TUBE BASE BOARD
TUBE BASE BOARD
1) Remove the following from the monitor:
   a) Back cover
   b) Mains supply plug
   c) Video BNC plug
   d) Remote control plug

2) Unscrew safety ground wire from the monitor hood; remove the hood.

3) At the monitor housing (See Detail 1, Figure 1), remove the 3 screws at points labeled "A" to release the mains power subassembly.

4) Place the mains power subassembly with the components facing-up as shown in Detail 1, Figure 1.

   **NOTE**

   If necessary, make the square opening in the monitor housing larger with a file.

5) Unsolder the safety ground wire connected between the monitor housing and the mains power subassembly at point labelled "B" (See Detail 1, Figure 1).

6) Remove the cap from mains power subassembly. (Remove screw (3) at points "C" as indicated in Detail 2, Figure 1).

7) To remove the mains supply socket, clip through the two wires connected to the fuses and remove the two screws that secure the mains supply socket to the mains power subassembly.

8) Install the new mains supply socket (delivered with this service kit) using the two spacers and two screws. (See Detail 2, Figure 1).

9) Solder the two wires leading from points E and F to the two fuses as shown in Detail 2, Figure 1.

10) Resolder the safety ground wire that was connected between the monitor housing and the mains power subassembly at point G as shown in Detail 2, Figure 1.
11) Thread the safety ground wire connected at point C through
the mains power subassembly cap.

12) Attach the cap with 3 screws at points C.

13) Replace the mains power subassembly and secure with 3 screws
at point A.

14) Solder safety ground wire to point B.

15) Connect wire M to ground strip as shown in Detail 3,
Figure 1.

16) Remove screw K (Detail 1, Figure 1) to fasten the other end
of wire M and a ground-washer at this point.

   CAUTION

   Re-install the insulation material
to isolate point B from monitor
housing.

17) Solder filter "N"in place as shown in Detail 1, Figure 1.

18) Replace the monitor hood.

19) Reconnect the other safety ground wire from point B to the
monitor hood.

20) Re-connect the mains supply safety plug, video BNC plug,
and remote control plug.

21) Replace monitor back cover.
20-INCH MONITOR 9807 750 2..01

RETROFIT KIT 3922 426 52941

MOUNTING INSTRUCTIONS

4522 980 33581

All alterations have to be carried out on video amplifier board 3922 426 51961. See also Documentation for this monitor: diagram 9807 750 2..01 - Z1.1 - 77.1.

Alterations:

1. Replace R138 (10 k) with GR28 (BAW62, code number 9331 012 20112); cathode to base of TS21.

2. Replace SPB (BZX79C12) with BAW62 (code number 9331 012 20112) with cathode to earth.

3. Replace R135 (100 k) with 23k7 (code number 2322 151 22373).

4. Replace R136 (10 k) with 5k62 (code number 2322 151 25622).

5. Replace R125 (1k5) with .750 ohms (code number 2322 151 27501).

6. Replace R119 (4k7) with 2k74 (code number 2322 151 52742).

7. Add C86 (22 nF, code nr. 2222 629 03223), parallel to GR9 + GR11.

8. Remove R133 (100 ohms) and replace with jumper 4022 007 45310.

Adjustment procedure:

1. After the monitor has been switched on for at least 10 minutes, adjust the black level of the video signal at the cathode to 90 Volts. Adjust with the "Brightness" potentiometer at the monitor front, while contrast is at minimum.

2. Then adjust CRT screen brightness with potentiometer R11 at the tube base board such, that the screen just produces light.

**NOTE:** Now maximum brightness that can be achieved with "Brightness" potentiometer at monitor front, is not determined anymore, and can be 100 cd/m², for instance.
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/Up to and including /Bis einschließlich

(The details belong to the same assembly(s)
(Die Einzelteilen gehören zu derselbe Zusammenstellung)

(The items have the same description
(Die Einzelteile tragen dieselbe Bezeichnung)

| Column 3 | Designation of material |
| Spalte 3 | Material Bezeichnung |

| Column 4 | Technical data |
| Spalte 4 | Technische Angaben |

C = complete (assembly)
C = Zusammenstellung

P = Poles
P = Pole

D = Detail of assembly
D = Detail einer Zusammenstellung

| Column 5 | Codenumber (Order no.) |
| Spalte 5 | Kodenummer (Bestellnr.) |

(.... .... ....) For the indicated series, this codenumber will be delivered until stock level is zero.
Für die angegebene Serie, wird dieses Kodenummer zuerst ausgeliefert bis Lagerbestand gleich null ist.

| Column 6 | Serie No. |
| Spalte 6 | Serien Nr. |

(x) = This sparepart only to be used for the series indicated.
(x) = Für die angegebene Serie dieses Ersatzteil nur benutzen.
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FILING INSTRUCTIONS

This manual is part of the service documentation set for the XTV5 FB TV Chain. It should be filed (together with documentation for (a) XTV5 Camera FB/HFB 4522 161 5024, and (b) XTV5 Camera Control Unit FB 4522 161 5028) with the service manual for the BV25.

Note: All relevant information (e.g. Adjustment procedures) for PEI 9807 733 4..01 can be found in this service manual for the BV25.

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SERVICE MANUAL-COMBINED UNITS

XTV5-FB

PEI 9807 733 4..01

For serial numbers, see list of pages and drawings

IPC: Eindhoven

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EINDHOVEN THE NETHERLANDS

Printed in The Netherlands  (85.0)
SERVICE PARTSLIST UNIT

PEI: 9807 733 41001

DESCRIPTION: TV CHAIN XTV-5 "FB" for BV25

SERIAL NR:

List of pages and drawings

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FILING INSTRUCTIONS

File this documentation in binder 3: XIV of the Subsystem Documentation
IMAGE DETECTION AND DISPLAY.
CONTENTS

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Safety precautions 2
Operation 3
Maintenance 4
Legend 4
This manual is intended to assist the user in the safe and efficient use of the equipment described in it. Before operating the equipment, the user should read this manual thoroughly, paying particular attention to the Safety Precautions which follow and to all the Warnings, Cautions and Notes given elsewhere in the text.

When reading this manual, the user should refer also to the illustrations and legend on page 4, as these constitute an essential part of the instructions contained in it.

It is the responsibility of the user to ensure observance of all legal regulations concerning both the building in which the equipment is installed and the equipment itself. The equipment must be used in accordance with the procedures contained in this manual and should be used only by persons with recognized relevant qualifications and adequate training on this particular type of equipment.

The equipment must not be used for purposes other than those described in this manual. Incorrect use or failure by the user to maintain the equipment in accordance with the maintenance instructions given in this manual relieves the manufacturer and his agents of all responsibility for any consequent non-compliance, injury, damage or defect.

**WARNING:** Disregard of these precautions may result in fatal or serious injury.

**GENERAL**
The equipment must not be used if any component is defective.

Changes in or additions to the equipment may be carried out only by Philips or by third parties authorized by Philips to do so. Such changes or additions must comply with local regulations and with the accepted standards of engineering practice.

The equipment must not be used in combination with other equipment unless that equipment is designated as compatible with it by Philips or an associated Company.

**ELECTRICAL SAFETY**
The equipment must be used only in rooms which comply with the national and international regulations concerning safety in rooms used for medical purposes, in particular those concerning provision of a protective earth (ground) terminal for equi-potential connection of equipments.

Always switch OFF the relevant part of the equipment and isolate that part from the a.c. supply before removing any cover. Only qualified service personnel should be allowed to connect or remove any high voltage cable or to gain access to the interior of any assembly to which high voltage is connected, either by removing covers or in any other way.

Never allow any liquid or aerosol to enter the equipment, as these may cause short circuits or corrosion or both.

**EXPLOSION SAFETY**
It is not safe to operate this equipment in the presence of explosive or inflammable vapour, gas or aerosols. In this context, it must be remembered that certain disinfectants can constitute such a hazard. Before using such a substance in the room where this equipment is installed, the equipment must be switched off and allowed to cool down to prevent its ingress through convection. The equipment must remain switched off until all traces of the substance have dispersed from the atmosphere of the room.
Position of the Monitor
The monitor may be tilted to an angle of up to 45° in any direction when suitably mounted. For optimal viewing, the monitor should be placed so as to eliminate reflections of light sources in the screen.

Environmental Conditions
Temperature
- storage and transportation: -25 to +70 °C
- operation : +10 to +45 °C
Humidity: not more than 90% during operation.

Electrical Supply
220 V, 50/60 Hz

Electrical Connections
The TV Monitor requires the following inputs:
- a.c. supply with an associated ground (earth) wire
- composite video input
- for HMR 20S: optional rotation control signals (TTL compatible). (Rotation can also be controlled from the monitor, see Legend).

The monitor provides a loop-through video output.

All these electrical connections are made behind the rear panel of the monitor by a service technician on installation and the leads are fed through this panel in a cable hose. If it should be necessary to disconnect the monitor in order to relocate it, the necessary disconnection and re-connection should be done by a service technician.

Power Switching
The a.c. supply to the TV Monitor is switched by the alternate-action power switch (Legend 2) which is illuminated (green) when set to ON with the supply present. This provides the means to switch the monitor off while the system which provides the supply remains on.

Video Matching
The monitor incorporates a switchable matching device of 75 ohms and the same switch connects or disconnects the video output. This switch is inside the cabinet and is set by the service technician, who should be called to check the setting in accordance with the Service Manual if the video network arrangements are subsequently altered.

TV System
525/1049 lines, 50/100 Hz frame rate for 50 Hz supply
625/1249 lines, 60/120 Hz frame rate for 60 Hz supply
0.5 to 2.0 Vpp composite video signal.
Aspect ratio 3:4 for standard (525/625) line rate, 3:4 or 1:1 for high (1049/1249) line rate.

Internal Settings of Frame Rate and Aspect Ratio
The monitor is preset at the factory for frame rates of 50 Hz and 60 Hz (in correspondence to the supply frequency) and for an aspect ratio of 3:4.

If 100/120 Hz frame rate or 1:1 aspect ratio for high line rate (1049/1249 lines) is required, the necessary internal adjustments need to be made by a service technician in accordance with instructions in the Service Manual.

Automatic Switching of Line Rate
The monitor detects the line rate of the input TV signal and switches itself automatically to operate at the corresponding line rate.

Brightness and Contrast Control
The monitor has an automatic brightness and contrast control circuit which works in association with manual controls on the front panel (Legend 3 and 4). The automatic control circuit detects the background light level by means of a photo-electric sensor (Legend 1) and adjusts both brightness and contrast to compensate instantaneously for any change in light level, thus maintaining the appearance of the image, as selected by means of the manual controls, if the room lighting changes for any reason.

The manual brightness and contrast controls are factory set to give the optimal range of brightness and contrast for video signals of 1 Vpp, as delivered by any of the medical imaging systems with which the monitor is normally associated. At these settings, the automatic control circuit provides its optimal range of control and can compensate for any level of ambient light likely to be encountered. Click stops on both controls are also factory set to allow the optimal control settings to be easily reinstated if they should be disturbed.

The spindles of the brightness and contrast controls are slotted to permit screwdriver adjustment by a service technician although knobs can be fitted if required. If the knobs are not in place, the holes in the front of the cabinet which accommodate them are blanked off with covers which can be removed by the service technician to reach the screwdriver slots or to fit the knobs.

Since, for most applications, no user adjustment is necessary, the HM 20S model is delivered with the knobs dismounted but these may be fitted during installation on special request of the user. However, the HMR 20S model is delivered with the knobs already mounted because, in the applications in which rotation is used, there is sometimes a requirement to change the brightness from the conventional setting in order to emphasise a particular aspect of the image.
NOTE: In the absence of such an operational requirement, it is recommended to operate with the knobs dismounted, since then there is no chance of inadvertent mis-setting. Adjustment of brightness or contrast or both to other than the factory settings degrades the performance of the automatic brightness and contrast control circuit and reduces its range of control. Therefore, for normal operation, ensure that the click stops are engaged on both controls.

Image Rotation (HMR 20S only)
The TV Monitor HMR 20S is equipped with an image rotation facility which may be subject to remote control. The zero position (no displacement) is automatically assumed on switching on the monitor except when remote control is implemented and this calls for some other orientation. Local control of image orientation is provided by three push buttons on the left-hand side of the front panel (Legend 5).

Operation of the central button causes the image to adopt the zero position rapidly. Operation of the push button on the right causes continuous image rotation at a slower rate in a clockwise direction, so long as the push button is depressed. The push button on the left has the opposite effect.

If remote control is implemented, it acts in parallel with the front panel controls, which maintain their normal roles.

TV Monitors HM 20S and HMR 20S require no periodic maintenance other than occasional cleaning of the cabinet and screen, and disinfection, as required. There are no user-serviceable parts inside the cabinet.

Cleaning and Disinfection
To clean or disinfect the cabinet or screen of the TV monitor, wipe over with a soft, lint-free cloth moistened with alcohol or a mild domestic cleaning agent or a non-corrosive disinfectant solution, as appropriate, and dry off with a similar cloth which is clean and dry (and sterile if required).

LEGEND

1. Light Sensor for automatic brightness and contrast control
2. Power ON/OFF switch with green indicator.
3. Brightness Control (knob may be removed)
4. Contrast Control (knob may be removed)
5. Rotation controls (HMR 20S only)
SERVICE SAFETY INFORMATION

1. All work on the exposed monitor chassis shall be performed by qualified service personnel only. No work should be attempted without carefully consulting this manual.

2. The rotatable version of this monitor has a rotation motor and a motor drive p.c.b. which are connected to the mains supply. In case of servicing those units an isolation transformer should always be used.

3. It is advised to ground the chassis during any service handling. Check the interconnection of the two earth screws (safety earth and functional earth) located at the back side of the monitor behind the back cover. When working on the exposed chassis use only one hand during testing to avoid severe electrical shock.

4. As rough handling of the picture tube may cause implosion it should be handled with great care. The use of safety goggles and protective gloves is strongly advised. Replace the picture tube only with the type Philips 6G7EAA27W picture tube; see also clause 9.

5. As possibly danger of personal injury might result from unnecessary exposure to X-ray radiation generated by the picture tube, prolonged exposure at close range to unshielded areas of the picture tube should be avoided.

6. In case of repair, always switch off the monitor first. After switching off, wait at least 30 seconds, because the monitor has a self-discharging Cathode Ray Tube which takes 30 seconds to discharge. The only electrical parts of the monitor that may be exchanged are printed circuit boards. After exchanging printed circuit boards which might influence the high voltage of the monitor, the value of this voltage shall be checked to be $19 \pm 1 \text{ kV}$. If a deviating value is found, it shall be corrected by adjusting R8, R7 and R201 on WM10 along the lines of the test instructions.

7. After exchanging PCB's in the supply unit, check the voltage on X1:3 to be $\pm 120 \pm 1 \text{ Volt}$. If a deviating value is found, readjust R1 on WM20. Use only an isolated screw driver.

8. The monitor is supplied connected for 220 V mains supply only. The mains cord, being a part of the cable harness (see 22-2: cable harness) must be connected according to the relevant System Documentation. The mains cord contains 3 wires. Their colours indicate the following:

| GREEN (CN)    | SAFETY EARTH |
| BLACK (BK)    |              |
| WHITE (WH)    | 220 Volt     |

9807 751 5.01 (89.0) 1.1
9. The monitor shall be installed at least 6 feet (1.83 m.) beyond the perimeter of the patient's bed, or table etc., and at least 7.5 feet (2.29 m.) above the floor.

10a. All components, indicated on the schematics with ▲ have safety functions. They may only be replaced by components having exactly the same properties. This can only be guaranteed if the same manufacturer or supplier is used.

10b. Normal repair of the monitor shall be carried out by exchanging complete Printed Circuit Boards. If repair on a Board is unavoidable, refer to manufacturer's parts list for safety critical components as mentioned under 10a.

11. When mounting the cable harness (9807 750 31101), make sure the protective sleeve of the harness does not stick into the monitor for more than 1 cm. Lengths of cables from the cable harness inside the monitor must be kept as short as possible.
Cables should be drawn back if, e.g. during transport, the sleeve has been shifted too much.

12. Before returning the serviced monitor to a client or before reputting it into operation at least the following safety tests should be performed:

a. Earth continuity test:
   An ohm meter is used to measure the resistance between each separate accessible metal part and the earth connection of the mains inlet. All measured values should be ≤ 0.1 Ohm.

b. Earth leakage test:
   An AC meter with an impedance of 1500 ohm, shunted by 0.15 μF is connected between the safety earth screw and the earth connection of the wall outlet.
   During this measurement the monitor may not be connected to the mains earth connection.
   The measured value should be ≤ 0.7 Volt.

WARNING

In case of a defect in the monitor, the enclosure may be under voltage stress, if the measured voltage is over the indicated value.

13. This monitor is supplied with 2 fuses, 2 spare fuses and a copper bar. When using the monitor with a mains plug which can be reversed, both phase and neutral must be fused.
In all other cases only the phase (L) must be fused and the copper bar must be inserted into the neutral (N) fuseholder. If not indicated, to be determined by measuring with a low impedance ohm measuring device, or voltage measuring device. (IEC 601).
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
SERVICE MANUAL UNIT
HM(R)20S 20" TV MONITOR
TYPE NR: 9807 751 5.01
SERIAL NR:

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Section A: INTRODUCTION AND TECHNICAL DATA

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1. GENERAL

1.1. SCOPE OF PRODUCT

This section describes the performance of a high resolution dual standard TV monitor for display of monochrome video signals. The monitor is considered to be a segment of the X-ray TV system. Styling is in correspondence with this environment. The monitor is mechanically compatible with TV monitors 9807 750 2.01, 9807 750 8.01, 9807 751 50001 and 9807 751 50101. The normal 50Hz version (NON-ROTATABLE IMAGE) has the code nr. 9807 751 51601, while the normal 60Hz version has code nr. 9807 751 51501. The rotatable 50Hz version has the code nr. 9807 751 51401, while the rotatable 60Hz version has the code nr. 9807 751 51301. All monitor types have ambient light controlled brightness and contrast. The product is a non-dividable functional unit. All properties can be easily verified.

1.2. BASIC PROPERTIES

The monitor is equipped with a 20 inch high resolution tube M47EAA27WW, deflection angle 110 degrees. The monitor will accept both standard TV signals and high resolution signals. Switching over is done automatically. Without an input signal the monitor will switch to low lines. In the high resolution mode, an aspect ratio of 3:4 or 1:1 can be selected by internal jumpers. After changing the aspect ratio readjustment of the picture width and geometry will not be necessary. The monitor can display 100/120 Hz pictures by internal jumpering. Readjustment of picture height will be necessary after changing jumper setting.

2. DEFINITION OF TERMS

- STANDARD SIGNALS are video signals that comply with CCIR or EIA broadcast standards.

- NON-STANDARD SIGNALS are video signals that do not exactly meet the CCIR or EIA standard. Possible deviations are:
  o absence of equalizing pulses
  o line and frame frequency, up to max. +/- 4%
  o set up levels
  o fall and rise times of synchronization pulses
  o non-standard ratio of video/sync.
3. TECHNICAL REQUIREMENTS

3.1. OPERATIONAL PERFORMANCE

3.1.1. Electrical

- Power

Supply voltage : 220 V ± 10%
Frequency range : 48-62 Hz
Input power : ca. 65W
CRT high voltage: 18.5 ± 1 kV at zero beam current.
Breathing < 2% from zero to max. beam current.

- Video Amplifier

. The monitor will accept the following input signals:
  Standard signals CCIR or EIA.
  Non-standard signals with the line and field frequency within
  the range of CCIR or EIA.
  High resolution signals 1249 lines 50 Hz or 1049 lines 60 Hz.
  Signals with 100 or 120 Hz field frequency (line frequency 32 KHz).
  Separated video and composite synchronization pulse.
  Signals from VCR and VTR.

. Input level
  Composite video: 0.5 Vpp to 2 Vpp. Nominal 1 Vpp.
  Video 0.35 Vpp to 1.4 Vpp; Sync. 0.15 Vpp to 0.6 Vpp.

. Ratio peak video/sync: max. 4.5

. Frequency response maximal deviation from a flat characteristic:
  Up to 20 MHz -1dB to +1dB.
  At 25 MHz <= -3dB.

. Tilt
  Tilt on 50 Hz square wave <= 5%
  Tilt on line frequency square wave <= 5%
  Overshoot on 250 kHz square wave <= 5%

Figures defined at 100 cd/m² peak white level.

. Hum
  50% added hum at nominal video level will give no significant picture
  disturbance.

- Horizontal Deflection

Nominal line frequency 15680 Hz or 31350 Hz.
Synchronization lock and hold: 4%
Flyback time : max. 6μS
Stability of amplitude : better than 2% of picture height.
- **Vertical Deflection**

Synchronization: 48 Hz to 62 Hz or 96 Hz to 124 Hz.
Stability of amplitude: better than 2% of picture height.

- **Dynamic Focus**

Horizontal and vertical dynamic focus is applied.

3.1.2. CRT

- Dark tinted glass with direct grind anti-glare treatment to improve contrast.
- Phosfor WW (standard white) tube M47EAA27WW.
- New generation gun for improved resolution.
- Internal surge limiter reduces flash-over effects.

- **Display Size**

280 x 280 mm or 280 x 360 mm

- **Aspect Ratio**

In Low Line Rate mode an aspect ratio of 3:4.
Internal jumper selectable aspect ratio in High Line Rate mode; 1:1 (for XTV5 and XTV6) or 3:4 (for XTV11 and XTV12), without the need for readjustments.

- **Interlace Factor**

Better than 45:55.

- **Geometry**

Inside monitor circle better than 1% of picture height.
2% for rotatable version.
Outside monitor circle 2%.

- **Resolution**

Modulation of 20 MHz bars in the centre >= 20% (high line rate).

- **Positional Hum**

Peak to peak displacement is less than 0.2% of picture height.

- **Picture Position**

The theoretical centre of the monitor circle is centered to the displayed area with a maximum deviation of 1% of the picture height.
The rotatable version has an additional deviation of 2% during rotation.
After switching from low to high line rate or back, an additional shift of 1% is allowed.
- **Black level**

With the black level adjusted to 4 cd/m² this level will be reached within 10 minutes.
From picture appearance until stabilization the level will be <= 10 cd/m².
Drift versus temperature: <= 2 cd/m² over operating temp. range.
Change due to 50% white at 250 cd/m²: <= 5 cd/m².
Black level brightness: max. >= 15 cd/m²
min. <= -50 cd/m².

- **White level**

front control: max. 600 cd/m²
min. equal to black level.

- **Picture height stability**

In all normal operating conditions, including empty tape play back, the picture dimensions shall not drop below 70% of the useful screen dimensions.

3.1.3. **Compatibility**

- The monitor is compatible with the following systems:
  - TV CHAIN XTIV4
  - TV CHAIN XTIV5
  - TV CHAIN XTIV6
  - TV CAMERA XTIV8
  - TV CHAIN XTIV11
  - TV CHAIN XTIV12
  - DCO systems
  - DVI systems
  - VCR and VTR

- The monitor is compatible with the following suspensions:
  - Mobile support (9807 606 20001)
  - Wall support (9807 605 60001)
  - Ceiling suspension (9807 605 70001)
  - Yoke (9807 605 90001)
  - Ceiling suspension for 4 monitors (9807 607 40001)

3.2. **MAINTENANCE AND LOGISTICS**

- Several measures have been taken to assure good serviceability:
  - Printed circuit boards can easily be exchanged.
  - Good accessibility for measuring purposes.
  - Easy exchange of picture tube.
3.3. OPERABILITY

3.3.1. Reliability

MTBF: 15000 hours excluding picture tube, picture tube 24000 hours.
MTTR: 0.5 hours
Economic life: 7 years

3.3.2. Operational Environment

Temperature range:
+10 to +45 degrees during operation
-25 to +70 degrees during transport

Humidity:
max. 90% during operation

Mains supply:
The monitor will show no significant picture deterioration under the following conditions:
Mains voltage drops of 25% during 10ms.
Mains voltage drops of 100% during 1ms.
Spikes of 500 V on mains voltage according to UXW 13850.

No defects may occur due to voltage spikes of 1000 Vpp according to UXW 13850.

3.4. DESIGN CONSTRAINTS

Applicable Standards and Regulations

- Safety

IEC 601-1
AP requirements only applicable for remote control functions
UL 1410
CSA C22.2

- Electro Magnetic Compatibility

EMC behaviour in accordance with UXW 13850
UXW 13850 covers VDE 0871 (level B)
VDE 0875 (level N)
FCC rules

- X-ray Radiation

The monitor complies with: DHHS
NH-W
Røntgenverordnung

- Mechanical Environment: MI - Acc. to UXW 13600 -

- Climatic Environment: CI - Acc. to UXW 13600 -
4. **INTERFACES**

2 BNC connectors for video with loop-through facility. When no loop through is required (75 Ohm termination), the second BNC connector can be used for external composite synchronization or parking the second video cable.
1 DIN plug and 1 MOD connector for remote control of rotatable scan system (when applicable).
1 9-pin D connector for remote control of brightness and contrast (when applicable).

5. **OPERATION**

5.1. **NON-ROTATABLE VERSION**

Default setting of brightness and contrast adjustment by screwdriver at the front of the monitor via covered holes. Knobs included.
All other adjustments are located inside the monitor and are not user operated.

5.2. **ROTATABLE VERSION**

Default setting of brightness and contrast adjustment by knobs at the front of the monitor.
All other adjustments are located inside the monitor and are not user operated.
3 switches for left, right and zero position are provided.

6. **AMBIENT LIGHT CONTROLLED BRIGHTNESS AND CONTRAST LEVELS**

- Control at ambient light levels between 1 and 1000 lux.
- Control characteristics jumper selectable, depending on application.
- Wide field of view optical sensor.
7. ADDITIONAL INFORMATION FOR ROTATABLE VERSION

7.1. FUNCTIONAL DESCRIPTION

The 9807 751 51301 and 9807 751 51401 have the possibility of rotating the image in any desired position. Rotating can be done either by three pushbuttons on the front of the monitor, or by remote control.

7.2. PERFORMANCE

- Mains voltage: 220VAC 50 Hz or 60 Hz only.

- Rotation control:
  
  o 3 pushbuttons on the front for left, right and zero.
  
  o Remote control via a 10 pole MOD connector (WM60:X1) or 6 pole DIN plug (WM60:X7).

- Zero position: Maximal deviation from the nominal zero position ± 5 degrees. When switching on, the image automatically moves to this position.

- Rotation time: circa 10 seconds.

- Picture position: An extra deviation of the picture position in a rotated position is allowed.

- Operation of the image rotation mechanism shall not generate any visible disturbance in the image (when applicable).

7.3. DESIGN CONSTRAINTS

Apart from standards and regulations mentioned in 4.4., the remote control connections also meet the AP requirements.
Section B: INSTALLATION

CONTENTS

FIG. 1 B-2

1. CABLE ASSIGNMENTS B-3

2. DISMOUNTING AND MOUNTING OF THE CABLE HARNESS B-3
1. **CABLE ASSIGNMENTS**

WM10:X1 Video IN termination at 75 ohm via S1 if X2 not looped through. 
:X2 Video OUT (Loop Through) or External Synchronization not terminated.

**NOTE:** With cable harness 9807 750 31101 two video cables are provided. If a second monitor or loop through situation is not needed the second video cable can be parked at WM10:X2, provided that WM10:X2 is disconnected from the circuitry by switching S1 to the right, as seen from the rear, and putting W4 on 1-2. Parking the second video cable at WM10:X2, is not allowed for monitor types 9807 751 50001 and 9807 751 50101, otherwise a ghosting will appear on the screen.

WMX1 220VAC Mains
WM1  yel/grn Ground
WM60:X1 MOD connection for remote control of rotation system (only rotatable). 
:X7 DIN connection for remote control of rotation system (only rotatable). 
:X8 D connection for remote control of brightness and contrast levels (not applicable).

**NOTE:** Above cables are integral part of cable harness 9807 750 31101.

2. **DISMOUNTING AND MOUNTING OF THE CABLE HARNESS**

For picture see figure 1.

- Remove the cable harness (1) from clamp (2) by pulling the harness backwards (away from the monitor housing).
- Loosen four screws (A) and remove back cover (3).
- Now, the cable harness plus strain relief clamp (4) can be loosened by lifting up clamp (4) a little.
- Clamp (4) exists of two clamp halves (B) and (C), one clamp cover (D) and a plug (F) (Not visible in picture). Those parts are attached to each other by four screws (E) M3x20.
- By removing those four screws the parts can be taken apart and in this way clamp (4) can be removed from the cable harness.

**NOTE:** The second hole is for looping-through possibilities, if not used the second hole must be covered with delivered plug (F).

Mounting of the cable harness takes place by carrying out the actions mentioned above in the reversed order.
pretective sheeve always stays at least 92 cm above the floor.

such that, independently of the position of the monitor suspension, the

- The building of the cable harness (wires are indicated in fig. 1) must be

- The exhausted too much.

Cables must be drawn back il, e.g., during transport the sheeve has been

Inside the monitor must be kept as short as possible.

monitor for more than 1 cm. Length of cables from the cable harness

- Make sure the protective sheeve of the harness does not stick into the

IMPORTANT
Contents

1. General C-2

Drawing

WM10 CZ-1
See final section Additional Information (AIV).

**NOTE:** To adjust the monitor in accordance with Tommcan specifications,
been included in the need for further adjustments are required.

Jumper settings and component levels with the effects of their adjustment has
- In most cases, this will be the extreme of the adjustment, A J ust of switches,

- A desired value.

- Contrast (front control), contrast-control.

- Brightness and contrast control are factory adjusted.

- With WMIO:6G,

- Apply VBS or WMIO:4X (Video In) and adjust for correct vertical deflection

- 64:0:sec for 50Hz or 63:7: sec for 60Hz.

- While monitoring WMIO (line out) adjust this signal with WMIO:R10 to read

- Apply power, and ensure a raster is present.

- Check and ensure all plugs are in the right place, and programming is

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1. GENERAL
Overview of switches, jumpers, potentiometers, capacitors and coils with the effect of their adjustment.

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<td>Line (Hor.) Parabola (Dynamic Focus)</td>
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Section F: CORRECTIVE MAINTENANCE

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DRAWING

WM10 FZ-1
(CHT) and adjustments mentioned in 2.2 (Deflection) must also be carried out.

Besides, in case of mounting a new deflection coil or a new monitor tube
sealed before, it can be ordered under code nr. 2122 362 00727.

Since potentiometer MWO:3 may also have to be replaced (if it has been
which can be ordered under code nr. 2422 086 01042.

After each repair in the monitor, the adjustments mentioned in 2. and 2.1,

IMPORTANT

Adjustment procedure for TV Monitor H(8)205
1. GENERAL

Check whether all plugs are in (the right) place.
Remove the fuse of the Power Supply WM20:Z1, if a resettable fuse is available; otherwise make sure to have a spare Z1-fuse.
Turn all potentiometers on basic panel WM10 in their mid-position, including R1 and R2 at the front of the monitor, except for R3, R7, R8 and R201: turn R3, R7, R8 and R201 completely counter-clockwise.
Put switch WM10:S1 to the right (75 Ohm termination), as seen from the rear.
Disconnect WM10:X5, WM60:X5, WM60:X6 and WM60:X9.

Note: Tolerances.
When using tolerances the following should be agreed about: the number of decimals behind the full stop determines the tolerance.
So, 56 can vary between 56.0 and 56.9;
56.0 can vary between 56.00 and 56.09.

Standard factory adjustment is for low lines and an aspect ratio of 3:4 (for high lines aspect ratio: 1:1 and 3:4).

2. ADJUSTMENT PROCEDURE

Connect the monitor to the mains and switch on.
Check the voltage on power supply WM20 at point X1:1 to be 120 +/- 1 volt.
IF NECESSARY, ADJUST WITH WM20:R1. Adjust the period time (WM10:R10), measured at measuring point 11 to 64.0/μsec for 50Hz or 63.5/μsec for 60Hz while no video signal is being applied to the monitor.

If available, put the resettable fuse (Z1) on the Power Supply WM20.
The following two adjustments are global; an accuracy greater than 10% is not necessary: adjust the voltage, measured at WM10:C48 as follows:
Apply a low lines video signal and adjust 35 Volts with WM10:R8.
Apply a high lines video signal with scan ratio 1:1 and adjust 60 Volts with WM10:R7 (W6 on 1-2).
Apply a high lines video signal with scan ratio 3:4 and adjust 60 Volts with WM10:R201 (W6 on 1-2).
If the brightness is turned up too high the CRT will become irreversible.

WARNING

Point of light becomes fuzzy visible.

Switch on the monitor and very carefully turn up the brightness until a little

Turn brightness and contrast potentiometers completely counter-clockwise.

parts itch.

A separate detection coil can be ordered under the code number, stated in the

NOTE

Connect a separate detection coil instead of the original one.

Switch off the monitor.

Turn M10:04 clockwise until the CRT just starts to itch.

Measures the level of the cathode of the CRT and adjusts with the brightness.

2.2. DECTECTION

Replace an original fuse WM20:21 (see "IMPORTANT" at page P-2).

Remove the 820 Ohm resistor.

Increase WM10:820 for high lines (1:1) and WM10:8201 for high lines (3:4).

Adjust the high voltage for both frequencies to 18-19 kV with WM10:820 for low

Select M10:02:R such that turning becomes impossible.

Blows.

Adjust the high voltage to 21 kV and turn M10:02:R clockwise until the fuse

Adjust the fuse (Z1) on the power supply WM30:Ab a resetable type or make

Replace the fuse (Z1) by a new (unseated) potentiometer.

If M10:03:R has been seated, replace by a new (unseated) potentiometer.

As well

(3:4) with WM10:8201, which both finally must be turned back a few times

Repead the procedure for high lines (1:1) with WM10:820 and for high lines

Requirement: Z2KV. Turn WM10:85 a few turns back.

Circulars start motoroscopically.

For low lines, turn up the high Voltage (WM10:85) to such an extent that the

NOTE: H.T. probe is needed for this measurement.

Connect WM10:7X to get high Voltage.

2.1. HIGH VOLTAGE
Adjust, with the magnet rings of the deflection coil, the little point of light at the mechanical centre of the CRT.

Seal the magnet rings.

Connect the original deflection coil.

For the following adjustments a cross-hatch pattern must be displayed.

First adjust the High Voltage for high lines (1:1); adjust with WM10:R7.

Demand: between 18 and 19.2 kV.

Adjust the High Voltage for high lines (3:4); adjust with WM10:R201, 300 volts higher than the High Voltage for high lines (1:1).

Switch over to low lines.

Adjust the High Voltage 300 volts higher than the value at high lines (1:1) or equal to the value at high lines (3:4); adjust with WM10:R8 (max. 19.5 kV).

Now adjust the images as stated hereafter:

- Adjust WM10:R9 such, that the trailing edge of the (line) sync. pulse (MP3) coincides with the middle of the line deflection flyback (MP13:H-drive).
- Image width with WM10:R8 (low lines), WM10:R7 (high lines 1:1) and WM10:R201 (high lines 3:4).
- Line linearity: WM10:L4 (low lines) and WM10:L5 (high lines).
- Image height: WM10:R6 (low lines) and WM10:R53 (high lines).
- Vertical shift: WM10:R5.
- Horizontal shift can be corrected with WM10:R9.

Notes:

- For low lines, the image width can also be influenced by WM10:L6.
- The adjustments for high and low have influence upon each other.
  Therefore, first adjust the monitor globally and then repeat adjustments until the requirements are met.
- Equality of the High Voltage (or 300V difference in case of 1:1) is more important than the exact equality of the deflection.
- The image geometry can also be influenced by the round magnets, delivered with the deflection coil.

Connect WM60:X5, WM60:X6 and WM60:X9.
Measure the brightness of the white area with the help of a lux meter.

\[ V_1 = 0.48 + 0.005 \times \frac{V}{A} \]

1. Line: according to figure.

- Level difference at M10:O1 between white and black level must be adjusted.
- Image containing a pure white area (e.g., a vertical bar) may not be used.

Video input at M10:01.

Switch: M10:01 to 1-2.

Jumper setting: M1:0 B:1 D:3, M2:0 B:1 D:3, M3:0 B:1 D:3, M4:0 B:1 D:3, M5:0 B:1 D:3, M6:0 B:1 D:3, M7:0 B:1 D:3, M8:0 B:1 D:3.

Default position can be achieved by pressing up- and down button simultaneously.

Black level and contrast must be in default position.

Brighmess and contrast can be adjusted manually.

Connect the remote control for brightness and contrast.

Monitor light output must have stabilized (at least 1/2 hour after switch-on).

2.5. Adjustment of brightness/Contrast and checking of LDR.

Adjust for optimal definition in the center of the image with M10:H12.

(M10:H12)

Adjust the image parade at 200 V (M10:V11) of the frame parade at 1000 V.

2.4. Focus.

Adjust M10:H17 to get a clear output at the center of the image of 400 cd/m^2.

Apply a white image low light video signal.

WM10:H15 at 20V (measured at the cathode).

M10:H17 at 40V (measured at the anode). In the contrast potentiometer to maximum and adjust the white limiting with a white video signal.

Apply a step function with a rise time of at least 30 nsec.

Detect (sensitive: less than 0.5V).

Adjust M10:H17 until the light output to 25 cd/m^2 (Recommended: measuring potentiometer completely counter-clockwise).

Turn the brightness potentiometer completely clockwise and the contrast.
2.5.1. Adjustment of brightness and contrast

Brightness and Contrast at 0 by turning WM10:R2 and WM10:R1 completely counterclockwise.
Lux meter at: < 1 cd/m².
Turn up Contrast (WM10:R1) to 17 cd/m².
Turn up Brightness (WM10:R2) to 114 cd/m².
Now both potentiometers are in their position-of-delivery.

2.5.2. Checking the LDR-functioning

WM10:W5 in position 1-3.
Excessive light on LDR (Lux meter: 113-114 cd/m²).
Rough check of LDR.
Measure minimal light output by disconnecting the LDR (disconnect WM10:X10).
Lux meter 45 ±5 cd/m².
Reconnect LDR and block it out as lighttight as possible. Lux meter: minimum output; 2 to 3 cd/m².
Check the LDR characteristic by illuminating it such, that a correct LDR causes a screen light output of 60 ±15 cd/m².

2.5.3. Delivery

Metal strip between WM:1 and WM:2 must be taken away and parked at WM:1.
Shave basic panel back.
In case of fixed version; put covers in potentiometer holes.

2.6. FINAL EVALUATION

Check the image critically for imperfections like:

(a) Extreme noise
(b) A tendency to oscillation
(c) Stripes

Also check for scratches or dirt on the monitor.
No adjustments needed

WMZO:8/T1

+120 volt O/P

WMZO:8

TH1 Low line Horizental Linearity
TH2 Low line Horizental Linearity
TH4 Frequency Correction

RZ01 High line H.T. Ad.
RZ3 High line H.T. Ad.
R25 GL Adjust
R15 Center focus
R14 Vertical Parabola (dynamic focus)
R12 Line (Horiz). Parabola (dynamic focus)
R11 Line (Horiz). Offset Ad. (64.0 or 63.5 usec)
R10 Vertical Shift
R88 Low line H.T. Ad.
R7 41 High line H.T. Ad.
R6 Low line H.T. Ad.
R5 Vertical Linearity
R4 Max/min H.T. Ad. (2.1 V)
R2 Brightness Ad. (front panel)
R2 Contrast Ad. (front panel)

WM10:R1

Sync. Internal
WM10:Z2

WM10:Z1 (not terminated)

3 4 Scan Ratio High line Rate
I:1 Scan Ratio High line Rate

WM1:Z2

WM1:Z4

WM1:Z5

WM1:Z6

WM1:Z8

WM1:Z9

WM1:Z10

WM1:Z11

WM1:Z12

External WM10:Z2 (not terminated)

WM10:Z1 = WM10:Z2, WM10:Z1 not terminated.

I-3 Loop through (WM1:Z1 = WM10:Z2, WM10:Z1 not terminated).

I-2 Name Position Function

9607 751 5.01

NOT IN CASE OF MONITOR EXITS 9607 751 5000 AND

WM10:Z2 IS INSTEAD FOR PARALLEL A SECOND VIDEO CABLE.

Terminates WM10:Z1 with 75 ohm. WITH WM10:Z4 ON I-2.
Note 1:

Adjustments for a rotatable and a non-rotatable monitor are in principle the same. Only, in case of a rotatable monitor, check the following:
When switching-on the monitor the deflection coil must automatically turn to its zero position.
Check left- and right turning of the deflection coil, both in local- and remote control.
Check (with a circle signal) whether the swinging of the circle during rotation remains within 1% of the image height.

Note 2:

The adjustment procedure as described in this section C is valid for both 50 Hz and 60 Hz mains frequency applications, only:
- for low line rate one should read 625 lines for 50 Hz or 525 lines for 60 Hz.
- for high line rate one should read 1249 lines for 50 Hz or 1049 lines for 60 Hz.
- as final adjustment, adjust the Vertical Deflection with R6 on WM10.

Note 3:

Specific Adjustment for DCI
For DCI-application, only the Vertical Amplitude must be readjusted (WM10:R6)
For specific values, see Documentation "DCI Combined Unit Manual", Section C.

Note 4:

If the image width is too small or too large, the whole image can be enlarged narrowed by lowering or increasing the high voltage by adjusting the applicable potentiometer.
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BLOCK DIAGRAM
OF 20" HR MONITOR

9607 751 5.01 (b/38.0)
CABLE HARNESS
1. Loop through \( WMI0:XI = WM10:XX \), \( WMI0:XI \) not terminated.

2. Terminate \( WMI0:XI \) with 75 ohm, with \( WMI0:MY \) on I-Z.

---

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---

2. Set jumpers WI up to WE and switch SI on the WM10 basic board according to:

1. Use the SMD test-pattern as adjustment image (this test-pattern is monitor's, switchers, p-petters, capacitors, and coils on the WM10 basic board of the adjustment procedure; see section C page C-1 for the location of jumpers).

The HR(20) monitor has to be adjusted to the Tomoscan TX, CX or LX video.

---

Adjustments:

- Refer to 220V Dots or 60Hz, but will still give problems when powered with 208V.
- These are the 220V outlets for the CC. The HR(20) monitor normally connect the power-cable to the power distribution unit, connects terminals US, V3, U3.

---

2. Power-cable.

- Connect the video-cable at the monitor-stde to video input X1 on the WM10.
- Connect the video-cable at the monitor-stde to video input Y1 on the WM10.

---

Conclusions to be made:

Including IDC and DDC for all of the above mentioned systems:

HR(20) monitor to be used with the following systems:

The additional information in this section is meant for testing the
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NOTE: Jumpers W5, W7 and W8 to be positioned depending on application.

The video-cable coming from the Tomoscan TX-, CX- or LX-system has to be terminated by a 75 ohm resistor (only once in the whole video chain of course). This can be done internally in the WM(R)20S monitor by setting switch WM10:S1 in position 1-2 to 75 ohm termination. If an external 75 ohm terminator is used already, then set switch WM10:S1 in position 1-3 to OPEN.

3. Replace WM10:C74 (0.82/µF) by a capacitor of 1/µF (codenr. 2222 357 51105), to get an aspect ratio of 4:5 instead of 3:4.

4. Adjust the horizontal hold with WM10:R10 until the picture is as stable as possible.

5. Set jumper WM10:W4 from the 1-3 to the 1-2 position (no external sync.).

6. Fine adjust the horizontal hold, if necessary, with WM10:R10 to stabilize the picture.

7. Adjust the picture width with WM10:R201, or if not present with WM10:R7, do not overscan (don’t use more than 95% of the full monitor width). Or if equipment is available adjust with WM10:R201 (or WM10:R7) high tension to 18.5 kV, measured at high tension connection to the picture tube, with high tension probe (i.e. PM9246A) and DMV (i.e. PM2518X).


10. Adjust the picture height with WM10:R53, if not present with WM10:R6.


13. If BRIGHTNESS pre-adjust is necessary, then:
   a. turn the CONTRAST-potmeter at the monitor front fully counter-clockwise (minimum contrast).
   b. Turn the BRIGHTNESS-potmeter at the monitor front fully clockwise (maximum brightness).
   c. pre-adjust the brightness with WM10:R14.
**NOTE:** If the monitor shows problems in images with high contrast differences.

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**OVERVIEW:** As possible, change parameters, capacitors and coil with the effect of their image as close as possible to the system monitor image.

14. Adjust BRIGHNESS and CONTRAST at the monitor to match the HM(N)202S monitor.
This manual is part of the service documentation set for the XT5 TV chain. It should be filed with the service manual for the.

Additional binders can be ordered from IPC Eindhoven:

Code Number:
- 4522 980 31641
- 4522 980 31651
- 4522 980 31631
- 4522 980 31641
- 4522 980 31651

Capacity:
- 20 mm
- 50 mm
- 65 mm

FILED INSTRUCTIONS

XTV5 CAMERA FB/HFB 4522 161 5024. / 4522 161 7130.
SERVICE MANUAL-UNIT

XTV5 Camera FB/HFB

4522 161 5024.
4522 161 7130.

For serial numbers, see list of pages and drawings

IPC: Eindhoven

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EINDHOVEN THE NETHERLANDS

Printed in The Netherlands (a/88.0)
### SERVICE MANUAL UNIT
**XTV5 CAMERA FB/HFB**
**TYPE NR.** : 4522 161 5024. / 4522 161 7130.
**SERIAL NR.** :

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<td>F-17</td>
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</tr>
</tbody>
</table>

**PRINTING INSTRUCTIONS:** 4522 983 10942
1. **PURPOSE**

The XTV5 Camera FB/HFB is used in fluoroscopy systems to receive, to convert and to control electronic signals to and from a camera image tube.

2. **VERSIONS**

There are no versions of this camera to date.

3. **ITEMS SUPPLIED** (Figure A2-1)

- XTV5 Camera FB/HFB

3.1. **EQUIPMENT ITEMS**

3.1.1. Deflection and Focus Coil Assembly

Contains horizontal and vertical deflection coils, a focus coil, and alignment coils.

3.1.2. Vertical Deflection Board WK1

Generates a vertical sawtooth current for the vertical deflection coils; cathode and G1 control voltages; and directs filament voltage to WK6.

3.1.3. Preampifier Board WK2

Converts signal current from the camera image tube into a video voltage, which is then amplified, clipped and blanked.

3.1.4. Horizontal Deflection Board WK3

Generates a horizontal sawtooth current for the horizontal deflection coils, and alignment control voltages.

3.1.5. High Voltage Board WK3

Generates voltages for the camera image tube grids G2, G3, and G4 for the High Voltage Detector Indicator Lamps at WK1(WKH1) and (WHUD); and a Va Adjust Signal for WK2.

3.1.6. Back Panel Board WK5

Contains interface components and a camera image tube-type select switch.

3.1.7. Tube Interface Board WK6

Receives and directs electrical supplies for the camera image tube.

3.1.8. Mechanical Sections

Comprise a cap, centering rings, image tube tension springs, and pressure assembly with image tube adaptor pieces.
3.2. CABLE SET

No cable set has been supplied with XTV5 Camera F0/HFB.
The cables and cable connections are described in the BV/25 level documentation.

3.3. MOUNTING HARDWARE AND SMALL PARTS (A2–3)

4. TECHNICAL DATA

4.1. PERFORMANCE DATA

4.1.1. Performance Specifications

<table>
<thead>
<tr>
<th>INPUT POWER</th>
<th>+15V ± 5% (max. 350mA); -15V ± 5% (max. 600 mA)</th>
<th>+15V ± 0.1V</th>
<th>-15V ± 0.1V</th>
<th>OV</th>
<th>+6.4V ± 0.1V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+15V (max. 350mA); -15V (max. 600 mA) Return 20mV Short time stability 0.3% Ripple ± 100 mV.</td>
<td>Measuring points</td>
<td>X1:B0</td>
<td>X1:B5</td>
<td>X1:A6</td>
</tr>
<tr>
<td>BANDWIDTH</td>
<td>25 kHz (-3dB) Flat within 1dB, 1–150kHz (ref. 1kHz)</td>
<td>Combination Pulse Measuring point</td>
<td>See Chart 1</td>
<td>X1:B3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.f. drop at 25kHz 4% 1.f. drop at 50kHz 10%</td>
<td>Interruption Measuring point</td>
<td>+6V ± 0.1V or OV ± 0.1V (&quot;1&quot; or &quot;0&quot;)</td>
<td>X1:A10, X1:A8</td>
<td></td>
</tr>
<tr>
<td>IMAGE TUBE</td>
<td>1&quot; diameter 6&quot; length, separate magnetic deflection, focus, and alignment</td>
<td>Start Circuit Measuring point</td>
<td>+6V ± 0.1V or OV ± 0.1V (&quot;1&quot; or &quot;0&quot;)</td>
<td>X1:A7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>VOLTAGES</th>
<th>G1</th>
<th>-10V to -110V ± 10V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G2</td>
<td>+300V ± 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G3</td>
<td>+4600V ± 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G4</td>
<td>+120V ± 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FILAMENT</td>
<td>+46.9V ± 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V0</td>
<td>± max. +75V ± 5%</td>
<td></td>
</tr>
</tbody>
</table>

| BLANKING | Max. 100V total blanking at G1. |
| SCAN FAILURE PROTECTION | In the event of horizontal or vertical scan failure, the scanning beam in the camera image tube is immediately turned off. |
| BEAM CURRENT SUPPRESSION | Beam current is suppressed during flyback through G1 blanking and 15 sec after switch on. |
| CAMERA VIDEO OUTPUT | Non-composite with positive 2.5 V/cm/mA at 75Ω source |
| SIGNAL CURRENT | Adjusted to max. 600 nA |
| OUTPUT IMPEDANCE | 75Ω ± 5% |
| SIGNAL TO NOISE RATIO | ≥ 80dB with signal current of 300 nA with a 10kHz low-pass filter. |
| TARGET NEGATIVE PROTECTION | The potential of the cathode of the camera image tube can be lifted to a pre-adjusted value (0–4V). |
| REMOTE CONTROL FUNCTIONS | Horizontal Image Reversal, Beam Current Suppression, Target Negative Protection |
| LENS | Rodenstock 1.1/50: spring-loaded fixed coupling between lens and camera image tube. |

4.1.2. Input and Output Specifications

4.1.2.1. Vertical Deflection Board WK1

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>Supply Voltages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+15V</td>
</tr>
<tr>
<td></td>
<td>± 0.1V</td>
</tr>
<tr>
<td>Measuring points</td>
<td>X1:B0</td>
</tr>
<tr>
<td>Combination Pulse Measuring point</td>
<td>See Chart 1</td>
</tr>
<tr>
<td>Interruption Measuring point</td>
<td>+6V ± 0.1V or OV ± 0.1V (&quot;1&quot; or &quot;0&quot;)</td>
</tr>
<tr>
<td>Start Circuit Measuring point</td>
<td>+6V ± 0.1V or OV ± 0.1V (&quot;1&quot; or &quot;0&quot;)</td>
</tr>
<tr>
<td>Vertical amplitude Measuring points</td>
<td>-10V ± 0.1V to +10V ± 0.1V</td>
</tr>
<tr>
<td>Uv Adjust Measuring point</td>
<td>OV to -10V ± 0.1V</td>
</tr>
</tbody>
</table>
4.1.2.1. Vertical Deflection Board WK1 (Cont.)

Target Negative Protection
Measuring point \(X1:B9\)

Vertical Shift
Measuring point \(X1:B8\)

High Voltage Detection
Measuring point \(X1:B6\)

\(-115V\) Supply
Measuring point \(X1:A2\)

**OUTPUTS**

Supply Voltages

\[
\begin{array}{c|c|c|c|c}
+15V & +6.6V & -15V & 0V \\
\hline
\pm 0.1V & \pm 0.1V & \pm 0.1V & \\
\end{array}
\]

Measuring points \(X2:A1, X2:B6, X2:B3, X2:B9\)

GI Voltage
Measuring point \(X2:A10\)

Cathode Voltage
Measuring point \(X2:B5\)

V-Scan Measuring points
See Chart 1 \(X1:A4, X1:B4\)

**CHART 1: WK1 WAVEFORMS**

\(e = +5.5V \pm 0.2V\)

\(b = +2 \pm 0.2V\)

\(c = +0.7V \pm 0.2V\)

\(t1 = 6\mu\text{s}(50\text{–Hz});\ 7\mu\text{s}(60\text{–Hz})\)

\(t2 = 1.6\mu\text{s}(50\text{–Hz});\ 1.28\mu\text{s}(60\text{–Hz})\)

\(T2 = 16.6\mu\text{s}(60\text{–Hz})\)

**CHART 2: WK2 WAVEFORMS**

\[\text{Video} \quad \text{See chart 2} \quad \text{X1:A0, X1:B10}\]

4.1.2.2. Proamplifier Board WK2

**INPUTS**

Supply Voltages

\[
\begin{array}{c|c|c|c|c}
+15V & +10V & 0V & -15V \\
\hline
\pm 5% & \pm 10% & \pm 5% & \\
\end{array}
\]

Measuring points \(X1:A5, X1:B1, X1:B3, X1:A1, X1:A3\)

Target Current
Measuring point \(-650\text{ mA top to top}\)

Va Adjust
Measuring point \(X1:A10, X1:B10\)

**OUTPUT**

Video Measuring point \(X1:A5\)

**CHART 2: WK2 WAVEFORMS**

4.1.2.3. Horizontal Deflection Board WK3

**INPUTS**

Supply Voltages

\[
\begin{array}{c|c|c|c|c|c|c|c|c}
\hline
\pm 0.1V & \pm 0.1V & \pm 0.1V & \pm 0.1V & \pm 0.1V & \pm 0.1V & \pm 0.1V & \pm 0.1V \\
\end{array}
\]

Measuring points \(X1:A10, X1:B9, X1:A3, X1:A7\)

Combination Pulse Measuring point \(X2:A5\)

Alignment Control
Measuring points \(X1:B1, X1:B3\)

Static Focus Measuring point \(X1:A2\)

H-Scan Reverse Measuring point \(X1:B6\)

H-Shift Measuring point \(X1:B8\)

H-Amplitude Measuring point \(X1:B4\)

V-Scan Measuring points
See Chart 1 \(X1:B2, X1:A1\)
OUTPUTS

Static Focus  81-94 mA to 148-179 mA
Measuring points  X2:B3

-6.4V Focus Coil  -6.4V ± 0.1V
Measuring point  X2:A3

Alignment 1  
\[ V(X2:A2) = V(X1:B1) \pm 5\% \quad 0.45V(X1:B3) \pm 5\% \]
Measuring points  X2:A2 when connected to X2:B2

Alignment 2  
\[ V(X1:B3) \pm 5\% \quad 0.45V(X1:B3) \pm 5\% \]
Measuring points  X2:A1 when connected to X2:B1

Horizontal Scan  See Chart 3
Measuring points  X2:B7; X2:A5

 Interruption  
\[ +5.4V \pm 0.5V \text{ when } -7V \pm 1.0V \text{ at } (X1:B4) \]
Measuring point  X1:B5

Short Circuit  
\[ +6V \pm 0.1V \text{ or } OV \pm 0.1V \text{ ("1" or "0")} \]
Measuring points  X2:B10; X2:A10

HT Pulse  See Chart 4
Measuring point  X1:A6

INPUTS

Supply Voltages  
\[ +15V \pm 0.1V \quad OV \quad -15V \pm 0.1V \]
Measuring points  X1:B1; X1:A1; X1:B6

Dynamic Focus  See Chart 4
Measuring point  X1:B3

HT Pulse  See Chart 4
Measuring point  X1:B4

Va Adjust  
OV to +5V ± 0.1V
Measuring point  X1:B7

CHART 3: WK3 WAVEFORMS

A = 430mA ± 15%
Am = V(X1:B3) \pm 10% if L1 = 26.5 mA/V
Am = V(X1:B3) \pm 10% if L1 = 62.5 mA/V
L2 = Line frequency dependent

4.1.2.4. High Voltage Board WK4

INPUTS

Supply Voltages  
\[ +15V \pm 0.1V \quad OV \quad -15V \pm 0.1V \]
Measuring points  X1:B1; X1:A1; X1:B6

Dynamic Focus  See Chart 4
Measuring point  X1:B3

HT Pulse  See Chart 4
Measuring point  X1:B4

Va Adjust  
OV to +5V ± 0.1V
Measuring point  X1:B7

OUTPUTS

Supply Voltages  
\[ +920V \pm 5\% \quad +600V \pm 5\% \quad +300V \pm 5\% \quad -1000V \pm 7V \]
Measuring points  X2:B10; X2:A1; X2:B4; X2:B7; X1:A10

High Voltage Detector  
OV ± 0.7V
Measuring point  X1:B2

Va Adjust  
20.5V(X1:B7) ± 5%, limited to 83V ± 5%
Measuring point  X2:A9

CHART 4: WK4 WAVEFORMS

HT-PULSE

\[ \begin{align*}
\text{t} &= 12 \text{ usec} \\
\text{Y} &= 64 \text{ usec}
\end{align*} \]

DYNAMIC FOCUS

\[ +5.5V \pm 0.1V \]

Combined parabolic pulses (V-H)

4.1.2.5. Back Panel Board WK5

INPUTS

Supply Voltages  
\[ +15V \quad +6.4V \quad OV \quad -15V \quad -115V \]
Measuring points  X1:B2; X3:B2; X5:B5; X5:B3; X5:B1; X4:B6; X1:A2

Static Focus  81-94mA to 148-179 mA
Measuring point  X4:A3

Alignment Control  
\[ 1 \quad 2 \quad X4:B2 \quad X4:B3 \quad -9.5V \pm 2.2V \]
Measuring points  X4:B5

H-Scan Reverse  
OV to ± 15V (± 10%) Active when low
Measuring point  X4:B5

H-Shift  
-9.5V ± 0.7V to +9.5V ± 1V
Measuring point  X4:B6

H-Amplitude  
0.9 mA to 150-185 mA
Measuring point  X4:B4

Combination pulse  See Chart 1
Measuring point  X4:A1

V-Amplitude  
-10V ± 0.1V to +10V ± 0.1V
Measuring points  X5:A4; X5:A3

V-Shift  
OV ± 0.1V to +10V ± 0.1V
Measuring point  X5:A5

Interuption  
+6V ± 0.1V or OV ± 0.1V ("1" or "0")
Measuring points  X1:A10; X1:A8

Short Circuit  
+6V ± 0.1V or OV ± 0.1V ("1" or "0")
Measuring point  X1:A7

(03.0)E  4522 161 5024.
4.1.2.5. Back Panel Board W1K (Cont.)

INPUTS (Cont.)

Vg Adjust Measuring point 0V to -10V ± 0.1V X4:A2

High Voltage Detector -10V +10V ± 0V via 1kΩ ± 10% resistor X3:B2

OUTPUTS


Static Focus 81-94 mA to 148-179 mA X2:A2

Alignment Control Measuring points 1 2 See 4.1.2.3. X2:B1 X2:B3

H-Scan Reverse Measuring point X2:B6

H-Shift Measuring point -9.5V ± 0.7V to +9.3V ± 1V X2:B6

H-Amplitude Measuring point 0-9mA to 150-185 mA X2:B4

Combination Pulse Measuring point X3:A5, X1:B3 See Chart 1

V-Amplitude Measuring points X1:A5, X1:A9

V-Shift Measuring point 0V ± 0.1V to -10V ± 0.1V X1:B8

Vg-Adjust Measuring point X1:B7

Vtm Adjust Measuring point -10V ± 0.1V to +10V ± 0.1V X1:B9

Dynamic Focus Measuring Point X3:B3 See Chart 4

HT Pulse Measuring point X2:A6 See Chart 4

W-Scan Measuring point X2:A6 See Chart 1

Va Adjust Measuring point 0V to 80V ± 5% X3:B7

High Voltage Detector -10V +10V ± 0V via 1kΩ ± 10% resistor Measuring Point X1:B6

4.1.2.6. Tube Interface Board W1K

INPUTS

Supply Voltages Measuring points +15V +0.1V 0V +6.4V +0.1V -15V X2:A1 X2:B9 X2:B6 X2:B3

G1 Voltage Measuring point -114.9V ± 1.5V X2:A10

Target Negative Prevention Measuring point -10V ± 0.1V to +10V ± 0.1V X2:B5

Va Adjust Measuring points X3:B10; X3:A10

OUTPUTS

Supply Voltages Measuring points +15V +0.1V 0V +6.0V +0.1V -15V X3:B5 X3:B1 X3:B3 X3:A5 X3:A1 X3:A3

G1 Voltage Measuring point -114.9V ± 1.5V X3:A9

Cathode Supply Measuring point -V(WK1/X1:1:B9) ±5% X2:B7

Filament Supply Measuring point -6.4V ± 0.1V X2:B5

Va Adjust 20.5V (WK4/X1:B7) ±5%, limited to 83V ±5% X1:A9
**CAUTION**

Handle the camera with usual care. Since the camera image tube in the camera is a Vidicon, it can be irreversibly damaged by exposure to direct rays of the sun or other source of intense illumination.

---

**TABLE A1 CAMERA CABLE PLUG CONNECTIONS WXX1**

<table>
<thead>
<tr>
<th>POINTS</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0V</td>
</tr>
<tr>
<td>B</td>
<td>H-SHIFT</td>
</tr>
<tr>
<td>C</td>
<td>COMBINATION PULSE</td>
</tr>
<tr>
<td>D</td>
<td>0V</td>
</tr>
<tr>
<td>E</td>
<td>H-SCAN REVERSE</td>
</tr>
<tr>
<td>F</td>
<td>+6.4V SUPPLY</td>
</tr>
<tr>
<td>G</td>
<td>---</td>
</tr>
<tr>
<td>H</td>
<td>+15V SUPPLY</td>
</tr>
<tr>
<td>J</td>
<td>Wg ADJUST</td>
</tr>
<tr>
<td>K</td>
<td>V-SHIFT</td>
</tr>
<tr>
<td>L</td>
<td>0V</td>
</tr>
<tr>
<td>M</td>
<td>DYNAMIC FOCUS</td>
</tr>
<tr>
<td>N</td>
<td>Wg ADJUST</td>
</tr>
<tr>
<td>P</td>
<td>V-AMPLITUDE</td>
</tr>
<tr>
<td>R</td>
<td>H-AMPLITUDE</td>
</tr>
<tr>
<td>S</td>
<td>TARGET NEGATIVE PREVEN.</td>
</tr>
<tr>
<td>T</td>
<td>V-AMPLITUDE</td>
</tr>
<tr>
<td>U</td>
<td>STATIC FOCUS</td>
</tr>
<tr>
<td>V</td>
<td>ALIGNMENT CONTROL 1</td>
</tr>
<tr>
<td>W</td>
<td>+15V SUPPLY</td>
</tr>
<tr>
<td>X</td>
<td>ALIGNMENT CONTROL 2</td>
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<tr>
<td>AA</td>
<td>0V</td>
</tr>
<tr>
<td>M9</td>
<td>0V</td>
</tr>
</tbody>
</table>
Section B: INSTALLATION

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LIST OF DRAWINGS

1. CAMERA IMAGE TUBE REMOVAL BZ-1
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1. INTRODUCTION

This section contains instructions for installation, for camera tube removal and replacement, and for programming the XTV5 Camera FB/HFB.

2. TOOLS AND TEST EQUIPMENT

A standard tool set is required to install the XTV5 Camera FB/HFB.

3. PURPOSE OF MOUNTING MATERIAL

The purpose of any mounting material supplied with the XTV5 Camera FB/HFB is to ensure the camera and/or camera cable at a relevant location.

4. INSTALLATION INSTRUCTIONS

4.1. INITIAL CONDITIONS

(1) Before installing the XTV5 Camera FB/HFB, check that the programming requirements have been accomplished in accordance with paragraph 5, PROGRAMMING FACILITIES, of this section.

4.2. INSTALLATION MATERIAL

In order to properly mount the fiber-coupled camera 4522 161 5026, special optical oil and lens paper are needed.

4.3. CAMERA IMAGE TUBE REMOVAL (Figure BZ-1)

(1) Loosen and remove the three mounting screws. Remove the camera cap.

(2) Disconnect both the camera cable plug W04 and the BNC plug.

(3) Holding the vertical deflection board WK1 secure, loosen and remove the four mounting screws and washers.

(4) Carefully remove the vertical deflection board WK1.

(5) Loosen the three camera mounting screws, and gently lift the camera tube socket up - away from the camera tube pins so that the socket merely rests upon the image tube.
4.3. CAMERA IMAGE TUBE REMOVAL (Figure B2-1) (Cont.)

(6) Gently lift the camera away, and carefully remove the screws holding the pressure and centering rings in place.

(7) Rotate the camera image tube a quarter-turn, and lift the camera image tube up-right away from the image intensifier.

4.4. FIBER OPTICS CLEANING

**CAUTION**

Observe the following cautions to avoid damaging the fiber optics:

(a) Only use the lens paper supplied; do not use silicon-treated paper.
(b) Use a sheet of lens paper only once.
(c) Do not wipe fiber optics clean with a circular motion.
(d) Do not moisten or blow on the fiber optics.

(1) If the camera image tube or image intensifier is new, remove the protective cover.

(2) Clean the camera image tube with the lens supplied, moving the lens paper across the fiber optics in one direction only.

**NOTE**

If the cleaning has been done with alcohol, allow the alcohol to evaporate completely.

**CAUTION**

If the camera image tube is a Vidicon, it can be irreversibly damaged by exposure to the direct rays of the sun or any other source of intense illumination.

4.5. CAMERA IMAGE TUBE REPLACEMENT (Figure B2-2)

**CAUTION**

Before beginning, vertically position the image intensifier. With a lamp, carefully check that all dust particles have been removed from the image intensifier and Vidicon Camera image tube.

(1) Slide the centering ring over the camera image tube. Align the white mark on the camera image tube with the single groove on the pressure ring.

**NOTE**

In case of interference (scanning, mesh, fiber), align the white mark on the camera image tube with the double grooves on the pressure ring.

4.5. CAMERA IMAGE TUBE REPLACEMENT (Figure B2-2) (Cont.)

(2) Apply a drop of optical oil to the center of the image intensifier with the wire applicator in the top of the oil bottle. Check that the camera image tube is still aligned and that the target wire is correctly positioned. Press the camera image tube and centering and pressure rings on the image intensifier and secure.

**CAUTION**

Do not lift the camera image tube to re-align; turn only.

(3) Carefully lower the camera over the camera image tube.

(4) Press the camera tube socket onto the camera image tube socket pins.

**CAUTION**

Check that the pins of the socket are properly aligned. Do not twist the camera image tube.

(5) Replace and tighten the three camera mounting screws; replace the vertical deflection board WK1; reconnect the camera plug WCA1 and the BNC plug.

(6) Replace and secure the camera cap with the three mounting screws.

5. PROGRAMMING FACILITIES

This paragraph describes the conditions which must be met before installing the XTV5 Camera FB/NFB. Positions of controls and adjustments are described in Section C, SETTING TO WORK.

5.1. CAMERA IMAGE TUBE-TYPE MECHANICAL ADAPTATION

(1) If a Plumbicon camera image tube is to be installed, check that the proper adaptor (See Figure BZ-3) is in place.

(2) If a Vidicon camera image tube is to be installed, check that the proper adaptor (See Figure BZ-3) is in place.

5.2. VIDEO PREAMPLIFIER BOARD WK2

(1) For an XTV5/NFB System position jumper WI at H as shown on this page. Remove WZ.
5.2. VIDE0 PREAMPLIF1ER BOARD WIK (Cont.)

(2) For an XTV5 SF or FB System position jumper W2, as shown below, at L. Remove W1.

5.3. HORIZONTAL DEFLECTION BOARD WIK3 (Cont.)

(4) For an FB system position jumper W1 as shown below.

5.3. HORIZONTAL DEFLECTION BOARD WIK3

(1) For an XTV5 SF or FB system position jumper W2 as shown below.

(2) For an XTV5 FB System position jumper WIK2 as shown below.

(3) For an XTV5 SF or FB system position jumper W1 as shown below.

5.4. BACK PANEL BOARD WIK5

(1) For Vidicon XQ1285, position jumper W1 as shown below.
5.4. BACK PANEL BOARD WKS (Cont.)

(2) For Vidicon XQ 1285, position jumper M1 as shown below.
5.3. ERSATZ VON PRACTIX-C-TANK/BLENDE

- Den Tragflügel von Practix-C-Tank und Blende nicht abnehmen, damit die Ausrichtung gegenüber dem C-Bogen nicht verlorengeht.

- Die Verpackung von neuen Practix-C-Tank und Blende wieder benutzen für die Rücksendung von defekter Einheit.

Ausbau von Practix-C-Tank/Blende (Wenn nur die Blendeneinheit, siehe die Anleitung des fahrbaren Stativs, Abschnitt F).

1. Den C-Bogen senkrecht stellen, mit Practix-C-Tank unten, und verringeln.

2. Die Blendenebdeckung abnehmen (4 Schrauben M3).

3. Die kleine Montageplatte an der Seite des Flügels lösen, und die Einstellschraube aus der Blendeneinheit herausklappen.


ANMERKUNG

Zusätzlichen Linsenputzpapier, Codenummer 4522 980 16441, und optisches Oel, Codenummer 4522 980 18001, kann bestellen werden bei:

Philips Medical Systems
Technical Service
Space Parts Management
Butting ON
Einlöhmen
Niederlande
Einbau des Dauervorstreckers

(1) Den C-Sogen in die waagerechte Lage bringen und verteilen.

(2) Den Kaliberstift aus der Parkstellung in der Höhe der X2-Marke auf dem Xa-Gehäuse herausdrehen und aufbewahren.

(3) Das Typennummernschild des neuen BV auf dem Gehäuse befestigen. Die alte Platte abnehmen.

(4) Die Plastikschiene am Gehäuse nicht von der Austrittsfenster abnehmen.

(5) Die BV-ähnliche Vorsicht in das Gehäuse schieben und prüfen, ob sie einwandfrei in den Gehäuse eingesetzt sind.

(6) Darauf achten, dass der Referenzstift in das Gehäuse in die entsprechende Öffnung in der BV-ähnliche Vorsicht kommt.

(7) Den C-Sogen anziehen, senkrecht stellen, mit dem BV nach unten, und wieder verringeln.

(8) Den Eingangsteil in das Gehäuse setzen, dass die Marken auf dem Eingangsteil und den Rand des Xa-Gehäuses zusammenfallen und dann den Eingangsteil an 4 Senkköpfchen M4 an den Gehäuse festschrauben.

(9) Die 4 gummidichtungen so zwischen den BV-Schirm und den Eingangsteil legen, dass die Ausschnitte des Eingangsteils frei bleiben.


WÄHREND

DARRAUF ACHTEN, DASS DER KALIBERSTIFT NICHT KLEBEN, INFLOXIGE GEFÄHR.

(11) Die Sicherungsmuttern anziehen, dabei die Einstellschrauben mit einem Schraubenzieher festhalten, damit sie sich nicht drehen.

(12) Die schwarze Impulsionsplatte mit 4 Senkköpfchen M3 befestigen.

(13) Den Metallring mit 4 Senkköpfchen M5 auf dem Gehäuse befestigen.

(14) Falls erforderlich, den Raster mit 4 Senkköpfchen M4 befestigen. Der Markierungsstreifen muss senkrecht auf der Fläche Seite des BV-Gehäuses stehen.

(15) Den C-Sogen einziehen, senkrecht stellen, mit dem BV oben, und wieder verringeln.

(16) Den Kaliberstift wieder in die Höhe der X2-Marke legestecken.

(17) Die Klemme für die Hochspannungstecker liessen und die Kappen von den Hochspannungsteckern des neuen BV abnehmen.

(18) Falls erforderlich, die Hochspannungsschalter an der Kabelseite und der Steckerseite einbetten.

(19) Die Hochspannungstecker X1, X2, X4 und die Erdfüllung an die BV-ähnliche Vorsicht anschliessen. Die Hochspannungstecker aus hineindrehen.

(20) Die Klemmen der Hochspannungstecker so befestigen, dass die Stecker nicht mehr bewegt werden können und ein Uberspringen der Hochspannung vermieden wird.

(21) Die Plastikschiene am BV-Austrittsfenster abnehmen, damit das Ventials angekuppelt werden kann.

(22) Die drei Abschirmklemmen und die mit dem BV mitgelieferten speziellen Unterlagschienen auf dem Metallring um das Austrittsfenster montieren.

ANWEISUNG


(23) Die Fernsehkamera und Ihre Haube montieren; siehe hierfür: Ersatz der Fernsehkamera.

ANWEISUNG

Nach dem Ersatz des BV müssen wegen des Konversionsfaktors CT die fokussierte Spannung am Xa-X-Generator neu eingestellt und die elektrodenoptische Empfindlichkeit (fOSE in mA) geprüft werden.

(24) Schrauben und Aufkleber mit dem BED-Nummer an der zentralen Informationsstelle "i" auf dem aktuellen Stand bringen.
5.2. EINBAU DER FEHLENKAMERA (siehe FZ-3, FZ-4)

**Ausbau der FS-Kameraeinheit:**

1. Den C-Bogen senkrecht stellen, mit dem Bildverstärker oben, und arretieren.
2. Die Kamerakabine abnehmen.
5. Die 3 unverlierbaren Befestigungsschrauben um Flansch der FS-Kamera lösen.

**Ausbau der Kameragläser (Vidicon):**

8. Durch wechselweises und gleichmäßigiges Drehen der 3 Schrauben die Koppelplatte lösen.
9. Die Koppelplatte abnehmen, aber nicht die 3 Abstandsstücke.

**Einbau der Kameragläser (Vidicon):**

2. Einmal in Silikon gestreutes Papier benutzen, weil die Passoptik damit beschädigt werden kann.
5. Die Passoptik nicht anfassen und nicht darauf blassen.
6. Der Alkohol muss vor dem Zusammenbau völlig verdunstet sein.
7. Mit einer Lampe oder einem Milchlicht prüfen, ob die Passoptiken völlig staubfrei sind und keine Unregelmäßigkeiten aufweisen.

9. Die Koppelungsplatte auf den Vidicon schließen und das Vidicon so drehen, dass der kurze Stift sich gegenüber dem Ausschnitt der Koppelplatte befindet und dass die weisse Marke auf dem Vidicon mit der einzelnen Marke auf der Koppelplatte zusammenfällt.

**ANMERKUNG**

Nach dem Einbau eines neuen Vidicons seien Code- und Seriennummer notieren.

10. Die Kombination von Koppelplatte und Vidicon so positionieren, dass der Ausschnitt in der Koppelplatte sich bei der X1-Marke des Bildverstärkers befindet.
1. INTRODUCTION

This section describes the control, adjustment, and test facilities for the XTV5 Camera FB/HFB. Instructions on Setting to Work may be found in the group level documentation.

2. EQUIPMENT REQUIRED

<table>
<thead>
<tr>
<th>MULTIETERS</th>
<th>OSCILLOSCOPES</th>
</tr>
</thead>
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<tr>
<td>PM2411</td>
<td>PM3110</td>
</tr>
<tr>
<td>PM2412/01/02</td>
<td>PM3210</td>
</tr>
<tr>
<td>PM2412A</td>
<td>PM3231</td>
</tr>
<tr>
<td>PM2503</td>
<td>PM3232</td>
</tr>
<tr>
<td>PM2517X (Preferred)</td>
<td>PM3226</td>
</tr>
<tr>
<td>or equivalent</td>
<td>or equivalent</td>
</tr>
</tbody>
</table>

3. SETTING-UP AND TESTING

Step-by-step procedures for setting-up and testing the XTV5 Camera FB/HFB may be found in the group documentati

3.1. COUPLING PLATE ADJUSTMENT

In the event that the entire II output-screen image falls outside the target area, proceed as follows:

1) In an x-ray system, initiate fluoroscopy and check the I.V. monitor image. Ensure that the complete II output-screen image within the lead (Pb) edge is visible on the target. If necessary enlarge the monitor circle diameter.

WARNING

Radiation hazard. The following adjustment must be done under radiation. Ensure that proper safety precautions have been taken.

2) If the II output-screen image (as seen at the I.V. monitor) is not completely visible, loosen the mounting screws and adjust the alignment screws until the complete II output-screen image is visible.

3) Tighten the mounting screws. Stop fluoroscopy. Re-adjust monitor circle diameter, scan amplitude, scan shifts, and re-focus electrically.

4. CONTROLS AND ADJUSTMENTS

The controls and adjustments for the XTV5 Camera FB/HFB are listed in Table C-1.

5. TEST POINTS

The test points for the XTV5 Camera FB/HFB are listed in Table C-2.
6. INDICATORS

The indicators for the XTUS Camera FB/HFB are listed in Table C-3.

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<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVS' holder</td>
<td>Lens objectors</td>
<td>To adjust the distance between camera image tube target and the image intensifier lens.</td>
</tr>
<tr>
<td>Around camera image tube</td>
<td>Deflection coil assembly</td>
<td>Can be rotated to adjust orientation of scanning pattern on camera image tube target.</td>
</tr>
<tr>
<td>Preamplifier Board WK2</td>
<td>Test-switch S1</td>
<td>To select signal source for adjustment of frequency emphasis; either from the test signal generator or during actual fluoroscopy.</td>
</tr>
<tr>
<td></td>
<td>Frequency emphasis</td>
<td>To adjust frequency emphasis response of the video preamplifier.</td>
</tr>
<tr>
<td></td>
<td>potentiometer C30</td>
<td></td>
</tr>
<tr>
<td>Jumper W1</td>
<td>To select on XTUS system.</td>
<td></td>
</tr>
<tr>
<td>Jumper W2</td>
<td>To select on XTUS system.</td>
<td></td>
</tr>
<tr>
<td>Jumper W3</td>
<td>To select transfer impedance.</td>
<td></td>
</tr>
<tr>
<td>Test signal adjust</td>
<td>To adjust test signal pulse response or to adjust the black-white step during radiation.</td>
<td></td>
</tr>
<tr>
<td>potentiometer C16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal Deflection</td>
<td>Jumper W1</td>
<td>To select an XTUS Q or XTUS H system.</td>
</tr>
<tr>
<td>Board WK3</td>
<td>To select an XTUS Q or XTUS H system.</td>
<td></td>
</tr>
<tr>
<td>Jumper W2</td>
<td>To select an XTUS Q or XTUS H system.</td>
<td></td>
</tr>
<tr>
<td>Jumper W3</td>
<td>To select an XTUS Q or XTUS H system.</td>
<td></td>
</tr>
<tr>
<td>Base Plate Board WK5</td>
<td>Jumper W1</td>
<td>To select source of for the High Voltage Board WA4</td>
</tr>
<tr>
<td>Vertical Deflection Board WK1</td>
<td>VCL-adjust</td>
<td>To adjust VCL range (tube dependent)</td>
</tr>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamplifier Board WK2</td>
<td></td>
<td>a) $i_{in} \cdot 365.10^3 \pm 5%$; bandwidth 1MHz - 3dB; bandwidth $1/57.10^3$ C\text{in}; E_{in} 25 pf.</td>
</tr>
<tr>
<td>Test Point MP1</td>
<td></td>
<td>b) 60V in; bandwidth 25MHz - 3dB.</td>
</tr>
<tr>
<td>Test Point MP2</td>
<td></td>
<td>OV ± 2%</td>
</tr>
<tr>
<td>Test Point MP3</td>
<td></td>
<td>a) $i_{in} \cdot 350.10^3 \pm 5%$; bandwidth 25MHz - 3dB; C\text{in} 25pf after C30 adjusted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) maximum signal amplitude 1300 mV.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) low frequency oversheat a/b x 100%; 250kHz 40%; 50Hz 40%;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) overshoot a/b x 100%; 5% with pulse flank slope 15ns ± 5ns amplitude 600mV.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>e) Signal/Noise ratio 47dB ($i_{g} = 300mA$); C\text{in} 30pf.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>f) Q-version; bandwidth 15MHz, -3dB.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>g) Sl1:1 and Sl1:2 closed and Sl3:3 and Sl1:4 open; pulse frequency 0.2 μs &lt; t &gt; 3 μsec.</td>
</tr>
<tr>
<td>LOCATION</td>
<td>NAME</td>
<td>MEASUREMENT</td>
</tr>
<tr>
<td>----------</td>
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<td>-------------</td>
</tr>
<tr>
<td>Vertical Deflection Board WK1</td>
<td>Test Point MS1</td>
<td>Combination pulse input: +4.3V ±1V +2V ±0.5V -0.5V ±0.5V</td>
</tr>
<tr>
<td></td>
<td>Test Point MS2</td>
<td>V1 output 0.2V ±0.2V when 3.5V V(X1:B3) 4.1V 6.3V ±0.2V when OV V(X1:B3) 2.6V</td>
</tr>
<tr>
<td></td>
<td>Test Point MS3</td>
<td>D10 output V(X1:B3) t = 96.5 μsec ± 30%</td>
</tr>
<tr>
<td></td>
<td>Test Point MS5</td>
<td>V2 output -13.5 ± 1.6V</td>
</tr>
<tr>
<td></td>
<td>Test Point MS7 and (X1:A4)</td>
<td>a) Conditions: V(X1:A5) -10V ±0.1V V(X1:B8) 0V 20 msec +1.8V ±0.3V -3.9V ±0.2V +1.0V ±0.2V -4.0 ± 0.2V b) Conditions: V(X1:A5) +10V ±0.1V V(X1:B8) 0V c) Conditions: V(X1:A5) -10V ±0.1V V(X1:B8) +10V ±0.1V c) Voltages 2.2V ± 0.2V higher than at a). d) Conditions: V(X1:A5) +10V ±0.1V V(X1:B8) +10V ±0.1V d) Voltages 2.2V ± 0.2V higher than at b).</td>
</tr>
<tr>
<td>LOCATION</td>
<td>TEST POINTS</td>
<td>MEASUREMENT</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| Vertical Deflection Board W1 | Test Point MSB | ![Graph](image.png) | Conditions:  
V(X1:A5)= +10V ±0.1V  
V(X1:B0)= 0V  
62 Ω, 14 P, V between (X1:A4) and (X1:B4) |
| | Test Point X1:B4 | ![Graph](image.png) | Conditions:  
Same as MSB |
| | Test Point MS11 | ![Graph](image.png) | Conditions:  
a) Same as MSB  
b) V(X1:A5)= +10V ±0.1V  
V(X1:B0)= 0V  
(X1:A6) and (X1:B6) connected  
0V ± 0.5V |
| | Test Point MS12 | ![Graph](image.png) | Conditions:  
a) +5.5V ± 0.5V  
b) Same as MS11  
b) -0.5V ± 0.3V |
| | Test Point MS13 | ![Graph](image.png) | Conditions:  
a) Same as MSB  
b) No connection between (X1:B4) and (X1:A4) |
| | Test Point MS15 | ![Graph](image.png) | Conditions:  
a) +6.3V ± 0.2V  
b) +0.2V ± 0.2V |

(03.D)E 4522 161 5024.
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>MEASUREMENT</th>
</tr>
</thead>
</table>
| Vertical Deflection Board WK1 | Test Point MS19 | Conditions:  
a) One or more inputs to D2="0"  
b) One or more inputs to D2="1"  
- +0.4V ± 0.2V  
- +0.5V ± 0.2V |
| Test Point MS20 | Conditions:  
a) V(MS19) = +0.4V ± 0.2V  
b) V(MS19) = +0.5V ± 0.4V  
- +0.4V ± 0.2V  
- +0.3V ± 0.2V |
| Test Point MS25 | +10.1V ± 5% |
| Horizontal Deflection Board WK3 | Test Point MS2 | Conditions:  
a) If V(X1:A5) = +1.8V  
- +0.2V ± 0.2V  
- +0.2V ± 0.2V |
| Test Point MS3 | Conditions:  
t2 = flyback time  
- 5.4V ± 0.3V  
- +2.0V ± 0.2V |
| Test Point MS4 | Conditions:  
t2 = flyback time  
- +6V ± 0.2V  
- +0.2V ± 0.2V |
| Test Point MS5 | +4V ± 0.5V  
- 4.8V ± 0.5V  
- +0.2V ± 0.2V |
| Test Point MS7 | -10.3V ± 0.4V  
- +0.2V ± 0.2V |
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>MEASUREMENT</th>
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</table>
| Horizontal Deflection Board WK3 | Test Point MS10 | Conditions:  
V(X1:B4) = -7V ± 0.1V  
V_{min} = -13V ± 2V  
V_{max} = +80V ± 13V  
Waveform same as MS11. |
| Test Point MS11 | | Conditions:  
a) V(X1:B6) = -7V ± 0.1V  
W1 = 1-3  
W2 = 1-3  
W3 = 1-2  
COMB PULSE =  
(T = 32 μsec  
± 2 μsec)  
(t = 2 μsec  
± 6.5 μsec)  
t2  
V_{max} = +95V ± 15V  
V_{min} = -14.5V ± 0.5V  
t2 = 3.8 μsec  
± 0.3 μsec  
b) V(X1:B4) = -7V ± 0.1V  
c) V(X1:B4) = 0V  
b) V_{max} = 100V ± 15V  
t2 = 5.8 μsec  
± 0.3 μsec  
c) V_{max} = 140V ± 15V  
t2 = 6.2 μsec  
± 0.3 μsec |
| Test Point MS12 | | Conditions:  
a) V(X1:B6) = 0V ± 0.1V  
V_{max} = +13.2V ± 1V  
b) V(X1:B6) = +15V ± 0.1V  
b) average 1V |
| Test Point MS13 | | Conditions:  
V(X1:B4) = -7V ± 0.1V  
V(X1:B6) = 0V ± 0.1V  
V_{max} = +89V ± 13V  
0V  
-6V ± 2V |
| Test Point MS14 | | Conditions:  
V(X1:B4) = -7V ± 0.1V  
V_{max} = +12.5V ± 1.5V  
0V  
-1.2V ± 0.3V |
| Test Point MS16 | | Conditions:  
V(X1:B4) = -7V ± 0.1V  
V_{max} = +6.1V ± 0.5V  
0V  
-0.75V ± 0.2V |
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>MEASUREMENT</th>
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<tr>
<td>High Voltage Board Wk4</td>
<td>Test Point M51</td>
<td>Sinus signal: 1kHz ± 10%; amplitude average 0V ± 0.5V</td>
</tr>
<tr>
<td></td>
<td>Test Point M52</td>
<td>Sinus signal: 1kHz ± 10%; amplitude average 10V ± 0.5V</td>
</tr>
<tr>
<td></td>
<td>Test Point M54</td>
<td><img src="image" alt="Waveform" /></td>
</tr>
<tr>
<td></td>
<td>Test Point M55</td>
<td><img src="image" alt="Waveform" /></td>
</tr>
<tr>
<td></td>
<td>Test Point M56</td>
<td>-109V ± 7V</td>
</tr>
<tr>
<td></td>
<td>Test Point M57</td>
<td>-25.8V ± 3V</td>
</tr>
<tr>
<td></td>
<td>Test Point M58</td>
<td>0V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td>Test Point M59</td>
<td>-2.5V ± 1.5V</td>
</tr>
<tr>
<td></td>
<td>Test Point M61</td>
<td>V(MS11) = V(X1:87) ± 2%</td>
</tr>
<tr>
<td>LOCATION</td>
<td>NAME</td>
<td>INDICATION</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Vertical Deflection Board Wk1</td>
<td>LED H1</td>
<td>Tube voltage supply high when LED lit. V(X1:B6) = -10V ± 0.1V;</td>
</tr>
<tr>
<td></td>
<td>HVNI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED H2</td>
<td>Tube voltage supply low when LED lit. V(X1:B6) = +10V ± 0.1V.</td>
</tr>
<tr>
<td></td>
<td>HVLO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED H3</td>
<td>INTERRUPTION signal received from WK3 when LED lit. V(MS2) contains no a.c. signal.</td>
</tr>
<tr>
<td></td>
<td>VEPU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED H4</td>
<td>V(MS11) = 0V ± 0.5V when LED lit.</td>
</tr>
<tr>
<td></td>
<td>VESC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED H5</td>
<td>SHORT CIRCUIT signal received from WK3 when LED lit.</td>
</tr>
<tr>
<td></td>
<td>VEXIR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED H6</td>
<td>When Beam Current suppression: = &quot;0&quot;, LED lights. (X1:A9)</td>
</tr>
<tr>
<td></td>
<td>BECU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED H7</td>
<td>When H-Scan Failure: = &quot;0&quot;, LED lights. (X1:A10)</td>
</tr>
<tr>
<td></td>
<td>HOIR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED H8</td>
<td>When H-Scan Failure: &quot;0&quot;, LED lights. (X1:A7)</td>
</tr>
<tr>
<td></td>
<td>HOSL</td>
<td></td>
</tr>
</tbody>
</table>
Section F: CORRECTIVE MAINTENANCE

Contents:
1. INTRODUCTION F-1
2. TEST EQUIPMENT RECOMMENDED F-1
3. SPECIAL TOOLS F-1
4. TROUBLESHOOTING PROCEDURES F-1
4.1. GENERAL
4.2. SPECIFIC

List of Flow Diagrams
Loop F1: Camera Input Supply Voltages
Loop F2: H-, V-, and COM3 Pulse Supply
Loop F3: Camera Image Tube Supplies
Loop F4: Focus and Alignment Coils
Loop F5: Video

1. INTRODUCTION

This section contains troubleshooting procedures and a list of approved test equipment.

2. TEST EQUIPMENT REQUIRED

<table>
<thead>
<tr>
<th>Multipliers</th>
<th>Oscilloscopes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM 2411</td>
<td>PM 3110</td>
</tr>
<tr>
<td>PM 2412/01/02</td>
<td>PM 3210</td>
</tr>
<tr>
<td>PM 2412A</td>
<td>PM 3231</td>
</tr>
<tr>
<td>PM 2503</td>
<td>PM 3200</td>
</tr>
<tr>
<td>PM 2517X (Preferred)</td>
<td>PM 3225</td>
</tr>
<tr>
<td></td>
<td>PM 3226</td>
</tr>
<tr>
<td></td>
<td>PM 3232</td>
</tr>
<tr>
<td></td>
<td>PM 3233</td>
</tr>
<tr>
<td></td>
<td>PM 3240</td>
</tr>
</tbody>
</table>

3. SPECIAL TOOLS

Special flat cable extenders will be necessary to measure the p.c.b. and plug points.

4. TROUBLESHOOTING PROCEDURES

4.1. GENERAL

Familiarity with the circuits is recommended before any troubleshooting is attempted. Please ensure that this unit is the source of malfunction. Consult the subsystem level troubleshooting flow diagrams before beginning. See Section G, EXPLANATIONS, for a description of flow-chart symbols.

4.2. SPECIFIC

WARNING

Shock hazards as high as 1000V are exposed when operating the camera without the hood.

1. Remove the camera hood. Connect boards WK1, WK2, WK3 and WK4 to boards WK5 and WK6 with the flat cable extenders. See Figure FZ-1.

2. Connect a correctly functioning control unit and monitor to the XTV5 Camera.

3. After identifying the functional loop that appears to be faulty, trace the malfunction as indicated in the flow chart.

4. After locating the malfunction with the help of the TROUBLESHOOTING CHARTS (detail 2 on the Z3-drawings), repair or replace as is appropriate.

5. After repair or replacement, check through the troubleshooting loop once again.
LOOP F1: CAMERA INPUT SUPPLY VOLTAGES (Cont.)

De-energize XTVS Control Unit. Replace horizontal deflection board WK3 and energize the XTVS control unit. Measure WK5X2 points as indicated in Figure 5.

De-energize XTVS control unit. Replace high voltage board WK4 and energize the XTVS control unit. Measure WK5X3 points as indicated in Figure 6.

De-energize XTVS control unit. Replace tube interface board WK6 and energize the XTVS control unit. Measure WK6X points as indicated on Figure 7.

De-energize XTVS control unit. Replace preamplifier board WK2 and energize the XTVS control unit. Measure WK2 points as indicated on Figure 8.

Check tube interface board. See diagram Z3-6. *NOTE

Check preamplifier board. See diagram Z3-2.

STOP

---

**Figure 5**

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK5X2</td>
<td>A3</td>
<td>0V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td>B9</td>
<td>+6.4V ± 5%</td>
</tr>
<tr>
<td></td>
<td>A10</td>
<td>+15V ± 5%</td>
</tr>
<tr>
<td></td>
<td>A7</td>
<td>-15V ± 5%</td>
</tr>
</tbody>
</table>

**Figure 6**

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK5X3</td>
<td>A1</td>
<td>0V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td>B1</td>
<td>+15V ± 5%</td>
</tr>
<tr>
<td></td>
<td>B8</td>
<td>-15V ± 5%</td>
</tr>
</tbody>
</table>

**Figure 7**

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK6X1</td>
<td>B10</td>
<td>0V ± 0.1V</td>
</tr>
<tr>
<td>WK6X2</td>
<td>A1</td>
<td>0V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td>B6</td>
<td>+6.4V ± 5%</td>
</tr>
<tr>
<td></td>
<td>A1</td>
<td>+15V ± 5%</td>
</tr>
<tr>
<td></td>
<td>B3</td>
<td>-15V ± 5%</td>
</tr>
</tbody>
</table>

**Figure 8**

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK2X1</td>
<td>A1, B1</td>
<td>0V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td>A5, B5</td>
<td>+15V ± 5%</td>
</tr>
<tr>
<td></td>
<td>A3, B3</td>
<td>-15V ± 5%</td>
</tr>
</tbody>
</table>

*NOTE
Also check continuity in chassis wiring between M10, M12, M15, and M19 to chassis points 3, 4, 2 and 1, respectively.
Loop F2: H, V, AND COMBIPULSE SUPPLY
LOOP F2: H-, V-, AND COMBI PULSE SUPPLY (Cont.)

De-energize the XTV5 control unit. Replace vertical deflection board WK1.

Energize the XTV5 control unit. Measure points as indicated in Figure 4.

Measurements in accordance with Figure 4

De-energize the XTV5 control unit. Replace the horizontal deflection board WK3.

Energize the XTV5 control unit. Measure points as indicated in Figure 5. After measuring, de-energize the XTV5 control unit.

Measurements in accordance with Figure 5

Check the connection between WK3 and the deflection coils. See diagram Z3-1.

Check indicator lamps H7, H8, H6 and H5 at WK1.

NO

One of the lamps is lit

YES

Check vertical deflection board WK1 for malfunction. See diagram Z3-1.

Check indicator lamps H5 and H3 at the vertical deflection board.

NO

One of the lamps is lit

YES

Check horizontal deflection board WK3 for malfunction. See diagram Z3-3.

Check vertical deflection board WK1 for malfunction. See diagram Z3-1.

Figure 4

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK5X2</td>
<td>B4</td>
<td>0.9 mA to 150-185 mA</td>
</tr>
<tr>
<td></td>
<td>B8</td>
<td>-9.5V ± 0.7V to +9.3V ± 1V</td>
</tr>
<tr>
<td></td>
<td>A5</td>
<td>-</td>
</tr>
</tbody>
</table>

\[ a = 15.5V ± 0.2V \]
\[ b = +2V ± 0.2V \]
\[ c = -0.7V ± 0.2V \]
\[ t = 6 \mu\text{scc}(50Hz), 7 \mu\text{scc}(60Hz) \]
\[ T = 32 \mu\text{scc} \]

WK1X1 | B8 | 0V ± 0.1V to +10V ± 0.1V |
A9, A5 | -10V ± 0.1V to +10V ± 0.1V |
B3 | Same as WK5X2: A5 |
WK3X1 | B8 | +1V ± 0.1V to -1V ± 0.1V |
B4 | -15V ± 0.1V to +5V ± 0.1V |
WK3X2 | A5 | Same as WK5X2: A5 |

Figure 5

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK1X2</td>
<td>B4</td>
<td>+4.2V ± 0.4V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-6.0V ± 0.8V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U(X1:A5) = -10V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U(X1:BB) + 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>62 Ω, 1%, P = 1W between (X1:A4) and (X1:B4)</td>
</tr>
<tr>
<td></td>
<td>A4</td>
<td>+1.0 ± 0.3V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-3.1 ± 0.2V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U(X1:A5) = -10V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U(X1:BB) + 0V</td>
</tr>
<tr>
<td>D2, B10</td>
<td></td>
<td>Same as WK1X1:B9</td>
</tr>
<tr>
<td>A1, A10</td>
<td></td>
<td>Same as WK1X1:A4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK7X2</td>
<td>B7</td>
<td>A</td>
</tr>
</tbody>
</table>

\[ A = 430 mA ± 15\% \]
\[ A = U(X1:BB) \pm 10\% \text{ if } L1 = 26.5\mu\text{m}A/V \]
\[ A = \frac{U(X1:BB)}{16.8} \pm 10\% \text{ if } L1 = 62.5\mu\text{m}A/V \]
\[ \text{t}_{\text{p}} \text{ is line frequency dependent} \]

A5 | 0V ± 0.1V |
STOP

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6
LOOP F3: CAMERA IMAGE TUBE SUPPLIES (Cont.)

**Figure 6**

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINTS</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WKX1</td>
<td>A1</td>
<td>0V to -10V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td>A6</td>
<td>-10V ± 0.1V to +10V ± 0.1V</td>
</tr>
</tbody>
</table>

**Figure 7**

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINTS</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WKX1</td>
<td>B7</td>
<td>0V to -10V ± 0.1V</td>
</tr>
<tr>
<td></td>
<td>B9</td>
<td>-10V ± 0.1V to +10V ± 0.1V</td>
</tr>
</tbody>
</table>

Remove camera cable plug connection at WKX1. Energize XTUS control unit. Measure as indicated in Figure 5.

- **Measurements in accordance with Figure 5**
  - NO
  - YES

De-energize the XTUS control unit.
Replaces camera cable plug WKX1.
Disconnect plug connection WKX5.
Energize XTUS control unit.
Measure as indicated in Fig. 6.

- **Measurements in accordance with Figure 6**
  - NO
  - YES

De-energize the XTUS control unit.
Reconnect plug connection WKX5.
Energize the XTUS control unit.
Measure as indicated in Figure 7.

- **Measurements in accordance with Figure 7**
  - NO
  - YES

Check continuity between WKX1 and WKX5.
See diagram Z2-1.

Check base panel board WK5 for continuity.
See diagram Z3-5.

STOP
LOOP F4: FOCUS AND ALIGNMENT (Cont.)

Figure 4

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK3X2</td>
<td>B1</td>
<td>V(X2:B1)= 0.45V (X1:B3) ± 5%</td>
</tr>
<tr>
<td>A1</td>
<td>V(X2:A1)= V(X1:B3) ± 5%</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>V(X2:A2)= V(X1:B1) ± 5%</td>
<td></td>
</tr>
<tr>
<td>B3</td>
<td>0.1Ω across (X2:B3) and (X1:A2)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 5

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK4X1</td>
<td>B3</td>
<td></td>
</tr>
</tbody>
</table>
LOOP F5: VIDEO (Cont.)

A

Measurements in accordance with Figure 4

Check supply voltages from the vertical deflection board in accordance with LOOP F1.

Check high voltage board WK4 for malfunction. See diagram 23-4.

De-energize the XTV5 control unit. Re-connect tube socket board WK6. Measure as indicated in Figure 5.

Energize the XTV5 control unit.

Measurements in accordance with Figure 5

Check the tube socket board WK6 for malfunction. See diagram 23-6.

De-energize the XTV5 control unit. Re-connect preamplifier board WK2. Measure as indicated in Figure 6.

Energize the XTV5 control unit.

Measurements in accordance with Figure 6

Check target connection to WK2 for continuity.

De-energize the XTV5 control unit. Replace the WK5W1 jumper. Measure as indicated in Figure 6.

Energize the XTV5 control unit.

Measurements in accordance with Figure 6

Check the preamplifier board WK2 for malfunction. See diagram 23-2.

De-energize the XTV5 control unit. Remove plug X2 at preamplifier board WK2.

Energize the XTV5 control unit.

Measure the video signal as indicated in Figure 7. De-energize the XTV5 control unit.

Measurements in accordance with Figure 7

Check base panel board WK5 and resistors R1 and R2. See diagram 22-1 and 23-5.

De-energize the XTV5 control unit. Remove plug X2 at preamplifier board WK2.

Energize the XTV5 control unit.

Measure the video signal as indicated in Figure 7. De-energize the XTV5 control unit.

Measurements in accordance with Figure 7

Check preamplifier board WK2 for malfunction. See diagram 23-2.

B

Figure 5

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK6X3</td>
<td>B10</td>
<td>0V to 80V ± 5%</td>
</tr>
<tr>
<td>WK6X1</td>
<td>A9</td>
<td>20.5V (WK6X1:B7) + 5% limited to 80V ± 5%</td>
</tr>
</tbody>
</table>

Figure 6

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK2X1</td>
<td>B10</td>
<td>20.5V (WK6X1:B7) + 5% limited to 80V ± 5%</td>
</tr>
</tbody>
</table>

Figure 7

<table>
<thead>
<tr>
<th>PLUG</th>
<th>POINT</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WK2</td>
<td>X2</td>
<td>a = 0V to 1200 mV</td>
</tr>
<tr>
<td>WKX1</td>
<td>Z</td>
<td>b = line frequency</td>
</tr>
</tbody>
</table>

F-16  

(03.0)E  
4522 161 5024.
STOP

See diagram 12-1. Check for short circuit, check earthings around XZ, and check continuity in XTV contacts.

Figure 7. In accordance with manufacturer's specifications.

YES

The XTV control unit, plug XTV control unit, front panel, v蟲内 weighing unit. XTV control unit, plug at xz, ensure that XTV plug at XZ. Ensure that XTV plug at XZ.

Re-connect the power cable XZ.

A

LOOP F5: VIDEO (cont.)
Fiber Coupling
OF CAMERA X15S WITH
SIMPLIFIED CIRCUIT DIAGRAM

Section Z-2
List of Pages and Drawings

Manual code number: 4522 983 14011

SERIAL NO.

TYPE NO. 9807 140 20301
6.1 COMPACT GENERATOR SERVICE MANUAL - UNIT
4. COEFFICIENT MAINTENANCE

4.1. The number of the location on the generator

4.2. Equipment required

4.3. Setting up

4.4. Service controls and adjustments

4.4.1. Adjustment low voltage control

4.4.2. Adjustment high voltage control

5. INTRODUCTION

5.1. Introduction to work

5.2. Tools and equipment

5.3. Installation

5.4. Application standards

5.5. Electrical data

5.6. Dimensions and weights

5.7. Technical data

6. INTRODUCTION AND TECHNICAL DATA

6.1. Purpose

6.2. Description of the generator

6.3. Operation manual for the generator

6.4. Technical data

6.5. Electrical data

6.6. Dimensions and weights

6.7. Application standards

7. INTRODUCTION AND TECHNICAL DATA

7.1. Purpose

7.2. Description of the generator

7.3. Operation manual for the generator

7.4. Technical data

7.5. Electrical data

7.6. Dimensions and weights

7.7. Application standards

1.1. Description of the generator

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2. Introduction

2.1. Introduction to work

2.2. Tools and equipment

2.3. Installation

2.4. Application standards

2.5. Electrical data

2.6. Dimensions and weights

2.7. Application standards

3. Setting up

3.1. Setting up

3.2. Equipment required

3.3. Setting up and testing

3.4. Service controls and adjustments

3.4.1. Adjustment low voltage control

3.4.2. Adjustment high voltage control

4. Coefficient maintenance

4.1. The number of the location on the generator

4.2. Equipment required

4.3. Setting up

4.4. Service controls and adjustments

4.4.1. Adjustment low voltage control

4.4.2. Adjustment high voltage control
1.5.2. Electrical Data

The high Voltage Cascade Generator comprises a 25 kHz oscillator for transforming a high voltage, which is followed by a 4,3 stage multiplier. All H.V. output voltages are protected against overvoltage and overcurrent. All H.V. output voltages are short circuit proof.

(1) Input Data

Supply Voltage : +15V±10%; -15V±10%
Current consumption : <250 mA

(2) Output data

Voltages Min. Max.
Cathode (adjustable) Vc -10 kV -25 kV
Focusing (adjustable) Vf -9.76 kV -24.8 kV
Range focusing Vf 160 V 400 V
Anode 0 V 0 V
Ion pump -2kV +15% -2kV -15%

(3) General

Load current of cathode : lc < 15 uA
Load current of focusing electrode : If < 15 uA
Load current of ion pump : lp < 20 uA

(4) Control signals

The control signals are given with respect to the 0 V common of the ±15 V generator supply.
Signal level: according to 15V LOGNOS.

- Reset Input Signal
  Alarm Reset : ALKS = HC
  Level : +7.5 V < Vin < +15 V
  Input impedance: 10 kohm
  Reset time : tr > 200 ms
  Location : BGX1:B4

- Alarm Output Signal
  HV Generator Alarm: HVGAL = H
  Level : +11V < Vout < +15V
  Output impedance : 10 kohm
  Alarm time : continuous
  Location : BGX1:B2

1.5.3. Environmental Data

Ambient temperature : +10°C to +55°C

1.5.4. Applicable Standards

- IEC 601-1; A.P.
- UL 187
- CSA c22.2 nr.114

2. INSTALLATION

2.1. INTRODUCTION

This section contains general mounting instructions. For information relating to the system, see the BV25 SYSTEM MANUAL.

2.2. TOOLS AND TEST EQUIPMENT

This equipment can be installed with a standard toolset. Equipment needed during subsequent adjustment and functional testing is listed in paragraph 3,SETTING TO WORK.

2.3. INSTALLATION INSTRUCTIONS

2.3.1. Mechanical

Fit the unit with 4 screws M4 x 12 to the destination mounting plate in the BV25 stand, see also the BV25 SYSTEM MANUAL.

2.3.2. Electrical

Remove the caps from the HV-plugs of the generator. Grease the HV-plugs with silicon grease, coder, 1312 501 48202, and connect the plugs to the 11-cube according 21-1.

Cathode HVCL BG:1 - BBX1
Focusing HVPF1 BG:2 - BBX2
Ion Pump HVPF1 BG:3 - BBX4
Anode BG
Earth ( ) BG1

CAUTION
HIGH VOLTAGE WILL BE PRESENT ON THE CONNECTORS WHEN THE LOW VOLTAGE SUPPLY IS SWITCHED-ON.

Connect the low voltage supply cable to the connector BGX1 of the compact generator.

<table>
<thead>
<tr>
<th>Generator</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGX1:A1</td>
<td>-15V supply</td>
</tr>
<tr>
<td>BGX1:A3,B3</td>
<td>0 V</td>
</tr>
<tr>
<td>BGX1:A5</td>
<td>+15V</td>
</tr>
<tr>
<td>BGX1:B2</td>
<td>High voltage alarm</td>
</tr>
<tr>
<td>BGX1:B4</td>
<td>Alarm cease</td>
</tr>
</tbody>
</table>

(B5.0)E 9807 148 20301
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4.1. Information des Gemeinderates

4.2. Bestellung des Kammerpräsidenten (Mitglied des mit der Vorsitzenden der Kammer)

4.3. Bestellung und Präsidenten

3.1. Inhaber

3.2. Gewerbetreibende

3.3. MANDATEN

3.4. Service-Information

3.5. Technische Daten

2.7. Kammerpräsident

2.6. Gewerbe und Präsidenten

2.5. Inhaber

2.4. Wirtschaftsvereinen

2.3. MANDATEN

2.2. Gewerbevereinen und Wirtschaftsvereinen

2.1. Inhaber

1.1. MANDATEN

1.2. Gewerbevereinigung der Gemeinde Darmstadt

1.3. Gewerbevereinigung des Gerns

1.4. MANDATEN

1.3. Gewerbevereinigung der Gemeinde Darmstadt

1.2. Gewerbevereinigung des Gerns

1.1. MANDATEN

6.1. tüv-COMPACT GENERATION

...
1.5.2. Elektrische Daten


(1) Eingangsdaten
Speisespannung: +15V±10%; -15V±10%
Stromaufnahme: < 250 mA

(2) Ausgangsdaten
Spannungen     Minimal    Maximal
Kathode HVCL1 (einstellbar) -10 kV    -25 kV
Fokussierung HVFL1 (einstellbar) -9,76 kV    -24,8 kV
Fokussierbereich VI 160 V    400 V
Anode 0 V    0 V
Ionenpumpe -2 kV±15%    -2 kV±15%

(3) Allgemeines
Belastungstrom der Kathode: I< 15 uA
Belastungstrom der Fokussierungselektrode: I< 15 uA
Belastungstrom der Ionenpumpe: I< 20 uA

(4) Steuersignale
Die Steuersignale sind in bezug auf die gemeinsamen OV der Betriebsspannungen von + und -15 V angegeben.
Signalpegel entspricht 15 V LOCHOS.

- Rückstell-Eingangssignal
  Alarmausbildung: ALRS – NC
  Pegel: +7,5V<V<+15V
  Eingangsimpedanz: 10 kOhm
  Rückstellzeit: t> 200 ms
  Punkt: RGC1:B4

- Alarm- Ausgangssignal
  Hochspannungsgenerator-Alarm: HVGAL – N
  Pegel: +11V<V<+15V
  Ausgangsimpedanz: 1 kOhm
  Alarmzeit: kontinuierlich
  Punkt: RGC1:B2

1.5.3. Umgebungsbedingungen
Temperaturbereich: +10°C bis +55°C

1.5.4. Diebstößige Normen
- IEC 601-1; A.F.
- UL 187
- CSA c22.2 nr.114

2. MONTAGE

2.1. EINLEITUNG

Dieser Abschnitt enthält allgemeine Montageanweisungen. Für Angaben über die Montage des Subsystems siehe die entsprechende BV25 BV/IV- SYSTEM-ANLEITUNG.

2.2. WERKZEUG UND PRÜFGERÄTE

Diese Einheit lässt sich mit normalem Werkzeug montieren. Die für die anschließende Einstellung und die Funktionsprüfung benötigten Geräte sind in Punkt 3, "INBETRIEBNAHME", aufgeführt.

2.3. MONTAGEANLEITUNGEN

2.3.1. Mechanisch

Die Einheit mit vier Schrauben M4 x 12 an der betreffenden Montageplatte des BV25 Stativs anbringen, siehe auch die BV25 SYSTEM-ANLEITUNG.

2.3.2. Elektrisch

Entfernen Sie die Schutzkappe der Hochspannungsteckers. Fest die Hochspannungstecker ein mit Blikkenfett, Kodenummer 1312 501 48202, und schließen die Steckers an der Bildverstärkerfahne gemäss 21-1.

Kathode BGC1 - BRC1
Fokussierung BGC2 - BRC2
Ionenpumpe BGC3 - BRC4
Anode BGC1
Erde ( ) BGC1

WARUNG
Sobald die Speisespannung angeschlossen und eingeschaltet wird ist HOCHSPANNUNG anwesend auf die Steckers.

Schließen Sie die Speisespannungskabel an Konnektor BGC1 des Kompaktgenerators.

<table>
<thead>
<tr>
<th>Generator</th>
<th>Funktion</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGC1:A1</td>
<td>-15V speisespannung</td>
</tr>
<tr>
<td>BGC1:A3,B3</td>
<td>0V</td>
</tr>
<tr>
<td>BGC1:A5</td>
<td>+15V speisespannung</td>
</tr>
<tr>
<td>BGC1:B2</td>
<td>Hochspannungalarm</td>
</tr>
<tr>
<td>BGC1:B4</td>
<td>Alarmausbildung</td>
</tr>
</tbody>
</table>
3.1.1. General Information

3.1.2. Installation of the System-Unit

3.1.3. Adjusting the System-Unit

3.2. Electrode Calibration

3.3. Operation of the System-Unit

3.4. Setting Parameter B

3.5. Setting Parameter C

3.6. Setting Parameter D

4. Operating Manual

6.1. Complete Generation
1.5.2. Datos Electricos

El generador en cascada de alta tensión comprende un oscilador de 25 kHz para la transformación de alta tensión, que es seguido por un multiplicador de 4,5 etapas.
Todas las tensiones de salida de alta tensión están protegidas contra sobretensión y sobrecorriente. Todas las tensiones de salida de alta tensión están protegidas contra cortocircuito.

(1) Datos de entrada
Tensión de alimentación: +15V±10% -15V±10%
Consumo de corriente: < 250 mA

(2) Datos de salida

Tensiones

<table>
<thead>
<tr>
<th>Tensión</th>
<th>Mín.</th>
<th>Máx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catódica (ajustable) Vc</td>
<td>-10 kV</td>
<td>-25 kV</td>
</tr>
<tr>
<td>Enfoque (ajustable) Vf</td>
<td>-9,76 kV</td>
<td>-24,8 kV</td>
</tr>
<tr>
<td>Enfoque de alcance Vf</td>
<td>160 V</td>
<td>460 V</td>
</tr>
<tr>
<td>Ando</td>
<td>0 V</td>
<td>0 V</td>
</tr>
<tr>
<td>Bomba de iones</td>
<td>-2 kV +15%</td>
<td>-2 kV -15%</td>
</tr>
</tbody>
</table>

(3) Generalidades

Corriente de carga de catódica: < 15 mA
Corriente de carga de electrodo enfoque: < 15 mA
Corriente de carga de bomba de iones: < 20 mA

(4) Señales de control

Las señales de control se dan respecto a 0 V común de los generadores de alimentación de +15 V.
Nivel de señal: según 15 V LOCHOS.

- Reajuste de la señal de entrada
  Reajuste de alarma: AALG - BC
  Nivel: +7,5V < Vin < +15V
  Impedancia de entrada: 10 kΩ
  Tiempo de reajuste: C<sub>r</sub> > 200 ms
  Emplazamiento: BX1: B4

- Señal de salida de alarma
  Alarma del generador de alta tensión: HVGAL-H
  Nivel: +15V < Vout < +15V
  Impedancia de salida: 1 kΩ
  Tiempo de alarma: continuo
  Emplazamiento: BX1: B2

1.5.3. Datos Ambientales

Temperatura ambiente: +10°C hasta +55°C

1.5.4. Normas Aplicables

- IEC 601-1; A.P.
- UL 187
- CSA c22.2 nr.114

2. INSTALACION

2.1. INTRODUCCION

Esta sección contiene instrucciones generales para el montaje. Para información relativa al sistema específico a instalar, ver el MANUEL correspondiente al SISTEMA de BV25.

2.2. HERRAMIENTAS Y EQUIPO DE PRUEBA

Este equipo puede instalarse con un juego de herramientas ordinario. El equipo necesario durante los ajuste subsiguientes y pruebas de funcionamiento están enumerados en la punto 3: PUESTA EN FUNCIONAMIENTO.

2.3. INSTRUCCIONES PARA LA INSTALACION

2.3.1. Mecánico

Fije la unidad con 4 tornillos M4 x 12 a la placa de montaje del tripode metálico de BV25 destinada para ello, también ver le MANUAL del SISTEMA de BV25.

2.3.2. Eléctrico

Aleje las fundas de los conectores de alta tensión. Engrase los conectores de alta tensión con la grasa de silicona número del código 1312 501 48202 y conectar los conectores en el tubo 1.1 conforme a 21-1.

- Cátodo HV221
  - B:1 - BX1
- Enfoque HVF11
  - B:2 - BX2
- Bombadeiones HVPII
  - B:3 - BX3
- Ando
  - BGI
- Tierra
  - BGI

AVISO

En cuanto la alimentación se conectara, la alta tensión hallarse existente sobre los conectores de alta tensión.

Conecte el cable de alimentación en el conector BX1 del generador compacto.

<table>
<thead>
<tr>
<th>Generador</th>
<th>Función</th>
</tr>
</thead>
<tbody>
<tr>
<td>BX1:A1</td>
<td>-15V</td>
</tr>
<tr>
<td>BX1:A3, B3</td>
<td>0V</td>
</tr>
<tr>
<td>BX1:A5</td>
<td>+15V</td>
</tr>
<tr>
<td>BX1:B2</td>
<td>Señal de alarma</td>
</tr>
<tr>
<td>BX1:B4</td>
<td>Reajuste de alarma</td>
</tr>
</tbody>
</table>
3.2.2. Acceso al conmutador de entrada NIT

Para el conmutador: NIT - NIT

4.50 NIT

3.2.1. Acceso al conmutador de entrada NIT

3.2. MONICAS Y PERINAS

- Examen del cuello x
- Examen del pecho x
- Examen del recto x
- Examen del hígado x
- Examen del páncreas x
- Examen del riñón x
- Examen del estómago x
- Examen del corazón x
- Examen del cerebro x

Las recomendaciones que figuran en el programa tienen como objetivo la preven}

3.2. EQUIPO NECESARIO

El equipo del sistema de B2S debe incluir:

- Conmutadores de control de la clínica
- Conmutadores de control de la clínica
- Conmutadores de control de la clínica

En caso de competencia o conflicto, debe optar por la

5.1. INFORMACIÓN

6.1. ORIGEN DE GENERACIÓN

4. MATERIAL DE CONSTRUCCIÓN
4522 960 31631
4522 960 31641
4522 960 31631
4522 960 32141

Code Number

Capacity:

Additional binders can be ordered from IPC Equipment.

8V2

For the XTV5 TV Chain, it should be filled with:

This manual is part of the service documentation set.

Filling Instructions
<table>
<thead>
<tr>
<th>SERIAL RM:</th>
<th>TYPE RM: 4522 161 5028</th>
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| LIST OF PARTS AND DRAWINGS | }

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<th>4522 161 5028</th>
<th>4522 983 10962</th>
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**PRINTING INSTRUCTIONS: 4522 983 10962**

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6-83. INSTALLATION INSTRUCTIONS
6-84. INSTALLATION INSTRUCTIONS
6-85. INSTALLATION INSTRUCTIONS
6-86. INSTALLATION INSTRUCTIONS
6-87. INSTALLATION INSTRUCTIONS
6-88. INSTALLATION INSTRUCTIONS
6-89. INSTALLATION INSTRUCTIONS
6-90. INSTALLATION INSTRUCTIONS
6-91. INSTALLATION INSTRUCTIONS
6-92. INSTALLATION INSTRUCTIONS
6-93. INSTALLATION INSTRUCTIONS
6-94. INSTALLATION INSTRUCTIONS
6-95. INSTALLATION INSTRUCTIONS
6-96. INSTALLATION INSTRUCTIONS
6-97. INSTALLATION INSTRUCTIONS
6-98. INSTALLATION INSTRUCTIONS
6-99. INSTALLATION INSTRUCTIONS
3.1.8. KV Control Board WN22

The KV Control Board WN22 produces control signals which adjust the x-ray dose rate to correlate with the video signals. For additional information, see Section 6.

3.1.9. Mechanical Sections

The XTV5 Camera Control Unit FB mechanical sections comprise a mounting plate; side casing; cover plate; two snap bushings; mounting screws, washers, and nuts; HEV certification plate; data plate; technical specifications plate; classification plate; administrative specifications plate; and the Philips identification plate. The service key is mounted on the cover plate.

3.2. CABLE SET

No cable set is supplied with XTV5 Camera Control Unit FB.

For cables and cable connections for the DV25, see the group level documentation for the DV25.

3.3. MOUNTING HARDWARE AND SMALL PARTS (Figure A2-2)

The mounting hardware and small parts of the XTV5 Camera Control Unit FB comprise:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SIZE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOUNTING SCREWS</td>
<td>M4 x 6</td>
<td>4</td>
</tr>
<tr>
<td>SPRING WASHERS</td>
<td>A.1</td>
<td>4</td>
</tr>
<tr>
<td>GROUND WASHERS</td>
<td>A.3 x 8</td>
<td>4</td>
</tr>
</tbody>
</table>

3.4. EQUIPMENT IDENTIFICATION

See Figure A2-3 for the location of the identification labels and plates on the equipment items.
### 4.1. PERFORMANCE SPECIFICATIONS (Cont.)

<table>
<thead>
<tr>
<th>HORIZONTAL SWEEP RATES</th>
<th>31, 250 Hz (625 lines per frame)</th>
<th>31, 500 Hz (525 lines per frame)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERTICAL SWEEP RATES</td>
<td>50- or 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Dose Rate Control</td>
<td>Automatic or manual. Select manual mode via remote control switch. kW/mA LOCK-IN or mA HARD. Control is via a hand switch at x-ray generator panel. Input signal for automatic dose rate is proportional to the signal current of the image tube, with dark current compensation when active.</td>
<td></td>
</tr>
<tr>
<td>Automatic Dose Rate Control Settings</td>
<td>TOP: sensing area 2%</td>
<td>AVERAGE: sensing area 0.3%</td>
</tr>
<tr>
<td></td>
<td>Two circular measuring fields are coupled to AGC measuring fields.</td>
<td></td>
</tr>
<tr>
<td>kW/mA Control Signal</td>
<td>The control signal is a symmetrical differential signal with respect to the ground potential; linearly proportional with the difference between the actual signal current and the nominal signal current. No signal current -6V +6V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nominal signal current 0V 0V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200% signal current +6V -6V</td>
<td></td>
</tr>
</tbody>
</table>

### 4.2. INPUT/OUTPUT SPECIFICATIONS

**Backpanel Board W101**

<table>
<thead>
<tr>
<th>POINT</th>
<th>NAME</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>OV</td>
<td>0V ± 2%</td>
</tr>
<tr>
<td>B</td>
<td>H-SHIFT</td>
<td>-0.5V ± 0.7 to -9.3V ± 1V</td>
</tr>
<tr>
<td>C</td>
<td>COMBINATION PULSE</td>
<td>See chart A-2</td>
</tr>
<tr>
<td>D</td>
<td>OV</td>
<td>0V ± 0.1V</td>
</tr>
<tr>
<td>E</td>
<td>H-SCAN REVERSE</td>
<td>0V to -15V (+ -1V)</td>
</tr>
<tr>
<td>F</td>
<td>V-AMPLITUDE</td>
<td>0V to -10.2V ± 0.7V</td>
</tr>
<tr>
<td>G</td>
<td>+15V</td>
<td>+15V ± 2%</td>
</tr>
<tr>
<td>J</td>
<td>Vs ADJUST</td>
<td>0V to +6.2V ± 0.4V</td>
</tr>
<tr>
<td>K</td>
<td>V-SHIFT</td>
<td>0V to -10V ± 0.7V</td>
</tr>
<tr>
<td>M</td>
<td>DYNAMIC FOCUS</td>
<td>0V to 6V ± 1V</td>
</tr>
<tr>
<td>N</td>
<td>Vg ADJUST</td>
<td>0V to -10.0V ± 0.7V</td>
</tr>
<tr>
<td>P</td>
<td>+6.4V</td>
<td>+6.4V ± 2%</td>
</tr>
<tr>
<td>R</td>
<td>H-AMPLITUDE</td>
<td>0.9 mA to 150-185 mA</td>
</tr>
<tr>
<td>S</td>
<td>TARGET NEG. PROT.</td>
<td>0V to +0.5V</td>
</tr>
<tr>
<td>U</td>
<td>STATIC FOCUS</td>
<td>81-94 mA to 148-179 mA</td>
</tr>
<tr>
<td>V</td>
<td>ALIGNMENT 1</td>
<td>-9V ± 0 to 8.5V ± 2.2V</td>
</tr>
<tr>
<td>W</td>
<td>-15V</td>
<td>-15V ± 2%</td>
</tr>
<tr>
<td>X</td>
<td>ALIGNMENT 2</td>
<td>-9V ± 0 to 8.5V ± 2.2V</td>
</tr>
</tbody>
</table>

**Backpanel Board W102**

<table>
<thead>
<tr>
<th>POINT</th>
<th>NAME</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NGC LONG TERM</td>
<td>0V to +15V (+10%)</td>
</tr>
<tr>
<td>B</td>
<td>T.V. KEY OUT</td>
<td>0V</td>
</tr>
<tr>
<td>C</td>
<td>H-SCAN REVERSE</td>
<td>0V to +15V (+10%)</td>
</tr>
<tr>
<td>D</td>
<td>SELECT FIXED GAIN</td>
<td>0V to +15V (+10%)</td>
</tr>
<tr>
<td>E</td>
<td>T.V. KEY IN</td>
<td>0V</td>
</tr>
<tr>
<td>F</td>
<td>Dose Rate Control</td>
<td>+6V(-0.5V) to -12V(+2V)</td>
</tr>
<tr>
<td>H</td>
<td>Dose Rate Control</td>
<td>-6V(-0.5V) to +12V(+2V)</td>
</tr>
<tr>
<td>J</td>
<td>T.V. CCD READY</td>
<td>See Chart A-4</td>
</tr>
<tr>
<td>K</td>
<td>PREP. REQUEST</td>
<td>0V to +15V (+10%)</td>
</tr>
<tr>
<td>M</td>
<td>SMALL MEAS. FIELD</td>
<td>0V to +15V (+10%)</td>
</tr>
<tr>
<td>N</td>
<td>REQ. STAND FLUOR.</td>
<td>0V to +15V (+10%)</td>
</tr>
<tr>
<td>P</td>
<td>MAIN PHASE</td>
<td>5V±1V ±1V</td>
</tr>
<tr>
<td>R</td>
<td>MAIN PHASE</td>
<td>+6.4V ±2%</td>
</tr>
<tr>
<td>S</td>
<td>-15V</td>
<td>-15V ± 2%</td>
</tr>
<tr>
<td>T</td>
<td>+15V</td>
<td>+15V ± 2%</td>
</tr>
<tr>
<td>U</td>
<td>EVEN LINE</td>
<td>0V to +15V (+10%)</td>
</tr>
<tr>
<td>V</td>
<td>+6.4V</td>
<td>+6.4V ±2%</td>
</tr>
<tr>
<td>W</td>
<td>OV</td>
<td>0V ± 2%</td>
</tr>
<tr>
<td>X</td>
<td>OV</td>
<td>0V ± 2%</td>
</tr>
<tr>
<td>X:17</td>
<td>X:10</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>-15V ± 2%</td>
<td>FREE RED</td>
<td></td>
</tr>
<tr>
<td>H-SCAN INCREASE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X:15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V-SCAN INCREASE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X:14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 30V ± 0.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X:13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 30V ± 0.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X:12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 30V ± 0.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Inputs**
- Command Controls Board Ports
- Measuring Points
- Fixed Gain
- ALL 0 to 30V (±0.5%)
- Measuring Points
- Command Voltage

**Outputs**
- All 0 to 30V (±0.5%)
- Measuring Points
- Command Voltage
- Supply Voltage

**Sample Table**

<table>
<thead>
<tr>
<th>X:17</th>
<th>X:16</th>
<th>X:15</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 30V ± 0.5%</td>
<td>0 to 30V ± 0.5%</td>
<td>0 to 30V ± 0.5%</td>
</tr>
</tbody>
</table>

**Diagram**
- DO at +15V ± 10%
- DO at +15V ± 10%
- H-SCAN INCREASE
- V-SCAN INCREASE
- Command Controls Board Ports
- Measuring Points
- Fixed Gain
- All 0 to 30V (±0.5%)
- Measuring Points
- Command Voltage

**Legend**
- Section A
- Section B
- Section C

**Note**
- All measurements are approximate and subject to variation.
Camera Control Board WN11 (Cont.)

OUTPUTS

<table>
<thead>
<tr>
<th>H-Shift</th>
<th>-9.5V ± 0.7V to +9.3V ± 1V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H-Scan Reverse/ V-Sync</th>
<th>OV to +15V (± 1V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V-Shift</th>
<th>OV to +10V ± 0.7V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vg Adjust</th>
<th>OV to -10.0V ± 0.7V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V-Amplitude</th>
<th>OV to -10.2V ± 0.7V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target Negative Prevention</th>
<th>OV to -5V-0.5V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic Focus</th>
<th>OV to 6V ± 1V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H-Amplitude</th>
<th>0.9 mA to 150-185 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Static Focus</th>
<th>81-94 mA to 148-179 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alignment I and II</th>
<th>-9V±0 to -1.9V to 8.5±2.2V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:9; X2:17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target Voltage</th>
<th>OV to +6.2V ± 0.4V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:19</td>
</tr>
</tbody>
</table>

Video Processing Board WN13

INPUTS

<table>
<thead>
<tr>
<th>Supply Voltages</th>
<th>+15V ± 2%</th>
<th>OV ± 2%</th>
<th>-15V ± 2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Points</td>
<td>X2:2; X1:2</td>
<td>X1:22; X1:1; X2:22; X2:1</td>
<td>X1:3; X2:3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Waveforms</th>
<th>Dark Current Pulse</th>
<th>Composite Blanking Pulse</th>
<th>Circle Blanking</th>
<th>Composite Sync</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Points</td>
<td>X2:20</td>
<td>X2:19</td>
<td>X2:18</td>
<td>X1:20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Waveforms</th>
<th>Clamp Pulse</th>
<th>Sample Pulse</th>
<th>Video from Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Points</td>
<td>X1:17</td>
<td>X1:18</td>
<td>X3:1</td>
</tr>
</tbody>
</table>

See Chart A-2

CHART A-1

CAMERA CONTROL BOARD WN11 WAVEFORMS

SAMPLE PULSE

- a = 0 to ±6.4V (±2%-30%) |
- t = 0.5 msec |
- T = 20 msec

V-PARABOLA

- a = 0 to 5V ± 1V |
- T = Frame frequency

H-PARABOLA

- a = 0 to 6V ± 1V |
- T = Line frequency

NOTE

Dynamic Focus is a combination signal of the V-Parabola and the H-Parabola.
### VIDEO PROCESSING BOARD UN13 WAVEFORMS

**VIDEO FOR KV CONTROL**
- a = 0V to 1200 mV; dc -9V ± 2V
- T = line frequency

**CLAMP PULSE**
- a = 0V to 
- t = 1.25 µsec
- T = line frequency

### VIDEOS, BLANKING, SYNC (VBS)
See Performance Data.

### XG/Id Board UN17

#### INPUTS

<table>
<thead>
<tr>
<th>Supply Voltages</th>
<th>+15V ± 2%</th>
<th>-6.4V ± 2%</th>
<th>0V ± 2%</th>
<th>-15V ± 2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Points</td>
<td>X1:2</td>
<td>X1:3</td>
<td>X1:11; X1:22</td>
<td>X1:14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Waveforms</th>
<th>Modulated H-Parabola</th>
<th>Clamp Pulse</th>
<th>Composite Blanking</th>
<th>Discharge Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Points</td>
<td>X2:16</td>
<td>X1:17</td>
<td>X2:19</td>
<td>X1:19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Waveforms</th>
<th>Dark Current Reset Pulse</th>
<th>Dark Current + Power ON</th>
<th>Sample Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Points</td>
<td>X2:20</td>
<td>X2:17</td>
<td>X1:10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Waveforms</th>
<th>Video for Measuring</th>
<th>See Chart A-3</th>
<th>Automatic Gain Fast Lock-In</th>
<th>Measuring Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:12</td>
<td>A-3</td>
<td>X2:18</td>
<td>Active when low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measuring Field External</th>
<th>OV to 6.4V (+2%–3%)</th>
<th>Active when low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed Gain</th>
<th>OV to 4V (-0 +10%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:19</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measuring Field Select External</th>
<th>OV to +15V (± 10%)</th>
<th>Active when low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Measuring Field</th>
<th>OV to +15V (± 10%)</th>
<th>Active when low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X1:7</td>
<td></td>
</tr>
</tbody>
</table>

### OUTPUTS

<table>
<thead>
<tr>
<th>Automatic Gain Voltage</th>
<th>OV to 4V (-0% +5%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Point</td>
<td>X2:9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output Waveforms</th>
<th>Circle Blanking</th>
<th>Measuring Field for kv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Points</td>
<td>X2:18</td>
<td>X1:11</td>
</tr>
</tbody>
</table>

See Chart A-3
Pulse Generator Board WN19

INPUTS

Supply Voltages

<table>
<thead>
<tr>
<th>+15V ± 2%</th>
<th>+6.4V ± 2%</th>
<th>OV ±</th>
<th>-15V ± 2%</th>
<th>2WAC, 50 or 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1:2</td>
<td>X1:4</td>
<td>X1:1; X1:22</td>
<td>X1:3</td>
<td>X1:8</td>
</tr>
</tbody>
</table>

Even Line Command Measuring Points

<table>
<thead>
<tr>
<th>+15V or OV</th>
<th>Active when</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2:12</td>
<td>low</td>
</tr>
</tbody>
</table>

Fail Position Measuring Point

<table>
<thead>
<tr>
<th>OV or +15V</th>
<th>LED active</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2:7</td>
<td>at +15V</td>
</tr>
</tbody>
</table>

OUTPUTS

Output Waveforms Measuring Points

<table>
<thead>
<tr>
<th>Clamp Pulse</th>
<th>Dark Current Pulse</th>
<th>H-Blanking</th>
<th>V-Blanking Pulse</th>
<th>Sample Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2:14</td>
<td>X1:18</td>
<td>X2:9</td>
<td>X2:11</td>
<td>X2:4</td>
</tr>
</tbody>
</table>

See chart A-4

Output Waveforms Measuring Points

<table>
<thead>
<tr>
<th>Discharge Pulse</th>
<th>Composite Blanking</th>
<th>Composite Sync</th>
<th>Combi-Pulse</th>
<th>Sync Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2:14</td>
<td>X1:18</td>
<td>X2:9</td>
<td>X2:11</td>
<td>X2:4</td>
</tr>
</tbody>
</table>

See chart A-4

Output Waveforms Measuring Points

<table>
<thead>
<tr>
<th>Dark Current Power ON</th>
<th>Dark Current Reset</th>
<th>T.V. Ready Signal</th>
<th>See Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2:19</td>
<td>X2:16</td>
<td></td>
<td>A-4</td>
</tr>
</tbody>
</table>

---

PULSE GENERATOR BOARD WN19 WAVEFORMS

**CLAMP PULSE**

\[ a = 0 \text{V} \text{ to } +6.4 \text{V} \]
\[ t = 1.25 \mu \text{sec} \]
\[ T = 64 \mu \text{sec} (50 \text{ Hz}) \]
\[ 63.6 \mu \text{sec} (60 \text{ Hz}) \]

**DARK CURRENT PULSE**

\[ a = 0 \text{V} \text{ to } +6.4 \text{V} \]
\[ t = 2.8 \mu \text{sec} \]
\[ T = 64 \mu \text{sec} (50 \text{ Hz}) \]
\[ 63.6 \mu \text{sec} (60 \text{ Hz}) \]

**H-BLANKING PULSE**

\[ a = 0 \text{V} \text{ to } +6.4 \text{V} \]
\[ t = 11.1 \mu \text{sec} (60 \text{ Hz}) \]
\[ 11.9 \mu \text{sec} (50 \text{ Hz}) \]
\[ T = 63.6 \mu \text{sec} (60 \text{ Hz}) \]
\[ 64 \mu \text{sec} (50 \text{ Hz}) \]

**V-BLANKING PULSE**

\[ a = 0 \text{V} \text{ to } +6.4 \text{V} \]
\[ t = 1.6 \mu \text{sec} (50 \text{ Hz}) \]
\[ 1.35 \mu \text{sec} (60 \text{ Hz}) \]
\[ T = 20 \mu \text{sec} (50 \text{ Hz}) \]
\[ 14.6 \mu \text{sec} (60 \text{ Hz}) \]

**SAMPLE PULSE**

\[ a = 0 \text{V} \text{ to } +6.4 \text{V} \]
\[ t = 680 \mu \text{sec} (50 \text{ Hz}) \]
\[ 572.4 \mu \text{sec} (60 \text{ Hz}) \]
\[ T = 20 \mu \text{sec} (50 \text{ Hz}) \]
\[ 16.6 \mu \text{sec} (60 \text{ Hz}) \]

**DISCHARGE PULSE**

\[ a = 0 \text{V} \text{ to } +6.4 \text{V} \]
\[ t = 256 \mu \text{sec} \]
\[ T = 20 \mu \text{sec} (50 \text{ Hz}) \]
\[ 14.6 \mu \text{sec} (60 \text{ Hz}) \]

**COMPOSITE BLANKING**

See Chart A-3.

**COMPOSITE SYNC**

See Chart A-2.

---

(83.0)E
4522 161 502B.
CHART A-5 (Cont.)

START PULSES

T.V. READY SIGNAL

+15V

T.V. READY SIGNAL

+6.4V

DARK CURRENT

RESET PULSE

0V

DARK CURRENT

RESET PULSE

+6.4V

WITH POWER ON

0V

+5.5V

COMBINATION PULSE

+2V

0V

-0.7V

SWITCH ON

COMBINATION PULSES

50 lines (50-Hz) (1.6 msec)

60 lines (60-Hz) (1.28 msec)

V-BLANKING

PULSE

COMBINATION

BLANKING

COMBINATION

PULSE

SAMPLE PULSE

DISCHARGE PULSE

COMPOSITE SYNC

See Chart A-2
### KV Control Board W22 (Cont.)

#### CHART A-7

**KV CONTROL BOARD W22 WAVEFORMS**

<table>
<thead>
<tr>
<th>VIDEO FOR KV CONTROL</th>
<th>SAMPLE PULSE</th>
<th>DISCHARGE PULSE</th>
<th>MEASURING FIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Waveform Diagram" /></td>
<td><img src="image2" alt="Waveform Diagram" /></td>
<td><img src="image3" alt="Waveform Diagram" /></td>
<td><img src="image4" alt="Waveform Diagram" /></td>
</tr>
<tr>
<td>( a = 100 \text{ mV to } 600 \text{ mV} )</td>
<td>( a = 0 \text{ V to } +6.4 \text{ V} ) (±2%-30%)</td>
<td>( a = 0 \text{ V to } +6.4 \text{ V} ) (±2%-30%)</td>
<td>( a = 0 \text{ V to } -6.4 \text{ V} ) (±2%-30%)</td>
</tr>
<tr>
<td>( t = 11.9 \mu \text{sec} )</td>
<td>( t = 0.5 \mu \text{sec} ) ( T = 20 \mu \text{sec} )</td>
<td>( t = 0.5 \mu \text{sec} ) ( T = 20 \mu \text{sec} )</td>
<td>( t = 0 \mu \text{sec} \text{ to } 37.1 \mu \text{sec} ) ( T = 64 \mu \text{sec} )</td>
</tr>
<tr>
<td>( T = 64 \mu \text{sec} )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Active when low**

---

**4.3 DIMENSIONS AND WEIGHTS**

See Figure A-5 for the dimensions and weights of the XTV5 Camera Control Unit FB.

**4.4 MOUNTING INSTRUCTIONS**

See Section B, INSTALLATION, for further information on the mounting arrangement possibilities.

**4.5 SUPPLY REQUIREMENTS**

See paragraph 4.1., PERFORMANCE DATA, for supply requirements.

**4.6 ENVIRONMENTAL DATA**

- Ambient temperature ?
- Humidity ?

**4.7 TRANSPORT AND HANDLING**

There are no special transport or handling instructions.
5.2. AGC/Id BOARD WN17

5.2.1. AGC Top/Average Selection

(1) For AGC Top, position jumper switches W1 and W2 to connect points 1 and 2, as shown below.

(2) For AGC Average, position jumper switches W1 and W2 to connect points 1 and 3, as shown below.

5.2.2. Rectangular/Circular Blanking Selection

(1) For rectangular blanking position jumper switch W3 to connect points 1 and 3, as shown below.

(2) For circular blanking, position jumper switch W3 to connect points 1 and 2 as shown below.

5.2.3. Manual/Automatic Dark Current Control Selection

(1) For automatic dark current compensation control, position jumper switch W4 to connect points 1 and 2 as shown below.

(2) For manual dark current compensation control, position jumper switch W4 to connect points 1 and 3 as shown below.

5.3. PULSE GENERATOR BOARD WN19

5.3.1. 50 Hz/60 Hz Selection

(1) For 50 Hz, position jumper switch W2 to connect points 1 and 2 as shown below.

(2) For 60 Hz, position jumper switch W2 to connect points 1 and 3 as shown below.
5.5. KW CONTROL BOARD UN22

5.5.1. Top/Average KW Control Selection
(1) For Top level KW Control, position jumper switch W1 to connect points 1 and 2 as shown below.

(2) For Average KW Control, position jumper switch W1 to connect points 1 and 3 as shown below.

5.5.2. KW/mA/mA Selection
(1) For KW/mA Control, position jumper switch W2 to connect points 1 and 2 as shown below.

(2) For mA Control, position jumper switch W2 to connect points 1 and 3 as shown below.

5.6. ADAPTATION BOARD BN25

5.6.1. H-Scan Reverse Selection
For H-Scan Reverse, position jumper switch W3 to connect between points 1 and 3 as shown below.

5.6.2. V-Scan Inverse Selection
For V-Scan Inverse Selection, position jumper switch W2 to connect between points 1 and 3 as shown below.
Section C

1. INTRODUCTION

Sections 6. CONTROLS AND ADJUSTMENTS
5. TEST POINTS
4. CONTROLS AND ADJUSTMENTS
3. SETTING UP AND TESTIND
   Multiplier
   Conversion
   2. EQUIPMENT REQUIRED
   3. EQUIPMENT REQUIRED
   4. CONTROLS AND ADJUSTMENTS
   5. TEST POINTS
   6. CONTROLS AND ADJUSTMENTS
   LIST OF TABLES
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAPTATION BOARD BV25 WN23</td>
<td>DOSE RATE CONTROL VOLTAGE</td>
<td>Adjust dose rate control voltage to kW control board. max. CCW-0V ± 10mV; CW 10.0V to 10.9V at (X17).</td>
</tr>
<tr>
<td></td>
<td>ADJUST (R1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FIXED GAIN ADJUST (R2)</td>
<td>Adjust fixed gain voltage. max. CCW 0V ± 10V; CW 5V ± 600 mV (X14).</td>
</tr>
<tr>
<td></td>
<td>W1 JUMPER</td>
<td>Allows selection of H-Scan Reverse (1 to 2 NORMAL) (1 to 3 REVERSE)</td>
</tr>
<tr>
<td></td>
<td>W2 JUMPER</td>
<td>Allows selection of V-Scan Inverse (1 to 2 NORMAL) (1 to 3 INVERSE)</td>
</tr>
<tr>
<td>CAMER CONTROL BOARD WN11</td>
<td>H-SHIFT REVERSED (R1)</td>
<td>Adjusts the position of scanning pattern, left or right, at the target at camera. Adjustment required. max. CCW -9.3V ± 1V; max. CW +9.3V ± 0.7V (X1:10)</td>
</tr>
<tr>
<td></td>
<td>H-SHIFT NORMAL (R2)</td>
<td>Adjusts the position of scanning pattern, left or right, at the target at camera.                                                      max. CCW -9.3V ± 1V; max. CW +10.2V ± 0.7V (X1:13)</td>
</tr>
<tr>
<td></td>
<td>V-AMPLITUDE (R3)</td>
<td>Adjusts the height of the scanning pattern on the target at the camera. Adjustment required. max. CCW 0V ± 0.1V; max. CW +10.2V ± 0.7V (X1:13)</td>
</tr>
<tr>
<td></td>
<td>V-SHIFT NORMAL (R4)</td>
<td>Adjusts the position of scanning pattern, up or down, at the target at camera. Adjustment required. max. CCW 0V ± 0.1V; max. CW +10V ± 0.7V (X1:18)</td>
</tr>
<tr>
<td></td>
<td>V-SHIFT INVERSED (R5)</td>
<td>Adjusts the position of scanning pattern, up or down, at the target at camera. Adjustment required. max. CCW 0V ± 0.1V; max. CW +10V ± 0.7V (X1:18)</td>
</tr>
<tr>
<td></td>
<td>TARGET NEGATIVE PREVENTION</td>
<td>Adjusts safety protection voltage for camera. Adjustment required. max. CCW 0V ± 0.05V; max. CW -4.6V and -5.19V (X2:19)</td>
</tr>
<tr>
<td></td>
<td>(R6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wg ADJUST (R7)</td>
<td>Adjusts voltage applied to grid 1 at camera. Adjustment required. (X1:12) with (R6) and (R7) max. CCW = 0V ± 0.1V with (R6) adjusted to -4V and (R7) max. CCW = 0.4V ± 0.05V with (R6) and (R7) max. CW = -10V ± 0.7V</td>
</tr>
<tr>
<td></td>
<td>H-AMPLITUDE (R8)</td>
<td>Adjusts the width of the scanning pattern at the target at the camera. Adjustment required. (X2111) with W1 connecting 1 and 2 and (R8) max. CCW = +1.07V to +1.47V with W1 connecting 1 and 2 and (R8) max. CW = 0V with W1 connecting 3 and 4 and (R8) max. CCW = -2.00V to 2.54V with W1 connecting 3 and 4 and (R8) max. CW = 0V</td>
</tr>
<tr>
<td></td>
<td>STATIC FOCUS (R9)</td>
<td>Adjusts the static focus voltage. Adjustment required. (X2.14) max. CCW = 2.2V to -4V; max. CW = -6.0 and -9.0.</td>
</tr>
<tr>
<td></td>
<td>ALIGNMENT 1 (R10)</td>
<td>Adjusts the voltage to the alignment coils. Adjustment required. (X219) max. CCW = -9V to -10.9V; max. CW = +8.5V to +10.7V.</td>
</tr>
<tr>
<td></td>
<td>ALIGNMENT 2 (R11)</td>
<td>Adjusts the voltage to the alignment coils. Adjustment required. (X219) max. CCW = -9V to -10.9V; max. CW = +8.5V to +10.7V.</td>
</tr>
<tr>
<td></td>
<td>TARGET VOLTAGE (R12)</td>
<td>Adjusts the voltage used for target voltage. Adjustment required (X219) max. CCW = 0V ± 0.1V; max. CW = 0V</td>
</tr>
<tr>
<td></td>
<td>LINE RATE ADJUST (M1)</td>
<td>Allows selection between High and Low Scanning Rates.</td>
</tr>
<tr>
<td></td>
<td>CAMERA TUBE TYPE SELECT</td>
<td>Allows selection for diode gun type camera tubes. 1-2 other tubes; 3-4 (D1) Diode gun.</td>
</tr>
<tr>
<td>FUNCTION</td>
<td>LOCATION</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>AircraftLockControlBoard</td>
<td>4C19</td>
<td></td>
</tr>
<tr>
<td>メインロックコントロール(LOCK)</td>
<td>4A19</td>
<td></td>
</tr>
<tr>
<td>メインロックコントロール(LOCK)</td>
<td>4A19</td>
<td></td>
</tr>
</tbody>
</table>

**1.2 For Pressured**

*For Non-Pressured or Non-Nonpressurized Conditions*

- 1.2 For Pressured (1.2 For PRESSURED)
- 1.2 For Non-Pressured (1.2 For NONPRESSURED)

**2.4 jumper**

*MAIN LOCK (1.2 For Non-PRESSURED)*

- 2.4 jumper (1.2 For Non-Pressured)

**3.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 3.4 jumper (1.2 For Pressured)

**4.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 4.4 jumper (1.2 For Pressured)

**5.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 5.4 jumper (1.2 For Pressured)

**6.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 6.4 jumper (1.2 For Pressured)

**7.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 7.4 jumper (1.2 For Pressured)

**8.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 8.4 jumper (1.2 For Pressured)

**9.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 9.4 jumper (1.2 For Pressured)

**10.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 10.4 jumper (1.2 For Pressured)

**11.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 11.4 jumper (1.2 For Pressured)

**12.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 12.4 jumper (1.2 For Pressured)

**13.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 13.4 jumper (1.2 For Pressured)

**14.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 14.4 jumper (1.2 For Pressured)

**15.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 15.4 jumper (1.2 For Pressured)

**16.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 16.4 jumper (1.2 For Pressured)

**17.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 17.4 jumper (1.2 For Pressured)

**18.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 18.4 jumper (1.2 For Pressured)

**19.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 19.4 jumper (1.2 For Pressured)

**20.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 20.4 jumper (1.2 For Pressured)

**21.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 21.4 jumper (1.2 For Pressured)

**22.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 22.4 jumper (1.2 For Pressured)

**23.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 23.4 jumper (1.2 For Pressured)

**24.4 jumper**

*MAIN LOCK (1.2 For PRESSURED)*

- 24.4 jumper (1.2 For Pressured)
### TABLE C-1 (Cont.)

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONITORING BOARD</td>
<td>MODULATED H-PARABOLA</td>
<td>Adjusts the raster amplitude. Factory pre-set.</td>
</tr>
<tr>
<td>W1 JUMPER</td>
<td>(R1) Adjust (RI)</td>
<td>(R1) max. DOWN = 2.10V, max UP = 2.3V</td>
</tr>
<tr>
<td></td>
<td>W1 JUMPER</td>
<td>1-2 scanning 3/4 625/525 L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-3 scanning 1/1 1249/1049 L</td>
</tr>
<tr>
<td>KV CONTROL BOARD</td>
<td>VARIABLE GAIN AMPLIFIER</td>
<td>Adjust input voltages to variable gain amplifier. Factory pre-set.</td>
</tr>
<tr>
<td>W2 JUMPER</td>
<td>ADJUST (RI) and (R2)</td>
<td>With 200 mV ± 10 mV at X1:4 and 0V at X1:9, (RI) is adjusted to -6.4V ± 0.1V at X1:6. With 1200 mV ± 10 mV at X1:14 and 10V ± 10mV at X1:9; (R1) is adjusted to ±1-2V ± 0.1V at X1:6.</td>
</tr>
<tr>
<td></td>
<td>W2 JUMPER</td>
<td>Allows selection for TOP/AVERAGE KV control. (1-2 for TOP) (1-3 for AVERAGE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allows selection for KV/mA or mA control (1-2 for KV/mA) (1-3 for mA)</td>
</tr>
</tbody>
</table>

### TABLE C-2

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>NAME</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAPTATION BOARD</td>
<td>Measuring Point 1</td>
<td>DV to -10.0V ± 0.7V</td>
</tr>
<tr>
<td>BV25 W23</td>
<td>Measuring Point 2</td>
<td>DV to +6.2V ± 0.4V</td>
</tr>
<tr>
<td></td>
<td>Measuring Point 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Point 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(X2:4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Point 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(X2:8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Point 7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(X1:1A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Point 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(X2:10)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Point 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(X1:11)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Point 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(X2:13)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Point 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(X2:12)</td>
<td></td>
</tr>
<tr>
<td>LOCATION</td>
<td>NAME</td>
<td>FUNCTION</td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| Measuring Point 12  
(X1:15) |  |  |
| Measuring Point 13  
(X2:4) |  |  |
| Measuring Point 14  
(X2:6) |  |  |
| Measuring Point 15  
(X2:14) |  |  |
| Measuring Point 16  
(X1:20) |  |  |
| Measuring Point 17  
(X1:10) |  |  |
| Measuring Point 18  
(X2:7) |  |  |
| Measuring Point 19  
(X1:14) |  |  |
| Measuring Point 20  
(X2:15) |  |  |
| PULSE GENERATOR  
BOARD VN19 | Measuring Point 1  
(X1:6) | (R1) adjusts between 45 to 55 Hz  
45 Hz = 1V to -8V; 55Hz = +1V to +12V. |
| MONITORING  
BOARD VN21 | Measuring Point 1  
(X1:19) |  |
|  | Measuring Point 2  
(X1:5) |  |
**Table C-2 (Cont.)**

<table>
<thead>
<tr>
<th>Function</th>
<th>Measuring Point 1</th>
<th>Measuring Point 2</th>
<th>Measuring Point 3</th>
<th>Measuring Point 4</th>
<th>Measuring Point 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUNCTION</strong></td>
<td><strong>X:0Y:0</strong></td>
<td><strong>X:0Y:10</strong></td>
<td><strong>X:1Y:0</strong></td>
<td><strong>X:1Y:10</strong></td>
<td><strong>X:2Y:0</strong></td>
</tr>
<tr>
<td><strong>NAME</strong></td>
<td><strong>W2Y LED</strong></td>
<td><strong>W1Y LED</strong></td>
<td><strong>HI LED</strong></td>
<td><strong>MI LED</strong></td>
<td><strong>LOTZ LED</strong></td>
</tr>
<tr>
<td><strong>LOCATION</strong></td>
<td><strong>CAMERA CONTROL</strong></td>
<td><strong>VIDEO PROCESSING BOARD</strong></td>
<td><strong>V26 LED</strong></td>
<td><strong>V27 LED</strong></td>
<td><strong>AC/DC BOARD</strong></td>
</tr>
</tbody>
</table>

**INSTRUCTIONS**

TABLE C-3

2.3.1. Adaptation Board BV25 WN23 (Cont.)

5) If it is not possible to adjust (R1) so that the readings meet specifications, check in accordance with Section F, TROUBLESHOOTING, to isolate the fault.

6) Set the Power to OFF, remove the Stabilized Power Supply Board WN2 from the extender and replace.

2.3.2. Camera Control Board WN11 Adjustments

1) Set the Power OFF.

2) Put the Camera Control Board WN11 on an extender, set the Power ON.

3) If the FAIL POSITIONED LED lights, switch the Power OFF and reverse position of the Camera Control Board WN11. Set the Power ON again.

4) Using (X1:22) or (X1:11) as ground return with an accurate dc voltmeter or oscilloscope execute the following measurements.

5) To check target voltage, turn (R12) fully counterclockwise so that the voltage reads between 0.50V and 0.65V measured at measuring point (X1:11). Turn (R12) fully counterclockwise so that the voltage reads 0V ± 0.1V.

6) To check alignment voltages, turn (R10) for point (X2:9) and (R11) for point (X2:17) fully counterclockwise so that the voltage at either point is more negative then -5V and more positive then +10.9V. Turn (R10) and (R11) fully clockwise so that the voltage at points (X2:9) and (X2:17) read > +8.5V and < +10.7V.

7) To check target negative protection voltage, turn (R6) fully counterclockwise so that the voltage at point (X2:5) reads 0V ± 0.05V.
   * Apply 0V to point (X1:17); the voltage should read 0V ± 0.05V. Then, turn (R6) fully clockwise so that the voltage between -4.6V and -5.5V.

8) To check Vg-adjust voltage, turn (R6) until point (X2:5) reads 0V and turn (R7) fully counterclockwise such that the voltage at points (X1:20) reads 0V ± 0.01V. Turn (R6) until points (X2:5) reads 0V such that the voltage at points (X1:20) reads 0.4V ± 0.5V. Turn (R6) until point (X2:5) reads 0V and turn (R7) fully clockwise such that the voltage at point (X1:20) reads -10V ± 0.7V.

9) To check the vertical amplitude, turn (R3) fully counterclockwise such that the voltage at point (X1:15) reads 0V ± 0.1V. Request vertical Scan Inverse ; the reading should stay the same. Turn (R3) fully clockwise such that the voltage at point (X1:15) reads +10.02V ± 0.7V. Remove the Vertical Scan Inverse request.
   * The voltage should not deviate more than 2%.

10) To check vertical shift voltage, turn (R4) fully clockwise such that the voltage at point (X1:10) reads 0V ± 0.1V. Turn (R4) fully counterclockwise such that the voltage at point (X1:10) reads -10V ± 0.7V. Request vertical Scan Inverse ; turn (R5) fully counterclockwise such that the voltage at point (X1:10) reads 0V ± 0.1V. Turn (R5) fully clockwise such that the voltage at point (X1:10) reads +10V ± 0.7V.

11) To check horizontal shift voltage, turn (R2) fully counterclockwise such that the voltage at point (X1:10) reads -9.3V ± 1V. Turn (R2) fully clockwise such that the voltage at point (X1:10) reads -9.5V ± 0.7V. Request Horizontal Scan Inverse ; turn (R1) fully counterclockwise such that the voltage at point (X1:10) reads -9.3V ± 1V. Turn (R1) fully clockwise such that the voltage at point (X1:10) reads -9.5V ± 0.7V.

12) To check horizontal amplitude voltage, connect a resistor of 1W between (X2:11) and 0V. Position jumper switch W1 to connect points 1 and 2. Turn (R8) fully counterclockwise such that the voltage as read at point (X2:11) reads between 1.07V and 1.65V. Turn (R8) fully clockwise such that the voltage at point (X2:11) reads 0V. Position jumper switch W1 to connect points 4 and 5. Turn (R8) fully counterclockwise such that the voltage at point (X2:11) reads between 2.00V and 2.50V. Turn (R8) fully clockwise such that the voltage at point (X2:11) reads 0V.

13) To check the static focus voltage, connect a resistor of 1W between point (X2:14) and 0V. Turn (R4) fully counterclockwise such that the voltage at point (X2:14) reads between -2.2V and -4V. Turn (R9) fully clockwise such that the voltage at point (X2:14) reads between -6.0V and -9V.

14) If it is not possible to adjust the Camera Control Board WN11 properly, check in accordance with Section F, TROUBLESHOOTING, to isolate the fault.

15) Set the Power OFF, remove the camera Control Board WN11 from the extender and replace.

2.3.3. Video Processing Board WN13 Adjustments

1) Set the Power OFF.

2) Put the Video Processing Board WN13 on an extender; set the Power ON.

3) If the FAIL POSITION LED lights, switch the Power Switch S1 OFF and reverse position of the Video Processing Board WN13. Set the Power ON again.

4) Using (X1:22) or (X1:11) as ground return, with an accurate oscilloscope execute the following measurements.
Section E

[Document content not legible/extracted]
2.3.5. Pulse Generator Board Adjustments (Cont.)

5) b) For line adjustments, remove OV from (X2:8). The oscillator should now lock in the mains frequency within approximately 1 sec. The voltage as measured at point (X1:6) must remain constant (± 0.2V variation). Turn (R1) such that the voltage at point (X1:6) is 0 ± 0.5V.

6) If it is not possible to adjust the Pulse Generator Board WN19 check in accordance with Section F, TROUBLESHOOTING, to isolate the fault.

7) Set the Power to OFF, remove the Pulse Generator Board WN19 from the extender and replace.

2.3.6. Monitoring Board WN21 Adjustments

1) Set the Power OFF.

2) Put the Monitoring Board WN21 on an extender; set Power ON.

3) If the FAIL POSITION LED lights, switch the Power to OFF, and reverse position of the Monitoring Board WN21. Set the power to ON again.

4) Using (X1:22) or (X1:1) as ground return, with an accurate oscilloscope execute the following measurements.

5) To adjust the modulated H-parabola, set-up the control unit and camera for 625 lines. Connect one channel of the scope to point (X1:10) and the other channel of the scope to point (X1:10) and the other channel of the scope to point (X1:14). Turn (R1) fully clockwise such that the raster amplitude is greater than 2.3V. Turn (R1) fully counter clockwise such that the raster amplitude is less than 2.10V.

6) If it is not possible to adjust the Monitoring Board WN21, check in accordance with Section F, TROUBLESHOOTING, to isolate the fault.

7) Set the Power OFF, remove the Monitoring Board WN19 from the extender, and replace.

2.3.7. KV Control Board WN22 Adjustments

1) Set the Power OFF.

2) Put the KV Control Board WN22 on an extender, set the Power ON.

3) If the FAIL POSITION LED light, switch the Power to OFF, and reverse position of the KV Control Board WN22. Set the Power to ON again.

4) Check that jumper switches W1 and W2 are connecting points 1 and 2. Using (X1:22) or (X1:1) as ground return with an accurate oscilloscope execute the following measurements.

5) To adjust the control amplifier apply a voltage of 0V at point (X1:9). Turn (R2) fully clockwise such that the voltage at point (X1:7) reads less then -2V. Turn (R2) fully counter clockwise such that the voltage at points (X1:7) read 0V ± 0.5V. Turn (R1) fully counter clockwise. Apply a voltage of 10V ± 0.1V at point (X1:9). Turn (R1) clockwise such that the voltage at point (X1:7) rises from 0V to a voltage greater than +2V. Turn (R1) clockwise such that the voltage as measured at point (X1:7) read 0V ± 0.5V.

6) To adjust the KV control voltage, apply a video signal of 200 mV ± 10 mV at point (X1:14) and 0V at point (X1:9). Adjust (R2) such that the voltage at point (X1:6) read 0V ± 0.1V. Apply a video signal of 1200 mV ± 10 mV at point (X1:9). Adjust (R1) such that a voltage at point (X1:6) reads +1.2V ± 0.1V.

7) If it is not possible to adjust the KV Control Board WN22, check in accordance with Section F, TROUBLESHOOTING, to isolate the fault.

8) Set the Power to OFF, remove the KV control Board WN22 from the extender, and replace.
Section F: Corrective Maintenance

2. Test Equipment Reconfiguration
XTV5 CONTROL UNIT
GENERAL
TROUBLESHOOTING

POWER TRANSFORMER DEFECT

TRANSFER RELAYS DEFECT

SHORT CIRCUIT

POWER SUPPLY AND/OR LOW
VOLTAGE SUPPLY DEFECT

DEFECTIVE VIDEO
AMPLIFICATION

Ug CONTROL DEFECT

Ve CONTROL DEFECT

FOCUSING SUPPLY
VOLTAGES FAULTY

Check in accordance with LOOP F1

Check in accordance with LOOP F1

Check in accordance with LOOP F5

Check in accordance with LOOP F4

Check in accordance with LOOP F4

Check in accordance with LOOP F6

Check in accordance with LOOP F5

F-2
D

WHITE RING → CAMERA CONTROL DEFECT

VERTICAL BAR AT LEFT EDGE → HORIZONTAL BLANKING WIDE

VERTICAL BAR AT RIGHT EDGE → CABLE DELAY COMPENSATION INCORRECT

CIRCLE FILLED LEFT/RIGHT → H-AMPLITUDE TOO LOW

CIRCLE FILLED TOP/BOTTOM → V-AMPLITUDE TOO LOW

E

Check in accordance with LOOP F4

Check in accordance with LOOP F2

Check in accordance with F5

Check in accordance with LOOP F5

Check in accordance with LOOP F4

Check in accordance with LOOP F4
LOOP F1: POWER SUPPLY VOLTAGES

Figure F1-1

<table>
<thead>
<tr>
<th>WN11 POINTS</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1:2</td>
<td>+15 V ± 2%</td>
</tr>
<tr>
<td>X1:1</td>
<td>+6.4 V ± 2%</td>
</tr>
<tr>
<td>X1:3</td>
<td>-15 V ± 2%</td>
</tr>
</tbody>
</table>

DV reference X1:1

Figure F1-2

<table>
<thead>
<tr>
<th>WN13 POINTS</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1:2</td>
<td>+15 V ± 2%</td>
</tr>
<tr>
<td>X2:2</td>
<td>-15 V ± 2%</td>
</tr>
</tbody>
</table>

DV reference X1:1

Figure F1-3

<table>
<thead>
<tr>
<th>WN17 POINTS</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1:2</td>
<td>+15 V ± 2%</td>
</tr>
<tr>
<td>X1:4</td>
<td>+6.4 V ± 2%</td>
</tr>
<tr>
<td>X1:3</td>
<td>-15 V ± 2%</td>
</tr>
</tbody>
</table>

DV reference X1:1

Figure F1-4

<table>
<thead>
<tr>
<th>WN19 POINTS</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1:2</td>
<td>+15 V ± 2%</td>
</tr>
<tr>
<td>X2:2</td>
<td>+6.4 V ± 2%</td>
</tr>
<tr>
<td>X1:3</td>
<td>-15 V ± 2%</td>
</tr>
</tbody>
</table>

DV reference X1:1

---

Place WN11 on extender, Energize CCU, Measure in accordance with Figure F1-1.

Measurements same as Figure F1-1

NO

Probable malfunction at WN11. Check in accordance with drawing Z3-1. Repair or replace. Repeat LOOP F1.

YES

De-energize CCU, Remove WN11 and extender. Replace WN11 in normal position. Place WN19 on extender. Energize CCU, Measure in accordance with Figure F1-3.

Measurements same as Figure F1-3

NO

Probable malfunction at WN17. Check in accordance with drawing Z3-3. Repair or replace. Repeat LOOP F1.

YES

De-energize CCU, Remove WN17 and extender. Replace WN17 in normal position. Place WN17 on extender. Energize CCU, Measure in accordance with Figure F1-4.

Measurements same as Figure F1-4

NO

Probable malfunction at WN19. Check in accordance with drawing Z3-4. Repair or replace. Repeat LOOP F1.

YES
STOP

LOOP F1: POWER SUPPLY VOLTAGES (cont.)
LOOP F2: PULSE DISTRIBUTION

Remove WN19 and replace on an extender. Energize the CCU. Measure across points X1:8 and X1:1 at WN19.

50 or 60Hz, 3Vtt to 5Vtt

NO

YES

EXPOFIX installed

NO

YES

EVEN LINE FACILITY

NO

YES

EXTERNAL SYNC connected

NO

A

Check continuity in accordance with drawing Z1-2. Repair or replace. Repeat LOOP F2.

De-energize CCU. Position jumper switches at WN19 as shown in F2-1. Give the commands as shown in Figure F2-2 and measure relevant points with CCU energized.

Measurements same as Figure F2-2

NO

YES


Both fields the same

NO

YES

De-energize CCU. Position W1 between 1-2. At WN19, measure point X1:10 with CCU energized.

Same as Figure F2-3

NO

YES

Check continuity in accordance with drawing Z1-2. Repair or replace. Repeat LOOP F2.

IF EXPOFIX not installed such there is even line select, give command for even line and check in accordance with Figure F2-3. If readings incorrect, check continuity, repair or replace. Repeat LOOP F2.

Probable malfunction at WN19. To trace the possible cause of malfunction, continue this flow diagram at branch A.

Figure F2-1

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>50-Hz</th>
<th>60-Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>W2</td>
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<td>1-3</td>
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<tr>
<td>W3</td>
<td>1-2</td>
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<tr>
<td>W4</td>
<td>1-2</td>
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<tr>
<td>W5</td>
<td>1-2</td>
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<tr>
<td>W6</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>W7</td>
<td>1-2</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Figure F2-2

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>WN19:</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVEN LINE</td>
<td>X2:12</td>
<td>0V ± 10%</td>
</tr>
<tr>
<td>EXT. SYNC</td>
<td>X1:6</td>
<td>0V ± 10%</td>
</tr>
<tr>
<td>MAINS LOCK OFF</td>
<td>X2:8</td>
<td>0V ± 10%</td>
</tr>
<tr>
<td>SELECT CRYSTAL</td>
<td>X1:5</td>
<td>0V ± 10%</td>
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</table>

Figure F2-3
Loop F2: Pulse Distribution
LOOP F2: PULSE DISTRIBUTION

C

34 - 43 μsec

NO

Probable malfunction at WN19. Check in accordance with drawing Z3-7 to isolate fault. Repair or replace. Repeat LOOP F2.

YES

Measure outgoing waveforms in according with Figure F2-4 at WN19.

D

Same as Figure F2-4

NO

Probable malfunction at WN19. Check in accordance with drawing Z3-7 to isolate fault. Repair or replace. Repeat LOOP F2.

YES
END

IF figure FZ-5

THEN Loop FZ-2

WITH drawing ZZ-1, REPORT or REPORT Loop FZ-2.

WITH drawing ZZ-2, REPORT or REPORT Loop FZ-2.

THEN Loop FZ-2

WITH drawing ZZ-1, REPORT or REPORT Loop FZ-2.

WITH drawing ZZ-2, REPORT or REPORT Loop FZ-2.

Then perform Loop FZ-2.

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Then perform Loop FZ-2.
LOOP F3: DOSE RATE CONTROL

De-energize CDU. Remove WN22 and replace on extender. Position jumper switch W1 to connect points 1-2 and W2 to connect points 1-2.

Energize the CDU. Measure the line frequent pulses as shown in Figure F3-1.

Measurements same as Figure F3-1

If point X1:14 is not correct, check the video processor in accordance with LOOP F5.

If point X1:12 is not correct, check the pulse generator in LOOP F2.

If point X1:18 is not correct, check the AGC/Id Board in accordance with LOOP F5.

Measure the frame frequent pulses as shown in Figure F3-2.

Measurements same as Figure F3-2.

If points X1:10 or X1:16 are not correct, check the pulse generator in accordance with LOOP F2.

Figure F3-1

Figure F3-2
Loop F3: Dose Rate Control (Cont.)
LOOP F3: DOSE RATE CONTROL (Cont.)

Measure points X1:8 and C1:6.

Same ≤ 50 mV

NO → OUTPUT STAGE

YES

Measure at X1:8 and MP4.

(V_{MP4} x 4) -6V ± 0.5V

NO → REFERENCE VOLTAGE

YES

Apply 200 mV ± 10 mV at point X1:14 and 0V at X1:9. Adjust R2 such that X1:6 reads ±6V ± 0.1V.

Adjustment possible

NO → END ADJUSTMENT

YES

Apply 1200 mV ± 10 mV at point X1:14 and 10V ± 10 mV at X1:9. Adjust R1 such that X1:6 reads ±1.2V ± 0.1V.

Adjustment possible

NO → END ADJUSTMENT

YES

Check in accordance with drawing Z3-9. Repair or replace. Repeat LOOP F3.
LOOP F3: DOSE RATE CONTROL (cont.)
LOOP F4: CAMERA SUPPLY

De-energize CCU, Place WN11 on extender. Energize CCU. Measure at MP9.

+ 10.0V ± 0.7V

NO

YES

Measure at MP10.

INTERNAL POWER SUPPLY

- 10.2 V ± 0.7V

NO

YES

Turn R12 max. CW. Measure at X2:19.

TARGET VOLTAGE REG.

0V ± 0.1V

NO

YES

Turn R10 max. CCW. Measure at X2:9. Turn R11 max. CCW. Measure at X2:17.

more neg. -9V

NO

more pos. -10.9V

YES


ALIGNMENT CIRCUITRY

+ 10.7

NO

YES
LOOP F4: CAMERA SUPPLY (CONT.)
LOOP F4: CAMERA SUPPLY (Cont.)

B

Turn R4 and R5 max. CCW. Measure point X1:18 in normal mode and with V-SCAN INVERSE.

OV ± 0.1V

NO

YES

OV ± 10%

NO

COMMAND Synchron.

Check II/TV system for continuity. Repair or replace. Repeat LOOP F4.

Measure point X1:13 with V-SCAN INVERSE.

-9.3 ± 1V

NO

YES

Position W1 between 1-2. Connect an 1 watt resistor between X2:17 and 0V. Turn R8 not CCW.

1.07V - 1.45V

NO

YES

Position W1 between 4-3. Turn R8 max. CCW.

2.00V - 2.54V

NO

YES

H-AMPLITUDE CIRCUIT

CHECK II/TV SYSTEM FOR CONTINUITY. REPAIR OR REPLACE. REPEAT LOOP F4.

Check II/TV system for continuity. Repair or replace. Repeat LOOP F4.

Measure point X1:6 with H-SCAN REVERSE.

C
LOOP F4: CAMERA SUPPLY (cont.)
LOOP F5: VIDEO PROCESSING

De-energize CCU, Place WN13 on extender. Energize CCU. Connect 75 Ohm to plug WNX4. Measure sync. level at point X4:1.

Top sync. OV±0.01V
voltage sync. -0.5V±0.05V

NOTICE
Before testing LOOP F5, complete testing LOOP F1 and LOOP F2.

Check in accordance with drawing Z3-9. Repair or replace. Repeat LOOP F5.

SYNC MIXER

Measure video at X4:1. Adjust set-up to 35 mV ± 10% with R3 during CLEAN CIRCLE.

Adjust possible

Measure at X1:6 during CLEAN CIRCLE

OV ± 10%

Check in accordance with drawing Z3-4. Repair or replace. Repeat LOOP F5.

YES

NO

CLEAN CIRCLE CIRCUIT

Figure F5-1

WN13 POINT | MEASUREMENT
---|---
X2:20 | 6.4V
| 1.2 μsec
X2:11 | OV to +4V (-0% ± 5%)
X2:9 | OV to +4V (-0% ± 5%)
X2:18 | 0 24.7 μsec

Measure in accordance with figure F5-1.

Same as figure F5-1

Apply 4V ± 0.05V at point X2:11. Measure at point X4:1 during dark current pulse.

310 mV ± 70 mV higher

DARK CURRENT ADDING

A

Probable malfunction at AGC/id board. Check in accordance with drawing Z3-5. Repair or replace. Repeat LOOP F5.

Check in accordance with drawing Z3-4. Repair or replace. Repeat LOOP F5.
Loop FS: Video Processing (cont.)
LOOP F5: VIDEO PROCESSING (Cont.)

B

Measure point X2:14 during normal operation.

- Same as Figure F5-3
  - NO: DARK CURRENT ADDER
  - YES: Measure point X1:12 during normal operation.
    - Same as Figure F5-2
      - NO: V.G. AMPLIFIER CIRCUIT
      - YES: END

Check in accordance with drawing Z3-3. Repair or replace. Repeat LOOP F5.

Check in accordance with drawing Z3-3. Repair or replace. Repeat LOOP F5.
<table>
<thead>
<tr>
<th>Section 2: DANGERS</th>
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<tbody>
<tr>
<td>Z2-1</td>
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<td>Z2-2</td>
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<td>Z2-3</td>
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<tr>
<td>Z2-4</td>
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<td>Z2-8</td>
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<td>Z2-9</td>
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<th>CONTENTS</th>
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<tbody>
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<td>Z2-1</td>
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</tr>
<tr>
<td>Z2-3</td>
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<tr>
<td>Z2-4</td>
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ALERT: Camera Control Unit PB