

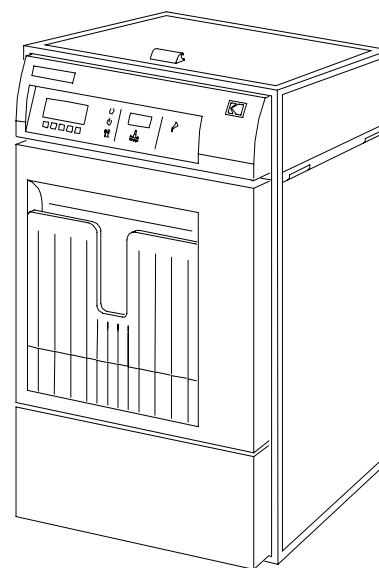


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OPERATOR MANUAL

for the

Kodak X-Omat 480 RA Processor



H108_0318BA

PLEASE NOTE

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**Warning**

To avoid hazardous conditions, keep floors and floor coverings around your *Kodak X-Omat* Processors and associated drains clean and dry at all times. Any accumulation of fluids from mixing tanks, drain lines, etc, should be cleaned up immediately. In the event of an accumulation of liquid due to backup, overflow, or other malfunctions of the drain associated with your *Kodak X-Omat* Processor, call a plumber or other contractor to correct any problem with the drain. Kodak accepts no responsibility or liability whatsoever for the serviceability of any drain connected to or associated with a *Kodak X-Omat* Processor. Such drains are the sole responsibility of the customer.

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Section 1: Introduction

Overview of the Processor

Figure 1 **Feed-End View of the Processor**

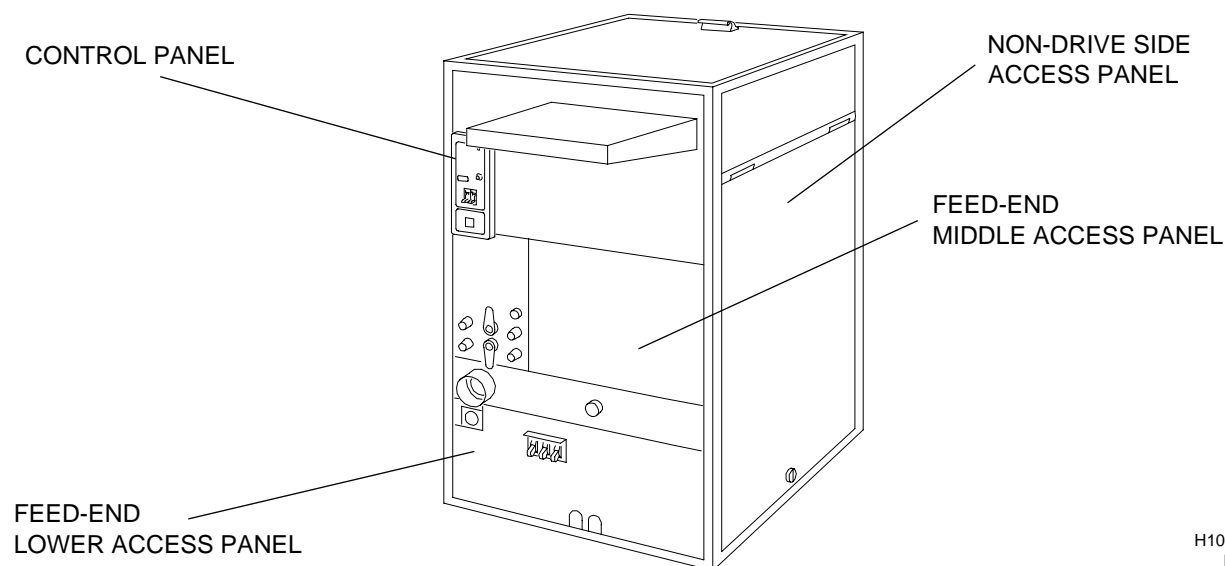


Figure 2 **Receiving-End View of the Processor**

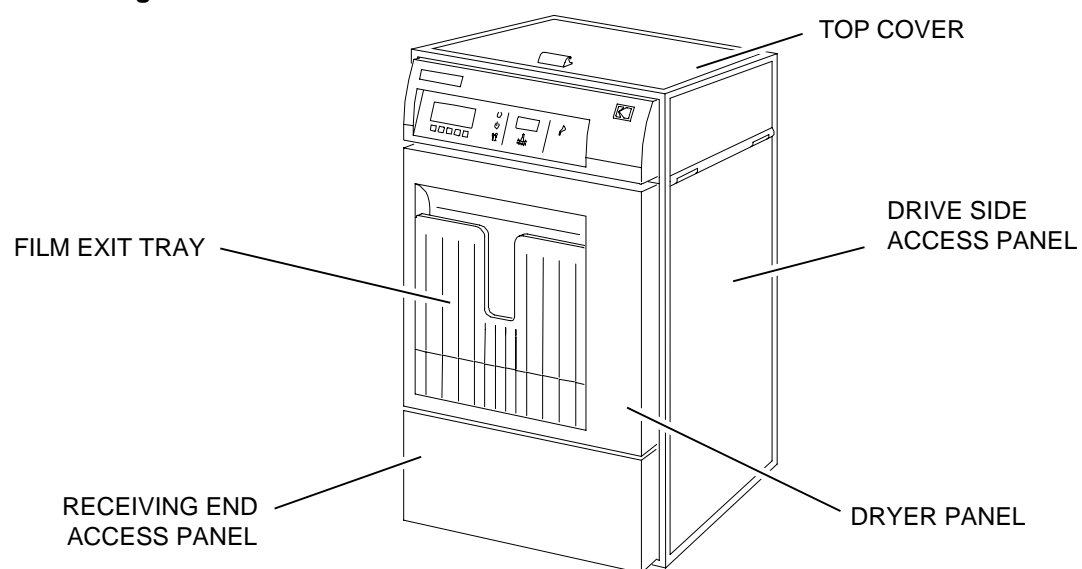
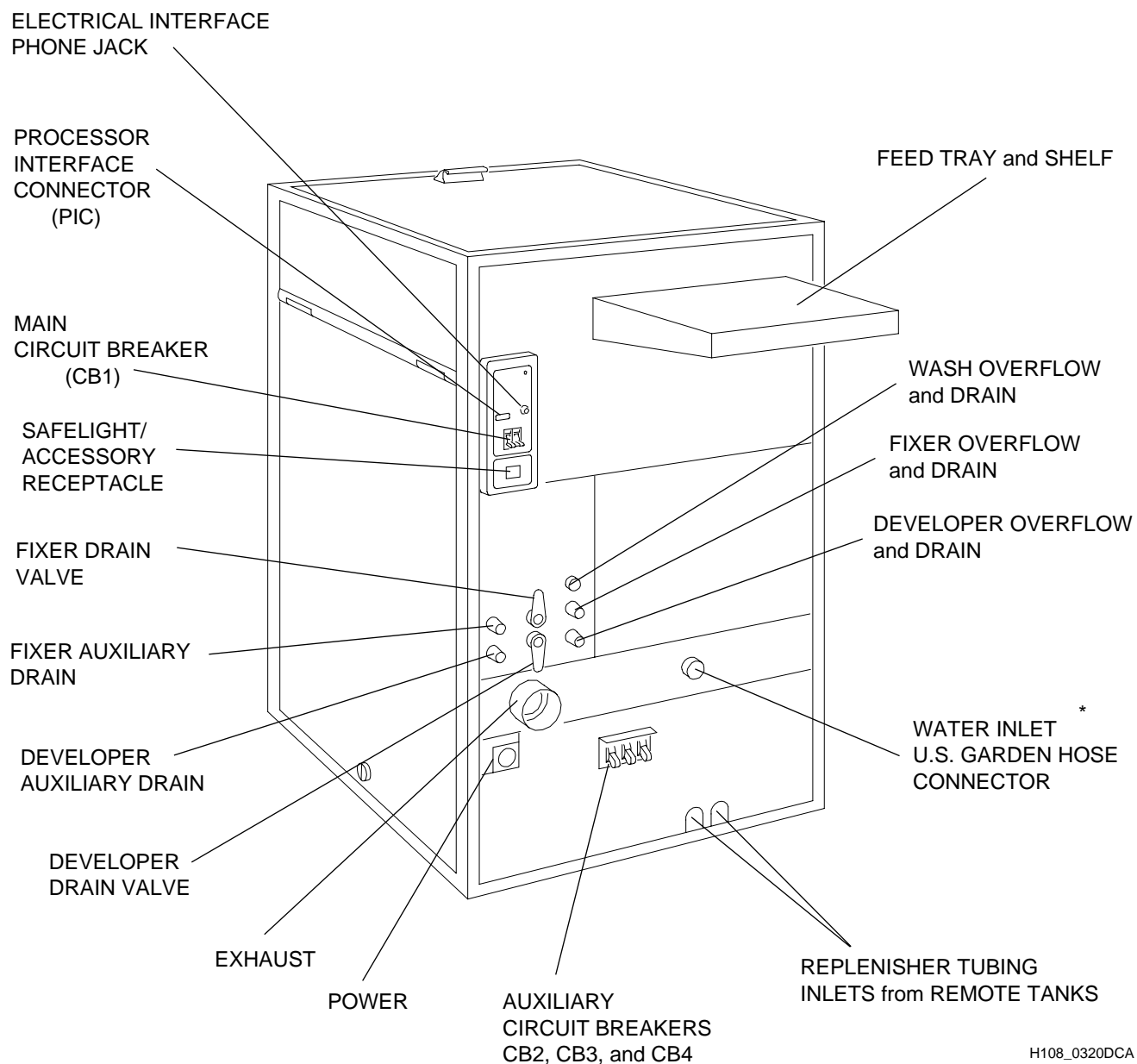


Figure 3 Major Components of the Processor



H108_0320DCA
H108_0320DA

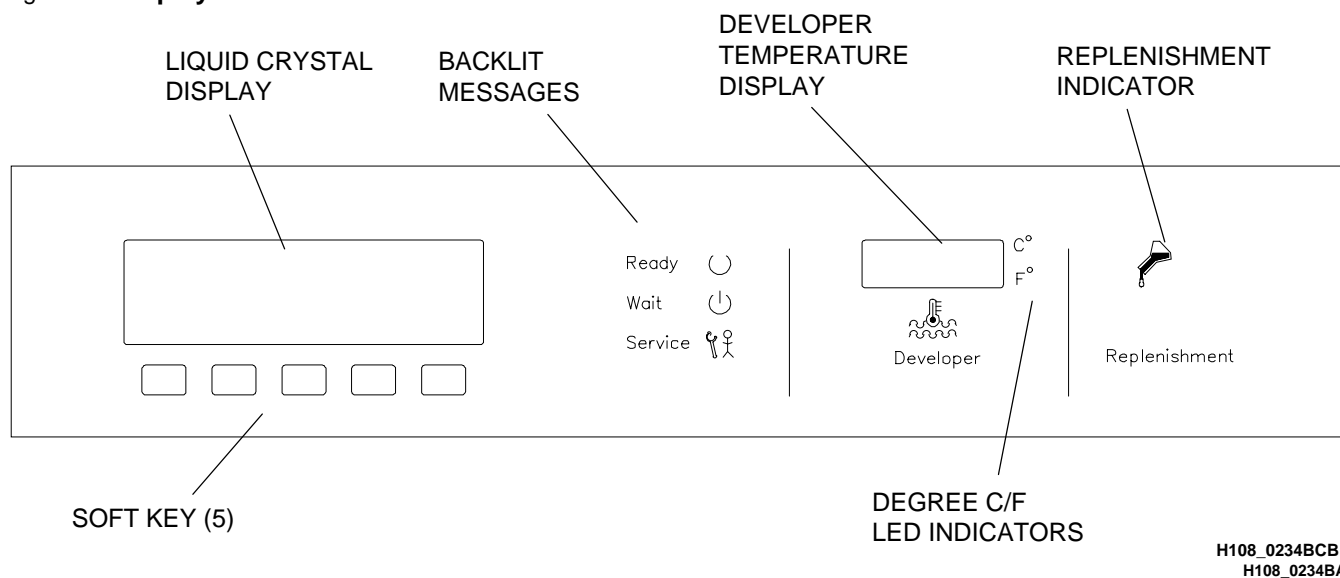
* Supplied in the pre-pack is an adapter for 1/2-inch NPT.

The Display Panel

Using the Display Panel

You may select, change, and monitor processing variables for the *Kodak X-Omat 480 RA Processor* by using the Display Panel, Figure 4 below.

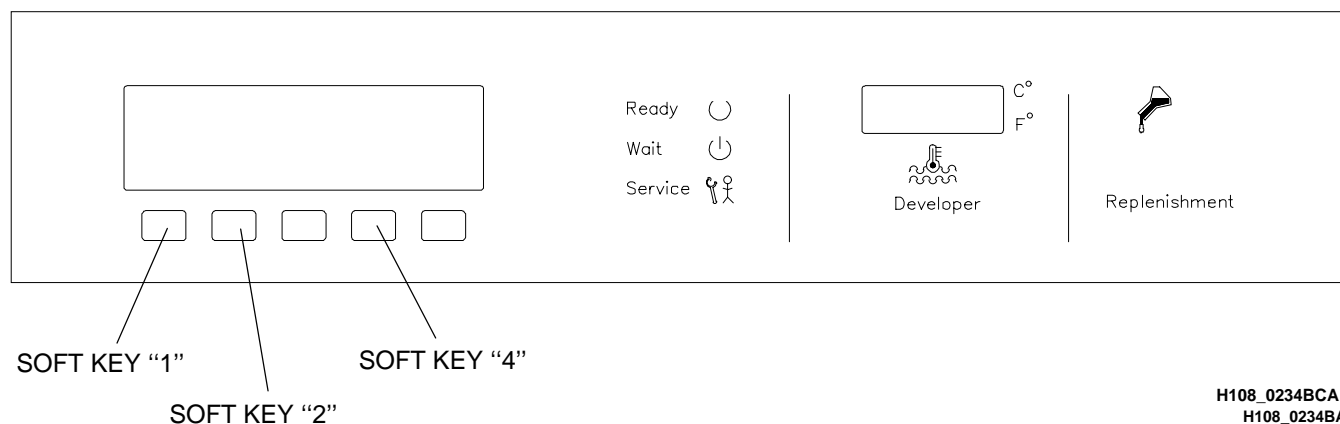
Figure 4 **Display Panel**



Adjusting the Contrast of the Liquid Crystal Display (Display Panel)

- [1] To lighten the display, press and hold the SOFT KEY indicated as "4" on the DISPLAY PANEL. At the same time, press the SOFT KEY indicated as "1" on the DISPLAY PANEL to obtain the desired contrast.
- [2] To darken the display, press and hold the SOFT KEY indicated as "4" on the DISPLAY PANEL. At the same time, press the SOFT KEY indicated as "2" on the DISPLAY PANEL to obtain the desired contrast.

Figure 5 **Adjusting the Contrast of the Liquid Crystal Display**



Status Information

Overview

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 36 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 centimetres 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 MESSAGE / ERROR		CURRENT CYCLE		
SOFT KEY	SOFT KEY	SOFT KEY	SOFT KEY	SOFT 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 [46](#) or [47](#) 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.

Cycles of Operation for the Processor

Table 1 Cycle Information for the Processor

Cycle	Process Time in seconds	Drop Time in seconds	Film/Chemical	Throughput in films/hr.
K/RA	38	45	RA film/chemicals	479
Rapid	53	61	RA,T-MAT films RP chemicals	351
Standard	79	92	RA,T-MAT,RP films 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 11 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 chemicals required for optimum image quality when using the processor. *Kodak RP X-Omat Developer* and Replenisher and *Kodak RP X-Omat Fixer* and Replenisher, or equivalents, may be used with the extended, standard, and rapid cycles. **Only RA film and RA chemicals 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 35 x 43 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 35 x 43 cm sheets of film (fed 43 cm wide) processed in one hour.

Processor Configuration and Setpoints

Setup information consists of the film processor configuration and all process setpoints. Setup information that was preset for the processor at the factory is listed in the table below.

Setup 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 setup information by using the soft keys on the display panel. See “Setting Up the Processor” on Page 17. The new setup information will be retained in memory even when power to the processor is interrupted or the processor is turned off.

Table 2 Processor Configuration and SetPoints

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	98°F (36.6°C)	101°F (38.3°C)	95°F (35°C)	95°F (35°C)
Fixer Temperature (minimum)	90°F (32.2°C)	90°F (32.2°C)	90°F (32.2°C)	90°F (32.2°C)
(Automatic) Developer Replenishment (35 x 43 cm sheet)	60 mL	60 mL	60 mL	60 mL
(Automatic) Fixer Replenishment (35 x 43 cm sheet)	85 mL	85 mL	85 mL	85 mL
Transport Speed	135 in./min (343 cm./min)	99 in./min (251 cm./min)	66 in./min (168 cm./min)	34 in./min (86 cm./min)
Dryer Temperature	120°F (48.9°C)	120°F (48.9°C)	120°F (48.9°C)	120°F (48.9°C)

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 setup 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 “TOTAL ON TIME” key for the Total Processor On Time.
 - Press the “SHEET COUNT” key for the Sheet Count.
 - Press the “XPORT ON TIME” key for the Transport On Time.
 - Press the “DONE/RETURN” key when you are done reviewing the processor status information and wish to return to the previous menu.

READY 135 °F = DRYER SETPOINT				STD
▲ DRYER	▼ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP
1	2	3	4	CANCEL REQUEST
TOTAL ON TIME	SHEET COUNT	XPORT ON TIME		DONE / RETURN

Basic Operating Characteristics

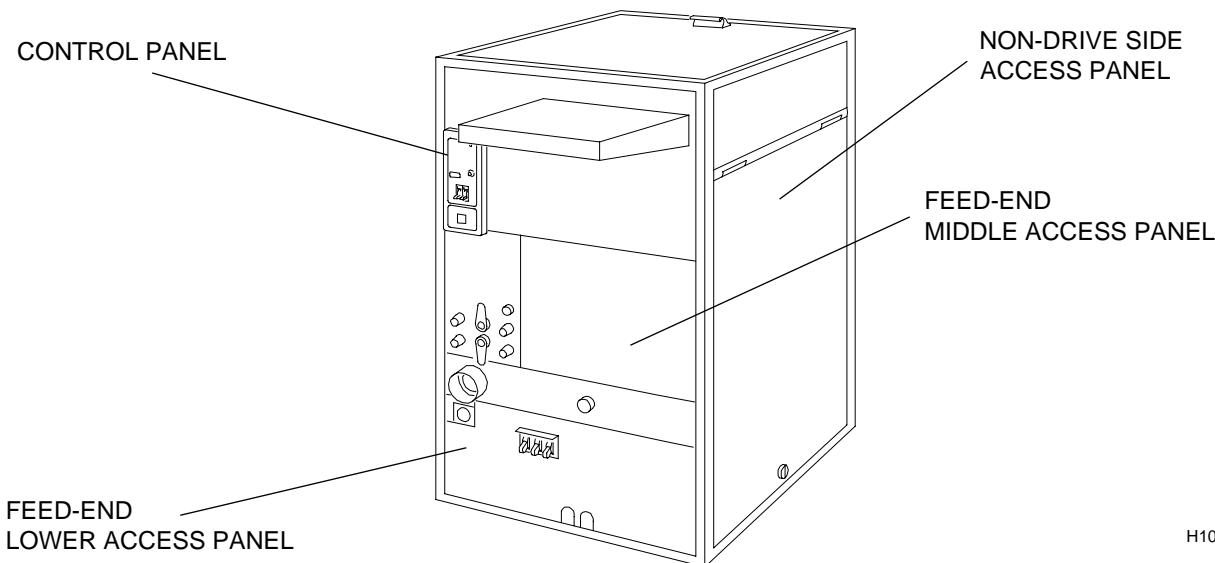
- Holding down a key will cause the key to toggle among all its possible options. For example, holding down the [▲] key, will cause the temperature displayed to rapidly increase as long as the key is held down.
- When the processor is first turned on, the wash water and drive motor run for approximately 4 minutes 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, 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 operate only if the top cover is on the processor
- When **both** replenisher pumps are operating, the replenishment light on the display panel illuminates.
- The wash water drains whenever power to the processor is interrupted or the processor is turned off.
- On the feed end of the processor is a panel which indicates the selected operating cycle and the current processor status. A dimmer is available to adjust the intensity of these indicator lights.

Section 2: Mixing the Chemicals and Filling the Tanks

Mixing the Chemicals

- [1] Move the Main Circuit Breaker, CB1, to the “O” position.
- [2] Close the Developer and Fixer Drain Valves.

Figure 6 **Feed-End of Processor**



H108_0319BCA
H108_0319BA



Important

The appropriate combination of film and chemicals is required for optimum image quality during a selected cycle. See the table on Page 9.

- [3] Determine which type of chemicals is needed for the operating cycle that you selected. Contact your Kodak representative to discuss the best option for your needs.



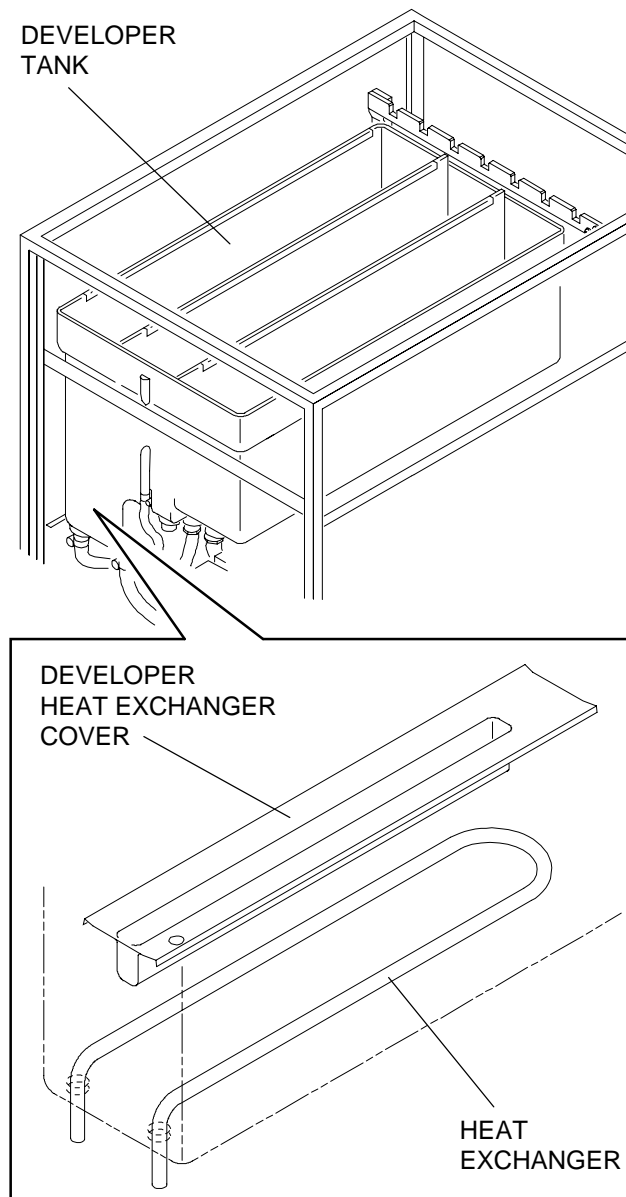
Important

- When mixing chemicals, follow all instructions and precautions.
 - Mix only a 2-week supply of developer replenisher.
- [4] Following all directions provided with the solutions, mix at least 19 L (5 gal) of solution.

Filling the Tanks

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

Figure 7 Heat Exchanger Cover



H108_0118CCA
H108_0118CA

[2] Check that a new developer filter has been installed. Install a new filter if necessary.



Caution

Replace the filter cap and secure it.

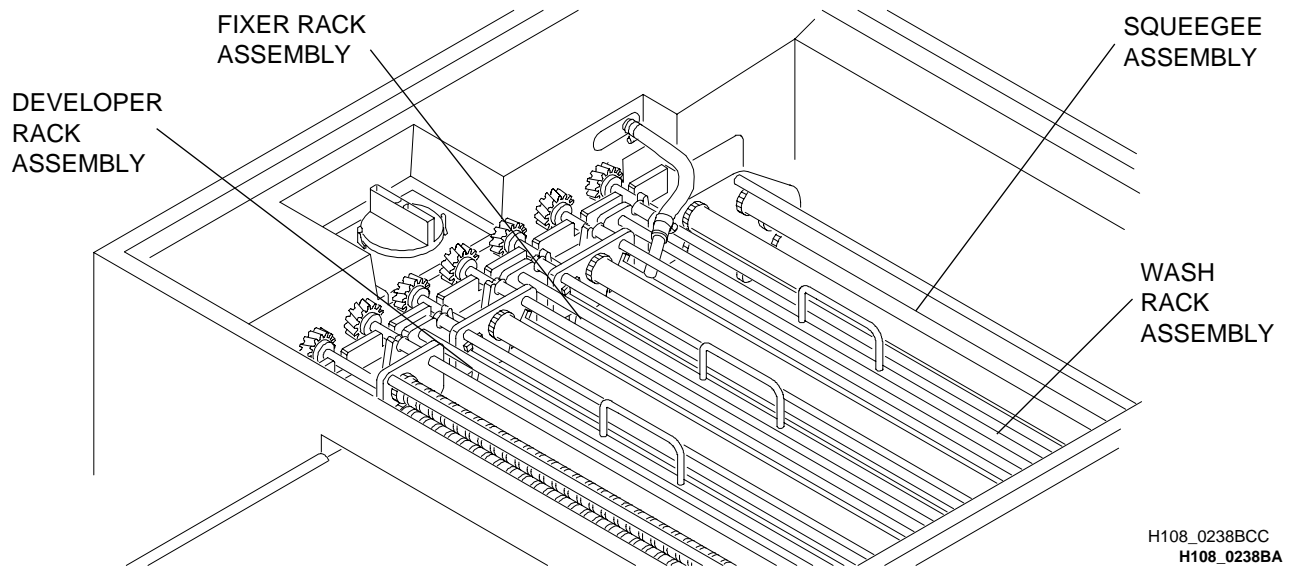


Note

It is recommended that a new developer filter be installed whenever processing chemical is changed.

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

Figure 8 Installing the Racks

**Important**

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

- [4] Check that CB2, CB3, and CB4 are in the “I” position.
- [5] Move the main circuit breaker, CB1, to the “I” position.
- [6] 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 a sheet of film is fed into the processor when an error condition exists.
- See the “Menu Flowchart for the RA Processor” on Page [46](#) or [47](#).

- [7] Press the “GO TO SETUP” key.

READY 135°F = DRYER SETPOINT				STD
▲ DRYER	▼ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

- [8] Enter the 4 digit access code.

1	2	3	4	CANCEL REQUEST
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[9] Press the “OPTIONS” key.

CYCLE	SETUP PROCESS	OPTIONS	LANG	DONE / RETURN
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[10] 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 replenishment pumps automatically turn off and the recirculation pump turns on.

[11] Press the “TANK FILL” key.

[12] **Immediately, press the “DONE/RETURN” key to store the entry.**

SELECT AUTO	SELECT FLOODED	TANK FILL	DISABLE REPLEN	DONE / RETURN
----------------	-------------------	-----------	-------------------	------------------

[13] After the replenishment pumps turn off, check that-

- (a) the level of both the developer and fixer solutions in the tanks is just below the overflow limit of the tanks.
- (b) there is some movement on the surface of the developer and fixer solutions to indicate that the recirculation pump is operating.

[14] **If using RP chemicals**, refer to the instructions provided with the developer solution to determine the required amount of starter solution to add to the developer tank.

[15] Continue on to Page [17](#) to set up the processor or advance to Page [33](#) to begin daily film processing.

Section 3: Setting Up the Processor

Processor Configuration

Calibrating the Replenishment System

Introduction

Calibrate the replenishment system every 3 months or whenever preventive maintenance is performed.

The operator calibrates the replenishment system for all process cycles in one operation. Calibration 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 the 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 deliver the replenishment rate set by the operator.

Note

The volume actually measured during calibration is **not** the **volume delivered** for a 35 x 43 cm sheet of film.

During replenishment calibration, the replenishment pumps are disabled from normal operation. However, the replenishment pumps will cycle for approximately 3 seconds after a replenishment mode is selected. When this cycle is complete, the processor is ready for the next calibration cycle.

Procedure

- [1] To calibrate the replenishment system, press the “GO TO SETUP” key.

READY 135°F = DRYER SETPOINT				STD
▲ DRYER	▼ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

- [2] Enter the 4-digit access code.

1	2	3	4	CANCEL REQUEST
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- [3] Press the “OPTIONS” key.

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

- [4] Press the “MORE” key.

- [5] Press the “REPLEN CALIB” key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE / RETURN
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RECEPT MODE	STANDBY MODE	REPLEN CALIB	MORE	DONE / RETURN
----------------	-----------------	-----------------	------	------------------

- [6] Remove the dryer panel.

- [7] Remove the 2 screws and the receiving-end access panel.

[8] Press either the-

- (a)** "FIX CAL" key for fixer calibration.
- (b)** "DEV CAL" key for developer calibration.

DEV CAL	FIX CAL			DONE / RETURN
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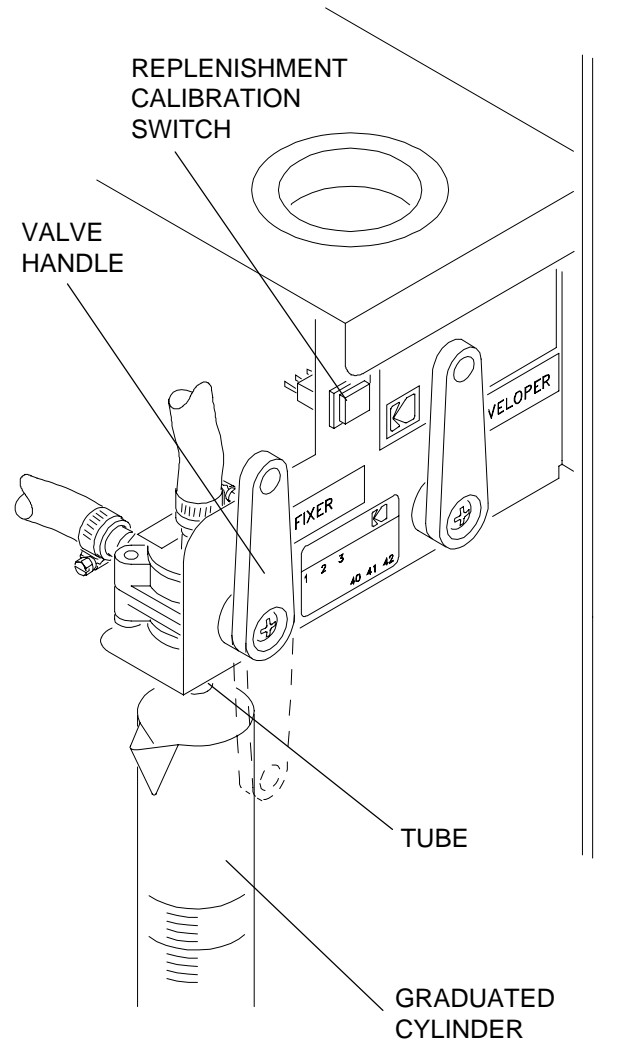
Caution

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

- [9]** Place the Graduated Cylinder under the Tube. See Figure 9 on Page 19.
- [10]** Move the Valve Handle for the fixer (or the developer) to point at the Graduated Cylinder.
- [11]** Press the Replenishment Calibration Switch.
- [12]** Correctly dispose of the solution in the Graduated Cylinder.
- [13]** Again place the Graduated Cylinder under the Tube.
- [14]** Press the Replenishment Calibration Switch.
- [15]** Measure and record the volume of replenishment delivered by the system.
- [16]** Correctly dispose of the solution in the Graduated Cylinder.
- [17]** Do Steps 13 through 16 two more times.
- [18]** Determine the average volume delivered.
- [19]** Close the Valve Handle for the fixer (or developer).
- [20]** Press the "UPDATE CAL VOL" key.

UPDATE CAL VOL				DONE / RETURN
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Figure 9 Calibration



H108_0045CCB
H108_0045CA

SITE SPECIFICATIONS

[21] Press [▲] or [▼] keys until the volume of replenishment displayed equals the average volume calculated in Step [18](#).

Before:

PROCESS NOT READY				RAPID	
66 mL = DEVELOPER REPLENISHMENT VOLUME					
▲	▼				DONE / RETURN

After:

PROCESS NOT READY				RAPID	
63 mL = DEVELOPER REPLENISHMENT VOLUME					
▲	▼				DONE / RETURN

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

[23] Immediately, press the "DONE/RETURN" key again and do Steps [8](#) through [23](#) for the other solution.

[24] Install the receiving-end access panels onto the processor.

Replenishment Modes

Description

Automatic Replenishment Mode	Select this mode to allow the processor to automatically adjust the replenishment volumes for developer and fixer according to the film usage for the processor.
Flooded Replenishment Mode	<p>Check with your Kodak representative to see whether the Flooded Replenishment Mode is right for the film usage of the processor. Replenishment will be added automatically-</p> <ul style="list-style-type: none"> every 5 minutes and when the equivalent film area of 35 x 43 cm has been processed. The factory preset value is 60 mL for developer and 60 mL for fixer.
Tank Fill Mode	Select this mode to fill the processor tanks from empty. A warning error E129 occurs as the tanks are filling. After the tanks are filled, the error is cleared and the processor will begin normal operation.
Disable Replenishment	Select this feature to disable the replenishment pumps before doing any of the cleaning procedures. When the pumps are disabled, a warning error E130 occurs. The error is cleared when the operator selects either Automatic or Flooded Replenishment.

Procedure

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

READY 135°F = DRYER SETPOINT				STD
▲ 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 PROCESS	OPTIONS	LANG	DONE / RETURN
-------	------------------	---------	------	------------------

[4] Press the “REPLEN MODE” key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE / RETURN
----------------	--------------	------------------	------	------------------

[5] Select one of the 4 operating modes-

- Automatic Replenishment
- Flooded Replenishment
- Tank Fill
- Disable Replenishment

SELECT AUTO	SELECT FLOODED	TANK FILL	DISABLE REPLEN	DONE / 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 135°F = DRYER SETPOINT				STD
▲ 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 PROCESS	OPTIONS	LANG	DONE / RETURN
-------	------------------	---------	------	------------------

[4] Press the "TEMP LOCK" key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE / RETURN
----------------	--------------	------------------	------	------------------

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

SELECT OFF	SELECT ON			DONE / 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 centimetres per minute.

Procedure

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

READY 135°F = DRYER SETPOINT				STD
▲ 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 PROCESS	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] Immediately, 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 13 on Page 35) 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 135°F = DRYER SETPOINT				STD
▲ 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 PROCESS	OPTIONS	LANG	DONE / RETURN
-------	------------------	---------	------	------------------

[4] Press the "MORE" key.

REPLEN MODE	TEMP LOCK	DISPLAY UNITS	MORE	DONE / RETURN
----------------	--------------	------------------	------	------------------

[5] Press the "RECEPT MODE" key.

RECEPT MODE	STANDBY MODE	REPLEN CALIB	MORE	DONE / RETURN
----------------	-----------------	-----------------	------	------------------

[6] Press either the-

- (a) "SELECT SAFE" key for the "Safelight" mode.
- (b) "SELECT ACCY" key for the "Accessory" mode.

SELECT SAFE	SELECT ACCY			DONE / RETURN
----------------	----------------	--	--	------------------

[7] Immediately, 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 135°F = DRYER SETPOINT				STD
▲ 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 PROCESS	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	STANDBY MODE	REPLEN CALIB	MORE	DONE / RETURN
----------------	-----------------	-----------------	------	------------------

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

INTER MODE	CONT MODE			DONE / RETURN
---------------	--------------	--	--	------------------

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

Changing Setpoints

Processor Cycle

Description

This procedure, and the 3 procedures following it, explain how to change process variables whose setpoints were preset at the factory. In most cases factory setpoints will provide optimum film processing.



Important

Setpoints are stored for each cycle. Changing a setpoint changes it for only the selected cycle.

Procedure

[1] To select the processor cycle for either RP or RA chemicals, press the “GO TO SETUP” key.

READY 135°F = DRYER SETPOINT				STD
▲ DRYER	▼ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

[2] Enter the - digit access code.

1	2	3	4	CANCEL REQUEST
---	---	---	---	-------------------

[3] Press the “CYCLE” key.

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

[4] Select the desired operating cycle-

(a) If using RP chemistry, press-

“RAPID CYCLE” key for the rapid cycle.

“STD CYCLE” key for the standard cycle.

“EXT CYCLE” key for the extended cycle.

(b) If using RA chemicals, press the “K/RA CYCLE” key.

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

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

Developer and Fixer Temperatures

Description

Developer and fixer temperature setpoints can be modified and stored for future use. Setpoints that were preset at the factory can always be restored by pressing the “Default Setting” key.

Procedure

- [1]** To change the temperature setpoints for developer or fixer, press the “GO TO SETUP” key.

READY 135°F = DRYER SETPOINT				STD
▲ 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 “SETUP PROCESS” key.

CYCLE	SETUP PROCESS	OPTIONS	LANG	DONE / 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 CYCLE	STD CYCLE	EXT CYCLE	K/RA CYCLE	DONE / RETURN
----------------	--------------	--------------	---------------	------------------

- [5]** Press the “TEMP” key.

TEMP	REPLEN VOLUME	SPEED		DONE / 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 setpoint, press the-

- (a) [▲] key to increase the temperature setpoint.
- (b) [▼] key to decrease the temperature setpoint.
- (c) "DEFAULT SETTING" key to return to the factory setpoint.
- (d) "CANCEL REQUEST" key to return to the last value set.

▲ TEMP	▼ TEMP	DEFAULT SETTING	CANCEL REQUEST	DONE / RETURN
-----------	-----------	--------------------	-------------------	------------------

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

[9] Do Steps [6](#) through [8](#) for the other solution.

 **Note**

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

Replenishment Rates

Description

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

Procedure

[1] To change the replenishment volume, press the “GO TO SETUP” key.

READY 135°F = DRYER SETPOINT				STD
▲ 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 “SETUP PROCESS” key.

CYCLE	SETUP PROCESS	OPTIONS	LANG	DONE / 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 CYCLE	STD CYCLE	EXT CYCLE	K/RA CYCLE	DONE / RETURN
----------------	--------------	--------------	---------------	------------------

[5] Press the “REPLEN VOLUME” key.

TEMP	REPLEN VOLUME	SPEED		DONE / 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 REP VOLUME	FIX REP VOLUME			DONE / RETURN
-------------------	-------------------	--	--	------------------

- [7] To change the replenishment volume, press the -
- (a) [▲] key to increase the replenishment volume.
 - (b) [▼] 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	DEFAULT SETTING	CANCEL REQUEST	DONE / RETURN
--------------	--------------	--------------------	-------------------	------------------

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

[9] Do Steps 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 135°F = DRYER SETPOINT				STD
▲ 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 "SETUP PROCESS" key.

CYCLE	SETUP PROCESS	OPTIONS	LANG	DONE / 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 CYCLE	STD CYCLE	EXT CYCLE	K/RA CYCLE	DONE / RETURN
----------------	--------------	--------------	---------------	------------------

- [5] Press the "SPEED" key.

TEMP	REPLEN VOLUME	SPEED		DONE / RETURN
------	------------------	-------	--	------------------

- [6] To change the transport speed press-

- (a) [▲] key to increase the transport speed.
- (b) [▼] key to decrease the transport speed.
- (c) "DEFAULT SETTING" key to return to the setpoint speed.
- (d) "CANCEL REQUEST" key to return to the last value set.

▲ SPEED	▼ SPEED	DEFAULTS PEED	CANCEL REQUEST	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

*Japanese requires dedicated software. Contact your Kodak representative.

Procedure

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

READY 135°F = DRYER SETPOINT				STD
▲ 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
-------------------	------------------	------------------	------	------------------

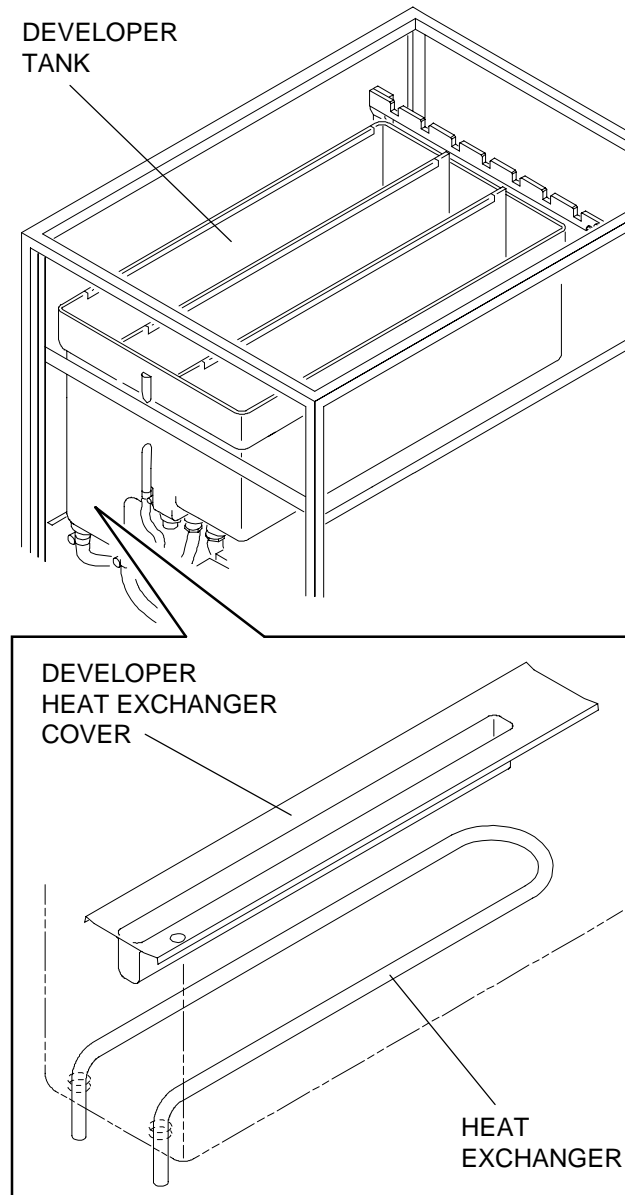
[5] Immediately, press the "DONE/RETURN" key to store the entry.

Section 4: Operating Instructions

Daily Start-up

- [1] If the racks have been removed, check that the developer heat exchanger cover is correctly positioned in the bottom of the developer tank.

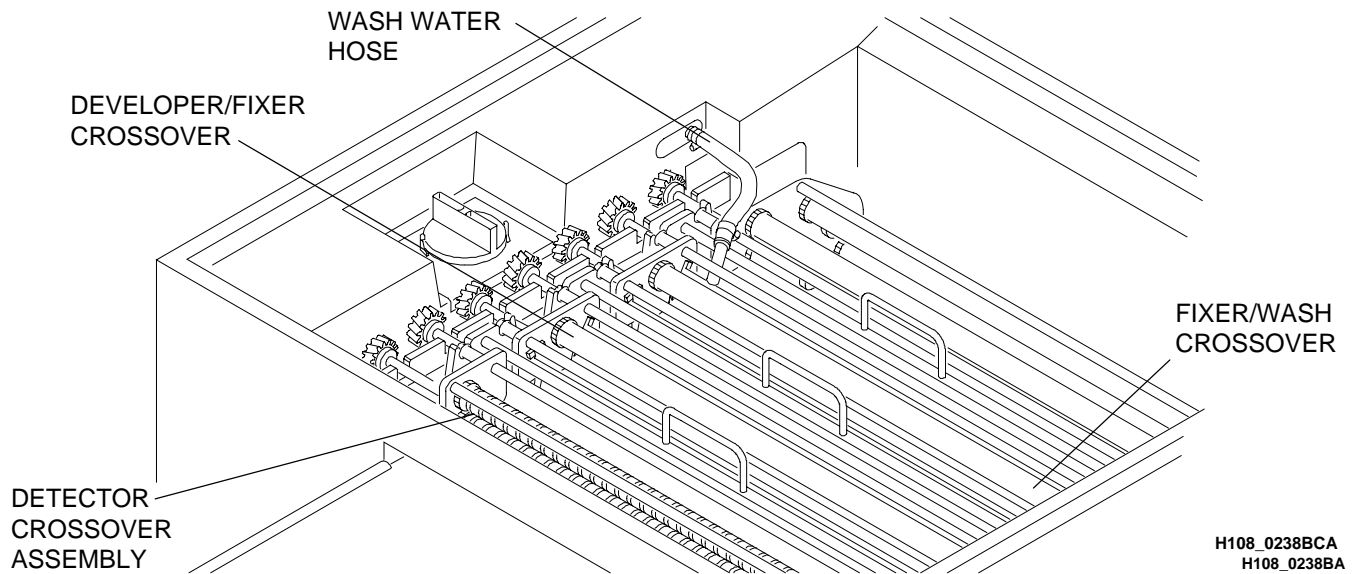
Figure 10 Heat Exchanger Cover



H108_0118CCA
H108_0118CA

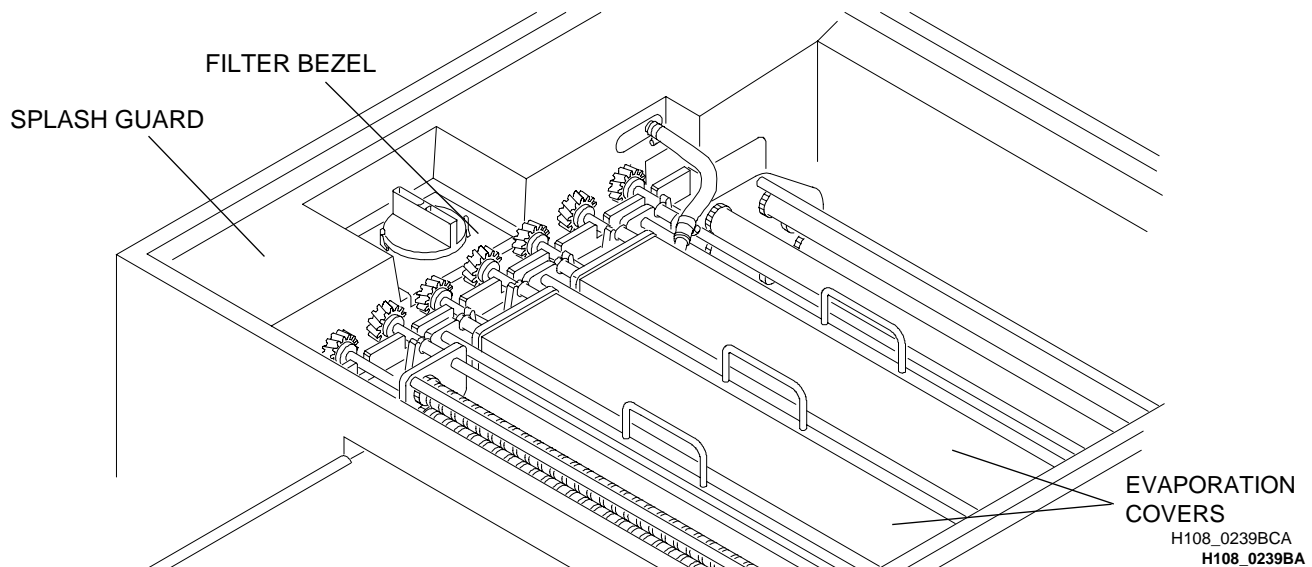
- [2] Check that all the Racks and Crossovers are in their correct positions.
[3] Check that the Wash Water Hose is connected.
[4] Check that the developer and fixer solutions are at the overflow level of each tank.

Figure 11 Racks and Crossovers



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

Figure 12 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).

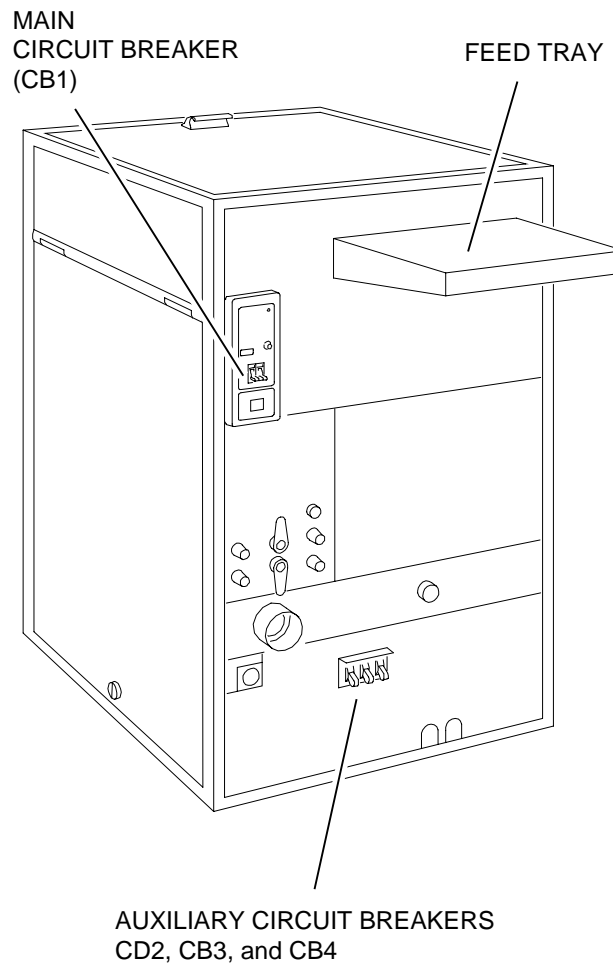
[8] Remove any film from the Feed Tray.

[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.

Figure 13 Location of the Circuit Breakers



H108_0320CCB
H108_0320CA

 **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 a sheet of film is fed into the processor when an error condition exists.

[12] To change the processor cycle, press the “SELECT CYCLE” key.

READY 135°F = DRYER SETPOINT		STD		
▲ DRYER	▼ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

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

- “RAPID CYCLE” key for the rapid cycle.
- “STD CYCLE” key for the standard cycle.
- “EXT CYCLE” key for the extended cycle.

[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
Replenishment 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
Dryer temperature not to specification when the processor is energized or when the setpoint temperature is increased	E134	Yes

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

Located behind the backlit panel on the feed end of the processor are 2 rows of status indicator lights. See Figure [14](#) on Page [38](#).

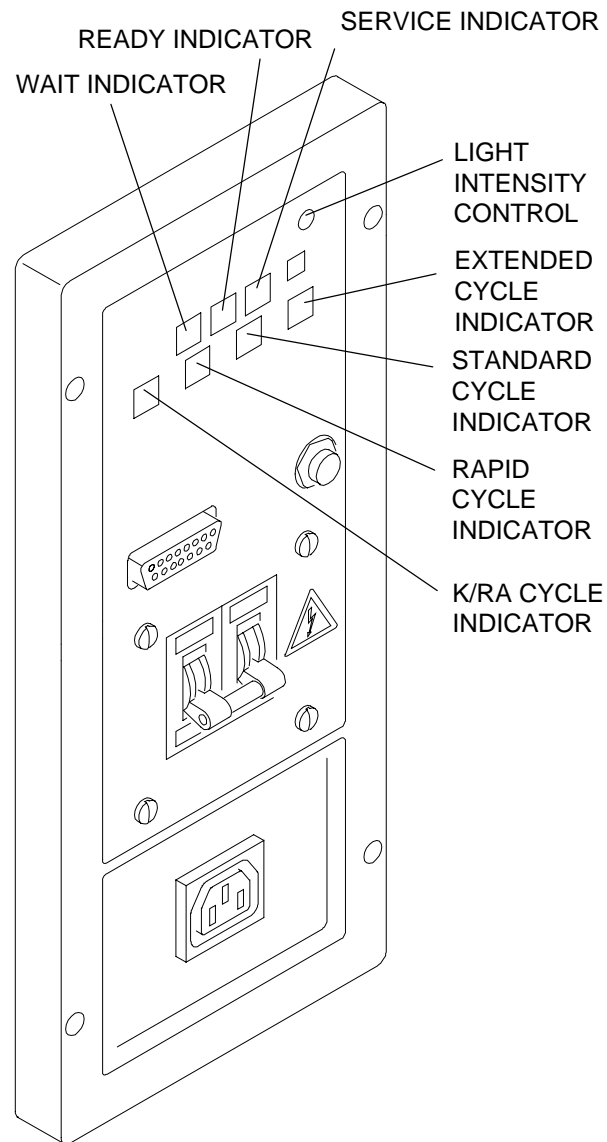
1. The first row contains 3 colored lights indicating the current status of the processor.
 - If the Green "Ready" indicator is illuminated, the processor is ready to accept film.
 - If the Yellow "Wait" indicator is illuminated, the processor is not yet ready to accept films.
 - If the Red "Service" indicator is illuminated, the processor is in need of service.
2. The second row contains letters indicating the current operating cycle.
 - If "K" is illuminated, the processor is operating in the K/RA cycle.
 - If the "R" is illuminated, the processor is operating in the Rapid cycle.
 - If the "S" is illuminated, the processor is operating in the Standard cycle.
 - If the "E" is illuminated, the processor is operating in the Extended cycle.

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

 **Note**

To prevent fogging of the film, do not turn the light intensity too high.

Figure 14 Indicator Lights



H108_0229CCA
H108_0229CA

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) [▲] key to **increase** the temperature.

(b) [▼] key to **decrease** the temperature.

READY 135°F = DRYER SETPOINT			STD	
▲ DRYER	▼ DRYER	SELECT CYCLE	DISPLAY FIX TEMP	GO TO SETUP

Film-Feeding Procedure

Sheet Film: See Figure 16 on Page 41 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.

Generally for best results, 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 it into the processor.
- **Do not** allow more than 125 films to accumulate in the film exit tray at one time.

Roll Film: Use a sheet of film as a leader. Make sure that the sheet film is as wide as, or wider than, the roll film and at least 18 cm (7 in.) long.

Using 2.5 cm (1 in.) wide tape, such as *3M SCOTCH* Brand Polyester Film Tape No. 850, fasten the roll film, emulsion side up, 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.



Note

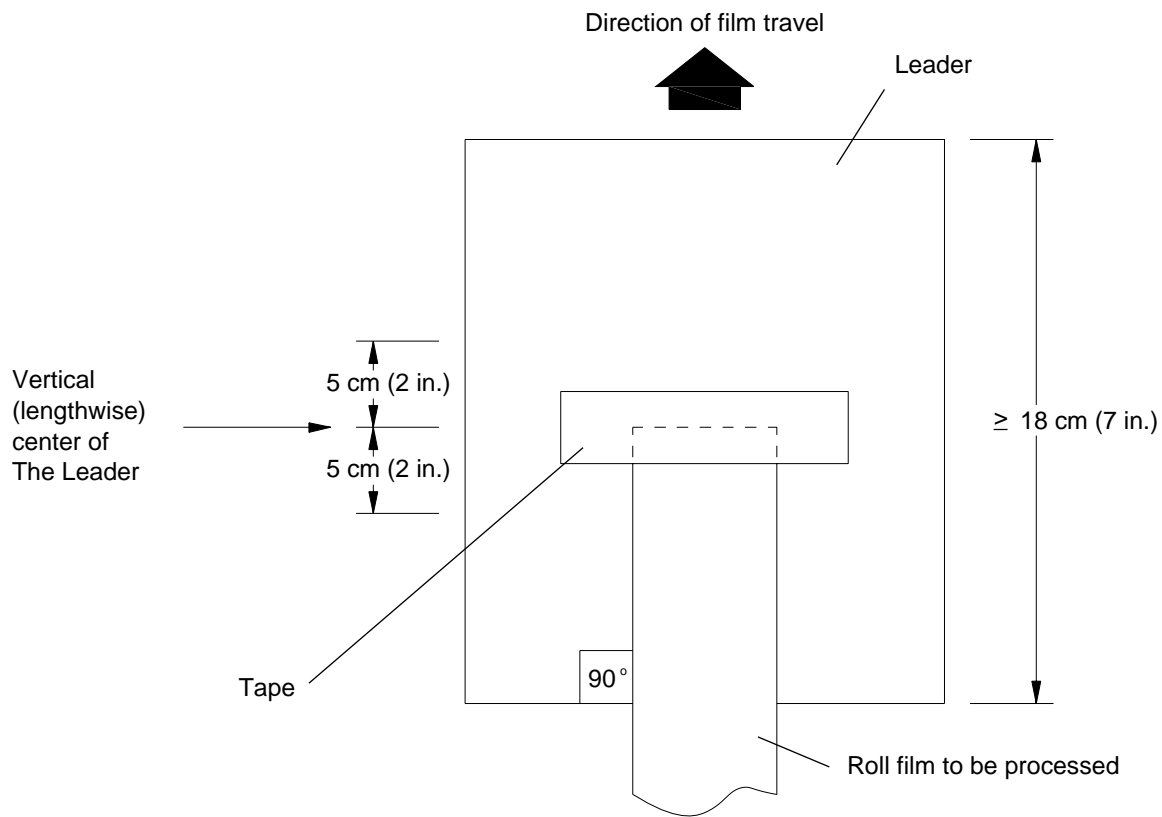
Tape the leading edge of the roll film, **emulsion side up**, within 5.1 cm (2 in.) of the vertical (lengthwise) center of the Leader. See Figure 15 on the following page.

For reliable transport of the roll film, apply slight tension on both the feed and take-up ends of the roll film, such as with a KODAK Roll Film Take-Up, Model 11, Catalog No. 118-6899.

Note

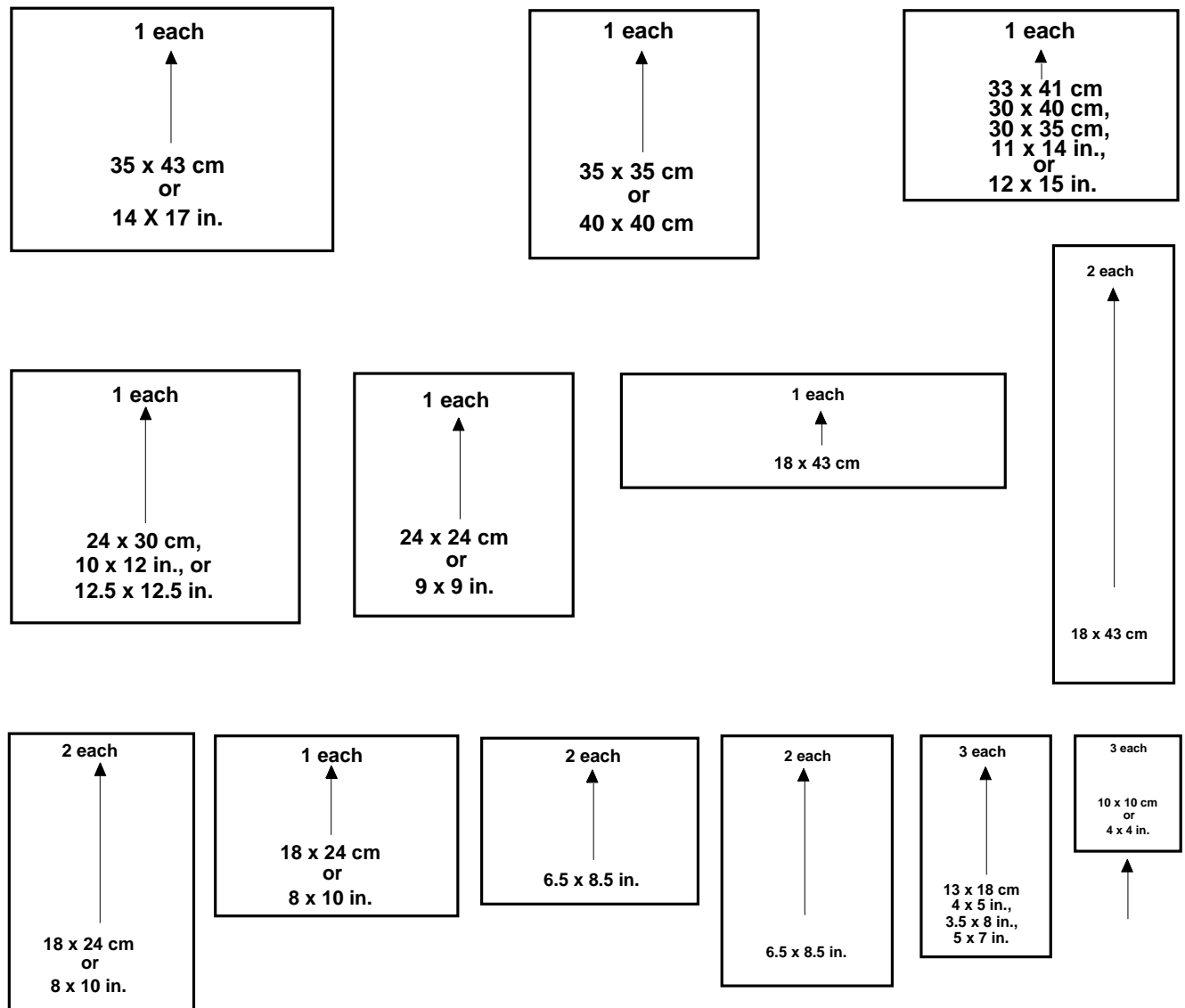
For correct operation, when using the roll film adapter, it is necessary to replace the receiving bin door with a modified door, Catalog No. 160-6318.

Figure 15 **Attaching a Leader to Roll Film**



H104_0551HCA
H104_0551HC

Figure 16 X-Ray Film Sizes



H104_9002DC

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.

Reliable operation of the processor requires that it be kept clean.

Daily Cleanup



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] Open the top cover.
- [4] Disconnect the water hose from the quick disconnect.



Caution

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

- [5] Remove the evaporation covers, both crossovers, and the squeegee assemblies.
- [6] Clean these parts with warm water and a soft damp cloth.
- [7] Dry all the parts with a clean cloth and allow the parts to air dry overnight.
- [8] 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.



Caution

Failure to leave the top cover open when the processor is not in use will cause corrosion of metal parts and will reduce the life of the processor.

- [9] Replace the top cover and leave open approximately 5.1 cm (2 in.) overnight to allow the parts to completely dry and to allow chemical vapors to dissipate.

Section 5: Preventive Maintenance

Weekly

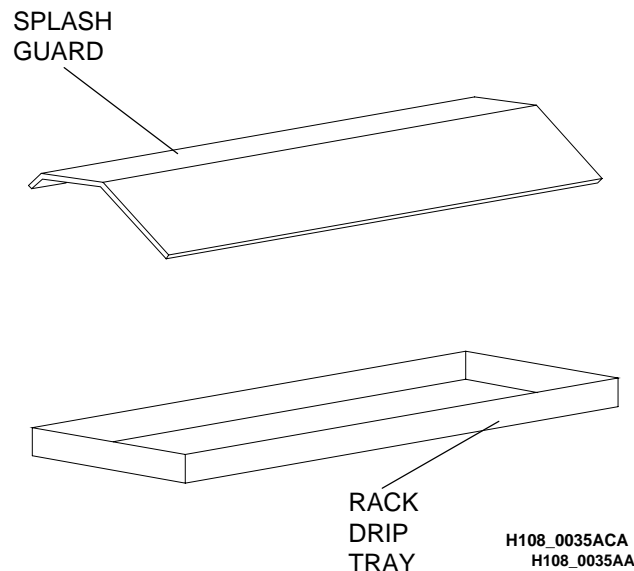
- [1] Move the main circuit breaker, CB1, to the "O" position.
- [2] Move the wall power switch to the "OFF" position.
- [3] Turn off the water supply.
- [4] Disconnect the water hose from the quick disconnect.



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.

Figure 17 **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.



Caution

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

- [10] Install the racks, crossover assemblies, evaporation covers, and wash water hose. Check that each assembly is correctly positioned.
- [11] Open the Fixer and Developer Drain Valves on the feed end of the processor. See figure 3 on Page 6.
- [12] Using a hose, thoroughly rinse the inside of the processor tanks with water.
- [13] Close the Fixer and Developer Drain Valves.
- [14] Fill the tanks with clean water.
- [15] Install the top cover.

Section 6: Correcting Difficulties

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 settings for correct replenishment.
	•		•			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 biological growth in the wash tank with a mild solution of chlorine bleach. Use 60 mL (2 fl oz) of bleach per 3.8 L (1 gal) 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 replenisher tanks if necessary. Mix the developer replenisher 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.
•	•					If the 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.
	•	•				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 the time delay. For all transport speeds, the buzzer should sound once the trailing edge of the film has advanced 7.5 cm (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 buildup.
				•		Check that the processor and the tanks are correctly leveled.

Section 7: Warranty

Kodak warrants this *Kodak X-Omat* 480 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* 480 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* 480 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.

Section 8: Menu Flowchart

Section 9: Menu Flowchart for the Japanese Language

Section 10: Publication Change Notice Table

Print Date	Pub. No.	ECO No.	Affected Pages	File Name	Notes
April 1992	246614	2630-013	All Pages	3228om_a.txt	1st Printing
August 1995	246614	2630-144	All Pages	om3228_1_144.doc	Major Revision Frame Conversion

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