OPERATOR MANUAL

for the

Kodak X-Omat 460 RA Processor

H108_0003DA

Table of Contents

The Display Panel

Using the Display Panel

You may select, change, and monitor processing variables for the *Kodak X-Omat* 460 RA Processor by using the display panel, Figure 1 below.

BACKLIT MESSAGES

LIQUID CRYSTAL DISPLAY

DEVELOPER TEMPERATURE DISPLAY

REPLENISHMENT INDICATOR

ROOM LIGHT SENSOR

Ready
Wait
Service

°C
°F

Developer

Replenishment

DEGREE C/F LED INDICATORS
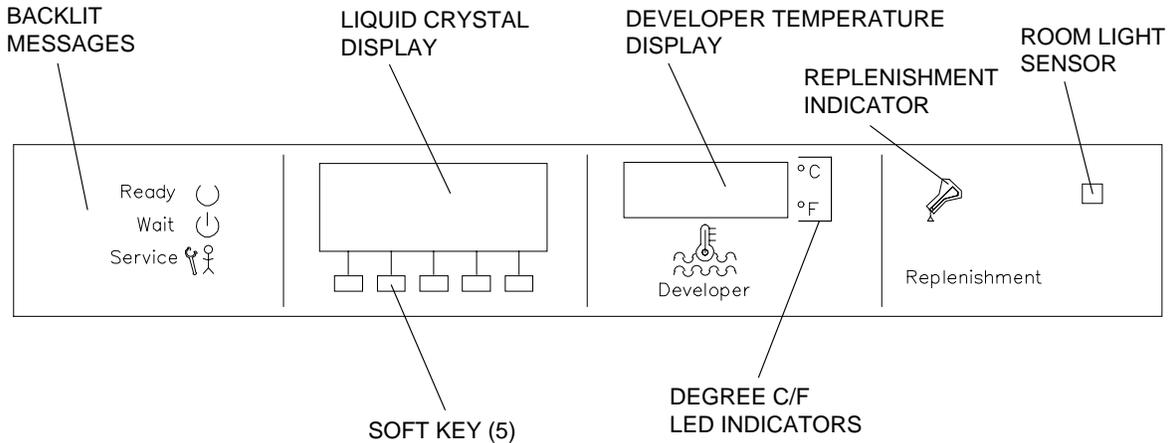
SOFT KEY (5)

H104_0080BCA
H104_0080BA

Figure 1 Display Panel

Adjusting the Contrast of the 300 Circuit Board Display (Display Panel)

[1] To darken the display, press and hold the fourth SOFT KEY on the DISPLAY PANEL. At the same time, press the first SOFT KEY on the DISPLAY PANEL as necessary to obtain the desired contrast.

[2] To lighten the display, press and hold the fourth SOFT KEY on the DISPLAY PANEL. At the same time, press the second SOFT KEY on the DISPLAY PANEL as necessary to obtain the desired contrast.

Ready
Wait
Service

°C
°F

Developer

Replenishment

Press to Darken Display

Press to Lighten Display

Press and Hold to Change Contrast
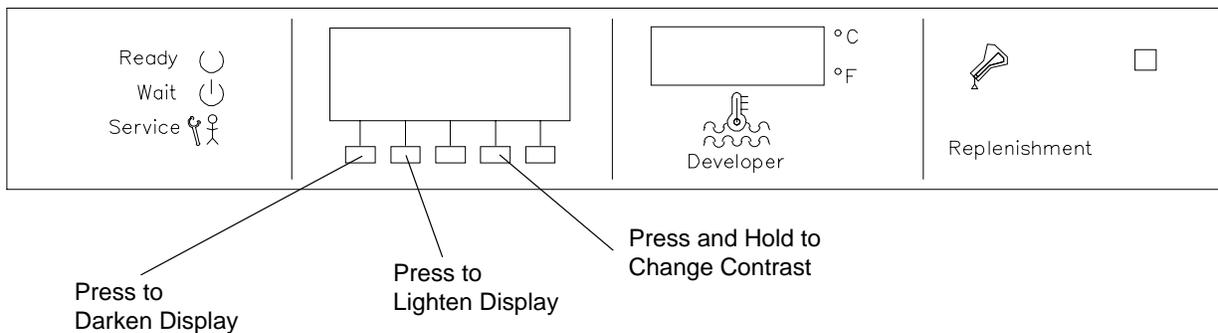
H104_0080BCB
H104_0080BA

Figure 2 Adjusting the Brightness of the 300 Board Display

Status Information The display panel provides the following status information for the processor:

- Liquid Crystal Display
  - Ready/Not Ready
  - Message/Error
  - Current cycle
  - Current function for each of the "Soft Keys"
- Operation Status LEDs
  - The **"Ready"** LED indicates that the processor is ready to accept film.
  - The **"Wait"** LED indicates that the processor has not yet reached its optimum film processing conditions. See page 34 for a further description of "Wait" conditions.
  - The **"Service"** LED indicates that the processor has an error that the operator cannot repair.
- Indicators
  - The Developer Temperature Display shows the current temperature of the developer solution in the processor tank in degrees celsius or fahrenheit. If the temperature appears in degrees celsius, it indicates that you are operating in the metric system and that travel speed will be displayed in centimeters per minute.
  - The Replenishment Indicator illuminates whenever both the Developer and Fixer Pumps are operating.

The display panel has 5 keys called "Soft Keys" that allow you to select, change, and monitor processor variables. These keys are located just below the Liquid Crystal Display (LCD).

```
┌─────────────────────────────────────────────────────────┐
│  READY/NOT READY              CURRENT CYCLE               │
│  MESSAGE/ERROR                                            │
│  ──────────────────────────────────────────              │
│  SOFT     SOFT     SOFT     SOFT     SOFT                 │
│  KEY      KEY      KEY      KEY      KEY                  │
└─────────────────────────────────────────────────────────┘
```

After you have made a selection from the menu displayed on the LCD, the functions of the first 4 keys change to describe the next lower level menu selections. Any key that is not used will be blank. Pressing the fifth key, "DONE/RETURN", completes the entry and displays the next upper level menu on the display panel. **See page 45 to view the menu flowchart for the processor display panel**. In addition, each procedure in this manual shows the step-by-step readout of the LCD after each key selection.

Cycle Information for the Processor

Cycle	Process Time seconds	Drop Time seconds	Film/Chemical	Throughput films/hr.
K/RA	38	45	RA film/chemicals	479
Rapid	53	61	RA/RP film, RP chemicals	351
Standard	79	92	RA/RP film, RP chemicals	233
Extended	154	179	RP film/chemicals	120

Cycle is one of the four operating modes of the processor. You may set up the processor for operation in the Extended, Standard, and Rapid cycles by simply selecting one of these cycles on the display panel. In order to select the Kwik/RA (K/RA) cycle, which provides the fastest film processing time, you must use the access code. **See page 7 for more information about use of the access code.**

The microprocessor automatically adjusts the transport speed, replenishment volumes, and solution and dryer temperatures to the values that are programmed for the selected cycle.

Film/Chemical is the combination of film and chemistry required for optimum image quality when using the processor. *Kodak RP X-Omat* Developer Replenishment and *Kodak RP X-Omat* Fixer Replenishment, or equivalents, may be used with the extended, standard, and rapid cycles. **Only RA film and RA chemistry may be used for the K/RA cycle**. Contact your Kodak Representative to discuss the best option for your needs.

Process Time is the time it takes the **leading edge** of a sheet of film to travel from the detector rollers to the exit rollers of the dryer rack.

Drop Time is the time it takes the **leading edge** of a 35x43 cm sheet of film (fed 43 cm wide) to enter the detector rollers and the **trailing edge** to exit the dryer rack.

Throughput is the number of 35x43 cm sheets of film (fed 43 cm wide) processed in one hour.

Processor Configuration and Set-Points

Set-up information consists of the film processor configuration and all process set-points. Set-up information that was preset for the processor at the factory is listed in the table below.

Set-up information is stored in battery backed-up RAM (Random Access Memory). Therefore, you do not need to program new values every time you turn the processor on. **Even if power to the processor is interrupted or the processor is turned off, you do not need to program the processor.**

If you wish, you may adjust the set-up information by using the soft keys on the display panel. See "Setting Up the Processor" on page 13. The new set-up information will be retained in memory even when power to the processor is interrupted or the processor is turned off.

Processor Configuration and Set-Points

Item	K/RA	RAPID	STANDARD	EXTENDED
Replenishment Mode	Automatic	Automatic	Automatic	Automatic
Temperature Lockout Mode	Off	Off	Off	Off
Display Units	°F, in./min.	°F, in./min.	°F, in./min.	°F, in./min.
Safelight Receptacle Mode	Safelight	Safelight	Safelight	Safelight
Standby Mode	Interval	Interval	Interval	Interval
Developer Temperature	36.6°C (98°F)	38.3°C (101°F)	35°C (95°F)	35°C (95°F)
Fixer Temperature (minimum)	32.2°C (90°F)	32.2°C (90°F)	32.2°C (90°F)	32.2°C (90°F)
(Automatic) Developer Replenishment (35x43 cm sheet)	60 ml	60 ml	60 ml	60 ml
(Automatic) Fixer Replenishment (35x43 cm sheet)	85 ml	85 ml	85 ml	85 ml
Transport Speed	343 cm./min. (135 in./min.)	251 cm./min. (99 in./min.)	168 cm./min. (66 in./min.)	86 cm./min. (34 in./min.)
Dryer Temperature	48.9°C (120°F)	48.9°C (120°F)	48.9°C (120°F)	48.9°C (120°F)

Using the Access Code	**Only service personnel and one primary operator should use the access code.** The access code **4213** must be entered after the "GO TO SETUP" key on the main menu is pressed.

The access code is necessary to—

• change set-up information that was preset at the factory,

• change to or from the K/RA cycle.

The access code is **not** necessary to—

• select an operating cycle (except K/RA),

• change the dryer temperature,

• display the fixer temperature.

A second access code allows the primary operator access to review processor status information.

(1) Press the "GO TO SETUP" key on the main menu.

(2) Enter the access code **3244**.

    • Press the first key for the Total Processor On Time.

    • Press the second key for the Sheet Count.

    • Press the third key for the Transport On Time.

    • Press the fifth key when you are done reviewing the processor status information and wish to return to the previous menu.

Basic Operating Characterstics

- Holding down a key will cause the key to toggle among all its possible options. For example, holding down the $\boxed{\wedge}$ key, will cause the temperature displayed to rapidly increase as long as the key is held down.

- When the processor is first turned on, the wash water and drive motor run for a short period and then turn off. The replenisher pumps also turn on when the processor is turned on.

- Depending upon which wiring procedure was followed during the installation of the exhaust fan, the exhaust fan may run all the time, continuous mode, or only when the dryer blower motor is on, intermittent mode.

- If either developer or fixer solution evaporated while the processor was off, the developer and fixer tanks will be automatically replenished to their overflow levels when the processor is again turned on.

- When the film accumulator senses film, it turns on the drive motor.

- To prevent the replenisher pumps from pumping replenishment solutions when film is not being processed, film area is only detected by the sensors if the film **enters the detector rollers**.

- The drive motor and replenisher pumps will not operate if the top cover is not on the processor

- When both replenisher pumps are operating, the replenisher light on the display panel illuminates.

- The wash water drains whenever power to the processor is interrupted or the processor is turned off.

- If the processor is used in an area that is dark or dimly lit, the processor's room light sensors will detect the lack of bright light and turn off the lights on the display panel to prevent the fogging of the film which it "thinks" is being processed.

- On the feed end of the processor is a panel which indicates the selected operating cycle and the currect processor status. A dimmer is available to adjust intensity of these indicator lights.

Mixing the Chemistry   **[1]**   Move the Main Circuit Breaker, CB1, to the ''0'' position.

ELECTRICAL INTERFACE
PHONE JACK

PROCESSOR
INTERFACE
CONNECTOR
(PIC)

FEED TRAY and SHELF

MAIN
CIRCUIT BREAKER
(CB1)

WASH OVERFLOW
and DRAIN

SAFELIGHT/
ACCESSORY
RECEPTACLE

FIXER OVERFLOW
and DRAIN

DEVELOPER OVERFLOW
and DRAIN

FIXER DRAIN
VALVE

FIXER AUXILIARY
DRAIN

DEVELOPER
AUXILIARY DRAIN

WATER INLET   *
U.S. GARDEN HOSE
CONNECTOR

DEVELOPER
DRAIN VALVE

EXHAUST

REPLENISHER TUBING
INLETS from REMOTE TANKS

POWER   AUXILIARY
CIRCUIT BREAKERS
CB2, CB3, and CB4

H108_0002DCA
H108_0002DA

Figure 3 Major Components of the Processor

* Supplied in the pre-pack is an adapter for 1/2-inch NPT.

[2]   Close the Developer and Fixer Drain Valves.

FIXER
AUXILIARY
DRAIN

FIXER
DRAIN
VALVE

WASH OVERFLOW
and DRAIN

FIXER OVERFLOW
and DRAIN

POWER

DEVELOPER
DRAIN VALVE

WATER
INLET

DEVELOPER
AUXILIARY
DRAIN

DEVELOPER
OVERFLOW
and DRAIN

H108_0004CCA
H108_0004CA
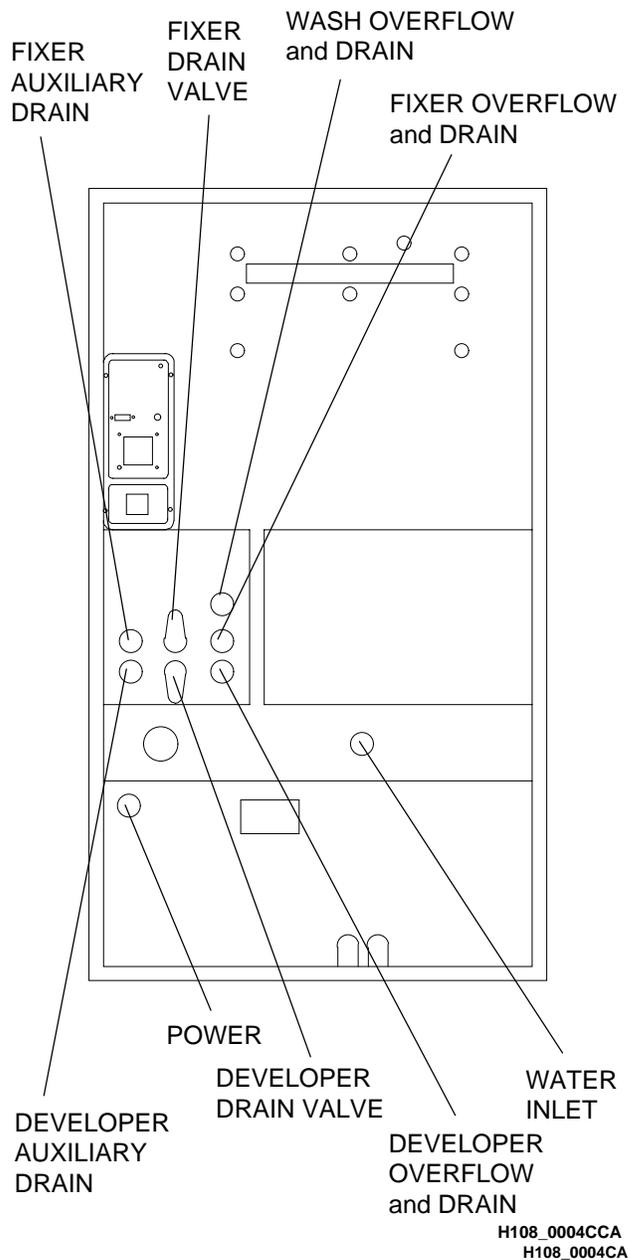
Figure 4 Closing the Drain Valves

[3]   Determine which type of chemistry is needed for the operating cycle that you
selected. See the table on page 5.

IMPORTANT

• When mixing chemistry, follow all instructions and precautions.

• Mix only a 2 week supply of developer replenishment.

[4]   Following all directions provided with the solutions, mix at least 19 liters
(5 gallons) of solution.

Filling the Tanks

[1] Check that the developer heat exchanger cover is correctly positioned in the bottom of the developer tank.

[2] Check that the Developer, Fixer, and Wash Racks are in their correct positions.

FIXER RACK ASSEMBLY

DEVELOPER RACK ASSEMBLY

SQUEEGEE ASSEMBLY

WASH RACK ASSEMBLY
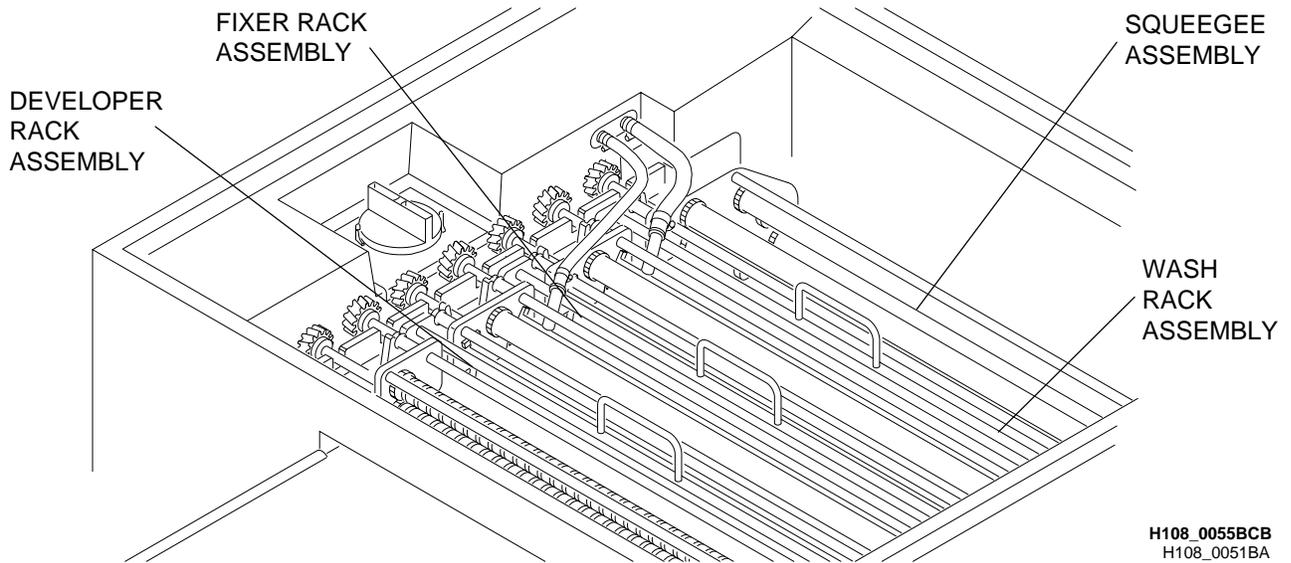
H108_0055BCB
H108_0051BA

Figure 5 Installing the Racks

IMPORTANT

If the top cover is on the processor when the processor is turned on, the replenisher pumps and drive motor will turn on for a short period and circulation of the wash water begins automatically.

[3] Check that CB2, CB3, and CB4 are in the "I" position.

[4] Move the main circuit breaker, CB1, to the "I" position.

[5] Wait for the main menu to appear on the display panel.

IMPORTANT

• Be sure that within 20 seconds after you complete your first entry, you press the soft key for your next desired selection . If you do not press a key within 20 seconds of your previous entry, the LCD will again display the main menu.

• An alarm "beep" will occur twice whenever there is an error condition with the processor and a sheet of film is fed into the processor.

• See to page 45 or 46 to see the "Menu Flowchart for the RA Processor."

[6] Press the "GO TO SETUP" key.

```
 READY                           STD
 135 F = DRYER SETPOINT

 ─────────────────────────────────────
   /\    |  \/   | SELECT | DISPLAY | GO TO
  DRYER  | DRYER | CYCLE  |   FIX   | SETUP
         |       |        |  TEMP   |
```

[7] Enter the 4 digit access code.

1	2	3	4	CANCEL REQUEST

[8] Press the "OPTIONS" key.

CYCLE	SETUP PROC- ESS	OPTIONS	LANG	DONE/ RETURN

[9] Press the "REPLEN MODE" key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE/ RETURN

IMPORTANT

- If the developer and fixer tanks of the processor are empty and you do not press "TANK FILL", a "Fill Error" will occur.
- The developer and fixer tanks will not fill if the top cover is off of the processor.
- The developer and fixer tanks require approximately 10 minutes to fill with solution.
- Once the tanks are full, the replenisher pumps automatically turn off.

[10] Press the "TANK FILL" key.

[11] **Immediately, press the "DONE/RETURN" key to store the entry.**

SELECT AUTO	SELECT FLOODED	TANK FILL	DISABLE REPLEN	DONE/ RETURN

[12] After the replenisher pumps turn off, check that—

   (a) the level of both the developer and fixer solutions in the tanks is at the tanks' overflow limits.

   (b) there is some movement on the surface of the developer and fixer solutions to indicate that the recirculation pump is operating.

[13] **If using RP chemistry**, add 190 ml (6.5 oz.) of starter solution to the processor's developer tank as required.

[14] Continue on to page 13 to set up the processor or advance to page 32 to begin daily film processing.

Processor Configuration

Calibrating the Replenishment System

Introduction   **Calibrate the replenishment system whenever you add new chemicals to the processor.**

The operator calibrates the replenishment system for all process cycles in one operation that determines the actual rate of solution flow through the replenishment pumps. The operator will measure the volume of solution pumped during a set period of time, then use the display panel to enter his measurement into the microprocessor. The microprocessor computes the rate of solution flow through the pump, then adjusts the period of time that the pump must operate to match the replenishment volume set by the operator.

NOTE

The volume actually measured during this procedure is **not** the **volume delivered** for a 35x43 cm sheet of film.

Procedure   **[1]**   **To calibrate the replenishment system**, press the ''GO TO SETUP'' key.

READY				STD
135 F = DRYER SETPOINT				
/\ DRYER	\/ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

[2]   Enter the 4 digit access code.

1	2	3	4	CANCEL REQUEST

[3]   Press the ''OPTIONS'' key.

CYCLE	SETUP PROC– ESS	OPTIONS	LANG	DONE/ RETURN

[4]   Press the ''MORE'' key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE/ RETURN

[5] Press the "REPLEN CALIB" key.

RECEPT MODE	STAND- BY MODE	REPLEN CALIB	MORE	DONE/ RETURN

[6] Remove the receiving-end access panel from the processor.

[7] Press either the—

    (a)   "FIX CAL" key for fixer recalibration.

    (b)   "DEV CAL" key for developer recalibration.

DEV CAL	FIX CAL			DONE/ RETURN

CAUTION

Wear safety glasses when doing the following steps.
Replenishment solutions drain quickly and may splash.

[8] Place the Graduated Cylinder under the Tube. See Figure 6 on page 15.

[9] Move the Valve Handle for the fixer (or the developer) to point at the Graduated Cylinder.

[10] Press the Replenishment Calibration Switch.

[11] Measure and record the volume of replenishment delivered by the system.

[12] Dispose of the solution in the Graduated Cylinder correctly.

[13] Do Steps 8 through 12 at least 2 more times.

[14] Determine the average volume delivered.

[15] Close the Valve Handle for the fixer (or developer).

[16] Press the "UPDATE CAL VOL" key.

UPDATE CAL VOL				DONE/ RETURN

REPLENISHMENT
CALIBRATION
SWITCH

VALVE
HANDLE

VELOPER

FIXER

1 2 3

A0 A1 A2

TUBE

GRADUATED
CYLINDER
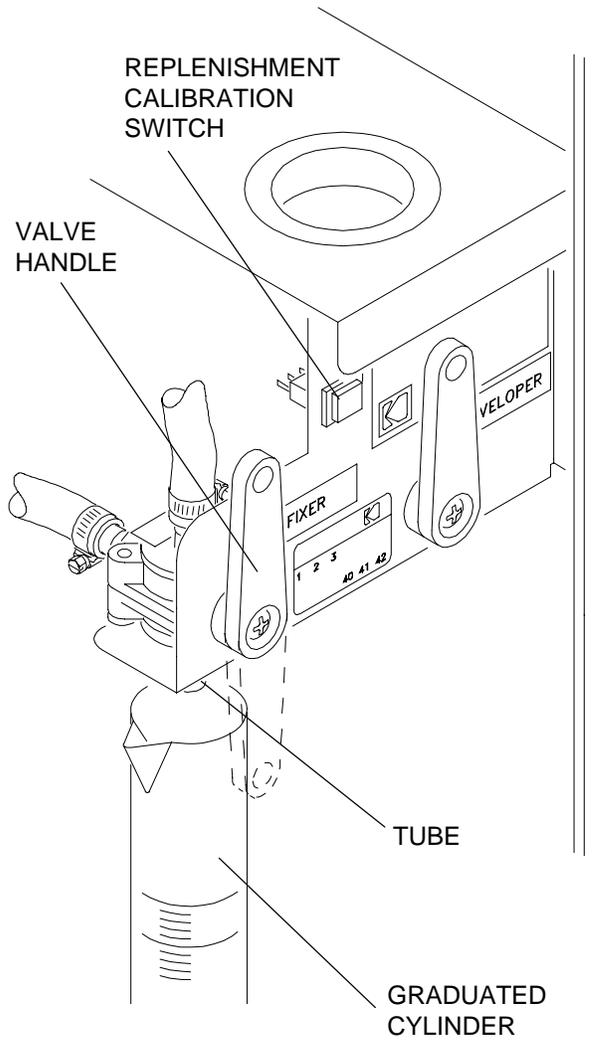
H108_0045CCB
H108_0045CA

Figure 6 Calibration

[17] Press $\boxed{\Lambda}$ or $\boxed{V}$ keys until the volume of replenishment displayed equals the average volume you calculated in Step 14.

Before:

```
PROCESSOR NOT READY              RAPID

66 mL = DEVELOPER REPLENISHMENT VOLUME


                                      DONE/
    /\     \/                         RETURN
```

After:

```
PROCESSOR NOT READY              RAPID

63 mL = DEVELOPER REPLENISHMENT VOLUME


                                      DONE/
    /\     \/                         RETURN
```

[18] **Immediately, press the ''DONE/RETURN'' key to store the entry.**

[19] **Immediately, press the ''DONE/RETURN'' key again** and do Steps 7 through 19 for the developer.

[20] Install the receiving-end access panel onto the processor.

Description

**Automatic
Replenishment Mode**   Select this mode when you want the processor to automatically adjust the replenishment volumes for developer and fixer according to the film usage for the processor. See ''Replenishment Volume'' beginning on **page 26**.

**Flooded
Replenishment Mode**   **Check with your** *Kodak* **representative** to see whether the Flooded Replenishment Mode is right for your film usage. Replenishment will be added automatically—

• every 5 minutes, achieving a minimum replenishment of 780 ml/hr while the processor is on **and**

• when the equivalent film area of 35x43 cm has been processed.

Tank Fill Mode   Select this mode when you want the processor tanks to fill automatically. In this mode the processor tanks fill with solution from the replenishment tanks until the level sensors detect that the processor tanks are full.

**Disable
Replenishment**   Select this feature to disable the replenisher pumps before doing any of the cleaning procedures.

Procedure

[1] **To select a replenishment mode**, press the "GO TO SETUP" key.

```
READY                              STD
135 F = DRYER SETPOINT
─────────────────────────────────────────
   /\      |   \/    | SELECT  | DISPLAY | GO TO
 DRYER     |  DRYER  | CYCLE   |  FIX    | SETUP
           |         |         |  TEMP   |
```

[2] Enter the 4 digit access code.

```
         |         |         |         | CANCEL
   1     |    2    |    3    |    4    | REQUEST
```

[3] Press the "OPTIONS" key.

```
 CYCLE   | SETUP   |         |         | DONE/
         | PROC-   | OPTIONS | LANG    | RETURN
         | ESS     |         |         |
```

[4] Press the "REPLEN MODE" key.

```
 REPLEN  | TEMP    | DISPLAY |         | DONE/
 MODE    | LOCK    | UNITS   | MORE    | RETURN
```

[5] Select one of the 4 operating modes—

   • Automatic Replenishment

   • Flooded Replenishment

   • Tank Fill

   • Disable Replenishment

```
 SELECT  | SELECT  | TANK    | DISABLE | DONE/
 AUTO    | FLOODED | FILL    | REPLEN  | RETURN
```

[6] **Immediately, press the "DONE/RETURN" key to store the entry.**

Temperature Lockout Mode

Description	Selecting "ON" automatically disables the transport system whenever the developer temperature deviates from the specified temperature range. The transport system remains disabled until the temperature of the developer is back within the specified temperature range.

Selecting "OFF" allows the processor to accept film even when the developer temperature deviates from specified temperature range. |

IMPORTANT

When using accessory equipment, the "Temperature Lockout" must be "OFF".

Procedure

[1] **To select on or off for the "Temperature Lockout" mode**, press the "GO TO SETUP" key.

```
┌────────────────────────────────────────────────────────────┐
│ READY                              STD                       │
│ 135 F = DRYER SETPOINT                                       │
│ ──────────────────────────────────────────                  │
│    /\     │    \/    │ SELECT │ DISPLAY │ GO TO              │
│  DRYER    │  DRYER   │ CYCLE  │   FIX   │ SETUP              │
│           │          │        │  TEMP   │                   │
└────────────────────────────────────────────────────────────┘
```

[2] Enter the 4 digit access code.

```
┌────────────────────────────────────────────────────────────┐
│          │          │        │         │ CANCEL             │
│    1     │    2     │   3    │    4    │ REQUEST            │
└────────────────────────────────────────────────────────────┘
```

[3] Press the "OPTIONS" key.

```
┌────────────────────────────────────────────────────────────┐
│  CYCLE   │  SETUP   │OPTIONS │  LANG   │ DONE/              │
│          │  PROC-   │        │         │ RETURN             │
│          │   ESS    │        │         │                    │
└────────────────────────────────────────────────────────────┘
```

[4] Press the "TEMP LOCK" key.

```
┌────────────────────────────────────────────────────────────┐
│ REPLEN   │  TEMP    │DISPLAY │  MORE   │ DONE/              │
│  MODE    │  LOCK    │ UNITS  │         │ RETURN             │
└────────────────────────────────────────────────────────────┘
```

[5] Press the "SELECT ON" or "SELECT OFF" key.

```
┌────────────────────────────────────────────────────────────┐
│ SELECT   │ SELECT   │        │         │ DONE/              │
│  OFF     │   ON     │        │         │ RETURN             │
└────────────────────────────────────────────────────────────┘
```

[6] **Immediately,** **press the "DONE/RETURN" key to store the entry.**

Display Units for Temperature and Transport Speed

Description   You may select either english or metric "Display Units" for the temperature and transport speed readings on the display panel. If you select english units, the displayed temperature will be in degrees Fahrenheit, and the displayed transport speed will be in inches per minute. If you select metric units, the displayed temperature will be in degrees Celsius, and the displayed transport speed will be in centimeters per minute.

Procedure

[1] **To change "Display Units" for temperature and transport speed**, press the "GO TO SETUP" key.

READY STD 135 F = DRYER SETPOINT				
/\ DRYER	\/ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

[2] Enter the 4 digit access code.

1	2	3	4	CANCEL REQUEST

[3] Press the "OPTIONS" key.

CYCLE	SETUP PROC- ESS	OPTIONS	LANG	DONE/ RETURN

[4] Press the "DISPLAY UNITS" key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE/ RETURN

[5] Press either—

    (a) "SELECT ENGLISH" for °F and in./min or

    (b) "SELECT METRIC" for °C and cm/min.

SELECT ENGLISH	SELECT METRIC			DONE/ RETURN

[6] <u>Immediately,</u> **press the "DONE/RETURN" key to store the entry.**

Safelight Receptacle and Accessory Mode

Description   The safelight receptacle, which is located on the control panel (see Figure 9 on page 33) can be set to either the Accessory mode or to the Safelight mode. The Accessory mode provides power to accessories; the Safelight mode turns off the safelight outlet when film is fed into the processor. The period of time that the safelight outlet remains off depends on the transport speed and the length of the film.

Procedure   **[1]**   **To select the ''Accessory'' or ''Safelight'' mode**, press the ''GO TO SETUP'' key.

```
READY                           STD
135 F = DRYER SETPOINT
─────────────────────────────────────────
   /\   |   \/   | SELECT | DISPLAY | GO TO
 DRYER  |  DRYER | CYCLE  |  FIX    | SETUP
        |        |        |  TEMP   |
```

[2]   Enter the 4 digit access code.

```
        |        |        |        | CANCEL
   1    |   2    |   3    |   4    | REQUEST
```

[3]   Press the ''OPTIONS'' key.

```
 CYCLE  | SETUP  |        |        | DONE/
        | PROC-  | OPTIONS|  LANG  | RETURN
        |  ESS   |        |        |
```

[4]   Press the ''MORE'' key.

```
 REPLEN | TEMP   | DISPLAY|        | DONE/
  MODE  | LOCK   | UNITS  |  MORE  | RETURN
```

[5]   Press the ''RECEPT MODE'' key.

```
 RECEPT | STAND- | REPLEN |        | DONE/
  MODE  |   BY   | CALIB  |  MORE  | RETURN
        |  MODE  |        |        |
```

[6]   Press either the—

(a)   ''SELECT SAFE'' key for the ''Safelight'' mode.

(b)   ''SELECT ACCY'' key for the ''Accessory'' mode.

```
 SELECT | SELECT |        |        | DONE/
  SAFE  |  ACCY  |        |        | RETURN
```

[7]   <u>Immediately,</u> **press the ''DONE/RETURN'' key to store the entry.**

Standby Mode

Description	Once in the standby mode, you may select the interval mode or the continuous mode. When the processor is in the **interval mode**, the transport system will turn on every 8 minutes for 90 seconds to keep the rollers wet. When the processor is in the **continuous mode**, the transport system will operate continuously at a reduced speed to keep the rollers wet. In either mode, the dryer blower turns on and wash water is circulated as required to maintain dryer temperature and developer cooling, respectively.

Procedure

[1] **To select the ''Standby'' mode**, press the ''GO TO SETUP'' key.

READY				STD
135 F = DRYER SETPOINT				
/\ DRYER	\/ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

[2] Enter the 4 digit access code.

1	2	3	4	CANCEL REQUEST

[3] Press the ''OPTIONS'' key.

CYCLE	SETUP PROC- ESS	OPTIONS	LANG	DONE/ RETURN

[4] Press the ''MORE'' key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE/ RETURN

[5] Press the ''STANDBY MODE'' key.

RECEPT MODE	STAND- BY MODE	REPLEN CALIB	MORE	DONE/ RETURN

[6] Press ''INTER MODE'' or ''CONT MODE'' key.

INTER MODE	CONT MODE			DONE/ RETURN

[7] <u>Immediately,</u> **press the ''DONE/RETURN'' key to store the entry.**

Changing Set-Points

Processor Cycle

Description	This procedure, and the three procedures following it, explain how to change process variables whose set-points were preset at the factory. In most cases factory set-points will provide optimum film processing.

<div align="center">

IMPORTANT

Set-Points are stored for each cycle. Changing
a set-point changes it for only the selected cycle.

</div>

Procedure	**[1]** **To select the processor cycle for either RP or RA chemistry**, press the ''GO TO SETUP'' key.

```
READY                           STD
135 F = DRYER SETPOINT
_____
   /\    |   \/   | SELECT |DISPLAY|GO TO
 DRYER   | DRYER  | CYCLE  |  FIX  |SETUP
         |        |        | TEMP  |
```

[2] Enter the 4 digit access code.

```
                               CANCEL
   1    |   2    |   3    |  4  |REQUEST
```

[3] Press the ''CYCLE'' key.

```
        | SETUP  |        |      |DONE/
 CYCLE  |PROCESS |OPTIONS | LANG |RETURN
```

[4] Select the desired operating cycle—

   (a) If using RP chemistry, press—

   1. ''RAPID CYCLE'' key for the rapid cycle.

   2. ''STD CYCLE'' key for the standard cycle.

   3. ''EXT CYCLE'' key for the extended cycle.

   (b) If using RA chemistry, press the ''K/RA CYCLE'' key.

```
 RAPID  |  STD   |  EXT   | K/RA |DONE/
 CYCLE  | CYCLE  | CYCLE  |CYCLE |RETURN
```

[5] **Immediately, press the ''DONE/RETURN'' key to store the entry.**

Developer and Fixer Temperatures

Description	Developer and fixer temperature set-points can be modified and stored for future use. Set-Points that were preset at the factory can always be restored by pressing the "Default Setting" key.

Procedure

[1] **To change the temperature set-points for developer or fixer**, press the "GO TO SETUP" key.

```
READY                              STD
135 F = DRYER SETPOINT
_____
   /\      \/    SELECT  DISPLAY GO TO
 DRYER    DRYER  CYCLE     FIX   SETUP
                          TEMP
```

[2] Enter the 4 digit access code.

```
                                 CANCEL
    1       2       3       4    REQUEST
```

[3] Press the "SETUP PROCESS" key.

```
  CYCLE    SETUP                   DONE/
         PROCESS  OPTIONS  LANG   RETURN
```

[4] Select the operating cycle that you wish to change.

    (a) "RAPID CYCLE" key for the rapid cycle.

    (b) "STD CYCLE" key for the standard cycle.

    (c) "EXT CYCLE" key for the extended cycle.

    (d) "K/RA CYCLE" key for the K/RA cycle.

```
  RAPID     STD     EXT     K/RA   DONE/
  CYCLE    CYCLE   CYCLE   CYCLE  RETURN
```

[5] Press the "TEMP" key.

```
           REPLEN                  DONE/
   TEMP    VOLUME  SPEED          RETURN
```

[6] Press either the—

    (a) ''DEV TEMP'' key to change the developer temperature.

    (b) ''FIX TEMP'' key to change the fixer temperature.

DEV TEMP	FIX TEMP			DONE/ RETURN

[7] To change the temperature set-point press the—

    (a) $\boxed{\Lambda}$ key to increase the temperature set-point.

    (b) $\boxed{V}$ key to decrease the temperature set-point.

    (c) ''DEFAULT SETTING'' key to return to the factory set-point.

    (d) ''CANCEL REQUEST'' key to return to the last value set.

/\\ TEMP	\\/ TEMP	DE- FAULT SETTING	CANCEL RE- QUEST	DONE/ RETURN

[8] <u>Immediately,</u> **press the ''DONE/RETURN'' key to store the entry.**

[9] Do Steps 6 through 8 for the fixer or the developer solution.

NOTE

The temperature set-point for the fixer solution is a minimum only; the temperature may rise above this set-point.

Description   Changes to the replenishment volume will be stored for the cycle until new changes are made. Replenishment volume is dependent on the replenishment mode: Automatic or Flooded.

In the **Automatic Replenishment** mode, replenishment solutions are added when an area of film equivalent to approximately 1500 square cm (240 square inches) has been processed, for example, one 35 x 43 cm (14 x 17 in.) sheet film.

As film usage for the processor lessens, the volumes of developer and fixer necessary for correct replenishment increase.

Film Usage	Films/ ½ hour	(Auto) Replenishment Volume	
		Developer (ml/sheet)	Fixer (ml/sheet)
Low	1 - 2	100	120
Medium	3 - 4	80	100
High	5 (or more)	60	85

The operator enters the volume for developer (V_{dev}) and fixer (V_{fix}) replenishments on the keypad for **high** film usage. The microprocessor automatically calculates the replenishment volumes for **low** and **medium** film usage.

Film Usage	New (Auto) Replenishment Volume	
	Developer(ml/sheet)	Fixer(ml/sheet)
Low	1.67 x (V_{dev})	1.41 x (V_{fix})
Medium	1.33 x (V_{dev})	1.18 x (V_{fix})
High	(V_{dev})	(V_{fix})

In the **Flooded Replenishment** mode, developer and fixer replenishment volumes are—

• 65 ml every 5 minutes **and**

• 65 ml for each 1500 square cm (240 square inches) of film.

Procedure

[1] **To change the replenishment volume**, press the ''GO TO SETUP'' key.

```
READY                          STD
135 F = DRYER SETPOINT
─────────────────────────────────────
  /\      \/    SELECT DISPLAY GO TO
 DRYER   DRYER  CYCLE   FIX    SETUP
                        TEMP
```

[2] Enter the 4 digit access code.

```
                                   CANCEL
  1        2       3       4        REQUEST
```

[3] Press the ''SETUP PROCESS'' key.

```
 CYCLE   SETUP                    DONE/
         PROCESS OPTIONS  LANG    RETURN
```

[4] Select the operating cycle that you wish to change.

    (a) ''RAPID CYCLE'' key for the rapid cycle.

    (b) ''STD CYCLE'' key for the standard cycle.

    (c) ''EXT CYCLE'' key for the extended cycle.

    (d) ''K/RA CYCLE'' key for the K/RA cycle.

```
 RAPID    STD     EXT    K/RA    DONE/
 CYCLE   CYCLE   CYCLE   CYCLE   RETURN
```

[5] Press the ''REPLEN VOLUME'' key.

```
         REPLEN                  DONE/
  TEMP   VOLUME   SPEED          RETURN
```

[6] Press the—

    (a) ''DEV REP VOLUME'' key to change the developer replenishment volume.

    (b) ''FIX REP VOLUME'' key to change the fixer replenishment volume.

```
  DEV      FIX
  REP      REP
 VOLUME  VOLUME
```

[7] To change the replenishment volume press the —

    (a) $\wedge$ key to increase the replenishment volume.

    (b) $\vee$ key to decrease the replenishment volume.

    (c) ''DEFAULT SETTING'' key to return to the factory values.

    (d) ''CANCEL REQUEST'' key to return to the last value set.

/\ REP VOL	\/ REP VOL	DE- FAULT SETTING	CANCEL RE- QUEST	DONE/ RETURN

[8] **Immediately, press the ''DONE/RETURN'' key to store the entry.**

[9] Do Steps [6] through [8] for the fixer or developer solution.

Setting the Transport Speed

Description	The transport speed can be changed for each cycle. The new speed value will be stored for that cycle.

Procedure

[1] **To change the transport speed**, press the "GO TO SETUP" key.

```
┌─────────────────────────────────────────────────────────┐
│ READY                              STD                   │
│ 135 F = DRYER SETPOINT                                   │
│ ─────────────────────────────────────────              │
│   /\    │   \/   │ SELECT │DISPLAY │GO TO              │
│  DRYER  │  DRYER │ CYCLE  │  FIX   │SETUP              │
│         │        │        │  TEMP  │                    │
└─────────────────────────────────────────────────────────┘
```

[2] Enter the 4 digit access code.

```
┌─────────────────────────────────────────────────────────┐
│                                    CANCEL               │
│    1    │   2    │   3    │   4    │REQUEST             │
└─────────────────────────────────────────────────────────┘
```

[3] Press the "SETUP PROCESS" key.

```
┌─────────────────────────────────────────────────────────┐
│  CYCLE  │ SETUP  │        │        │DONE/               │
│         │PROCESS │OPTIONS │ LANG   │RETURN              │
└─────────────────────────────────────────────────────────┘
```

[4] Select the operating cycle that you wish to change.

    (a) "RAPID CYCLE" key for the rapid cycle.

    (b) "STD CYCLE" key for the standard cycle.

    (c) "EXT CYCLE" key for the extended cycle.

    (d) "K/RA CYCLE" key for the K/RA cycle.

```
┌─────────────────────────────────────────────────────────┐
│  RAPID  │  STD   │  EXT   │  K/RA  │DONE/               │
│  CYCLE  │ CYCLE  │ CYCLE  │ CYCLE  │RETURN              │
└─────────────────────────────────────────────────────────┘
```

[5] Press the "SPEED" key.

```
┌─────────────────────────────────────────────────────────┐
│         │ REPLEN │        │        │DONE/               │
│  TEMP   │ VOLUME │ SPEED  │        │RETURN              │
└─────────────────────────────────────────────────────────┘
```

[6]   To change the transport speed press—

   (a) $\boxed{\wedge}$ key to increase the transport speed.

   (b) $\boxed{\vee}$ key to decrease the transport speed.

   (c)   "DEFAULT SETTING" key to return to the set-point speed.

   (d)   "CANCEL REQUEST" key to return to the last value set.

/\\ SPEED	\\/ SPEED	DE- FAULT SETTING	CANCEL RE- QUEST	DONE/ RETURN

[7]   **Immediately**, **press the "DONE/RETURN" key to store the entry.**

Language Option

Description   The processor displays messages in 12 different languages:

Danish	Italian
Dutch	Japanese
English	Norwegian
Finnish	Portuguese
French	Spanish
German	Swedish

NOTE

Japanese requires a dedicated chip set for the
microprocessor. Contact your *Kodak* representative.

Procedure   **[1]   To change the language**, press the "GO TO SETUP" key.

READY				STD
135 F = DRYER SETPOINT				
/\ DRYER	\/ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

[2]   Enter the 4 digit access code.

1	2	3	4	CANCEL REQUEST

[3]   Press the "LANG" key.

CYCLE	SETUP PROCESS	OPTIONS	LANG	DONE/ RETURN

[4]   Select the —

    (a)   desired language key.

    (b)   "MORE" key for other language options.

SELECT ENGLISH	SELECT FRENCH	SELECT GERMAN	MORE	DONE/ RETURN

[5]   Immediately, press the "DONE/RETURN" key to store the entry.

Daily Start-up

[1] Check that all the Racks and Crossovers are in their correct positions.

[2] Check that the developer heat exchanger cover is correctly positioned in the bottom of the developer tank.

[3] Check that the Wash Water Hoses are connected.

[4] Check that the developer and fixer solutions are at the overflow level of each tank.

DEVELOPER/FIXER CROSSOVER

WASH WATER HOSES

FIXER/WASH CROSSOVER

DETECTOR CROSSOVER ASSEMBLY

H108_0051BCB
H108_0051BA
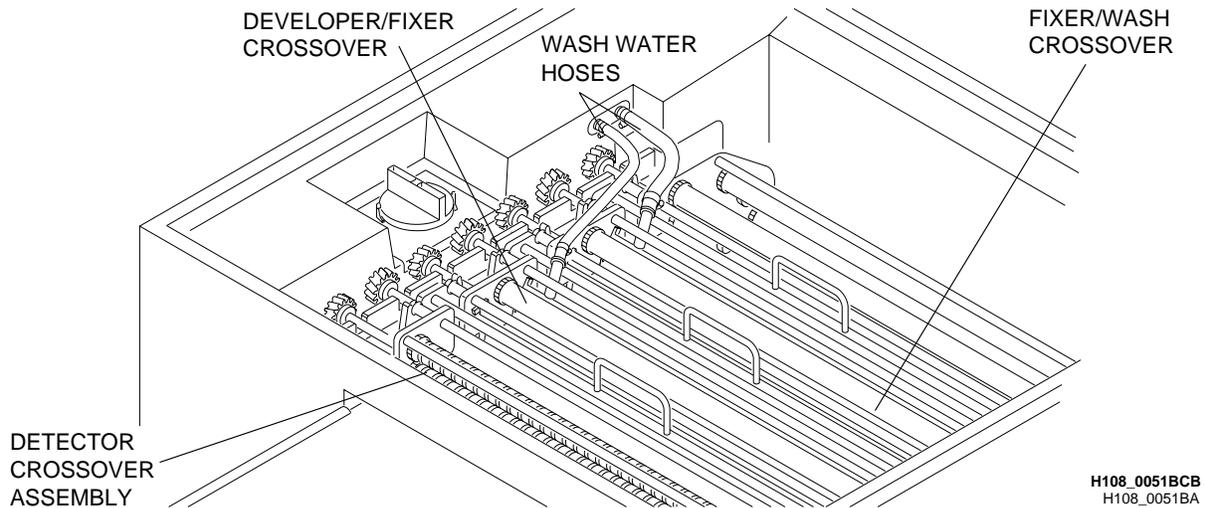
Figure 7 Racks and Crossovers

[5] Install the Evaporation Covers if they are not already installed.

FILTER BEZEL

SPLASH GUARD

EVAPORATION COVERS

H108_0055BCC
H108_0055BA
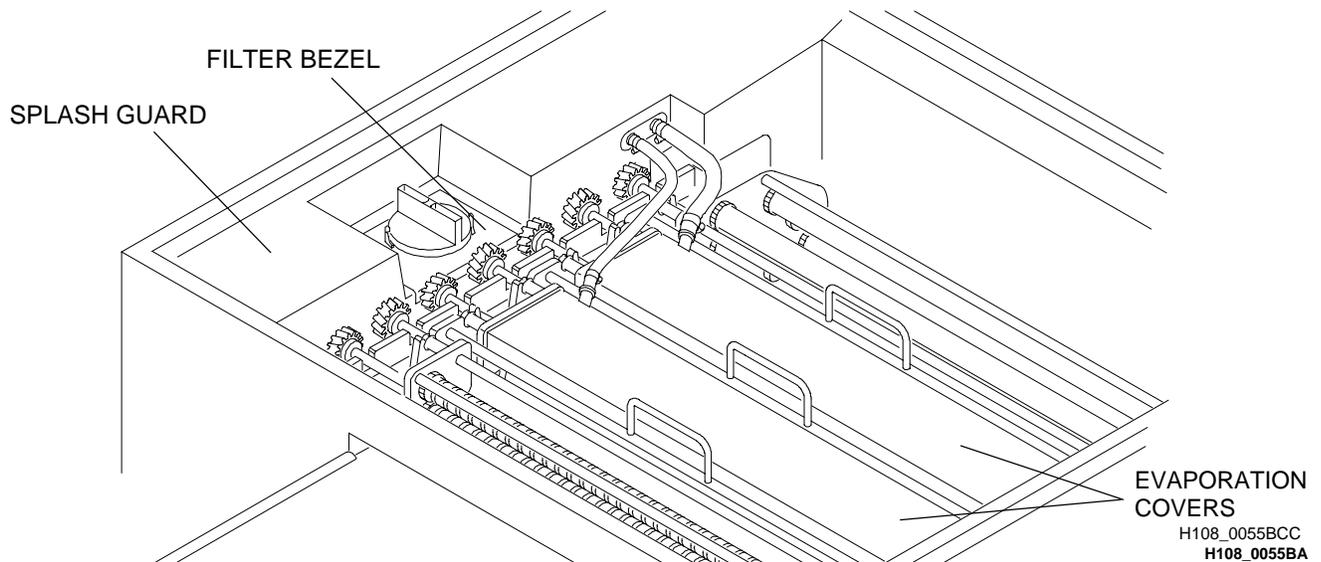
**Figure 8 Evaporation Covers**

[6] Install the top cover onto the processor.

[7]   Turn on the water supply.

NOTE

The incoming water temperature should be between 4.5°C (40°F) and 32.2°C (90°F).

[8]   Remove any film from the Feed Tray.

[9]   Move Auxiliary Circuit Breakers CB2, CB3, and CB4 to the ''I'' position.

[10]   Move the wall power switch to the ''ON'' position.

[11]   Move the Main Circuit Breaker, CB1, to the ''I'' position.

MAIN
CIRCUIT BREAKER
(CB1)

AUXILIARY CIRCUIT BREAKERS
CB2, CB3, and CB4
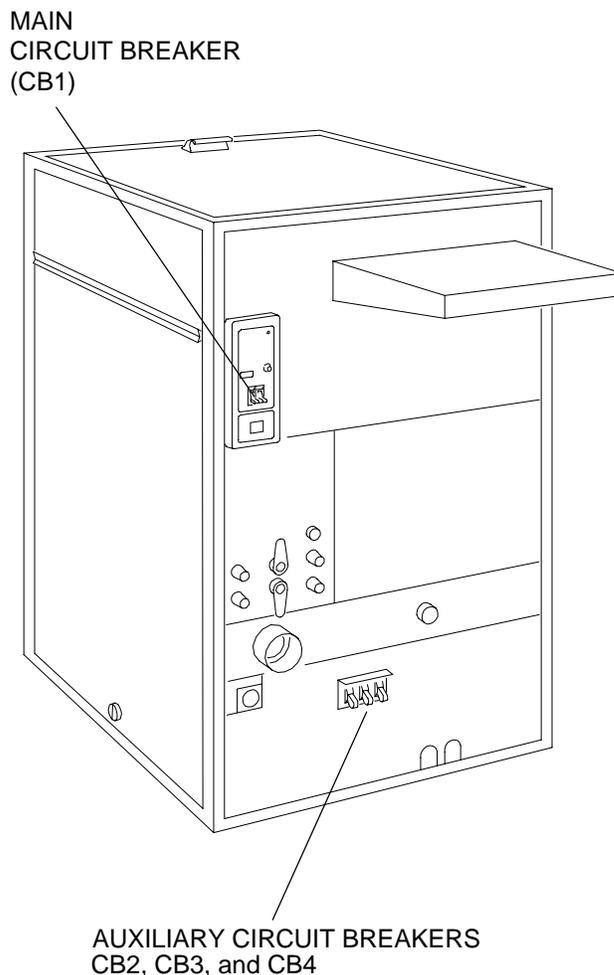
H108_0002CCC
H108_0002CA

Figure 9 Location of the Circuit Breakers

IMPORTANT

- Make sure that you press the soft key for each selection within 20 seconds of completing your previous entry. If you do not press a key within 20 seconds of your previous entry, the LCD will display the main menu again.
- An alarm "beep" will occur twice whenever there is an error condition with the processor **and** a sheet of film is fed into the processor.

[12] **To change the processor cycle**, press the "SELECT CYCLE" key.

```
READY                           STD
135 F = DRYER SETPOINT

  /\         \/      SELECT  DISPLAY GO TO
DRYER      DRYER     CYCLE     FIX
                               TEMP   SETUP
```

[13] Select the operating cycle that you wish to change.

   (a) "RAPID CYCLE" key for the rapid cycle.

   (b) "STD CYCLE" key for the standard cycle.

   (c) "EXT CYCLE" key for the extended cycle.

   (d) "K/RA" key for the K/RA cycle.

```
RAPID     STD      EXT              DONE/
CYCLE    CYCLE    CYCLE             RETURN
```

[14] **Immediately, press the "DONE/RETURN".**

IMPORTANT

- The **"Ready"** LED indicates that the processor is ready to accept film.
- The **"Service"** LED indicates that the processor has an error that the operator cannot repair.
- The **"Wait"** LED indicates that the processor has not yet reached its optimum film processing conditions.

Cause of "Wait" Condition	Error Code	Film Accepted
Replenisher Pump disabled	E130	Yes
Developer temperature not to specification	E132/E133	"Temperature Lockout" OFF: Yes "Temperature Lockout" ON: No
Tanks currently being filled	E129	No
Top Cover not installed	E128	No

**[15]   Begin processing film when the ''Ready'' LED turns on.**

NOTE

Located behind the backlit panel on the feed end of the processor are two rows of status indicator lights. See Figure 10 on page 36.

  (1) The first row contains three colored lights indicating the current status of the processor.

- If the Green ''Ready'' indicator is lit, the processor is ready to accept film.
- If the Yellow ''Wait'' indicator is lit, the processor is not yet ready to accept films.
- If the Red ''Service'' indicator is lit, the processor is in need of service.

  (2) The second row contains letters indicating the current operating cycle.

- If ''K'' is lit, the processor is operating in the K/RA cycle.
- If the ''R'' is lit, the processor is operating in the Rapid cycle.
- If the ''S'' is lit, the prcoessor is operating in the Standard cycle.
- If the ''E'' is lit, the processor is operating in the Extended cycle.

You may change the brightness of these indicators by turning the light intensity adjustment located next to the indicator lights.

NOTE

To prevent fogging of the film, do not turn the light intensity too high.
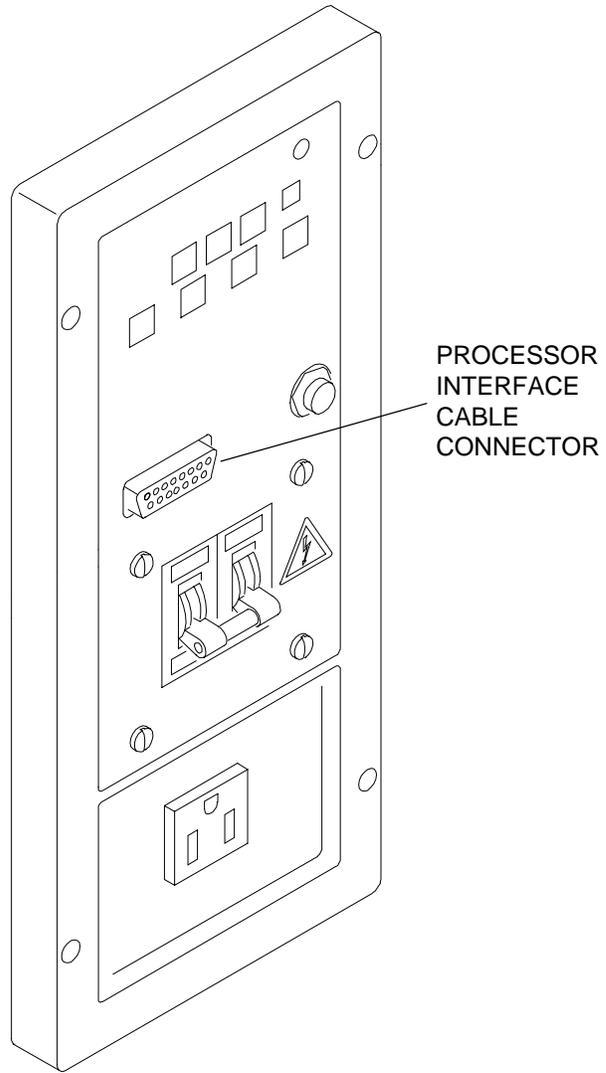
PROCESSOR
INTERFACE
CABLE
CONNECTOR

H108_0160CCC
H108_0160CA

Figure 10 Indicator Lights

Adjusting the Dryer Temperature

Use the main menu to adjust the temperature of the dryer. You do not need to use the access code. You may select a different dryer temperature for each cycle and store them separately.

IMPORTANT

Adjust the dryer temperature to the lowest possible temperature that still allows good drying.

[1] To change the dryer temperature press the—

    (a) $\boxed{\wedge}$ key to **increase** the temperature.

    (b) $\boxed{\vee}$ key to **decrease** the temperature.

| /\ DRYER	\/ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

Film-Feeding Procedure

Sheet Film: See Figure 11 for the correct film-insertion procedure. Arrows indicate the direction in which films are transported into the processor. Feed films *square* with the edge of the film guide.

Insert single-emulsion films **emulsion-side-up** into the processor aligning the film edge with the edge of the film guide.

CAUTION

- **Do not** try to pull the film back out of the processor once you have fed them into the processor.
- **Do not** allow more than 100 films to accumulate in the receiving bin at one time.

Roll Film (35 mm): Use a sheet of film as a leader. Make sure that the sheet film is wider than the roll film and at least 17.8 cm (7 inches) long. Using 1-inch-wide tape, such as *3M SCOTCH* Brand Polyester Film Tape No. 850, fasten the film to the leader, making sure that the adhesive side of the tape is not exposed. Most other types of tape are not acceptable, because their bases are soluble in the processing solutions.

1 each

35 x 43 cm
or
14 X 17 in.

1 each

35 x 35 cm
or
40 x 40 cm

1 each

33 x 41 cm,
30 x 40 cm,
30 x 35 cm,
11 x 14 in.,
or
12 x 15 in.

1 each

24 x 30 cm,
10 x 12 in., or
12.5 x 12.5 in.

1 each

24 x 24 cm
or
9 x 9 in.

1 each

18 x 43 cm

2 each

18 x 43 cm

2 each

18 x 24 cm
or
8 x 10 in.

1 each

18 x 24 cm
or
8 x 10 in.

2 each

6.5 x 8.5 in.

2 each

6.5 x 8.5 in.

3 each

13 x 18 cm
4 x 5 in.,
3.5 x 8 in.,
5 x 7 in.

3 each

10 x 10 cm
or
4 x 4 in.
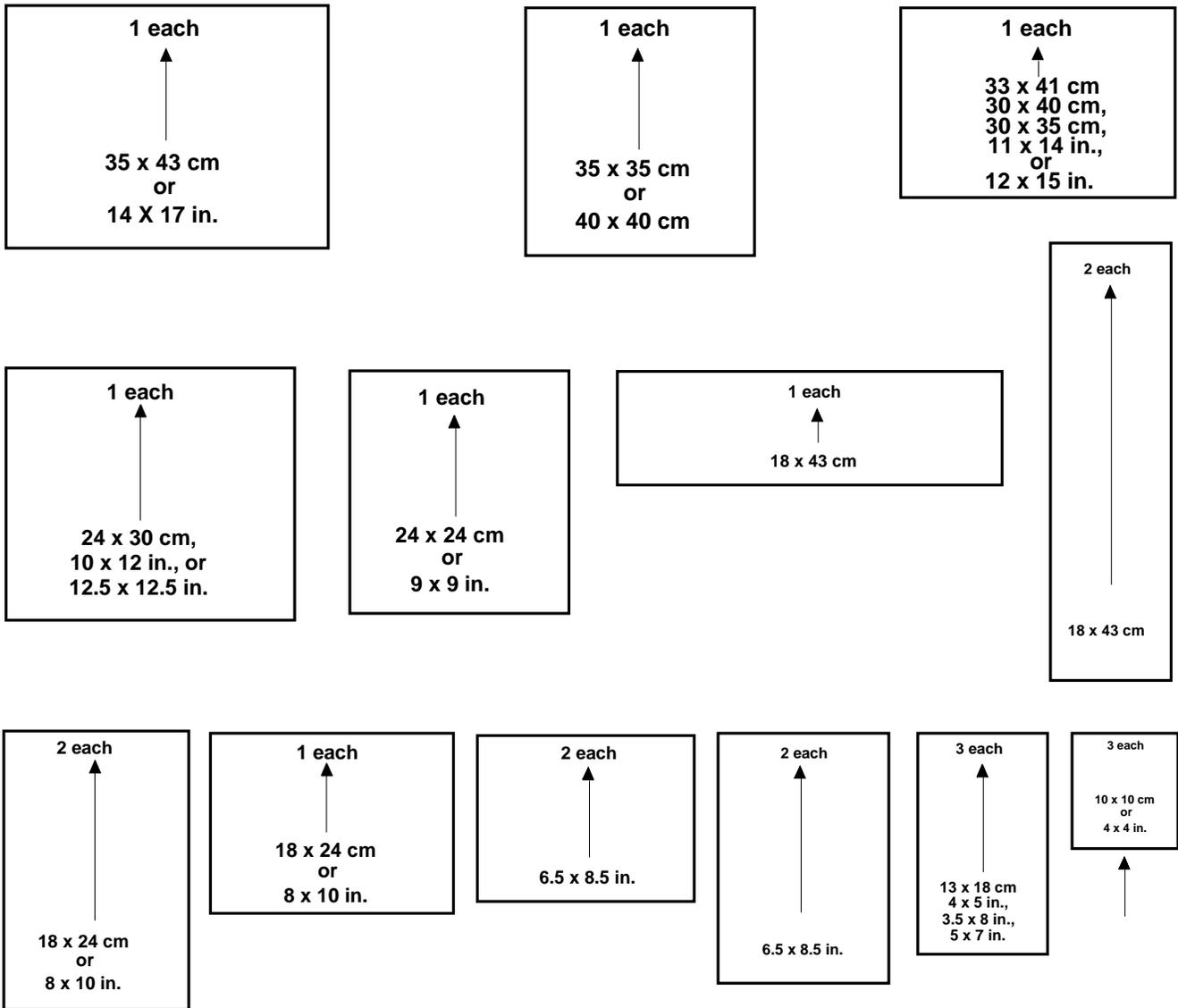
H104_9002DC

Figure 11 X-Ray Film Sizes

Shutdown

[1] Move the main circuit breaker, CB1, to the "O" position.

[2] Move the wall power switch to the "OFF" position.

[3] Turn off the water supply.

[4] Perform the "Daily Cleanup" procedure.

Daily Cleanup

Reliable operation of the processor requires that all parts are cleaned

WARNING

Wear rubber gloves, safety glasses, and protective clothing when doing any daily maintenance procedure. Report any change in the operating condition of the processor to your service personnel.

[1] Move the main circuit breaker, CB1, to the "O" position.

[2] Move the wall power switch to the "OFF" position.

[3] Disconnect the water hoses from the crossovers.

CAUTION

Handle these assemblies carefully to prevent changing their alignment. DO NOT clean the racks, crossover assemblies, or squeegee rollers using abrasive materials. Do not wash the roller racks and assemblies with water hotter than 100°F (37.5°C).

[4] Remove the evaporation covers, both crossovers, and the squeegee assemblies.

[5] Clean these parts with warm water and a damp cloth.

[6] Dry all the parts with a clean cloth and allow the parts to air dry overnight.

[7] Use a clean cloth to wipe all chemical residue from the processing section of the processor. To prevent contamination, do not use the same cloth for the fixer and developer sections.

[8] Leave the top cover open approximately 5.1 cm (2 inches) overnight to allow the parts to completely dry.

Preventive Maintenance

IMPORTANT

For periodic (or monthly) maintenance, see the Service Manual for the processor.

[1] Move the main circuit breaker, CB1, to the ''O'' position.

[2] Move the wall power switch to the ''OFF'' position.

[3] Turn off the water supply.

[4] Disconnect the water hoses from the crossovers.

CAUTION

To prevent fixer/developer contamination when you remove the fixer rack, place the splash guard between the developer and fixer tanks. Use the rack drip tray when you remove or install any of the racks.

SPLASH
GUARD

RACK
DRIP
TRAY

H108_0035ACA
H108_0035AA
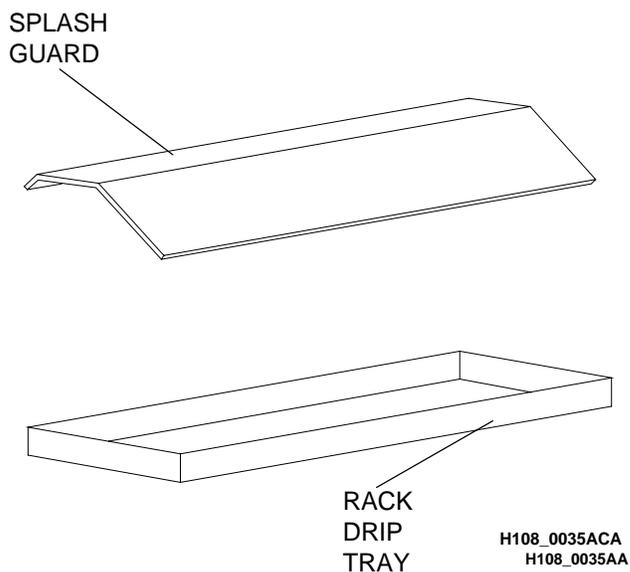
Figure 12 Splash Guard and Drip Tray

[5] Remove the evaporation covers, all crossover assemblies, and all racks.

[6] Carefully, clean the film accumulator cover with a damp cloth.

[7] Rinse and wipe the removed parts with a damp cloth.

[8] Clean the detector crossover with a soft fiber brush and warm water. Allow it to air dry before processing film.

[9] Check that the rack rollers turn and rotate freely.

[10] Remove the developer heat exchanger cover from the bottom of the developer tank.

[11] Wash the developer heat exchanger cover with developer system cleaner that has been mixed correctly.

[12]   Rinse the developer heat exchanger cover thorougly with water to remove all of the developer system cleaner.

[13]   Install the developer heat exchanger cover into the bottom of the developer tank.

```
╔══════════════════════╗
║       CAUTION        ║
╚══════════════════════╝
```

Install the racks slowly, and make sure that the splash guard is installed between the tanks.

[14]   Install the racks, crossover assemblies, evaporation covers, and water tubing. Check that each assembly is correctly positioned.

[15]   Check that the slots in the dryer air tubes are clean and oriented correctly.

1	**2**	**3**	**4**	**5**	**6**	1. Transport Failure 2. Surface Artifacts 3. Abnormal Film Densities 4. Wet Films 5. Low Solution Levels 6. Overlapping of Films
•					•	Film Feeding Error *Feed only single thicknesses of film. Feed next film only after film feed signal. If there is no film feed signal, refer the difficulty to qualified personnel.*
•	•	•	•			Feed only compatible films.
•					•	Check that all racks and crossovers are seated correctly.
•					•	Check the tracking of the dryer drive belt.
•	•					Check that the surfaces of all the rollers are clean and smooth, especially in the developer turnaround.
•			•			Check that the dryer air tubes are in the correct position.
	•		•			Remove any dirt from the dryer rollers and air tubes, especially the slots. Use a bottle brush and rinse with water.
	•	•	•	•		Check the settings for correct replenishment. Check the replenishment system: tubing kinks, pump operation, detector switches, area accumulator, and replenisher pumps.
	•		•			Adjust the dryer temperature control setting to the **lowest** possible temperature that still allows good drying.
	•					Remove any buildup of debris from the feed tray and detector rollers.
•	•				•	Clean any bacterial growth in the wash tank with a mild solution of chlorine bleach. Use 2 fluid ounces (60 mL) of bleach per 1 gallon (3.8 L) of water. Wipe tanks with a soft sponge.
•				•		Check that drain valves are completely closed. Check that the tanks are full.
•	•	•	•		•	Change any incorrectly mixed, exhausted, or contaminated chemicals. Change the developer filter if necessary. Fill the replenishment tanks if necessary. *Mix the developer replenishment in quantities not to exceed a 2-week supply.* *Always use a splash guard and rack drip tray when lifting the fixer rack to prevent contaminating the developer.* *Mix chemicals as directed.*

1	2	3	4	5	6	
						1. Transport Failure
						2. Surface Artifacts
						3. Abnormal Film Densities
						4. Wet Films
						5. Low Solution Levels
						6. Overlapping of Films
•	•				•	Check that *all* rollers are in place, positioned and rotating correctly.
•	•				•	Check that *all* roller gears, sprockets, and idlers are engaged.
•	•				•	Replace any rollers with broken or worn gudgeons.
•	•				•	Replace any bearings which do not allow the turnaround rollers to rotate correctly.
•	•					Check the rack chain tension. Check that rollers do not hesitate, and that the chain does not jump.
•	•					If incoming wash water is dirty, clean the rack and tank thoroughly. Change the incoming water filter.
			•			Check that the dryer air exhaust is free from any obstruction and is installed correctly according to specifications in the Installation Instructions.
	•	•				Check incoming water temperature. Temperature must be between 4.4°C (40°F) and 32.2°C (90°F).
		•				Check that the correct bulb and safelight filter are in the safelight and at the correct distance from the feed tray and work surface.
•		•				Check that the cover and panels are tight on the processor. Check that there is no leak in the light-tight gasket.
•						10 x 10 cm films — feed films diagonally if they fail to transport reliably.
					•	Check the time delay. For all transport speeds, the buzzer should sound once the trailing edge of the film has advanced 3 inches into the processor.
			•			Check that ambient conditions are within the specifications.
•						If the solution temperature is low, the processor will not accept film. Check that the temperature lockout is "SELECT ON".
				•		Check that level probes are clean and free from build-up. Check that all lines are without kinks or air bubbles.
	•		•			Check that the exhaust fan is either operating when the dryer fan cycles on, or operating continuously, depending upon how it was set up at the time of installation.

Kodak warrants this *Kodak X-Omat* 460 RA Processor to function correctly for one year from the date of initial installation, when installed within one year from date of shipment.

Warranty Repair Coverage

If this equipment does not function correctly during the warranty period, the dealer (for *Kodak X-Omat* 460 RA Processors) who sold the equipment will provide or arrange for repair of the equipment during the dealer's normal working hours. Such repair service will include any adjustments and/or replacement of parts required to maintain your equipment in good working order.

How To Obtain Service

Should equipment require service, refer to the sales contract for details on whom to call for service, or contact the dealer (for *Kodak X-Omat* 460 RA Processors) who sold the equipment.

Limitations

Warranty service is limited to the contiguous United States, the island of Oahu in Hawaii, and certain areas of Alaska.

This warranty does not cover—

• circumstances beyond the control of Kodak,

• misuse,

• abuse,

• attachments,

• accessories,

• alterations not marketed by Kodak (including service or parts to correct problems resulting from the use of such attachments, accessories, or alterations),

• failure to follow the operating instructions as recommended by Kodak,

• supply items.

Kodak makes no other warranties, expressed or implied, for this equipment.

Repair without charge is the only obligation of both Kodak and the dealer under this warranty. **Kodak will not be responsible for any consequential or incidental damages resulting from the sale, use, or incorrectly functioning of this equipment, even if loss or damage is caused by the negligence or other fault of Kodak.**

Such damages for which Kodak **will not** be responsible, include, but are not limited to, loss of revenue or profit, downtime costs, loss of use of the equipment, cost of any substitute equipment, facilities or services or claims of your customers for such damages.

This limitation of liability will not apply to claims for injury to persons or damage to property caused by the sole negligence or fault of Kodak or by persons under its direction or control.

3056om_c.txt

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