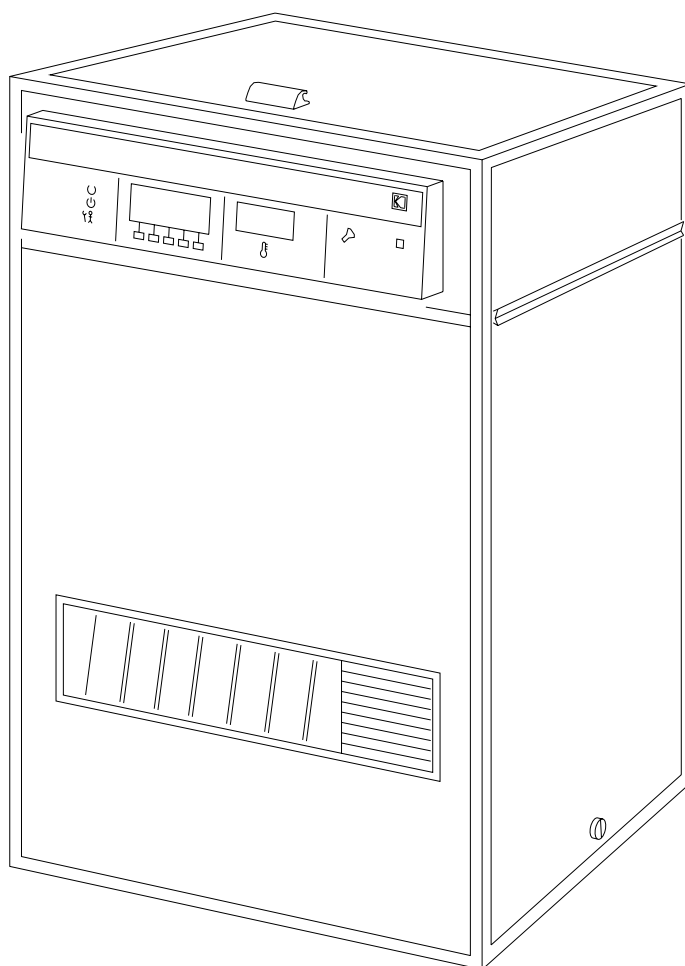




# DIAGNOSTICS

for the

## *Kodak X-Omat 460 RA Processor*



H108\_0003DA

#### PLEASE NOTE

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#### CAUTION



This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

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## Software Diagnostics

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### Error Codes

- Error codes are listed by order of priority.
  - More than one error code can occur at one time.
  - When 2 or more errors occur at the same time, only the highest priority error code will be shown on the display panel. The lower the error code number, the higher its priority.
  - When the higher priority error/warning code is corrected, the next priority error/warning code will be displayed on the display panel.
  - Error codes are divided into 3 categories.
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### Fatal Errors

If a sheet of film is in transit through the processor when these errors occur, the sheet of film will exit from the processor; the processor will enter Standby mode; and the processor will not accept any more sheets of film.

If while the first sheet of film is in transit through the processor, you insert additional sheets of film into the processor, those additional sheets of film will exit from the processor; the processor will go into standby; and the processor will not accept any more sheets of film.

If these errors occur while the processor is in standby, the processor will not accept any film. The user cannot correct the error. Move the MAIN CIRCUIT BREAKER, CB1, to the "O" position and call for service.

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### Non-fatal Errors

The processor will accept film and continue to operate, but the image quality may be reduced. The user should call for service.

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### Warning Errors

The processor can continue to operate. The error is a temporary condition or one which the operator can correct.

<b>Circuit Board Identification</b>	<b>200 Circuit Board</b>	Control Panel Circuit Board — The 200 Circuit Board is located below and to the left of the feed shelf. It provides visual output, by means of the indicator lights, of the current operating status of the processor. This Circuit Board also contains a 15 pin port for accessories such as the Portable Computer.
	<b>300 Circuit Board</b>	Display Circuit Board — The 300 Circuit Board is located on the Dryer end of the processor. It provides a way for the operator to communicate with the Microprocessor Circuit Board. It also provides a visual status of the processor including any occurrences of errors.
	<b>400 Circuit Board</b>	Current Limiter Circuit Board — The 400 Circuit Board is located inside the electrical box. It protects the power supply from electrical surges in the motor circuit.
	<b>500 Circuit Board</b>	Microprocessor Circuit Board — The 500 Circuit Board is located inside the electrical box. It accepts and interprets input from the sensors, and controls the operation of all motors and solenoids.
	<b>5600 Circuit Board</b>	Film Accumulator Circuit Board — The 5600 Circuit Board is located behind the feed tray. It senses film surface area and sends this information to the 500 Circuit Board.

#### **NOTE**

If the processor is used in connection with a Multiloader 700, and the 2 units become separated, an Error 003 (Loss of 5600 Circuit Board Data Link) may occur. This error will disappear as soon as the 2 units are once again connected.

## Fatal Errors

Error Code	Problem Description	Action
Err 001	500 Circuit Board Error	(1) Remove the 500 CIRCUIT BOARD. (2) Remove and keep the EPROMS from the 500 CIRCUIT BOARD. (3) Install the EPROMS on a new 500 CIRCUIT BOARD and install the new BOARD. • EPROMS can be ordered separately.
Err 002	Dryer Over Temperature	(1) Check that the CONNECTORS on the DRYER THERMISTOR are not loose, worn, or corroded. (2) Check that RELAY U1 in the electrical box, AC side, has not shorted. • Install a new RELAY U1, if necessary.
Err 003	Loss of 5600 Circuit Board Data Link	(1) Reset the processor by deenergizing and then energizing it. (2) Check that CONNECTIONS P/J 5501, P/J 14, and P/J 508 on the CABLE from the 5600 CIRCUIT BOARD are not loose. • Install a new 5600 CIRCUIT BOARD and/or CABLE, if necessary. • Install a new 500 CIRCUIT BOARD, if necessary. • Using NEEDLE-NOSE PLIERS, make sure that the TERMINALS are positioned firmly in CONNECTORS P/J 508, P/J 14, and P/J 5501. (3) See Mod. 5 or the Installation Instructions for information about installing a LIGHT SHIELD over the FEED TRAY.
Err 004	Inoperative Transport	(1) Check that the TRANSPORT SYSTEM is not malfunctioning. (2) Check that the DRIVE CONTROLLER FUSE F2 is not open. • Install a new FUSE F2, if necessary. (3) Check for 24 Volts dc on both the 400 and 500 CIRCUIT BOARDS. • If the voltage is not within the range, install a new 500 CIRCUIT BOARD. (4) See Error 041 Actions.

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**Non-Fatal Errors**

<b>Error Code</b>	<b>Problem Description</b>	<b>Action</b>
Err 032	Developer Tank Fill Error	<ol style="list-style-type: none"><li>(1) Check that the DEVELOPER REPLENISHMENT TANK is not empty.</li><li>(2) Check that the DRAIN VALVE is closed.</li><li>(3) Check that the REPLENISHMENT HOSE is straight.</li><li>(4) Check that the REPLENISHMENT CONTROL VALVE is not in the "Replenish Check" position.</li><li>(5) Check that the AC side of the SOLID STATE RELAY U3 is not open.<ul style="list-style-type: none"><li>• Install a new SOLID STATE RELAY U3, if necessary.</li></ul></li><li>(6) Check that there is a 5 V control signal from the 500 CIRCUIT BOARD to SOLID STATE RELAY U3.<ul style="list-style-type: none"><li>• Install a new 500 CIRCUIT BOARD, if necessary.</li></ul></li><li>(7) Check that the PUMP is operating.<ul style="list-style-type: none"><li>• Repair it or install a new PUMP, if necessary.</li></ul></li><li>(8) Check that the POPPET VALVE in the PUMP is not broken or dirty.<ul style="list-style-type: none"><li>• Clean it or install a new VALVE, if necessary.</li></ul></li><li>(9) Check that the WIRES to the LEVEL PROBES are not broken and that they are securely connected.<ul style="list-style-type: none"><li>• Repair the WIRES as necessary.</li></ul></li><li>(10) This error will occur during initial set-up when the tanks are filled with water. Before filling the TANKS with water, add 3 ounces of DEVELOPER to the DEVELOPER TANK and 3 ounces of FIXER to the FIXER TANK.</li></ol>

Error Code	Problem Description	Action
Err 033	Fixer Tank Fill Error	<ol style="list-style-type: none"> <li>(1) Check that the FIXER REPLENISHMENT TANK is not empty.</li> <li>(2) Check that the DRAIN VALVE is closed.</li> <li>(3) Check that the REPLENISHMENT HOSE is straight.</li> <li>(4) Check that the REPLENISHMENT CONTROL VALVE is in the "Replenish Check" position.</li> <li>(5) Check that the AC side SOLID STATE RELAY U4 is not open. <ul style="list-style-type: none"> <li>• Install a new SOLID STATE RELAY U4, if necessary.</li> </ul> </li> <li>(6) Check that there is a control signal from the 500 CIRCUIT BOARD. <ul style="list-style-type: none"> <li>• Install a new 500 CIRCUIT BOARD, if necessary.</li> </ul> </li> <li>(7) Check that the PUMP is operating. <ul style="list-style-type: none"> <li>• Repair it or install a new PUMP, if necessary.</li> </ul> </li> <li>(8) Check that the POPPET VALVE in the PUMP is not broken or dirty. <ul style="list-style-type: none"> <li>• Clean it or install a new VALVE, if necessary.</li> </ul> </li> <li>(9) Check that the LEVEL PROBES are not open. <ul style="list-style-type: none"> <li>• Repair them or install new PROBES, if necessary.</li> </ul> </li> <li>(10) This error will occur during initial set-up when the tanks are filled with water. Before filling the TANKS with water, add 3 ounces of DEVELOPER to the DEVELOPER TANK and 3 ounces of FIXER to the FIXER TANK.</li> </ol>
Err 034	Unable to Determine Developer Temperature	<ol style="list-style-type: none"> <li>(1) Check that the DEVELOPER THERMISTOR is not open or has not shorted.</li> <li>(2) Check that the DEVELOPER THERMISTOR resistance at 25°C (77°F) is approximately 10k ohms. <ul style="list-style-type: none"> <li>• Install a new DEVELOPER THERMISTOR, if necessary.</li> </ul> </li> <li>(3) Check that the DEVELOPER THERMISTOR CONNECTORS P/J 46, P/J 12, and P/J 503 are firmly connected. <ul style="list-style-type: none"> <li>• Repair the PINS on the CONNECTORS or install new CONNECTORS, if necessary.</li> </ul> </li> <li>(4) Check that the DEVELOPER is recirculating.</li> <li>(5) Check that nothing is covering the WASH TANK DRAIN and affecting the cooling system.</li> <li>(6) See Error 037 and Error 038 Actions.</li> </ol>
Err 035	Unable to Determine Fixer Temperature	<ol style="list-style-type: none"> <li>(1) Check that the FIXER THERMISTOR is not open or has not shorted.</li> <li>(2) Check that the FIXER THERMISTOR resistance at 25°C (77°F) is approximately 10k ohms. <ul style="list-style-type: none"> <li>• Install a new FIXER THERMISTOR, if necessary.</li> </ul> </li> <li>(3) Check that the FIXER THERMISTOR CONNECTORS P/J 44, P/J 13, and P/J 503 are firmly connected. <ul style="list-style-type: none"> <li>• Repair the PINS on the CONNECTORS or install new CONNECTORS, if necessary.</li> </ul> </li> <li>(4) Check that the FIXER is recirculating.</li> <li>(5) See Error 039 Actions.</li> </ol>

Error Code	Problem Description	Action
Err 036	Unable to Determine Dryer Temperature	<ol style="list-style-type: none"> <li>(1) Check that the DRYER THERMISTOR is not open or has not shorted. <ul style="list-style-type: none"> <li>• Check that the DRYER THERMISTOR resistance at 25°C (77°F) is approximately 10k ohms.</li> <li>• Install a new DRYER THERMISTOR, if necessary.</li> </ul> </li> <li>(2) Check that the DRYER THERMISTOR CONNECTORS P/J 45, P/J 17, and P/J 503 are firmly connected. <ul style="list-style-type: none"> <li>• Repair the PINS on the CONNECTORS or install new CONNECTORS, if necessary.</li> </ul> </li> <li>(3) Check that there is air flow. <ul style="list-style-type: none"> <li>• Repair the DRYER BLOWER MOTOR, if necessary.</li> </ul> </li> <li>(4) Check that LED K501 on the 500 CIRCUIT BOARD is lit. <ul style="list-style-type: none"> <li>• Replace the 500 CIRCUIT BOARD, if necessary.</li> </ul> </li> <li>(5) Check that DRYER HEATER AIRFLOW INTERLOCK, JUMPER E3, is positioned correctly on the 500 CIRCUIT BOARD. See Mod. 1 for more information.</li> <li>(6) Check if OVERTEMP THERMOSTAT S7 (manual reset) is open.</li> <li>(7) Check if there is a sheet of film in front of the DRYER SCREEN. <ul style="list-style-type: none"> <li>• Check if the DRIVE BELT is loose. Adjust the position of the MOTOR or replace the BELT, if necessary.</li> <li>• Check if the SETSCREW on the DRYER BLOWER MOTOR PULLEY is loose.</li> <li>• Check if the SETSCREW on the DRYER BLOWER PULLEY is loose.</li> <li>• Once the cause is determined, reset the OVERTEMP THERMOSTAT S7.</li> <li>• Reset the processor by deenergizing and then energizing it.</li> </ul> </li> <li>(8) Measure the incoming supply voltage and make sure that the TRANSFORMER JUMPERS are correct for the voltage measured.</li> <li>(9) See Error 040 Actions.</li> </ol>



Error Code	Problem Description	Action
Err 037	Loss of Developer Heating Ability	<ol style="list-style-type: none"> <li>(1) Check that the DEVELOPER HEATER R3 is not open.</li> <li>(2) Check that the DEVELOPER HEATER RESISTANCE at 25°C (77°F) is less than 100 ohms. <ul style="list-style-type: none"> <li>• Install a new DEVELOPER HEATER R3, if necessary.</li> </ul> </li> <li>(3) Check that the AC side of SOLID STATE RELAY U2 is not open. <ul style="list-style-type: none"> <li>• Install a new SOLID STATE RELAY U2, if necessary.</li> </ul> </li> <li>(4) Check that the 500 CIRCUIT BOARD is providing a 5 Volt dc signal to SOLID STATE RELAY U5 at TERMINALS 3 and 4. <ul style="list-style-type: none"> <li>• Remove and keep the EPROMS from the 500 CIRCUIT BOARD, and install a new 500 CIRCUIT BOARD, if necessary.</li> </ul> </li> <li>(5) Check that the DEVELOPER HEAT EXCHANGER COVER is correctly installed.</li> <li>(6) See Error 034 and Error 038 Actions.</li> </ol>
Err 038	Loss of Developer Cooling Ability	<ol style="list-style-type: none"> <li>(1) Check that the DEVELOPER COOLING SOLENOID L2 COIL is not open. <ul style="list-style-type: none"> <li>• Install a new SOLENOID L2, if necessary.</li> </ul> </li> <li>(2) Check that the A1 POWER SUPPLY is providing 24 Volt dc to the L2 COIL.</li> <li>(3) Check that the COOLING LOOP in the DEVELOPER TANK is not blocked. <ul style="list-style-type: none"> <li>• Clean the COOLING LOOP thoroughly, if necessary.</li> </ul> </li> <li>(4) Check that SOLENOID L2 is not blocked. <ul style="list-style-type: none"> <li>• Disassemble and clean SOLENOID L2, if necessary.</li> </ul> </li> <li>(5) Check that the WASH TANK is not empty. <ul style="list-style-type: none"> <li>• Check SOLENOID L1 at the WASH WATER INPUT, if necessary.</li> </ul> </li> <li>(6) Check that the INCOMING WATER SUPPLY to the processor is supplying water.</li> <li>(7) Check that the incoming water temperature is at least 5°F below the DEVELOPER set temperature and is between 4° and 32°C (40° and 90°F).</li> <li>(8) Check the DEVELOPER HEAT EXCHANGER COVER is correctly installed.</li> <li>(9) Check that the QUICK DISCONNECT is connected.</li> <li>(10) See Error 034 and Error 037 Actions.</li> </ol>

Error Code	Problem Description	Action
Err 039	Loss of Fixer Heating Ability	<ol style="list-style-type: none"> <li>(1) Check that the FIXER HEATER R4 is not open.</li> <li>(2) Check that the FIXER HEATER RESISTANCE at 25°C (77°F) is less than 100 ohms. <ul style="list-style-type: none"> <li>• Install a new FIXER HEATER R4, if necessary.</li> </ul> </li> <li>(3) Check that the AC side of SOLID STATE RELAY U5 is not open. <ul style="list-style-type: none"> <li>• Install a new SOLID STATE RELAY U5, if necessary.</li> </ul> </li> <li>(4) Check that the 500 CIRCUIT BOARD is providing a 5 Volt dc signal to SOLID STATE RELAY U5 at TERMINALS 3 and 4. <ul style="list-style-type: none"> <li>• Remove and keep the EPROMS from the 500 CIRCUIT BOARD, and install a new 500 CIRCUIT BOARD, if necessary.</li> </ul> </li> <li>(5) Check if the WATER INLET SCREEN or INLET FILTERS at SOLENOID L1 are blocked or dirty. <ul style="list-style-type: none"> <li>• Install a new SCREEN or new FILTERS, if necessary.</li> </ul> </li> <li>(6) See Error 035 Actions.</li> </ol>
Err 040	Inoperative Dryer	<ol style="list-style-type: none"> <li>(1) Reset the manual OVERTEMP THERMOSTAT.</li> <li>(2) Check that the DRYER HEATER is not open.</li> <li>(3) Check that at 25°C (77°F) the HEATER RESISTANCE of the 2 HEATERS connected in parallel is 8 ohms. <ul style="list-style-type: none"> <li>• Install a new DRYER HEATER, if necessary.</li> </ul> </li> <li>(4) Check that the AC side of SOLID STATE RELAY U1 is not open. <ul style="list-style-type: none"> <li>• Install a new SOLID STATE RELAY U1, if necessary.</li> </ul> </li> <li>(5) Check that the 500 CIRCUIT BOARD is providing a 5 volt dc signal to SOLID STATE RELAY U5. <ul style="list-style-type: none"> <li>• Remove and keep the EPROMS from the 500 CIRCUIT BOARD, and install a new 500 CIRCUIT BOARD, if necessary.</li> </ul> </li> <li>(6) Check that the DRYER DRIVE BELT is installed and not slipping.</li> <li>(7) Check if the K502 LED on the 500 CIRCUIT BOARD is lit, and if the DRYER BLOWER MOTOR is receiving power. <ul style="list-style-type: none"> <li>• Replace the 500 CIRCUIT BOARD, if necessary.</li> </ul> </li> <li>(8) Check if JUMPER E3 is installed.</li> <li>(9) See Error 036 Actions.</li> </ol>

Error Code	Problem Description	Action
Err 041	Loss of Transport Speed Control	<p>(1) After the processor spends 2 minutes in this condition, the error automatically increases to an 004 error condition.</p> <p>(2) Check that the Yellow LED CR19 on the 500 CIRCUIT BOARD is lit.</p> <ul style="list-style-type: none"> <li>• If necessary, check for 24 Volts dc from the QUAD POWER SUPPLY.</li> </ul> <p>(3) Check that the Red LED on the DC MOTOR CONTROLLER CIRCUIT BOARD is lit.</p> <ul style="list-style-type: none"> <li>• If necessary, check for 24 Volts dc into and out of the 400 CIRCUIT BOARD.</li> <li>• If 24 Volts dc is on the input to the 400 CIRCUIT BOARD, but not at the output, replace the 400 CIRCUIT BOARD.</li> <li>• Check the current at FUSE F2 at the ELECTRICAL BOX. If the current is 2½ amps, find and correct the mechanical problem in the transport system of the processor.</li> <li>• Check if the voltage from the 400 CIRCUIT BOARD to the DC MOTOR CONTROLLER is 0. If the voltage is 0, install a new 400 CIRCUIT BOARD. If the voltage is &gt; 0 volts, but &lt; 24 volts, find and correct the mechanical problem in the transport system of the processor.</li> <li>• If 24 Volts dc is <b>not</b> on the input to the 400 CIRCUIT BOARD, check for 24 Volts dc at the 500 CIRCUIT BOARD CONNECTOR P/J 502-22 (+), and at TB 5-2 (-). If 24 Volts dc is present, replace FUSE F2.</li> </ul> <p>(4) Check if CONNECTOR P/J 502 is correctly positioned on the 500 CIRCUIT BOARD.</p> <p>(5) Check the analog voltage to the MOTOR CONTROLLER A2 at TERMINALS #6 (+) and #4 (-):</p> <ul style="list-style-type: none"> <li>• Extended Speed: Approximately 2.0 Volts dc</li> <li>• Standard Speed: Approximately 3.2 Volts dc</li> <li>• Rapid Speed: Approximately 4.2 Volts dc</li> <li>• K/RA Speed: Approximately 5.4 Volts dc</li> <li>• If the TRANSPORT is running slow, the MICROPROCESSOR will increase these voltages approximately 25 mV every second. Once 6 Volts dc is reached, the MICROPROCESSOR will shut off these voltages. If this happens, check for mechanical problems.</li> <li>• If the voltages are 0, check the wiring and connector for opens or shorts. If none, the problem is the MOTOR CONTROLLER A2 or the 500 CIRCUIT BOARD. NOTE: These voltages and currents should be measured before 20 seconds has passed after the cycle was selected, because the MICROPROCESSOR will shut down if it thinks that the correct speed has not been attained.</li> </ul> <p>(6) See Error 004 Actions.</p>

<b>Error Code</b>	<b>Problem Description</b>	<b>Action</b>
Err 042	Loss of Communication between the Film Feeder and the Microprocessor	(1) Check that the CABLE connections between the FILM FEEDER and the processor are not loose. (2) Check that the CABLE connections between the 200 Circuit Board and the 500 Circuit Board are not loose.
Err 043	Static Random Access Memory Battery Failure	<ul style="list-style-type: none"> <li>• Replace the 500 CIRCUIT BOARD.</li> </ul>
Err 044	Display Random Access Memory Error	<ul style="list-style-type: none"> <li>• Install a new 300 CIRCUIT BOARD.</li> <li>• Check that the CONNECTORS between the 300 CIRCUIT BOARD and the 500 CIRCUIT BOARD, including the CABLE inside the ELECTRICAL BOX are not loose or broken.</li> <li>• Install new CONNECTORS, if necessary.</li> </ul>
Err 045	Display Communication Link Error	<ul style="list-style-type: none"> <li>• Check that the CONNECTORS between the 300 CIRCUIT BOARD and the 500 CIRCUIT BOARD, including the CABLE inside the ELECTRICAL BOX are not loose or broken.</li> <li>• Install new CONNECTORS, if necessary.</li> </ul>

## Warnings

Error Code	Problem Description	Action
Err 128	Cover Not in place	<ul style="list-style-type: none"> <li>• Install the TOP COVER.</li> <li>• Check if SWITCH S6 is operating correctly.</li> <li>• Check if CONNECTORS P/J 29, located below SWITCH 6; P/J 15, located on the back of the ELECTRICAL BOX; and P/J 505, located on the 500 CIRCUIT BOARD are connected.</li> </ul>
Err 129	Tank Fill Mode	<ul style="list-style-type: none"> <li>• No action needed.</li> </ul>
Err 130	Replenisher Pumps Disabled	<ul style="list-style-type: none"> <li>• Using the keypad, select either Automatic or Flooded Replenishment to enable the REPLENISHER PUMPS.</li> </ul>
Err 132	Developer Under Set Temperature	<ul style="list-style-type: none"> <li>• No action needed.</li> <li>• This error will clear automatically when the DEVELOPER reaches the set-point temperature.</li> </ul>
Err 133	Developer Over Set Temperature	<ul style="list-style-type: none"> <li>• No action needed.</li> <li>• This error will clear automatically when the DEVELOPER reaches the set-point temperature.</li> </ul>
Err 134	Dryer Under Set Temperature	<ul style="list-style-type: none"> <li>• This error will clear automatically when the DRYER temperature reaches the set-point temperature.</li> </ul>
Err 135	Developer Replenishment Warning	<ol style="list-style-type: none"> <li>(1) Check that the DEVELOPER REPLENISHMENT TANK is not empty.</li> <li>(2) Check that the DEVELOPER REPLENISHMENT HOSES are straight.</li> </ol>
Err 136	Fixer Replenishment Warning	<ol style="list-style-type: none"> <li>(1) Check that the FIXER REPLENISHMENT TANK is not empty.</li> <li>(2) Check that the FIXER REPLENISHMENT HOSES are straight.</li> </ol>
Err 137	LED Error on the 5600 Circuit Board	<ol style="list-style-type: none"> <li>(1) Check that there is no dirt on the PROTECTIVE COVER for the 5600 CIRCUIT BOARD.</li> <li>(2) Reset the processor by deenergizing and then energizing it.</li> <li>(3) If the error continues, call for service.</li> </ol>
Err 138	Invalid Film Accumulator Data	<ul style="list-style-type: none"> <li>• Verify that the software in the FILM ACCUMULATOR is compatible with the version of software on the 500 CIRCUIT BOARD. See the Service Bulletins and Newsletters.</li> </ul>

## Mechanical Diagnostics

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### Problem — Transport Failure

<b>Film Feeding Action</b>	[1]	Make sure you feed only one sheet of film at a time. Make sure you do not feed the next sheet of film until you have received the film feed signal. If you do not receive the film feed signal, refer the difficulty to qualified personnel.
	[2]	Make sure you feed 10 x 10 cm films diagonally if they fail to transport reliably.
<b>Replenishment Action</b>	[3]	Check that the DRAIN VALVES are completely closed. Check that the PROCESSOR TANKS are full.
	[4]	Change any chemicals that were not mixed correctly, are exhausted, or are contaminated. When mixing fresh chemicals follow the recommendations below. <ul style="list-style-type: none"><li>• Mix a 2 week supply of DEVELOPER REPLENISHER.</li><li>• Always use a SPLASH GUARD and RACK DRIP TRAY when removing the FIXER RACK from the processor to prevent contaminating the DEVELOPER.</li><li>• Mix all chemicals and solutions as directed.</li></ul>
	[5]	Change the DEVELOPER FILTER if it is clogged or dirty.
	[6]	Check that the REPLENISHER RATES are set for correct replenishment.
	[7]	Fill the REPLENISHMENT TANKS if the solution levels are low.
<b>Recirculation Action</b>	[8]	Check that the ORIFICE in the DEVELOPER and the FIXER RECIRCULATION HOSE is not plugged. Install a new DEVELOPER FILTER.
<b>Rack and Crossover Action</b>	[9]	Check that all RACKS and CROSSOVERS are in the correct position.
	[10]	If incoming wash water is dirty, clean the WASH RACK and WASH TANK thoroughly. <ul style="list-style-type: none"><li>• Clean any bacterial growth in the WASH TANK with a mild solution of chlorine bleach. Use 60 mL (2 fluid ounces) of bleach per 3.8 L (1 gallon) of water. Wipe the TANK with a soft sponge that will not scratch the surface of the TANK.</li></ul>
	[11]	Check that the TURNAROUND ASSEMBLY is correctly adjusted. Make sure that the TURNAROUNDS are square with the RACK.

<b>Roller Action</b>	<b>[12]</b>	Make sure that all ROLLERS are correctly positioned and are rotating freely.
	<b>[13]</b>	Make sure that all ROLLER GEARS, SPROCKETS, and IDLERS are engaged.
	<b>[14]</b>	If any ROLLERS, especially the TURNAROUND ROLLERS, are broken or have worn GUDGEONS, remove them and install new ones.
	<b>[15]</b>	If any BEARINGS do not allow the TURNAROUND ROLLERS to rotate correctly, remove them and install new ones.
	<b>[16]</b>	Adjust the RACK CHAIN so that ROLLERS do not hesitate and the CHAIN does not jump. <b>Lower and raise the TURNAROUND ASSEMBLY squarely when making the adjustment.</b>
<b>Dryer Action</b>	<b>[17]</b>	Check that the DRYER DRIVE BELT is straight and is positioned on the center of the PULLEY.
	<b>[18]</b>	Check that the DRYER AIR TUBES are in the correct positions.
	<b>[19]</b>	Adjust the DRYER TEMPERATURE CONTROL SETTING to the <b>lowest</b> possible temperature that still allows good drying.
	<b>[20]</b>	Make sure that the EXHAUST FAN is operating.
<b>Miscellaneous Action</b>	<b>[21]</b>	Check that the TOP COVER and ACCESS PANELS are installed on the processor.
	<b>[22]</b>	Check that light does not leak through the LIGHT-TIGHT GASKET.
	<b>[23]</b>	If experiencing problems when the solution temperature is low, check that the TEMPERATURE LOCKOUT is disabled.

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## Problem — Surface Artifacts

Replenishment Action	[1]	Check that the REPLENISHER RATES are set for correct replenishment. Check that: <ul style="list-style-type: none"><li>• the TUBING of the REPLENISHMENT SYSTEM is straight</li><li>• the PUMP is operating</li><li>• the DETECTOR SWITCH is operating.</li></ul>
	[2]	Change any chemicals that were not mixed correctly, that are exhausted, or are contaminated. When mixing fresh chemicals follow the recommendations below. <ul style="list-style-type: none"><li>• Mix a 2 week supply of DEVELOPER REPLENISHER.</li><li>• Always use a SPLASH GUARD and RACK DRIP TRAY when removing the FIXER RACK from the processor to prevent contaminating the DEVELOPER.</li><li>• Mix all chemicals and solutions as directed.</li></ul>
	[3]	Fill the REPLENISHMENT TANKS if the solution levels are low.
	[4]	Change the DEVELOPER FILTER if it is clogged or dirty.
Rack and Crossover Action	[5]	If incoming wash water is dirty, clean the WASH RACK and WASH TANK thoroughly. <ul style="list-style-type: none"><li>• Clean any bacterial growth in the WASH TANK with a mild solution of chlorine bleach. Use 60 mL (2 fluid ounces) of bleach per 3.8 L (1 gallon) of water. Wipe the TANK with a soft sponge that will not scratch the surface of the TANK.</li></ul>
	[6]	Make sure that the surface of all the ROLLERS is clean and smooth, especially in the DEVELOPER TURNAROUND.
Roller Action	[7]	Remove any buildup of debris from the DETECTOR ROLLERS.
	[8]	Make sure that all ROLLERS are correctly positioned and are rotating freely.
	[9]	Make sure that all ROLLER GEARS, SPROCKETS, and IDLERS are engaged.
	[10]	Replace any ROLLERS with broken or worn GUDGEONS, especially the TURNAROUND ROLLERS.
	[11]	Replace any BEARINGS which do not allow the TURNAROUND ROLLERS to rotate correctly.
	[12]	Adjust the RACK CHAIN so that ROLLERS do not hesitate and the CHAIN does not jump. <b>Lower and raise the TURNAROUND ASSEMBLY squarely when making the adjustment</b>



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<b>Dryer Action</b>	<b>[13]</b> Remove any dirt from the DRYER AIR TUBES and from within the SLOTS in the DRYER AIR TUBES. Use a BOTTLE BRUSH to clean the AIR TUBES. Rinse the AIR TUBES with water.
	<b>[14]</b> Adjust the DRYER TEMPERATURE CONTROL SETTING to the <b>lowest</b> possible temperature that still allows good drying. If you set the DRYER TEMPERATURE CONTROL SETTING too low, the O-RINGS may cause film artifacts which may look like scratches with a positive density.
	<b>[15]</b> 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.

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<b>Miscellaneous Action</b>	<b>[16]</b> Remove any buildup of debris from the FEED TRAY.
	<b>[17]</b> Check that the correct films are being processed for the chemistry in use.

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## Problem — Abnormal Film Densities

Film Feeding Action	[1]	Make sure you feed only compatible films.
Replenishment Action	[2]	Change any chemicals that were not mixed correctly, that are exhausted, or are contaminated. When mixing fresh chemicals follow the recommendations below. <ul style="list-style-type: none"><li>• Mix a 2 week supply of DEVELOPER REPLENISHER.</li><li>• Always use a SPLASH GUARD and RACK DRIP TRAY when removing the FIXER RACK to prevent contaminating the DEVELOPER.</li><li>• Mix all chemicals and solutions as directed.</li></ul>
	[3]	Fill the REPLENISHMENT TANKS if solution levels are low.
	[4]	Change the DEVELOPER FILTER if it is clogged or dirty.
	[5]	Check that the REPLENISHER RATES are set for correct replenishment.
Recirculation Action	[6]	With the processor energized, check for movement of the solutions at the surface of the PROCESSOR TANKS. Movement indicates recirculation. If no movement is observed, check that: <ul style="list-style-type: none"><li>• the TUBING for the RECIRCULATION SYSTEM is straight</li><li>• the PUMP is operating</li><li>• the DEVELOPER FILTER is correctly positioned.</li></ul>
	[7]	Check that the ORIFICE in the DEVELOPER and the FIXER RECIRCULATION HOSE is not plugged.
	[8]	Install a new DEVELOPER FILTER.
Miscellaneous Action	[9]	<b><i>Check ambient water temperature. The water temperature must be between 4° and 32° C (40° and 90° F).</i></b>
	[10]	If using a SAFELIGHT, check that the correct BULB and SAFELIGHT FILTER are in the SAFELIGHT RECEPTACLE and at the correct distance from the FEED TRAY and work surface.
	[11]	Check that the TOP COVER and ACCESS PANELS are installed on the processor.
	[12]	Check that light does not leak through the LIGHT-TIGHT GASKET.
	[13]	If the films are fogging, reduce the intensity of the Feed-End Display Panel.

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## Problem — Wet Films

<b>Film Feeding Action</b>	<b>[1]</b>	Make sure you feed only compatible films.
<b>Replenishment Action</b>	<b>[2]</b>	<p>Change any chemicals that were not mixed correctly, are exhausted, or are contaminated.</p> <p>When mixing fresh chemicals follow the recommendations below.</p> <ul style="list-style-type: none"><li>• Mix a 2 week supply of DEVELOPER REPLENISHER.</li><li>• Always use a SPLASH GUARD and RACK DRIP TRAY when removing the FIXER RACK from the processor to prevent contaminating the DEVELOPER.</li><li>• Mix all chemicals and solutions as directed.</li></ul>
	<b>[3]</b>	Fill the REPLENISHMENT TANKS if solution levels are low.
	<b>[4]</b>	Change the DEVELOPER FILTER if it is clogged or dirty.
	<b>[5]</b>	Check that the REPLENISHER RATES are set for correct replenishment.
<b>Recirculation Action</b>	<b>[6]</b>	With the processor energized, check for movement of the solutions at the surface of the PROCESSOR TANKS. Movement indicates recirculation. If no movement is observed, check the RECIRCULATION SYSTEM for TUBING kinks, PUMP failure, and DEVELOPER FILTER misplacement.
<b>Dryer Action</b>	<b>[7]</b>	Make sure that the DRYER AIR TUBES are in their correct positions.
	<b>[8]</b>	Remove any dirt from the DRYER AIR TUBES and from within the SLOTS in the DRYER AIR TUBES. Use a BOTTLE BRUSH to clean the AIR TUBES. Rinse the AIR TUBES with water.
	<b>[9]</b>	Adjust the DRYER TEMPERATURE CONTROL SETTING to the <b>lowest</b> possible temperature that still allows good drying.
	<b>[10]</b>	Check that the DRYER AIR EXHAUST is free from any obstruction and is installed according to specifications in the Installation Instructions.
	<b>[11]</b>	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.
	<b>[12]</b>	Check that the DRYER OVER TEMPERATURE SWITCH is depressed.

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## Problem — Solution Levels

### Replenishment Action

- [1] Check that the REPLENISHER RATES are set for correct replenishment.  
Check that:
  - TUBING of the REPLENISHMENT SYSTEM is straight
  - the PUMP is operating
  - the DETECTOR SWITCH is operating.
- [2] Change any chemicals that were not mixed correctly, are exhausted, or are contaminated.  
When mixing fresh chemicals follow the recommendations below.
  - Mix a 2 week supply of DEVELOPER REPLENISHER.
  - Always use a SPLASH GUARD and RACK DRIP TRAY when removing the FIXER RACK from the processor to prevent contaminating the DEVELOPER.
  - Mix all chemicals and solutions as directed.
- [3] Fill the REPLENISHMENT TANKS if solution levels are low.
- [4] Change the DEVELOPER FILTER if it is clogged or dirty.
- [5] Check that the POPPET SEATS are not dirty or distorted and preventing correct replenishment. Have qualified personnel clean or replace them if necessary.
- [6] Check that the LEVEL PROBES are clean and free from build-up.  
Check that all TUBING and HOSES are without kinks and air bubbles.

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## Problem — Overlapping of Films

<b>Replenishment Action</b>	[1]	Change any chemicals that were not mixed correctly, are exhausted, or are contaminated. When mixing fresh chemicals follow the recommendations below. <ul style="list-style-type: none"><li>• Mix a 2 week supply of DEVELOPER REPLENISHER.</li><li>• Always use a SPLASH GUARD and RACK DRIP TRAY when removing the FIXER RACK from the processor to prevent contaminating the DEVELOPER.</li><li>• Mix all chemicals and solutions as directed.</li></ul>
	[2]	Fill the REPLENISHMENT TANKS if solution levels are low.
	[3]	Check that the REPLENISHER RATES are set for correct replenishment.
	[4]	Change the DEVELOPER FILTER if it is clogged or dirty.
<b>Recirculation Action</b>	[5]	Check that the ORIFICE in the DEVELOPER and the FIXER RECIRCULATION HOSE is not plugged.
	[6]	Install a new DEVELOPER FILTER.
<b>Rack and Crossover Action</b>	[7]	Make sure that all RACKS and CROSSOVERS are in the correct position.
	[8]	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 the WASH TANK with a soft sponge that will not scratch the surface of the TANK.
	[9]	Check that the TURNAROUND ASSEMBLY is correctly adjusted. Make sure that the TURNAROUNDS are square with the RACK.
<b>Dryer Action</b>	[10]	Check that the DRYER DRIVE BELT is straight and positioned on the center of the PULLEY.
<b>Miscellaneous Action</b>	[11]	Check the time delay. For all transport speeds, the buzzer should sound once the film has advanced 3 inches into the processor.
	[12]	If the processor is used with a Multiloader 700 and the processor is operating in Extended Cycle, films may overlap. Make sure that the Multiloader 700 has 3.1 version of software; set JUMPER A9 on the A9 BOARD for ME3; and set the processor's transport speed parameter to 28.

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**Health Sciences Division**

