” is set in FRT1/FR2/FR4, the resulting film output is without frame/without ruler.

Only when “with frame” is set in FRT1/FR2/FR4, the setting defined in FRSC is effective.

Setup example 1)
FRSC= “0000 0200 XXXX XXXX XXXX XXXX”
With MPM codes of 0000 and 0200 only, the film output is “with frame/without ruler”.

Setup example 2)
FRSC= “???? XXXX XXXX XXXX XXXX XXXX”
With all the MPM codes, the film output is “with frame/without ruler”.

Setup example 3)
FRSC= “020? XXXX XXXX XXXX XXXX XXXX”
With MPM codes of 0200-020F only, the film output is “with frame/without ruler”.


Detailed Explanation about Area Indication

Of the setup items of PRINT, the area indication, which is closely related among the items, is explained in detail below.

There are two types of area indications as follows.

- **Area 0**

The hospital name, patient name, sex, patient ID, age or birth date, exposure date, exposure time, set processing information, and department name are indicated.

Example)

- **Area 1**

The IP number, EDR mode/menu code, system ID/image number, image condition, normalization condition, correction item, engineer code, exposure bed information, and compression code are indicated.

Example)
Output Format of Areas 0 and 1

For areas 0 and 1, their output position and display position (rotational position) on each film may be set.

- **Selection of area indication**
  
  Indication of area 0 and area 1 is switched by “26. CE”.

- **Designation of area size**
  
  The standard size is designated with “27. CSX0”, “28. CSY0”, “29. CSX1”, and “30. CSY1”.

For large size: Designated with items 31. CLX0, 32. CLY0, 33. CLX1, and 34. CLY1.

- **Concept of area position and area rotation**
  
  The definition of area position and rotation is as illustrated below.
With items 36. FC1 through 36. FC4, four types of area positions and area rotations may be set for a specific MPM code (up to eight codes may be set). For a MPM code that is not set with items FC1 through FC4, a normal output format (area 0 = position 0/no rotation, area 1 = position 1/no rotation) will result.

**SUPPLEMENTARY NOTE**

A wildcard “?” may be used for one letter of a MPM code that may be set with items FC1 through FC4. “?” denotes any letter, from 0 to F.

Example) “123?” ‘ Represents a MPM code, from 1230 to 123F.

● Setting procedures

<table>
<thead>
<tr>
<th>Position/rotation definition</th>
<th>MPM code (Up to eight codes may be set)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area 0 = position (0), rotation disabled (0)</td>
<td>0031: 0123 1234 2345 3456 4567 5678 6789 789A</td>
</tr>
<tr>
<td>Area 1 = position (3), 90° rotation enabled (1)</td>
<td></td>
</tr>
</tbody>
</table>

Setup example)

FC1=0031:0123 1234 2345 3456 4567 5678 6789 789A

Area 0 = position (0), rotation disabled (0)
Area 1 = position (3), 90° rotation enabled (1)
3.3 REMOTE SWITCH (RMT_SW.CFG)

It sets remote switch ON/OFF of the intelligent hub. Because it is an “indent” item, it may not be typically set.

◊ SUPPLEMENTARY NOTE ◊

Intelligent hub: A hub that complies with SNMP (Simple Network Management Protocol).

■ Format

IP address, root, “parameter”

● IP address (IP address)

IP address that is set in the HOSTS file.
☞ “3.7 HOSTS ADDRESS (HOSTS)”

● “Parameter”

• When ON    “NOPK  △ 1000”
• When OFF   “NOPK  △ 0000”
   “△” denotes a space.

■ Setup Example

REMOTE SWITCH is set to ON.
An example of description (bold faced) for the above setup is presented below.

```
#  #RMT_SW.CFG
#  

[ON]
#172.16.0.128,root,"NOPK 1000"

[OFF]
#172.16.0.128,root,"NOPK 0000"

172.16.0.128,root,"NOPK 1000"
```
3.4 EQUIPMENT (EQUIP)

It sets to determine which HOST is requested to process filing function, display function, print function, and ID information acquisition function.

■ Format

Function △ HostName (△ HostName ··· )

“△” denotes a space.

● Function (function)

Function requested for the host that is set in “HostName (host name)”.

- OD_FILE (Filing function)
- DISPLAY (Display function)
- PRINT (Print function)
- IDT (ID information acquisition function)

● HostName (host name)

A host that is responsible for the function specified by “Function (function)” may be set.

If multiple hosts are set with “IDT”, the host that is first set is used preferentially. The next host will be used when its immediately preceding host experiences failure or any other trouble.

If multiple units are connected with “PRINT”, “OD_FILE”, and “DISPLAY”, the output designation can be designated by user setting.

With the CR-IR341, the number of hosts that may be set for one function is restricted as follows.

- IDT Up to five IDTs
- PRINT LOCAL and one host name, or up to two host names
- Other Up to two

It should be noted that the setup for HostName (host name) is as follows.

- LOCAL
  A host connected over an E-I/F or serial line. It is designated when direct connection is to be established.
- LOCAL_S
  A host connected over an E-I/F or serial line. It is designated when direct connection is to be established. Note, however, that high-resolution data transfer is not supported.
- LOCAL_R
  It is designated when print output is to be provided only during reoutput, without generating printout during reading.

During reading, images are transferred only to the HIC/QA-WS, where image checks/adjustments are performed, and then they are routed from the HIC/QA-WS, to the CR-IR341, and to the printer for reoutput.

◆ NOTE ◆

No output can be generated directly to the printer from the CR-IR341 where “LOCAL_R” setting is made.
• Host name that is set in the HOSTS file

A network-connected host. It is designated when network connection is to be established.

“3.7 HOST ADDRESS (HOSTS)”

Setup Example

<table>
<thead>
<tr>
<th>Function</th>
<th>Host Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD_FILE</td>
<td>Network-connected to odf624.</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>Network connections to hic654 and hic655 (multiple connections)</td>
</tr>
<tr>
<td>PRINT</td>
<td>LOCAL connection and network-connected to fn-ps551.</td>
</tr>
<tr>
<td>IDT</td>
<td>Network-connected to fcridt4-1 and fcridt4-2.</td>
</tr>
</tbody>
</table>

An example of description (bold faced) for the above setup is presented below.

```
# EQUIP

# Function Host Name [Host Name]...
# Function = OD_FILE or DISPLAY or PRINT or IDT

OD_FILE odf624
DISPLAY hic654 hic655
PRINT LOCAL fn-ps551
IDT fcridt4-1 fcridt4-2
```
3.5 LOCAL INTERFACE (INTERFACE)

It defines the setup information for communication requirements over serial line connection. No change is necessary because the initial value is used as is.

◆ NOTE ◆

Only if the CR-LP414N/FL-IM2636N or FL-IM3543N is connected to the CR-IR341 (A07 or later) (including being connected as a backup printer), the setup value for “N1” in “2. LIF: siosetup.lp” file should be changed from “005” to “010”.

3.6 NETWORK HOST INTERFACE (DEVICE)

It may define functions, communication protocols, and transfer rates of each host. The host must be a device that is connected to a network.

■ Format

<table>
<thead>
<tr>
<th>HostName:Attr</th>
<th>Attr,</th>
<th>Protocol ID,</th>
<th>System code,</th>
<th>Speed</th>
</tr>
</thead>
</table>

- **HostName** (host name)
  - Host name that is set in the HOSTS file.
  - “3.7 HOSTS ADDRESS (HOSTS)”

- **Attr** (attribute)
  - One of the following should be designated. Multiple attributes can be designated by delimiting them by “|”.
    - PRINT Film output enabled
    - HD_FILE Active file enabled
    - DISPLAY Display function
    - OD_FILE Archive file enabled

- **Protocol ID** (protocol identification number)
  - It is set in four hexadecimal digits. It may be omitted by entering “,”. When it is omitted, it is set to “0100 (FINP)”.
    - 0001 DMSP
    - 0100,0110 FINP (Fuji integrated network protocol)
    - 0200 Base on DICOM
  - If it is necessary to use the image processing exclusive selection flag, the protocol identification number needs to be set to either “0100”, “0110”, or “0200”.

- **System code** (system type code)
  - It is set in two hexadecimal digits. It may be omitted by entering “,”.

- **Speed** (transfer speed)
  - It is set in decimal notation. It may be omitted by entering “,”. When it is omitted, it is set to “8”.
Setup Example

● hic654 setup content

Attributes of “display function (DISPLAY)” and “active file enabled (HD_FILE)” are set. The protocol is set to FINP, with the system code and transfer speed omitted.

● odf624 setup content

An attribute of “archive file enabled (OD_FILE)” is set. The protocol is set to FINP, with the system code and transfer speed omitted.

● fn-ps551 setup content

Attributes of “display function (DISPLAY)” and “film output enabled (PRINT)” are set. The protocol is set to FINP, with the system code and transfer speed omitted.

An example of description (bold faced) for the above setup is presented below.

```
#  # DEVICE
#  # Host Name: Attr|Attr,[Protocol ID],[System code],[Speed]
#  # Attr        = PRINT or HD_FILE or DISPLAY or OD_FILE
#  # Protocol ID = 0100(FINP) or 0110(FINP) or 0200(DICOM)
#  # System code = Hex 2 figures
#  # Speed       = Dec [Kbytes/sec] (default 8Kbytes/sec)

hic654:DISPLAY|HD_FILE,0100,,
odf624:OD_FILE,0100,,
fn-ps551:PRINT,0100,,
```
3.7 HOSTS ADDRESS (HOSTS)

It sets a correspondence between a host name and its IP address. One host should be defined per line. Up to 127 hosts can be defined.

Format

<table>
<thead>
<tr>
<th>IP Addr</th>
<th>Host Name</th>
</tr>
</thead>
</table>

“\)” denotes a space.

- **IP Addr (IP address)**

An IP address is set in the form of “xxx.xxx.xxx.xxx”, using numerals ranging from 0 to 255. “xxx” denotes 0 through 255.

**NOTES**

- To one CR-IR341 machine, be sure to assign both a standard LAN IP address (CPU90E) and a LAN board IP address (CPU90F).
  
  Example) 172.16.0.1 fcr5000a ... CR-IR341#1 (CPU90E)
            172.16.0.2 fcr5000a-1 ... CR-IR341#1 (CPU90F)

- Be sure to match the standard LAN IP address (CPU90E) and LAN board IP address (CPU90F) to the IP addresses set in item No. 3 “IPS” and item No. 4 “IPI” of SYSTEM: IRSET.CFG, respectively.

- **Host Name (host name)**

A host name is set within 10 characters, using lowercase alphabets (a through z), numerals (1 through 9), and hyphen (-).

**NOTES**

- If any alphabet is used in a host name, be sure to use lowercase letters.
- The initial letter of a host name should always be a lowercase alphabet.
Setup Example

CR-IR341  2 units
IDT-IV   2 units
HI-C     1 unit
OD-F     1 unit
FN-PS551 1 unit

An example of description (bold faced) for the above setup is presented below.

```
#
# HOSTS
#
# Host Name = Max 10 characters
#(Available Character:‘a’–’z’ ‘0’–’9’ ‘ ’[37chars])
# IP Addr  Host Name
172.16.0.1  fcr5000a
172.16.0.2  fcr5000a-1
172.16.0.11 fcr5000b
172.16.0.12 fcr5000b-1
172.16.0.21 fcridt4-1
172.16.0.22 fcridt4-2
172.16.0.101 hic654
172.16.0.102 ODF624
172.16.0.103 fn-ps551
```
3.8 DISTRIBUTION (CODEDSTB)

It sets the distribution destination for network connection. One distribution code should be defined per line. Up to 128 lines of distribution code can be defined.

Format

<table>
<thead>
<tr>
<th>Code</th>
<th>Host Name (Host Name)</th>
</tr>
</thead>
</table>

“△” denotes a space.” denotes a space.

- **Code (distribution destination code)**

A distribution destination code is set in eight alphanumeric characters or “?” “?” denotes a match with any one character.

- **Host Name (host name)**

The host name that is set in the HOSTS file should be set. Up to four host names can be set by delimiting them with a space.

☞ “3.7 HOSTS ADDRESS (HOSTS)”

Setup Example

The distribution code is set.

HI-C AA0123??

An example of description (bold faced) for the above setup is presented below.

```
# # Codedstb
# # Code Host Name [HostName]...
AA0123?? hic654
```
3.9 ROUTING (ROUTE)

It sets the information about the router address in the network and about the network connection, when a router is used for connection to another network.

Format (A03 or Earlier)

**Dst Addr** △[Host Name] △[Host IP],[Seg Size],[Win Size],[Delay Timer],[Rate]

“△” denotes a space.

- **Dst Addr (transfer destination IP address)**
  An IP address of a transfer destination. For the IP address of the transfer destination, a transfer destination address of an individual host or a transfer destination network address should be set. When the transfer destination network address is set, the host number portion of the IP address should be set to “0”.

- **Host Name (name of router)**
  It may be omitted when “Host IP (IP address of router)” is set.

- **Host IP (IP address of router)**
  “Host IP” may be omitted when “Host Name” that is set in the “HOST” file is set.

- **Seg Size (TCP segment size)**
  The TCP segment size is set in bytes. “Seg Size” may be omitted.

- **Win Size (TCP window size)**
  The TCP window size is set in bytes. “Win Size” may be omitted.

- **Delay Timer (TCP ACK delay timer)**
  The TCP ACK delay timer value is set in multiples of the reference value. “Delay Timer” may be omitted.

- **Rate (transfer rate)**
  The overall transfer rate, up to the destination including any router, is set in bytes/sec. “Rate” may be omitted.

Format (A08 or Later)

(Dst-Addr △ Dst-Network-Addr) △ (Router-Name △ Router-Addr),

“△” denotes a space.

- **Dst-Addr △ Dst-Network-Addr (destination IP address or destination network IP address)**
  Either the destination IP address or the destination network IP address is set.

- **Router-Name △ Router-Addr (router name or router IP address)**
  Either the “Host Name” of the router or the IP address of the router is set.
3.10 NETMASKS (NETMASKS)

It sets the network number and subnet mask when connection is established with another network.

The subnet mask indicates a range the network number portion represents in the IP address (“xxx.xxx.xxx.xxx” where “xxx” denotes 0 to 255).

Format

```
Network △ netmask
```

“△” denotes a space.

● Network (network number)

It sets a network number of the network to which the CR-IR341 is connected.

● netmask (subnet mask)

It specifies a range the network number portion represents in the IP address.

It is set in the form of “xxx.xxx.xxx.xxx” (where “xxx” denotes a decimal numeral ranging from 0 to 255), and the bit of the portion handled as the network number is set to “1”, while the bit of the portion handled as the host number is set to “0”.

It is classified into the following network classes according to the range of the network number portion.

- Class A: 255.0.0.0
- Class B: 255.255.0.0
- Class C: 255.255.255.0

The narrower the range of the network number portion, the greater portion may be handled as the host number (the greater for classes C, B, and A in this order). Thus, more host addresses (IP addresses) may be assigned within the same network (that is, a larger network may be implemented).

◆ NOTE ◆

*If the networks for the CPU90E and CPU90F are the same, the same net mask should be set for both. If the CPU90F is not available, the net mask for the CPU90F is left on its default, regardless of its setting value.*
Setup Example

Network: 172.16.0.0
netmask: 255.255.255.0

An example of description (bold faced) for the above setup is presented below.

```
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td></td>
</tr>
<tr>
<td># Network masks database</td>
<td></td>
</tr>
<tr>
<td>#</td>
<td></td>
</tr>
<tr>
<td># only non-default subnet masks need to be defined here</td>
<td></td>
</tr>
<tr>
<td>#</td>
<td></td>
</tr>
<tr>
<td># Network netmask</td>
<td></td>
</tr>
<tr>
<td>172.16.0.0</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>
```
### List of Setup Items Related to Network and Setup

#### 3.11 Examples

An example of how to change the settings of the network-related configuration file is presented below. Referring to this example, configuration file settings should be made as appropriate for each system configuration.

<table>
<thead>
<tr>
<th>Item</th>
<th>File name</th>
<th>Description</th>
<th>Format</th>
<th>Parameter</th>
<th>Remarks</th>
<th>Refer to</th>
</tr>
</thead>
</table>
| REMOTE SW  | RMT_SW .CFG | Remote switch ON/OFF setting for intelligent hub | IP address, rout, "NOPK1000" | *NOPK1000"=ON  
*NOPK0000"=OFF | Indent  
V Up to one host name may be designated for connected equipment OD_FILE and DISPLAY, respectively.  
OD_FILE † 1, DISPLAY; † 1 | 3.3      |
| EQUIPMENT  | EQUIP     | Setting of connected equipment and host name      | Function host name [host name]... |  

- [Function] (function)  
  OD_FILE: filing  
  DISPLAY: HI-C  
  PRINT: printer  
  IDT: ID terminal  
- [host name] (host name)  
  LOCAL: Used when direct connection is established  
  host name: Used when network connection is established |  

V Up to one "LOCAL" and one host name may be designated for PRINT.  
LOCAL † 1, host name † 1  
V For IDT, up to five host names may be designated following "IDT". Even if six or more IDTs are connected over the network, a maximum of five IDTs may only be designated.  
Note that the CR-IR341 cannot search for ID information of the IP inserted unless the IDT is powered ON.  
IDT † 5 | 3.4      |
| NETWORK HOST INTERFACE | DEVICE     | Definition of host name                          | Host Name:Attr|Attr,[Protocol ID],[System code],[Speed] |  

- Attr (attribute)  
  OD_FILE: archive filing  
  DISPLAY: display  
  PRINT: printer  
  HD_FILE: active filing  
- Protocol ID (protocol)  
  0001 DMS protocol  
  0100 FINP  
  0200 DICOM (Base on DICOM) |  

3.6      |
| HOSTS ADDRESS | HOSTS     | Setting of IP address and host name              | IP Addr host name |  

- IP Addr (IP address)  
  xxx.xxx.xxx.xxx  
- Host Name (host name)  
  Example: fcr5000a |  

An IP address should be set using numerals ranging from 0 to 255.  
A host name should be set within 10 characters, using lowercase alphabets (a-z), numerals (0-9), and hyphen (-).  
The initial letter of a host name should always be a lowercase alphabet. | 3.7      |
<table>
<thead>
<tr>
<th>Item</th>
<th>File name</th>
<th>Description</th>
<th>Format</th>
<th>Parameter</th>
<th>Remarks</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTRIBUTION</td>
<td>CODED</td>
<td>Setting of distribution destination for network connection</td>
<td>Code host name [host name]...</td>
<td>■ [Code] (distribution destination code) A distribution destination code should be set using eight alphanumerical characters or &quot;?&quot;. Example: AA0123??</td>
<td>■ The distribution destination code should not be set using more than 8 characters.</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>STB</td>
<td></td>
<td></td>
<td>■ [Host Name] (host name) The host name represents a host name that is set in the &quot;HOSTS&quot; file.</td>
<td>■ Up to four entries of [Host Name] (host name) may be set.</td>
<td></td>
</tr>
<tr>
<td>ROUTING</td>
<td>ROUTE</td>
<td>Information about the router address within the network and the IP address for network connection</td>
<td>Dst Addr [host name] [Host IP], [Seg Size], [Win Size], [Delay Timer], [Rate]</td>
<td>■ Dst Addr For the transfer destination IP address, a transfer destination address of an individual host or a transfer destination network address should be set. When the transfer destination network address is set, its host number portion should be &quot;0&quot;.</td>
<td></td>
<td>3.9</td>
</tr>
<tr>
<td>NETMASKS</td>
<td>NET Masks</td>
<td>Setting of subnet mask for network connection</td>
<td>Network netmask</td>
<td>Example: 172.16.0.0 255.255.255.0</td>
<td></td>
<td>3.10</td>
</tr>
<tr>
<td>DICOM</td>
<td>-</td>
<td></td>
<td></td>
<td>Network number</td>
<td>OEM network protocol (Base on DICOM)</td>
<td></td>
</tr>
</tbody>
</table>

*NOTE 1* The format/parameter for A08 or later is as follows.
(Dst-Addr | Dst-Network-Addr) △ (Router-Name | Router-Addr) . . .
The destination IP address or the destination network IP address, and the router name or the IP address of the router are set.
Setup Example 1

- Two units of the IDT-IV are connected to the CPU90E board of the machine via a 10Base-T hub.
- The OD-F624, HI-C654 and FN-PS551 are connected to the CPU90F board of the machine via a 10Base-T hub.
- The machine and FL-IMD are connected via the E-i/f (IMG08A).
- The host is temporarily connected (including virtual equipment).

The “Hostname” of each CR unit installed at a hospital, including the CR-IR341 itself, should be registered so that the configuration file can easily copied and restored to other units.

An example of description (bold faced) for the above setup is presented below.

- **REMOTE SWITCH (RMT_SW.CFG)**

```
#  #RMT_SW.CFG
#  172.16.0.128,root,"NOPK 1000"
```

- **EQUIPMENT (EQUIP)**

```
#  # EQUIP
#  # Function Host Name [Host Name]...
#  # Function = OD_FILE or DISPLAY or PRINT or IDT
OD_FILE odf624
DISPLAY hic654
PRINT LOCAL fn-ps551
IDT fcridt4-1 fcridt4-2
```

- **NETWORK HOST INTERFACE (DEVICE)**

```
#  # DEVICE
#  # Host Name:Attr|Attr,[Protocol ID],[System code],[Speed]
#  # Attr = PRINT or HD_FILE or DISPLAY or OD_FILE
#  # Protocol ID = 0100(FINP) or 0110(FINP) or 0200(DICOM)
#  # System code = Hex 2 figures
#  # Speed = Dec [Kbytes/sec] (default 8Kbytes/sec)
hic654:DISPLAY|HD_FILE,0100,,
odf624:OD_FILE,0100,,
fn-ps551:PRINT,0100,,
```
### HOSTS ADDRESS (HOSTS)

```plaintext
#    # HOSTS
#    # Host Name = Max 10 characters
#    #(Available Character:'a'-'z' '0'-'9' '-'[37chars])
#    # IP Addr   Host Name
172.16.0.1   fcr5000a
172.16.0.2   fcr5000a-1
172.16.0.11  fcr5000b
172.16.0.12  fcr5000b-1
172.16.0.21  fcridt4-1
172.16.0.22  fcridt4-2
172.16.0.101 hic654
172.16.0.102 odf624
172.16.0.103 fn-ps551
```

### DISTRIBUTION (CODEDSTB)

```plaintext
#    # Codedstb
#    # Code Host Name [HostName]...
AA0123?? hic654
```

### NETMasks (NETmasks)

```plaintext
#    # Network masks database
#    # only non-default subnet masks need to be defined here
#    # Network    netmask
172.16.0.0  255.255.255.0
```
Setup Example 2: QA-WS Connection

For the QA-WS connection, perform the following setup procedures.

◆ NOTES ◆

- The HCP08A board (optional) and CPU90F board (optional) must be installed in the control rack.
- The Fuji Base-on-DICOM option software must be installed.

◆ SYSTEM (IRSET.CFG) ◆

- For “2. IPS” and “3. IPI”, set appropriate IP addresses.
- For “45. UID_STI”, set an appropriate examination instance user ID.

◆ EQUIPMENT (EQUIP) ◆

Set the transfer destination QA-WS host name (“qa-ws1”) as the DISPLAY attribute.
To deliver the re-output from the QA-WS to the printer instead of directly delivering the output from the image reader to the printer, set “LOCAL_R” as the PRINT attribute.

```
| # |
| DISPLAY qa-ws1 |
| PRINT LOCAL_R |
```

◆ NETWORK HOST INTERFACE (DEVICE) ◆

Set the host information about the transfer destination QA-WS.

```
| # |
| qa-ws1:DISPLAY,0200, |
```

◆ HOSTS ADDRESS (HOSTS) ◆

Set the IP address and host name of the local machine and transfer destination QA-WS.

```
| # |
| 172.16.0.100 fcr5000n-1 |
| 172.16.0.200 qa-ws1 |
```

◆ ROUTING (ROUTE) ◆

If the transfer destination 5000 Series image reader is not within the same network, set the IP address of the router that serves as the exit of the local network. If the destination image reader is within the same network, this setting is not required.

◆ NETMASKS (NETMASKS) ◆

If the transfer destination QA-WS is not within the same network, set the subnet mask. If the transfer destination QA-WS is within the same network, there is no need to make this entry again.
● DICOM (Base on DICOM)

Perform “Base on DICOM” setup for both the local machine and transfer destination QA-WS. The format to be used is indicated below.

```
HostName,ServiceName:AEName,[PortNo.],[SOPType],[CompType],[Timeout1],[Timeout2],[DensityType]
```

- **HostName**
  Enter the host name that is defined by HOSTS or DEVICE.
- **ServiceName**
  Set “STORAGE_U” for the local machine and “STORAGE_P” for the QA-WS.
- **AEName**
  Set the DICOM standard Application Entity name (consisting of up to 16 ASCII characters).
- **PortNo.**
  Set the TCP port number that the Base-on-DICOM application uses. This entry is meaningless for the transmitting end. The default setting is “104”.
- **SOPType (SOP Class Type definition)**
  Although two options are selectable (1: FINP; 2: OEM), choose “1”.
- **CompType (image data compression definition)**
  Although two options are selectable (0: no compression; 1: JPEG compression), choose “1”.
- **Timeout1**
  Set the timeout time (in seconds) for the TCP socket connect/recv command.
- **Timeout2**
  Set the timeout time (in seconds) for one-image transfer.
- **DensityType**
  Set the output density for each output destination unit. “1” should always be set.

The following example (bolded entry portion) shows how to enter the above settings.

```
# DICOM
#
HostName,ServiceName:AEName, [PortNo.],[SOPType],[CompType],[Timeout1],[Timeout2],[DensityType]

# ServiceName = STORAGE_U | STORAGE_P | QR_U
#                    | QR_P | PRINT_U | PRINT_P
#
# fcr5000n-1,STORAGE_U :5000_DICOM,,1,1,100,600,1
# qa-ws1,STORAGE_P :hic655qa-scp,5045,1,1,100,600,1
```
Setup Example 3: Printer Output Setup for Each Network Connection

**NOTE**
The HCP08A board (optional) and CPU90F board (optional) must be installed in the control rack.

Perform network-specific printer output setup as indicated below.

**SYSTEM (IRSET.CFG)**
For “2. IPS” and “3. IPI”, set appropriate IP addresses.

**EQUIPMENT (EQUIP)**
Set the transfer destination 5000 Series image reader host name as the PRINT attribute. Note that only one 5000 Series image reader unit can be added.

```
# PRINT LOCAL fcr5000n-2
```

**NETWORK HOST INTERFACE (DEVICE)**
Set the host information about the 5000 Series image reader at the transfer destination.

```
#
fcr5000n-2:PRINT,0100,1
```

**HOSTS ADDRESS (HOSTS)**
Set the IP address of the 5000 Series image reader at the transfer destination.

```
#
172.16.0.100 fcr5000n-2
```

**ROUTING (ROUTE)**
If the transfer destination 5000 Series image reader is not within the same network, set the IP address of the router that serves as the exit of the local network. If the destination image reader is within the same network, this setting is not required.

**NETMASKS (NETMASKS)**
If the transfer destination QA-WS is not within the same network, set the subnet mask. If the transfer destination QA-WS is within the same network, there is no need to make this entry again.
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4. Preparation for Installation Environment

4.1 Specifications of Machine

- **Product Code**
  
  CR-IR341

- **Dimensions**
  
  W730 x D720 x H1720 (mm)

- **Weight**
  
  310 kg approx.

- **Center of Gravity (mm)**
  
  Height: 1095
  
  From the right-hand side: 351
  
  From the rear: 365
### Installation Space

The space required for installation differs depending on whether the machine is secured with the anchoring members or not.

- **Without clamps**
  - Height: 1800 or more
  - Rear: 50 or more
  - Front: 200 or more
  - Machine: 200 or more
  - Unit: mm

- **With clamps**
  - Height: 1800 or more
  - Rear: 100 or more
  - Front: 700 or more
  - Machine: 700 or more
  - Unit: mm
4.1.1 Machine Moving and Fixing Means

■ Moving Means
Moving: Four casters (variable direction/no brake) attached

■ Fixing Means
Fixing: Four adjustable feet

4.1.2 Environmental Requirements

■ Temperature Requirements

<table>
<thead>
<tr>
<th></th>
<th>Operation</th>
<th>Non-operation</th>
<th>During transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>15 – 30°C</td>
<td>0 – 45°C</td>
<td>-10 – 50°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>40 – 80%</td>
<td>10 – 90%</td>
<td>10 – 90%</td>
</tr>
<tr>
<td>(without condensation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atmospheric pressure</td>
<td>700 – 1,030hpa</td>
<td>500 – 1,030hpa</td>
<td></td>
</tr>
</tbody>
</table>

The above environmental requirements do not apply to IPs (Imaging Plates).

■ Floor (Installation Area) Vibration Requirements
10-55 Hz in frequency, 0.0075 mm or less in amplitude

■ Floor Levelness
10 mm/mm (1/100 of inclination) or less for both front and rear and both right and left

■ Variable Magnetic Field
0.3 gauss p-p or less

■ Floor Flatness
10 mm or less

■ Maximum Heat Generation
800 wh

■ Noise
Standby: 55 dB or less
Operation: 60 dB or less
Single-shot noise: 70 dB or less

■ Warm-up time
4 min approx.
4.1.3 Electrical Specifications

- **Frequency**
  50Hz/60Hz, single-phase, common specification

- **Line Voltage**
  100VAC ± 10%, or 200 - 240 VAC ± 10%

- **Capacity**
  0.8kVA

- **Power Cord**
  100 V: 3.5 m
  200 V: 15 m

- **Rated Amperage**
  100 V: 8 A
  200 V: 4 A

- **Overload Protection**
  100 V/200 V: 15 A

- **Power Consumption**
  0.8kVA

- **Grounding (Overseas)**
  Use a separate cable kit specifically designed for local use, and securely insert the power plug into an indoor polarized receptacle.
4.2 Preinstallation Work

Before starting the grounding procedures, make sure that the place where the machine is to be installed meets the criteria set forth in “SSS Installation Site Requirements.”

Before the machine is transferred, preinstallation procedures should be completed for necessary electrical utility, water supply/drain piping, waste solution disposal, and air-conditioning system installation work.

■ Electrical Work (Overseas)

For more detail, local rules and regulations should be complied with.

- For 200V power supply
  An independent branch circuit assigned specifically for the machine should be provided via a 15A circuit breaker.
  A predetermined ground wiring should be implemented for the ground polarity of the receptacle.

- For 100V power supply
  A predetermined ground wiring should be implemented for the ground polarity of the receptacle.
Installation Site Requirements

Avoid the following installation sites:

• Places where the temperature changes drastically.
• Places near heat sources such as heaters.
• Places where water leakage or equipment submersion may occur.
• Places where the machine may be exposed to any corrosive gas.
• Dusty places.
• Places where the machine is subject to constant or excessive vibration or shock.
• Places that are exposed to direct sunlight.
## 4.3 Tools Used

### Standard tools

**NOTE**

To service the machine, use the servicing instruments and tools that have been inspected and calibrated.

*If the machine were serviced using servicing instruments and tools that have not been inspected and calibrated, proper performance of the machine could not be guaranteed.*

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Manufacturer</th>
<th>Quantity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midget ratchet set</td>
<td>7331</td>
<td>CHAPMAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Adjustable wrench 150mm</td>
<td>W-120</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Water pump pliers</td>
<td>P-245</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Nippers 150mm</td>
<td>N-25</td>
<td>HOZAN</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phillips screwdriver No. 1</td>
<td>NO.6300-1</td>
<td>VESSEL</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phillips screwdriver No. 2</td>
<td>NO.6300-2</td>
<td>VESSEL</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Combination box-open-end wrench (7mm)</td>
<td>M41-7</td>
<td>KTC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phillips stubby screwdriver</td>
<td>NO.135-4</td>
<td>PB</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### Pliers 150mm
- **Type**: JP-200
- **Manufacturer**: HOZAN
- **Qty.**: 1
- **Remarks**:

![Pliers 150mm](FR1H706.EPS)

### Long-nose pliers 150mm
- **Type**: P-22
- **Manufacturer**: HOZAN
- **Qty.**: 1
- **Remarks**:

![Long-nose pliers 150mm](FR1H707.EPS)

### Allen wrench set
- **Type**: BLX-9
- **Manufacturer**: Boudhus
- **Qty.**: 1
- **Remarks**:

![Allen wrench set](FR1H723.EPS)

### Digital tester
- **Type**: FLUKE77
- **Manufacturer**: FLUKE
- **Qty.**: 1
- **Remarks**: Inspection and calibration required

![Digital tester](FR1H725.EPS)

### Scissors
- **Type**: —
- **Manufacturer**: Any commercially available one
- **Qty.**: 1
- **Remarks**:

![Scissors](FR1H728.EPS)

### Calipers
- **Type**: N-15
- **Manufacturer**: Mitutoyo
- **Qty.**: 1
- **Remarks**: Inspection required. A block gauge for use in inspection requires calibration.

![Calipers](FR1H730.EPS)

### Steel rule (150mm)
- **Type**: Type C
- **Manufacturer**: YAMAYO
- **Qty.**: 1
- **Remarks**: Inspection required

![Steel rule (150mm)](FR1H731.EPS)

### Steel rule (300mm)
- **Type**: Type C
- **Manufacturer**: YAMAYO
- **Qty.**: 1
- **Remarks**: Inspection required

![Steel rule (300mm)](FR1H732.EPS)

### Steel tape measure (5.5 m)
- **Type**: WS5005
- **Manufacturer**: NEOLOCK
- **Qty.**: 1
- **Remarks**:

![Steel tape measure (5.5 m)](FR1H733.EPS)

### Penlight
- **Type**: BF-318
- **Manufacturer**: MATSUSHITA ELECTRIC
- **Qty.**: 1
- **Remarks**:

![Penlight](FR1H738.EPS)
<table>
<thead>
<tr>
<th></th>
<th>Type</th>
<th>Qty.</th>
<th>Manufacturer</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blower</strong></td>
<td>JUMBO</td>
<td>1</td>
<td>HURRICANE</td>
<td></td>
</tr>
<tr>
<td><strong>Cloth</strong></td>
<td>—</td>
<td>1</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>
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5. Temporary Placement

5.1 Unloading, Transfer, and Unpacking

■ Unloading

⚠️ CAUTIONS

- Exercising due care to avoid nails that retain the wooden crate pieces, dismantle the wooden crate.
- Once the wooden crate is dismantled, pull out the nails immediately. If the crate pieces are left with nails attached, someone or the machine may get hurt.

(1) Secure a transfer path of the machine.
Move away any obstacle out of the way on the transfer entry, corridors, and corners, so that the machine can be moved to the installation place safely. Also, see that an elevator is available.

⚠️ CAUTION

Before unloading the machine, be sure to secure its transfer path.
(2) Remove the top protective cover from the machine, and pull out the nails from it.

◆ NOTE ◆

Use care not to break the top protective cover. The top protective cover is needed when placing the machine from the carrier pallet down onto the floor.

(3) Remove the wooden crate pieces and protective members, except for the vinyl sheet left that directly covers the machine.
(4) Remove the four clamps that fasten the machine to the carrier pallet.
If you use the removed clamps for machine installation, bring them together with the machine to the installation site.
(5) Nail the top protective cover removed at step (2) onto the carrier pallet on the rear side of the machine to form a slope for placing the machine down onto the floor.

**NOTES**

- The slope should be formed on the rear side of the machine. If the slope is formed on the front side of the machine, the adjustable feet will interfere with the floor when the machine is put down from the carrier pallet, so that it cannot be put down smoothly.
- Both upper-end corners of the top protective cover should be nailed securely onto the carrier pallet. If you try to lower the machine without nailing the top protective cover down, the top protective cover may move out of position, causing the machine to topple down.
- The top protective cover should be used as a slope only once when the machine is unloaded. If the top protective cover is used many times, it may lose strength, so that it may be broken when the machine is placed on it.

(6) Raise the adjustable feet of the machine all the way up.

(7) Move the machine over the slope surface with the aid of the machine casters until it is lowered from the carrier pallet.

**CAUTION**

When moving the machine over the slope surface with the aid of the casters, be sure to have an assistant support the upper portion of the machine for the purpose of preventing the machine from toppling down. Also, move the machine slowly over the slope surface to avoid shocking the machine.
Transfer

Bring the machine into the installation place.

**CAUTIONS**

- When the machine is transferred with its casters, be sure to raise the adjustable feet of the machine all the way up.
- When bringing the machine into the installation place, support it so that it will not topple down. Because the machine is top-heavy, it may topple during transit.
- If the machine should be moved over some step or bump, move it as slowly as possible to avoid shock to it. Note that the step over which the machine may move over is about 10 mm high at most.

Unpacking

**CAUTION**

Allow the packed machine to stand at a room temperature for an adequate period of time. If you unpack it immediately after transferring it indoors, moisture condensation may occur on the machine.
5.2 Checking the Items Supplied

Check whether all the items are supplied in accordance with the packing list that is contained in each carton. The service technician must keep the test result sheet.

Machine main body

- Machine main body 1
- Retainer 4

The machine retaining members also serve as retainers used during transit.

“8.3 Final Installation”

- CPU90E board (installed in the machine) 1
- IMG07B board (installed in the machine) 1
- IMG08H board (installed in the machine: for CR-IR341 only) 1
5.2.2 Separate packaged items

- **Small-size box 1**
  - Instruction manual (for machine main body) 1
  - Test result sheet 1
  - Machine-specific management floppy disk 1
  - Labels 1 set
  - PC MENU EDITOR floppy disk (114Y5431010A/bundled with CSL type only) 1
  - MMC90A board (Memory module) 2
  - Retaining plate (for retaining the light-collecting guide assembly) 1
  - Light-collecting guide assembly retaining screw (BR M4x12) 1
  - Erasure lamp assembly retaining screw (BR M4x8) 1
  - Power cable bracket retaining screw (BR M4x8), spare 2
  - Optional board mounting screw (truss M4x8) 4
  - NK clamp (NK-18N, 13N, 10N) 3 each
  - Lower front cover retaining screw (truss M4x12) 2
  - I/F cable retaining screw (for rear cover) (truss M4x20) 3

- **Small-size box 2**
  - Power cable kit 1 (either model)
    - 100-200 V spec for Japan and US
    - 200-240 V spec for Europe (excluding UK)
    - 200-240V spec for UK

- **Small-size box 3**
  - IMG08A board (LP interface board) 1
    - Required to establish local connection with the LP.

- **Medium-size box**
  - Erasure lamp assembly 1

- **Large-size box**
  - Light-collecting guide assembly 1
5.2.3 Options

- DMC08A board (DMS interface board) 1
  Required to establish local connection with the DMS.
- IMG08B board (multi-frequency processing (MFP) optional board) 1
  Can be used for local connection with LP.
- IMG08C board 1
- LAN90B board or CPU90F board 1
  (Ethernet card, 100BASE-TX Intelligent LAN card)
- HCP08A board (Ethernet card) 1

5.3 Temporary Placement Procedures

(1) Secure sufficient space for installation work and temporarily place the CR-IR341.

(2) Lower the adjustable feet of the machine to secure it in place.
6. Installation

6.1 Work Flow

START

1. Unclamp and install separate packaged items (other than the printed circuit boards)
   - Put the removed clamps and screws in one place.
   - After unclamping, count them to check that nothing is left unclamped.
   - Refer to "6.2 Unclamping and Installing Separate packaged Items"

2. Connect the power cable and check for short.
   - Refer to "6.2 Unclamping and Installing Separate Packaged Items (Except for Boards), 6.2.4 Procedures at Side-Positioning Conveyor, Subscanning Unit, and Power Supply Unit"

3. Set up each board.
   - Set up each board according to the system configuration.
   - Refer to "6.3 Setting and Installing Boards"

   - Refer to "6.4 Cable Wiring Diagram, 6.4.1 Interface Cables"

5. Power ON the machine and perform various checks.
   - Refer to "6.5 Preparations for Power ON"
   - Refer to "6.6 Turning ON the Power"
   - Refer to "6.7 Measuring and Adjusting Voltage"
   - Refer to "6.8 Clearing Backup Memory"
   - Refer to "6.9 Setting Date and Time"

END
6.2 Unclamping and Installing Separate Packaged Items (Except for Boards)

**NOTES**

- Put the tapes, foam blocks, cable ties, tags and screws kept separately removed from the machine in one place. After unclamping, count them to check that nothing is left unclamped. “6.2.7 Unclamping Check List”
- When removing tapes, exercise care not to drop foam blocks or other irrelevant items into the machine.
- When cutting cable ties, ensure that no cuttings enter the machine.

### Name of Each Unit

- Controller
- IP removal unit
- Vertical conveyor
- Up-down conveyor
- Before-side positioning conveyor
- Power supply
- Sub-scanning unit
- Side-positioning conveyor
- Scanning optics unit
- Erasure conveyor
- After-reading conveyor
- Light-collecting guide
- Cassette set unit
6.2.1 Removal of Covers

Remove the covers in the following order.

1) Lower front cover
   While slightly pulling the top of the cover toward yourself, lift it up and out.

2) Upper right-hand side cover (truss M4x6, x4)
   Pull up the entire cover toward yourself and out.

3) Lower right hand side cover (truss M4x6, x9)
   While slightly pulling the top of the cover toward yourself, pull it up and out.

4) Upper rear cover (truss M4x12, x4)

5) Lower rear cover (truss M4x12, x8)
   While slightly pulling the top of the cover toward yourself, pull it up and out.

6) Upper left-hand side cover (truss M4x12, x4)

7) Lower left-hand side cover (truss M4x6, x3; truss M4x12, x6)
   While slightly pulling the top of the cover toward yourself, pull it up and out, exercising care to prevent the cover of the switch portion from hitting the power supply unit.
   Remove the single tape that retains the filter cover. Because the three screws on the front side of the machine are truss M4x6, while the six screws on the rear side of the machine are truss M4x12, use care not to confuse these screws during installation.

8) Upper front cover (BR M4x8, x2)
   While slightly pulling the top of the cover toward yourself, pull it up and out. Also remove the single tape that retains the FD cover in place.

9) Stack table (truss M4x6, x2)
   Using a 2-mm Allen wrench or so forth, first remove the screw covers and then the screws.
6.2.2 Procedures at Cassette Set Unit and Up-Down IP Removal Unit

**Workflow**

START

- Unclamping Vertical Conveyor
- Pulling out Tray of Cassette Set Unit
- Unclamping Multi-Stage Cassette Loading Cover
- Removing Multi-Stage Cassette Loading Cover
- Unclamping Cassette Set Unit
- Removing Cassette Set Unit
- Unclamping IP Removal Unit
- Reinstalling Cassette Set Unit
- Pushing in Tray of Cassette Set Unit
- Reinstalling Multi-Stage Cassette Loading Cover

"6.2.3 Procedures at Erasure Conveyor and Before-Side-Positioning Conveyor"
Procedures

(1) Cut the four cable ties that retain the changeover guide.
(2) Remove the two brackets.
(3) Reposition the brackets removed at step (2).

SUPPLEMENTARY NOTES

• Be sure to reposition the brackets because they will be used as jigs for adjusting the cassette hold solenoid.
• The two screws used to retain the vertical conveyor should be removed and kept in another place for later use.
(4) Remove one tape and four foam blocks from the multi-stage cassette loading cover.
(5) Remove one tape that retains the ferrite core.
(6) Disconnect the connectors (CNA1 – 3 from the cassette set unit; CNB1, 3, 4 from the up-down IP removal unit; CNT1 from the multi-stage cassette loading cover).
(7) Slide the tensioner until the timing belt can be removed.
   Loosen the screw (BR M4x8) that retains the tensioner to slide the tensioner as appropriate, and then secure the tensioner in place.
   “3.4 Tensioners Not Requiring Tension Adjustment” in Machine Description
(8) Remove the timing belt.
(9) Remove one screw that retain the multi-stage cassette loading cover and the two screws that retain the tray of the cassette set unit.
(10) While using care to prevent the connector cables, etc. from getting caught, pull out the tray of the cassette set unit.
11) Remove the six screws that retain the multi-stage cassette loading cover.
12) Pull out the multi-stage cassette loading cover horizontally.
13) Remove four tapes that retain the inch/metric guide assembly and four tapes that
retains the 24x30 mammo guide assembly.
14) Cut four cable ties that retains the solenoid.

15) Remove the six screws that retain the cassette set unit.
16) Pull out the cassette set unit horizontally.
17) Remove one tape that retains the IP removal arm, and one foam block.
With the foam block pushed by the finger, remove the tape by slowly moving it horizon-
tally, using care not to bend the IP removal arm.
18) Remove the single tape that retains the IP removal arm located on the right-hand side
of the IP removal unit.
(19) Rotate the timing belt to move up the IP removal unit to about 10 - 20 mm.

(20) Remove the two tapes and two foam blocks for absorbing the shock that would be applied to the IP removal assembly when it falls.
(21) Reinstall the cassette set unit horizontally along the positioning brackets.
(22) Secure the cassette set unit in place with six screws.
(23) While using care to prevent the connector cables, etc. from getting caught, put the cassette set unit back where it was.

**CAUTION**

*When removing and installing the units, use care not to damage the cables.*

(24) Secure the tray of the cassette set unit in place with two screws.

(25) Connect the connectors (CNA1 – 3 to the cassette set unit; CNB1, 3, 4 to the up-down IP removal unit).

(26) Attach the timing belt to the timing belt wheel.

(27) Put the tensioner back where it was originally located.

Loosen the screw (BR M4x8) that retains the tensioner. Flick the timing belt several times to ensure that it snugly fits onto the timing belt wheel, and then secure the tensioner in place.

☞ “3.4 Tensioner Not Requiring Tension Adjustment” in Machine Description
(28) Mount the multi-stage cassette loading cover on the machine main body, and loosely retain the four lower screws.

**NOTE**

Accomplish positioning at the time of multi-stage cassette loading cover installation. If you do not complete positioning, a cassette holding failure may occur.

(29) Insert a 150 mm scale along the right-hand side of the lowermost shelf (fourth shelf). Press the manual release lever to lower the hold pin.

(30) Slide the multi-stage cassette loading cover until the scale comes into contact with the cassette set unit entry reference guide protrusion (level difference: 0.5 – 1 mm), and then tighten the four screws that were loosely retained.
(31) Insert a 300-mm scale along the right edge of the topmost shelf (first shelf).
Push the manual release lever so that the hold pin is withdrawn.

(32) Secure the multi-stage cassette loading cover in place.
Loosely tighten the two screws on top of the cover, and take positioning steps (30) for the topmost shelf (first shelf) before screwing it down.

◊ SUPPLEMENTARY NOTES ◊

Because of parts machining precision, the multi-stage cassette loading cover may be slightly warped when secured, though this will not pose any problem. Alignment with the cassette set unit should take first priority.

(33) Connect connector (CNT1).
### 6.2.3 Procedures at Erasure Conveyor and Before-Side-Positioning Conveyor

#### Workflow

![Workflow Diagram](FR1B1232.EPS)

**A** “6.2.2 Procedures at Cassette Set Unit and Up-Down IP Removal Unit”

- Unclamping Erasure Conveyor
- Installing Erasure Lamp
- Unclamping Before-Side-Positioning Conveyor

**B** “6.2.4 Procedures at Side-Positioning Conveyor and Subscanning Unit”  

#### Procedures

1. Cut the single cable tie for retaining the branch path changeover guide driving solenoid (SOLF1).
(2) Take out the erasure lamp assembly from the mid-size box contained as part of the separately packaged items.

WARNING
Carefully handle the erasure lamp. If it is hit, the erasure lamp may be broken, so you may get injured.

(3) Install the erasure lamp assembly into the erasure conveyor.

SUPPLEMENTARY NOTE
When inserting the erasure lamp assembly, align the positioning pin located on the right-hand side of the inlet into the hole of the erasure lamp assembly, and push it all the way into the erasure conveyor.

(4) Using the mounting screw supplied, secure the erasure lamp assembly in place.

(5) Connect the connectors (DCOUT 4, 5, ACOUT 1, 2).

(6) Cut the single cable tie for retaining the changeover guide driving solenoid (SOLC1).
6.2.4 Procedures at Side-Positioning Conveyor, Subscanning Unit, and Power Supply Unit

■ Workflow

Unclamping Side-Positioning Conveyor
Unclamping Subscanning Unit
Connect Power Cable and Check for Short

■ Procedures

(1) Remove the single screw that retains the clamp and side-positioning member.

◇ SUPPLEMENTARY NOTE◇

The screw removed should be kept in another place for later use.

(2) Loosen the single screw that retains the clamp onto the MD1, and slide the clamp leftward and secure it in place.
(3) Remove the transparent cover located on the left-hand side of the machine.

(4) Remove the single tape and foam block for retaining the tensioner.

(5) While rotating the flywheel by hand, check to ensure that the Kapton® belt does not come off the pulley and that there is no offensive noise.

(6) Reinstall the transparent cover removed at step (3).

(7) Place in the REMOTE position the REMOTE/LOCAL switch of the power supply unit located on the left-hand side of the machine.

(8) Take out the power cable from the small-sized box.

(9) Put the power cable through the hole in the frame and connect it to TB1 of the power supply unit.

(10) Attach the power cable retaining bracket to the machine.
(11) Secure the power cable in place with the NK clamp.

(12) Set to ON the circuit breaker located on the left-hand side of the machine.
(13) With the power plug unplugged, measure the resistance value between terminals shown in the table below.

**CAUTION**

If anything abnormal is found with the results of the check for power supply short, take remedial action as appropriate with reference to “3. Troubleshooting Procedures Based on Improper Operation” in Troubleshooting before proceeding to the next step.

If the specified value shown in the table is not met, connect the power supply all over again.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>L-N</th>
<th>L-E</th>
<th>N-E</th>
<th>E-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance value</td>
<td>180K to 230K Ω</td>
<td>∞</td>
<td>∞</td>
<td>0.2 Ω or less</td>
</tr>
</tbody>
</table>

<US/Japan model>  <For Europe (excluding UK)>  <UK model>
6.2.5 Procedures at Scanner Unit

Workflow

- Pulling Out Scanner Unit
- Unclamping Scanner Unit
- Installing Light-Collecting Guide
- Pushing in Scanner Unit

C  "6.2.4 Procedures at Side-Positioning Conveyor and Subscanning Unit"

D  "6.2.6 Procedures at Controller"
**Procedures**

**CAUTIONS**

- Before pulling out the scanner unit, be sure to remove the two bracket retaining screws located on the upper portion of the SCN08A board and disconnect the connectors. If pulled out without removing them, the SCN08A board may be damaged.
- When pulling out the scanner unit, be sure to lower the adjustable feet down to the floor. If not, the bolts of the adjustable feet would interfere with the cable cover.
- When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Disconnect the connectors (CN7-9, CNZ6-8, 10 from the SCN08A board; CNZ1, 2, 4, 5 from the subscanning unit).

The cables connected to the SCN08A board should be pushed aside to the right and top sides of the scanner unit, while the cables connected to the subscanning unit, both front and rear, should be fitted beneath the cable cover.
(2) Remove the two bracket retaining screws located on the upper portion of the SCN08A board.

(3) Remove the two screws that retain the scanner unit.

(4) Pull out the scanner unit.

◆ **NOTE◆

*When pulling out the scanner unit, use care so that it is not caught by the connectors or cables disconnected.*

(5) Disconnect the connector (CNME2).
(6) Remove the bottom retaining screw from each of the four scanner unit retaining brackets, and loosen the screw on the scanner unit.

(7) Move the four brackets furthest away from the bottom and secure them in place. The four screws that retain the brackets should be removed and kept separately.

(8) Connect the connector (CNME2) removed at step (5).

(9) Remove the single screw from the light-collecting guide retaining arm, and rotate the arm.

(10) Remove the single tape that retains the connector (CN1, 2).
(11) Take out the light-collecting guide assembly from the large-size box.

**CAUTIONS**

- Wear gloves when installing the light-collecting guide assembly. If installed with bare hands, the light-collecting guide assembly may be soiled or damaged.
- *Never touch the light-receiving face of the light-collecting guide assembly even when you are wearing the gloves.*
- Carefully handle the light-collecting guide assembly to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.
(12) Carefully install the light-collecting guide assembly onto the subscanning unit, while exercising care to prevent contact with surrounding units.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Never touch the light-receiving face of the light-collecting guide, even when you are wearing gloves.
- Carefully handle the light-collecting guide to avoid damage to it due to contact with surrounding objects.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.
- When inserting the light-collecting guide assembly, align the protrusions located at both ends of the light-receiving face of the light-collecting guide assembly against the reference plane in the subscanning direction, and the front protrusion against the reference pin in the main scan direction.

---

The light-collecting guide must be in close contact with the pin. The right- and left-hand light-receiving edges of the light-collecting guide must be in close contact.
(13) While supporting the light-collecting guide assembly, secure it with the light-collecting guide assembly retaining arm in place. While pushing the shaft portion of the light-collecting guide retaining arm, rotate it. Make sure that the stopper hooks the inner protrusion of the light-collecting guide assembly, and the screw it down.

◆ NOTE ◆

When pushing the light-collecting guide assembly retaining arm, be sure to push down its shaft portion. If the arm portion is pushed, the arm itself may be deformed.

(14) Secure the light-collecting guide assembly in place with the mounting screw supplied and brace.

⚠️ CAUTION

Once the light-collecting guide is secured in place with the brace, make sure that the light-collecting guide assembly is not dislocated from its fixed position (i.e., position as instructed in the side view illustrated at step (12), where the light-collecting guide must be in close contact). If it is dislocated, move the light-collecting guide retaining bracket to adjust the fixed position as appropriate.
(15) Make sure that the socket of the PMT08A board is fitted into the socket of the light-collecting guide and that the sockets of the PMT08A board and light-collecting guide are parallel to each other.

If anything abnormal is found, remove the single screw that retains the light-collecting guide retaining bracket. While holding the light-collecting guide, push in the PMT08A board assembly, and adjust the position of the sockets of the PMT08A board and light-collecting guide as appropriate.

After the brace is fixed with the screw, verify again that the sockets are parallel, and then proceed to the next step.

**CAUTIONS**

- Wear gloves when handling the light-collecting guide assembly. If it is handled with bare hands, the light-collecting guide assembly may be soiled or damaged.
- Wear a mask to prevent saliva from sputtering around on the light-collecting guide.
(16) Connect the connectors (CN1 and CN2 on the PMT08A board).

(17) While pushing the stopper located on the front side of the machine, put the scanner unit back into the machine until the stopper located on the rear side of the machine is activated.

(18) While pushing the stopper located on the rear side of the machine, put the scanner unit all the way into the machine.

**NOTE**

When putting the scanner unit back where it was, use care so that it is not caught by the connectors and cables disconnected.

(19) Using two screws, secure the bracket located on the upper portion of the SCN08A board.

(20) Secure the scanner unit in place with two screws.

(21) Connect the connectors (CN7-9, CNZ6-8, 10 on the SCN08A board; CNZ1, 2, 4, 5 on the subscanning unit).
(22) Make sure that the no-fuse breaker settings on the SCN08A board are all shorted (in the ON position).

The no-fuse breakers (NFB) are to be shorted (ON) at factory prior to shipment and must be so at installation. However, since they may unexpectedly turn OFF due to vibration during transit, press all the no-fuse breaker buttons two or three times to ensure that they are depressed to ON.

No-fuse breaker status

![Diagram of no-fuse breaker status]

**NOTE**

With board version J or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.
6.2.6 Procedures at Controller

◆ NOTE ◆
With version K or later of the DRV08A board and version E or later of the SNS08A board, the no-fuse breaker (NFB) is replaced with the fuse, so that checking procedures need not be performed.

Workflow

- "6.2.5 Procedures at Scanner Unit"
- Checking No-fuse Breaker on DRV08A Board
- Checking No-fuse Breaker on SNS08A Board
- "6.2.7 Unclamping Check List"
Procedures

CAUTION

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

The no-fuse breaker (NFB) is to be shorted (in the ON position) by factory default and during installation. Because it may be accidentally placed in the OFF position due to vibration during transit, push each of the no-fuse breaker buttons several times to ensure that they are all depressed to ON.

No-fuse breaker status

OFF position

ON position

(1) Make sure that the no-fuse breaker settings on the DRV08A board are all shorted (in the ON position).

(2) Make sure that the no-fuse breaker settings on the SNS08A board are all shorted (in the ON position).
6.2.7 Unclamping Check List

Count the number of tapes, foam blocks, cable ties, and tags removed from the machine, and the number of screws kept separately for later use to ensure that there is nothing unclamped from the machine.

<table>
<thead>
<tr>
<th>Unclamping location</th>
<th>Tape</th>
<th>Foam block</th>
<th>Cable tie</th>
<th>Tag</th>
<th>Screw kept separately</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1 Removal of Covers</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>4.2.2 Procedures at Cassette Set Unit and Up-Down IP Removal Unit</td>
<td>14</td>
<td>7</td>
<td>8</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>4.2.3 Procedures at Erasure Conveyor and Before-Side-Positioning Conveyor</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>4.2.4 Procedures at Side-Positioning Conveyor and Subscanning Unit</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4.2.5 Procedures at Scanner Unit</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4.2.6 Procedures at Controller</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>8</td>
<td>10</td>
<td>39</td>
<td>7</td>
</tr>
</tbody>
</table>
6.3 Setting and Installing Boards

Boards to be set up vary depending on the system configuration. Only the board settings that are relevant to your system configuration should be made.

**CAUTION**

Use care not to depress the white button of the no-fuse breaker more than necessary. If it is depressed too much, it may remain depressed, thereby causing OPEN/CLOSE failure. Especially, do not strongly push it with a pen point or the like.

6.3.1 MTH08A board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Remove the board retaining plate and IMG07B board.
(2) Disconnect the connectors (CN6-8, 11, 18, 19 from the CPU90E board).

(3) Remove the CPU90E board.
(4) Make sure that the no-fuse breaker settings on the MTH08A board are all shorted (in the ON position).

The no-fuse breaker (NFB) is to be shorted (in the ON position) by factory default and during installation. Because it may be accidentally placed in the OFF position due to vibration during transit, push each of the no-fuse breaker buttons several times to ensure that they are all depressed to ON.

```
[Diagram of no-fuse breaker status]
```

**NOTE**

With board version D or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.
6.3.2 MMC90A board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

**REFERENCE**

For CR-IR341 units with serial numbers #2484 or later, the MMC90A board is already installed by factory default, so that installation procedures should not be performed. However, for units with the following serial numbers, the MMC90A board is a separate packaged item, so that its installation procedures should be performed.

- CR-IR341
  - #2849–2852, 2854, 2858, 2860, 2863, 2868, 2873, 2883, 2894

Install the MMC90A boards (the memory modules) to the connectors (CN17, 18) of the MTH08A board.

**NOTE**

When mounting the MMC90A board, pay attention to the following points.
- Do not touch the connector portion of the MMC90A board, but grasp both ends of the board.
- Open the tabs of CN17/18, align the notches of the MMC90A board to the notched edges in the CN17/18 slot, and insert the MMC90A board straight into the slot, while holding both ends of the board.
- After installing the MMC90A board, make sure that the tabs have been closed and the MMC90A board has been securely locked into place.
**NOTE**

Take the following procedures to remove the MMC90A board. If the procedures are not observed, the connector tab(s) may be damaged.

1. Push out the left tab of the connector.
2. Press out the left end of the MMC90A board at an angle of 30-40°.
3. Remove the MMC90A board.
6.3.3 CPU90E board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Make sure that the no-fuse breaker settings on the CPU90E board are all shorted (in the ON position) and that its switches are set as illustrated below.

The no-fuse breaker (NFB) is to be shorted (in the ON position) by factory default and during installation. Because it may be accidentally placed in the OFF position due to vibration during transit, push each of the no-fuse breaker buttons several times to ensure that they are all depressed to ON.

**NOTE**

With board version G or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.

Nos. 1 and 2 of S2 (both are in the OFF position by factory default) should be placed in the ON position. If they remain in the OFF position, the memory cannot be backed up, so the setup cannot be saved.

The rest should be set as follows.

- S1: All OFF
- S2: Nos. 3 and 4 are OFF
- S5: STRAIGHT
- S6: RS-422
- S7: All ON
(2) Install the CPU90E board to the MTH08A board.
Push the CPU90E board supplied into the bottom slot, and secure it in place with two mounting screws supplied.

(3) Connect the connectors (CN6-8, 11, 18, 19 on the CPU90E board).
BLANK PAGE
6.3.4 IMG07B board

![Diagram showing IMG07B board with S1 set to "4".]

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

1. Make sure that S1 on the IMG07B board is set to “4”.

Set to "4"
(2) Install the IMG07B board to the MTH08A board.
Push the IMG07B board supplied into the second slot from the bottom, and secure it in place with two screws supplied.
6.3.5 CPU90F board or LAN90B board

⚠️ CAUTION ⚠️
When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

◆ NOTE ◆
CPU90F board version N or later, the software version of the machine should be updated to A09 or later. Earlier software versions do not support a newer LSI (discontinuation supported) on the daughter board (ETH90F board) of the CPU90F board.

(1) For the CPU90F board, make sure that the no-fuse breakers are all shorted (in the ON position).

The no-fuse breakers (NFBs) are to be shorted (ON) at factory prior to shipment and must be so at installation. However, since they may unexpectedly turn OFF due to vibration during transit, press all the no-fuse breaker buttons two or three times to ensure that they are depressed to ON.

No-fuse breaker status

OFF position  ON position

CPU90F board version M or later, the no-fuse breaker (NFB) is replaced with the fuse. Thus, make sure that the fuse has not been blown.
(2) Make sure that the switches on the CPU90F board are set as illustrated below.

**CPU90F board**

- **CNS10**
  - No short pin (OPEN)
  - Switches:
    - 1
    - 2
    - 3

- **ETH90F board**
  - T4
  - Short pin
    - 1
    - 2
    - 3

- **DIS1**
  - OFF position
  - ON position

- **DIS2**
  - OFF position
  - ON position

- **SW1**
  - Set to "6"

**LAN90B board**

- **CN6**
  - CN2
  - CN7
  - S2

- **S1**
  - Switch for resetting the LAN90B board
  - Set to "6"

- **S2 setting**
  - Description:
    - 1–3, 5, 6: To be determined
    - 4: ON: Function test (FT)
      - OFF: OS boot (NORMAL)
  - Setting:
    - Always OFF
(3) Remove the slot cover, and reposition its two screws to the CPU90F board or LAN90B board.

**SUPPLEMENTARY NOTE**

The slot cover removed should be repositioned to any vacant slot located below its original position. If there is no free slot, the slot cover should be kept in another place for later use.

(4) Install the CPU90F board or LAN90B board to the MTH08A board. Push the CPU90F board or LAN90B board into the top slot, and secure it in place with the two screws that were used to secure the slot cover.
6.3.6 HCP08A board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Make sure that SW1 on the HCP08A board is set to “5”.

![Diagram of HCP08A board with SW1 set to “5”](FR1105.EPS)
(2) Remove the slot cover supplied, and reposition its two screws to the HCP08A board.

◊ **SUPPLEMENTARY NOTE◊**
The slot cover removed should be repositioned to any vacant slot located below its original position. If there is no free slot, the slot cover should be kept in another place for later use.

(3) Install the HCP08A board to the MTH08A board.
Push the HCP08A board into the second slot from the top, and secure it in place with the two screws that were used to secure the slot cover.
6.3.7 DMC08A board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Make sure that S1 on the DMC08A board is set to “0”.

```
<table>
<thead>
<tr>
<th>S1</th>
<th>CN1</th>
<th>CN2</th>
<th>CN3</th>
<th>CN4</th>
<th>CN5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Set to “0”
(2) Remove the slot cover supplied, and reposition its two screws to the DMC08A board.

◊ SUPPLEMENTARY NOTE ◊

The slot cover removed should be repositioned to any vacant slot located below its original position. If there is no free slot, the slot cover should be kept in another place for later use.

(3) Install the DMC08A board to the MTH08A board.

Push the DMC08A board into the second slot from the top, and secure it in place with the two screws that were used to secure the slot cover.
6.3.8 IMG08C board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

(1) Make sure that S1 on the IMG08C board is set to “3”.
(2) Install the IMG08C board to the MTH08A board.

Push the IMG08C board into the third slot from the top, and secure it in place with two screws supplied.
6.3.9  IMG08B/H board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

**IMG08H Board: CR-IR341**

1. Make sure that S1 on the IMG08H board is set to “2”.

2. Make sure that the IMG08H board has been securely inserted in place.
**IMG08B Board: CR-IR361**

1. Make sure that S1 on the IMG08B board is set to “2”.

2. Insert the IMG08B board to the MTH08A board.
   Push the IMG08B board into the fourth slot from the top, and secure it in place with two screws supplied.
6.3.10 IMG08A board

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

1. Make sure that S1 on the IMG08A board is set to “1”.

![Diagram of IMG08A board with S1 set to “1”](FR1B1196.EPS)
(2) Remove the slot cover, and reposition its two screws to the IMG08A board.

**SUPPLEMENTARY NOTE**

The slot cover removed should be repositioned to any vacant slot located below its original position. If there is no free slot, the slot cover should be kept in another place for later use.

(3) Install the IMG08A board to the MTH08A board.

Push the IMG08A board into the fourth slot from the bottom, and secure it in place with the two screws that were used to secure the slot cover.
6.3.11 Installing Board Retaining Plate

**CAUTION**

When servicing any printed circuit board, be sure to wear an anti-static wristband to ensure proper grounding. If not, static electricity built on the human body may cause damage to electric parts mounted on the board.

Install the board retaining plate.

◆ **NOTE◆

After installing the board retaining plate, be sure to check if the board retaining plate is fitted to the frame. If it is not fitted properly, check to ensure again that the boards have been installed as appropriate.
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6.4 Cable Wiring Diagram

The cable wiring diagram of the machine is as illustrated below. Referring to this diagram, check cable hookups and connections.

6.4.1 Interface Cables

Interface cables are hereinafter referred to simply as I/F cables.
6.5 Preparations for Power ON

(1) Turn OFF the high-voltage switch (S1) of the SCN08A board.

**WARNING**

Be sure to turn OFF the high-voltage switch before powering ON with the covers removed. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

(2) Connect the power plug into the power outlet.
(3) Make sure that the REMOTE/LOCAL switch is placed in the REMOTE position.
(4) Make sure that the system power is in the OFF position.
6.6 Turning ON the Power

Since the software has already been installed in the machine prior to shipment, it is ready to start operation by powering it ON.

(1) Turn ON the breaker of the distribution switchboard.

(2) Turn ON the circuit breaker located on the left-hand side of the machine.

   The circuitry of the machine is powered, but the machine does not start up yet because the system power remains in the OFF position.

(3) Turn ON the system power.

⁻ The initialization sequence starts. The machine starts up about four and a half minutes later.
(4) Perform fan operation checks during the initialization sequence.

◇ SUPPLEMENTARY NOTE ◇

If an HV OFF error or line connection error for IDT, LP, etc. occurs during the initialization sequence, press the CHECK button.
To check for errors during the initialization sequence, take steps as described in “8. Final Installation and Checks.”

The exhaust fans and intake fans to be checked for operation are located at four points.
Make sure that they operated during the initialization sequence of the machine.

• Fan located on upper portion of right-hand side: Two intake fans (monitor side and right-hand side cover)
• Fan located on lower portion of right-hand side: Three exhaust fans (Two power supply units and One erasure lamp)
• Fan located on upper portion of rear: One exhaust fan
• Fan located on upper portion of front left-hand side: Two intake fans

◇ SUPPLEMENTARY NOTE ◇

For the exhaust fan attached to the erasure lamp assembly, check its operation during IP conveyance checks.
(5) As the high-voltage switch OFF window appears, press Stop Alarm.

(6) Make sure that the machine starts up normally.

An example of operation panel screen appearing when the machine has started up normally is shown below.

Routine screen
(screen made to CSL specification)

NOTE: For the IDT type, the "menu selecting icon" does not appear.
6.7 Measuring and Adjusting Voltage

**WARNINGS**

To avoid electrical shock hazards from high voltage, observe the following precautions.

- Do not touch the power supply terminals.
- When making voltage measurements, do not touch the probes (metal portions) of the employed tester.

Measure voltages at the following points.

If any measured value differs from the specified value, rotate the associated voltage adjustment trimmer (adjustment point) as needed.

<table>
<thead>
<tr>
<th>Measurement point</th>
<th>Adjustment point</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB2 1—3</td>
<td>+5V</td>
<td>5.1 — 5.3V</td>
</tr>
<tr>
<td>DC OUT1 1—3</td>
<td>+12V</td>
<td>12.0 — 12.6V</td>
</tr>
<tr>
<td>DC OUT3 1—6</td>
<td>+15V</td>
<td>14.5 — 15.5V</td>
</tr>
<tr>
<td>DC OUT3 2—7</td>
<td>+24V1</td>
<td>23.0 — 25.0V</td>
</tr>
<tr>
<td>DC OUT3 4—9</td>
<td>+24V2</td>
<td>23.0 — 25.0V</td>
</tr>
<tr>
<td>DC OUT6 2—6</td>
<td>+15Va</td>
<td>14.5 — 15.5V</td>
</tr>
<tr>
<td>DC OUT6 3—7</td>
<td>-15Va</td>
<td>-14.5 — -15.5V</td>
</tr>
</tbody>
</table>

Side view

Enlarged view of measurement points
6.8 Clearing Backup Memory

To clear the backup memory, use the Maintenance Utility. The Maintenance Utility is hereinafter referred to simply as M-Utility. The operating procedures and common information for M-Utility are described collectively in “APPENDIX 1. COMMON INFORMATION FOR M-UTILITY.”

In “Appendix 3. Common Information for M-Utility”

◆ NOTE ◆

Be sure to reset the machine after clearing the backup memory. Unless the machine is reset, the backup memory is not cleared.

(1) Touch the U-Utility button.
   - The screen switches to the U-Utility mode.

(2) Touch the upper left corner and upper right corner of the operation panel in sequence.
   - M-Utility is activated.

(3) Select “8. BACK MEMORY”.
(4) Select “1. CLEAR”.
   - The following message appears.
   
   ARE YOU SURE TO CLEAR ALL THE BACKUP MEMORIES?
   1. YES 2. NO (DEFAULT=2) : 
   Meanings: Are you sure to initialize (clear) the backup memory?
(5) Select “1”.

> The backup memory is initialized, with the following message displayed.

**BACKUP MEMORIES ARE CLEARED.**

Meaning: The backup memory has been initialized.

The following files are cleared from the HD.

- **IMG**
  Set processing information, information for image number generation, HV ON/OFF information
- **IPH**
  IP position information, subscanning grip correction data
- **PNL**
  Audible click tone enabled/disabled, parallax correction data
- **DST**
  Output LP information (NET/LOCAL)
- **JNL**
  Error log information
- **LIF**
  Format frequency information
- **MFC**
  Setup options information
- **CSL** (for CSL specification only)
  Multiframe-related information, set processing-related information, menu selection information

(6) Repeatedly select “0. QUIT”.

> The screen returns to U-Utility.

(7) Press the RESET switch of the machine.
6.9 Setting Date and Time

To set the date and time, use the User Utility.
The User Utility is hereinafter referred to simply as U-Utility.
(1) Touch the U-Utility button.

> The screen switches to the U-Utility mode.

NOTE: For the IDT type, the "menu selecting icon" does not appear.
(2) Touch the date/time setting on the U-Utility screen.
   ⇒ The date/time setting screen appears.

(3) Touch the virtual keyboard to enter the current date and time.

(4) After entering the date and time, touch the ENT key to confirm the entry.
   ⇒ When the setting is confirmed, OK appears below the entry column.
   If the date or time is entered incorrectly, touch the BS key (backspace key) to return to
   the character to be corrected.

(5) Touch the RETURN button.
   ⇒ The U-Utility screen appears.
7. Setting Configuration File

**NOTES**

- For the CSL type, perform menu editor setting.
  - "Appendix 8. Menu Editor Settings"
- For the CL connection type, perform CR Console (CR-IR348CL) connection.
  - "Appendix 9 Procedures for Connecting with CR Console (CR-IR348CL)"

In this chapter, it is assumed that configuration information is actually set with reference to the worksheets that were created in "3. Determination of Configuration Information."
- "3. Determination of Configuration Information"

Flow of Configuration File Setting

```
START

Is there any configuration file that has already been set? Is the machine a second or subsequent machine to be installed?

Y N

Install the configuration file

- 7.1 Installing Configuration File

Is it necessary to change the setup?

Y N

Edit the configuration file.

- 7.2 Editing Configuration File

Back up the configuration file.

- 7.3 Backing Up Configuration File

Reset

- 7.4 Resetting Machine

Reset the machine.

END
```
7.1 Installing Configuration File

Edit a setup file on a personal computer (PC) running on Windows 95, and install the file edited.

**CAUTIONS**

- When installing the setup file, be sure to match the following language settings (FNT) in “SYSTEM (IRSET.CFG)”.
  a) Language setting used when the setup file to be installed is saved
  b) Language setting for the machine to be installed

```
# IRSET.ORG/CFG
# IDT=1
#1: System Type
  # 0:CSL / 1:IDT
# FNT=0
#2:FONT(LANGUAGE)
  # 0:JPN / 1:ENG / 2:GER / 3:FRN / 4:ESP /
  # 5:ITA / 6:SWE / 7:FIN / 8:DEN / 9:NOR /
  # 10:KOR
  # 7:Not Available
  # 10:114Y5431030 (Korean Option) is necessary.
```

- Never power OFF the machine or press the FD eject button during file saving. The FD or FD drive may be damaged.
- Once a setup file is installed, be sure to reset the machine after exiting M-Utility.
- After installing the setup file, do not change the FNT (language setting) item of “SYSTEM (IRSET.CFG)”. Only one menu parameter can be saved in the machine. Thus, if the FMT (language setting) item is changed and then saved, the setup file contains the initial value for the new language changed, so that the setup file installed becomes invalid.
(1) Put a floppy disk (FD) containing the setup file into the FDD.
(2) Touch the U-Utility button.
  ➥ The screen switches to the U-Utility mode.
(3) Touch the upper left and upper right corners of the operation panel in sequence.
  ➥ M-Utility is activated.

NOTES: • For the IDT type, the "menu selecting icon" does not appear.
  • For the initial setting, the "Multiframe forced output" button will not appear.
  • The IDT type includes CR-IR348CL connection.

(4) Select “7. FILE UTILITY”.

NOTES: • For the IDT type, the "menu selecting icon" does not appear.
(5) Select “4. RESTORE” and “2. CONFIGURATION DATA” in sequence.

Of the setup files, the following files are saved from the floppy disk to the hard disk.

- SYSTEM (IRSET.CFG)
- PRINT (FILFMT.CFG)
- IRSTATUS (IRSTATUS.CFG)

**NOTE**

The menu parameters saved in the floppy disk also contain the language setting for the machine. Thus, if the language setting differs during RESTORE and during BACK UP, the file cannot be read during RESTORE.
(6) Select “4. RESTORE” “3. NETWORK DATA” and “1. YES” in sequence.

> 7

0. QUIT
1. FORMAT FD
2. FORMAT IMAGE PARTITION
3. BACK UP
4. RESTORE
5. EDR DATA
6. PREVIOUS SYSTEM SOFTWARE
7. EXECUTION
FUT> 4

0. QUIT
1. SCANNER DATA
2. CONFIGURATION DATA
3. NETWORK DATA
4. IMAGE PROCESSING DATA
5. CSL MENU DATA
FUT: RES> 3

➲ Of the setup files, the following files are saved from the floppy disk to the hard disk.

- REMOTE SWITCH (RMT_SW.CFG)
- EQUIPMENT (EQUIP)
- NETWORK HOST INTERFACE (DEVICE)
- HOSTS ADDRESS (HOSTS)
- DISTRIBUTION (CODEDSTB)
- ROUTING (ROUTE)
- NETMASKS (NETMASKS)
- DICOM (DICOM)

◆ NOTE ◆

The menu parameters saved in the floppy disk also contain the language setting for the machine. Thus, if the language setting differs during RESTORE and during BACK UP, the file cannot be read during RESTORE.

(7) Select “0. QUIT” repeatedly.
➲ The screen returns to the U-Utility mode.

(8) Press the RESET button.
➲ The machine is reset, so that the settings of the files installed become effective.
7.2 Editing Configuration Files

To set up a configuration file on the FCR5000R, use “2. CONFIGURATION SETTING” of M-Utility.

Referring to the worksheet, edit the configuration file in the order of menu hierarchy.

**Menu Hierarchy and Configuration Files**

2.CONFIGURATION SETTING : View or change the setting in the configuration file.

- 1.SYSTEM (IRSET.CFG) : Define overall setup information regarding the machine ............................... [3.1]
- 2.PRINT (FILMFMT.CFG) : Define setup information related to the film output format .............................. [3.2]
- 3.REMOTE SWITCH (RMT_SW.CFG) : Remote switch ON/OFF setting for the intelligent hub ........................ [3.3]
- 4.EQUIPMENT (EQUIP) : Define setup information related to units connected ........................................... [3.4]
- 5.LOCAL INTERFACE (INTERFACE) : Define setup information for communication requirements over serial line connection ................................. [3.5]
- 6.NETWORK HOST INTERFACE (DEVICE) : Define setup information for network-connected communication ........................................ [3.6]
- 7.HOSTS ADDRESS (HOSTS) : Set up the address for network connection ............................................. [3.7]
- 8.DISTRIBUTION (CODEDSTB) : Set up the distribution destination for network connection .................. [3.8]
- 9.ROUTING (ROUTE) : Set up the routing for network connection .......................................................... [3.9]
- 10.NETMASKS (NETMASKS) : Set up the subnet mask for network connection ....................................... [3.10]
- 11.DICOM (DICOM) : Base on DICOM.

**NOTE 1:** Titles in parentheses denote file names to be edited.
**NOTE 2:** Numerals in brackets denote relevant chapter in this manual.
How to Edit Each Setup File

A specific editing method is described below, using “SYSTEM : IRSET.CFG” by way of example.

◊ SUPPLEMENTARY NOTES◊

• “#” at the beginning of a sentence means that the sentence is a comment. A comment describes remarks, such as explanation about a setup item and choices of items.

<table>
<thead>
<tr>
<th>Comment</th>
<th>Setup item</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td># IRSET.ORG/CFG</td>
<td>IDT=1</td>
<td>#1.System Type</td>
</tr>
<tr>
<td>#</td>
<td></td>
<td># 0:CSL / 1:IDT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• “ø” represents a carriage return.

(1) Select “2. CONFIGURATION SETTING” and “1. SYSTEM”.

游击 The contents of SYSTEM (IRSET.CFG) are displayed.
(2) Touch the location to be edited.
   ➤ The cursor appears at the location touched.
   The cursor can be moved by touching the ↑, ↓, ←, or → key.

(3) Using a virtual keyboard, edit it.
   • Display a desired virtual keyboard for entry.
     Three types of virtual keyboards are available; by touching the ▲ or ▼ key, one of the
     three virtual keyboards can be selected. Also, by touching the Caps key, the caps
     mode can be toggled to the lower-cap display corresponding to the three types of
     virtual keyboards.
   • Using the [DEL] or [BS] key, modify the value.
     [DEL] key: Whenever it is touched once, a character immediately after (to the right
     of) the cursor is deleted.
     [BS] key: Whenever it is touched once, a character immediately before (to the left
     of) the cursor is deleted.

◊ SUPPLEMENTARY NOTE ◊
If you edited the file incorrectly and it is difficult to undo the editing with the [DEL] or [BS] key,
press the [CANCEL] key and repeat from step (1) all over again.

(4) Press the [SAVE] key.
   ➤ The edited contents are saved to the HD.

(5) Back up the configuration file that has been set up.
   ➤ “7.3 Backing Up Configuration File”

(6) Press the RESET button.
   ➤ The machine is reset so that the file that has been set up is effective.

◊ SUPPLEMENTARY NOTE ◊
If there is any other configuration item to be set up, do not press the RESET button. The
RESET button should be pressed after all the setups are finished.
7.3 Backing Up Configuration File

The configuration file that has been set is backed up.

**CAUTIONS**

- Never power OFF the machine or press the FD eject button during file backup. The FD or FD drive may be damaged.
- Once a setup file is edited, be sure to reset the machine after exiting M-Utility.

1. Put a backup floppy disk into the FDD.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left and upper right corners of the operation panel in sequence.
   - M-Utility is activated.

**NOTES:**
- For the IDT type, the "menu selecting icon" does not appear.
- For the initial setting, the "Multiframe forced output" button will not appear.
- The IDT type includes CR-IR348CL connection.
(4) Select “7. FILE UTILITY”.

(5) Select “3. BACK UP”, “2. CONFIGURATION DATA” and “1.YES” in sequence.

- Of the setup files, the following files are saved to the floppy disk:
  - SYSTEM (IRSET.CFG,IRSET.ORG)
  - PRINT (FILFMT.CFG,FILFMT.ORG)
  - IRSTATUS (IRSTATUS.CFG,IRSTATUS.ORG)

**NOTE**

The menu parameters saved in the floppy disk also contain the language setting for the machine. Thus, if the language setting differs during RESTORE and during BACK UP, the file cannot be read during RESTORE.
(6) Select “3. BACK UP”, “3. NETWORK DATA” and “1.YES” in sequence.

> 7
0. QUIT
1. FORMAT FD
2. FORMAT IMAGE PARTITION
3. BACK UP
4. RESTORE
5. EDR DATA
6. PREVIOUS SYSTEM SOFTWARE
7. EXECUTION
FUT> 3

Of the setup files, the following files are saved to the floppy disk.

- REMOTE SWITCH (RMT_SW.CFG)
- EQUIPMENT (EQUIP)
- NETWORK HOST INTERFACE (DEVICE)
- HOSTS ADDRESS (HOST)
- DISTRIBUTION (CODEDSTB)
- ROUTING (ROUTE)
- NETMASKS (NETMASKS)
- DICOM (DICOM)

◆ NOTE ◆

The menu parameters saved in the floppy disk also contain the language setting for the machine. Thus, if the language setting differs during RESTORE and during BACK UP, the file cannot be read during RESTORE.

(7) Select “0. QUIT” repeatedly.

 зрения The screen returns to the U-Utility mode.
7.4 Resetting Machine

In order to make changes to the configuration files effective, reset the machine.

Machine Resetting Procedures

1. Power OFF the machine.
2. Power ON the machine.
3. Make sure that the settings in the configuration files have been changed as appropriate.

See "7.2 Editing Configuration File"
8. **Final Installation and Checks**

Before the machine is delivered to the end user, final checks should be performed to ensure that the machine operates normally.

8.1 **Checking IP Conveyance in M-Utility**

Convey IPs of various sizes (five sizes with mammo type included; otherwise, four sizes) about ten times to ensure that no IP jam error occurs.

**Items Provided on Hand**

IP cassettes and IPs of various sizes (types)
- 14" x 14" (35cm x 35cm)
- 14" x 17" (35cm x 43cm)
- 10" x 12" (24cm x 30cm)
- 8" x 10" (18cm x 24cm)
- — (18cm x 24cm mammo) → needed only when the mammo type is used

**IP Conveyance Check**

1. Power ON the machine.
2. Touch the U-Utility button.
   - The screen switches to the U-Utility mode.
3. Touch the upper left corner and upper right corner of the operation panel in sequence.
   - M-Utility is activated.

**NOTES:**
- For the IDT type, the "menu selecting icon" does not appear.
- For the initial setting, the "Multiframe forced output" button will not appear.
- The IDT type includes CR-IR348CL connection.
(4) Select “3. TEST MODE”, “2. AUTO MODE”, and “2. READING & ERASURE” in sequence.

مخ: A message prompting you to enter the number of conveyances appears on screen.

(5) Set the number of IP conveyances to 10.

(6) Repeatedly select “0. QUIT” to exit M-Utility.

(7) Insert the following four types of cassettes (five if the mammo type is included) into any location of the shelf.

مخ: IP conveyance is started.

- 14” x 14” (35cm x 35cm)
- 14” x 17” (35cm x 43cm)
- 10” x 12” (24cm x 30cm)
- 8” x 10” (18cm x 24cm)
- — (18 cm x 24 cm mammo)

(8) Check the following checkpoints during IP conveyance.

- There is no offensive noise or odor from the machine.
- IPs are conveyed in order of cassettes inserted.
- The exhaust fan (FANF1) mounted on the erasure lamp assembly operates.

(9) After IP conveyance is completed, take out all the cassettes, and make sure that the IPs are free of any scratch.

(10) Change the shelf locations where the cassettes are inserted, and repeat steps (7) through (9).

مخ: When a total of ten IP conveyances are completed, the machine automatically stops.

(11) Take out the cassettes.

(12) Press the RESET button.

مخ: The machine restarts, and is then ready for routine operation.
(13) Touch the upper left and upper right corners of the operation panel in sequence.

.overflow
M-Utility is activated.

.overflow
(14) Select “3. TEST MODE” and “1. ROUTINE MODE” in sequence.

.overflow
(15) Repeatedly select “0. QUIT” to exit M-Utility.

.overflow
(16) Power OFF the machine.
8.2 Reinstalling Covers

**CAUTION**

Before installing the covers, make sure that the high-voltage switch of the SCN08A board is in the ON position.

1. Reinstall the covers.
   - For reinstallation of the covers, reverse the removal steps.
   - "4.2.1 Removal of Covers"
   - To reinstall the lower front cover, use the two screws (truss M4x12) supplied as separate packaged items.

2. Adjust the stack table locations.

3. Secure the I/F cable onto the lower rear cover with NK clamps.
   - When installing the lower rear cover, secure the I/F cable onto the lower rear cover with three screws (truss M4x20) and NK clamps supplied as separate packaged items. Choose one of the three types of NK clamps according to the thickness and number of I/F cables secured in place.

**NOTES**

- Be sure to secure the I/F cable onto the lower rear cover with NK clamps. If not, a line error for units connected may result.
- When fixing the NK clamps, be sure to use screws (truss M4x20) supplied as separate packaged items.

(4) Make sure that the covers have been installed securely and that there is no missing cover screws.
### 8.3 Final Placement

For final placement, there are two installation methods. One is to install the machine by securing it with the clamps that were removed at the time of unloading. The other is to install the machine without using such clamps. Check the space available for installation, and consult with the user about his wishes before choosing between the above two installation methods.

---

**CAUTION**

*In order to avoid electric shock hazards, power OFF the machine before performing any procedures.*

---

#### Installation Space Required for Final Placement

The space required for final placement differs depending on whether the machine is to be secured with the clamps or not.

![Diagram of installation space](image)

**Without clamps**

- Height: 1800 or more
- Front: 700 or more
- Rear: 200 or more
- Machine: 200 or more

**With clamps**

- Height: 1800 or more
- Front: 700 or more
- Rear: 700 or more
- Machine: 700 or more

**Unit:** mm

---

#### Procedure for installing the machine without the clamps

1. Secure necessary installation space around the machine.
2. Rotate the four adjustable feet of the machine by hand to bring them into contact with the floor.
3. Using a wrench, rotate the lower nut of the adjustable foot to adjust its height.
   - The four nuts should be rotated equally.
   - Adjust the amount of nut rotation so as to apply equal pressure to the four adjustable feet.

**NOTES**

- Lift up the machine until the casters are free to roll.
- Make sure that all the four adjustable feet are used.

4. Push the upper nut against the adjustable foot and secure it in place.
Procedure for installing the machine with the clamps

1. Loosen the clamp height adjustment screws.
2. Lower the upper nuts for the adjustable feet, and place the clamps between them.
3. Press the clamp anchor nut mount sections against the floor surface.
4. Mark the floor surface to indicate the clamp hole locations.

SUPPLEMENTARY NOTES

• If the rear clamps are not tightened by the adjustable foot nuts, the machine can be repositioned as needed for maintenance or like purposes simply by removing the two front clamps.
• If the rear of the machine cannot be provided with an adequate space for clamp installation, tighten the two front clamps only.
(5) Remove the clamps, and move the machine away.
Secure space for anchor nut embedding work.

(6) Embed the anchor nuts in the locations marked at step (4).

(7) Move the machine back to the installation location, and secure the earthquake protection members onto both the machine and anchor nuts.

(8) Tighten the height adjustment screws of the earthquake protection members.
8.4 Checks after Machine Startup

Make sure that the machine starts up normally and is ready for network communication.

(1) Make sure that the unit connected has been powered ON.

(2) Power ON the machine.

(3) Make sure that the machine starts up normally.

The screen of the operation panel with the machine started up normally is shown below.

Routine screen
(screen made to CSL specification)

NOTE: For the IDT type, the "menu selecting icon" does not appear.
8.5 Checking Interface Operation

(1) Provide on hand an ID card and an IP-containing cassette.
(2) Pass the ID card through the magnetic card reader of the IDT.  
    A screen prompting you to select an exposure region appears.
(3) Select an exposure region.
(4) Scan the barcode of the cassette with the barcode reader of the IDT.
(5) Put the cassette into the machine.
(6) Make sure that the ID information scanned at step (2) matches the ID information displayed on the machine.
(7) Verify that an image is normally outputted from the LP.
(8) Make sure that the ID information scanned at step (2) matches the ID information on the LP.
8.6 Checking Image and Adjusting Image Requirements

- Check for Ununiformity, Sensitivity, and Density

(1) Uniformly expose each IP of the following sizes at about 1 mR.
   Note that size values in parentheses should be applied when the metric type is used.
   • 14" x 14" (35cm x 35cm) or 14" x 17" (35cm x 43cm)
   • 10" x 12" (24cm x 30cm)
   • 8" x 10" (18cm x 24cm)
   The IP exposure conditions are as follows.
   • Distance: 1.8m
   • Voltage: 80kV
   • Amperage: 50mA
   • Time: 0.013sec

(2) Make recording in SENSITIVITY from the test menu of the IDT, and generate output.

(3) Make sure that the resulting image is free from ununiformity on the output film or display monitor.
   If any ununiformity is found, take remedial measures as appropriate.

   (4) Check the sensitivity and density.
   Make sure that the system sensitivity value displayed on the output film is approximately 200 and the film density is approximately 1.2. Also verify that there is no density variation in the main scanning direction.
   If anything abnormal is found, take remedial measures as appropriate.

   “3. Troubleshooting Procedures Based on Abnormal Images” in Troubleshooting


**Check for Jitters**

1. Place 15-cm steel rules on each IP of the following sizes as illustrated, and uniformly expose the IP at about 1 mR.
   - 14" x 14" (35cm x 35cm) or 14" x 17" (35cm x 43cm)
   - 10" x 12" (24cm x 30cm)
   - 8" x 10" (18cm x 24cm)

The IP exposure conditions are as follows.
- Distance: 1.8m
- Voltage: 80kV
- Amperage: 50mA
- Time: 0.013sec

   How to expose the steel rules is illustrated below.

   ![Steel rules on IP](image1)

2. Make recording in SENSITIVITY from the test menu of the IDT, and generate output.

3. Make sure that there is no jitter on the resulting image of the frame and steel rules on the output film.

   If any jitter is found, take remedial measures as appropriate.

   “3. Troubleshooting Procedures Based on Abnormal Images” in Troubleshooting
■ Check for Format

Make sure that the white blank is 2 mm or less, as actually measured on the IP, from the outermost edge of the image frame of the film outputted in “■ Check for jitters.” If the white blank exceeds 2mm or the reduction factor is improper, take remedial measures as appropriate.

“3. Troubleshooting Procedures Based on Abnormal Images” in Troubleshooting

The distance measured on the film may differ from the actual size measured on the IP, depending on the reading size. For example, for a two-in-one image of 14” x 14” (35cm x 35cm) size, because its reduction factor is 50%, the actual size on the IP is twice the distance measured on the film.

The relationship between the reading size and reduction factor is shown below.

<table>
<thead>
<tr>
<th>Reading size</th>
<th>Two-in-one image</th>
<th>Full image</th>
</tr>
</thead>
<tbody>
<tr>
<td>14” x 17” (35cm x 43cm)</td>
<td>1/2</td>
<td>2/3</td>
</tr>
<tr>
<td>14” x 14” (35cm x 35cm)</td>
<td>1/2</td>
<td>2/3</td>
</tr>
<tr>
<td>10” x 12” (24cm x 30cm)</td>
<td>2/3</td>
<td>1/1</td>
</tr>
<tr>
<td>8” x 10” (18cm x 24cm)</td>
<td>6/7</td>
<td>1/1</td>
</tr>
</tbody>
</table>
**Check for Output Characters**

Make sure that the contents of the film character format information that has been set in "2. CONFIGURATION SETTING" of M-Utility are indicated accurately on the film outputted in "Check for Jitters."

If anything abnormal is found with the output characters, take remedial measures as appropriate.

"3. Troubleshooting Procedures Based on Abnormal Images" in Troubleshooting

**Normal two-image output characters**

![Diagram of normal two-image output characters]

- Above the image area
  - a: Hospital name (institution name)
  - b: IP number
  - c: EDR mode and menu code
  - d: System ID and image number

- Below the image area
  - e: Image processing conditions
  - f: Exposure menu name
  - g: Standardization conditions and amendments
  - h: Engineer code and exposure table information
  - i: Department name
  - j: Patient ID
  - k: Patient name (Kana)
  - l: Patient name (Kanji)
  - m: Exposure date and time
  - n: Film mark
  - o: Sex
  - p: Age or birth date
  - q: Image reduction ratio
  - r: Set processing information
  - s: Left-right reversal mark (R)
  - t: Data compression code
  - u: PEM information or Ene.-Sub./superposition information

**Other image output patterns and character display areas**

**SUPPLEMENTARY NOTE**

The output characters indicated in the character display areas (A and B) are variously laid out depending on the employed output pattern.
14" x 17"/8" x 10" four-image output

Four-image output of a size other than 14" x 17"/8" x 10"

18 x 43 (long) two-image output (B4LP)

18 x 43 (long) two-image output (14" x 17"LP)
8.7 Checking and Deleting Error Logs That Occur during Setup

■ Procedures for Checking Error Log

(1) Power ON the machine.
(2) Touch the U-Utility button.
  ➥ The screen switches to the U-Utility mode.
(3) Touch the upper left corner and upper right corner of the operation panel in sequence.
  ➥ M-Utility is activated.
(4) Select “1. ERROR LOG UTILITY” and “1. LIST” in sequence.
(5) Designate the format for the error log to be displayed on the screen.
  One of the following may be selected for the type of error messages to be outputted:
  “Error Messages Only”, “Warning Messages Only”, and “All Messages”. For the type of
  error messages designated, one of the following options can be selected.
  • ALL
    Displays all the generated errors messages in order from the newest to the oldest.
    This option displays all the error messages even if the same error messages have
    been generated a number of times.
  • SUMMARY
    Error messages generated are displayed according to the error code. Error mes-
    sages and their count (four digits) are displayed.

■ Procedures for Deleting Error Log

(1) Select “0. QUIT”.
(2) Select “1. ERROR LOG UTILITY” and “2. CLEAR” in sequence.
(3) Select “1. ERROR LOG”.
  ➥ All the error logs are deleted.
8.8 Checking Machine Shutdown

Check for System Remote-OFF Function
Make sure that when the power switch of the operation panel is turned OFF, the machine and external unit (image monitor) connected to it powers OFF normally.
8.9 Cleaning Covers

Clean all the covers with a moistened cloth.
8.10 Attachment of Labels

Referring to the dimensional values for attachment locations illustrated below, attach the labels, supplied as separated packaged items.

- Exposure markers precaution label: 1
- Cassette precaution label: 1
- Cassette number label (1–4): each 1
- Arrow indication label: 4
- MCR label (for CSL type only): 2 (JIS and ISO)

Be sure to remove all exposure markers before inserting the cassette.
## Appendix 1. Worksheet for Determination of System Configuration

Date Set ________________

Prepared By ________________

### Printer and DMS Connected

- Model name, software version, and connection method of printer

- Model name, software version, and connection method of DMS

### IDT-IV or CR-IR348CL and CPU Board

- Board connected to IDT-IV
  - CPU90E
  - CPU90F

- When IDT-IV is connected to CPU90E
  - DMS is connected to the DMC08A board.
  - DMS is connected to the CPU90F board over 100BASE-TX.

- When IDT-IV is connected to CPU90F/LAN90B
  - DMS is connected to the CPU90F board over 10BASE-T.
  - DMS is connected to the CPU90F board over 100BASE-T.
  - IDT-IV and DMS are connected to the CPU90F board through a 100M/10M

- When CR-IR348CL is connected to LAN90B
  - The CR-IR348CL is connected to the LAN90B board over 100BASE-TX.

### IDT Type and CSL Type

- IDT Type
- CSL Type
Appendix 2. For Determination of Configuration Information

Date Set
Prepared By ___________

Referring to “3. Determination of Configuration Information,” enter the setting of the machine to be installed in “□” below.
During installation procedures, perform configuration setup with reference to this worksheet.

Appendix 2.1 SYSTEM (IRSET.CFG)

“3.1.1 List of SYSTEM (IRSET.CFG) Setup Items”

<table>
<thead>
<tr>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
</tr>
<tr>
<td># IRSET.ORG/CFG</td>
</tr>
<tr>
<td>#</td>
</tr>
<tr>
<td>IDT=□</td>
</tr>
<tr>
<td>#1.System Type</td>
</tr>
<tr>
<td># 0:CSL / 1:IDT</td>
</tr>
<tr>
<td>FNT=□ :...:</td>
</tr>
<tr>
<td>#2.FONT(LANGUAGE)</td>
</tr>
<tr>
<td># 0:JPN / 1:ENG / 2:GER / 3:FRN / 4:ESP /</td>
</tr>
<tr>
<td># 5:ITA / 6:SWE / 7:FIN / 8:DEN / 9:NOR /</td>
</tr>
<tr>
<td># 10:KOR</td>
</tr>
<tr>
<td># Note:</td>
</tr>
<tr>
<td># 10:114Y5431030(Korean Option) is necessary.</td>
</tr>
<tr>
<td>IPS=□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</td>
</tr>
<tr>
<td>#3.IP Address(CPU90E)  (Length=15) 172.16.0.1</td>
</tr>
<tr>
<td>IPI=□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</td>
</tr>
<tr>
<td>#4.IP Address(CPU90F)  (Length=15) 172.16.0.2</td>
</tr>
<tr>
<td>ILA=□</td>
</tr>
<tr>
<td>#5.IDT Network Port</td>
</tr>
<tr>
<td># 0:CPU90E / 1:CPU90F</td>
</tr>
</tbody>
</table>
**SCD="D1"**

#6. System Code (Length=2)

<table>
<thead>
<tr>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
</tr>
</tbody>
</table>

* Change not permitted

**SMJ="5000 "**

#7. System Name (Length=6)

<table>
<thead>
<tr>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000</td>
</tr>
</tbody>
</table>

* Change not permitted

**SID="_"**

#8. System ID (Length=1)

<table>
<thead>
<tr>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

**SFC=**

#9. Manual Sensitivity Setting (CSL Type)

<table>
<thead>
<tr>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

0: (OFF)

1: Standard, Semi-High-Speed

2: Standard, Semi-High-Speed, High-Speed

**SFD=**

#10. Manual Sensitivity Default (CSL Type)

<table>
<thead>
<tr>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

0: Standard

1: Semi-High-Speed

2: High-Speed

3: (Depend on menu default=Memory)

# Note:

<table>
<thead>
<tr>
<th>SFC</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>1</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>CONTENTS</td>
<td>Initial value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LGR=, #11.Logical Reading(CSL Type) 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0:OFF / 1:ON</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># Note:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># IP is read after ID is confirmed when LGR is set 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># (The monitor image is not displayed until ID is confirmed).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XRY=, #12.OverXray Flag 0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0:LOG &amp; MESSAGE / 1:LOG ONLY / 2:NONE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U_MF=, #13.User UTL Multi-Frame Button Control 0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0:OFF / 1:ON</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS1=, #14.Screen Save Timer 5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0-60[min]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITV=, #15.Time put at each image store for accept reprinting (E-IF) 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0-60[sec]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPS=, #16.The number of sheets of continues image store (E-IF) 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0-10[sheet]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID_EDR=, #17.Edr Mode Variation(CSL Type) 0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0:AUTO,SEMI,FIX</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># 1:AUTO,SEMI,FIX,SEMI-X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># 2:AUTO,SEMI,FIX,SEMI-X,MANUAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID_FILING=, #18.Filing Mode 0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0:DISABLE / 1:OFF,ON / 2:OFF,ON*,ON</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID_FUNC=</td>
<td>Initial value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#19. Function Setting (CSL Type)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td># 0:DISABLE / 1:ENABLE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID_FILMC=</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#20. Film Letter (CSL Type)</td>
<td>0</td>
</tr>
<tr>
<td># 0:OFF / 1:ON</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID_BIRTH=</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#21. Birthday Format (CSL Type)</td>
<td>2</td>
</tr>
<tr>
<td># 0:JAPANESE DATE (H10.04.01)</td>
<td></td>
</tr>
<tr>
<td># 1:ANSI LONG DATE (1998.APR.01)</td>
<td></td>
</tr>
<tr>
<td># 2:ANSI SHORT DATE (1998.04.01)</td>
<td></td>
</tr>
<tr>
<td># 3:AMERICAN LONG DATE (APR.04.1998)</td>
<td></td>
</tr>
<tr>
<td># 4:AMERICAN SHORT DATE (04.01.1998)</td>
<td></td>
</tr>
<tr>
<td># 5:EUROPEAN LONG DATE (01.APR.1998)</td>
<td></td>
</tr>
<tr>
<td># 6:EUROPEAN SHORT DATE (01.04.1998)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID_SEARCH=</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#22. Search Key (CSL Type)</td>
<td>0</td>
</tr>
<tr>
<td># 0:ID# / 1:ID#,RECEPT# / 2:ID#,EXAM# /</td>
<td></td>
</tr>
<tr>
<td># 3:ID#,RECEPT#,EXAM#</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID_LENGTH=</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#23. Patient’s ID Length (CSL Type)</td>
<td>10</td>
</tr>
<tr>
<td># 1-10:ID_INFO_TYPE=0</td>
<td></td>
</tr>
<tr>
<td># 1-64:ID_INFO_TYPE=1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID_PADDING=</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#24. Patient’s ID Padding method (CSL Type)</td>
<td>0</td>
</tr>
<tr>
<td># 0:Pad with space to the head (Ex.” 1234567”)</td>
<td></td>
</tr>
<tr>
<td># 1:Pad with zero to the head (Ex.”0001234567”)</td>
<td></td>
</tr>
<tr>
<td># 2:Pad with space to the tail (Ex.”1234567”)</td>
<td></td>
</tr>
<tr>
<td># 3:Pad with zero to the tail (Ex.”1234567000”)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RECEIPT_LENGTH=</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#25. Reception No. Length (CSL Type)</td>
<td>5</td>
</tr>
<tr>
<td># 1-5:ID_INFO_TYPE=0</td>
<td></td>
</tr>
<tr>
<td># 1-16:ID_INFO_TYPE=1</td>
<td></td>
</tr>
<tr>
<td>CONTENTS</td>
<td>1</td>
</tr>
<tr>
<td>----------</td>
<td>---</td>
</tr>
<tr>
<td>IN_A2 - 5</td>
<td></td>
</tr>
</tbody>
</table>

**RECEPT_PADDING=**

#26.Reception No. Padding method (CSL Type)

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Pad with space to the head (Ex.&quot;  123&quot;)</td>
</tr>
<tr>
<td>1</td>
<td>Pad with zero to the head (Ex.&quot;00123&quot;)</td>
</tr>
<tr>
<td>2</td>
<td>Pad with space to the tail (Ex.&quot;123  &quot;)</td>
</tr>
<tr>
<td>3</td>
<td>Pad with zero to the tail (Ex.&quot;12300&quot;)</td>
</tr>
</tbody>
</table>

**EXAM_LENGTH=**

#27.Examination No. Length (CSL Type)

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>ID_INFO_TYPE=0</td>
</tr>
<tr>
<td>1-16</td>
<td>ID_INFO_TYPE=1</td>
</tr>
</tbody>
</table>

**EXAM_PADDING=**

#28.Examination No. Padding method (CSL Type)

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Pad with space to the head (Ex.&quot;   1234567&quot;)</td>
</tr>
<tr>
<td>1</td>
<td>Pad with zero to the head (Ex.&quot;0001234567&quot;)</td>
</tr>
<tr>
<td>2</td>
<td>Pad with space to the tail (Ex.&quot;1234567   &quot;)</td>
</tr>
<tr>
<td>3</td>
<td>Pad with zero to the tail (Ex.&quot;1234567000&quot;)</td>
</tr>
</tbody>
</table>

**IFT=0**

#29.Reserve

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserve</td>
</tr>
</tbody>
</table>

* Change not necessary

**PRO=**

#30.Function Protect

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NONE</td>
</tr>
<tr>
<td>1</td>
<td>TS</td>
</tr>
<tr>
<td>2</td>
<td>ES</td>
</tr>
<tr>
<td>3</td>
<td>MS</td>
</tr>
<tr>
<td>4</td>
<td>MX</td>
</tr>
<tr>
<td>5</td>
<td>WS</td>
</tr>
<tr>
<td>6</td>
<td>PS</td>
</tr>
<tr>
<td>7</td>
<td>TM</td>
</tr>
<tr>
<td>8</td>
<td>TX</td>
</tr>
<tr>
<td>9</td>
<td>WX</td>
</tr>
<tr>
<td>10</td>
<td>EX</td>
</tr>
<tr>
<td>11</td>
<td>AS</td>
</tr>
<tr>
<td>99</td>
<td>ALL</td>
</tr>
</tbody>
</table>

**SF1=50**

#31.Read Sensitivity Semi-h

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-299</td>
<td></td>
</tr>
</tbody>
</table>

* Change not necessary

**SF2=100**

#32.Read Sensitivity High

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-299</td>
<td></td>
</tr>
</tbody>
</table>

* Change not necessary
## GRP=0

Initial value

- #33. Film Sorting Group Code
  - 0: None
  - 1: Space (2) + Dep. Code (8)
  - 2: Dep. Code (4) + Menu Name (6)
  - 3: Dep. Code (4) + Film Char 1 (6)
  - 4: FCR Image ID (1) + Space (9)
  - 5: Space (4) + MPM Code (4) + Space (2)
  - 6: Space (4) + Film Char 1 (6)
  - 7: Dep. Code (4) + MPM Code (4) + Space (2)

* (3, 6; Not Available for HIC655, HIC655QA, QA-WS771 store/reprint)

---

## PTR=0

Initial value

- #34. Film Char 1/Menu Name Start Pointer
  - 0

---

## UNQ=0

Initial value

- #35. Film Sort Unique Code
  - 0: SPACE / 1: ID#

* (1: Not Available for HIC655, HIC655QA, QA-WS771 store/reprint)

---

## PCD=

Initial value

- #36. I/F Pixel Clock Rate for DMS
  - 0: 1 usec / 1: 2 usec

---

## PCL=

Initial value

- #37. I/F Pixel Clock Rate for LP
  - 0: 1 usec (<60m) / 1: 2 usec (>60m)

---

## CIM=

Initial value

- #38. IP Size Code Setting
  - 0: INCH / 1: METRIC

---

## EBK=

Initial value

- #39. EDR Backup Flag
  - 0: OFF / 1: MENU / 2: FULL
<table>
<thead>
<tr>
<th>Initial Value</th>
<th>EBA=&quot;&quot;</th>
<th>#40. EDR Backup Server Address (Length=15)</th>
<th>. . .</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EM1=&quot;&quot;</td>
<td>#41. EDR Backup Menu Code (Length=4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EM2=&quot;&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EM3=&quot;&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EM4=&quot;&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EM5=&quot;&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U_IP=</td>
<td></td>
<td>#42. The following buttons &amp; icon control(for OEM)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># - &quot;SELECT PRINTER&quot;(User UTL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># - &quot;DELETE PRINTING IMAGES(S)&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># of &quot;DELETE WAITING IMAGES&quot;(User UTL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># - &quot;The number of sheets of print&quot; icon</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># of &quot;REOUTPUT IMAGE&quot;(User UTL) and Manual EDR.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>#                                     1</td>
<td></td>
</tr>
<tr>
<td>ID_AP=</td>
<td></td>
<td>#43. Image Reversal Mode Variation(CSL Type)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># 0: L-R reversal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># 1: T-B reversal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># 2: L-R, T-B reversal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># 3: L-R reversal / 90-deg, Rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># 4: L-R, T-B reversal / 90-deg, Rotation</td>
<td></td>
</tr>
<tr>
<td>ID_DST=</td>
<td></td>
<td>#44. Distribution Code Setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td># 0: DISABLE / 1: ENABLE</td>
<td></td>
</tr>
<tr>
<td>CONTENTS</td>
<td>\n</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Initial value</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**UID_STI=**

#45. UID Issuance Type

<table>
<thead>
<tr>
<th>#</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>3</td>
</tr>
<tr>
<td>0:</td>
<td>(IDT Type)</td>
</tr>
<tr>
<td>0:</td>
<td>&lt;org root&gt;.2.0.&lt;Private Image UID’&gt;</td>
</tr>
<tr>
<td>0:</td>
<td>&lt;Mac Address&gt;.&lt;Time Stamp&gt;.&lt;Unique ID&gt;</td>
</tr>
<tr>
<td>1:</td>
<td>(CSL Type)</td>
</tr>
<tr>
<td>2:</td>
<td>&lt;Accession Number’&gt;</td>
</tr>
<tr>
<td>2:</td>
<td>&lt;Study Date + Modarity(CR)&gt;</td>
</tr>
<tr>
<td>3:</td>
<td>&lt;Accession Number’&gt;</td>
</tr>
<tr>
<td>3:</td>
<td>&lt;Study Date + Modarity(CR)&gt;</td>
</tr>
<tr>
<td>4:</td>
<td>&lt;Accession Number’&gt;</td>
</tr>
<tr>
<td>4:</td>
<td>&lt;Study Date&gt;</td>
</tr>
<tr>
<td>4:</td>
<td>&lt;Patient ID’2&gt;</td>
</tr>
<tr>
<td>4:</td>
<td>&lt;Requesting Service’&gt;</td>
</tr>
</tbody>
</table>

#Note:

(1)<org root>1.2.392.200036.9125

(2) When Study Date cannot be acquired, Acquisition Date is used.

**DEF_DENSITY=**

#46. Image Density Device Default

<table>
<thead>
<tr>
<th>#</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>Standard Density</td>
</tr>
<tr>
<td>1:</td>
<td>High Quality Density</td>
</tr>
</tbody>
</table>

**JSTFY”**

#47. Right/Left justify of long character type.

<table>
<thead>
<tr>
<th>#</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>Left Justify / 1: Right Justify</td>
</tr>
<tr>
<td>a:</td>
<td>Patient ID</td>
</tr>
<tr>
<td>b:</td>
<td>Patient’s Name</td>
</tr>
<tr>
<td>c:</td>
<td>Menu Name</td>
</tr>
<tr>
<td>d:</td>
<td>Examination Number</td>
</tr>
<tr>
<td>e:</td>
<td>Department Name</td>
</tr>
<tr>
<td>f-l:</td>
<td>Reserved(default: Left)</td>
</tr>
<tr>
<td>m-p:</td>
<td>Reserved(default: Right)</td>
</tr>
</tbody>
</table>

**HQ_FUNC=**

#48. HQ Function Setting

<table>
<thead>
<tr>
<th>#</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>DISABLE / 1: ENABLE</td>
</tr>
<tr>
<td>CONTENTS</td>
<td>In_A2 - 9</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>DRC_FUNC</strong></th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#49.DRC Function Setting</td>
<td>1</td>
</tr>
<tr>
<td>0:DISABLE / 1:ENABLE</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ID_INFO_TYPE</strong></th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#50.ID info. type(CSL Type)</td>
<td>0</td>
</tr>
<tr>
<td>0:Stand. / 1:Long</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ID_CODE_SET</strong></th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#51.ID info.code set</td>
<td>0</td>
</tr>
<tr>
<td>(CSL Type:Magnetic Card / ID-ONLINE)</td>
<td></td>
</tr>
<tr>
<td>0:CP850 / 1:ISO8859-1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SSS</strong></th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#52.Select Screen Save Display</td>
<td>0</td>
</tr>
<tr>
<td>0:Black Screen</td>
<td></td>
</tr>
<tr>
<td>1:Pictures</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>DST_PADDING</strong></th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#53.Distribution Code Padding method</td>
<td>2</td>
</tr>
<tr>
<td>0:Pad with space to the head (Ex.&quot;    1234&quot;)</td>
<td></td>
</tr>
<tr>
<td>1:Pad with zero to the head (Ex.&quot;00001234&quot;)</td>
<td></td>
</tr>
<tr>
<td>2:Pad with space to the tail (Ex.&quot;1234    &quot;)</td>
<td></td>
</tr>
<tr>
<td>3:Pad with zero to the tail (Ex.&quot;12340000&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ENV</strong></th>
<th>&quot;CR-IR341&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>#54.Equipment name for version display.</td>
<td>(Max 9 character)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ID_RET</strong></th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#55.Select retrieve key input timing</td>
<td>0</td>
</tr>
<tr>
<td>0:Whenever you set a cassette.</td>
<td></td>
</tr>
<tr>
<td>1:When you need to change patient info.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>UID</strong></th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#56.UID Issuance</td>
<td>0</td>
</tr>
<tr>
<td>Whether study and series information is to be issued by IR or not.</td>
<td></td>
</tr>
<tr>
<td>0:OFF</td>
<td></td>
</tr>
<tr>
<td>1:ON</td>
<td></td>
</tr>
</tbody>
</table>
### Initial value

<table>
<thead>
<tr>
<th>EXAM=</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>#57. Examination Number Field</td>
<td></td>
</tr>
<tr>
<td># Which data is to be handled as an examination number.</td>
<td></td>
</tr>
<tr>
<td># 0: Examination Number</td>
<td></td>
</tr>
<tr>
<td># 1: Reception Number</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L2430=</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>#58. Logical reading (15cm<em>30cm size) of 24cm</em>30cm IP</td>
<td></td>
</tr>
<tr>
<td># If you select panoramic-tomo menu, logical reading is enable.</td>
<td></td>
</tr>
<tr>
<td># 0: OFF</td>
<td></td>
</tr>
<tr>
<td># 1: ON</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID_EXAM=</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>#59. Examination No. Display Mode (CSL Type)</td>
<td></td>
</tr>
<tr>
<td># 0: NO DISPLAY AND INPUT</td>
<td></td>
</tr>
<tr>
<td># 1: DISPLAY AND INPUT</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID_DEPT=</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>#60. Department Name Display Mode (CSL Type)</td>
<td></td>
</tr>
<tr>
<td># 0: NO DISPLAY AND INPUT</td>
<td></td>
</tr>
<tr>
<td># 1: DISPLAY AND INPUT</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPT_LENGTH=</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>#61. Department Name Length (CSL Type)</td>
<td></td>
</tr>
<tr>
<td># 1-8: ID_INFO_TYPE=0</td>
<td></td>
</tr>
<tr>
<td># 1-64: ID_INFO_TYPE=1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MES_LENGTH=</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>#62. Maximum Text Length for On-line Connection (CSL Type)</td>
<td></td>
</tr>
<tr>
<td># 0: 128byte (Include STX, ETX, ETB and BCC)</td>
<td></td>
</tr>
<tr>
<td># 1: 256byte (Include STX, ETX, ETB and BCC)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SCS=</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>#63. Select specific character to be set. This setting is valid if you select FNT=1 (English).</td>
<td></td>
</tr>
<tr>
<td># 0: ISO-IR 6</td>
<td></td>
</tr>
<tr>
<td># 1: ISO-IR 100</td>
<td></td>
</tr>
</tbody>
</table>
**PN_CS=**

#64. CONVERSION OF PATIENT NAME

This setting is whether patient name is converted from FINP data to DICOM VR or not.

# 0: Not converted
# 1: Converted

**PN_FDS=**

#65. FINP COMPONENT DELIMITER FOR SINGLE BYTE REPRESENTATION

# 0: Space " "
# 1: Caret "^^"
# 2: Comma ",,"

**PN_FDM=**

#66. FINP COMPONENT DELIMITER FOR MULTI BYTE REPRESENTATION

# 0: Space " "
# 1: Caret "^^"
# 2: Comma ",,"

**PN_FCS1=**

#67. FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION

This definition is used, when the FINP data contains 1 component.

# F: Family name
# G: Given name
# M: Middle name
# P: Prefix
# S: Suffix

Initial value

0

Note:
Multi byte representation is limited in Japanese (JIS X 0208).
## PN_FCS2=

```
#68.FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
#This definition is used, when the FINP data
#   contains 2 components.
#   F:Family name
#   G:Given name
#   M:Middle name
#   P:Prefix
#   S:Suffix
```

## PN_FCS3=

```
#69.FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
#This definition is used, when the FINP data
#   contains 3 components.
#   F:Family name
#   G:Given name
#   M:Middle name
#   P:Prefix
#   S:Suffix
```

## PN_FCS4=

```
#70.FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
#This definition is used, when the FINP data
#   contains 4 components.
#   F:Family name
#   G:Given name
#   M:Middle name
#   P:Prefix
#   S:Suffix
```

## PN_FCS5=

```
#71.FINP COMPOSITION FOR SINGLE BYTE REPRESENTATION
#This definition is used, when the FINP data
#   contains 5 components.
#   F:Family name
#   G:Given name
#   M:Middle name
#   P:Prefix
#   S:Suffix
```
<table>
<thead>
<tr>
<th>PN_FCM1=&quot;&quot;,.&quot;1&quot;</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#72.FINP COMPOSITION FOR MULTI BYTE REPRESENTATION &quot;F&quot;</td>
<td></td>
</tr>
<tr>
<td>#This definition is used, when the FINP data contains 1 component.</td>
<td></td>
</tr>
<tr>
<td># F:Family name</td>
<td></td>
</tr>
<tr>
<td># G:Given name</td>
<td></td>
</tr>
<tr>
<td># M:Middle name</td>
<td></td>
</tr>
<tr>
<td># P:Prefix</td>
<td></td>
</tr>
<tr>
<td># S:Suffix</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PN_FCM2=&quot;&quot;,.&quot;2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>#73.FINP COMPOSITION FOR MULTI BYTE REPRESENTATION &quot;FG&quot;</td>
</tr>
<tr>
<td>#This definition is used, when the FINP data contains 2 components.</td>
</tr>
<tr>
<td># F:Family name</td>
</tr>
<tr>
<td># G:Given name</td>
</tr>
<tr>
<td># M:Middle name</td>
</tr>
<tr>
<td># P:Prefix</td>
</tr>
<tr>
<td># S:Suffix</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PN_FCM3=&quot;&quot;,.&quot;3&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>#74.FINP COMPOSITION FOR MULTI BYTE REPRESENTATION &quot;FGM&quot;</td>
</tr>
<tr>
<td>#This definition is used, when the FINP data contains 3 components.</td>
</tr>
<tr>
<td># F:Family name</td>
</tr>
<tr>
<td># G:Given name</td>
</tr>
<tr>
<td># M:Middle name</td>
</tr>
<tr>
<td># P:Prefix</td>
</tr>
<tr>
<td># S:Suffix</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PN_FCM4=&quot;&quot;,.&quot;4&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>#75.FINP COMPOSITION FOR MULTI BYTE REPRESENTATION &quot;FGMPS&quot;</td>
</tr>
<tr>
<td>#This definition is used, when the FINP data contains 4 components.</td>
</tr>
<tr>
<td># F:Family name</td>
</tr>
<tr>
<td># G:Given name</td>
</tr>
<tr>
<td># M:Middle name</td>
</tr>
<tr>
<td># P:Prefix</td>
</tr>
<tr>
<td># S:Suffix</td>
</tr>
</tbody>
</table>
**Initial value**

**PN_FCM5=** ”"

#76.FINP COMPOSITION FOR MULTI BYTE REPRESENTATION

This definition is used, when the FINP data contains 5 components.

# F:Family name
# G:Given name
# M:Middle name
# P:Prefix
# S:Suffix

**PN_DD=**

#77.DICOM COMPONENT DELIMITER

# 0:Space " "
# 1:Caret "^^"
# 2:Comma ","

**PN_DC=** ”"

#78.DICOM COMPOSITION

# F:Family name
# G:Given name
# M:Middle name
# P:Prefix
# S:Suffix

**MON=**

#79.display type on CRT monitor

# 0:Type1
# 1:Type2

**BCR=**

#80.BCR TYPE

Select a correct BCR

# 0:BCR5242-STB(DENSEI)
# 1:NFT7175/F01RL(OPTOELECTRONICS)

**LIM810=**

#81.8*10/18*24 single format output film

# 0:any / 1:only 8*10

**FLMW=**

#82.Film size confirm window open

# 0:No / 1:Yes

#end of file
### Appendix 2.2 PRINT (FILMFMT.CFG)

> **“3.2.1 List of PRINT (FILMFMT.CFG) Setup Items”**

<table>
<thead>
<tr>
<th>#</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF=</td>
<td>1</td>
</tr>
<tr>
<td>EF=</td>
<td>1</td>
</tr>
<tr>
<td>IF=</td>
<td>1</td>
</tr>
<tr>
<td>CF=</td>
<td>1</td>
</tr>
<tr>
<td>ET=</td>
<td>1</td>
</tr>
<tr>
<td>HN=</td>
<td>FUJI FILM HOSPITAL</td>
</tr>
<tr>
<td>HP=</td>
<td>9578 8E6D 8374 8343 838B 8380 9561 8940 8140 8140 8140 8140 8140 8140 8140 8140</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GF=</td>
<td>#8. Print set process</td>
</tr>
<tr>
<td></td>
<td># 0: No / 1: Yes</td>
</tr>
<tr>
<td>GJ=</td>
<td>#9. Print engineer ID</td>
</tr>
<tr>
<td></td>
<td># 0: No / 1: Yes</td>
</tr>
<tr>
<td>MF=</td>
<td>#10. Print menu</td>
</tr>
<tr>
<td></td>
<td># 0: No / 1: Yes</td>
</tr>
<tr>
<td>A1=</td>
<td>#11. Maximum age of monthly representation</td>
</tr>
<tr>
<td></td>
<td># 0-99</td>
</tr>
<tr>
<td>A2=</td>
<td>#12. Maximum age of daily representation</td>
</tr>
<tr>
<td></td>
<td># 0-12</td>
</tr>
<tr>
<td>TH=</td>
<td>#13. Trimming (mammo)</td>
</tr>
<tr>
<td></td>
<td># 0-25 (mm)</td>
</tr>
<tr>
<td>TE=</td>
<td>#14. Trimming (others)</td>
</tr>
<tr>
<td></td>
<td># 0-25 (mm)</td>
</tr>
<tr>
<td>CL=</td>
<td>#15. Representation of date</td>
</tr>
<tr>
<td></td>
<td># 0: Japanese / 1: ANSI Long / 2: ANSI Short / 3: American Long / 4: American Short / 5: European Long / 6: European Short</td>
</tr>
<tr>
<td>AB=</td>
<td>#16. Representation of age</td>
</tr>
<tr>
<td></td>
<td># 0: Age / 1: Date of birth</td>
</tr>
<tr>
<td>CONTENTS</td>
<td>Initial value</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
</tr>
<tr>
<td>FR1=</td>
<td></td>
</tr>
<tr>
<td>#17.Print image frame</td>
<td>0</td>
</tr>
<tr>
<td>#(14<em>17 film:14</em>17,14<em>14,18</em>43 Single format</td>
<td>0</td>
</tr>
<tr>
<td># 14<em>14 film:14</em>14 Single format</td>
<td>0</td>
</tr>
<tr>
<td># 8<em>10 film:8</em>10 Single format</td>
<td>0</td>
</tr>
<tr>
<td># 0:No / 1:Yes</td>
<td></td>
</tr>
<tr>
<td>FR2=</td>
<td></td>
</tr>
<tr>
<td>#18.Print image frame</td>
<td>0</td>
</tr>
<tr>
<td>#(14<em>17 film:18</em>43 LR/2on1 format</td>
<td>0</td>
</tr>
<tr>
<td># 0:No / 1:Yes</td>
<td></td>
</tr>
<tr>
<td>FR4=</td>
<td></td>
</tr>
<tr>
<td>#19.Print image frame</td>
<td>0</td>
</tr>
<tr>
<td>#(14<em>17 film:14</em>17,18<em>43,8</em>10 4on1 format</td>
<td>0</td>
</tr>
<tr>
<td># 0:No / 1:Yes</td>
<td></td>
</tr>
<tr>
<td>CR=</td>
<td></td>
</tr>
<tr>
<td>#20.Print compression rate</td>
<td>0</td>
</tr>
<tr>
<td># 0:No / 1:Yes</td>
<td></td>
</tr>
<tr>
<td>MM=</td>
<td></td>
</tr>
<tr>
<td>#21.Margin</td>
<td>0</td>
</tr>
<tr>
<td># 0:Margin depend on image ID (default:Transparent</td>
<td>0</td>
</tr>
<tr>
<td># 1:Margin depend on image ID(default:Black</td>
<td>0</td>
</tr>
<tr>
<td># 2:Transparent Margin(Fix</td>
<td>0</td>
</tr>
<tr>
<td># 3:Black Margin(Fix</td>
<td>0</td>
</tr>
<tr>
<td>SG=</td>
<td></td>
</tr>
<tr>
<td>#22.Print standard image on 14<em>17, 14</em>14 film like HQ Image</td>
<td>0</td>
</tr>
<tr>
<td># 0:NO / 1:YES(Magnify</td>
<td>0</td>
</tr>
<tr>
<td>HG=</td>
<td></td>
</tr>
<tr>
<td>#23.Size selection of 14<em>17, 14</em>14 film character</td>
<td>0</td>
</tr>
<tr>
<td>(single format</td>
<td>0</td>
</tr>
<tr>
<td># 0:Standard / 1:Large</td>
<td>0</td>
</tr>
<tr>
<td>CONTENTS</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>OS=</td>
<td>Initial value</td>
</tr>
<tr>
<td>#24.DR compression in reprint</td>
<td>0</td>
</tr>
<tr>
<td># 0:Depending on image information</td>
<td></td>
</tr>
<tr>
<td># 1:Depending on system setting</td>
<td></td>
</tr>
<tr>
<td># (1:Not Available)</td>
<td></td>
</tr>
<tr>
<td>RF=</td>
<td>2</td>
</tr>
<tr>
<td>#25.Print reverse mark</td>
<td></td>
</tr>
<tr>
<td># 0:No</td>
<td></td>
</tr>
<tr>
<td># 1:Yes(&quot; or &quot;R-reverse&quot;)</td>
<td></td>
</tr>
<tr>
<td># 2:Yes(&quot;AP&quot; or &quot;PA&quot;)</td>
<td></td>
</tr>
<tr>
<td>CE=</td>
<td>0</td>
</tr>
<tr>
<td>#26.Print 14<em>17,14</em>14 film character field</td>
<td></td>
</tr>
<tr>
<td># (Size-format:14<em>17-Single,18</em>43-LR/2on1,</td>
<td></td>
</tr>
<tr>
<td># 14<em>17-4on1,18</em>43-4on1,8*10-4on1,</td>
<td></td>
</tr>
<tr>
<td># 14<em>14-Single,8</em>10-Single)</td>
<td></td>
</tr>
<tr>
<td># 0:Both of field 1 &amp; 2</td>
<td></td>
</tr>
<tr>
<td># 1:Only field 1</td>
<td></td>
</tr>
<tr>
<td># 2:Only field 2</td>
<td></td>
</tr>
<tr>
<td># 3:None</td>
<td></td>
</tr>
<tr>
<td>CSX0=</td>
<td>500</td>
</tr>
<tr>
<td>#27.Character Area0(Standard) horizontal size</td>
<td></td>
</tr>
<tr>
<td># 2-500(0.1mm)</td>
<td></td>
</tr>
<tr>
<td>CSY0=</td>
<td>268</td>
</tr>
<tr>
<td>#28.Character Area0(Standard) vertical size</td>
<td></td>
</tr>
<tr>
<td># 2-268(0.1mm)</td>
<td></td>
</tr>
<tr>
<td>CSX1=</td>
<td>458</td>
</tr>
<tr>
<td>#29.Character Area1(Standard) horizontal size</td>
<td></td>
</tr>
<tr>
<td># 2-458(0.1mm)</td>
<td></td>
</tr>
<tr>
<td>CSY1=</td>
<td>174</td>
</tr>
<tr>
<td>#30.Character Area1(Standard) vertical size</td>
<td></td>
</tr>
<tr>
<td># 2-174(0.1mm)</td>
<td></td>
</tr>
<tr>
<td>CLX0=</td>
<td>980</td>
</tr>
<tr>
<td>#31.Character Area0(Large) horizontal size</td>
<td></td>
</tr>
<tr>
<td># 2-980(0.1mm)</td>
<td></td>
</tr>
</tbody>
</table>
**CONTENTS**

<table>
<thead>
<tr>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLY0=</strong>•...•...:</td>
</tr>
<tr>
<td>#32. Character Area0 (Large) vertical size</td>
</tr>
<tr>
<td># 2-268 (0.1mm)</td>
</tr>
<tr>
<td><strong>CLX1=</strong>•...•...:</td>
</tr>
<tr>
<td>#33. Character Area1 (Large) horizontal size</td>
</tr>
<tr>
<td># 2-668 (0.1mm)</td>
</tr>
<tr>
<td><strong>CLY1=</strong>•...•...:</td>
</tr>
<tr>
<td>#34. Character Area1 (Large) vertical size</td>
</tr>
<tr>
<td># 2-180 (0.1mm)</td>
</tr>
<tr>
<td><strong>FD1417=</strong>&quot;••••&quot;:</td>
</tr>
<tr>
<td><strong>FD1714=</strong>&quot;••••&quot;:</td>
</tr>
<tr>
<td><strong>FD1843=</strong>&quot;••••&quot;:</td>
</tr>
<tr>
<td><strong>FD0810=</strong>&quot;••••&quot;:</td>
</tr>
<tr>
<td><strong>FD1008=</strong>&quot;••••&quot;:</td>
</tr>
<tr>
<td><strong>FD1414=</strong>&quot;••••&quot;:</td>
</tr>
<tr>
<td>#35. 14<em>17, 14</em>14 film character field position &amp; rotation</td>
</tr>
<tr>
<td>#(default rules)</td>
</tr>
<tr>
<td>&quot;abcd&quot;</td>
</tr>
<tr>
<td># a: Area0 position</td>
</tr>
<tr>
<td>0: Left-Top / 1: Right-Top / 2: Left-Bottom / 3: Right-Bottom</td>
</tr>
<tr>
<td># b: Area0 rotation</td>
</tr>
<tr>
<td>0: No / 1: Yes</td>
</tr>
<tr>
<td># c: Area1 position</td>
</tr>
<tr>
<td>0: Left-Top / 1: Right-Top / 2: Left-Bottom / 3: Right-Bottom</td>
</tr>
<tr>
<td># d: Area1 rotation</td>
</tr>
<tr>
<td>0: No / 1: Yes</td>
</tr>
</tbody>
</table>

**CONTENTS**

Initial value

<table>
<thead>
<tr>
<th>FC1=&quot;&quot;</th>
<th>Initial value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC1,2,3,4=</td>
<td>XXXX:</td>
</tr>
<tr>
<td>1234 2345</td>
<td></td>
</tr>
<tr>
<td>FC2=&quot;&quot;</td>
<td></td>
</tr>
<tr>
<td>3456 4567</td>
<td></td>
</tr>
<tr>
<td>FC3=&quot;&quot;</td>
<td></td>
</tr>
<tr>
<td>5678 6789</td>
<td></td>
</tr>
<tr>
<td>FC4=&quot;&quot;</td>
<td></td>
</tr>
<tr>
<td>7890 8901</td>
<td></td>
</tr>
<tr>
<td>FC5=&quot;&quot;</td>
<td></td>
</tr>
<tr>
<td>FC5= &quot;0020:0317&quot;</td>
<td></td>
</tr>
<tr>
<td>FC6=&quot;&quot;</td>
<td></td>
</tr>
<tr>
<td>FC6= &quot;1030:????&quot;</td>
<td></td>
</tr>
</tbody>
</table>

#36.14*17,14*14 film character fields position & rotation (user definition rules)

#If processing menu code matches MPM1, MPM2,... or FC1-4:14*17,14*14,B4,8*10film

#FC5-6:8*10film

#MPM8 (max 8 menus), the character fields change
#the position & rotation due to "abcd" rule
#(max 4 rules).

# ex)
# FC1="2030:0000 0002" means,
# Rule FC1:
# For only "SKULL GENERAL(0000)"
# or "MANDIBLE(0002)"
# 14*17,14*14 film character position
# Area0 is Left-Bottom, Areal is Right-Bottom.

**EM=**

#37.Print Energy-Substraction Param./PEM Param.

0

# 0: No / 1: Yes (Ene.-Sub.) / 2: Yes (PEM)
**IN=**

#38. Print film char2/examination number
#   0: film char2 / 1: examination number
# Film char2 depends on IDT setting
#   (Short info. (KVP mAs), etc)
# Only when GJ is set 1, film char2 is displayed.
# Examination number is displayed without depending on GJ.

**IM=**

#39. Image area move to the top of 14*17 film.
#   (only for 15*30, 35*35, 43*43)
#   0: No (FCR9000 compatible)
#   1: Yes

**LTC=**

#40. Long type character format
#   0: No (default)
#   1: Yes
#   (Refer to JSTFY of irset.cfg for details of the long type item.)

**FRSC=**

#41. No print scale
#   (user definition rules)
#   if MPM code of processing menu matches above, scale isn’t printed on film. You can write max 8 MPM codes.
#   ex 1
#   FRSC= "XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX"
#   Scale is always printed on film.
#   ex 2
#   FRSC= "???? XXXX XXXX XXXX XXXX XXXX XXXX XXXX"
#   Scale isn’t printed on film.
#   ex 3
#   FRSC= "0000 0200 XXXX XXXX XXXX XXXX XXXX XXXX"
#   When processing menu is “SKULL GENERAL(0000)” or “CHEST GENERAL(0200)”, scale isn’t printed on film.

#end of file
## Network System Administration Sheet (FCR5000)

**Setup date:**

**Prepared by:**

- **REMOTE SWITCH (RMT_SW.CFG):** "NOPK 1000" : ON  "NOPK 0000" : OFF

### EQUIPMENT (EQUIP)

```
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
```

### NETWORK HOST INTERFACE (DEVICE)

```
_________________________ _______________________
_________________________ _______________________
```

### HOSTS ADDRESS (HOSTS)

```
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
```

### DISTRIBUTION (CODESTB)

```
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
```

### ROUTING (ROUTE)

```
_________________________ _______________________
_________________________ _______________________
```

### NETMASKS (NETMASKS)

```
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
   ▲   ▲   ▲   ▲   ▲   ▲   ▲   ▲
```

---

**Host unit name:** _______________________________  **Host model name:** ___________

**IP address:**

**Machine manufacture:**

**serial number:**

**Ethernet address:**  ____________ ____________ ____________ ____________

**Installation site:**

```
_________________________ _______________________
_________________________ _______________________
```

---

FR181215.EPS
Example of Description

Network System Administration Sheet (FCR5000)

Setup date: April 20, 1999
Prepared by: FUJI

- REMOTE SWITCH (RMT_SW.CFG): "NOPK 1000" : ON "NOPK 0000" : OFF

- EQUIPMENT (EQUIP)
  - OD_FILE △ odfl624
  - DISPLAY △ hic654
  - IDT △ fcridt4-1 △ fcridt4-2
  - PRINT LOCAL △ fn-ps551

- NETWORK HOST INTERFACE (DEVICE)
  - hic654:DISPLAY|HD_FILE,0100,
  - odfl624:DISPLAY|OD_FILE,0100,
  - fn-ps551:DISPLAY|PRINT,0100,

- HOSTS ADDRESS (HOSTS)
  - 172.16.0.1 △ fcr5000a
  - 172.16.0.2 △ fcr5000a-1
  - 172.16.0.11 △ fcr5000b
  - 172.16.0.12 △ fcr5000b-1
  - 172.16.0.21 △ fcridt4-1
  - 172.16.0.22 △ fcridt4-2
  - 172.16.0.21 △ fn-ps551

- DISTRIBUTION (CODESTB)
  - △ hic654
  - △ fn-ps551

- ROUTING (ROUTE)

- NETMASKS (NETMASKS)
  - 172.16.0.0 △ 255.255.255.0

---

Host unit name: ____________________________
Host model name: _________________________

IP address: ________________________________
Machine manufacture: _______________________
serial number: _____________________________
Ethernet address: __________________________
Installation site: ____________________________

FR1B1216.EPS
Appendix 3. Common Information about M-Utility

Appendix 3.1 How to Activate M-Utility

There are three ways to activate M-Utility.

- **When the software version number is displayed during initialization process**
  
  Touch the upper left corner of the operation panel and then the upper right corner within 2 seconds.
  
  ➥ M-Utility starts.
  
  When the screen reads STEP95, the operation panel is inoperative and does not respond at all even if you touch it. In such an instance, perform a reset and wait until the software version number appears on the screen.
● When the routine screen is displayed

(1) Press the U-Utility button.
   ➥ The screen switches to the U-Utility mode.

(2) Touch the upper left corner of the touch panel and then the upper right corner within two seconds.
   ➥ The M-Utility screen is displayed.

NOTES: • For the IDT type, the "menu selecting icon" does not appear.
• For the initial setting, the "Multiframe forced output" button will not appear.
• The IDT type includes CR-IR348CL connection.

● When the error screen is displayed

Touch the upper left corner of the operation panel and then the upper right corner within two seconds.

Call maintenance personnel.
03D2 Switchback conveyance error.

Stop alarm System down

NOTE: • For the IDT type, the "menu selecting icon" does not appear.
• For the initial setting, the "Multiframe forced output" button will not appear.
• The IDT type includes CR-IR348CL connection.
Appendix 3.2  How to Exit M-Utility

To exit M-Utility, select “0. QUIT” when the main menu is displayed. If the configuration file has been changed in M-Utility, the machine should be reset after exiting M-Utility so that the change is effective.

◆ NOTE ◆
If M-Utility is entered during initialization sequence, “0. QUIT” does not appear. Thus, after quitting M-Utility, the machine should be reset.

■ How to Exit M-Utility

(1) Select “0. QUIT” when the main menu of M-Utility is displayed.
   ➥ The screen switches to the M-Utility mode.

(2) Press the RESET button.
   As a rule, the RESET button should be pressed. Only when the setting becomes invalid by resetting as the Auto Conveyance mode has been set, the “RETURN” key should be touched.
Appendix 3.3  Common Operations in M-Utility

Selecting and quitting a menu in M-Utility are common to all of its menus.

Appendix 3.3.1  How to Select Menu

There are three ways to Select a menu in M-Utility.

■ Enter a menu number at the prompt of cursor “>”.
Its submenu are displayed, or the menu is immediately executed, with the result displayed.

■ Menu automatically selected as its relevant menu is selected
A menu is automatically selected by selecting its relevant menu.
Example) Select “6. MECHANICAL UTILITY”, “3. SENSOR,” and “2. MONITOR” in sequence.

“1. NUMBER” menu is automatically selected.
Appendix 3.3.2  How to Quit Menu

■ Select “QUIT”

When “QUIT” is selected from the menu items, one of the following results.
- When a menu item is displayed, it reverts back to its immediately above menu.
- When the main menu is displayed, M-Utility is exited and the U-Utility is entered.
- The menu (operation) being executed is halted.
- It reverts back to its immediately above menu, while the current menu remains active.

■ Select “STOP”

When “STOP” is selected, the operation (DRIVE) of the actuator or motor is ended.

Example: 3. STOP is selected

<table>
<thead>
<tr>
<th>0. QUIT</th>
<th>1. ERROR LOG UTILITY</th>
<th>2. CONFIGURATION SETTING</th>
<th>3. TEST MODE</th>
<th>4. ELECTRICAL UTILITY</th>
<th>5. SCANNER UTILITY</th>
<th>6. MECHANICAL UTILITY</th>
<th>7. FILE UTILITY</th>
<th>8. BACKUP MEMORY</th>
<th>9. HV OFF</th>
<th>10. MENU SETTING</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G</td>
<td></td>
<td>G</td>
<td></td>
<td>G</td>
<td>G</td>
<td></td>
</tr>
</tbody>
</table>

FRH1759.EPS
Appendix 3.3.3 How to Enter Numeral Value

When a menu, such as an IP conveyance menu, is executed, it is necessary to enter parameters, such as the number of IP conveyances. In M-Utility, touch the virtual keyboard displayed on the right side of the operation panel to enter a value.

Displaying Desired Keyboard for Entry

Three types of virtual keyboards are available: by touching the ▲ or ▼ key, one of the three virtual keyboards can be selected. Also, by touching the Caps key, the caps mode can be toggled to the lower-cap display corresponding to the three types of virtual keyboards.
Correcting Value Entry

You can correct a value entry with the [DEL] or [BS] key.

- [DEL] key: Each time you touch this key, it erases the character above the cursor.
- [BS] key: Each time you touch this key, it erases the character preceding (positioned to the left of) the cursor position.

Example) Change the numerical value from “9801” to “9901”.

1) Touch the operation panel to position the cursor under “0”.
2) Touch the [BS] key once to delete “8”.
3) Touch “9”.
Appendix 4. Requirements Regarding Locally Obtained Parts

For some parts, such as network cables and monitor cables, locally obtained parts may be used. In this case, parts that meet the requirements set forth below should be obtained locally.

- Locally Obtained Parts and Their Requirements

  - **External monitor**
    
    - Commercially available VGA monitor
    - Connector: D-sub 15-pin male connector should be provided.

  - **Monitor extension cable**
    
    - Commercially available VGA monitor cable

- **Network cable**

  - Grade: Category-5 shielded type
    
    - 10Base-T (CPU90E/F), 100BaseTX (CPU90F/LAN90B)
  
    - Cable length: up to 100 m
  
    - Connection: Straight

  - **NOTE**

    When the cable is laid out, be sure to clamp it onto the rear cover of the machine (to prevent radiation noise).

- **Network hub**

  A 10BaseT- and/or 100BaseTX-compliant hub should be used. The hub should have modular connectors of shielded type.
Appendix 5. Settings on Units Interfaced

Appendix 5.1 Settings on IDT-IV

Network connection settings are performed on the master IDT.
Select “Network Setting” on the main menu screen in Maintenance Utility, touch “Add” or “Change” to set the following items sequentially.

1. Host name
2. Device ID
3. IP address
4. Group

Appendix 5.2 Settings on DMS Unit

■ HI-C655

The network information for the destination host should be set.
Select “All node on the network” in “Network Environment” and click “New” to set the following items.

1. Node name
2. IP address
3. Using protocol number: 100
4. Machine code:
5. CR image hardcopy property: YES

■ HI-C654

Information on the FCR5000 should be set in NETWORK DEVICE of COMMON FILE that contains network common information.
Append the following items in sequence.

1. HOST NAME
2. IP ADDRESS
3. PROTOCOL NO.: 100
4. UNIT CODE
5. MACHINE ATTRIBUTE: F
6. TRANSFER SPEED: 100

■ OD-F624

Information on the FCR5000 should be set in NETWORK DEVICE of COMMON FILE.
Append the following items in sequence.

1. HOST NAME
2. IP ADDRESS
3. PROTOCOL NO.: 100
4. UNIT CODE
5. MACHINE ATTRIBUTE: F
6. TRANSFER SPEED: 100
Appendix 6. Installing Optional Software

To install the optional software (FD), use “7. EXECUTION” under “7. FILE UTILITY” of M-Utility.

**CAUTION**

Never power OFF the machine or press the FD eject button during file installation. The FD or FD drive may be damaged.

■ Example of Operation

An example where the Hyper Image Processing Option is to be installed is described below.

1. Activate M-Utility.
   - “Appendix 3. Common Information for M-Utility”
2. Put the optional software install floppy disk into the floppy disk drive.
3. Select “7. FILE UTILITY” and “7. EXECUTION” in sequence.
   - The files contained in the floppy disk are displayed.
   1) OPTION.ABS
   2) INSTALL
   3) UNINST
   4) OPTION.008
   ... 
   ...
4. Select item No. (“2”), or “INSTALL”, and touch the [ENT] key.
   (To uninstall, select “UNINST”.)
   - The following message appears.
   ARE YOU SURE TO EXECUTE SELECTED FILE?
   1. YES  2. NO :
5. Select “1. YES”.
   - File copying is initiated, with the following message displayed. (When uninstalled, the file is deleted.)
   ***** Install is complete *****
   *** Please reset the system***
   INSTALL IS EXECUTED.
  
  ◆ SUPPLEMENTARY NOTE ◆

  If any error occurs during installation, the floppy disk or SCSI hard disk drive may be faulty.
  Take remedial measure as appropriate, and then repeat from step (1) all over again.

6. Remove the floppy disk.
7. Reset the machine.
Appendix 8. Menu Editor Settings

For the CSL type, the Menu Editor (running on Windows) should be used in order to edit the image processing parameters and menu parameters (exposure menus).

Before editing the parameters for the machine with the Menu Editor, perform Menu Editor settings in accordance with the following procedures.

■ How to Start

(1) Power ON the personal computer (PC) where the Menu Editor is installed.
(2) From the “Start” menu of Windows, select “Run...”.
   ➤ The “Run” window opens.
(3) Type in “C:\Program Files\MENUEDITOR\ServiceUty.exe”
(4) Click “OK”.
   ➤ A “warning” message dialog appears.
(5) Click “Yes”.

⇒ The “PC-ME Property” window appears.

![Image of PC-ME Property window]

- Starting mode: ⬜ user mode ⬜ maintenance mode
- Parameter change:
  - MFP: ⬜ enable ⬜ disable
  - DRC: ⬜ enable ⬜ disable
  - TAS: ⬜ enable ⬜ disable
  - PEM: ⬜ enable ⬜ disable
- Mammography Function: ⬜ enable ⬜ disable

[OK] [Cancel]
How to Set

◆ NOTE ◆

The CR-IR347-only function (for mammography) should be disabled.

(1) Set the following items in the PC-ME Property window.
   • MFP: Multi-frequency processing
   • DRC: Dynamic range compression processing
   • TAS: Tomographic artifacts suppression processing
   • PEM: Breast pattern enhancement processing

(2) Click [OK].
   ✗ The setup is completed.

When the CR-IR341 is to be connected to the CR Console (CR-IR348CL), reference should be made to the following manual bundled.

Procedures for Connecting with CR Console (CR-IR348CL)

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Control Sheet

<table>
<thead>
<tr>
<th>Issue date</th>
<th>Revision number</th>
<th>Reason</th>
<th>Pages affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/15/2001</td>
<td>00</td>
<td>New release (FM3022)</td>
<td>All pages</td>
</tr>
<tr>
<td>08/30/2001</td>
<td>01</td>
<td>Support for “plus” (FM3145)</td>
<td>All pages</td>
</tr>
</tbody>
</table>

❍ The following terms used herein are abbreviated as follows.

- CR-IR348CL: CL
- CR-IR341P/342P/343P/344P/345P/347P/348RU: IR
- Local printer: LP

❍ The software versions of the IR that is connectable to the CL are as follows.

- CR-IR341P (FCR5000 plus): A14 or later
- CR-IR342P (FCR5000R plus): A09 or later
- CR-IR343P (FCR5501 plus): A09 or later
- CR-IR344P (FCR5501D plus): A05 or later
- CR-IR345P (FCR5502D plus): A04 or later
- CR-IR347P (FCR5000MA plus): A03 or later
- CR-IR348RU (FCR XU-D1): A00 or later
1. **Overall Work Flow**

The procedures for installing the CL, IR and/or LP for the first time are described herein. The installation procedures are divided into three steps: setups of the CL main unit, preliminary installation, and final installation.

In Step 1, software setup for activating the CL in standalone fashion and configuration setup for enabling the CL to recognize the IR are performed.

In Step 2, configuration setup is performed to transfer images from the IR to the CL over a network.

In Step 3, the CL and IR are incorporated into the hospital network. Network information of the CL and IR are customized to the hospital network, and the resulting modifications are reflected in the configurations of the CL and IR.

The overall work flow is illustrated below.

- **Step 1 <Setups of CL Main Unit>**

  - Checking the CL Installation Requirements
  - Setting Up the CL Hardware
    - Unloading and unpacking
    - Checking components
    - Installing accessory and optional items
    - Cable connection with the IR
    - Cable connection with the LP
  - Setting Up the CL Software
    - Checking date, time, and time zone
    - Installing the touch panel driver
    - Installing the option keys
    - Installing the AP keys
    - Recognizing the destination (5000 Series)
    - Configuration setting for CL system information
    - Configuration setting for IDT and console functions
    - Optimizing the display view
    - Connecting and setting the barcode reader and magnetic card reader

  TO "**STEP 2**"
### Step 2 <Preliminary Installation>

- **Setting the CL Configuration Regarding IR Connection (Setting in CL's Service Utility)**
  - Setting for the source (CL) (DICOM setting)
  - Setting for the destination (IR) (DICOM setting)
  - Setting for ID information exchange (FINP setting), etc.

- **Setting the Selector [Only When the Built-In Device Is Connected]**

- **Setting the CL Configuration Regarding LP Connection (Setting in CL's Service Utility)**

- **Installing the Console Display Software (Installing in CL's PC)**

- **Setting the IR Configuration Regarding CL Connection (Setting in M-Utility)**
  - EQUIPMENT (EQUIP)
  - NETWORK HOST INTERFACE (DEVICE)
  - HOSTS ADDRESS (HOSTS)
  - DICOM (Based on DICOM)

- **Checking Image Transfer**

- **Performing Preliminary Installation for Connection of Two or More IRs**

### Step 3 <Final Installation>

- **Incorporating the CL and IR into the Hospital Network**

- **Changing the IR and CL Configuration Settings [Modifying Only Configurations Related to Network Information Changed]**
  - Subnet Mask, CL/IR host name, CL/IR IP address
  - CL/IR Application Entity name, CL Port No.
  - CL host name
  - Subnet mask, CL IP address
  - IR host name, IR IP address
  - CL Application Entity name, CL Port No.
  - IR Application Entity name

- **Re-Setting the Selector [Only When the Host Name of the Built-In device Is Changed]**

- **Checking Image Transfer**

- **Backing Up the CL Configuration Files to Floppy Disks**

- **Connecting HI-C, QA-WS, ODF, RIS, and Other Devices to the CL**
Step 1

After performing hardware setups, such as cable connection, perform software setups for activating the CL.

Step 2

Perform configuration settings on the CL and IR that are network connected in one-to-one correspondence, so that images can be transferred from the IR to the CL.

Step 3

Incorporate the CL and IR that were set in Step 2 into the hospital network. After setting the selector and distribution code, check image transfer again.
2. Step 1 <Setups of CL Main Unit>

Set up the CL main unit with reference to the CR-IR346/348CL Service Manual.

“Installation (IN-B) - Connection to the 5000 Series -” in the CR-IR346/348 CL Service Manual

Contents of CL Main Unit Setups

- Hardware-related setups
  - Unloading and unpacking
  - Checking components
  - Installing accessory and optional items
  - Cable connection with the IR
  - Cable connection with the LP

- Software-related setups
  - Checking date, time, and time zone
  - Installing the touch panel driver
  - Installing the option keys
    <Note> Then, install the energy subtraction processing option key for the FCR XU-DI.
  - Installing the AP keys
  - Recognizing the destination (5000 Series)
  - Configuration setting for CL system information
  - Configuration setting for IDT and console functions
  - Optimizing the display view
  - Connecting and setting the barcode reader and magnetic card
3. **Step 2 <Preliminary Installation>**

 Procedures for network connecting the CL and IR in one-to-one correspondence and transferring images from the IR to CL are described in this section. The work flow is presented below.

### 3.1 Setting the CL Configuration Regarding IR Connection (Setting in CL’s Service Utility)

### 3.2 Setting the Selector [Only When the Built-In Device Is Connected]

### 3.3 Setting the CL Configuration Regarding LP Connection (Setting in CL’s Service Utility)

### 3.4 Installing the Console Display Software (Installing in CL’s PC)

### 3.5 Setting the IR Configuration Regarding CL Connection (Setting in M-Utility)

### 3.6 Checking Image Transfer

### 3.7 Procedures for Connecting Two or More IRs

---

#### 3.1 Setting the CL Configuration Regarding IR Connection (Setting in CL’s Service Utility)

**Activating the CL Service Utility**

1. Click first on the upper left corner and then on the upper right corner (within 5 seconds) of the startup screen of the CL to activate the CL Service Utility.


   **Click first on the upper left corner and then on the upper right corner.**
Setting for the Source (CL)

(1) Click “Setup Configuration Item”.

(2) Click \[\text{NETWORK CONFIG} \rightarrow \text{THIS HOST(IIP)}\].

(3) Click \[\text{New}\].

The “New Node” dialog box appears.
(4) Select [DICOM] in the “Add Node” portion and click [OK].

The “Application Entity List” dialog box appears.

(5) Perform the following settings in the “Application Entity List” dialog box.

I. Type in the Application Entity Name (DICOM_IIP) of the CL.
II. Type in the Port No. (21760) of the CL.
III. Select “OTHER”.

(6) Click [New].

The “DICOM Setup” dialog box appears.
(7) Perform the following settings in the “DICOM Setup” dialog box.

I. Select “PrivateUnstandardizedCRStorage”.

II. Select “SCP”.

III. “Select JPEG Lossless”.

IV. Select “ST&HQ”. When the 5000MA is connected, select “ST&HQ&SH”.

V. Select “HQ/SH”.

VI. If two-byte characters are to be used, check this checkbox.

(8) Click **OK**.

⇧ Back to the “Application Entity List” dialog box.

(9) Click **OK**.

⇧ Back to the “Setup Configuration Item” dialog box.
Setting for the Destination (IR)

(1) Click **NETWORK CONFIG** in the “Setup
Configuration Item” dialog box.

(2) Click **New**.

➤ The “New Node” dialog box appears.

(3) Type in the host name of the IR (fcr5501-n **NOTE**) in **HostName:** and the IP
address of the IR (172.16.0.2) in **IP Address:**.

(4) Select **DICOM** in the “Add Node” portion and click **OK**.

➤ The “Application Entity List” dialog box appears.

**NOTE (** NOTE **)**
The default host names for the respective machines are as follows.
5000/5000R/5000MA: fcr5000-n
5501/5501D/5502D/XU-D1: fcr5501-n
(5) Perform the following settings in the “Application Entity List” dialog box.

I. Type in the Application Entity Name of the IR (for example, DICOM_IR). “DICOM_IR” is set, by default, for every IR.

II. Select either “BUILTIN” or “CASSETTE”.

5000/5000R/5000MA : CASSETTE
5501H/5501D/5502D/XU-D1 : BUILTIN

(6) Click .

⇒ The “DICOM Setup” dialog box appears.
(7) Perform the following settings in the “DICOM Setup” dialog box.

I. Select “PrivateUnstandardizedCRStorage”.
II. Select “SCU”.
III. “Select “JPEG Lossless”.
IV. Select the film output destination.
   Select “IIP” when the LP is connected to the CL, or “FCR5000” when the LP is connected to the IR.

◆ NOTE ◆
If the XU-D1 is connected, “FCR5000” should not be selected in the “Film Output” field. The XU-D1 does not support LP output.

(8) Click .
   ✶ Back to the “Application Entity List” dialog box.

(9) Click .
   ✶ Back to the “Setup Configuration Item” dialog box.
Setting for ID Information Exchange

♦ NOTE ♦

This setting may be omitted for a cassette-based reader. If it is omitted, communication between the reader and CL operates as “FINP110”.

(1) Click **NETWORK CONFIG** ➔ **ALL OTHER NODES** ➔ **fcr5501-n** (host name of the destination) in the “Setup Configuration Item” dialog box.

(2) Click **New**.

⇒ The “New Node” dialog box appears.

(3) Make sure that **FINP** is selected in the “Add Node” portion, and click **OK**.

⇒ The “FINP Setup” dialog box appears.
(4) Perform the following settings in the “FINP Setup” dialog box.

I. Select either “BUILTIN” or “CASSETTE”.
   5000/5000R/5000MA : CASSETTE
   5501H/5501D/5502D/XU-D1 : BUILTIN

II. Select “ST&HQ”. When the 5000MA is connected, select “SH”.

III. Select “ST&HQ”.

(5) Click .
   ➤ Back to the “Setup Configuration Item” dialog box.
Saving the Configuration and Quitting the Service Utility

(1) Choose “Save” from the “Config (F)” menu in the “Setup Configuration Item” dialog box.

- A confirmation dialog box appears.

(2) Click Yes.

- The settings that have been made are saved.

(3) Choose “Close” from the “Config (F)” menu.

- Back to the “Service Utility” screen.
3.2 Setting the Selector [Only When the Built-In Device Is Connected]

When a built-in device is to be connected to the CL, it should be registered with the selector. When the cassette device is to be connected, it has been registered by default, so that its registration process need not be performed.

◆ NOTES◆

- Up to 16 cassette devices and up to two built-in devices may be connected to the CL.
- If no device is set in the selector, the CL application will not start up. Be sure to set at least one device in the selector.

(1) Click the “Selector Setting” button in the “Service Utility” screen.

> “The “Selector Setting” dialog box appears.
(2) Perform selector settings.

I. Choose an unregistered “Selector” tab.
   In the “Selector 1” tab, the cassette device has been registered by default.

II. Set the Technique Code that does not overlap with any other selector.

III. Select the device to be added to the selector (by way of host name).

IV. Select Reader Type.
   • 5501H/5501D/XU-D1 : 5501
   • 5502D : 5502
   • To revert back to “Cassette”, choose a vacant item from the pull-down menu of the “hostname:” field.

V. Type in letters to be displayed in the selector button (up to five half-width letters).

VI. To make the currently edited selector initially active when the CL is started, turn ON the radio button.
(3) If no cassette device is connected, the selector setting for the cassette device that has been set by default should be deleted.
1. Select the “Selector 1” tab.
2. Change Technique Code to “-1”.

(4) Click OK.

☞ Back to the “Service Utility” screen.

(5) Click the “Exit Service Utility” button.
☞ The Service Utility exits to the desktop.

◊ REFERENCE ◊

Below is shown an example of user screen where one cassette device and one built-in device are set in the selector.
3.3 Setting the CL Configuration Regarding LP Connection (Setting in CL’s Service Utility)

Configuration settings for connecting the LP to the CL are performed.

3.4 Installing the Console Display Software (Installing in CL’s PC)

◆ NOTE ◆

When installing the console display software, be sure to use the floppy disks bundled with the IR. Never use the setup program contained in the CL’s application CD-ROM.

(1) If the console display software has already been installed on the CL, uninstall it.

◇ REFERENCE ◇

The console display software is an application program, called “Built_in Console” found in “Add/Remove Programs” in the “Control Panel”.


(2) Put the first console display software floppy disk (FD) into the FD drive of the CL.

(3) Double-click “Setup.exe” in the FD (A:). 

(4) When a message prompting you to replace the FD, put the next FD into the drive. Repeat this process for the number of FDs.

◇ Once all the data in the FDs is loaded, the “Built_in Console Setup” window appears.

(5) Click OK.
(6) Click .

![Image](image1.png)

> Installation starts.

After the installation, the following dialog box appears.

(7) Click .

![Image](image2.png)

> A window prompting you to restart the PC appears.

(8) Remove the FD from the FD drive.

(9) Click .

![Image](image3.png)

> The PC is restarted.
3.5 Setting the IR Configuration Regarding CL Connection
(Setting in M-Utility)

Start the M-Utility and set the configuration files.

For more detail on the M-Utility operating procedures, see “Maintenance Utility (MU)” in the Service Manual for each IR.

Starting the M-Utility

For 5000/5000R/5000MA

(1) Turn ON the breaker of the IR.
   • When the IR is booted up, the routine screen appears on the IR panel.

(2) Press the U-Utility button on the IR panel.
   • The screen switches to the U-Utility mode.

(3) Touch the upper left corner of the touch panel and then on the upper right corner within 2 seconds.
   • The M-Utility screen appears.
● For 5501H/5501D/5502D/XU-D1

(1) Turn ON the powers in the following sequence.
   • Breaker of the power distribution switchboard
   • Breaker of the IR
     ➤ When the IR is booted up, a message, “FUJI COMPUTED RADIOGRAPHY”, appears on the IR panel.

(2) Once the CL recognizes the IR, click on the User Utility icon.

➤ The “User Utility” screen appears.
(3) Click once on each of the areas shown below.

⤷ The M-Utility screen appears.
Setting the Configuration Files

(1) Select the “2. CONFIGURATION SETTING” menu.
    ◦ The CONFIGURATION SETTING menu appears.

    >2

    0. QUIT
    1. SYSTEM
    2. PRINT
    •
    •
    9. ROUTING
    10. NETMASKS
    11. DICOM

(2) Set the following four configuration files (change the bold-faced portions).

◆ NOTE ◆

Unless otherwise specified, the configuration files described below should be regarded as those for XU-D1. The contents of the configuration files vary depending on the machine. For more detail, see the Service Manual for each IR.

○ EQUIP file (Select “4. EQUIPMENT”.)

    # EQUIP
    #
    # Function Hn=Îname [Host Name]...
    #
    # Function = DISPLAY or IDT
    # Host Name= HostName (Network:Hostname def. by hosts)
    IDT CRxxxxxxxx
    DISPLAY CRxxxxxxxx

    * CRxxxxxxxx is the host name of the CL (xxxxxxxxx: CL product serial number)

◆ NOTE ◆

The host name of the CL may be identified by taking the following steps.
1. Click “Start” - “Settings” - “Control Panel in sequence.
2. Double-click “System” and click the “Network Identification” tab.
3. Click “Properties”.
   ◦ The content of “Computer name” is the host name of the CL.
DEVICE file (Select “6. NETWORK HOST INTERFACE.”)

- For 5000/5000R/5501/5501D/5502D/XU-D1

```plaintext
DEVICE

Host Name: Attr|Attr,[Protocol ID],[System code],[Speed]
Attr = DISPLAY
Protocol ID = 0200(DICOM)
System code = Hex 2 figures
Speed = Dec [Kbytes/sec] (default 8Kbytes/sec)
```

```plaintext
CRxxxxxxxx:DISPLAY,0200,,
```

* CRxxxxxxxx is the host name of the CL (xxxxxxxxx: CL product serial number)

- For 5000MA

```plaintext
DEVICE

Host Name: Attr|Attr,[Protocol ID],[System code],[Speed],
[Density Type]
Attr = DISPLAY
Protocol ID = 0200(DICOM)
System code = Hex 2 figures
Speed = Dec [Kbytes/sec] (default 8Kbytes/sec)
Density Type = Output Image Density
1: Standard Density or High Quality Density (Max Pixel Spacing:100)
2: Standard Density or High Quality Density (Max Pixel Spacing:050)
```

```plaintext
CRxxxxxxxx:DISPLAY,0200,,,2
```

* CRxxxxxxxx is the host name of the CL (xxxxxxxxx: CL product serial number)

**NOTE**

Output density
1: Standard Density or High Quality Density (supported for up to 10 pixel/mm)
2: Standard Density or High Quality Density (supported for up to 10 pixel/mm)

HOSTS file (Select “7. HOSTS ADDRESS”.)

```plaintext
HOSTS

Host Name = Max 10 characters
(Available Character: ‘a’–‘z’ ‘0’–‘9’ ‘-’[37chars])
```

```plaintext
IP Addr Host Name
172.16.0.1 fcr55es
172.16.0.2 fcr55es-n
172.16.1.20 CRxxxxxxxx
```

* CRxxxxxxxx is the host name of the CL (xxxxxxxxx: CL product serial number)
Base on DICOM file (Select “11. DICOM”)

# DICOM
#
# HostName,ServiceName:AEName,[PortNo.],[SOPType],
# [CompType],[Timeout1],[Timeout2],[DensityType]
# HostName = Host name defined by "hosts" & "device"
# ServiceName = “STORAGE_U” or “STORAGE_P”
# AEName = Application Entity Name defined by DICOM
# (Max 16 ascii character’s)
# PortNo. = TCP Port Number connected to
# Dicom application(100:default).
# SOPType = SOP Class Type
# 1:Fuji Private,2:OEM Private
# CompType = Compression Type
# 0:No(Implicit little endian),1:JPEG
# Timeout1 = connect/recv command Timeout [sec] (0:endless)
# Timeout2 = Every Image Trans. Timeout [sec] (0:endless)
# DensityType = Output Image Density
# 0:Standard Density
# 1:Standard Density or High Quality Density
# Which Density is to be chosen depends on ID Information.
# ex)
# fcr5501-n ,STORAGE_U :DPR_DICOM,,2,1,100,600,1
# dest-1 ,STORAGE_P :DPR_DICOM,21760,2,1,100,600,1
fcr55es-n,STORAGE_U:DICOM_IR,,1,1,100,600,1
CRxxxxxxxx,STORAGE_P:DICOM_IIP,21760,1,1,100,600,1

* CRxxxxxxxx is the host name of the CL (xxxxxxxx: CL product serial number)

◊ REFERENCE ◊

When the 5000MA is connected, set as follows.
fcr5000-n,STORAGE_U:DICOM_IR,,1,1,100,600,1
CRxxxxxxxx,STORAGE_P:DICOM_IIP,21760,1,1,100,600,1

(*NOTE) Output density
0: Standard Density
1: Standard Density or High Quality Density (supported for up to 10 pixel/mm)
2: Standard Density or High Quality Density (supported for up to 20 pixel/mm)

(3) Press the RESET switch of the IR.
▷ The IR is rebooted.
3.6 Checking Image Transfer

Transfer an image read by the IR to the CL, where it is outputted to the LP.

**Starting the IR and CL-AP**

1. Turn ON the breaker of the IR.

   ➥ After a while, an IR initialization message appears on the monitor of the CL, and the IR gets ready for operation in a few minutes.

   **NOTE [when the built-in device is used]**

   If an error occurs during IR startup so that the routine screen does not appear, the M-Utility screen may be displayed by taking the following step. Then, check the settings that have been made in “3.5 Setting the IR Configuration”.

   ![Screen shot](0000047.EPS)

   Click first on the left corner and then on the right corner.

2. Type in the patient data and exposure menu in the user screen (examination receipt) of the CL, and click .

   ![Screen shot](0000029.EPS)
Reading the IP and Film Output to the LP

For 5000/5000R/5000MA

(1) Use the barcode reader to register the IP barcode and set the cassette into the IR.
→ The image read is transferred to the CL.

(2) Click (Quit Examination) on the upper right corner of the CL screen.
→ After a while, film output is generated on the LP.
For 5501H/5501D/5502D/XU-D1

(1) Send a shot signal to read an image of the IP.
   ☑ The image read is transferred to the CL.

(2) Click (Quit Examination) on the upper right corner of the CL screen.
   ☑ After a while, film output is generated on the LP.
### Quitting the CL-AP

1. Click on the upper right corner of the screen.
   - The menus appear.

2. While holding down the `<SHIFT>` key, click .
   - The CL-AP exits to the desktop.
3.7 Procedures for Connecting Two or More IRs

Procedures for connecting two or more IRs to a single CL are described below.

(1) Reconnect the network cable to another IR.

(2) Set the CL configuration. The settings to be made are as follows.
   - IR host name, IP address
   - Application Entity name, service class, etc.
   - Information on FINP for exchange of ID information

   ❧ “Setting for the Destination (IR)” and “Setting for ID Information Exchange” in “3.1 Setting the CL Configuration Regarding IR Connection (Setting in CL’s Service Utility)”

(3) For the built-in device, perform selector setting.
   ❧ “3.2 Setting the Selector [Only When the Built-In Device Is Connected]”

(4) Set the IR configuration. The settings to be made are as follows.
   - EQUIP file setting
   - DEVICE file setting
   - HOSTS file setting
   - Base on DICOM file setting

   ❧ “3.5 Setting the IR Configuration Regarding CL Connection (Setting in M-Utility)”

(5) Check image transfer.
   ❧ “3.6 Checking Image Transfer”

(6) If there is a third IR, repeat steps (1) through (5).

That’s all there is to Step 2.
Perform image parameter transfer setting described in “3.8 Image Processing Parameter Transfer Setting”, as needed.
3.8 Image Processing Parameter Transfer Setting

Perform network setting for transferring the image processing parameters from the CL to the IR. This setting should be made as needed.

If the software version for the CL is A02, image processing parameters are communicated via the CPU90E board. A network cable should also be connected to the CPU90E board.

"5. Image Processing Parameter Transfer Setting" of "Installation (IN-B) - Connection with 5000 Series -" in the CR-IR346/348CL Service Manual
4. Step 3 <Final Installation>

Incorporate the CL and IR that have been set up in Step 2 into the hospital network. The work flow is presented below.

4.1 Incorporating the CL and IR into the Hospital Network
4.2 Changing the IR and CL Configuration Settings
4.3 Re-Setting the Selector
4.4 Checking Image Transfer
4.5 Backing Up the CL Configuration Files
4.6 Connecting Other Device(s)

**NOTE**

- If multiple CLs are to be connected to a single 5000 cassette-based reader, the procedures described in the following reference should be performed together with the procedures described in the above work flow.

* “Appendix 1. Setup for Connecting Multiple CLs to a Single 5000 Cassette-based Reader”

- If the 5000plus system is to be added in the hospital network where the IDT-IV and CL already exist, the procedures set forth in the following reference should be performed, in addition to the work flow described above.

* “Appendix 2. Setting for Adding the 5000plus System in the Network where the IDT-IV Exists”

4.1 Incorporating the CL and IR into the Hospital Network

Reconnect the network cable that connects the CL and IR in one-to-one correspondence to meet the hospital network specifications.

If there are multiple IRs, they should be incorporated into the network at this time.
4.2 Changing the IR and CL Configuration Settings

If the following network information has been changed as a result of the participation in the hospital network, change the configuration settings of the CL and IR as appropriate.

- IR host name, IP address, Application Entity name
- CL host name, IP address, Application Entity name, Port No.
- Subnet mask of the overall network

**NOTE**

The procedures described in this section should be performed for items that need to be changed. For the network information that need not be changed, the values that have been set in Step 2 should be used as they are.

For example, when the CL and IR are incorporated into the hospital network as illustrated below, the network information to be changed are:

- Subnet mask;
- CL IP address; and
- IR host name and IP address.

In this scenario, the configurations should be changed with reference to the following, which are described in detail later.

- **Subnet Mask, CL/IR Host Name, CL/IR IP Address [Changing the M-Utility]**
- **IR Host Name, IR IP Address [Changing the Service Utility]**
- **Subnet Mask, CL IP Address [Changing Network Settings in Windows 2000]**

**Example of Participation into the Hospital Network**

Hospital network (subnet mask: 255.255.255.0)

100.150.100.1 100.150.100.2 100.150.100.3 100.150.100.4
CR5501D CR5501D CR5502D

172.16.1.20 172.16.0.2
fcr5501-n fcr5501-n

100.150.100.10 100.150.100.11
CRxxxxxxxx CRXUD1

The underlined portions have been changed.
Subnet Mask, CL/IR Host Name, CL/IR IP Address [Changing the M-Utility]

(1) Start the M-Utility and modify the configuration files in “2. CONFIGURATION SETTING”.

**NOTES**

- The SYSTEM configuration should be set in the “2. SYSTEM” menu of “2. CONFIGURATION SETTING” in the M-Utility.
- For the IP address setting in “2. SYSTEM” of “2. CONFIGURATION SETTING” in the M-Utility, the IP address on the CPU90F board side (IPI: IP Address (CPU90F)) should be changed.
- The NETMASK configuration should be set in the “7. NETMASK” menu of “2. CONFIGURATION SETTING” in the M-Utility.

Modify the configuration(s) marked by a circle, depending on the network information changed.

<table>
<thead>
<tr>
<th>Network information changed</th>
<th>IR host name</th>
<th>IR IP address</th>
<th>CL host name</th>
<th>CL IP address</th>
<th>Subnet mask</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM</td>
<td></td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td></td>
<td></td>
<td>○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NETWORK HOST INTERFACE</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>HOSTS ADDRESS</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>NETMASKS</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>DICOM</td>
<td></td>
<td>○</td>
<td></td>
<td>○</td>
<td></td>
</tr>
</tbody>
</table>

(2) If there are multiple IRs, change the IR configuration for the second and third IRs in a similar manner to step (1).

**NOTE**

Be sure to modify the IR configuration before the CL configuration. If the CL configuration (IP address) were changed first, the IR would be lost.

(3) Once the configuration file has been modified, restart the IR.
CL/IR Application Entity Name, CL Port No. [Changing the M-Utility]

(1) Start the M-Utility and change the “11. DICOM” configuration file in “2. CONFIGURATION SETTING”.

Starting the M-Utility in “3.5 Setting the IR Configuration Regarding CL Connection (Setting in M-Utility)”

Example of change:

- IR Application Entity name: DICOM_IR → CRXUD1_02_U
- CL Application Entity name: DICOM_IIP → CL_02_P
- Port No.: 21760 → 10113

```
# fcr5501-n, STORAGE_U:DICOM_IR,2,1,100,600,1
# dest-1, STORAGE_P:DICOM_IIP,21760,2,1,100,600,1
fcr5501-n, STORAGE_U:DICOM_IR,1,1,100,600,1
CRxxxxxxx, STORAGE_P:DICOM_IIP,21760,1,1,100,600,1
```

– – – – – – – – – – – – – – – – – – – – – – – – – – – – – – – – –

† Changed

```
# fcr5501-n, STORAGE_U:CRXUD1_02_U,2,1,100,600,1
# dest-1, STORAGE_P:DICOM_IIP,21760,2,1,100,600,1
fcr5501-n, STORAGE_U:CRXUD1_02_U,1,1,100,600,1
CRxxxxxxx, STORAGE_P:DICOM_IIP,21760,1,1,100,600,1
```

**REFERENCE**

If a second CL is to be connected to a single 5000 cassette-based reader, the following line should be described (example: host name is “CL-a”, AE name is “CL_a_SCP”, and port number is “10114”).

```
# fcr5000-n, STORAGE_U:CR5000_02_U,1,1,100,600,1
CRxxxxxxx, STORAGE_P:CL_02_P,10113,1,1,100,600,1
CL-a, STORAGE_P:CL_a_SCP,10114,1,1,100,600,1  † Description for the second CL
```

(2) If there are multiple IRs, change the IR configuration for the second and third IRs in a similar manner to step (1).

**NOTE**

Be sure to modify the IR configuration before the CL configuration. If the CL configuration (IP address) were changed first, the IR would be lost.

(3) Once the configuration file has been modified, restart the IR.
■ CL Host Name [Changing the Service Utility]

☞ “Appendix B Changing the CL Host Name” of “Reinstalling the Software (RI)” in the CR-IR346/348CL Service Manual

◆ NOTE ◆

Changing the CL host name involves complicated procedures, such as reinstalling the MSDE. Be sure to observe the procedures described in the CR-IR346/348CL Service Manual to change the CL host name.

■ Subnet Mask, CL IP Address [Changing Network Settings in Windows 2000]

(1) From the menu, select “Settings” and then “Control Panel”.
☞ The Control Panel opens.

(2) Double-click hand and then .
☞ The “Local Area Connection Status” dialog box appears.

(3) Click Properties.
☞ The Local Area Connection Properties” dialog box appears.
(4) Select **Internet Protocol (TCP/IP)** and click **Properties**.

The “Internet Protocol (TCP/IP) Properties” dialog box appears.
(5) Make sure that [Use the following IP address] is selected, and change the IP address or subnet mask.

(6) Click [OK].

-) Back to the “Local Area Connection Properties” dialog box.

(7) Click “Close”.

-) Back to the desktop.

(8) Close the “Network and Dial-up Connections” window.
IR Host Name, IR IP Address [Changing the Service Utility]

(1) Start the Service Utility of the CL.

(2) Click the “Setup Configuration Item” button.
   ➥ The “Setup Configuration Item” dialog box appears.

(3) Click [NETWORK CONFIG] ➤ [ALL OTHER NODES] ➤ [fcr5501-n] (IR host name).
   ➥ The right side of the dialog box switches to “Host Name”.

(4) Change the host name or IP address.

(5) Click and choose Save from the “Config” menu to save the setting.
CL Application Entity Name, CL Port No. [Changing the Service Utility]

1. Start the Service Utility of the CL.

2. Click the “Setup Configuration Item” button.
   The “Setup Configuration Item” dialog box appears.

3. Click NETWORK CONFIG - THIS HOST (IP) - DICOM - DICOM_IP (CL Application Entity name).
   The right side of the dialog box switches to “DICOM Setup”

4. Change the Application Entity name or Port No.

5. Click Apply and choose Save from the “Config” menu to save the setting.
IR Application Entity Name [Changing the Service Utility]

1. Start the Service Utility of the CL.

2. Click the “Setup Configuration Item” button.
   => The “Setup Configuration Item” dialog box appears.

   => The right side of the dialog box switches to “DICOM Setup”

4. Change the Application Entity name.

5. Click [Apply] and choose Save from the “Config” menu to save the setting.
4.3 Re-Setting the Selector

If the selector has been set in Section 3.2 and if the IR host name has been changed when the IR has been incorporated into the hospital network, the selector should be re-set.

◆ NOTE ◆

If the host name of the built-in device has been changed, be sure to re-set the selector. If the CL-AP is started without re-setting the selector, an error (code: 31099) will occur.

(1) Start the Service Utility of the CL.
(2) Click the “Selector Setting” button.

وها The “Selector Setting” dialog box appears.
(3) Perform selector setting.

I. Select the tab where the built-in device has been registered.

II. Because this field is vacant, choose the host name of the built-in device.

(4) Click \( \text{OK} \).

\( \rightarrow \) Back to the Service Utility screen.

(5) Click the "Exit Service Utility" button.

\( \rightarrow \) The Service Utility exits to the desktop.
4.4 Checking Image Transfer

Transfer the image read by the IR to the CL, where it is outputted to the LP.

☞ “3.6 Checking Image Transfer”

4.5 Backing Up the CL Configuration Files

After all the installation procedures are completed, back up the CL configuration files to two floppy disks.


4.6 Connecting Other Device(s)

If other devices, such as HI-C655/HI-C654/QA-WS/ODF/RIS, is to be connected to the CL, follow the procedures described in the following references to perform connections and settings as appropriate.


That’s all there is to Step 3.
Appendix 1. Setup for Connecting Multiple CLs to a Single 5000 Cassette-based Reader

If multiple CLs are to be connected to a single 5000 cassette-based reader, it is necessary to set the distribution code and patient information share function, in addition to the configuration settings required to exchange image and ID information.

Procedures for setting the distribution code and patient information share function are described here.

1.1 General Description

Distribution code

The distribution code is set to determine in which CL the image read by the reader is registered for identification. Unless the distribution code is set, an image-sending CL cannot be identified, so that transmission cannot be done.

Data flow
(1) On the CL-b, the ID information and cassette barcode are registered.
(2) The cassette is set on the reader to read image data.
(3) The reader transmits image data according to the distribution code setup file.
● Patient information share function

The patient information share function is intended to share ID information among the ID registered devices (CL and IDT-IV units).

Upon inquiry about ID information from the reader, if the patient information of interest is not found in the CL, it makes an inquiry to another CL or IDT-IV where sharing setup has been done to receive the ID information, and returns a notification to the reader regarding where the ID information of interest is found.

This setting should always be made if multiple CLs are to be connected to a single 5000 cassette-based reader.

Data flow:
1. On the CL-b, the ID information is registered.
2. The cassette is set on the reader to read image data.
3. The CL-a is inquired about ID information.
4. Because no ID information is found in the CL-a, CL-b is inquired about ID information where sharing setup has been done.
5. The ID information is returned to the CL-a.
6. The ID information is returned to the reader.

In the example of the illustration (distribution code) on the previous page, an inquiry about ID information is made first to the CL-a, and the distribution code of the CL-b is communicated to the reader via the CL-a.
1.2 Setup Procedures

**NOTE**

The setup procedures described here presume that the procedures described in “3. Step 2 <Temporary Installation>” have been completed.

**Setup on the CL Side**

**NOTE**

The following setup should be done for all the CLs connected to the reader.

**Setting of distribution code**

1. Start the Service Utility of the CL.
2. Click the “Setup Configuration Item” button.
   - The “Setup Configuration Item” dialog box appears.
3. Click SYSTEM CONFIG – 5.CSL/IDT FUNCTION
   - The right side of the dialog box switches to the IDT and console information configuration screen.
4. Set the distribution code (e.g., 5000-CLa) in the field.

**NOTES**

- The distribution code should be within 8 characters in length.
- The distribution code should be set so that it does not overlap within the same network.
● Patient information sharing setup

(1) Start the Service Utility of the CL.
(2) Click the “Setup Configuration Item” button.
   ⇒ A “Setup Configuration Item” window opens.
(3) Click IDT CONNECTING.

   ⇒ The right side of the window switches to the “CONFIG\IDT CONNECTING” screen.

(4) Click New.
(5) Perform the following settings.

![Diagram: IDT Connection]

I. Type in the host name for the host where sharing setup is made.
II. Type in the IP address.
III. Select the attribute of the device.
IV. Set GroupName.

**NOTE**

*If GroupName is set for the first time, type in GroupName by use of a keyboard, since there is no entry in the GroupName field.*

V. To set this device as a GateWay device, check the `GateWay` box (☐ → ☑).

**NOTE**

*If patient information is to be shared among different groups, it is necessary to set one GateWay device for each group (check the `GateWay` box).*

(6) Click `OK`

(7) To continue setup for another CL, repeat steps (4) through (6).

(8) In the “Config (F)” menu, save the setup that has been done.
Example of CL (CL-a and CL-b) setup

**NOTE**

Be sure to set both CL-a and CL-b devices.

Setup on the IR Side

1. Changing the EQUIPMENT file setup

   (1) Start the M-Utility to display the “2. CONFIGURATION SETTING” - “4. EQUIPMENT” configuration, and add a host with IDT capability, as needed (e.g., CL-b).

   ![Setup Configuration Item](EQUIP)

   ```
   # EQUIP
   #
   # Function Hn=Îname [Host Name]...
   #
   # Function = DISPLAY or IDT
   # Host Name= HostName (Network:Hostname def. by hosts)
   IDT  CL-a CL-b
   DISPLAY  CL-a
   ```

**REFERENCES**

- Up to five IDT units may be specified in the “IDT CL-a...” setup item.
- When “IDT CL-a CL-b CL-c” is set, an inquiry about ID information is made to the host that is described first (in this case, CL-a). Only if communication with that host fails due to power-OFF and so forth, an inquiry about ID information is made to the host that is described next.
(2) Delete the DISPLAY attribute setting.

◆ NOTE ◆

If the distribution code is used, the DISPLAY attribute setting should always be deleted.

---

# EQUIP

# Function Hn=Îname [Host Name]...

# Function = DISPLAY or IDT

# Host Name= HostName (Network:Hostname def. by hosts)

IDT      CL-a CL-b
	DISPLAY  CL-a ← Delete

---

● Setting of distribution code

(1) Display the “8. DISTRIBUTION” configuration, and add the distribution codes and host names for the CLs as destinations.

---

# Codedstb

# Code Host Name [HostName]...

5000-CLa  CL-a
5000-CLb  CL-b

---
1.3 Setup Example [Reference]

An example of configuration file settings (reader) is presented below where the following system configuration is operated.

**IR-1 Configuration Files**

- **EQUIP file**

  
  -  
  -  
  -  

  **IDT**  
  **CL-a**  **CL-b**

* "CL-b" should be set as needed.

- **DEVICE file**

  
  -  
  -  

  **CL-a**:DISPLAY,0200,,  
  **CL-b**:DISPLAY,0200,,

- **HOSTS file**

  
  -  
  -  

  **172.16.0.1** **IR-1**  
  **172.16.1.10** **CL-a**  
  **172.16.1.20** **CL-b**
● Codedstb file

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  5000-CLA   CL-a
  5000-CLb   CL-b

● Base on DICOM file

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  IR-1,STORAGE_U:IR-1-U,,1,1,100,600,1
  CL-a,STORAGE_P:CL-a-P,5001,1,1,100,600,1
  CL-b,STORAGE_P:CL-b-P,5002,1,1,100,600,1

■ IR-2 Configuration Files

● EQUIP file

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  IDT      CL-a CL-b CL-c*

* “CL-b” and “CL-c” should be set as needed.

● DEVICE file

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  CL-a:DISPLAY,0200,,
  CL-b:DISPLAY,0200,,
  CL-c:DISPLAY,0200,,

● HOSTS file

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  172.16.0.1   IR-1
  172.16.1.10  CL-a
  172.16.1.20  CL-b
  172.16.1.30  CL-c
- Codedstd file

- Base on DICOM file