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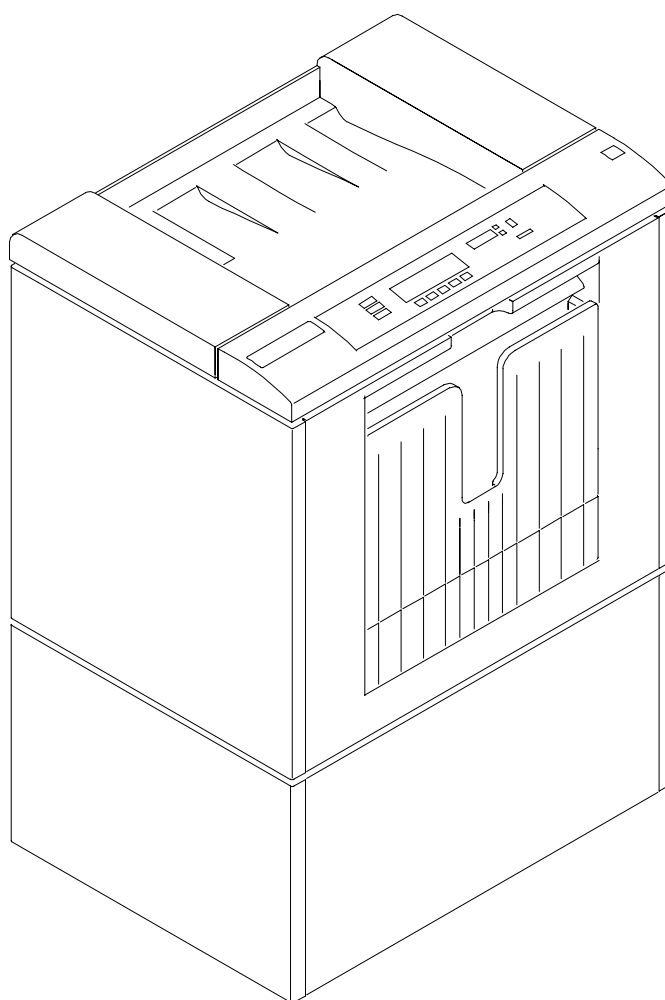
Supersedes 636722

April 1991

# **DIAGNOSTICS**

**for the**

## ***Kodak X-Omat 270 RA PROCESSOR***



H104\_0107DA

#### 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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## INTRODUCTION AND DEFINITIONS

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### Introduction

- The 500 CIRCUIT BOARD monitors the Processor functions during normal operation, continuously checking for any errors. When an error is found, an error code is displayed on the display panel.
- Error codes are listed by order of priority.
- The lower the error code number, the higher its 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.
- When the higher priority error code is corrected, the next priority error code will be displayed on the display panel.
- In addition, all errors are stored in an error log on the 500 CIRCUIT BOARD. This error log, accessible with the Portable Computer and appropriate software, will display how many times each error has occurred.
- Error codes are divided into 3 categories: Fatal, Non-Fatal, and Warning.

### NOTE

When errors occur, certain components may be disabled by the Microprocessor Circuit Board. Use the Portable Computer and the diagnostic tests to troubleshoot the components.

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### Fatal Errors

A Fatal Error is an error that can cause a hazardous situation to develop if the Processor is allowed to continue running.

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 shut down; 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; then the Processor will shutdown; 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 and should move the CIRCUIT BREAKER CB1 on the Processor to the "O" position and call for service.

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### Non-Fatal Errors

A Non-Fatal Error is an error that does not prevent the Processor from accepting film but that, in most cases, cannot be corrected by the operator. The Processor will continue to operate, but the image quality may be affected. The Processor will need to be serviced.

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### Warning Errors

A Warning Error is an error that can be corrected by the operator and that normally does not prevent the Processor from accepting film.

The Processor can continue to operate. The error is a temporary condition or one that the operator can correct. Image quality may be affected.

<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>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 the Processor.
	<b>600 Circuit Board</b>	The 600 Circuit Board is a filter on the AC line for the power supply. It is located inside the ELECTRICAL BOX.
	<b>5600 Circuit Board</b>	Universal Film Detector Circuit Board —The 5600 CIRCUIT BOARD is located behind the FEED SHELF. It senses film surface area and sends this information to the 500 CIRCUIT BOARD to control developer and fixer replenishment.

## ERROR CODES

### Fatal Errors

Error Code	Error Description	Possible Malfunction	Action
<b>E001</b>	500 CIRCUIT BOARD	Download the current software again	<ul style="list-style-type: none"> <li>Download new software, <b>or</b></li> <li>Install new U517, U518, U519, and U520 on the 500 CIRCUIT BOARD.</li> </ul>
		500 CIRCUIT BOARD	Install a new 500 CIRCUIT BOARD.
<b>E002</b>	Dryer Over Temperature Greater than 74°C (165°F)	CONNECTORS on the DRYER THERMISTOR	Clean, tighten, or repair the CONNECTORS.
		Incorrect resistance on the DRYER THERMISTOR	Check that the resistance at 25°C (77°F) is approximately 10K ohm. If necessary, install a new DRYER THERMISTOR.
		SOLID STATE RELAY U3 (controls the DRYER HEATER)	Check for correct operation of SOLID STATE RELAY U3. If necessary, install a new SOLID STATE RELAY U3.
<b>E003</b>	Loss of 5600 Circuit Board Data Link	Communication is lost.	Deenergize and then energize the Processor to automatically reset the Processor.
		CONNECTORS P/J5601, P/J508, or P/J5	Tighten the CONNECTORS.
		5600 CIRCUIT BOARD	Install a new 5600 CIRCUIT BOARD.
		500 CIRCUIT BOARD	Install a new 500 CIRCUIT BOARD.
<b>E004</b>	Inoperative Transport	If no feedback pulse is present, see E041.	

Error Code	Error Description	Possible Malfunction	Action
<b>E005</b>	Loss of Dryer Air Flow or Open DRYER OVERTEMPERATURE THERMOSTAT	The DRYER HEATER and DRYER BLOWER will be disabled when this error exists.	
		AIR FLOW SWITCH	Install a new AIR FLOW SWITCH.
		DRYER OVERTEMPERATURE THERMOSTAT	Reset or install, if necessary, a new OVERTEMPERATURE THERMOSTAT. If the OVERTEMPERATURE THERMOSTAT opens again, determine the cause of the overtemperature condition. See E002.
		DRYER BLOWER	Check and, if necessary, install a new: <ul style="list-style-type: none"> <li>• FUSE F1</li> <li>or</li> <li>• DRYER BLOWER</li> </ul>
		RELAY K502 on the 500 CIRCUIT BOARD	Install a new 500 CIRCUIT BOARD.
<b>E006</b>	Initialization Communication Error	This error occurs when the Processor is unable to communicate with the 5600 CIRCUIT BOARD after energizing.	
		CONNECTORS P/J5601, P/J508, or P/J5	Tighten the CONNECTORS.
		5600 CIRCUIT BOARD	Install a new 5600 CIRCUIT BOARD.
		500 CIRCUIT BOARD	Install a new 500 CIRCUIT BOARD.

## Non-Fatal Errors

Error Code	Error Description	Possible Malfunction	Action
E032	Developer Tank Fill	<p>This error will occur:</p> <ul style="list-style-type: none"> <li>• if the DEVELOPER TANK does not fill in 4 minutes in normal operation</li> <li>• if the DEVELOPER TANK does not fill in 15 minutes in the Tank Fill Mode</li> <li>• if the DEVELOPER TANK is empty and the Tank Fill Mode is not selected</li> <li>• if the REPLENISHER TANK is empty or the replenishment line is kinked or has an obstruction.</li> <li>• possibly, during initial installation if the TANKS of the Processor are filled with water. To prevent the error from occurring during initial installation, add 240 mL (8 fl oz) of developer to the DEVELOPER TANK before filling the Processor with water. Using the diagnostics, energize the RECIRCULATION PUMP to circulate the developer and remove any air pockets.</li> </ul>	
		LEVEL PROBES and CONNECTORS	<ul style="list-style-type: none"> <li>• Clean the LEVEL PROBES.</li> <li>• Clean and check the connections for the LEVEL PROBE CONNECTORS.</li> </ul>
		Low solution level in the REPLENISHER TANK	Mix new developer solution.
		An air pocket, kink, or other obstruction in the HOSE	Remove any obstructions in the HOSE between the REPLENISHER TANK and PUMP.
		The DEVELOPER DRAIN VALVE is open.	Close the DEVELOPER DRAIN VALVE.
		SOLID STATE RELAY U2 (controls the DEVELOPER REPLENISHMENT PUMP)	Check for correct operation of SOLID STATE RELAY U2. If necessary, install a new SOLID STATE RELAY U2.
		DEVELOPER REPLENISHMENT PUMP	<ul style="list-style-type: none"> <li>• Check FUSE F1.</li> <li>• Check for correct operation of MOTOR B3.</li> <li>• If necessary, install a new DEVELOPER REPLENISHMENT PUMP.</li> </ul>
		POPPET VALVES in the DEVELOPER REPLENISHMENT PUMP	Clean the POPPET VALVES. If necessary, install new POPPET VALVES.
		500 CIRCUIT BOARD <ul style="list-style-type: none"> <li>• The voltage at SOLID STATE RELAY U2, PINS 3 and 4, is not 5 V DC during replenishment.</li> <li>• The level sense circuit is malfunctioning.</li> </ul>	Install a new 500 CIRCUIT BOARD.

Error Code	Error Description	Possible Malfunction	Action
<b>E033</b>	Fixer Tank Fill	<p>This error will occur:</p> <ul style="list-style-type: none"> <li>• if the FIXER TANK does not fill in 4 minutes in normal operation</li> <li>• if the FIXER TANK does not fill in 15 minutes in the Tank Fill Mode</li> <li>• if the FIXER TANK is empty and the Tank Fill Mode is not selected</li> <li>• if the REPLENISHER TANK is empty.</li> <li>• possibly, during initial setup if the TANKS of the Processor are filled with water</li> </ul> <p>To prevent the error, add 240 mL (8 fl oz) of fixer to the FIXER TANK before filling the Processor with water. Using the diagnostics, energize the RECIRCULATION PUMP to circulate the fixer and remove any air pockets.</p>	
		LEVEL PROBES and CONNECTORS	<ul style="list-style-type: none"> <li>• Clean the LEVEL PROBES.</li> <li>• Clean and check the connections for the LEVEL PROBE CONNECTORS.</li> </ul>
		Low solution level in the REPLENISHER TANK	Mix new fixer solution.
		An air pocket, kink, or other obstruction in the HOSE	Remove any obstructions in the HOSE between the REPLENISHER TANK and PUMP.
		The FIXER DRAIN VALVE is open.	Close the FIXER DRAIN VALVE.
		SOLID STATE RELAY U4 (controls the FIXER REPLENISHMENT PUMP)	Check for correct operation of SOLID STATE RELAY U4. If necessary, install a new SOLID STATE RELAY U4.
		FIXER REPLENISHMENT PUMP	<ul style="list-style-type: none"> <li>• Check FUSE F1.</li> <li>• Check for correct operation of MOTOR B4.</li> <li>• Install a new FIXER REPLENISHMENT PUMP, if necessary.</li> </ul>
		POPPET VALVES in the FIXER REPLENISHMENT PUMP	Clean the POPPET VALVES. If necessary, install new POPPET VALVES.
		500 CIRCUIT BOARD <ul style="list-style-type: none"> <li>• The voltage at SOLID STATE RELAY U4, PINS 3 and 4, is not 5 V DC during replenishment.</li> <li>• The level sense circuit is malfunctioning.</li> </ul>	Install a new 500 CIRCUIT BOARD.



Error Code	Error Description	Possible Malfunction	Action
<b>E034</b>	Unable to Determine Developer Temperature	The DEVELOPER HEATER and DEVELOPER COOLING SOLENOID will be disabled when this error exists.	
		DEVELOPER THERMISTOR: • Is open or shorted • Incorrect resistance	<ul style="list-style-type: none"> <li>• Check that the resistance at 25°C (77°F) is approximately 10k ohms.</li> <li>• If necessary, install a new DEVELOPER THERMISTOR.</li> </ul>
		CONNECTORS on the DEVELOPER THERMISTOR	Clean, tighten, or repair the CONNECTORS.
		500 CIRCUIT BOARD: • Malfunction of the A/D conversion electronics • Precision RESISTOR test failure	Install a new 500 CIRCUIT BOARD.
		Ambient temperature is below 15°C (59°F).	Increase the ambient temperature, or deenergize and then energize the Processor.
		See E037 for additional actions.	
<b>E035</b>	Unable to Determine Fixer Temperature	The FIXER HEATER will be disabled when this error occurs.	
		FIXER THERMISTOR: • Is open or shorted • Incorrect resistance	<ul style="list-style-type: none"> <li>• Check that the resistance at 25°C (77°F) is approximately 10k ohms.</li> <li>• If necessary, install a new FIXER THERMISTOR.</li> </ul>
		CONNECTORS on the FIXER THERMISTOR	Clean, tighten, or repair the CONNECTORS.
		500 CIRCUIT BOARD: • Malfunction of the A/D conversion electronics • Precision RESISTOR test failure	Install a new 500 CIRCUIT BOARD.
		Ambient temperature is below 15°C (59°F).	Increase the ambient temperature, or deenergize and then energize the Processor.
		See E039 for additional actions.	

Error Code	Error Description	Possible Malfunction	Action
<b>E036</b>	Unable to Determine Dryer Temperature	The DRYER HEATER will be disabled when this error occurs.	
		DRYER THERMISTOR: <ul style="list-style-type: none"> <li>• Is open or shorted</li> <li>• Incorrect resistance</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the resistance at 25°C (77°F) is approximately 10k ohms.</li> <li>• If necessary, install a new DRYER THERMISTOR.</li> </ul>
		CONNECTORS on the DRYER THERMISTOR	Clean, tighten, or repair the CONNECTORS. If necessary, install new CONNECTORS
		500 CIRCUIT BOARD: <ul style="list-style-type: none"> <li>• Malfunction of the A/D conversion electronics</li> <li>• Precision RESISTOR test failure</li> </ul>	Install a new 500 CIRCUIT BOARD.
		See E040 for additional actions.	

Error Code	Error Description	Possible Malfunction	Action
<b>E037</b>	Loss of Developer Heating Ability	The DEVELOPER HEATER HR1 has an internal OVERTEMPERATURE THERMOSTAT. When the HEATER is extremely hot, the OVERTEMPERATURE THERMOSTAT opens. Wait for the HEATER to cool, which will allow the THERMOSTAT to reset before you measure the resistance.	
		SOLID STATE RELAY U1 (controls the DEVELOPER HEATER)	Check for correct operation of SOLID STATE RELAY U1. If necessary, install a new SOLID STATE RELAY U1.
		<ul style="list-style-type: none"> <li>DEVELOPER HEATER HR1:</li> <li>Is open</li> <li>Incorrect resistance</li> </ul>	<ul style="list-style-type: none"> <li>Check FUSE F2.</li> <li>Check that the resistance at 25°C (77°F) is approximately 50 ohms.</li> <li>Install a new DEVELOPER HEATER HR1.</li> </ul>
		500 CIRCUIT BOARD: <ul style="list-style-type: none"> <li>The voltage at SOLID STATE RELAY U1, PINS 3 and 4, is not 5 V DC.</li> <li>Malfunction of RELAY K504A.</li> </ul>	<ul style="list-style-type: none"> <li>Check that the K504 LED (DS4) on the 500 CIRCUIT BOARD is illuminated.</li> <li>If necessary, install a new 500 CIRCUIT BOARD.</li> </ul>
		DEVELOPER COOLING SOLENOID L2	<ul style="list-style-type: none"> <li>Check that DEVELOPER COOLING SOLENOID L2 is shutting off developer flow through the HEAT EXCHANGER.</li> <li>If necessary, install a new DEVELOPER COOLING SOLENOID L2.</li> </ul>
		RECIRCULATION PUMP	<ul style="list-style-type: none"> <li>Check FUSE F1.</li> <li>Check for correct operation of MOTOR B5.</li> <li>If necessary, install a new RECIRCULATION PUMP.</li> </ul>
		See E034 for additional actions.	

Error Code	Error Description	Possible Malfunction	Action
<b>E038</b>	Loss of Developer Cooling Ability	No water being supplied to the WASH TANK	Check: <ul style="list-style-type: none"> <li>• WATER INPUT SOLENOID L1</li> <li>• Clean or install, if necessary, a new DEVELOPER COOLING SOLENOID.</li> <li>• If necessary, connect the QUICK DISCONNECT.</li> <li>• Check that the incoming water supply is supplying water. If necessary, install a new FILTER.</li> <li>• Check that the incoming water supply is turned on.</li> </ul>
		Incoming water temperature is too hot.	Lower the water temperature. The wash water must be a minimum of 5.5°C (10°F) below the DEVELOPER TEMPERATURE setpoint.
		HEAT EXCHANGER	Clean obstructions from the HEAT EXCHANGER in the WASH TANK.
		DEVELOPER COOLING SOLENOID L2	Disassemble and clean L2. If necessary, install a new L2.
		A1 POWER SUPPLY	Check that the A1 POWER SUPPLY is providing 24 V DC to TERMINAL 1 on the WATER INPUT SOLENOID L1 and DEVELOPER COOLING SOLENOID L2. If necessary, install a new A1 POWER SUPPLY.
		500 CIRCUIT BOARD not energizing SOLENOIDS L1 or L2	Check that the 500 CIRCUIT BOARD is providing 24 V return to terminal 2 on SOLENOIDS L1 and L2. If necessary install a new 500 CIRCUIT BOARD.
		RECIRCULATION PUMP	Check for correct operation of MOTOR B5. If necessary, install a new RECIRCULATION PUMP.
		Missing WASH TANK CLIP	Install the WASH TANK CLIP.
		See E034 and E037 for additional actions.	

Error Code	Error Description	Possible Malfunction	Action
<b>E039</b>	Loss of Fixer Heating Ability	The FIXER HEATER HR2 has an internal OVERTEMPERATURE THERMOSTAT. When the HEATER is extremely hot, the OVERTEMPERATURE THERMOSTAT opens. Wait for the HEATER to cool, which will allow the THERMOSTAT to reset before you measure the resistance.	
		FIXER HEATER HR2: <ul style="list-style-type: none"> <li>• Is open</li> <li>• Incorrect resistance</li> </ul>	<ul style="list-style-type: none"> <li>• Check FUSE F2.</li> <li>• Check that the resistance at 25°C (77°F) is approximately 50 ohms.</li> <li>• If necessary, install a new FIXER HEATER HR2.</li> </ul>
		SOLID STATE RELAY U5 (controls the FIXER HEATER)	Check for correct operation of SOLID STATE RELAY U5. If necessary, install a new SOLID STATE RELAY U5.
		500 CIRCUIT BOARD: <ul style="list-style-type: none"> <li>• The voltage at SOLID STATE RELAY U5, PINS 3 and 4, is not 5 V DC.</li> <li>• RELAY K504B is malfunctioning.</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the K504 LED (DS4) on the 500 CIRCUIT BOARD is illuminated.</li> <li>• If necessary, install a new 500 CIRCUIT BOARD.</li> </ul>
		RECIRCULATION PUMP	<ul style="list-style-type: none"> <li>• Check FUSE F1.</li> <li>• Check for correct operation of MOTOR B5.</li> <li>• If necessary, install a new RECIRCULATION PUMP.</li> </ul>
		See E035 for additional actions.	

Error Code	Error Description	Possible Malfunction	Action
<b>E040</b>	Inoperative DRYER	SOLID STATE RELAY U3 (controls the DRYER HEATER)	Check for correct operation of SOLID STATE RELAY U3. If necessary, install a new SOLID STATE RELAY U3.
		RELAY K1 (enables the DRYER HEATER)	Check for correct operation of RELAY K1. If necessary, install a new RELAY K1.
		500 CIRCUIT BOARD: <ul style="list-style-type: none"> <li>• Voltage at SOLID STATE RELAY U3, PINS 1 and 2, is not 5 V DC.</li> <li>• RELAY K501 is malfunctioning.</li> </ul>	<ul style="list-style-type: none"> <li>• Check that K501 LED (DS1) on the 500 CIRCUIT BOARD is illuminated.</li> <li>• If necessary, install a new 500 CIRCUIT BOARD.</li> </ul>
		DRYER HEATER: <ul style="list-style-type: none"> <li>• Is open</li> <li>• Incorrect resistance</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the resistance at 25°C (77°F) is approximately 22 ohms.</li> <li>• If necessary, install a new DRYER HEATER.</li> </ul>
		NOTE: This error will also occur if the Processor is operated with the PANELS or the DRYER RACK removed.	
		See E036 for additional actions.	

Error Code	Error Description	Possible Malfunction	Action
<b>E041</b>	<p>Loss of Transport Speed Control.</p> <p>This error occurs when the transport speed is not within <math>\pm 3</math> inches/minute of the setpoint. It will change to E004 if the speed cannot be corrected.</p>	<p>The following items are correct normal operating conditions:</p> <ul style="list-style-type: none"> <li>• The red power LED on the DC MOTOR CONTROLLER is ON.</li> <li>• The supply voltage from the QUAD POWER SUPPLY to the + and - terminals of the DC MOTOR CONTROLLER A2 are 24 V DC.</li> <li>• The control voltage to terminals 4 and 6 on the DC MOTOR CONTROLLER is approximately the following: <ul style="list-style-type: none"> <li>- Extended Speed (2.0 V DC)</li> <li>- Standard Speed (3.2 V DC)</li> <li>- Rapid Speed (4.2 V DC)</li> <li>- K/RA Speed (5.4 V DC)</li> </ul> </li> <li>• Feedback pulses from the DC MOTOR CONTROLLER A2 are present on TP8 on the 500 CIRCUIT BOARD to indicate the speed of the DRIVE MOTOR.</li> </ul> <p>NOTE: If the transport is running slower than the set speed, or if the feedback pulses are not present on TP8 on the 500 CIRCUIT BOARD, the MICROPROCESSOR increases the control voltage approximately 25 mV every second at terminals 4 and 6 on the DC MOTOR CONTROLLER A2. At 6 V DC, the voltage is shut off. If this happens, check for mechanical malfunctions. If the voltage is 0, check that the wiring and CONNECTOR are connected.</p> <p>The voltage should be measured within 20 seconds after the cycle is selected. The MICROPROCESSOR will shutdown if the correct speed has not been attained.</p>	
		Loose Connections	Check all terminal connections on the DC MOTOR CONTROLLER and CONNECTORS A2 P/J1, P/J22, P/J505, and P/J504.
		QUAD POWER SUPPLY	Check that the supply voltages on the + and - terminals of the DC MOTOR CONTROLLER are 24 V DC.
		500 CIRCUIT BOARD	If the control voltage is not correct at terminals 4 and 6 of the DC MOTOR CONTROLLER A2, install a new 500 CIRCUIT BOARD.
		Yellow ALARM LED on the DC MOTOR CONTROLLER A2 is illuminated.	The ALARM LED indicates an internal overtemperature condition in the DC MOTOR CONTROLLER A2. This may be caused by a mechanical problem in the DC DRIVE MOTOR B6 or the transport system of the Processor.
		DC DRIVE MOTOR B6 or DC MOTOR CONTROLLER A2	<ul style="list-style-type: none"> <li>• If the DC DRIVE MOTOR is operating and no pulses occur in TP8 on the 500 CIRCUIT BOARD, check the DC DRIVE MOTOR B6 or the DC MOTOR CONTROLLER A2.</li> <li>• If the supply voltage and the control voltage to the DC MOTOR CONTROLLER A2 are correct, check the DC DRIVE MOTOR B6 or the DC MOTOR CONTROLLER A2.</li> </ul>

Error Code	Error Description	Possible Malfunction	Action
<b>E042</b>	Loss of the Accessory Data Link	Loose CABLE connections	Check and, if necessary, tighten: <ul style="list-style-type: none"> <li>• The CABLE connections between any accessory and the Processor PIC CONNECTOR</li> <li>• The CABLE connections P/J204 and P/J507 between the 200 CIRCUIT BOARD and the 500 CIRCUIT BOARD</li> </ul>
		500 CIRCUIT BOARD	Install a new 500 CIRCUIT BOARD.
		200 CIRCUIT BOARD	Install a new 200 CIRCUIT BOARD.
<b>E044</b>	Display Random Access Memory	CONNECTORS P/J301 or P/J506 between the 300 and the 500 CIRCUIT BOARDS	Clean, tighten, or repair the CONNECTORS. If necessary, install new CONNECTORS.
		300 CIRCUIT BOARD	Install a new 300 CIRCUIT BOARD.
		500 CIRCUIT BOARD	Install a new 500 CIRCUIT BOARD.
<b>E045</b>	Display Communication Link	CONNECTORS P/J301 or P/J506 between the 300 and the 500 CIRCUIT BOARDS	Tighten the connections. If necessary, install new CONNECTORS.
		300 CIRCUIT BOARD	Install a new 300 CIRCUIT BOARD.
		500 CIRCUIT BOARD	Install a new 500 CIRCUIT BOARD.



## Warnings

Error Code	Error Description	Possible Malfunction	Action
<b>E128</b>	Cover Not Closed	TOP COVER is open.	Close the TOP COVER.
		INTERLOCK SWITCH	Check INTERLOCK SWITCH S4. If necessary, install a new INTERLOCK SWITCH.
		CONNECTORS P/J25, P/J3, and P/J505	Clean, tighten, or repair the CONNECTORS. If necessary, install new CONNECTORS.
<b>E129</b>	Tank Fill Mode	None	None. This message will clear automatically.
<b>E130</b>	REPLENISHMENT PUMPS Disabled	None	Using the KEYPAD, select either Automatic or Flooded Replenishment to enable the REPLENISHMENT PUMPS.
<b>E132</b>	Developer Under Set Temperature	None	None. This message will clear automatically when the developer reaches the setpoint temperature.
<b>E133</b>	Developer Over Set Temperature	None	None. This message will clear automatically when the developer reaches the setpoint temperature.
<b>E134</b>	DRYER Under Set Temperature	None	None. This message will clear automatically when the DRYER reaches the setpoint temperature.
<b>E137</b>	LED Error on the 5600 CIRCUIT BOARD	5600 CIRCUIT BOARD	<ul style="list-style-type: none"> <li>• Check that no dirt is on the PROTECTIVE COVER for the 5600 CIRCUIT BOARD.</li> <li>• Reset the Processor by deenergizing and then energizing it.</li> <li>• Install version 2.50 or higher U5612 EEPROM.</li> <li>• Check the 5600 CIRCUIT BOARD with the diagnostics for the Portable Computer.</li> <li>• Install a new 5600 CIRCUIT BOARD, if necessary.</li> </ul>

## MECHANICAL DIAGNOSTICS

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### Problem — Transport Failure

<b>Rack and Crossover Remedies</b>	[1]	Check that all RACKS and CROSSEOVERS are in the correct positions.
	[2]	Check that all RACKS and CROSSEOVERS are seated correctly.
	[3]	Check for squareness of the CROSSEOVERS and RACKS.
	[4]	Check that all RACKS and CROSSEOVERS are cleaned thoroughly. See the Preventive Maintenance section of the Service Manual, Part No. 2B6845.
	[5]	Check that the CROSSEOVER TROUGHS are in the correct positions.
	[6]	Check that the WATER YOKE is installed correctly.
<b>Roller Remedies</b>	[7]	Check that all ROLLERS are correctly positioned and are rotating freely.
	[8]	Check that all GEARS, SPROCKETS, and IDLERS on the ROLLERS are engaged.
	[9]	If any ROLLERS are broken or have worn GUDGEONS, install new ROLLERS.
	[10]	If any BEARINGS are worn, install new BEARINGS.
	[11]	If any SPRINGS or E-RINGS are broken or missing, install new SPRINGS or E-RINGS.
	[12]	Adjust the CHAIN on the RACK so that the ROLLERS do not hesitate and the CHAIN does not jump.
<b>Dryer Remedies</b>	[13]	Check that the DRYER AIR TUBES are in the correct positions.
	[14]	Adjust the DRYER TEMPERATURE CONTROL SETTING to the <b>lowest</b> possible temperature that still allows good drying.
	[15]	Check that the DRYER RACK and the TOP EXIT RACK are seated correctly.
	[16]	Check that the LOCKING TABS are in the correct positions.
	[17]	Check for damage to the DRIVE GEAR on the DRYER RACK, if a film jam has occurred in the DRYER RACK or the TOP EXIT RACK.
<b>Miscellaneous Remedies</b>	[18]	Check that the TOP COVER is closed.

## Problem — Film Artifacts or Abnormal Densities

<b>Replenishment Remedies</b>	[1]	Check that the replenishment rates are set for correct replenishment.
	[2]	Check that: <ul style="list-style-type: none"><li>• The TUBING of the REPLENISHMENT SYSTEM does not have obstructions and is not pinched.</li><li>• The REPLENISHMENT PUMP is operating correctly.</li><li>• HOSE CLAMPS are tight.</li><li>• The LEVEL SENSOR PROBES and SPRING SPADES are clean.</li></ul>
	[3]	Do a replenishment calibration check.
	[4]	Change any chemicals that were not mixed correctly, that are exhausted, or that are contaminated. When mixing fresh chemicals follow these recommendations: <ul style="list-style-type: none"><li>• Mix a maximum of a 2-week supply of DEVELOPER REPLENISHER.</li><li>• Mix all chemicals and solutions as directed.</li><li>• To prevent contaminating the developer, always use a SPLASH GUARD and DRIP TRAY when removing the FIXER RACK from the Processor.</li></ul>
	[5]	Fill the REPLENISHER TANKS if the solution levels are low.
	[6]	Check that the DRAIN VALVES are completely closed. Check that the PROCESSOR TANKS are full.
<b>Recirculation Remedies</b>	[7]	Check that the ORIFICES in the developer and the fixer RECIRCULATION HOSES are not plugged and that they are the correct ORIFICES.
	[8]	Install a new DEVELOPER FILTER.
	[9]	With the Processor energized and the PROCESSOR TANKS full, 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 not obstructed and not pinched.</li><li>• The RECIRCULATION PUMP is operating.</li><li>• The DEVELOPER FILTER is correctly positioned.</li></ul>
<b>Rack and Crossover Remedies</b>	[10]	Check that all RACKS and CROSSEOVERS are in the correct positions.
	[11]	Check that all RACKS and CROSSEOVERS are cleaned thoroughly. See the Preventive Maintenance section of the Service Manual, Part No. 2B6845.
	[12]	Check that the Crossover TROUGHS and the EVAPORATION COVERS are in the correct positions.
	[13]	Check that the WATER YOKE is installed correctly.
	[14]	Check that all RACKS are correctly seated.

<b>Roller Remedies</b>	<b>[15]</b> Check that the surfaces of all ROLLERS are clean and smooth, especially in the DEVELOPER RACK and in the developer and fixer CROSSOVERS.
	<b>[16]</b> Remove any buildup of debris from the DETECTOR ROLLERS.
	<b>[17]</b> Check that the GUIDE SHOES in the CROSSOVERS are clean.
	<b>[18]</b> Check that all ROLLERS are correctly positioned and are rotating freely.
	<b>[19]</b> Check that all GEARS, SPROCKETS, and IDLERS on the ROLLERS are engaged.
	<b>[20]</b> If any ROLLERS are broken or have worn GUDGEONS, install new ROLLERS.
	<b>[21]</b> If any BEARINGS are worn, install new BEARINGS.
	<b>[22]</b> If any SPRINGS or E-RINGS are broken or missing, install new SPRINGS or E-RINGS.
	<b>[23]</b> Adjust the CHAIN on the DRYER RACK so that the ROLLERS do not hesitate and the CHAIN does not jump.
<b>Dryer Remedies</b>	<b>[24]</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>[25]</b> Check that the DRYER AIR TUBES are in the correct positions.
	<b>[26]</b> Adjust the DRYER TEMPERATURE CONTROL SETTING to the <b>lowest</b> possible temperature that still allows good drying.
	<b>[27]</b> If the Processor is used only in the standard or extended cycles, check that all the DRYER AIR TUBES are metal. If not, install the DRYER AIR TUBE CONVERSION KIT, Part No. 1C0990.
<b>Miscellaneous Remedies</b>	<b>[28]</b> <b><i>Check incoming water temperature. The water temperature must be between 4° and 29° C (40° and 85° F).</i></b>
	<b>[29]</b> Check that the TOP COVER is closed and that the ACCESS PANELS are installed on the Processor.
	<b>[30]</b> Check that the wash water is flowing.
	<b>[31]</b> Check that the WET SECTION COVER is in position.
	<b>[32]</b> Check that the ventilation is correctly set and that the EXHAUST HOSE is connected.

## Problem — Wet Films

<b>Film Feeding Remedies</b>	[1]	Make sure you feed only compatible films for the cycle selected.
	[2]	Check for the correct transport speed.
<b>Replenishment Remedies</b>	[3]	Check that the replenishment rates are set for correct replenishment. Check that: <ul style="list-style-type: none"><li>• the TUBING of the replenishment system does not have obstructions and is not pinched</li><li>• the REPLENISHMENT PUMP is operating</li><li>• HOSE CLAMPS are tight.</li></ul>
	[4]	Do a replenishment calibration check.
	[5]	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 maximum of 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>
	[6]	Fill the REPLENISHER TANKS if the solution levels are low.
	[7]	Check that the DRAIN VALVES are completely closed. Check that the PROCESSOR TANKS are full.
	[8]	With the Processor energized and the PROCESSOR TANKS full, 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 of the replenishment system does not have obstructions and is not pinched</li><li>• the REPLENISHMENT PUMP is operating</li><li>• the DEVELOPER FILTER is seated correctly.</li></ul>
	[9]	Check that the DRYER AIR TUBES are in the correct positions.
<b>Dryer Remedies</b>	[10]	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.
	[11]	Increase the DRYER TEMPERATURE, but always adjust the DRYER TEMPERATURE CONTROL SETTING to the <b>lowest</b> possible temperature that still allows good drying for the film being used.
	[12]	Check that the DRYER AIR EXHAUST is free from any obstruction and is installed according to the specifications in the Installation Instructions, Part No. 2B6843.
	[13]	Install 2.50 or higher software, which allows setting of the temperature in 1° increments.
	[14]	Check that the DRYER HEATER is operating.
	[15]	Check that the DRYER RACK and the TOP EXIT RACK are correctly seated.

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**Wash Water  
Remedies**

- [16]** Check that the wash water is flowing.
- [17]** In older Processors that do not have Mod 17 installed, check for correct flow (spray) through the SPRAY BARS. Clean the holes in the SPRAY BARS if necessary. See the Service Manual, Part No. 2B6845.
- [18]** Check that the holes in the CROSSOVER TROUGHS are open. Clean the holes if necessary, to prevent overflow of the wash water and diluting of the developer and fixer.

**Replenishment  
Remedies**

- [1] Check that the replenishment rates are set for correct replenishment.
- [2] Check that:
  - The TUBING of the REPLENISHMENT SYSTEM does not have obstructions and is not pinched.
  - The REPLENISHMENT PUMP is operating.
- [3] Do a replenishment calibration check.
- [4] Fill the REPLENISHER TANKS if solution levels are low.
- [5] Check that the POPPET VALVES are not dirty or distorted and preventing correct replenishment. Have qualified personnel clean the POPPET VALVES or install new ones if necessary.
- [6] Check that the LEVEL SENSOR PROBES and SPRING SPADES are clean and free from build-up.
- [7] Check that all TUBING and HOSES are without kinks and air bubbles.
- [8] Check the DRAIN VALVES for leakage.
- [9] Check that the CROSSOVER TROUGHS are in the correct positions.

**PUBLICATION CHANGE TABLE**

Revision Date	ECO No.	PCN No.	PCN Pub. No.	Affected Pages	Filename	Description
May 1994	2592-265	1	2B6848	All	3059dc_d.txt	Supersedes Diagnostics, Publication No. 636722, dated 4/91. Updates information throughout.

3059DC\_D.txt

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