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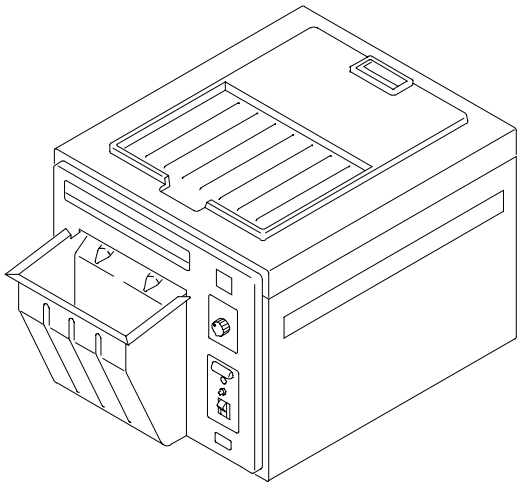
Service Manual

for the

KODAK *M35 and M35A* X-OMAT Processors



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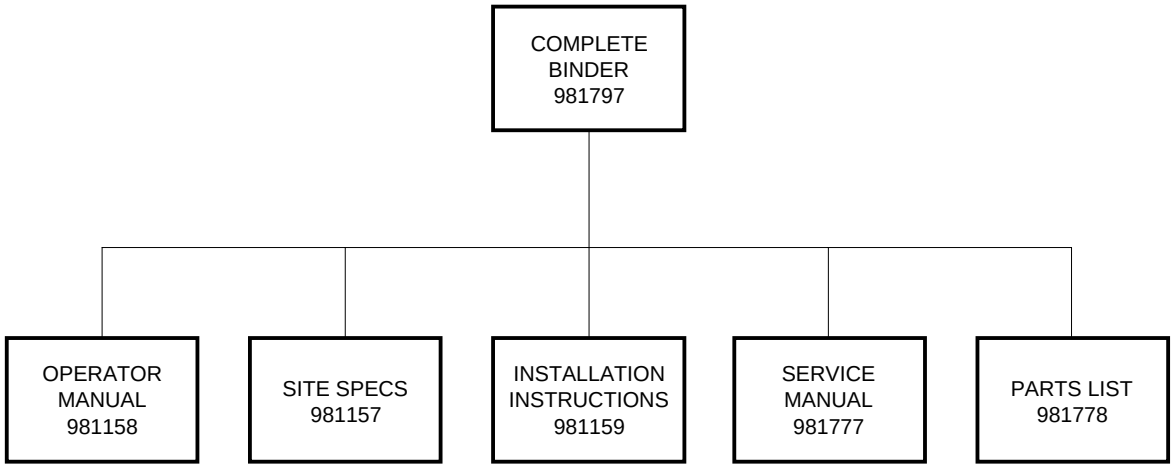
CAUTION

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

Related Publications for the M35 and M35A Processors

This publication is part of a series of instruction books that provide technical support information on the KODAK *M35 and M35A* X-OMAT Processors. It is recommended that these publications be kept in the binder provided. If an individual book is misplaced or destroyed, order another copy from your Eastman Kodak Representative using the Publication Part Numbers below.



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Introduction

Electrostatic Discharge

Overview

ESD--electrostatic discharge--is a primary source of:

- product downtime
- lost productivity
- costly repairs

While one cannot feel a static charge of less than 3,500 volts, as few as 30 volts can damage or destroy essential components in electronic equipment.

Effective ESD control requires following these guidelines.

Personnel Awareness

Everyone within the organization needs to be aware of ESD, because partial ESD control is no ESD control at all. Please note:

- ESD is a primary source of frustrating equipment failures and intermittent malfunctions.
- ESD affects productivity **and** profitability.
- ESD can be controlled.

General Precautions

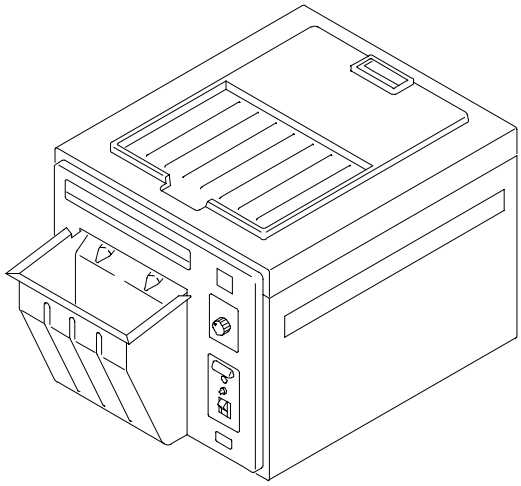
- **Do not** store trash near static-sensitive equipment.
- **Do not** place plastic materials near electronic components. Trash-can liners and styrofoam cups generate static electricity, which can damage or destroy electronic components.

Preventive Measures

- Always look for an ESD warning label before doing any procedure involving static-sensitive components such as circuit boards. All static-sensitive components are marked with bright graphic labels, which frequently include instructions. Follow all label instructions.
- If the work area is carpeted, spray the carpet with an antistatic solution. In low-humidity environments, spray carpets periodically with an antistatic preparation, available at local stores.
- Wear a grounding strap when handling static-sensitive components. Always make certain that the clip remains attached to a properly grounded, unpainted, clean surface.
- Repair static-sensitive components at an ESD-protected work station or use a portable grounding mat. For help in setting up an ESD-protected work station, contact your Kodak representative.
- When moving static-sensitive components from one area to another, insert and transport the components in ESD-protective packaging. Transparent antistatic bags are available from a variety of manufacturers and will help shield components from ESD damage.

Processor Description

The KODAK *M35 and M35A* X-OMAT Processors are designed to process medical x-ray film in either sheets or rolls. This tabletop processor is self-threading and has a 3-rack processing section with a dryer.



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Special Tools

The following special tools are necessary for some of the service procedures in this manual.

- TL-3230 Sealant
- TL-2244 Motor Oil, 1-oz Tube
- TL-2324 Motor Oil, 12-oz Tube
- TL-1481 Potentiometer Adjusting Tool
- 761217 Thermometer

Specifications and Data

Film Sizes

- 10 - 35 cm (4 - 14 in.) width
- 10 cm (4 in.) minimum length
- 4.6 m (15 ft) maximum length

Processor Speed

approximately
76 cm (30 in.) per minute

Control of the Solution Temperature

The temperature of the developer is adjustable from approximately 30 to 46°C (85 to 115°F). The temperature of the fixer is not controlled by adjustment.

Wash Water

The water for washing the film comes from the customer's water supply. The FLOW CONTROL VALVE regulates the usage at approximately 1 litre (¼ gal) per minute.

Dryer

The processor has a roller transport dryer with slotted AIR TUBES. A thermostat controls the temperature from 46 - 65°C (115 - 150°F).

Power Requirements

The **M35 Processor** uses 200, 208, 220, or 240 volts with a single-phase, 2-wire plus earth ground or 220 or 240 volts with a 2-phase, 3-wire plus earth ground and 50/60 Hz.

The **M35A Processor** uses 120 volts and a single-phase, 2-wire plus an earth ground and 50/60 Hz.

Dimensions

Height:	52 cm (20.5 in.)
Width:	67.3 cm (26.5 in.)
Depth:	1.27 metres (50 in.) overall, from the end of the FEED SHELF to the end of the RECEIVING BIN
Weight:	approximately 90 kg (200 pounds) empty

Films and Chemicals

The KODAK *M35 and M35A* X-OMAT Processors accept film that can be processed in KODAK *RP* X-OMAT Chemicals.

The RECIRCULATION PUMP for the developer and the fixer consists of a thermally protected MOTOR that operates two magnetic, centrifugal pumps.

Replenishment Pump

The replenishment system uses a positive displacement BELLOWS PUMP, designed for accurate delivery of replenishment solutions regardless of the solution level in the REPLENISHER TANKS.

Main Drive Motor

The MAIN DRIVE MOTOR is an open-frame gearhead motor with an automatic thermal overload protector.

Blower Motor

The BLOWER MOTOR is equipped with an automatic thermal overload protector.

Capacity of the Tanks with Racks Installed

The developer, fixer, and wash tanks each contain 7.8 litres (2.07 gallons).

Site Specifications

Publication No. 981157 contains the site specifications for the KODAK *M35 and M35A* X-OMAT Processors.

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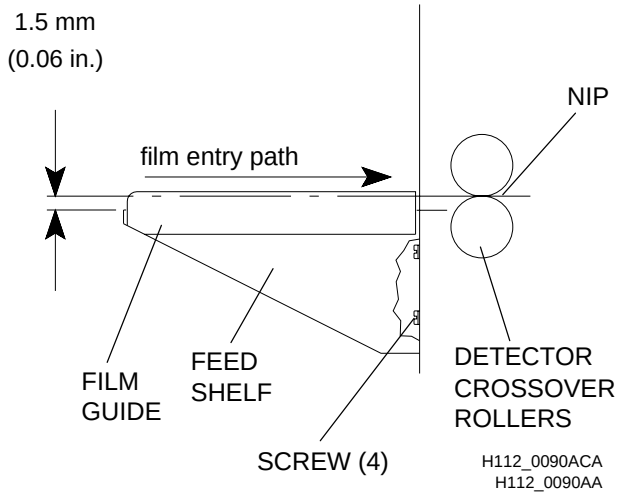
Adjustment of the Feed Shelf

[1] Adjust the height of the FEED SHELF to approximately 1.5 mm (0.06 or 1/16 in.) below the NIP of the DETECTOR CROSSOVER ROLLERS.

- **(a)** Loosen the 4 SCREWS.
- **(b)** Adjust the FEED SHELF for the correct height by moving the FEED SHELF up or down.
- **(c)** Insert a sheet of 35 x 43 cm film into the NIP of the DETECTOR CROSSOVER ROLLERS.

[2] Use the edges of the film to align the FILM GUIDE with the DETECTOR CROSSOVER ROLLERS for squareness.

[3] Tighten the 4 SCREWS.



Replacement of the Protective Material

[1] Remove the 4 SCREWS and the FEED SHELF.

[2] Remove **all** of the existing PROTECTIVE MATERIAL and adhesive from the FEED SHELF.

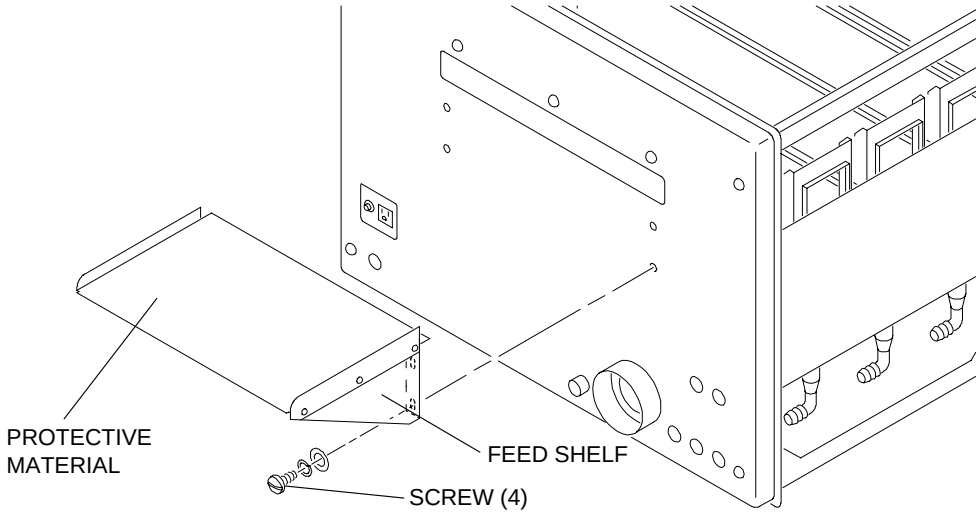
[3] Clean the FEED SHELF with a damp sponge.

IMPORTANT

Be sure the FEED SHELF is dry before installing the PROTECTIVE MATERIAL.

[4] Install the new PROTECTIVE MATERIAL.

[5] Install the FEED SHELF and adjust if necessary. See the above procedure.



Adjustment of the Detector Switches

CAUTION

Moving parts.

[1] Remove the TOP COVER.

[2] Check the DEVELOPER RACK and the DETECTOR CROSSOVER ASSEMBLY for squareness. See pages 2-6 and 2-7.

[3] Install the DEVELOPER RACK and the DETECTOR CROSSOVER ASSEMBLY.

[4] Set the clearance between the MAGNET and the DETECTOR SWITCH on the drive side to 1.6 mm (0.06 or 1/16 in.).

[5] Check the clearance between the MAGNET and the DETECTOR SWITCH:

(a) Energize the processor.

(b) Lift the top DETECTOR ROLLER.

(c) Insert a 5 x 7 inch sheet of film.

(d) Move the drive side DETECTOR SWITCH until the REPLENISHMENT PUMP activates.

(e) Check that the REPLENISHMENT PUMP stops in 3 seconds after you remove the sheet of film.

[6] Adjust the clearance between the MAGNET and the DETECTOR SWITCH if necessary.

(a) Loosen the SCREW.

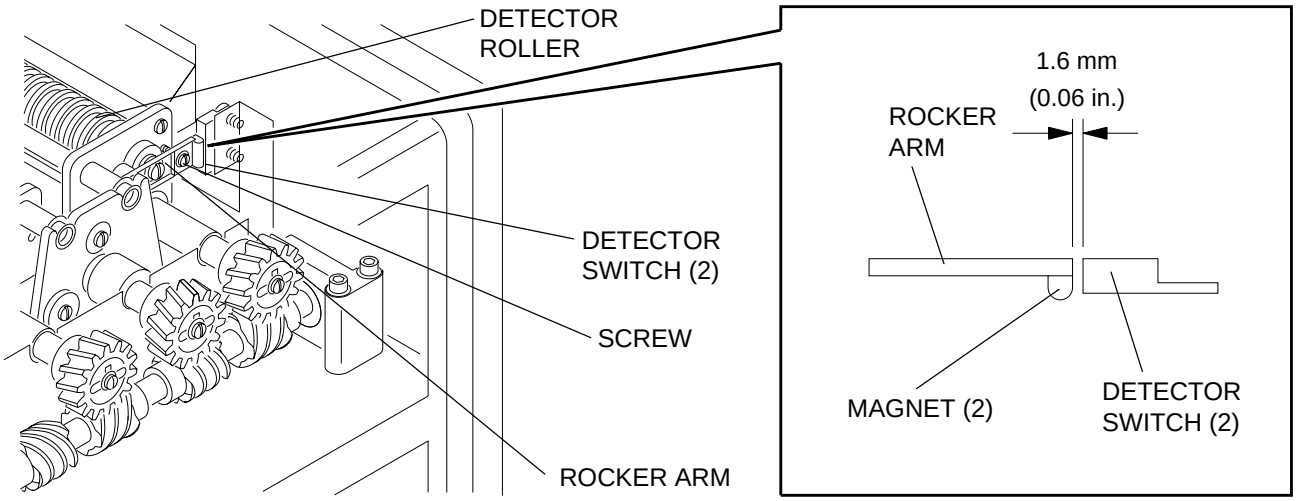
(b) Move the ROCKER ARM.

(c) Tighten the SCREW.

[7] Do steps 4 - 6 to adjust the DETECTOR SWITCH on the non-drive side.

[8] Install the TOP COVER.

[9] Check that the REPLENISHMENT PUMP does not operate unless you feed film.



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Adjusting the Detector Switches

Replacement of the Detector Switches

WARNING

Dangerous voltage.

[1] Disconnect the main power.

[2] Remove the:

- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS
- WIRE TIES, not shown

[3] Disconnect the SWITCH CABLE from the ELECTRICAL BOX.

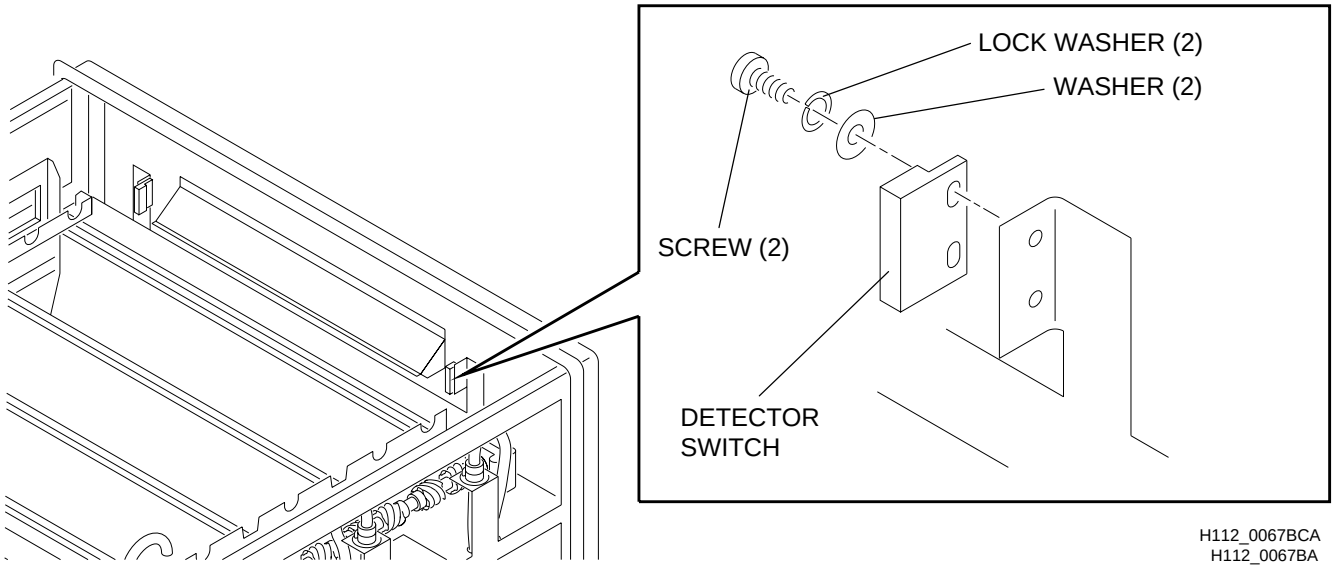
[4] Connect the new SWITCH CABLE.

[5] Install the:

- new DETECTOR SWITCH
- 2 WASHERS
- 2 LOCK WASHERS
- 2 SCREWS
- new WIRE TIES

[6] Connect the main power.

[7] Do the adjustment procedure if necessary. See page 2-4.



Replacement of the Detector Switch

Adjustment for Squareness

NOTE

Use this procedure to check the squareness of any of the CROSSOVER ASSEMBLIES.

[1] Remove the CROSSOVER ASSEMBLY from the processor.

[2] Place the CROSSOVER ASSEMBLY on a smooth, flat surface.

[3] Loosen the 2 NUTS on the 2 TIE RODS.

[4] Check that the 2 SIDE PLATES touch the flat surface evenly.

[5] Tighten the 2 NUTS.

Installation of a New Guide Shoe

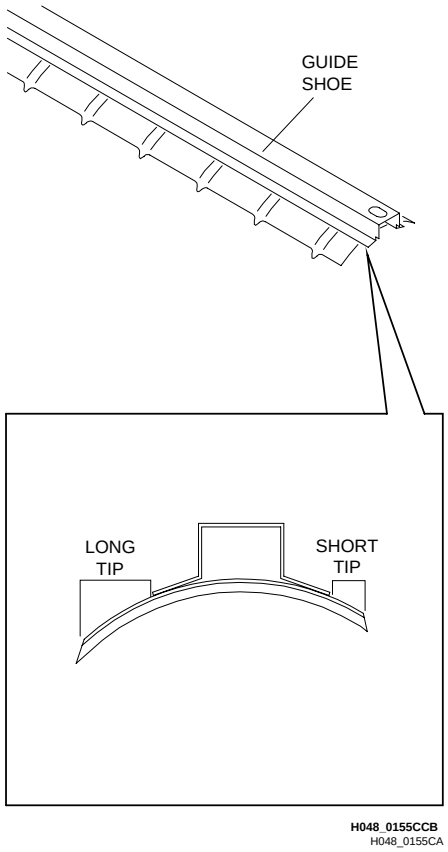
[1] Remove the existing GUIDE SHOE SCREWS and GUIDE SHOE.

[2] Install the GUIDE SHOE with the LONG TIPS in the direction of film travel.

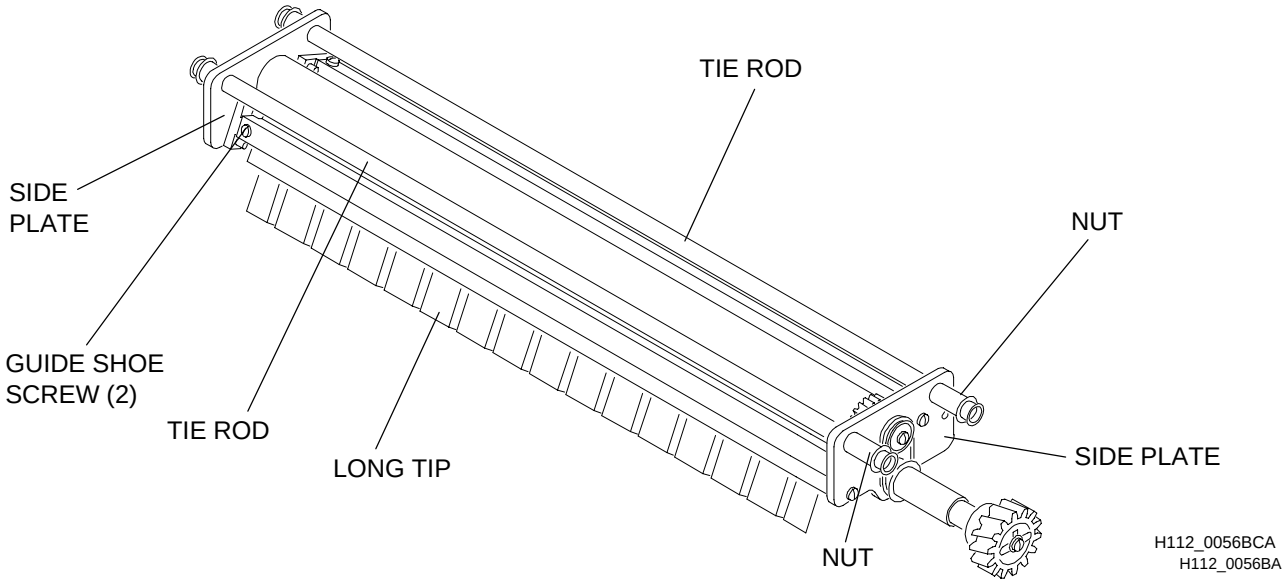
[3] Install the 2 GUIDE SHOE SCREWS.

NOTE

The GUIDE SHOES have no adjustment procedures.



Installing a Guide Shoe



Adjustment for Squareness

NOTE

Use this procedure to check the squareness of any of the RACK ASSEMBLIES.

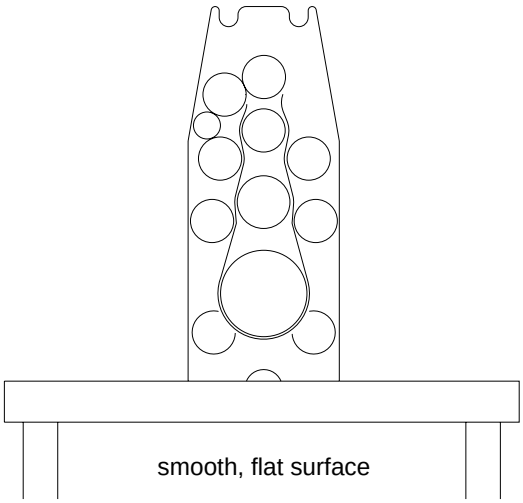
[1] Remove the RACK ASSEMBLY from the processor.

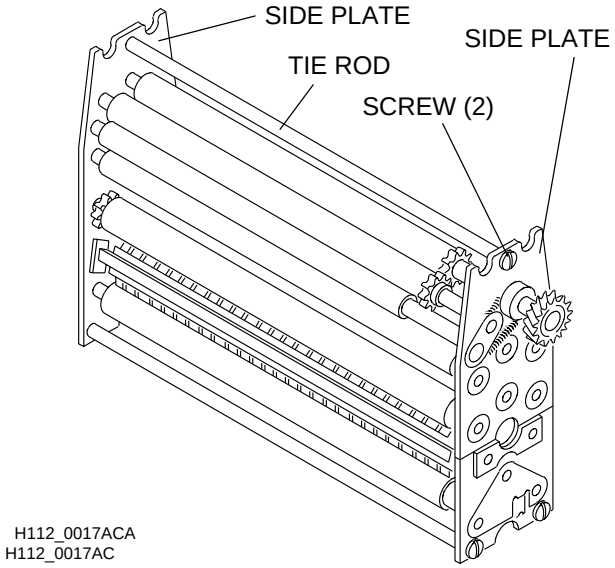
[2] Place the RACK ASSEMBLY on a smooth, flat surface.

[3] Loosen the SCREWS on the ends of the 3 TIE RODS.

[4] Check that the 2 SIDE PLATES touch the flat surface evenly.

[5] Tighten the SCREWS.





Adjusting a Rack Assembly for Squareness

Drive Chain

Adjustment of the Tension on the Drive Chain

[1] Check that the DRIVE CHAIN is wet with solution.

[2] Check that the RACK ASSEMBLY is at approximately the same temperature as the solutions in the tanks, to assure that the DRIVE CHAIN is the correct length.

[3] Loosen the 4 HOLDING SCREWS.

[4] Hold the RACK ASSEMBLY above the work surface until gravity tightens the DRIVE CHAIN around the TURNAROUND ASSEMBLY.

[5] Rotate the DRIVE GEAR one full turn.

[6] Tighten the 2 HOLDING SCREWS on the drive side first.

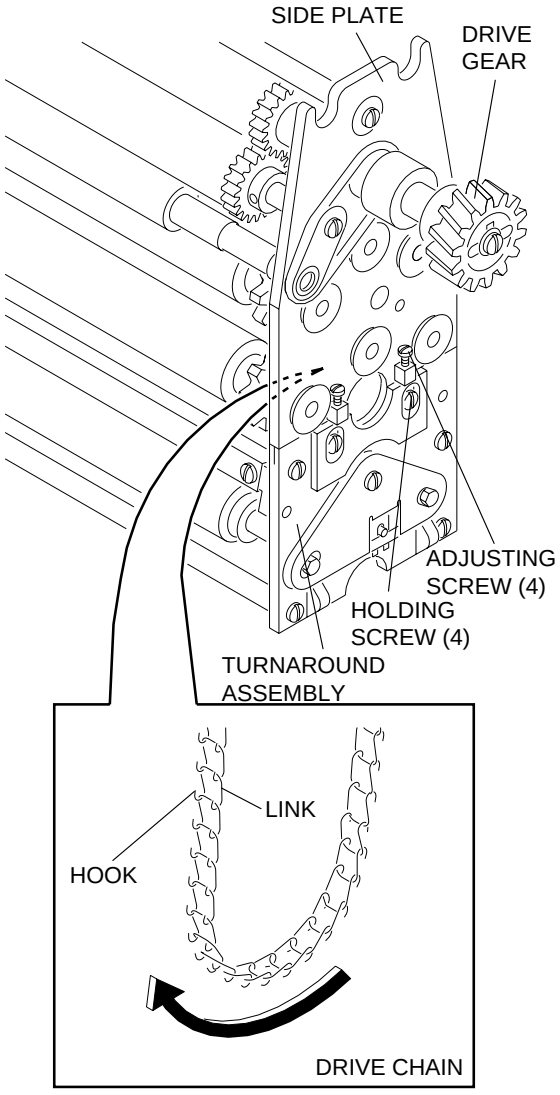
[7] Place the RACK ASSEMBLY on the work surface.

[8] Rotate the ADJUSTING SCREWS until the distance between the SIDE PLATE of the RACK and the SIDE PLATE of the TURNAROUND ASSEMBLY on the non-drive side is equal to the distance between the 2 SIDE PLATES on the drive side.

[9] Tighten the 2 HOLDING SCREWS on the non-drive side.

NOTE

Remove LINKS from the DRIVE CHAIN if necessary to provide the correct length. See steps 1 - 5.



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Replacement of the Drive Chain

[1] To open the existing DRIVE CHAIN, insert a screwdriver under the HOOKS of a LINK. Rotate the screwdriver if necessary.

[2] Attach the new DRIVE CHAIN to the existing DRIVE CHAIN with the HOOKS in the direction of travel and the openings of the LINKS outward. See the illustration.

[3] Pull the existing DRIVE CHAIN through the RACK ASSEMBLY until the new DRIVE CHAIN is in the correct position.

[4] Disconnect the existing DRIVE CHAIN from the new DRIVE CHAIN.

[5] Connect the ends of the new DRIVE CHAIN.

[6] Do the Drive Chain Adjustment above.

Turnaround Assembly

Adjustment for Squareness

NOTE

The illustration shows a DEVELOPER RACK ASSEMBLY; however, the procedure is the same for disassembling all the RACK ASSEMBLIES.

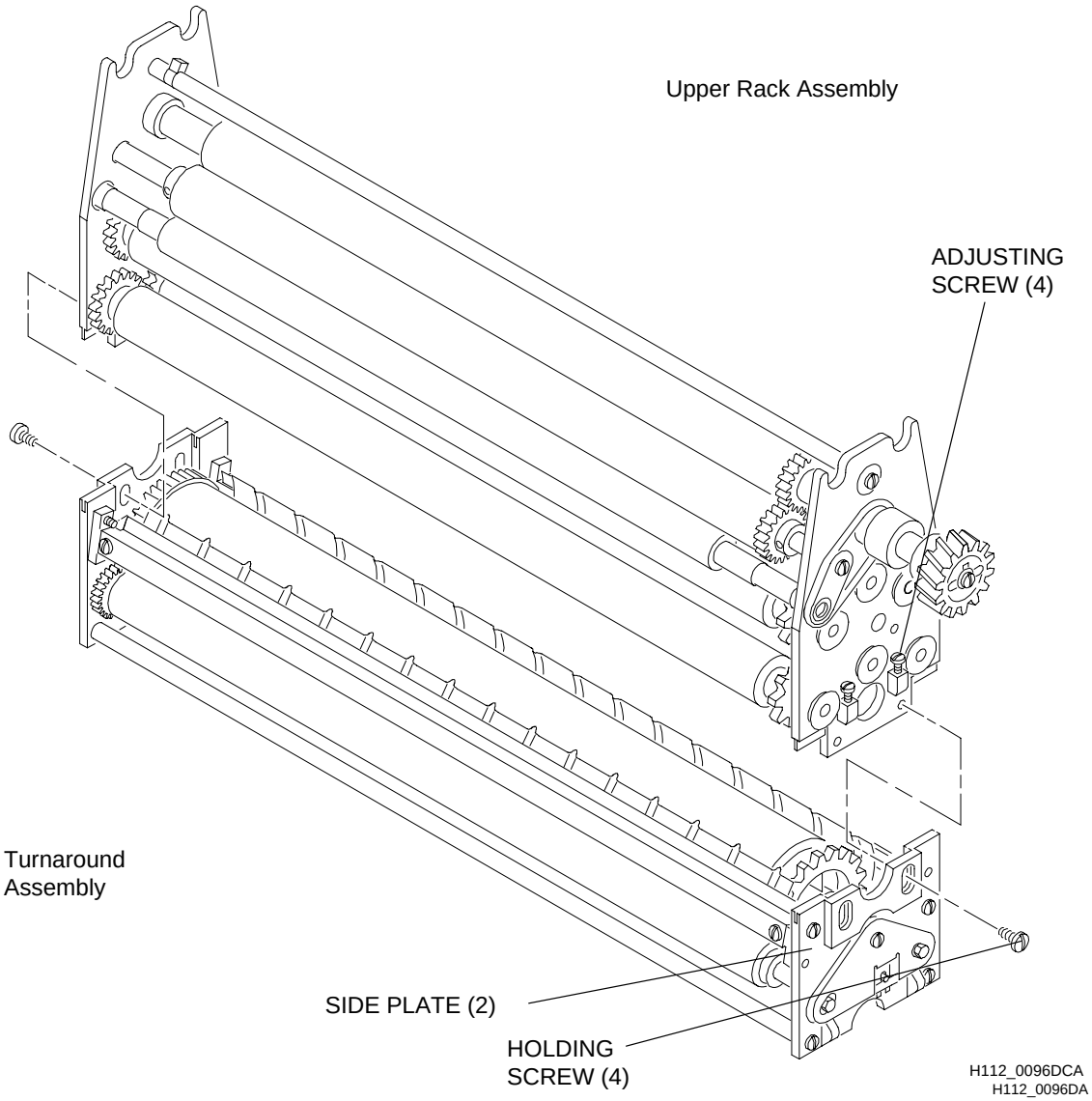
[1] Place the RACK ASSEMBLY on a smooth, flat surface.

[2] Loosen the 4 HOLDING SCREWS.

[3] Rotate the 4 ADJUSTING SCREWS the same amounts to move the TURNAROUND ASSEMBLY up or down.

[4] Check that the 2 SIDE PLATES of the TURNAROUND ASSEMBLY touch the flat surface evenly.

[5] Tighten the 4 HOLDING SCREWS.



Rack and Turnaround Assemblies

Disassembling the Turnaround Assembly

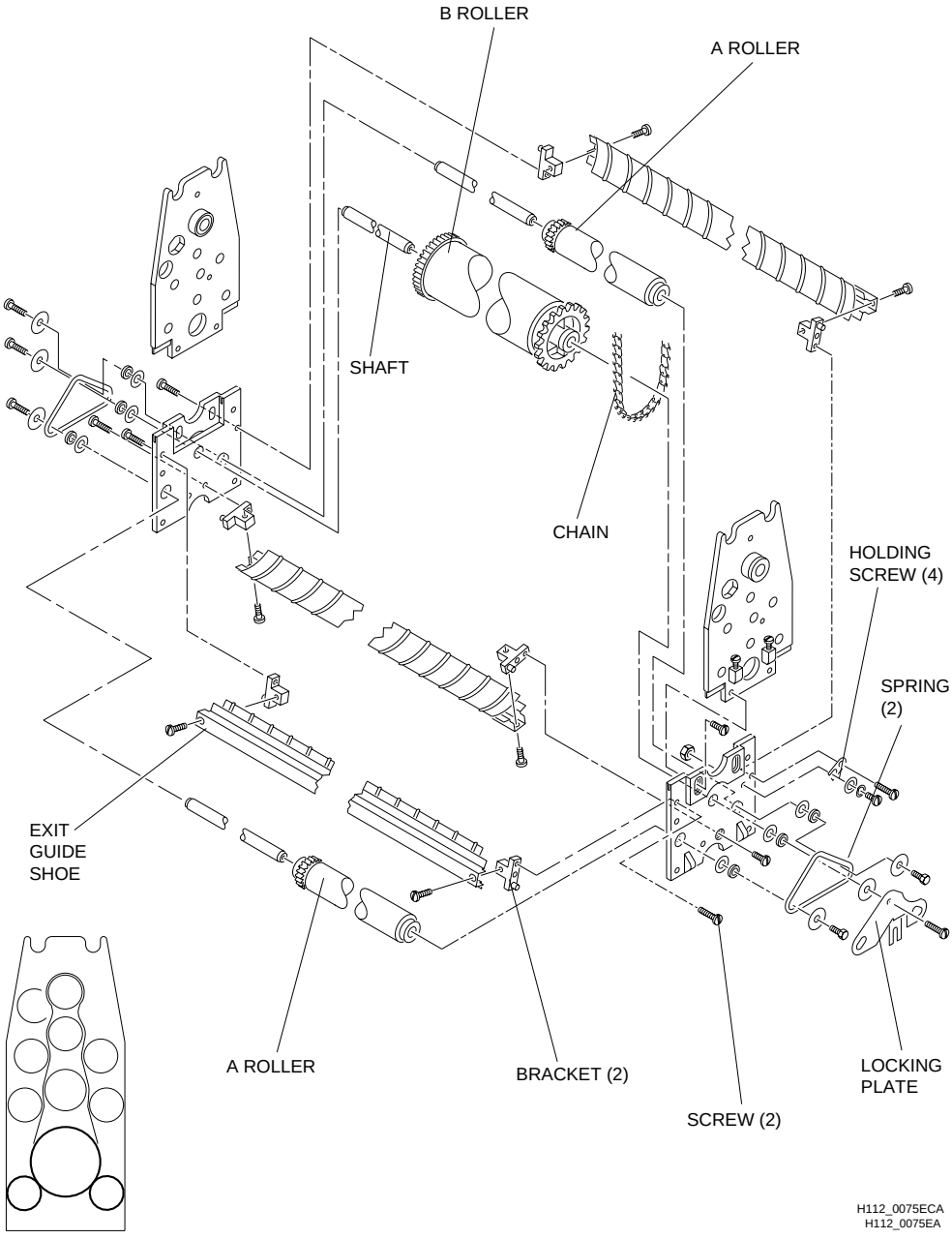
[1] Remove the:

- EXIT GUIDE SHOE and the BRACKETS
- ROLLER above the GUIDE SHOE
- 2 SPRINGS and LOCKING PLATE from the TURNAROUND ASSEMBLY
- 2 A ROLLERS

[2] From the non-drive side, pull the SHAFT from the B ROLLER.

[3] Remove the:

- 4 HOLDING SCREWS
- CHAIN from the B ROLLER
- TURNAROUND ASSEMBLY



Disassembling the Turnaround Assembly

Replacement of the B Roller

[1] See the illustration on page 2-10. Remove the:

- TURNAROUND ASSEMBLY from the RACK
- 2 SPRINGS
- LOCKING PLATE
- 2 A ROLLER ASSEMBLIES
- 2 SCREWS
- 2 BRACKETS
- EXIT GUIDE SHOE
- SHAFT, THRUST WASHERS, and the BEARING from the B ROLLER

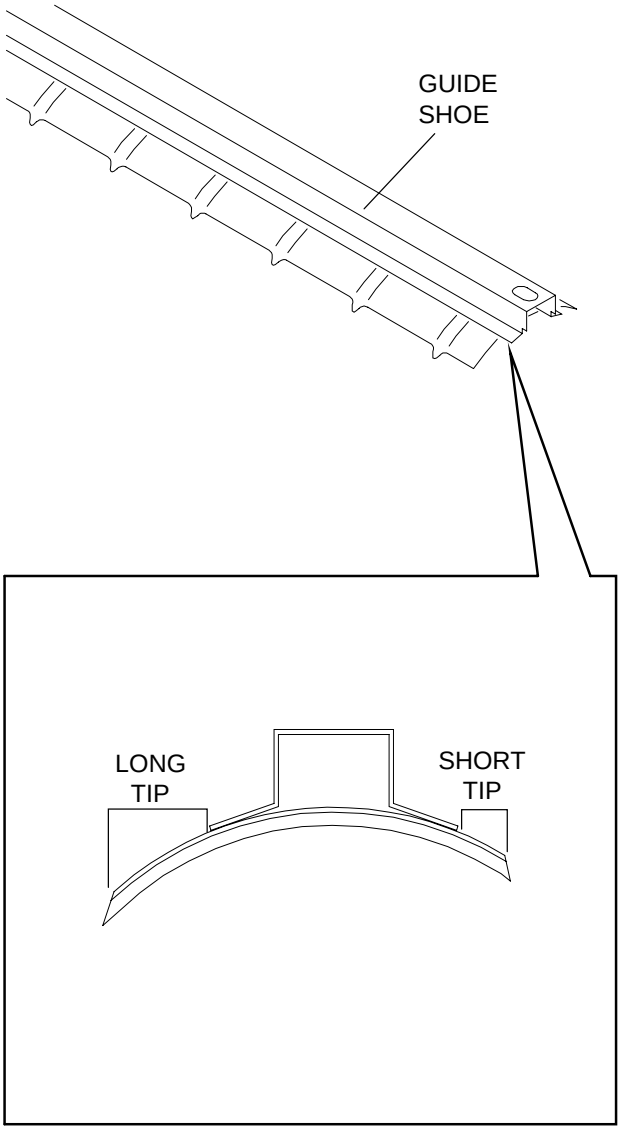
[2] See page 2-10. Install the:

- new B ROLLER, THRUST WASHERS, and BEARING onto the SHAFT
- 2 SCREWS
- 2 BRACKETS
- EXIT GUIDE SHOE
- 2 A ROLLER ASSEMBLIES
- LOCKING PLATE
- 2 SPRINGS
- TURNAROUND ASSEMBLY onto the RACK

[3] Check that the DRIVE CHAIN has the correct tension. See page 2-8 if adjustment of the DRIVE CHAIN is necessary.

Checking the Guide Shoes

[1] Check that the LONG TIPS are in the direction of film travel.



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Checking the Guide Shoes

Replacement of the A Rollers

NOTE

Each TURNAROUND ASSEMBLY has 2 A ROLLERS.

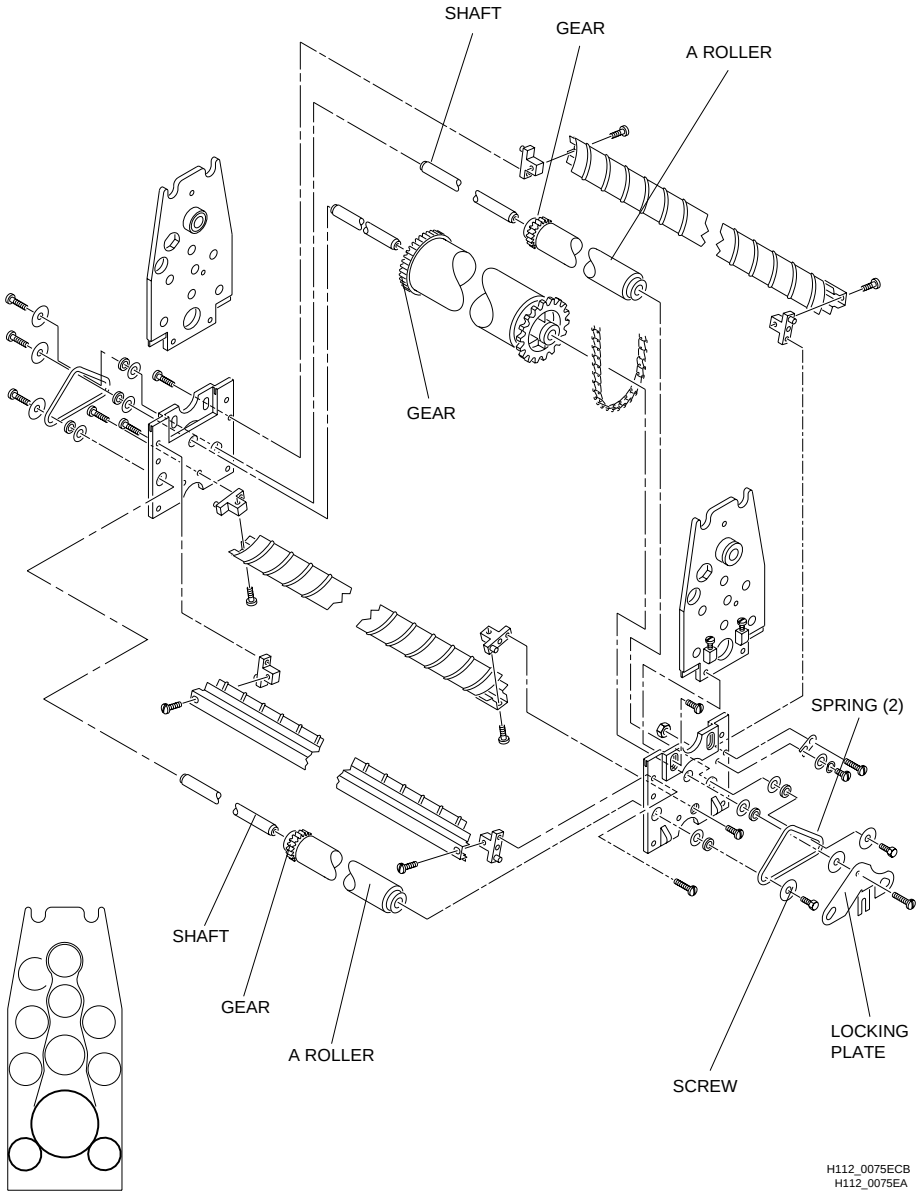
[1] Remove the:

- 2 SPRINGS
- LOCKING PLATE
- SCREW
- A ROLLER from the SHAFT

[2] Install the:

- new A ROLLER on the SHAFT
- A ROLLER in the TURNAROUND ASSEMBLY
- LOCKING PLATE
- 2 SPRINGS

[3] Check that all the GEARS in the TURNAROUND ASSEMBLY engage.



Replacement of the A Rollers

Replacement of the Resilient Drive Roller in the Developer and Fixer Racks

[1] Remove the 2 SPRINGS from the top of the RACK.

[2] Remove the SCREWS, WASHERS, LOCK WASHERS, GEAR, SPACERS, and BEARINGS from the resilient DRIVE ROLLER on the outside of both SIDE PLATES.

[3] Rotate the flat part of the SHAFT to the up position.

[4] Move the DRIVE ROLLER to the non-drive side and remove the KEY from the SPROCKET.

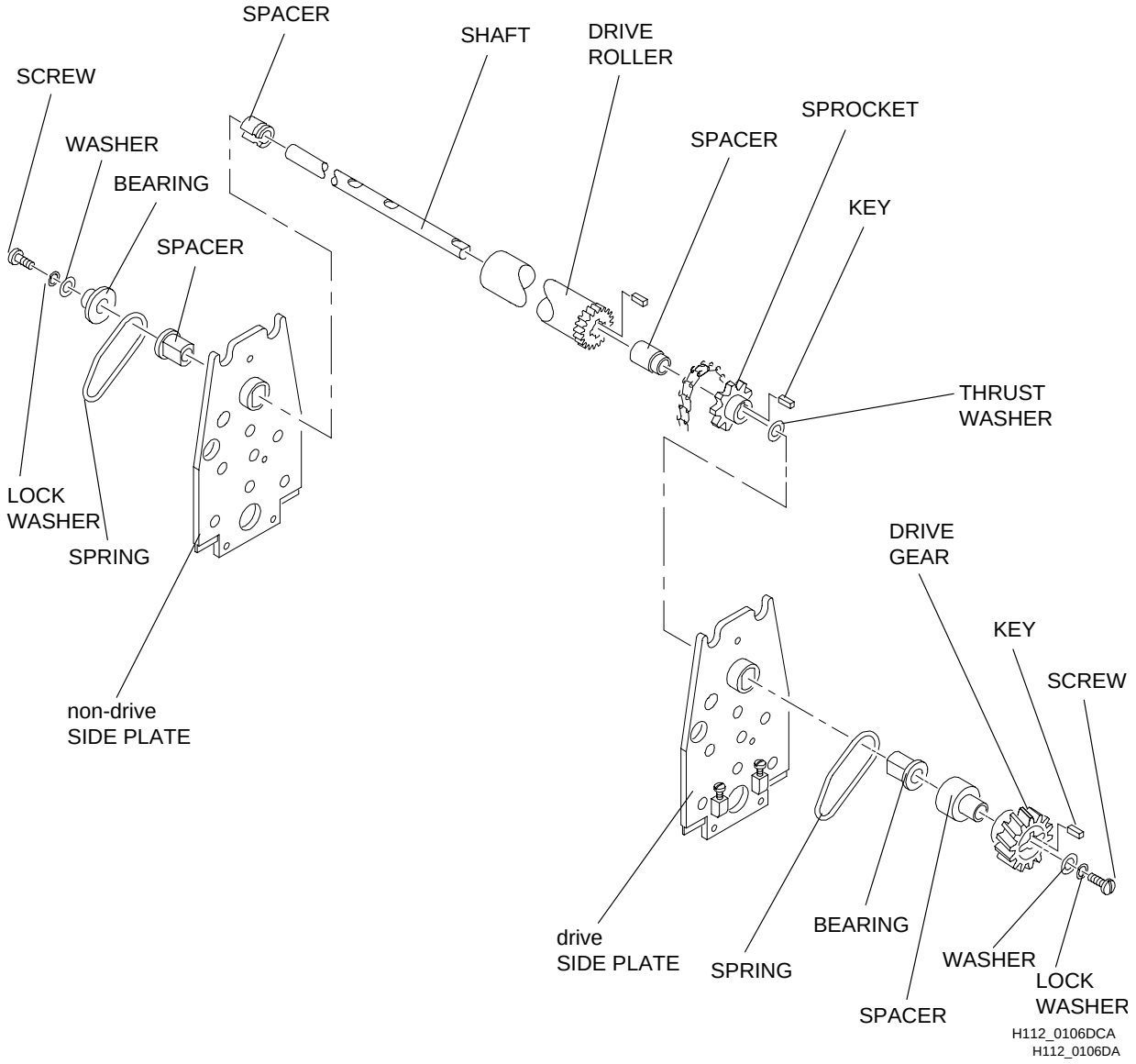
[5] Pull the SHAFT to the drive side to remove it from the non-drive SIDE PLATE.

[6] Remove the THRUST WASHER, SPROCKET, and SPACER.

[7] Continue to pull the SHAFT to the non-drive side.

[8] Remove the DRIVE ROLLER.

[9] Reverse the procedure to install the new DRIVE ROLLER.



Replacement of the Resilient Drive Roller

Replacement of the Resilient Rollers in the Wash Rack

[1] Remove the:

- 2 SCREWS and the ID WASHER from the TIE ROD
- SCREWS, WASHERS, DRIVE GEAR, SPACERS, and BEARINGS from the DRIVE and DRIVEN ROLLERS on the outside of both SIDE PLATES

[2] Rotate the flat part of the SHAFT of the DRIVE ROLLER to the up position.

[3] Move the DRIVE ROLLER to the non-drive side and remove the KEY from the SPROCKET.

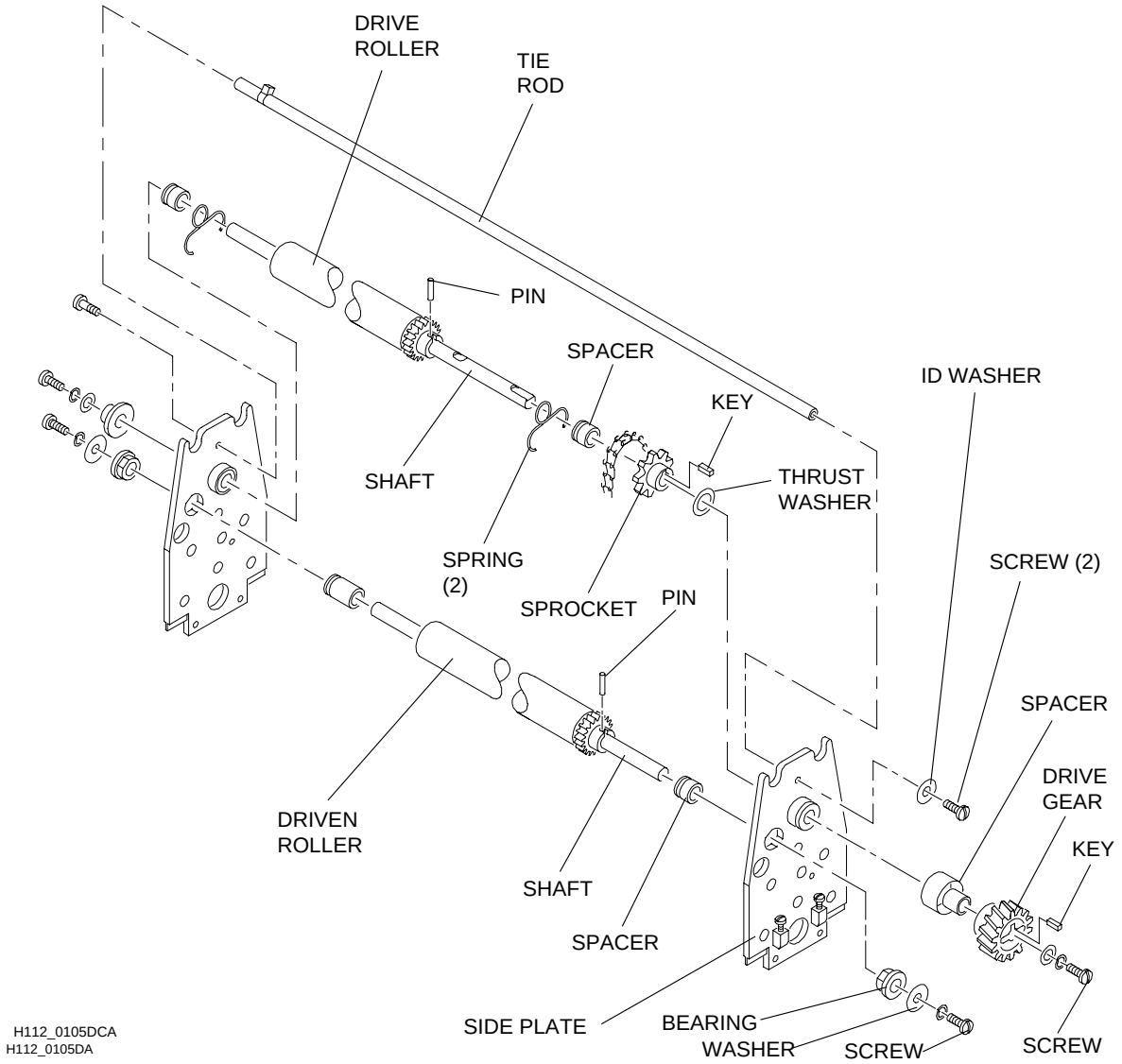
[4] Remove the 2 SPRINGS.

[5] Pull the 2 SHAFTS of the DRIVE ROLLER and the DRIVEN ROLLER to the drive side to remove them from the non-drive SIDE PLATE.

[6] Bend the SIDE PLATE slightly to allow removal of the DRIVE ROLLER.

[7] Remove the THRUST WASHER, SPROCKET, and SPACERS.

[8] Reverse the procedure to install new resilient ROLLERS.



Replacement of the Resilient Rollers of the Wash Rack

Dryer Rack

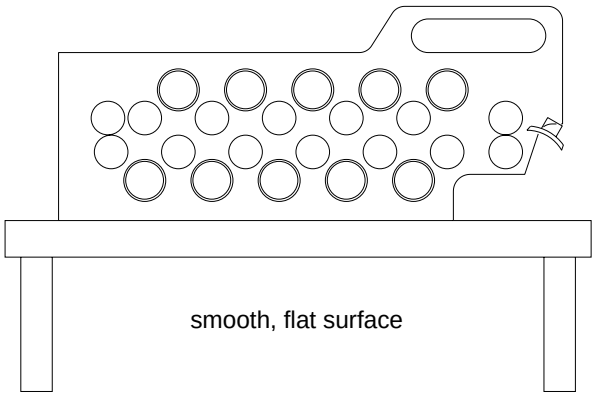
Adjustment for Squareness

[1] Remove the DRYER RACK from the processor and place it on a smooth, flat surface.

[2] Loosen the 2 SCREWS and 2 NUTS from the 2 TIE RODS.

[3] Check that the SIDE PLATES touch the flat surface evenly.

[4] Tighten the 2 SCREWS and 2 NUTS.



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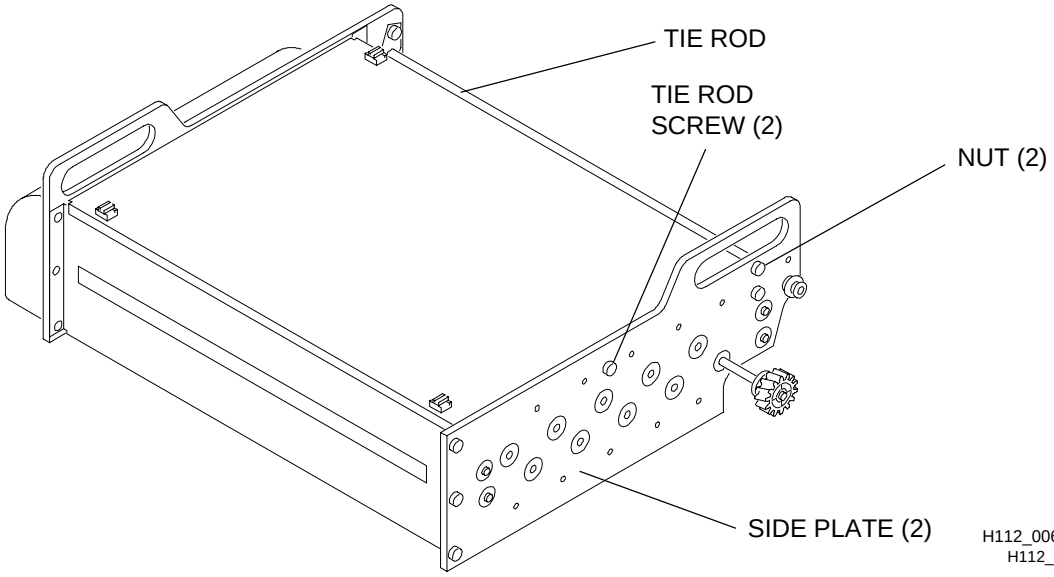

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Adjusting the Dryer Rack for Squareness

Replacement of the Drive Roller

[1] Remove the:

- top and bottom COVERS from the DRYER RACK
- PLENUM
- first 3 AIR TUBES
- O-RING from the DRIVE GEAR
- PIN
- DRIVE GEAR

[2] On the non-drive side, remove the

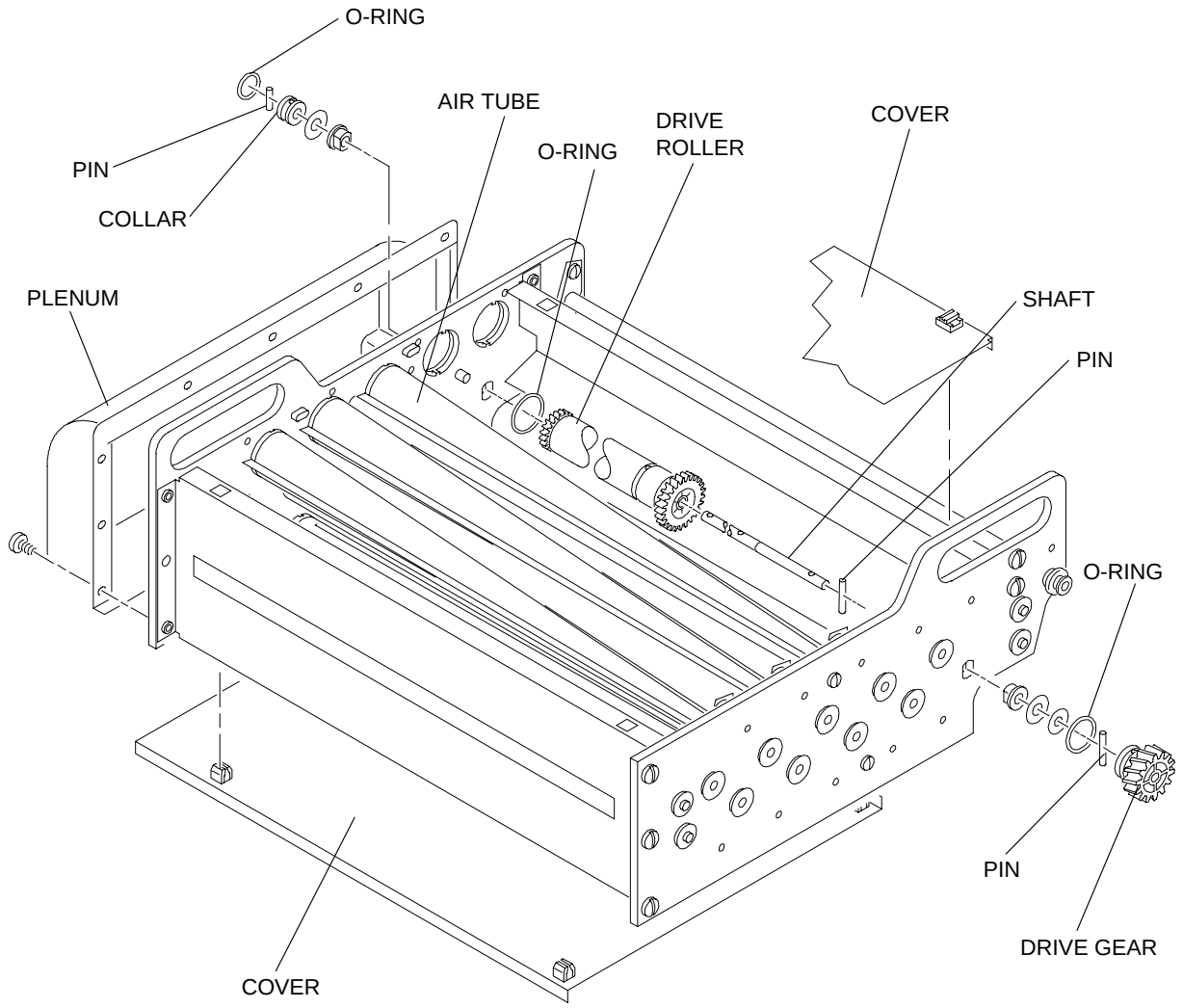
- O-RING from the COLLAR
- PIN
- COLLAR

[3] On the drive side, remove the O-RING from the DRIVE ROLLER.

[4] Remove the PIN from the DRIVE ROLLER.

[5] Remove the SHAFT from the DRIVE ROLLER.

[6] Reverse the procedure to install the new DRIVE ROLLER.



Replacement of the Drive Roller in the Dryer Rack

Adjustment of the Main Drive Chain

WARNING

Moving parts.

[1] Disconnect the main power.

[2] Remove the:

- drive SIDE PANEL
- 2 GUARD SCREWS
- the CHAIN GUARD
- MOTOR CAGE
- 2 SCREWS

[3] Loosen the 4 MOUNTING SCREWS.

CAUTION

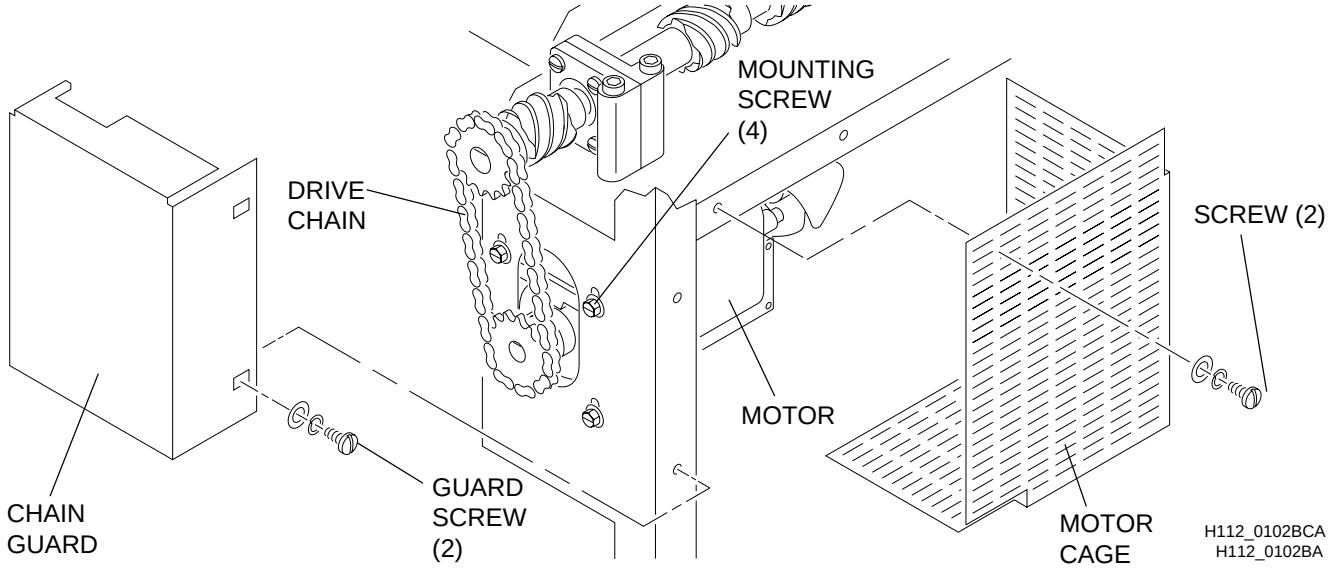
Do not overtighten the DRIVE CHAIN.

[4] Move the MOTOR up or down until the DRIVE CHAIN is tight. Do not overtighten the DRIVE CHAIN.

[5] Tighten the 4 MOUNTING SCREWS.

[6] Install the:

- MOTOR CAGE
- 2 SCREWS
- CHAIN GUARD
- 2 GUARD SCREWS
- SIDE PANEL.



Adjustment of the Main Drive Chain

Alignment of the Main Drive Motor

[1] Remove the drive SIDE PANEL, the 2 GUARD SCREWS, and the CHAIN GUARD.

[2] Loosen the 3 SETSCREWS.

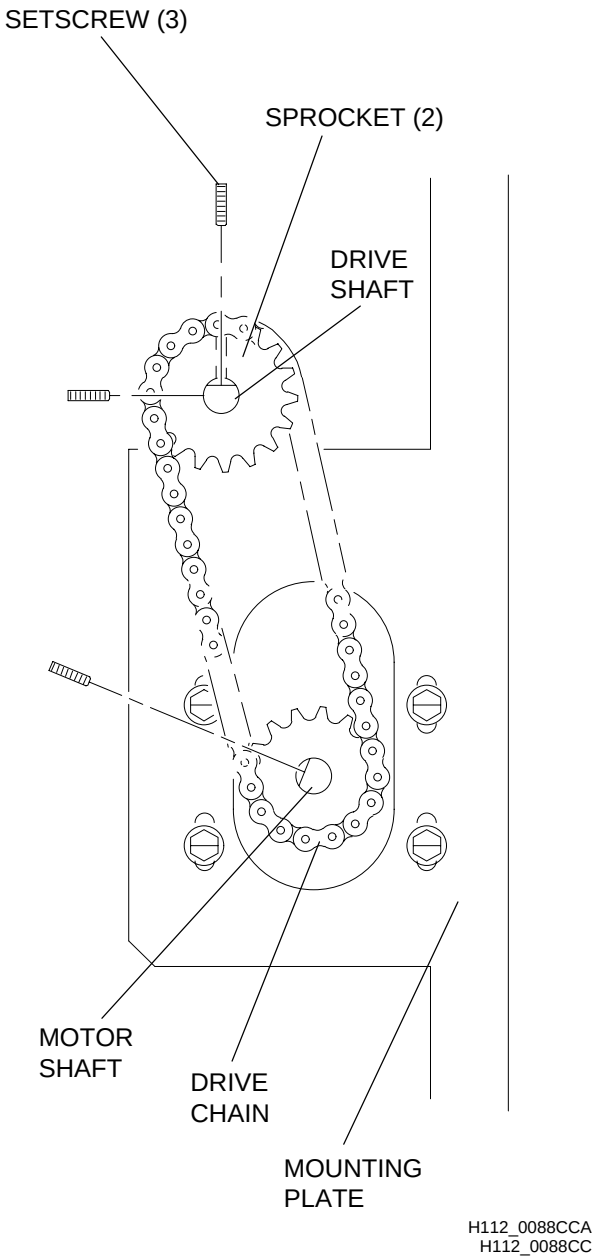
[3] Align the SPROCKETS with the ends of the DRIVE SHAFT and the MOTOR SHAFT.

[4] Tighten the 3 SETSCREWS.

[5] Check that the DRIVE CHAIN does not touch the MOUNTING PLATE.

[6] Check that the SPROCKET on the DRIVE SHAFT does not touch the DRIVE GEAR on the DRYER RACK. See the illustration on page 2-16.

[7] Install the CHAIN GUARD, the 2 GUARD SCREWS, and the SIDE PANEL.



Alignment of the Main Drive Motor

Replacement of the Main Drive Shaft, Worm Gears, or Bearing Blocks

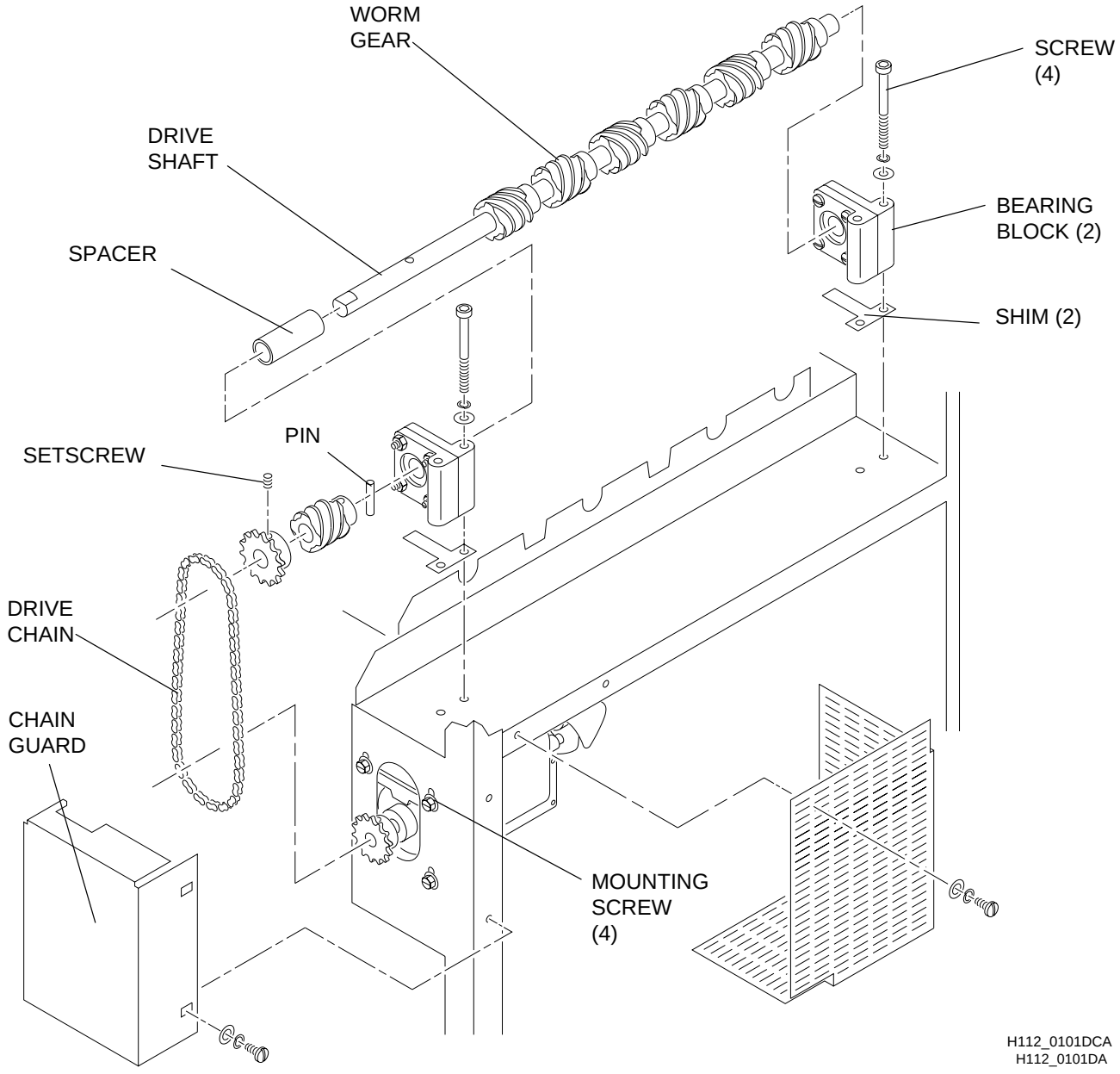
[1] Remove the CHAIN GUARD.

[2] Loosen the 4 MOUNTING SCREWS.

[3] Remove the DRIVE CHAIN.

[4] Remove the 4 SCREWS from the 2 BEARING BLOCKS.

[5] Remove the DRIVE SHAFT ASSEMBLY from the processor.



Replacement of the Main Drive Shaft

[6] Install new WORM GEARS or BEARING BLOCKS if necessary.

[7] Install the DRIVE SHAFT ASSEMBLY

[8] Place the SHIMS under the BEARING BLOCKS.

CAUTION

Do not overtighten the 4 SCREWS.

[9] Install the 4 SCREWS in the BEARING BLOCKS.

[10] Adjust the position of the BEARING BLOCKS until the DRIVE SHAFT moves freely.

[11] Install the DRIVE CHAIN.

[12] Adjust the DRIVE CHAIN. See page 2-8.

[13] Tighten the 4 MOUNTING SCREWS.

[14] Install the CHAIN GUARD.

Adjustment of the Dryer Temperature

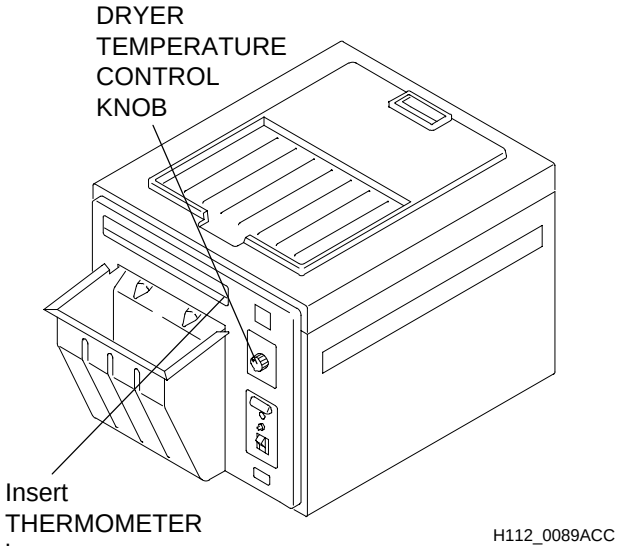
[1] To check the temperature of the DRYER, insert a THERMOMETER, Part No. 761217, under the DRYER **on the drive side** of the processor. See the illustration.

IMPORTANT

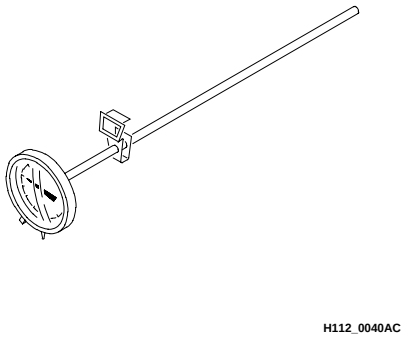
The correct temperature for the DRYER depends on the condition of the air and on the amount and type of film fed into the processor. Use the lowest temperature possible for good drying.

[2] Adjust the temperature of the DRYER, if necessary, by rotating the DRYER TEMPERATURE CONTROL KNOB:

clockwise ↷	to	**increase** the temperature
counterclockwise ↶	to	**decrease** the temperature



Adjusting the Dryer Temperature



Thermometer, Part No. 761217

Replacement of the Blower Assembly

WARNING

Dangerous voltage.

[1] Disconnect the main power.

[2] Remove the:

- TOP COVER
- DRYER RACK
- RECEIVING END COVER
- SIDE PANELS

CAUTION

Possible damage from electrostatic discharge.

[3] Disconnect CONNECTORS 801 and 802, not shown, from the 800 CIRCUIT BOARD. See the illustration on the next page for the position of the 800 CIRCUIT BOARD.

[4] Disconnect the CABLE ASSEMBLY from the ELECTRICAL BOX.

[5] See the illustration on page 2-24. Remove the:

- 2 MOUNTING SCREWS from the BRACKET
- 4 MOUNTING SCREWS from the DRYER HEATER
- BLOWER MOTOR and BRACKET
- BLOWER MOTOR from the BRACKET

[6] Install the new BLOWER MOTOR and the 4 MOUNTING SCREWS on the BRACKET.

NOTE

Do not tighten the 4 MOUNTING SCREWS on the BLOWER MOTOR until step 9.

[7] Install the BRACKET on the DRYER HEATER.

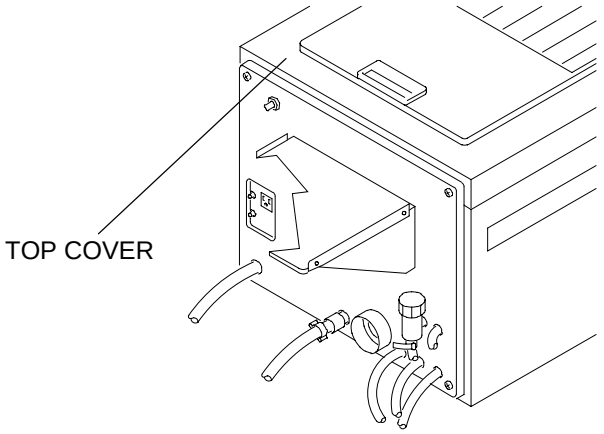
[8] Install the 6 MOUNTING SCREWS.

[9] Tighten the MOUNTING SCREWS.

[10] Connect the CABLE ASSEMBLY to the ELECTRICAL BOX.

[11] Install the:

- SIDE PANELS
- RECEIVING END COVER
- DRYER RACK
- TOP COVER



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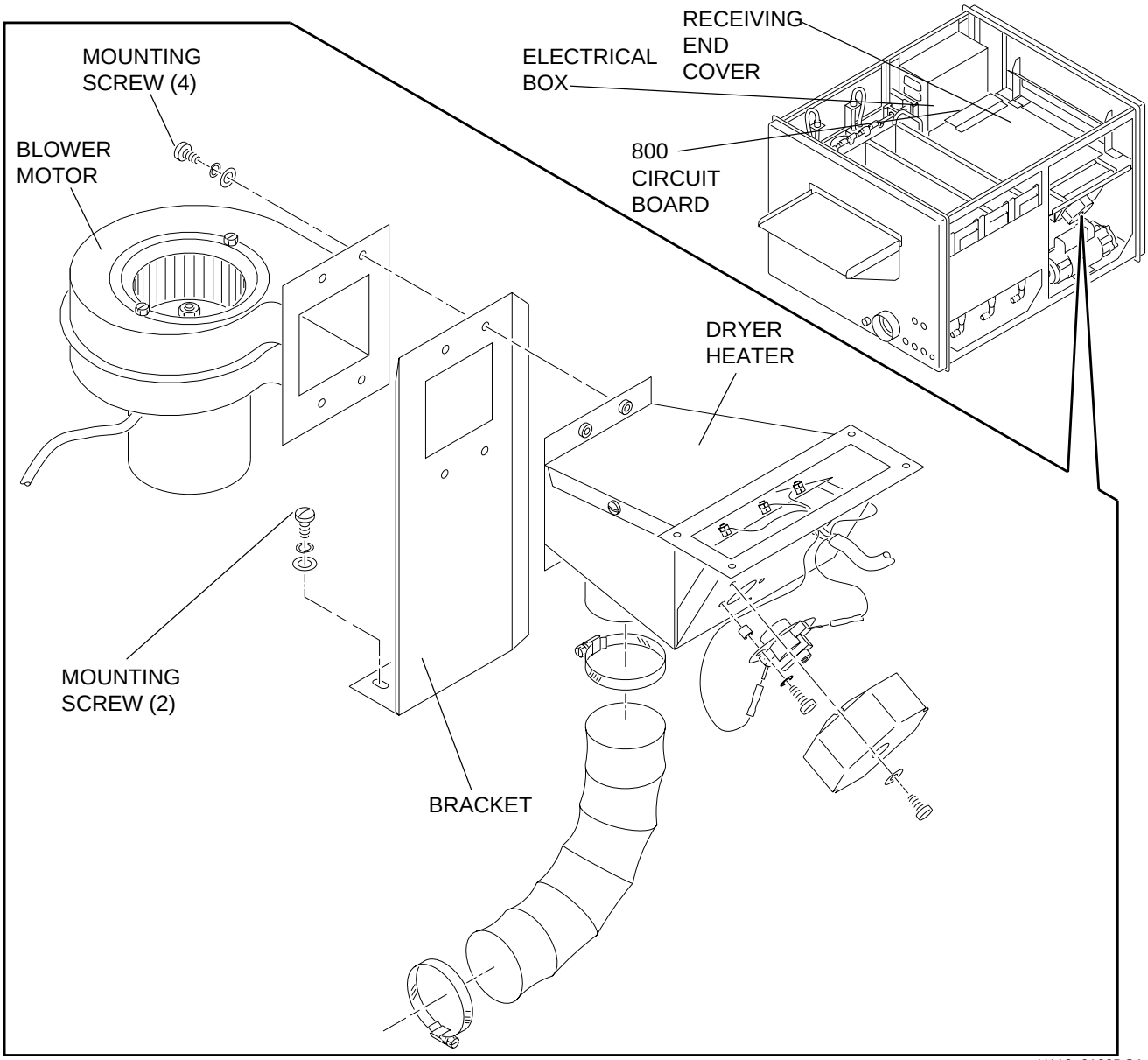


Replacement of the Blower Assembly

Replacement of the Dryer Heater or the Heater Core

[1] Disconnect the main power.

[2] Remove the:

- TOP COVER
- DRYER RACK
- RECEIVING END COVER
- SIDE PANELS

CAUTION

Possible damage from electrostatic discharge.

[3] Disconnect CONNECTORS 801 and 802, not shown, from the 800 CIRCUIT BOARD. See the illustration on the next page for the position of the 800 CIRCUIT BOARD.

[4] Disconnect TB2-1, TB2-3, TB2-5, and the ground wire from the ELECTRICAL BOX.

[5] See the illustration on page 2-27. Remove the:

- EXHAUST HOSE
- 4 SCREWS under the foam strips
- 6 MOUNTING SCREWS
- DRYER HEATER

[6] Do steps 7 - 10 to install only a new HEATER CORE inside the DRYER HEATER. To install an entire new DRYER HEATER, reverse the above procedure.

[7] Loosen the 2 SCREWS.

[8] Remove the HEATER TOP COVER.

[9] **Inside** the DRYER HEATER:

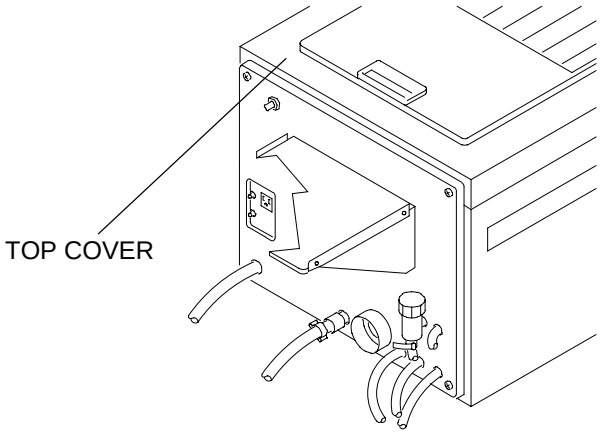
(a) Remove the 4 HEX NUTS, not shown.

(b) Loosen the 4 MOUNTING SCREWS, not shown.

(c) Remove the HEATER CORE.

[10] Reverse the procedure to install the new HEATER CORE in the DRYER HEATER.

[11] Reverse steps 1 - 5 to install the DRYER HEATER in the processor.



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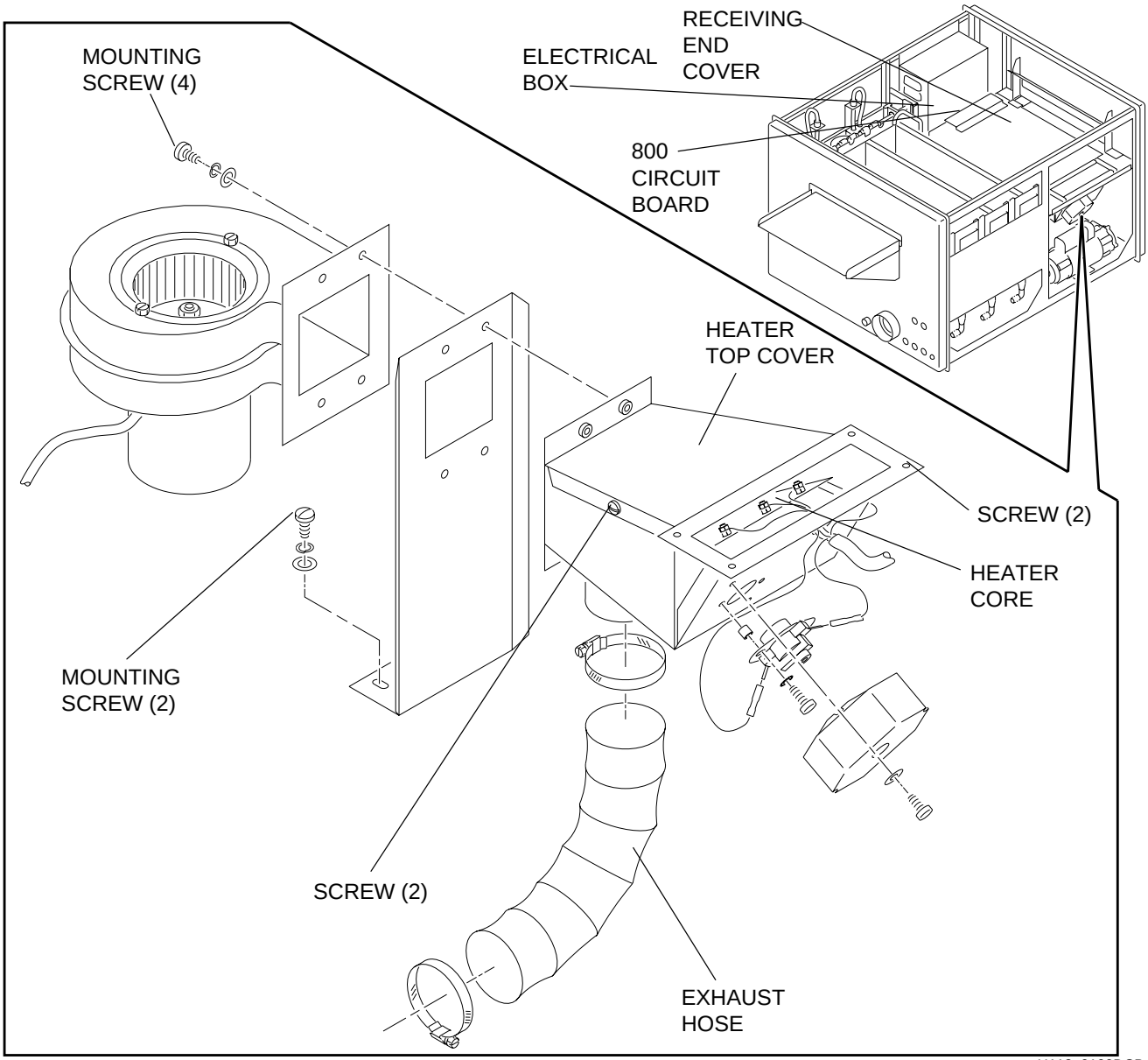
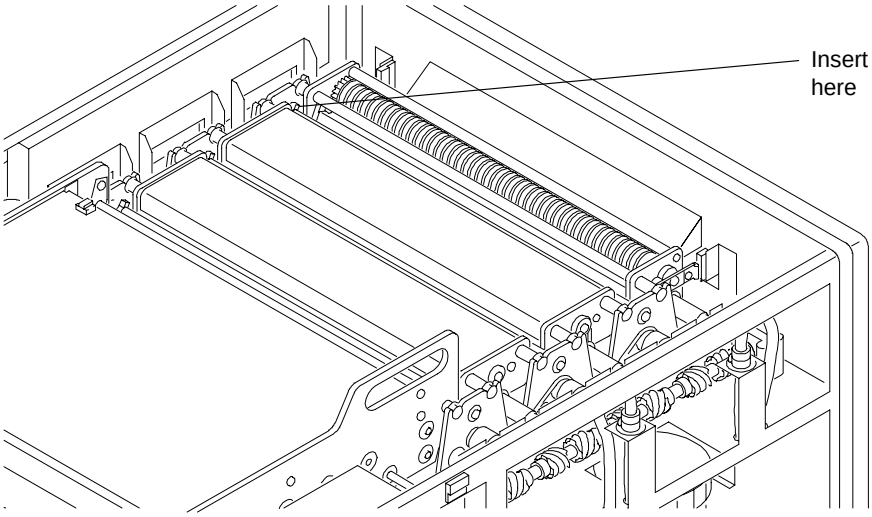


Replacement of the Dryer Heater or the Heater Core

Adjustment of the Developer Temperature

[1] Remove the TOP COVER.

[2] Insert a THERMOMETER of known accuracy, such as Part No. 761217, into the non-drive side of the DEVELOPER TANK between the SIDE PLATE of the DEVELOPER RACK and the RACK SUPPORT. The correct temperature is 33.3°C (92°F).



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[3] If the developer temperature is not correct, adjust the temperature:

CAUTION

- Possible damage from electrostatic discharge. Use an ESD wrist strap.
- Use the POTENTIOMETER ADJUSTING TOOL TL-1481 to adjust R2.

(a) Remove the drive SIDE PANEL from the processor.

(b) Open the ELECTRICAL BOX.

(c) Use TL-1481 to rotate R2 on the 100 CIRCUIT BOARD:

clockwise ↷	to	**increase** the temperature
counterclockwise ↶	to	**decrease** the temperature

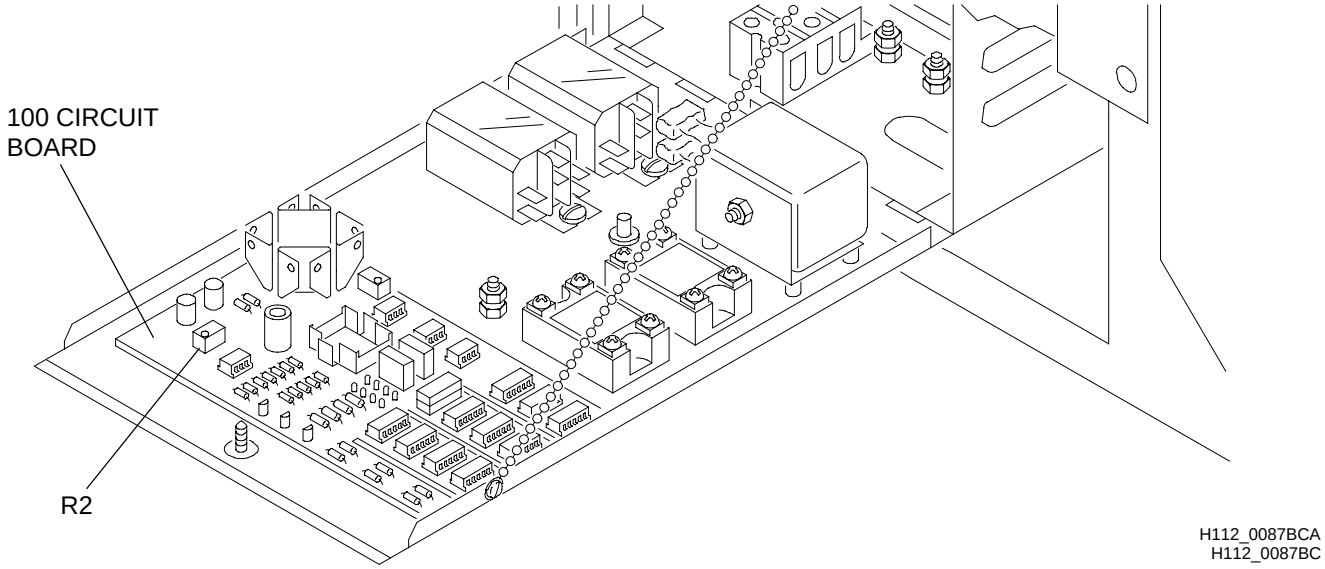
(d) Allow the developer to reach the new, adjusted temperature.

(e) Check the developer temperature in the DEVELOPER TANK with the THERMOMETER.

(f) If the developer temperature is not correct, do steps (c) - (e) again.

(g) Close the ELECTRICAL BOX and install the SIDE PANEL.

[4] Install the TOP COVER.



Adjusting the Developer Temperature on the 100 Circuit Board

Replacement of the Developer Heater

[1] Disconnect the main power.

[2] Drain the DEVELOPER TANK or clamp the 2 TUBES to the THERMOWELL.

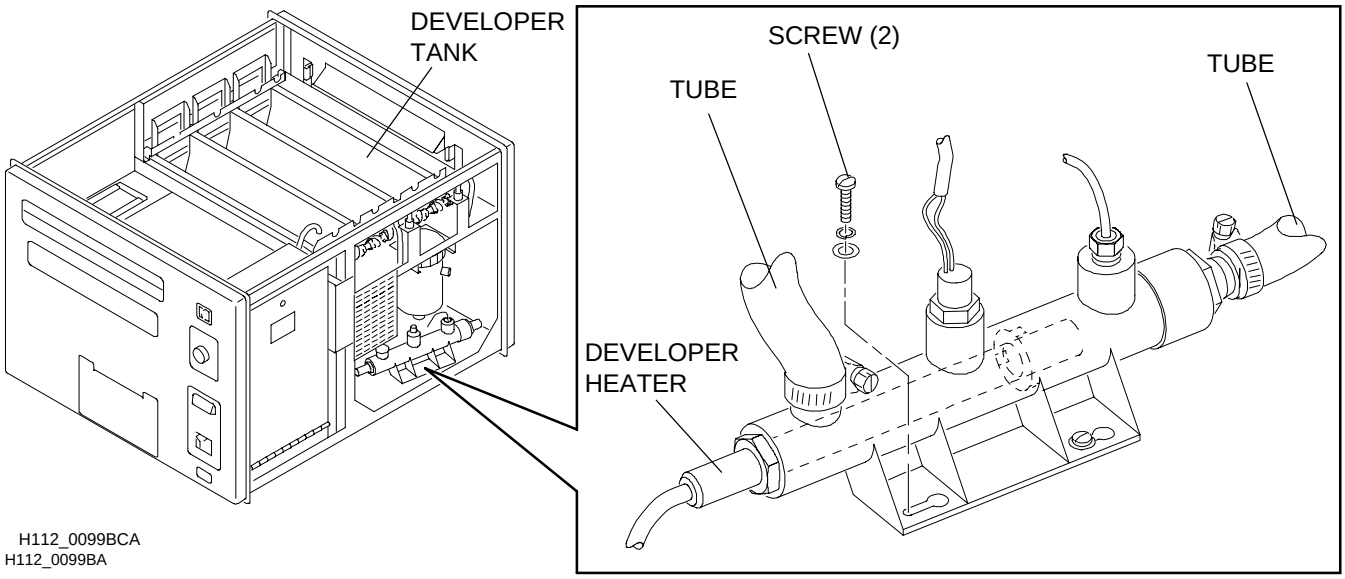
[3] Disconnect the wires to the DEVELOPER HEATER at TB2-9 and TB2-10.

CAUTION

When you remove the DEVELOPER HEATER from the THERMOWELL, a small amount of developer may spill. Clean any spilled solution.

[4] Remove the:

- 2 SCREWS
- THERMOWELL
- DEVELOPER HEATER from the THERMOWELL



Removing the Thermowell

[5] Apply SEALANT TL-3230 to the threads of the new DEVELOPER HEATER.

[6] Insert the new DEVELOPER HEATER into the THERMOWELL.

[7] Check that the DEVELOPER HEATER is in the correct position through the HEATER LOCATOR. See the illustration.

CAUTION

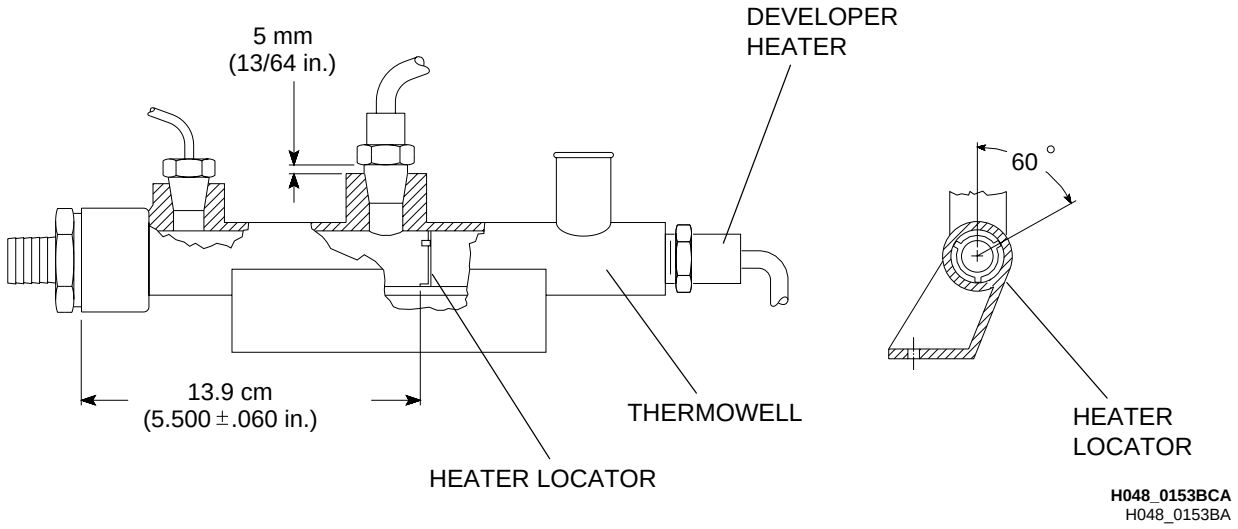
Overtightening the DEVELOPER HEATER may cause damage to the THERMOWELL.

[8] Hand tighten the DEVELOPER HEATER plus ½ turn.

[9] Install the THERMOWELL and 2 SCREWS.

[10] Connect the wires to TB2-9 and TB2-10.

[11] Unclamp the 2 TUBES or fill the DEVELOPER TANK.



Replacement of the Developer Heater

Replacement of the Developer Over-temperature Thermostat

[1] Disconnect the main power.

[2] Drain the DEVELOPER TANK or clamp the 2 TUBES to the THERMOWELL. See the illustration on page 2-30.

[3] Disconnect the OVER-TEMPERATURE THERMOSTAT at TB4-15, TB4-16, TB4-8, and TB4-9.

CAUTION

When you remove the OVER-TEMPERATURE THERMOSTAT from the THERMOWELL, a small amount of liquid may spill. Clean any spilled solution.

[4] Remove the OVER-TEMPERATURE THERMOSTAT from the THERMOWELL.

[5] Apply SEALANT TL-3230 to the threads of the new OVER-TEMPERATURE THERMOSTAT.

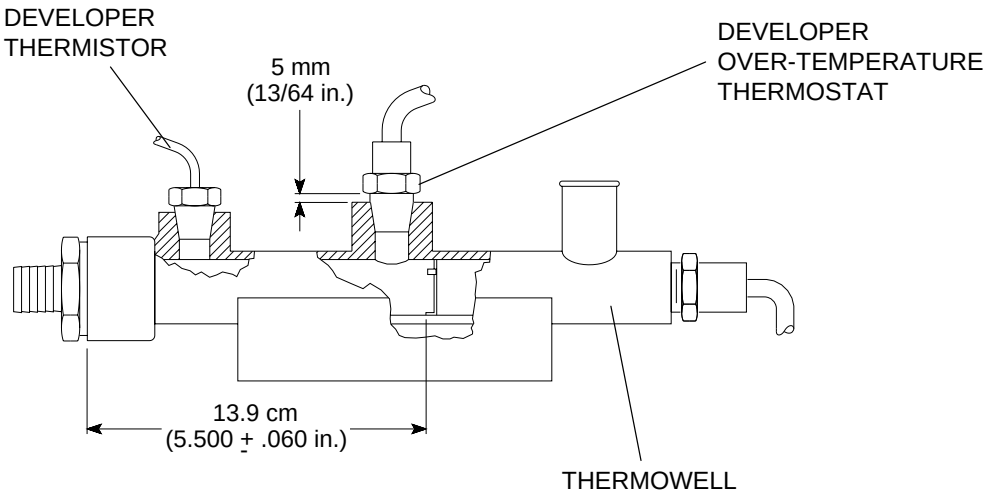
CAUTION

Do not install the new OVER-TEMPERATURE THERMOSTAT below the position shown in the illustration.

[6] Install the new OVER-TEMPERATURE THERMOSTAT **5 mm (13/64 inch)** from the THERMOWELL. See the illustration below.

[7] Connect TB4-15, TB4-16, TB4-8, and TB4-9 to the new OVER-TEMPERATURE THERMOSTAT.

[8] Unclamp the 2 TUBES or fill the DEVELOPER TANK.



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Replacement of the Developer Over-temperature Thermostat

Replacement of the Developer Thermistor

[1] Disconnect the main power.

[2] Drain the DEVELOPER TANK or clamp the 2 TUBES to the THERMOWELL. See the illustration on page 2-30.

[3] Disconnect the DEVELOPER THERMISTOR at TB4-13 and TB4-14.

CAUTION

When you remove the DEVELOPER THERMISTOR from the THERMOWELL, a small amount of liquid may spill. Clean any spilled solution.

[4] Remove the DEVELOPER THERMISTOR from the THERMOWELL.

[5] Apply SEALANT TL-3230 to the threads of the new DEVELOPER THERMISTOR.

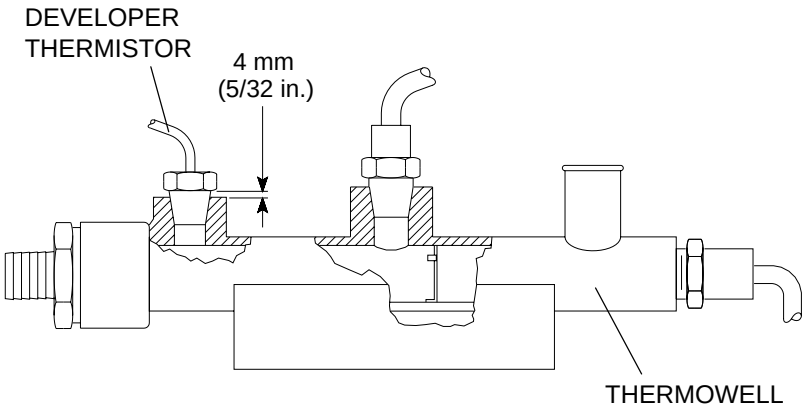
CAUTION

Do not install the new DEVELOPER THERMISTOR lower than shown in the illustration.

[6] Install the new DEVELOPER THERMISTOR **4 mm (5/32 inch)** from the DEVELOPER THERMOWELL.

[7] Connect TB4-13 and TB4-14 to the new DEVELOPER THERMISTOR.

[8] Unclamp the 2 TUBES or fill the DEVELOPER TANK.



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Replacement of the Developer Thermistor

Replacement of the Heat Exchangers

WARNING

Dangerous voltage.

[1] Disconnect the main power.

[2] Disconnect the water supply.

[3] Drain the 3 TANKS.

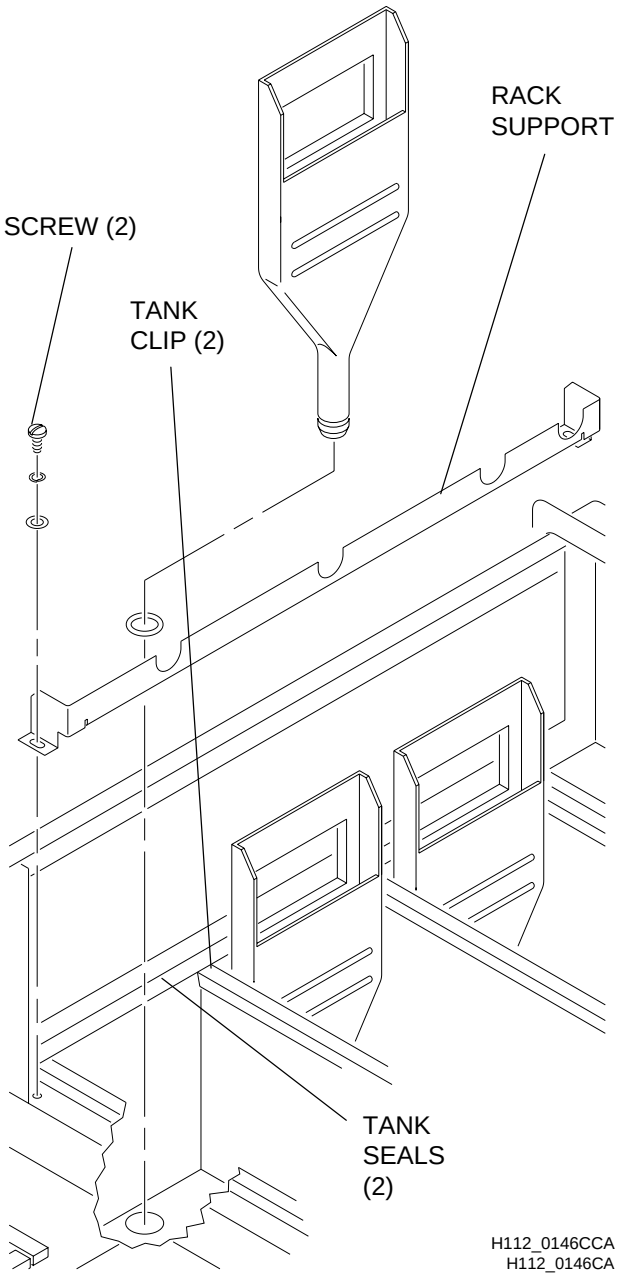
[4] Remove the:

- 2 SCREWS from the RACK SUPPORT
- RACK SUPPORT
- TANK SEALS
- TANK CLIPS

[5] Disconnect all tubing from the TANK.

[6] Remove the 2 FITTINGS and the WATER INLET TUBE if necessary. See the illustration on page 2-35.

[7] Lift the non-drive side of the TANK and then remove the TANK from the processor.



Removing the Rack Support

[8] Remove the 2 GLAND NUTS, the 2 O-RINGS, the 2 WASHERS, and the HEAT EXCHANGER from the TANK.

[9] Install the:

- new HEAT EXCHANGER
- 2 O-RINGS
- 2 WASHERS
- 2 GLAND NUTS
- TANK in the processor
- 2 FITTINGS, with new GASKETS if in the fixer TANK
- WATER INLET TUBE, if the wash TANK
- TANK SEALS
- TANK CLIPS
- tubing
- RACK SUPPORT

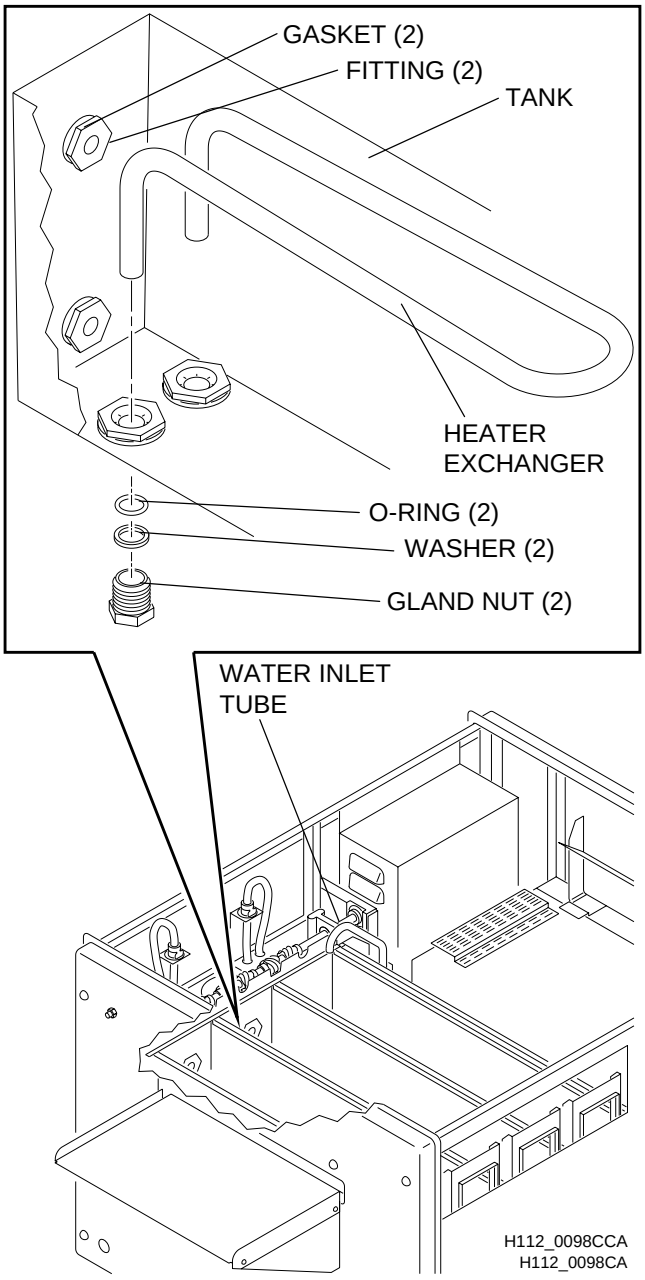
[10] Pull the RACK SUPPORT toward the non-drive side of the processor and install the 2 SCREWS.

[11] Connect the water and fill the 3 TANKS with water.

[12] Check for leakage.

[13] Drain the water from the developer and fixer TANKS. Fill the 2 TANKS with developer and fixer.

[14] Connect the main power.



Replacement of the Heat Exchangers

Recirculation Pump

Replacement of the Recirculation Pump

WARNING

Dangerous voltage.

[1] Disconnect the main power.

[2] Disconnect the water supply.

[3] Remove the TOP COVER and the 2 SIDE PANELS.

[4] Drain the 3 TANKS.

[5] Use PINCH CLAMPS on the tubing to prevent leakage.

[6] Disconnect the tubing to the RECIRCULATION PUMP.

[7] Remove the MOUNTING SCREWS.

[8] Remove the RECIRCULATION PUMP.

[9] Reverse the above procedure to install a new RECIRCULATION PUMP.

[10] Connect the water supply.

[11] Remove the PINCH CLAMPS.

[12] Fill the 3 TANKS with water.

[13] Connect the main power.

CAUTION

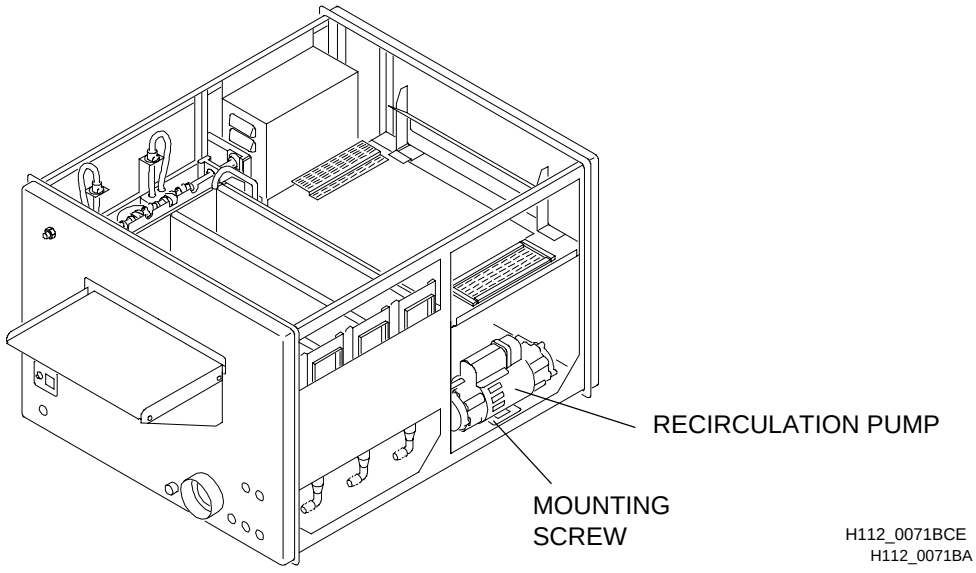
Never operate the RECIRCULATION PUMPS if the TANKS are empty.

[14] Actuate the RECIRCULATION PUMPS.

[15] Check for agitation on the surface of the solutions.

[16] Check for leakage.

[17] Drain the water thoroughly from the developer and fixer TANKS and fill the TANKS with developer and fixer.



Replacement of the Recirculation Pump

Replacement of the O-Ring

WARNING

Dangerous voltage.

[1] Disconnect the main power.

[2] Remove the TOP COVER and 2 SIDE PANELS.

[3] Install PINCH CLAMPS on the tubing of the RECIRCULATION PUMP to prevent leakage.

[4] Remove the:

- 4 WING NUTS
- OUTER PUMP HOUSING
- O-RING

[5] Check that the O-RING is correctly seated.

[6] Install the OUTER PUMP HOUSING and the 4 WING NUTS.

[7] Remove the PINCH CLAMPS.

[8] Connect the main power.

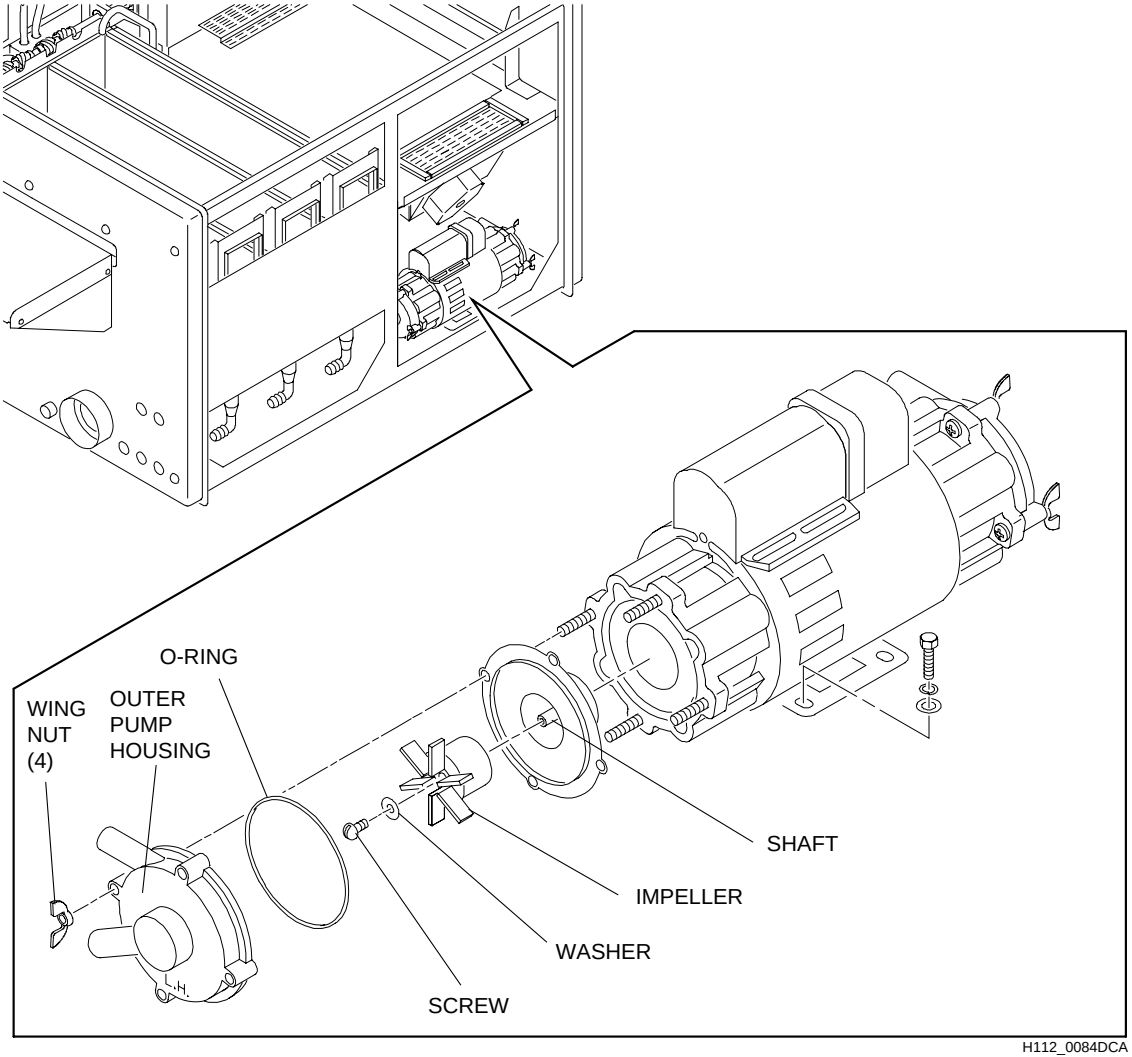
CAUTION

Never operate the RECIRCULATION PUMPS if the TANKS are empty.

[9] Actuate the RECIRCULATION PUMPS.

[10] Check for agitation on the surface of the solutions.

[11] Check for leakage.



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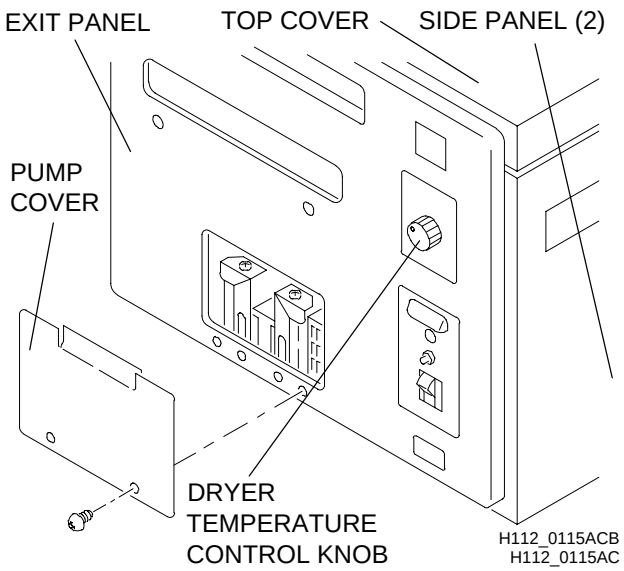
Replenishment Pump

Replacement of the Replenishment Pump

WARNING

Dangerous voltage.



[1] Disconnect the main power.

[2] Disconnect the water supply.

[3] Remove the:

- TOP COVER
- 2 SIDE PANELS
- RECEIVING BIN
- DRYER TEMPERATURE CONTROL KNOB
- PUMP COVER
- EXIT PANEL

[4] Disconnect the 2 MOTOR LEADS TB3-6 and TB3-2 and the ground wire.

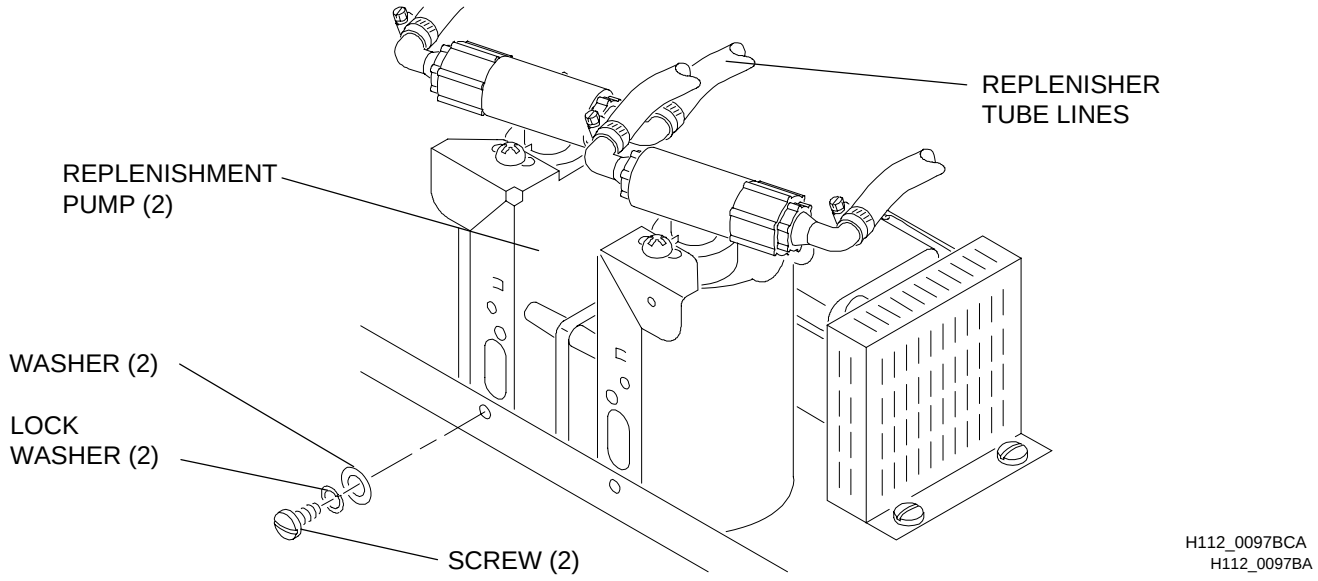
[5] Clamp the REPLENISHER TUBE.

[6] Remove the REPLENISHER TUBE LINES from the REPLENISHMENT PUMP.

[7] Remove and keep the 2 SCREWS, the 2 WASHERS, and the 2 LOCK WASHERS.

[8] Remove the REPLENISHMENT PUMP.

[9] Reverse the above procedure to install a new REPLENISHMENT PUMP.



Replacement of a Replenishment Pump

Adjustment of the Replenishment Pumps

[1] Remove the TOP COVER and the RECEIVING BIN.

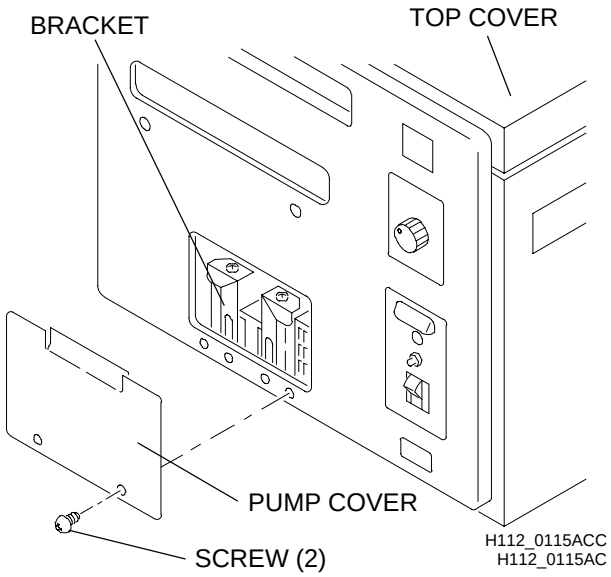
[2] Loosen the 2 SCREWS and remove the PUMP COVER.

[3] Actuate the DETECTOR SWITCH, by lifting the top DETECTOR ROLLER of the DETECTOR CROSSOVER ASSEMBLY, until the ADJUSTMENT SCREW is visible through the hole in the BRACKET.

[4] Loosen the SETSCREW.

CAUTION

Do not adjust the LOCKNUT on the other end of the ADJUSTMENT SCREW.



[5] Rotate the ADJUSTMENT SCREW:

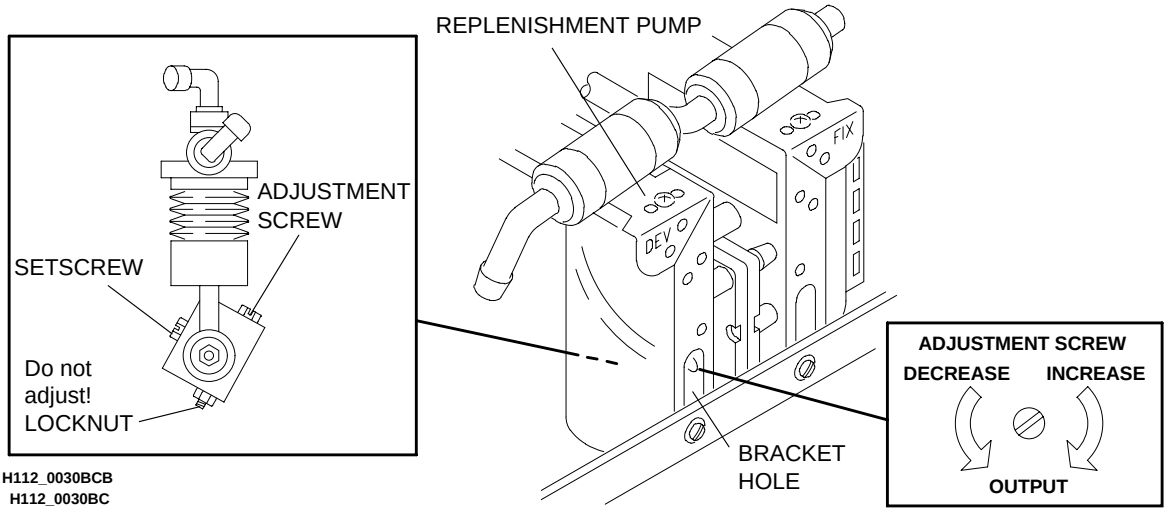
clockwise ↷	to	**increase** the flow rate
counterclockwise ↶	to	**decrease** the flow rate

[6] Tighten the SETSCREW.

[7] Check the flow rates and do steps 2 - 6 again if necessary. See the table on page 2-41 for various replenishment rates.

[8] Install the TOP COVER, the PUMP COVER, and the RECEIVING BIN.

[9] Check that the REPLENISHMENT PUMPS operate correctly by feeding a sheet of film into the processor. See page 2-4.



Adjustment of the Replenishment Pumps

Adjustment of the Replenishment Flow Rates in M35A Processors with Serial No. 10,000 and Above or in M35 Processors with Serial No. 35,000 and Above

[1] Remove the TOP COVER.

[2] Lift the top DETECTOR ROLLER of the DETECTOR CROSSOVER ASSEMBLY.

[3] Check that the replenisher solutions flow freely through the TUBING along the drive side of the processor.

[4] Press the METAL LATCH on the red QUICK DISCONNECT to disconnect the developer TUBING.

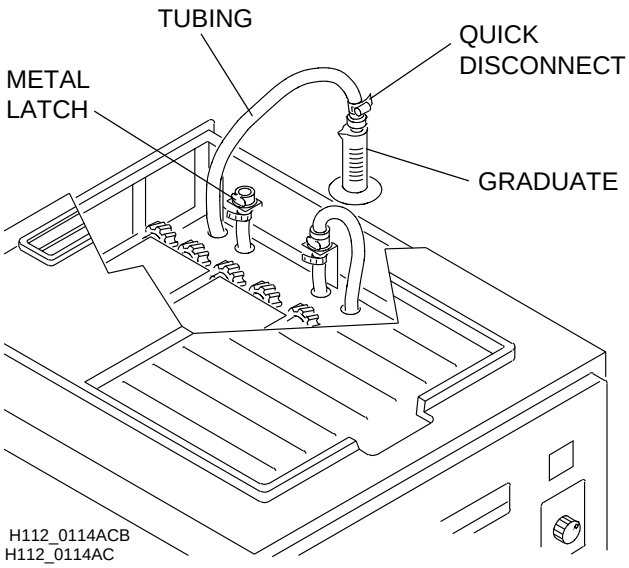
[5] Pull the TUBING slightly by rotating the TUBING over the edge of the frame.

[6] Insert the TUBING into a GRADUATE.

[7] Lift the top DETECTOR ROLLER of the DETECTOR CROSSOVER ASSEMBLY for the correct time, 28 or 34 seconds. See the table on the next page.

NOTE

The REPLENISHMENT PUMP will operate 3 seconds after you release the DETECTOR ROLLER.



Adjusting the Replenishment Flow Rate in M35A Processors with Serial No. 10,000 and Above or in M35 Processors with Serial No. 35,000 and Above

[8] Check that the amount of developer in the GRADUATE is the same as in the table.

[9] Adjust the REPLENISHMENT PUMP if necessary. See page 2-39 for the adjustment procedure.

[10] Do steps 7 - 9 again if necessary.

[11] Connect the QUICK DISCONNECT.

[12] Do this procedure again to check the flow rate of the **fixer.**

Film Size Processed	Use Condition	Average Amount of Film per 8 Hours of Processor Operation	Replenishment Flow Rate			
			mL per 35 cm (14 in.) 28 sec of Film Travel		mL per 43 cm (17 in.) 34 sec of Film Travel	
			Developer	Fixer	Developer	Fixer
Only 35 x 35 cm (14 x 14 in.) film	High	90 sheets or more	50	70	.	
	Medium	60 sheets	65	85	--	--
	Low	30 sheets or less	80	100		
Average size film intermix	High	115 sheets or more	50	70	.	
	Medium	80 sheets	65	85	--	--
	Low	40 sheets or less	80	100		
Only 35 x 43 cm (14 x 17 in.) film	High	75 sheets or more	.		60	85
	Medium	50 sheets	--	--	80	100
	Low	25 sheets or less			100	120

NOTE

- KODAK *RP* X-OMAT Chemicals are recommended.
- Replenishment rates are based on one sheet of film.
- Film feeding orientation should be consistent for best results.
- Slight sensitometric changes will occur as subsequent films are processed through a freshly started process. This is known as ‘‘seasoning’’ and is normal with any photographic process. Process control aims may have to be adjusted slightly to compensate.
- For 30 sheets or less, flooded replenishment is recommended.

Adjustment of the Replenishment Flow Rates in M35A Processors with Serial No. 8940 and Below or in M35 Processors with Serial No. 3760 and Below

[1] Remove the:

- 2 CROSSOVER ASSEMBLIES
- developer and fixer RACK ASSEMBLIES

[2] Insert the J-TUBE into the developer TANK.

[3] Energize the processor.

[4] Manually actuate the DETECTOR SWITCH by lifting the top DETECTOR ROLLER of the DETECTOR CROSSOVER ASSEMBLY.

[5] Allow the developer to fill the J-TUBE.

[6] Release the DETECTOR ROLLER.

[7] Hold a GRADUATE under the J-TUBE.

[8] To adjust the developer flow rate, lift the top DETECTOR ROLLER to operate the REPLENISHMENT PUMP for 28 or 34 seconds. See the table on page 2-41.

NOTE

The REPLENISHMENT PUMP operates for 34 seconds for each 35 x 43 cm (14 x 17 inch) sheet of film.

[9] Check that the amount of developer in the GRADUATE is the same as in the table.

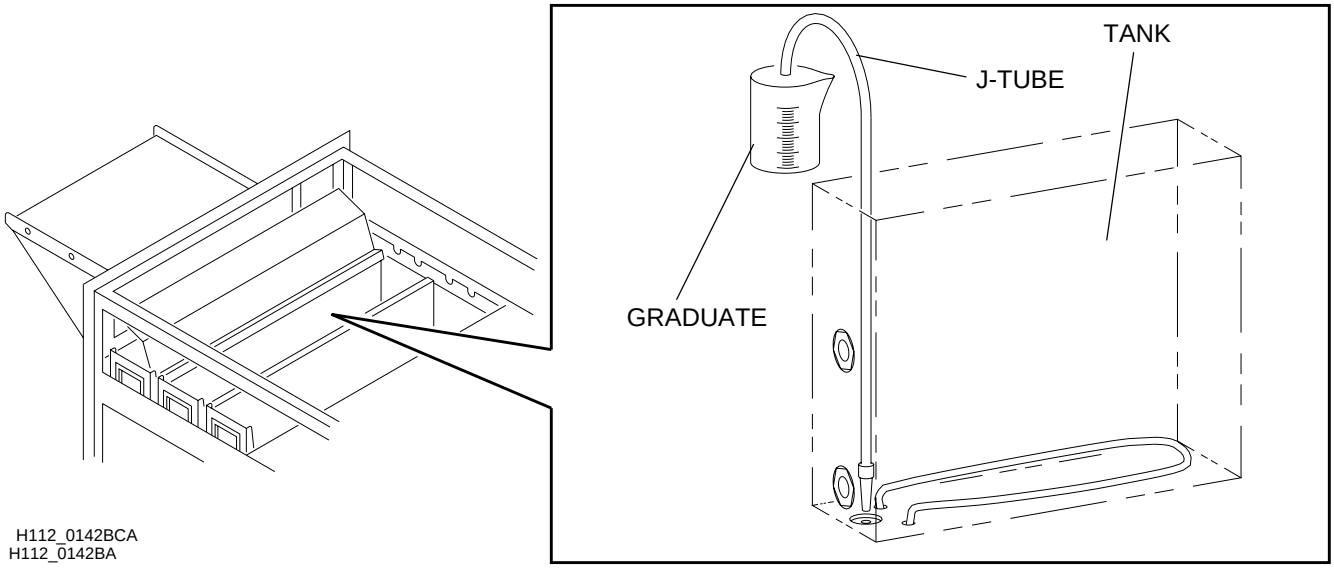
[10] Check the developer flow rate again by doing steps 4 - 9.

[11] Clean the J-TUBE before inserting it into the fixer TANK.

[12] To adjust the **fixer flow rate:**

(a) Insert the J-TUBE into the fixer TANK.

(b) Do steps 4 - 9.



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Adjusting the Replenishment Flow Rates in M35A Processors with Serial No. 8940 and Below or in M35 Processors with Serial No. 3760 and Below

Plumbing Circulation Diagrams, M35 and M35A Processors

See the next 4 pages.

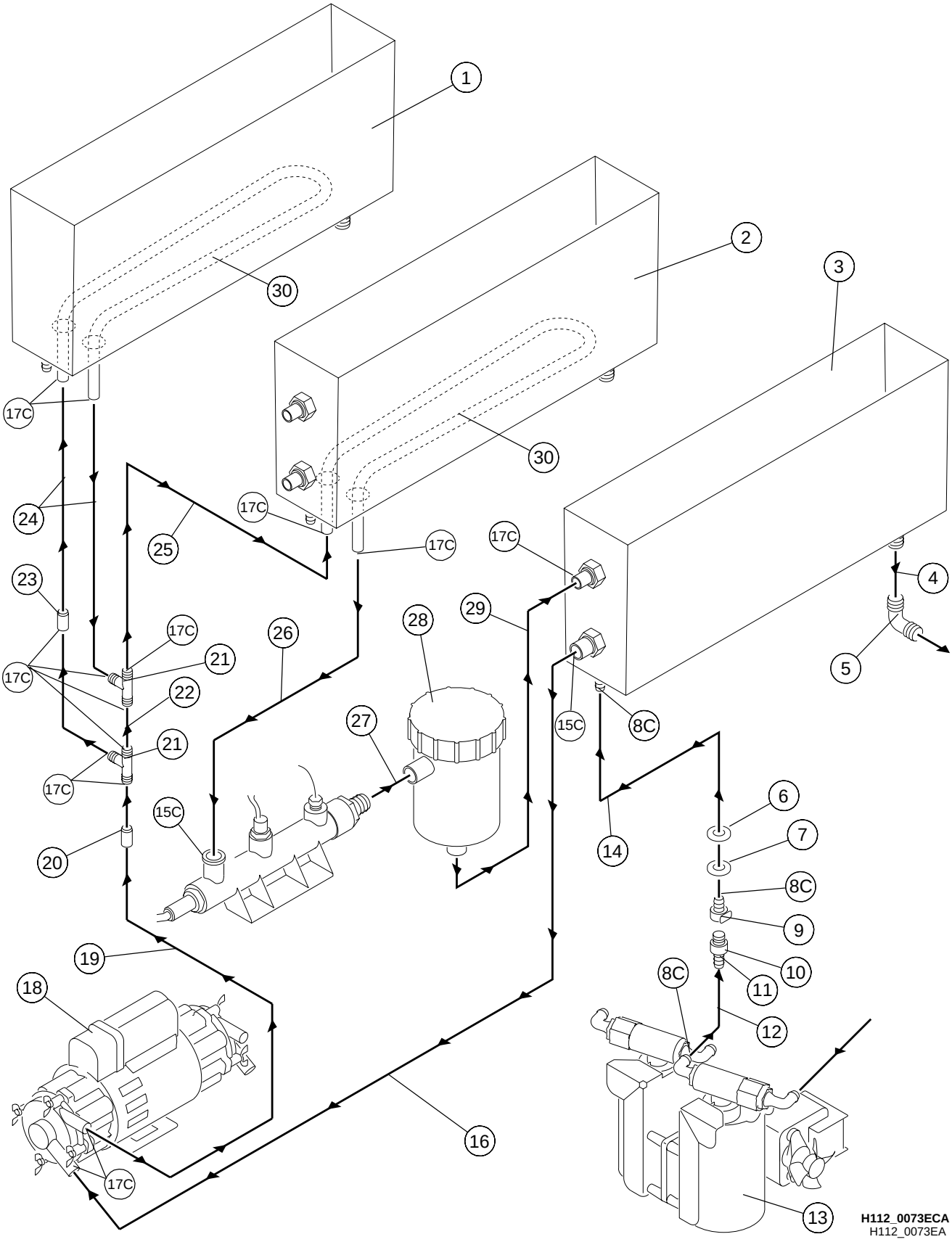

Figure 1 Developer Plumbing Circulation Diagram

Item	Part No.	Description	Qty.	Notes
1	287000	Tank - Wash	1	
2	779003	Tank - Fixer	1	
3	779002	Tank - Developer	1	
4	489788	Tube	1	
5	579383	Elbow	1	
6	594534	Washer	1	
7	594535	Gasket	1	
8c	246800	Clamp	2	
9	619251	Fitting - Quick Release, female	1	
10	619252	Insert - Quick Release, male	1	
11	240058	Tie - Red	1	
12	240004	Tube	1	
13	240227	Replenishment Pump Assembly - M35A Processor	1	
	651861	Replenishment Pump Assembly - M35 Processor	1	
14	240002	Tube	1	
15c	246808	Clamp	5	
16	287736	Tube	1	Developer Tank to the Recirculation Pump
17c	246801	Clamp	15	
18	240500	Recirculation Pump Assembly - M35A Processor	1	
	418703	Recirculation Pump Assembly - M35 Processor	1	
19	531270	Tube	1	From the Recirculation Pump
20	539151	Orifice - 0.250 ID	1	
21	180281	Connector - Tee	2	
22	463029	Tube	1	Between the 2 Tee Connectors
23	531263	Orifice - 0.109 ID	1	
24	527068	Tube	2	From the Tee Connectors to the Wash Heat Exchanger
25	488190	Tube	1	From the Tee Connector to the Fixer Heat Exchanger
26	287735	Tube	1	From the Thermowell to the Fixer Heat Exchanger
27	914568	Tube	1	From the Filter to the Thermowell
28	536827	Filter Assembly	1	
29	287740	Tube	1	From the Filter to the Developer Tank
30	287053	Exchanger - Heat	2	
	264461	Kit - Tubing	1	Includes Part No. 240002, 240003, 240004, 240005, 287733 (2), 287735, 287736, 287740, 471393, 489788 (3), & 914568.

Figure 1 Developer Plumbing Circulation Diagram

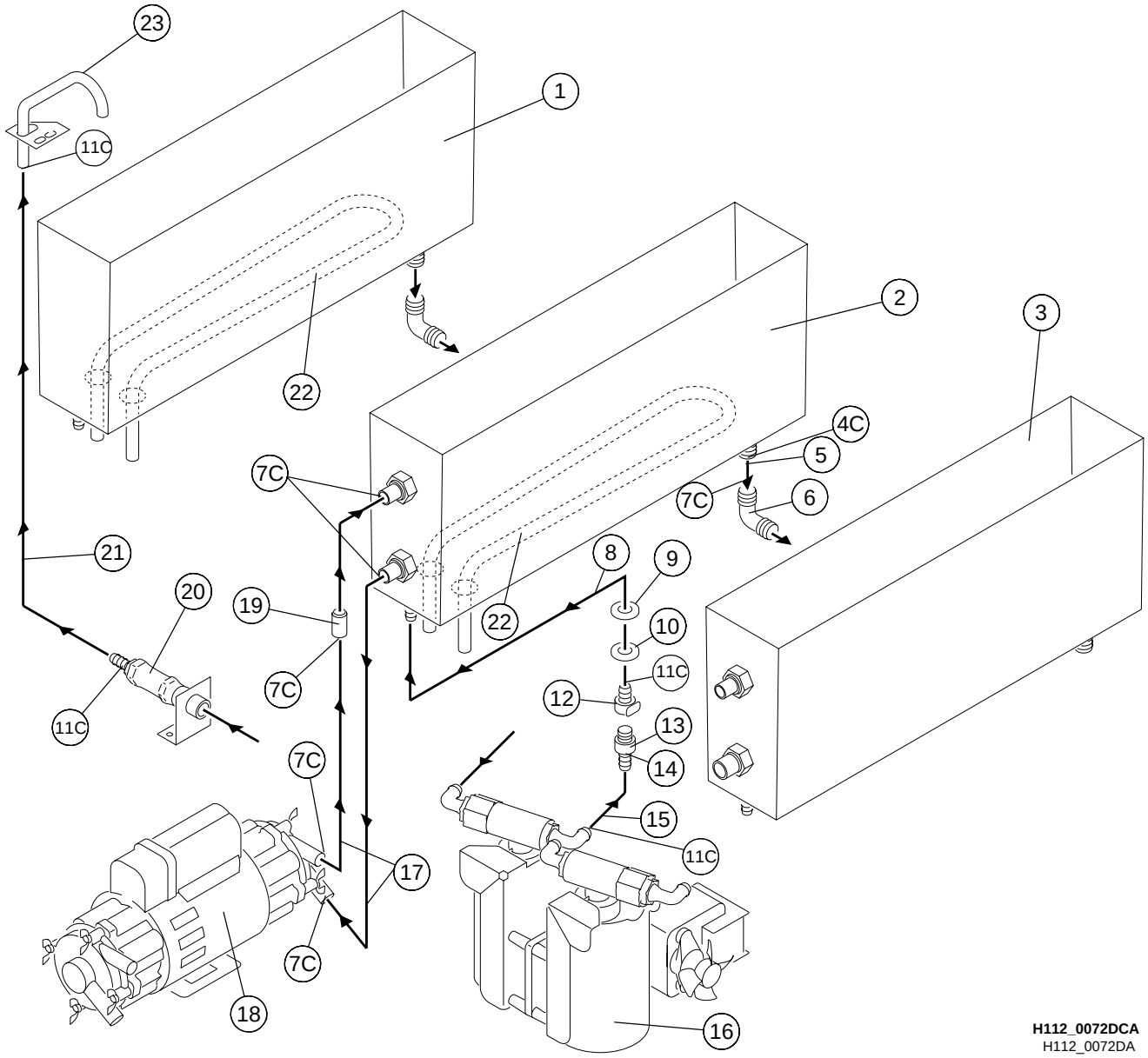

Figure 2 Fixer and Wash Plumbing Circulation Diagram, M35 and M35-A Processors

Item	Part No.	Description	Qty.	Notes
1	287000	Tank - Wash	1	
2	779003	Tank - Fixer	1	
3	779002	Tank - Developer	1	
4c	246808	Clamp	1	
5	489788	Tube	1	
6	579383	Elbow	2	
7c	246801	Clamp	15	
8	240003	Tube	1	
9	594534	Washer	1	
10	594535	Gasket	1	
11c	246800	Clamp	2	
12	619251	Fitting - Quick Release, female	1	
13	619252	Insert - Quick Release, male	1	
14	240059	Tie - Blue	1	
15	240005	Tube	1	
16	240227	Replenishment Pump Assembly - M35A Processor	1	
	651861	Replenishment Pump Assembly - M35 Processor	1	
17	287733	Tube	2	
18	240500	Recirculation Pump Assembly - M35A Processor	1	
	418703	Recirculation Pump Assembly - M35 Processor	1	
19	539152	Orifice - 0.209 ID	1	
20	261590	Water Inlet Assembly	1	
	261650	Kit - Flow Control Valve	1	Includes these 5 items:
	185101	Nipple	1	
	287730	Bracket - Water Inlet	1	
	472477	Control - Flow	1	
	556104	Adapter	1	
	551400	Elbow	1	
21	471393	Tube	1	
22	287053	Exchanger - Heat	2	
23	779214	Water Inlet Tube and Tab Assembly	1	
	264461	Kit - Tubing	1	Includes Part No. 240002, 240003, 240004, 240005, 287733 (2), 287735, 287736, 287740, 471393, 489788 (3), & 914568.

Figure 2 Fixer and Wash Plumbing Circulation Diagram, M35 and M35-A Processors

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Periodic Maintenance

General Information

NOTE

- This section includes additional procedures that are not in the Operator Manual, Publication No. 981158.
- To provide for optimum operation of the processor, it is important to use the following procedures.

[1] Process 5 sheets of unprocessed film before you begin the periodic maintenance. Check for artifacts.

[2] Check for:

- cleanliness
- broken parts
- wear of parts
- leakage
- site specifications

[3] Install new parts for the broken parts and parts that have wear.

WARNING

Dangerous Voltage

- Disconnect the main power before lubricating the parts.
- Do not allow any oil or grease to touch the CROSSOVERS and RACK ASSEMBLIES or to drip into the TANKS.

[4] Provide lubrication if necessary.

[5] Use the correct procedure to clean parts.

[6] Make the necessary adjustments.

[7] Process 5 sheets of unprocessed film in the processor after you have performed any service. Check for artifacts.

Lubrication Table

Part	Lubricant	Frequency	Procedure
Main Drive Chain	NLGI - No. 2 Lithium Ball and Roller Bearing Grease, TL-2324	As necessary. Check each month.	Apply to surface of Chain.
Recirculation Pumps	Light oil, such as SAE No. 20 Motor Oil, TL-2244	Every 6 months.	Several drops in the oil holes.
Main Drive Motor	No lubrication necessary	--	--
Gear Housing of the Main Drive Motor	No lubrication necessary	--	--
Dryer Blower Motor Bearings	Light oil, such as SAE No. 20 Motor Oil, TL-2244	Every 6 months.	Several drops in the oil holes.

Periodic Maintenance Schedule

ITEM TO CHECK	WEEKLY	MONTHLY
Film Guide Assembly		X
Detector/Crossover Assemblies Rollers Gears Guide Shoes Bearings Brackets Nuts	X	
Squeegee Assembly Rollers Gears Guide Shoes Bearings Brackets Nuts	X	
Rack Assemblies Rollers Sprockets Chain Springs Rewet Rollers		X
Turnaround Assemblies Rollers Springs		X
Main Drive Assembly		X
Plumbing Connections Tubing		X
Recirculation System Filter		X Or after 5000 films
Developer Temperature	X	
Water Flow to the Processor		X
Chemical Replenishment	X	
Strainer Assemblies		X
Dryer Sections Bearings Air Tubes Rollers O-Rings Dryer Temperature	 X X	X X X X

Detector Switches

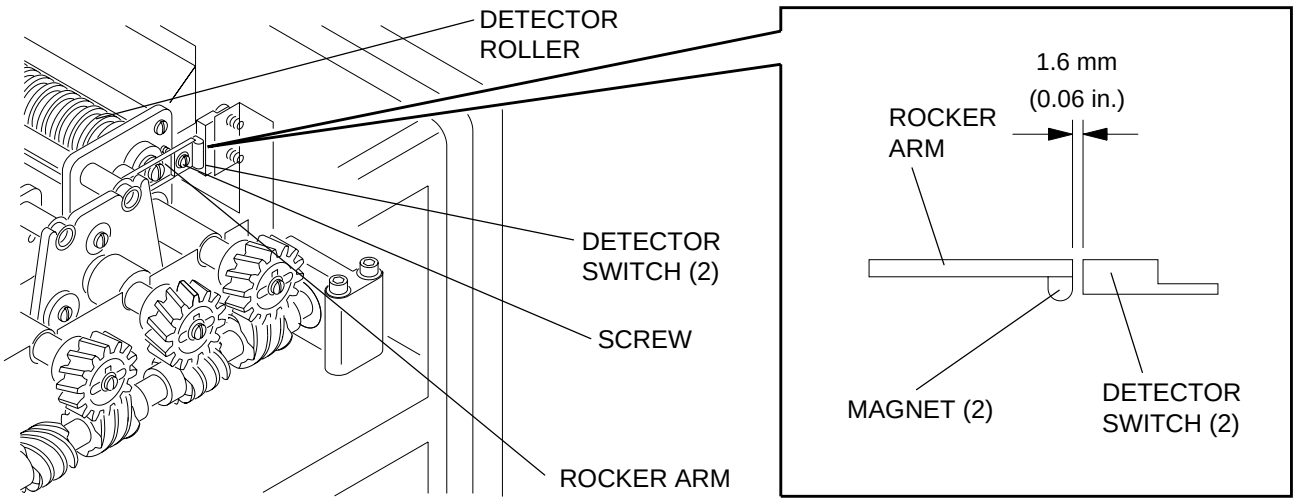
Check that the DETECTOR SWITCHES operate the REPLENISHMENT PUMP. See page 2-4 for adjustment of the DETECTOR SWITCHES, if necessary.

Detector Crossover Assembly

[1] Clean the DETECTOR ROLLERS with a damp, lint-free cloth or natural sponge.

[2] Check:

- That the ROCKER ARM moves freely. If not, remove the ROCKER ARM and BUSHING and clean with warm water.
- For corrosion of the ROCKER ARM. Install a new one if necessary.
- For squareness of the DETECTOR CROSSOVER ASSEMBLY. See page 2-6.
- That the DETECTOR CROSSOVER ASSEMBLY is seated correctly.



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Checking the Adjustment of the Detector Switches

Crossover Assemblies

[1] Remove the CROSSOVER ASSEMBLIES from the processor.

[2] Rinse the CROSSOVER ASSEMBLIES with running water.

[3] If necessary, use a soft brush and warm water or:

Developer/Fixer Crossover Assembly	*Kodak* Liquid Developer System Cleaner
Fixer/Wash Crossover Assembly	*Kodak* Fixer/Wash System Cleaner

[4] Check the ROLLER GEARS for broken or worn teeth. Install new ROLLERS if necessary.

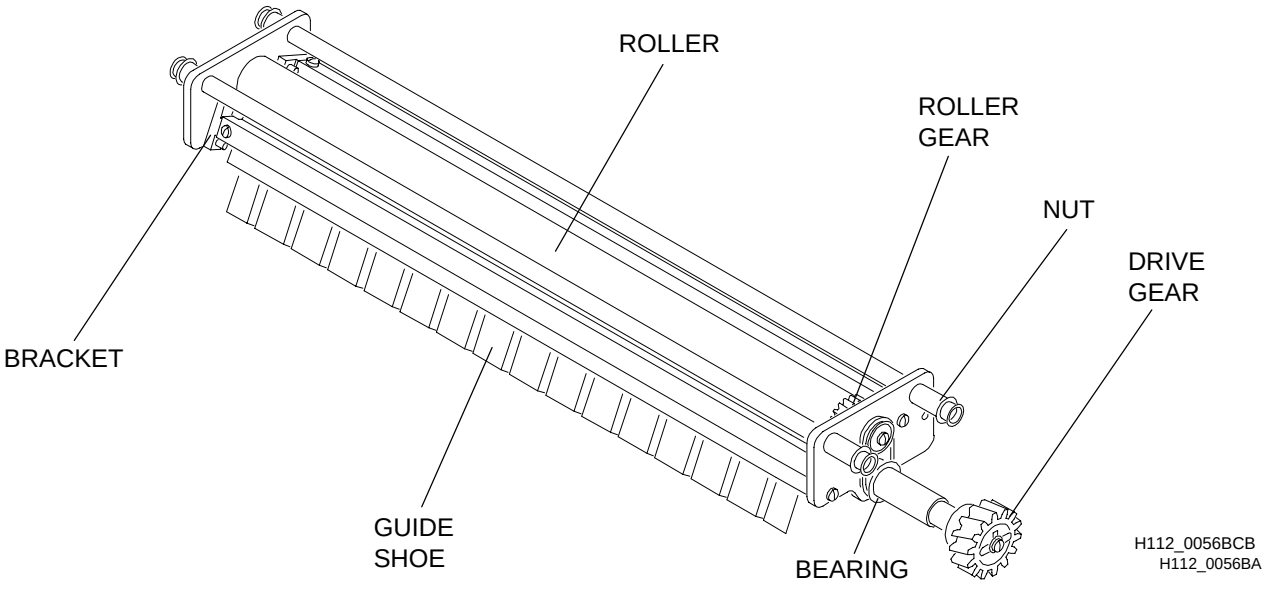
[5] Check that the RESILIENT ROLLER is smooth. Install a new RESILIENT ROLLER if necessary.

[6] Check the BEARING, BRACKETS, and NUTS for wear or broken parts. Install new parts if necessary.

[7] Check the DRIVE GEAR for wear or burrs. Install a new DRIVE GEAR if necessary.

[8] Place the CROSSOVER ASSEMBLIES on a flat surface with the GUIDE SHOES up.

[9] Check for squareness. See page 2-6 of this manual.

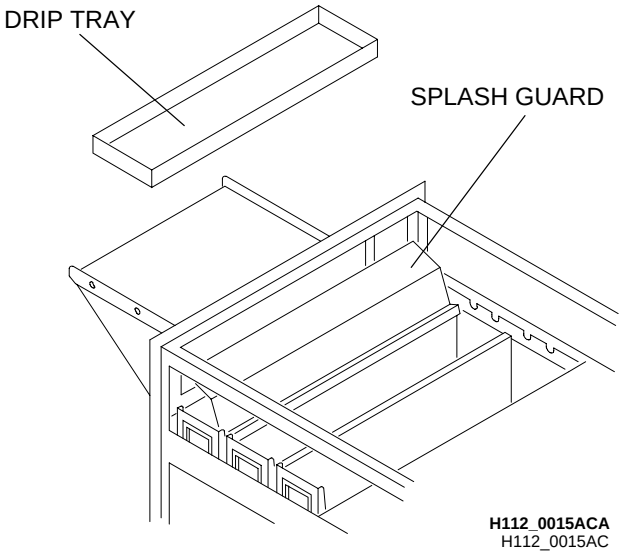


Crossover Assembly

Rack Assemblies

CAUTION

When you remove the FIXER RACK ASSEMBLY, install a SPLASH GUARD between the DEVELOPER TANK and the FIXER TANK to prevent contamination of the developer. Use a DRIP TRAY when you remove the RACK ASSEMBLIES. Install the RACK ASSEMBLIES slowly into the TANKS.



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Rollers

[1] Remove the RACK ASSEMBLIES from the processor.

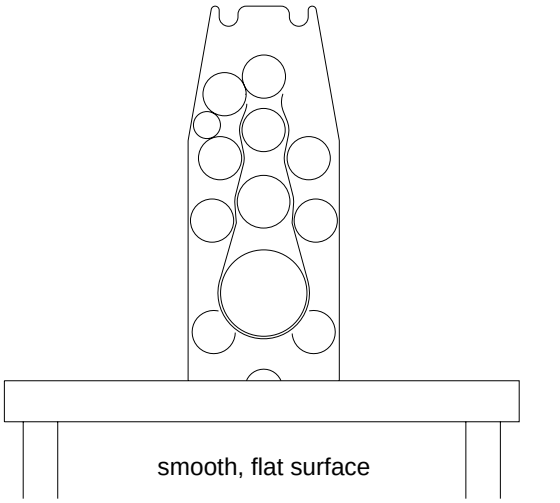
[2] Rinse the RACK ASSEMBLIES with warm water, approximately 44°C (110°F).

NOTE

Discoloration of the ROLLERS is normal.

[3] If necessary, use a soft brush or:

Developer Rack Assembly	*Kodak* Liquid Developer System Cleaner
Fixer Rack Assembly	. *Kodak* Fixer/Wash System Cleaner
Wash Rack Assembly	



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[4] Remove the STUDS from the drive side.

[5] Remove all the OUTER ROLLERS on the entrance side except the bottom OUTER ROLLER.

[6] Clean the INNER and OUTER ROLLERS.

[7] Check all SPROCKETS and GEARS for wear.

[8] Check that all ROLLERS are straight.

[9] Install the ROLLERS in the RACK ASSEMBLY.

[10] Check:

- That the ROLLERS are installed correctly.
- The REWET ROLLER for wear.
- That the REWET ROLLER is smooth.
- That the REWET ROLLER touches the ROLLERS above and below it.
- The RACK ASSEMBLY for squareness. See page 2-7.

Drive Chain

[1] Manually rotate the DRIVE GEAR to check the LINKS of the DRIVE CHAIN.

[2] Check the tension of the DRIVE CHAIN.

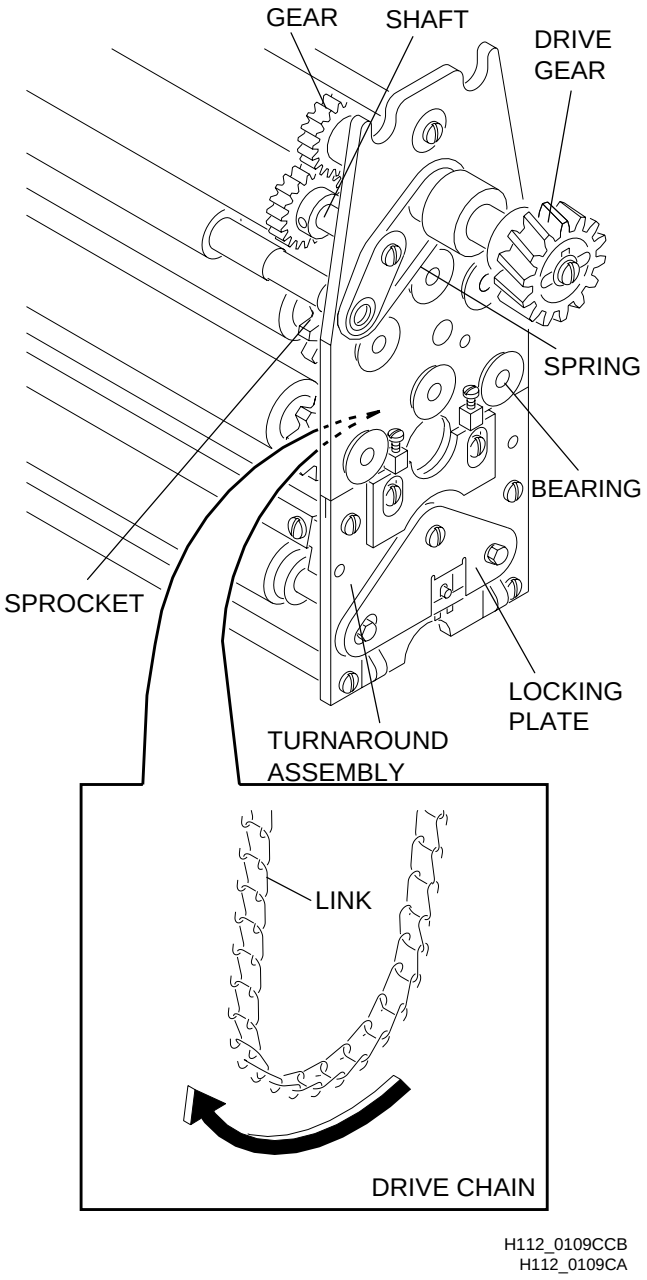
NOTE

If the DRIVE CHAIN is too tight, the ROLLERS will bind and wear the BEARINGS. If the DRIVE CHAIN is too loose, the ROLLERS will not move smoothly.

[3] If necessary, adjust the DRIVE CHAIN by moving the TURNAROUND ASSEMBLY up or down. Adjust both sides of the TURNAROUND ASSEMBLY by the same distance.

Springs

[1] Check the SPRINGS for wear. Install new SPRINGS if necessary.



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Checking the Rack Assemblies

Turnaround Assemblies

[1] Remove the TURNAROUND ASSEMBLIES from the RACK ASSEMBLIES.

[2] Clean the DEVELOPER TURNAROUND ASSEMBLY with KODAK Liquid Developer System Cleaner.

[3] Clean the FIXER TURNAROUND ASSEMBLY with KODAK Liquid Fixer/Wash System Cleaner.

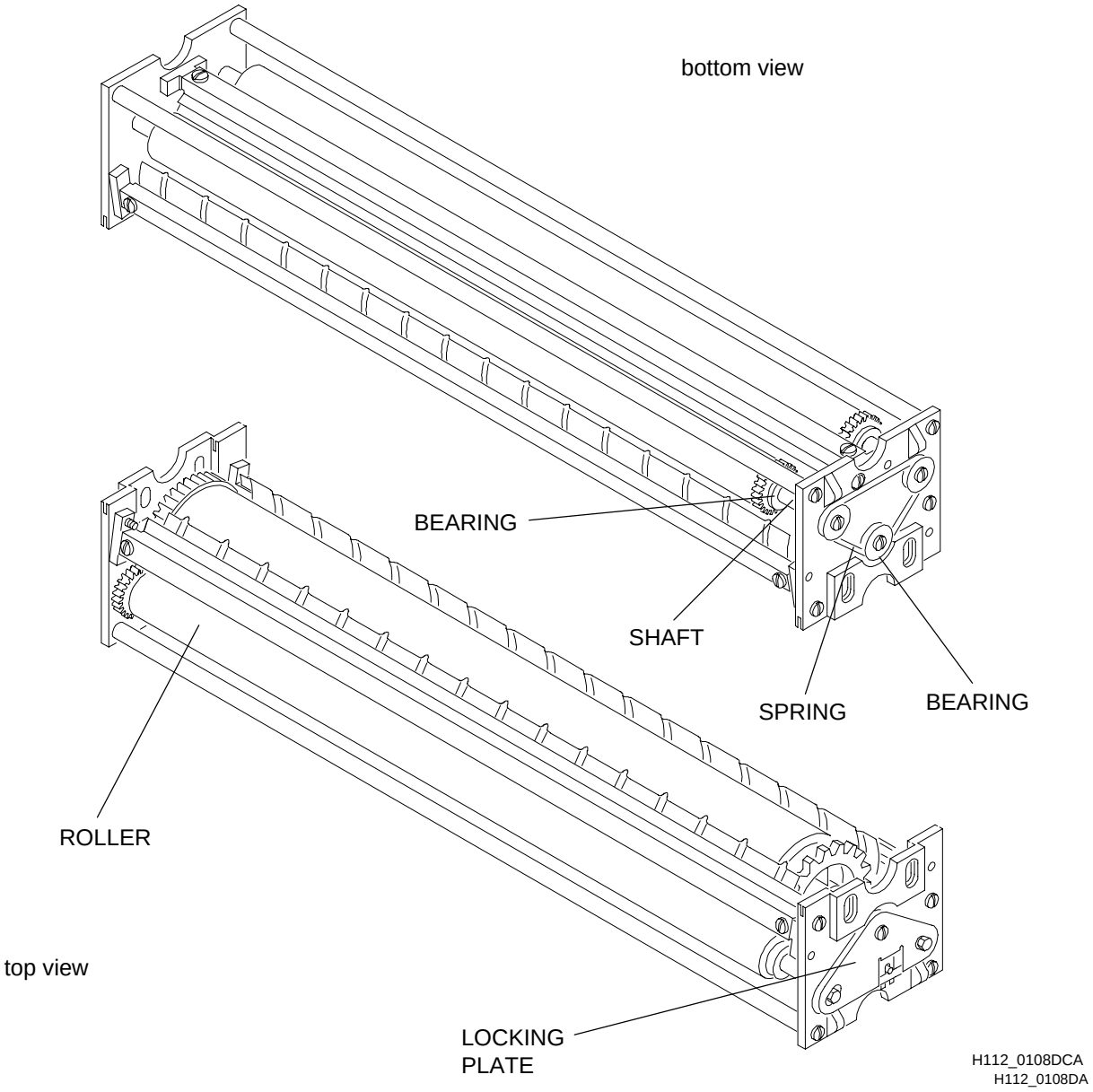
[4] Check the tension of the SPRINGS.

[5] Check the BEARINGS. If a ROLLER does not rotate freely on the SHAFT, install new BEARINGS.

[6] Check that the ROLLERS move freely in the slots of the LOCATING PLATES.

[7] Check that the surfaces of the ROLLERS are smooth.

[8] Wipe all ROLLERS with a damp cloth or sponge.



Checking the Turnaround Assemblies

[1] Check that all ROLLERS rotate freely.

[2] Check for broken GEARS. Install new ROLLERS if necessary.

[3] Remove dirt and dust from the AIR TUBES.

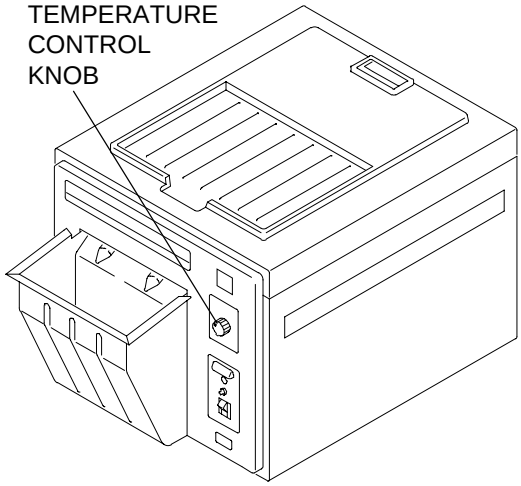
[4] Check the SPRINGS, not shown, for wear. Install new SPRINGS if necessary.

[5] Check the temperature at the bottom of the DRYER on the drive side of the processor.

[6] Rotate the DRYER TEMPERATURE CONTROL KNOB to adjust the temperature if necessary. See page 2-21.

NOTE

The temperature of the DRYER should be as low as possible for drying the film.



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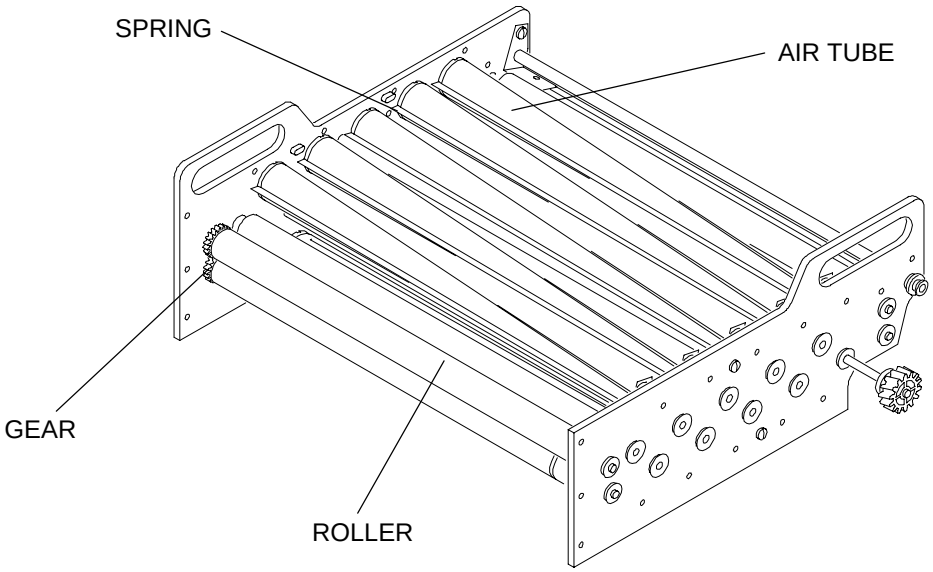

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Checking the Dryer Rack

[1] Check the DRIVE CHAIN for wear. Install a new DRIVE CHAIN if necessary.

[2] Check the tension of the DRIVE CHAIN. See page 2-8 if adjustment is necessary.

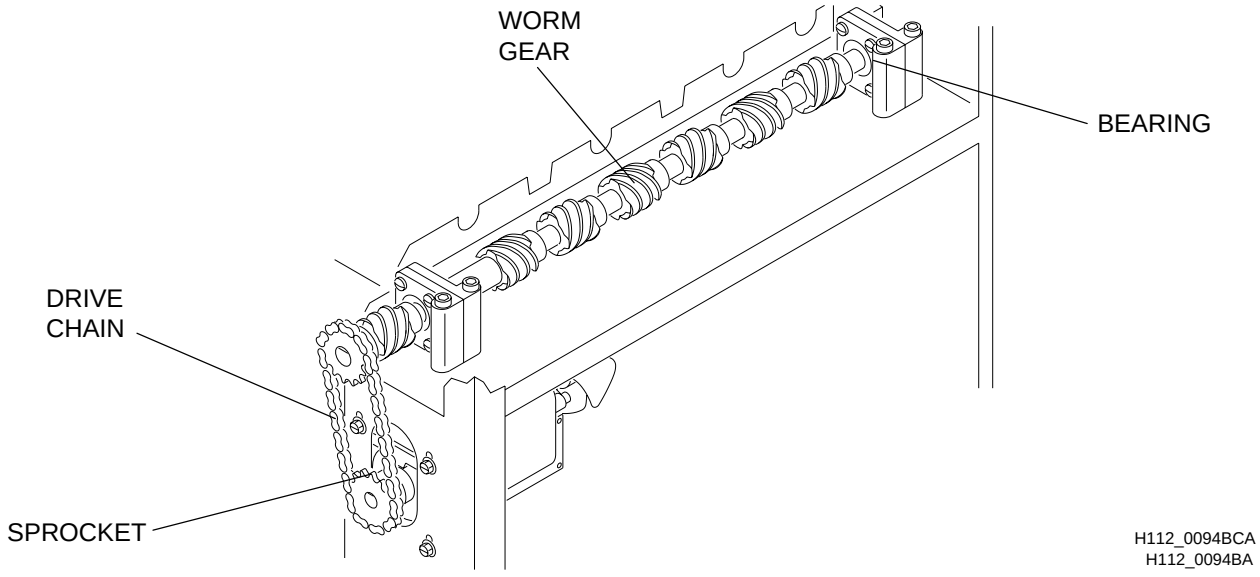
[3] Lubricate the DRIVE CHAIN if necessary.

[4] Check the BEARINGS, SPROCKETS, and WORM GEARS for wear. Install new parts if necessary.

[5] Check the teeth of the SPROCKETS. If the teeth are sharp, install new SPROCKETS.

[6] Check the WORM GEARS for burrs. Install new WORM GEARS if necessary.

[7] Rinse the WORM GEARS with a small amount of warm water.



Checking the Main Drive Assembly

General

[1] Check all the CONNECTIONS to the RECIRCULATION PUMPS, the VALVES, TUBING, and TANKS for leakage.

[2] Check that the temperature of all incoming water is 4 - 30°C (40 - 85°F).

[3] Check the flow rate of the wash water.

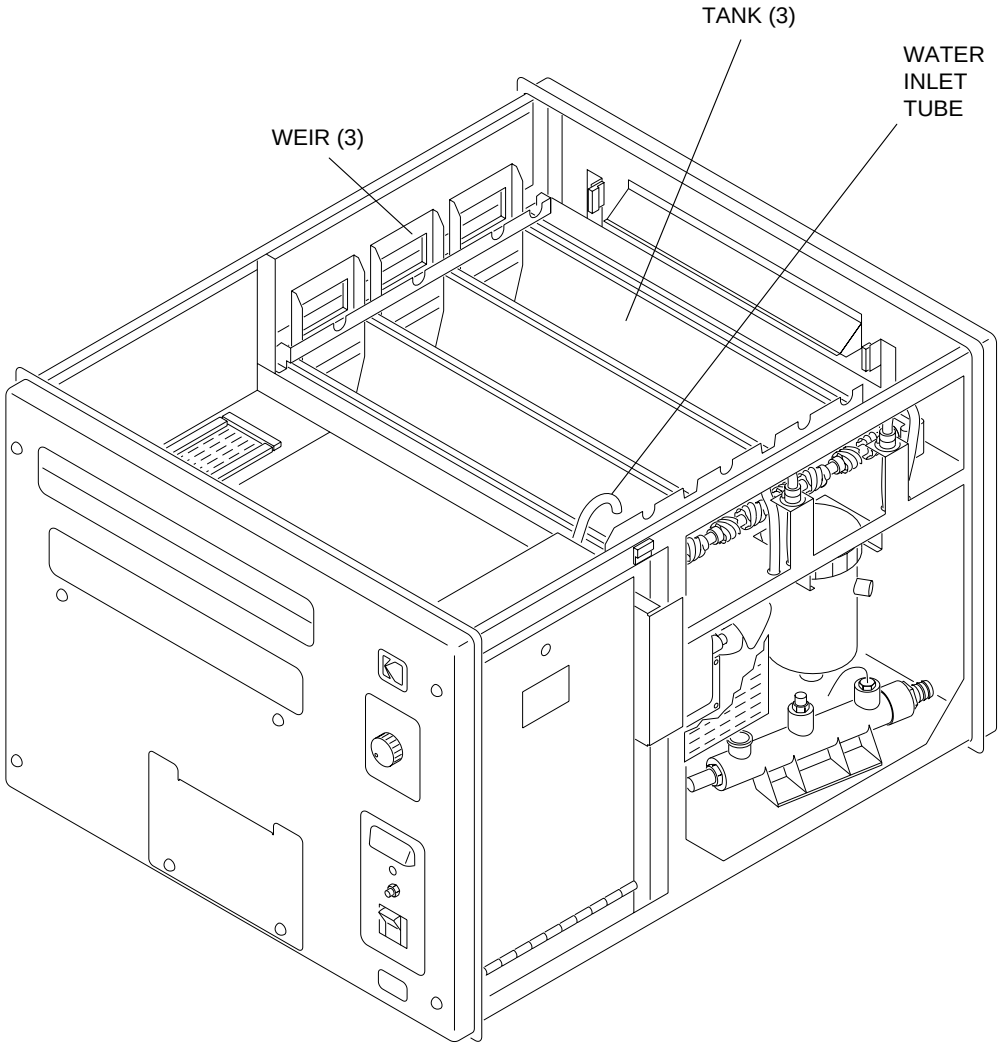
(a) Drain the TANKS.

(b) Remove the:

- FIXER/WASH CROSSOVER ASSEMBLY
- DRYER RACK ASSEMBLY
- WASH RACK ASSEMBLY

(c) Turn on the water.

(d) Measure the flow rate of the water. It should be 946 mL/min (¼ gal/min), +10% -0%, from the WATER INLET TUBE.



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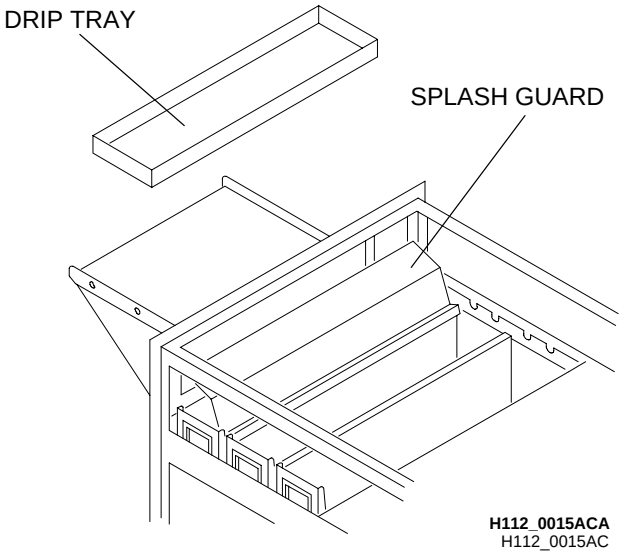
Recirculation Pumps

NOTE

When doing periodic maintenance and when changing the processing solutions, check the RECIRCULATION PUMPS and tubing.

CAUTION

- Always use a DRIP TRAY and the SPLASH GUARD when you remove RACK ASSEMBLIES.
- Never operate the RECIRCULATION PUMPS if the TANKS are empty.



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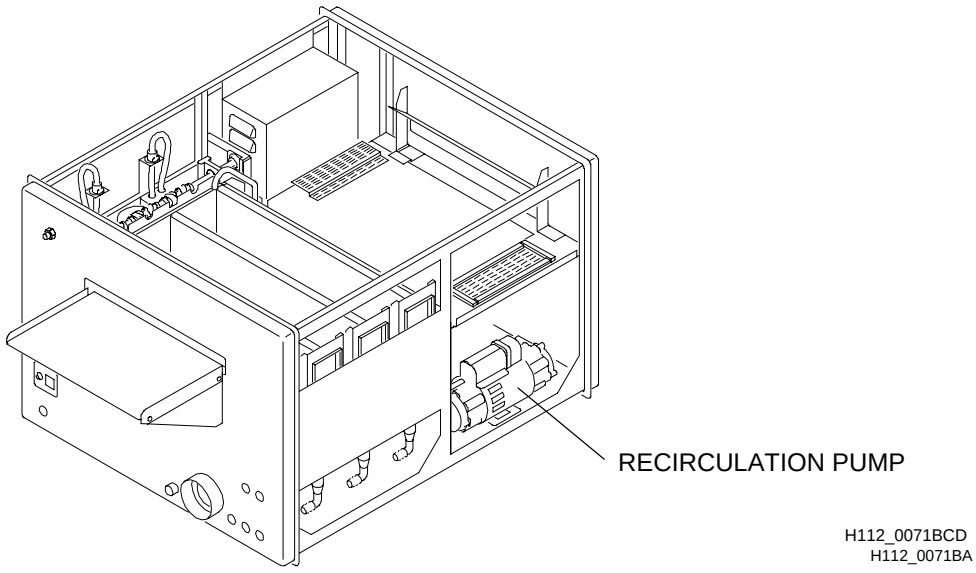
[1] Actuate the RECIRCULATION PUMPS.

[2] Check for:

- agitation on the surface of the solutions
- leakage
- excessive noise in the RECIRCULATION PUMPS



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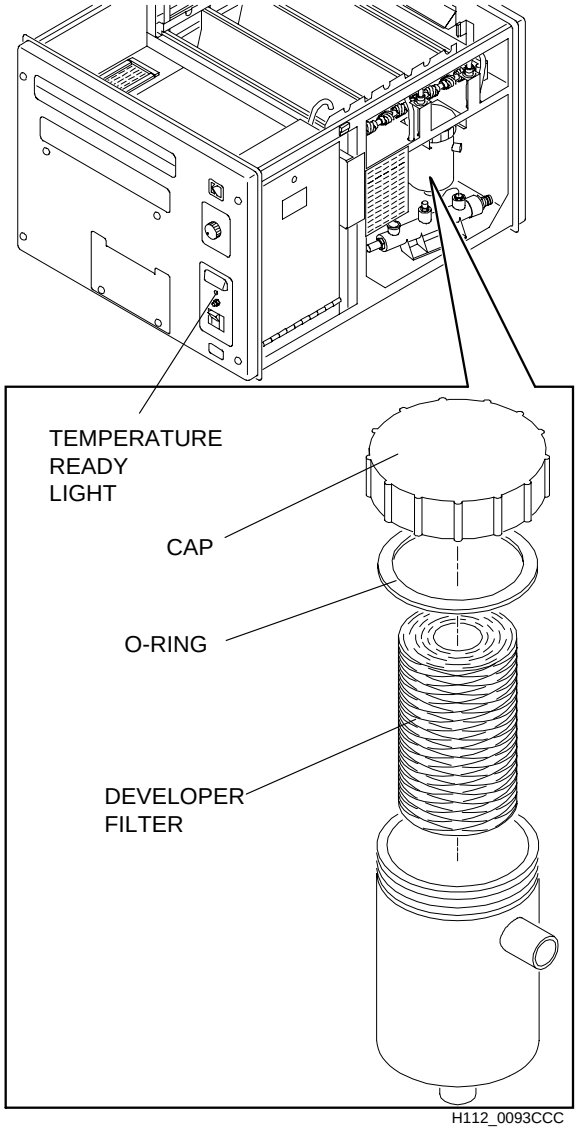
Checking the Recirculation Pumps

Developer Filter

[1] Install a new DEVELOPER FILTER at least once a month or after approximately 1000 sheets of film.

[2] Check that the O-RING is correctly seated before installing the CAP.



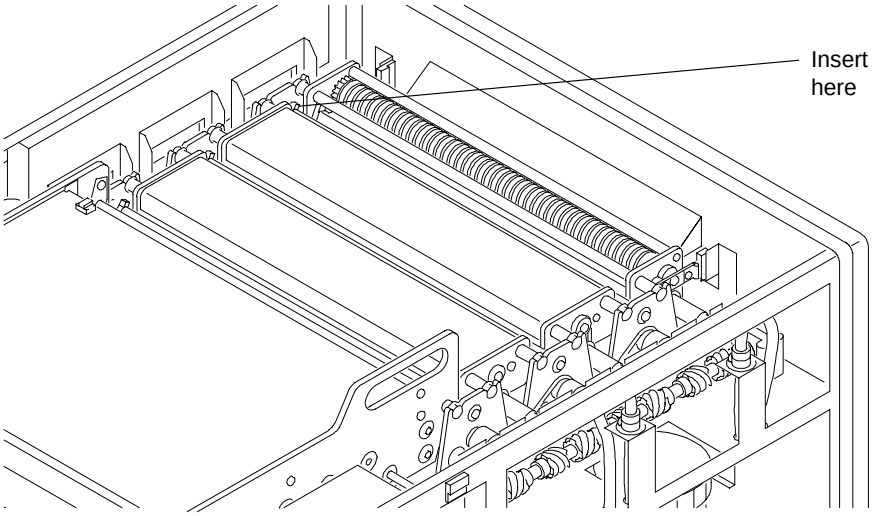
Replacement of the Developer Filter

Temperature of the Developer

[1] Remove the TOP COVER.

[2] Insert a THERMOMETER, Part No. 761217, into the non-drive side of the DEVELOPER TANK between the SIDE PLATE of the DEVELOPER RACK and the RACK SUPPORT. The correct developer temperature is 33.3°C (92°F).

If the Developer Is	The Temperature Ready Light Is
below the correct temperature,	on
higher than the correct temperature,	off
correct,	blinking



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[3] If the TEMPERATURE READY LIGHT does not indicate that the temperature of the developer is correct, adjust R2 on the 100 CIRCUIT BOARD.

(a) Remove the drive SIDE PANEL from the processor.

CAUTION

- Possible damage from electrostatic discharge. Use an ESD wrist strap.
- Use the POTENTIOMETER ADJUSTING TOOL TL-1481 to adjust R2.

(b) Open the ELECTRICAL BOX.

(c) Use the POTENTIOMETER ADJUSTING TOOL TL-1481 to adjust the developer temperature by rotating R2 on the 100 CIRCUIT BOARD:

clockwise ↷	to	**increase** the temperature
counterclockwise ↶	to	**decrease** the temperature

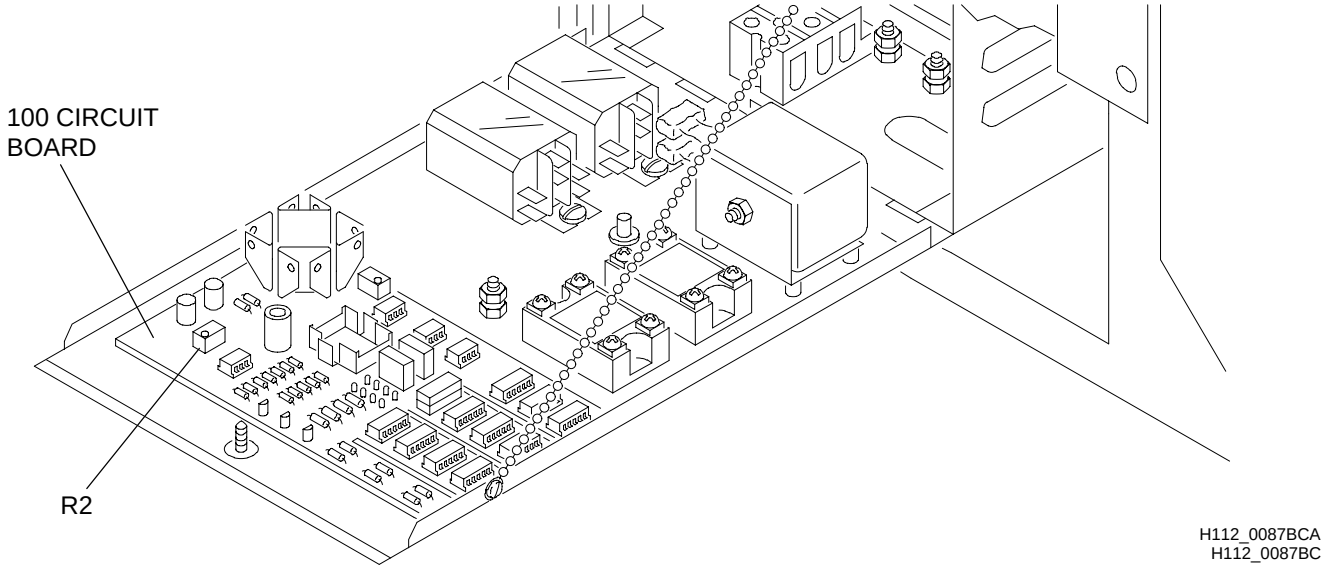
(d) Allow the developer to reach the new, adjusted temperature.

(e) Check the developer temperature in the DEVELOPER TANK with the THERMOMETER.

(f) If the developer temperature is not correct, do steps (c) - (e) again.

(g) Close the ELECTRICAL BOX and install the SIDE PANEL.

[4] Install the TOP COVER.



Checking and Adjusting the Developer Temperature

Chemical Replenishment

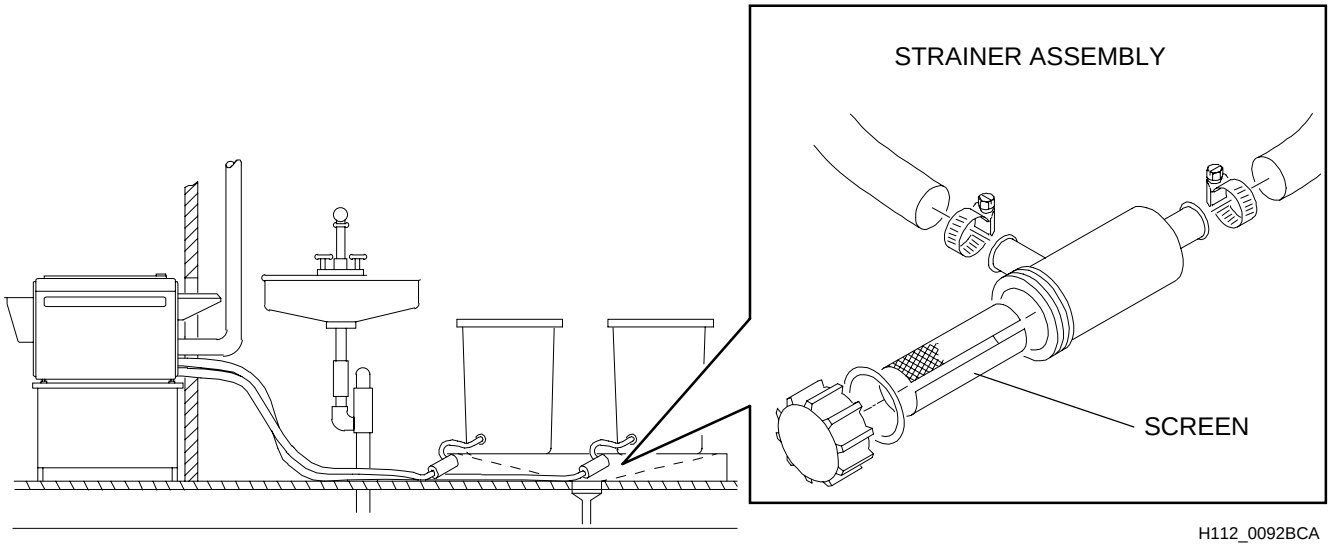
[1] Check the replenishment flow rates by doing the procedure on page 2-40 or page 2-42.

[2] Check the STRAINERS for debris.

(a) Place clamps on the tubing to stop the replenishment flow.

(b) Disassemble the STRAINER ASSEMBLIES.

(c) Use a brush and warm water to clean the STRAINER ASSEMBLIES and to remove dirt and chemical deposits from the SCREENS.



Cleaning the Replenishment Strainer Assemblies

Interlock Switch

[1] Check the operation of the INTERLOCK SWITCH:

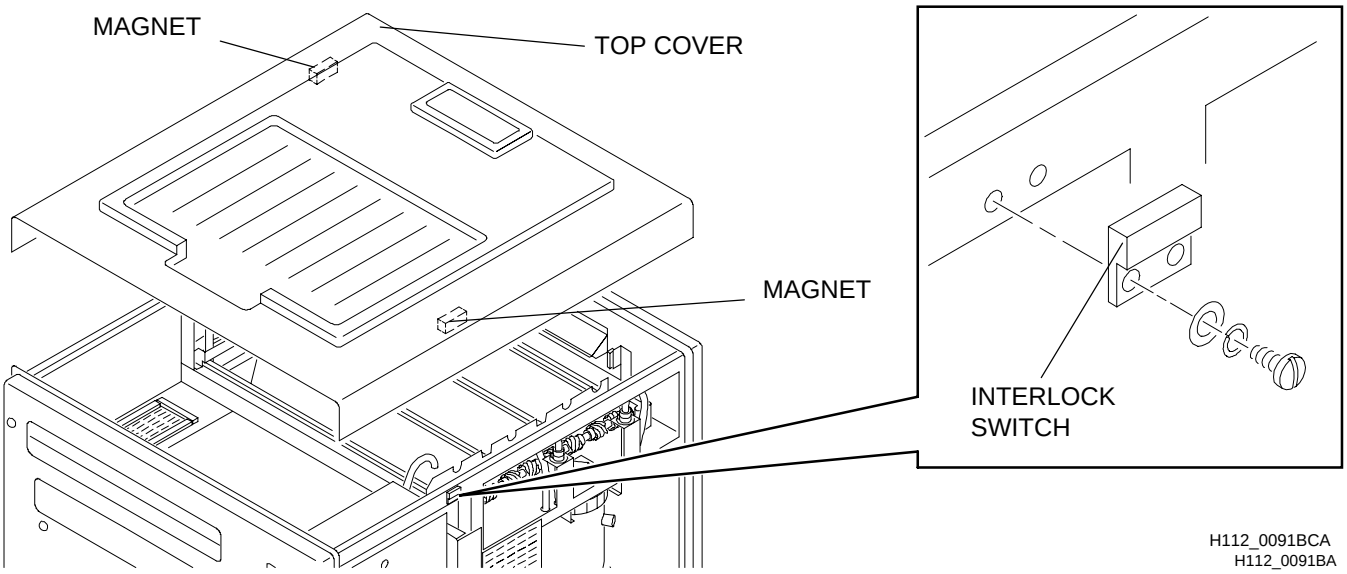
(a) Press one of the RUN/STANDBY SWITCHES.

(b) Remove the TOP COVER. The MAIN DRIVE MOTOR, the BLOWER MOTOR, and the DRYER HEATER will stop.

(c) If not, adjust the position of the MAGNETS on the TOP COVER.

(d) Install the TOP COVER and do steps (a) - (c) again.

[2] If the MAIN DRIVE MOTOR, the BLOWER MOTOR, and the DRYER HEATER do not stop, install a new INTERLOCK SWITCH.



Replacement of the Interlock Switch

Correcting Difficulties

IMPORTANT

- Many film transport and sensitometric difficulties can be caused or aggravated by inadequate hardening of the emulsion due to underreplenishment of the developer and fixer solution.
- Another cause of inadequate hardening of the emulsion may be deterioration of the developer replenisher because of age or storage at too high a temperature. Do not mix more than a 2-week supply of developer replenisher.

1. Transport Failure	2. Surface Artifacts	3. Abnormal Film Densities	4. Wet Films	5. Low Solution Levels	6. Overlapping of Films	
1	2	3	4	5	6	
•					•	Film Feeding Error ***Feed only single thicknesses of film. Feed the next film only after the film feed signal sounds. 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 that the surfaces of all the rollers are clean and smooth, especially in the developer turnaround assembly.
•			•			Check that the dryer air tubes are in the correct positions.
	•		•			Remove any dirt from the dryer rollers and air tubes, especially the slots. Use a bottle brush and rinse with water.
	•	•	•	•		Check the settings for correct replenishment. Check the replenishment system: kinks, pump operation, detector switches, and replenishment pump.
	•					Adjust the dryer temperature control setting to the **lowest** possible temperature that still allows good drying.
	•					Clean the feed shelf and detector rollers.
•	•				•	Clean any bacterial growth in the wash tank with a mild solution of chlorine bleach. Use 60 mL (2 fluidounces) of bleach per 3.8 L (1 gallon) of water. Wipe tanks with a soft sponge.
•				•		Check that the weirs are seated correctly. Check that the tanks are full.

1. Transport Failure	2. Surface Artifacts	3. Abnormal Film Densities	4. Wet Films	5. Low Solution Levels	6. Overlapping of Films	
1	2	3	4	5	6	
•	•	•	•		•	Change any chemicals that were not mixed correctly, are exhausted, or are contaminated. Change the developer filter if necessary. Check that replenishment flow rates are correctly set. Fill the replenisher tanks if necessary. ***Mix the developer replenishment in quantities not to exceed a 2-week supply.*** ***Always use a splash guard and rack drip tray when lifting the fixer rack to prevent contaminating the developer.*** ***Mix chemicals as directed.***
•	•				•	Check that *all* rollers are in place and positioned and rotating correctly.
•	•				•	Check that *all* roller gears, sprockets, and idlers are engaged.
•	•				•	Replace any rollers with broken or worn gudgeons.
•	•				•	Replace any bearings that do not allow the rollers to rotate correctly.
•	•					Check the rack chain tension. Check that the rollers do not hesitate and that the chain moves smoothly.
		•				With the processor on, check for movement on the surface of the solutions. Movement indicates recirculation. If you do not observe any movement, check that the tubing is not kinked, that the recirculation pump is operating, and that the developer filter is clean and in position.
•	•					If the incoming wash water is dirty, clean the rack and tank thoroughly. Change the incoming water filter. Make sure to use the correct water filter.
				•		Check that the poppets in the replenishment pump are clean and are not distorted or worn. If the poppets are preventing proper replenishment, have qualified personnel clean or replace them.
			•			Check that the dryer air exhaust is free from any obstruction and is installed correctly according to specifications in the Installation Instructions.
•					•	Check that the turnaround assembly is adjusted correctly. Make sure that the turnaround assemblies are square with the rack.
	•	•				Check the incoming water temperature. Temperature must be between 4°C (40°F) and 30°C (85°F).
•		•				Check that the orifices in the developer and fixer recirculation lines are the correct size and are not plugged.
		•				Check that the correct bulb and safelight filter are in the safelight and at the correct distance from the feed shelf and work surface.
•		•				Check that the top cover and panels are tight on the processor. Check that there are no leaks in the lighttight gasket.
•						10 x 10 cm films — feed films diagonally if they fail to transport reliably.

1. Transport Failure	2. Surface Artifacts	3. Abnormal Film Densities	4. Wet Films	5. Low Solution Levels	6. Overlapping of Films	
1	**2**	**3**	**4**	**5**	**6**	
					•	Check the time delay. For all transport speeds, the buzzer should sound once the trailing edge of the film has advanced 75 mm (3 in.) into the processor.
•	•	•			•	Check that the tank solution levels are at the overflow weirs.
•	•					Adjust the guide shoes correctly. NOTE: Most often in the developer turnaround. Adjust the tips of the guide shoes in the exit turnaround as close as possible to the rack roller above them.
				•		Check for solution in the replenisher tanks. Fill if necessary. NOTE: Do not mix more than a 2-week supply of developer replenisher.
		•				Check that the correct bulb is in the safelight.

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Diagrams

NOTE

If the processor does not operate correctly after checking through the table starting on page 4-1 of this Service Manual, see the diagrams in this section.

System	Condition	Description	Figure
Dryer Temperature Control or Main Drive		Sequence of Operation Circuit Diagram, 800 Board Circuit Diagram, M35 Circuit Diagram, M35A	5-1 5-2 5-3 5-4
	No Blower Motor or Drive Motor	Diagnostic Flowchart	5-5
	No Drive Motor or Dryer Heat	Circuit Board Flowchart, M35A	5-6
	No Dryer Heat	Diagnostic Flowchart, M35 Diagnostic Flowchart, M35A	5-7 5-8
	No Blower Motor	Diagnostic Flowchart	5-9
Replenishment Control System		Sequence for Film Feeding Circuit Diagram, M35 Circuit Diagram, M35A	5-10 5-11 5-12
	No Replenishment Pump	Diagnostic Flowchart	5-13
Developer Temperature		Sequence of Operation Circuit Diagram, M35 Circuit Diagram, M35A	5-14 5-15 5-16
	No Developer Heat and Temperature Ready Light Is On or Off	Diagnostic Flowchart	5-17
	Developer Heat on All the Time and Temperature Ready Light Is On	Diagnostic Flowchart	5-18
Complete Processor		Sequence of Operation Circuit Diagram, M35 Circuit Diagram, M35A Wiring Diagram, M35 Wiring Diagram, M35A Wiring Diagram, M35 Control Box Wiring Diagram, M35A Control Box Circuit Diagram, 100 Board	5-19 5-20 5-21 5-22 5-23 5-24 5-25 5-26

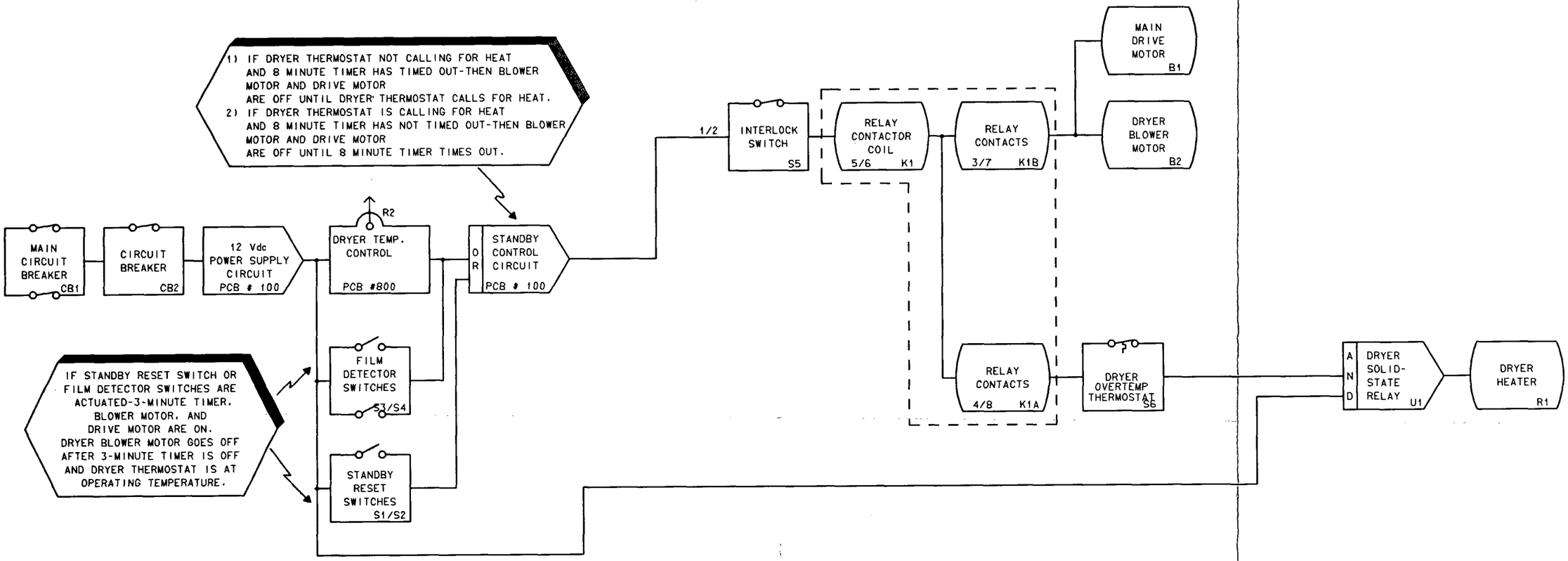


Figure 5-1 Sequence of Operation -- Dryer Temperature Control System and Main Drive Motor -- for the M35 and M35A Processors

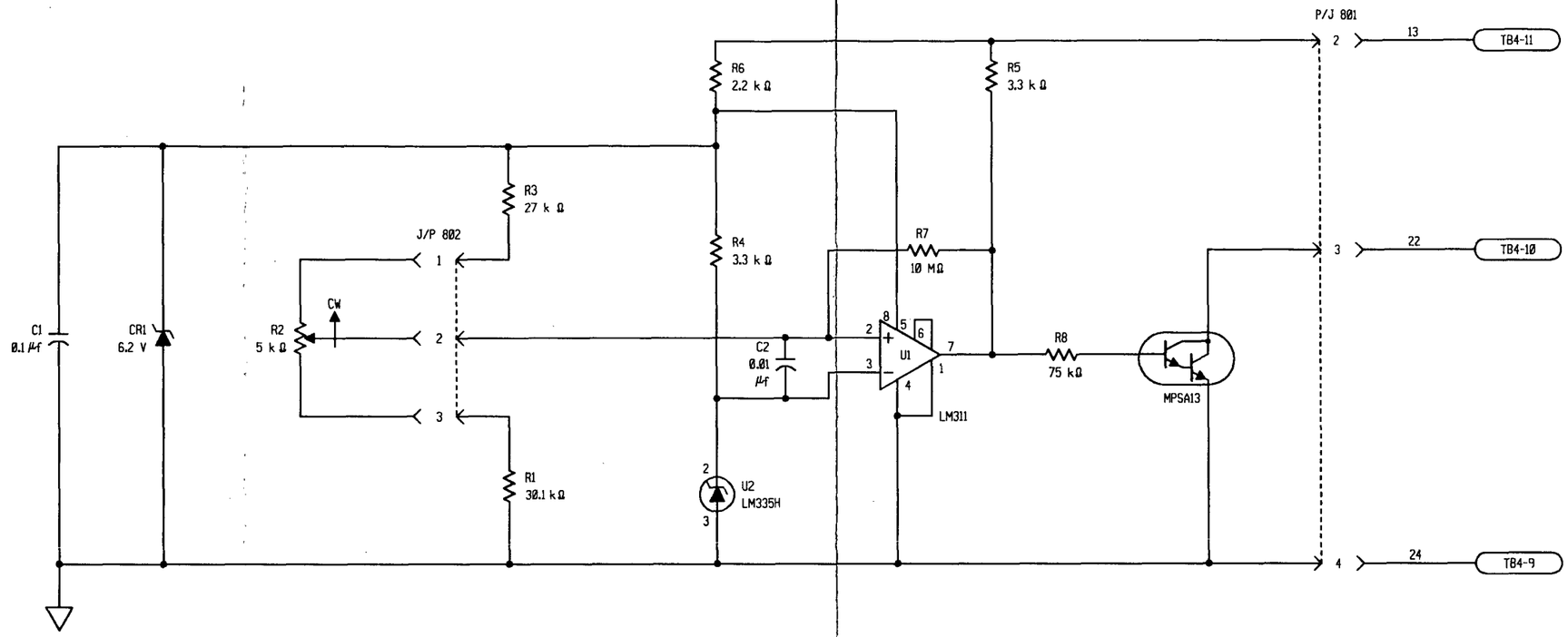
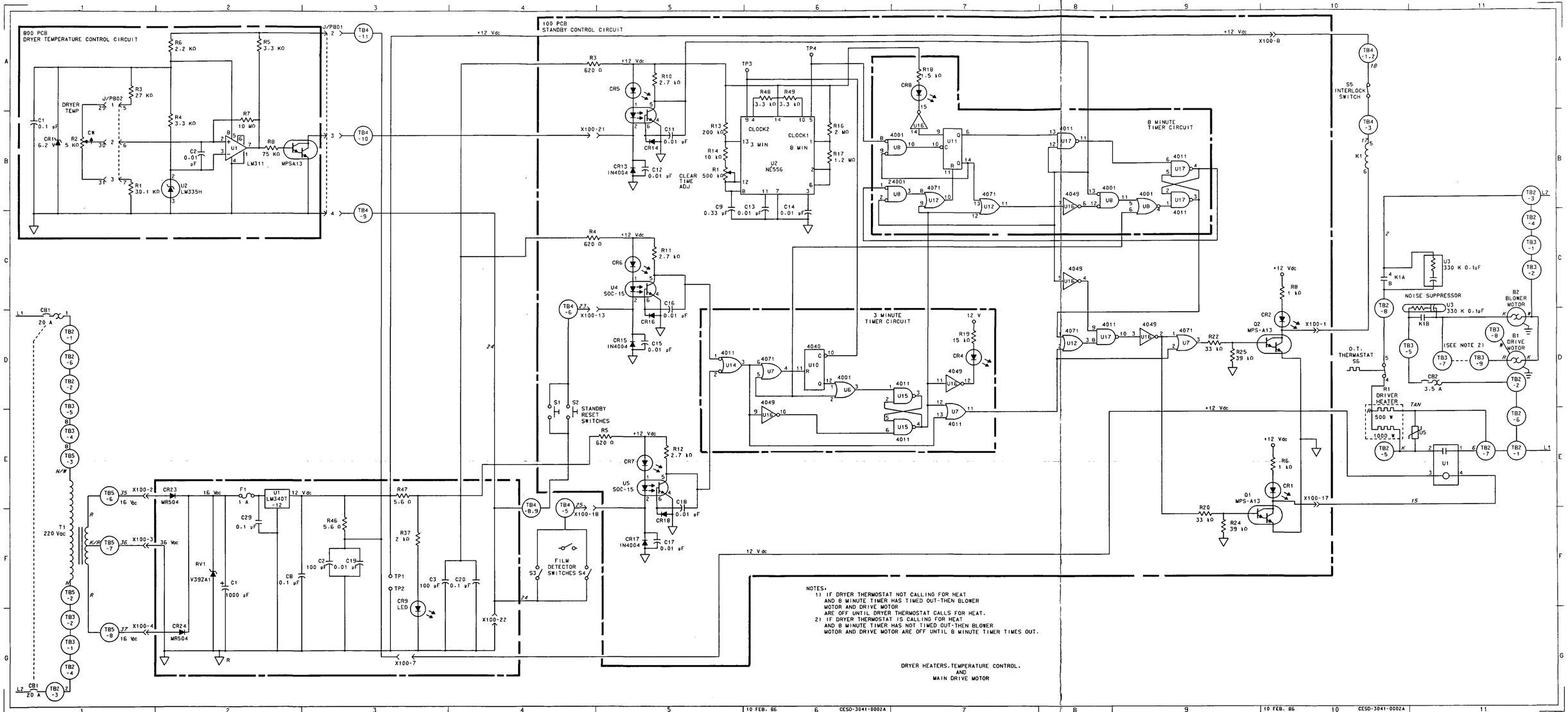
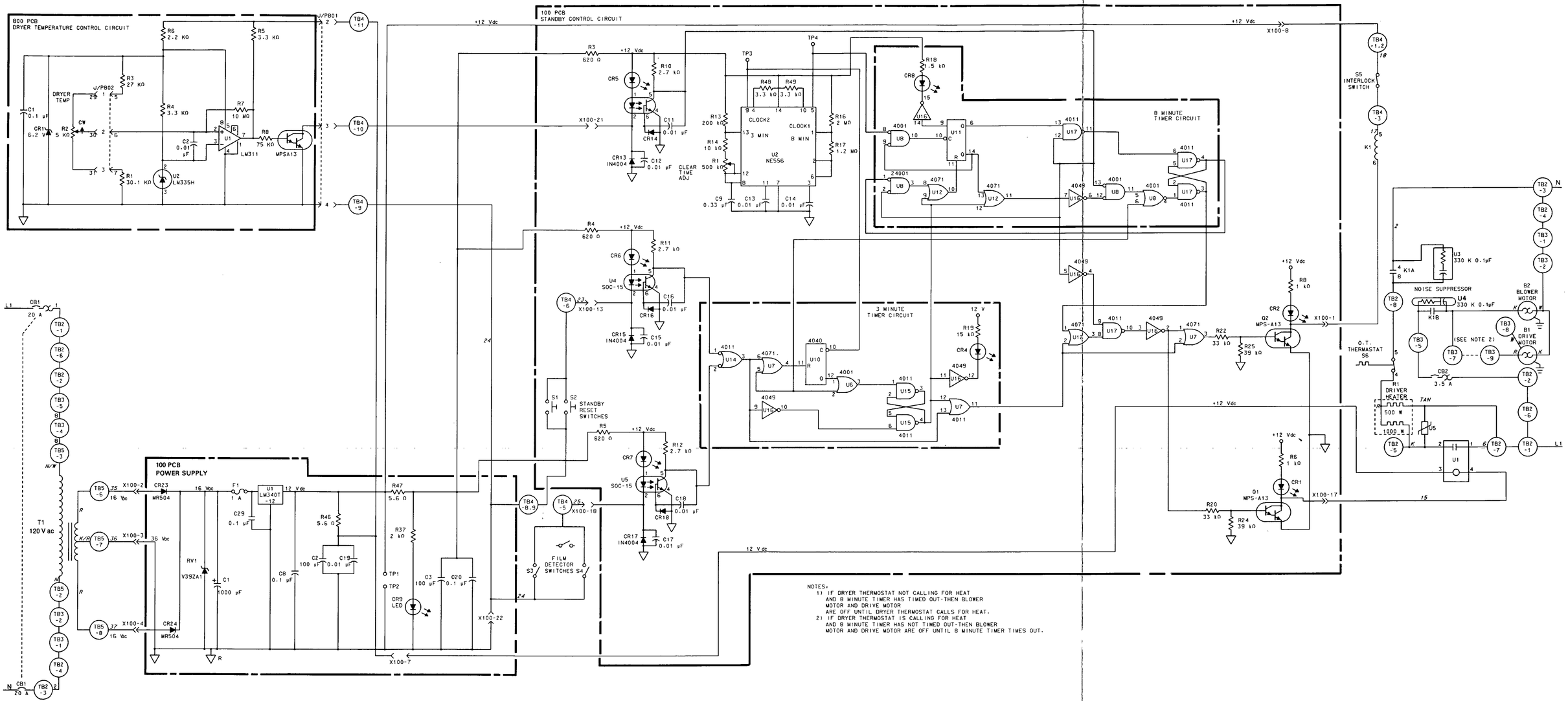


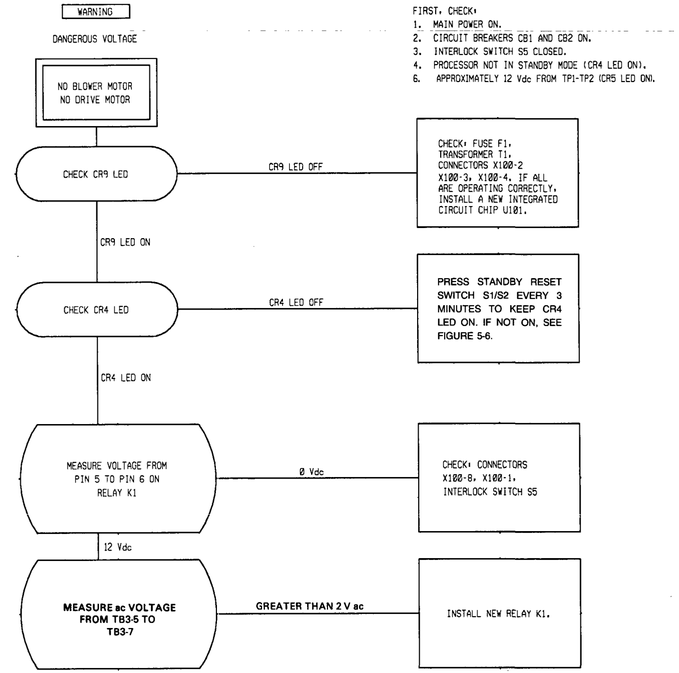
Figure 5-2 Circuit Diagram -- Dryer Temperature Control, 800 Circuit Board -- for the M35 and M35A Processors



981777 6/92 Figure 5-3 Circuit Diagram – Dryer Heater, Temperature Control System and Main Drive Motor -- for the M35 Processor



981777 6/92 Figure 5-4 Circuit Diagram – Dryer Heater, Temperature Control System and Main Drive Motor -- for the M35A Processor



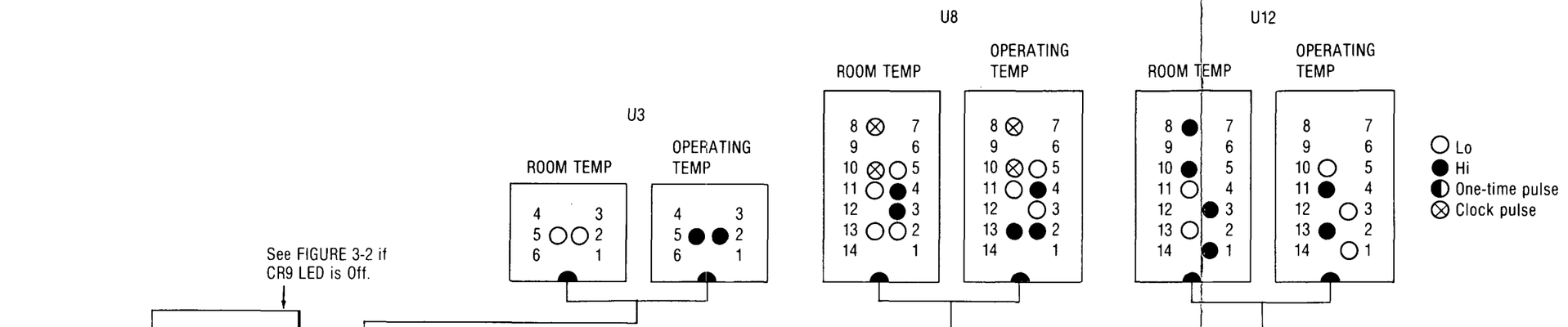
NOTE:
ALL VOLTAGES ARE APPROXIMATE ONLY

DIAGNOSTIC FLOWCHART FOR THE DRYER TEMPERATURE CONTROL, AND MAIN DRIVE

Figure 5-5 Diagnostic Flowchart for a Processor with Malfunctioning Blower Motor or Drive Motor -- for the M35 and M35A Processors

FIRST, CHECK:

1. At "ROOM TEMPERATURE": CR2 LED ON
   CR4 LED OFF
   CR8 LED OFF
2. At "OPERATING TEMPERATURE": CR2 LED OFF
   CR4 LED OFF
   CR8 LED OFF
3. FILM DETECTOR SWITCHES S3 and/or S4 Actuated Open.
4. INTERLOCK SWITCH S2 Actuated Closed.



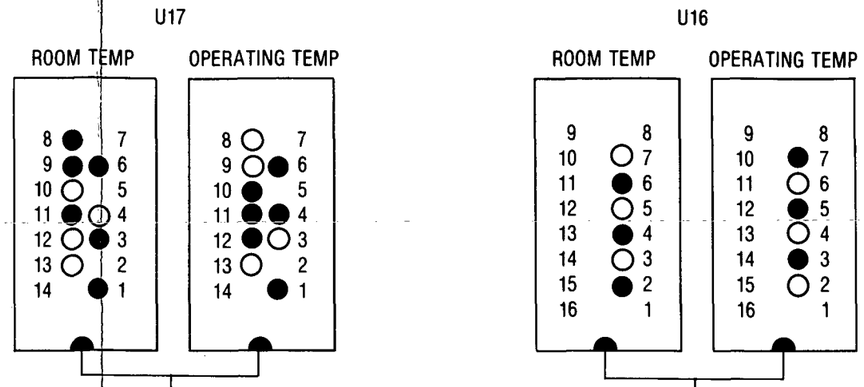
DRYER TEMPERATURE	POWER SUPPLY CIRCUIT + − TP1—TP2	CR9 LED	U3 PIN 2	U3 PIN 5	CR5 LED	DRYER THERMOSTAT S3	U8 PIN 13	U8 PIN 11	U8 PIN 8 PIN 10	U8 PIN 5	U8 PIN 4	U8 PIN 3	U8 PIN 2	CR8 & CR4 LEDS	U12 PIN 1	U12 PIN 3	U12 PIN 8	U12 PIN 10	U12 PIN 11	U12 PIN 13
ROOM TEMPERATURE	12 V dc	ON	Lo	Lo	ON	ENERGIZED	Lo	Lo	1-second clock pulses	Lo	Hi	Hi	Lo	OFF	Hi	Hi	Hi	Hi	Lo	Lo
OPERATING TEMPERATURE	12 V dc	ON	Hi	Hi	OFF	NOT ENERGIZED	Hi	Lo		Lo	Hi	Lo	Hi	OFF	Lo	Lo	Lo	Lo	Hi	Hi

See note 3.

NOTES:

1. Voltages measured with respect to TP2 unless otherwise noted.
2. Voltages measured by a multimeter with an input impedance of 20,000 ohms per volt dc or more.
3. Goes Hi after 8-minute timer times out (CR8 LED is off).
4. Lo = Less than 1V dc
   Hi = Greater than 10V dc

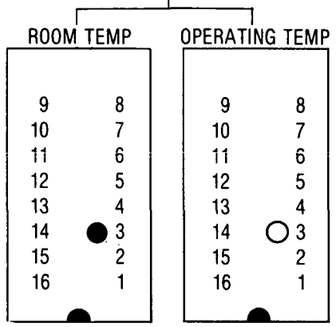
Figure 5-6 Circuit Board Flowchart for the Dryer Temperature Control System and the Main Drive -- for the M35A Processor



DRYER TEMPERATURE	U17										U16					
	PIN 13	PIN 12	PIN 11	PIN 10	PIN 9	PIN 8	PIN 6	PIN 4	PIN 3	PIN 1	PIN 7	PIN 6	PIN 5	PIN 4	PIN 3	PIN 2
ROOM TEMPERATURE	Lo	Lo	Hi	Lo	Hi	Hi	Hi	Lo	Hi	Hi	Lo	Hi	Lo	Hi	Lo	Hi
OPERATING TEMPERATURE	Lo	Hi	Hi	Hi	Lo	Lo	Hi	Hi	Lo	Hi	Hi	Lo	Hi	Lo	Hi	Lo

NO BLOWER MOTOR, NO DRIVE MOTOR	U7 PIN 3	CR2 LED	TRANSISTOR Q2	RELAY K1 CONTACTS 3	RELAY K1 CONTACTS 7	RELAY K1 CONTACTOR COIL 5	RELAY K1 CONTACTOR COIL 6	BLOWER MOTOR B2	DRIVE MOTOR B1
ROOM TEMPERATURE	Hi	ON	ON	0 V ac	0 V ac	ENERGIZED		ON	ON
OPERATING TEMPERATURE	Lo	OFF	OFF	120 V	120 V	NOT ENERGIZED		OFF	OFF

NO DRYER HEATER	CR5 and CR1 LEDS	TRANSISTOR Q1	SOLID-STATE RELAY U1 PIN 4	SOLID-STATE RELAY U1 PIN 3	SOLID-STATE RELAY U1	RELAY K1 CONTACTS 4	RELAY K1 CONTACTS 8	DRYER HEATER R1
ROOM TEMPERATURE	ON	ON	0 V dc	12 V dc	ENERGIZED	ENERGIZED		ON
OPERATING TEMPERATURE	OFF	OFF	12 V dc	12 V dc	NOT ENERGIZED	ENERGIZED		OFF



CONDITION	SEE FIGURE
No Blower Motor, No Drive Motor	**5-5**
No Dryer Heater	**5-8**
No Blower Motor	**5-9**

Figure 5-6 Circuit Board Flowchart for the Dryer Temperature Control System and the Main Drive -- for the M35A Processor

WARNING

DANGEROUS VOLTAGE

FIRST CHECK:
1. MAIN POWER ON.
2. CIRCUIT BREAKERS CB1 AND CB2 ON.
3. INTERLOCK SWITCH S5 CLOSED.
4. PROCESSOR NOT IN STANDBY MODE (CR4 LED ON).
5. APPROXIMATELY 12 Vdc FROM TP1-TP2. (CR9 LED ON).

NO DRYER HEAT

BLOWER MOTOR OPERATING CORRECTLY

CHECK CR5 LED — CR5 LED OFF → 1. ACTUATE DRYER THERMOSTAT R2 2. CHECK: CONNECTORS J/P801 & J/P802 AND X100-21.

CR5 LED ON

CHECK CR4 LED — CR4 LED OFF → PRESS STANDBY RESET SWITCH S1/S2 EVERY 3 MINUTES TO KEEP CR4 LED ON.

CR4 LED ON

MEASURE VOLTAGE FROM PIN 3 TO PIN 4 ON SOLID-STATE RELAY U1 — 0 Vdc → CHECK CONNECTORS X100-17 AND X100-7, TB4-11

~12 Vdc

MEASURE ac VOLTAGE FROM L1 TO L2 — LESS THAN 180 Vac → CHECK INPUT POWER.

220 ± 40 Vac

MEASURE ac VOLTAGE FROM TB2-1 TO TB2-3 — LESS THAN 180 Vac → CHECK WIRING TO CB1 AND CIRCUIT BREAKER CB1

220 ± 40 Vac

MEASURE ac VOLTAGE FROM TB2-1 TO TB2-7, 2-5 — LESS THAN 180 Vac → CHECK: SOLID-STATE RELAY U1, AND WIRING FROM TB2-6 TO TB2-7 FROM TB2-7 TO PIN 1 ON U1, FROM PIN 1 OF U1 TO PIN 2, FROM PIN 2 OF U1 TO TB2-5

CONTINUED

220 ± 40 Vac

MEASURE ac VOLTAGE FROM TB2-5 TO TB2-3 — LESS THAN 180 Vac → CHECK WIRING TB2-3 TO TB2-7 AND TB2-5

220 ± 40 Vac

MEASURE ac VOLTAGE FROM TB2-3 TO TB2-8 — LESS THAN 180 Vac → CHECK RELAY K1

220 ± 40 Vac

MEASURE ac VOLTAGE FROM TB2-8 TO TB2-7 & TB2-5 — LESS THAN 180 Vac → CHECK DRYER OVERTEMPERATURE THERMOSTAT S6

220 ± 40 Vac

MEASURE ac VOLTAGE FROM WIRE #4 OF S6 TO TB2-7 & TB2-5

LESS THAN 180 Vac

WARNING-DANGEROUS VOLTAGE. DISCONNECT MAIN POWER.

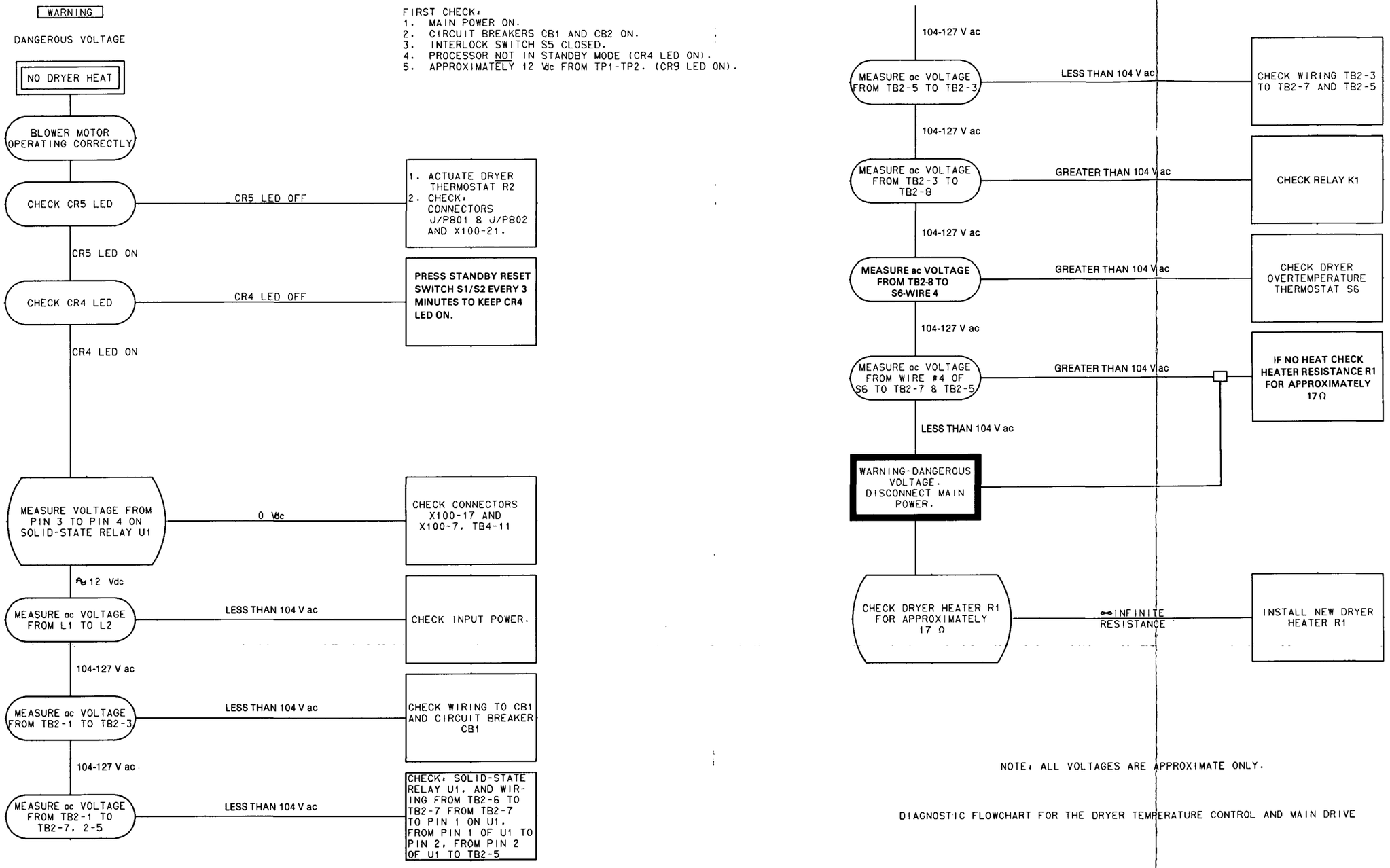
CHECK DRYER HEATER R1 FOR APPROXIMATELY 17 Ω — ∞ INFINITE RESISTANCE → INSTALL NEW DRYER HEATER R1

NOTE: ALL VOLTAGES ARE APPROXIMATE ONLY.

DIAGNOSTIC FLOWCHART FOR THE DRYER TEMPERATURE CONTROL AND MAIN DRIVE

05 FEB. 86 CESD-3041-0009A

981777 6/92 **Figure 5-7 Diagnostic Flowchart for a Processor without Heat in the Dryer -- for the M35 Processor**



DIAGNOSTIC FLOWCHART FOR THE DRYER TEMPERATURE CONTROL AND MAIN DRIVE

Figure 5-8 Diagnostic Flowchart for a Processor without Heat in the Dryer -- for the M35A Processor

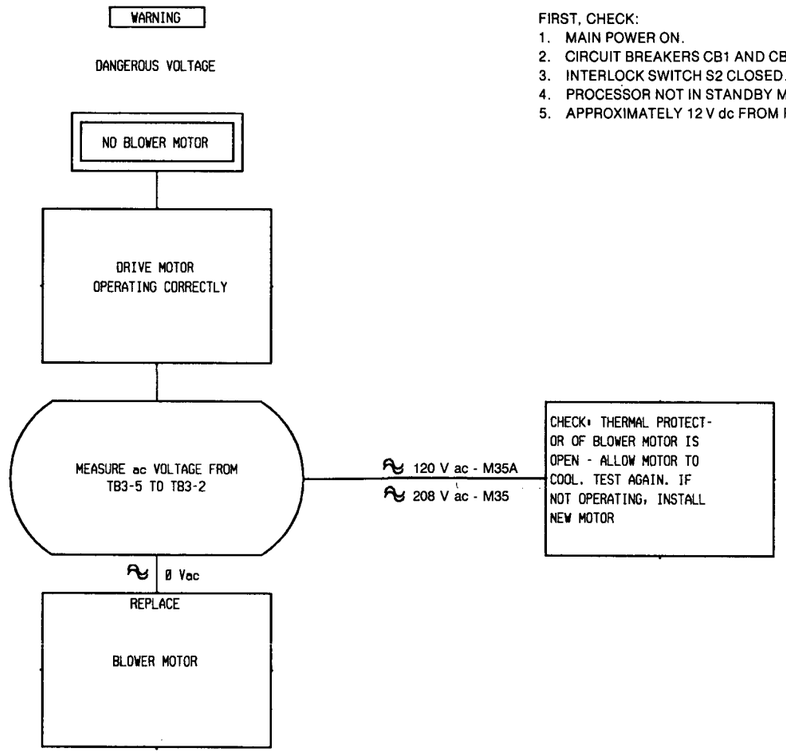


Figure 5-9 Diagnostic Flowchart for a Processor with Malfunctioning Blower Motor -- for the M35 and M35A Processors

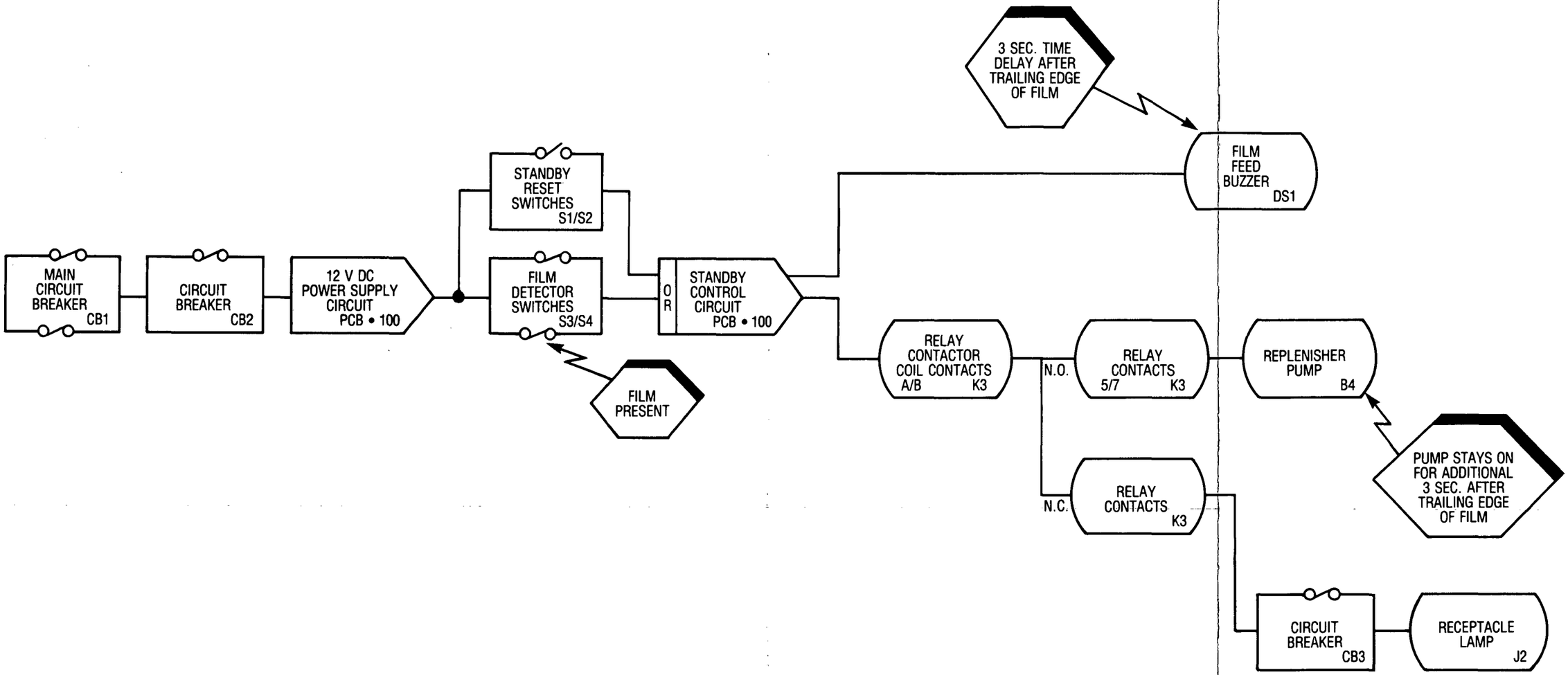
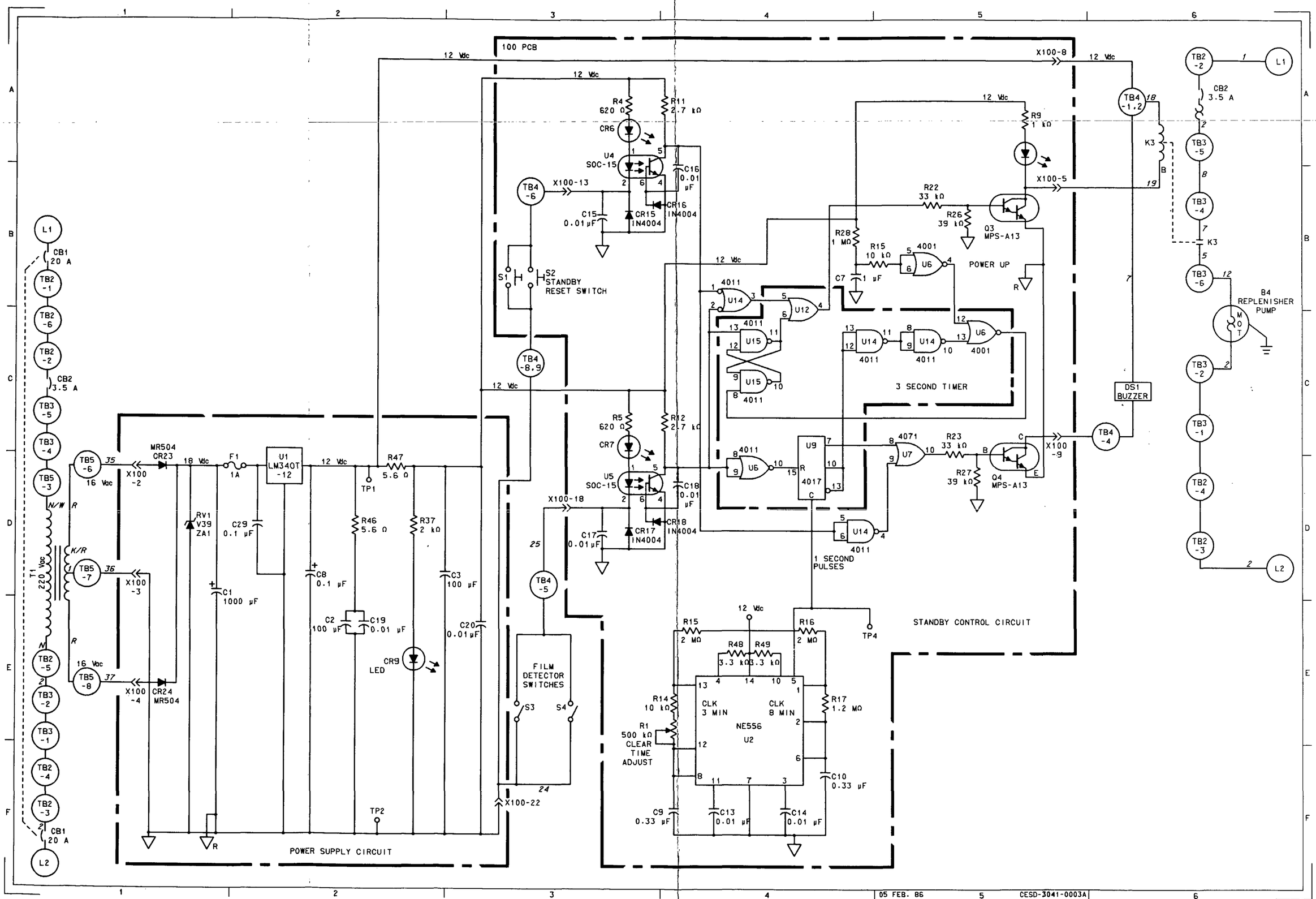
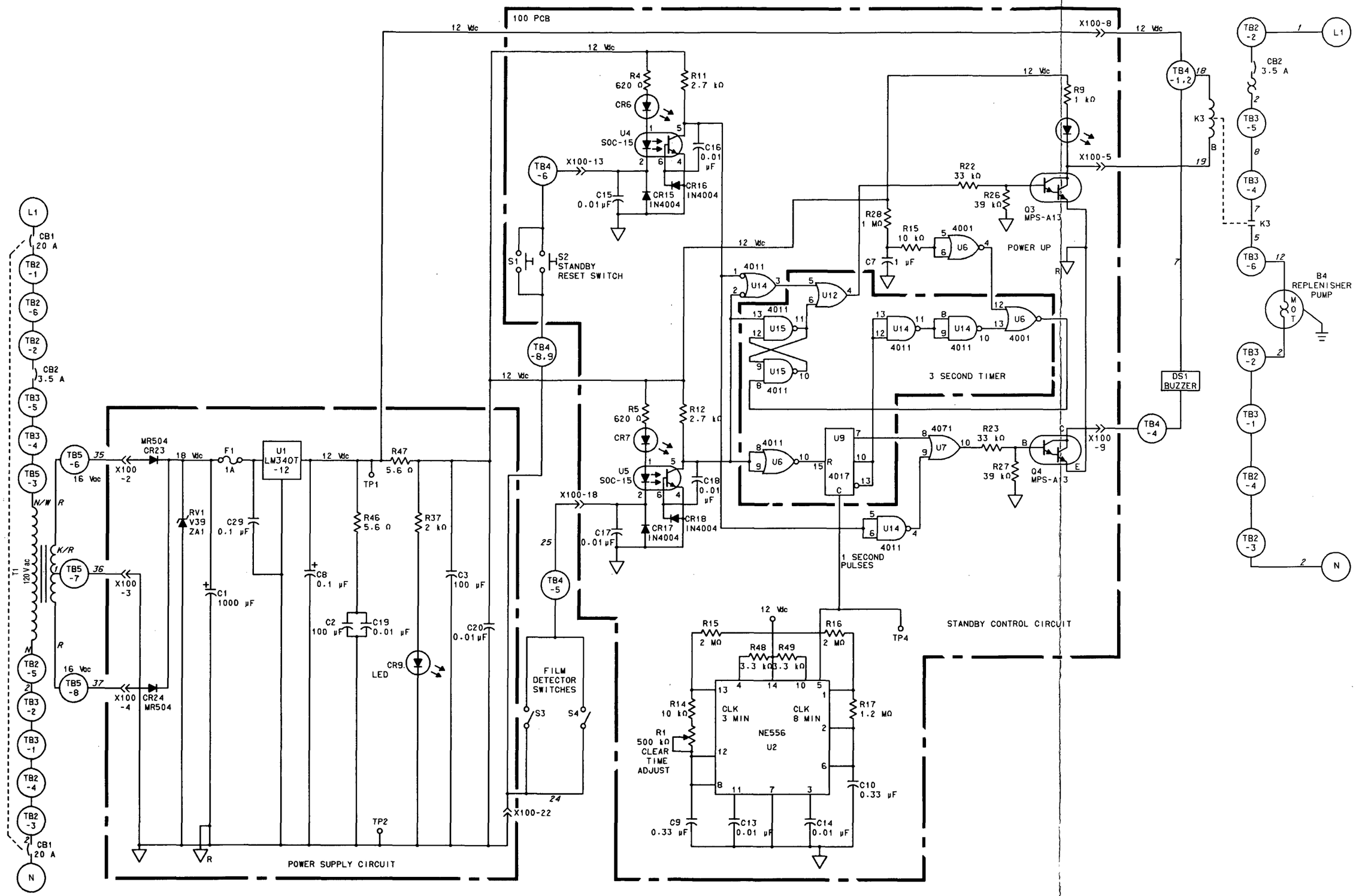


Figure 5-10 Sequence of Operation -- Film Feeding -- for the M35 and M35A Processors



981777 6/92 Figure 5-11 Circuit Diagram -- Replenishment Control System -- for the M35 Processor



981777 6/92 Figure 5-12 Circuit Diagram -- Replenishment Control System -- for the M35A Processor

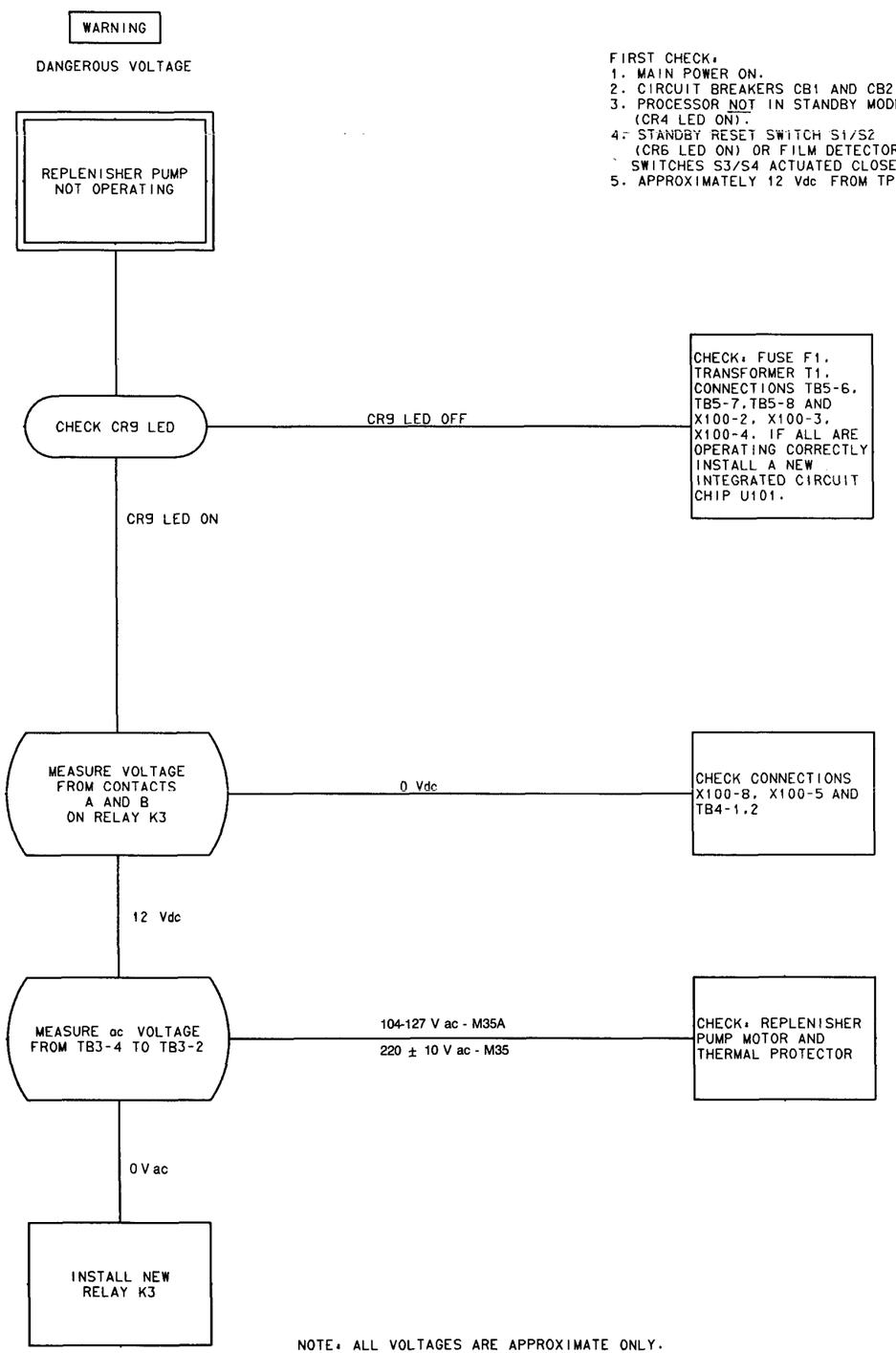


Figure 5-13 Diagnostic Flowchart for the Replenishment Control System -- for the M35 and M35A Processors

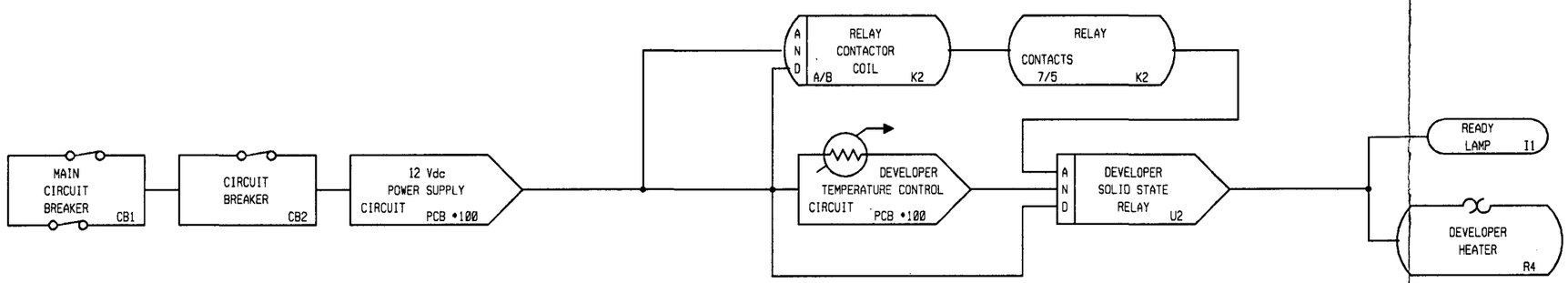
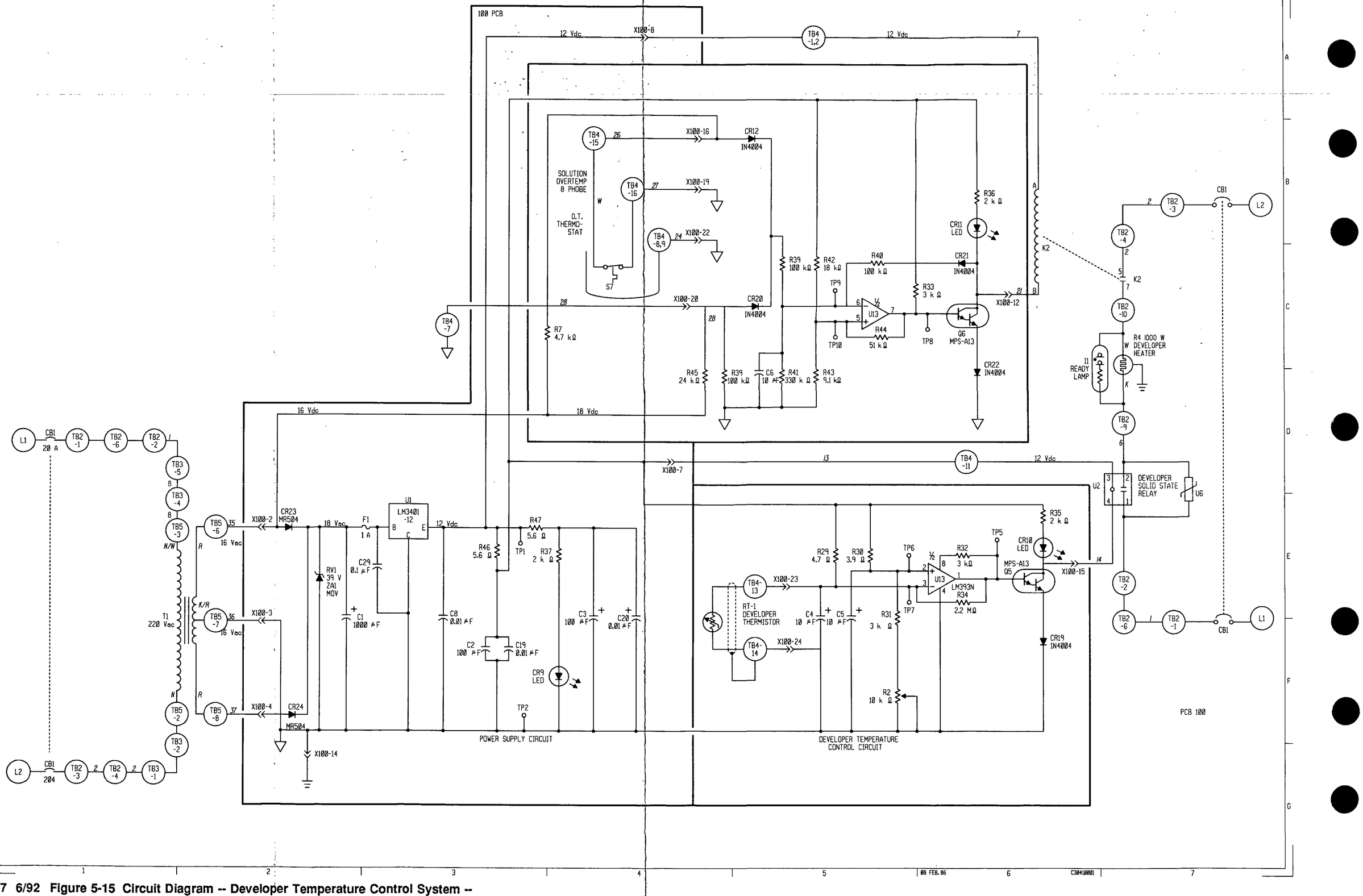


Figure 5-14 Sequence of Operation -- Developer Temperature Control System -- for the M35 and M35A Processors



981777 6/92 Figure 5-15 Circuit Diagram -- Developer Temperature Control System -- for the M35 Processor

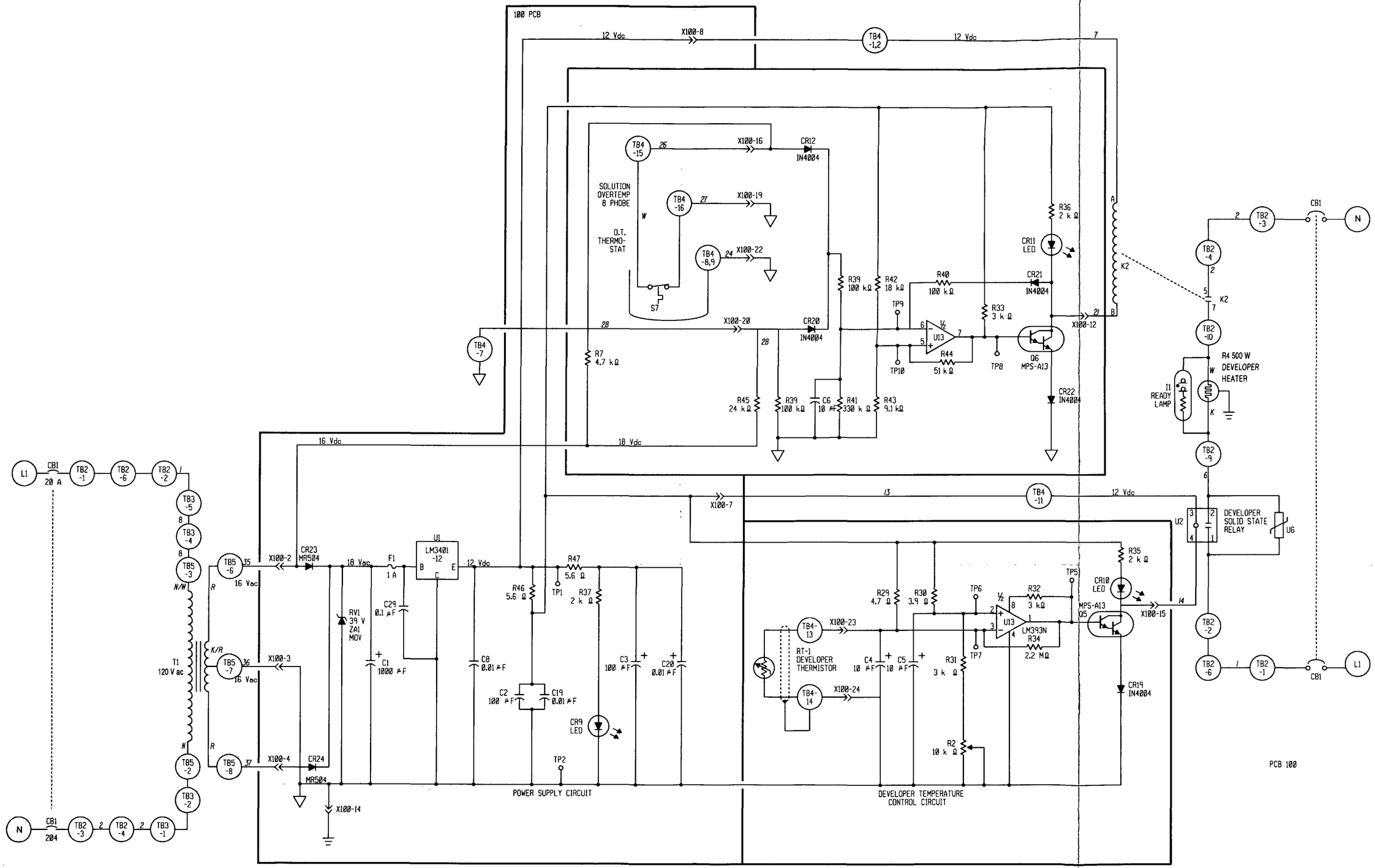
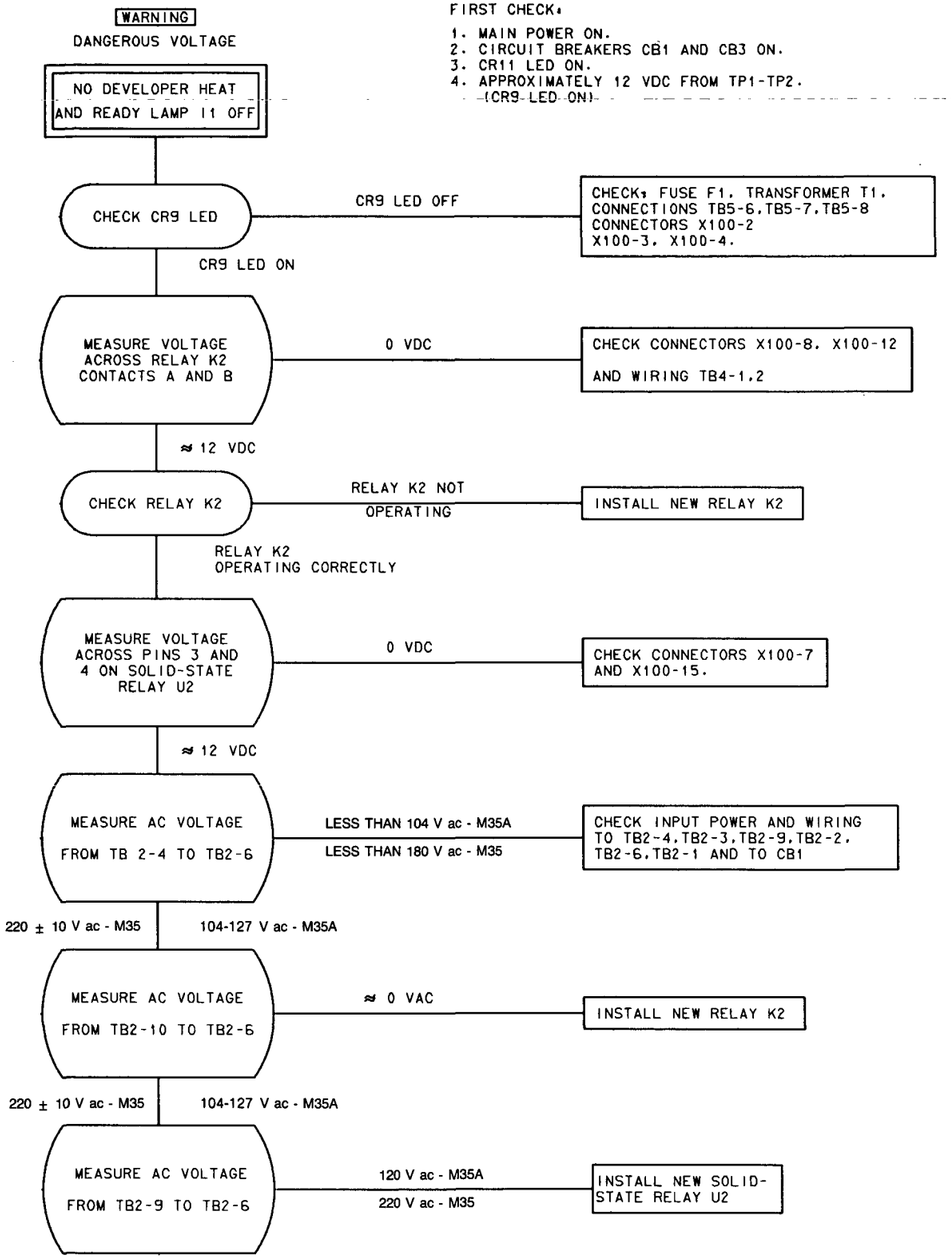


Figure 5-16 Circuit Diagram -- Developer Temperature Control System -- for the M35A Processor



NOTE: ALL VOLTAGES ARE APPROXIMATE ONLY.

DIAGNOSTIC FLOWCHART FOR THE DEVELOPER TEMPERATURE CONTROL.

Figure 5-17 Diagnostic Flowchart for a Processor with a Malfunctioning Developer Temperature Control System and Temperature Ready Light -- for the M35 and M35A Processors

981777 6/92 sheet 1 of 2

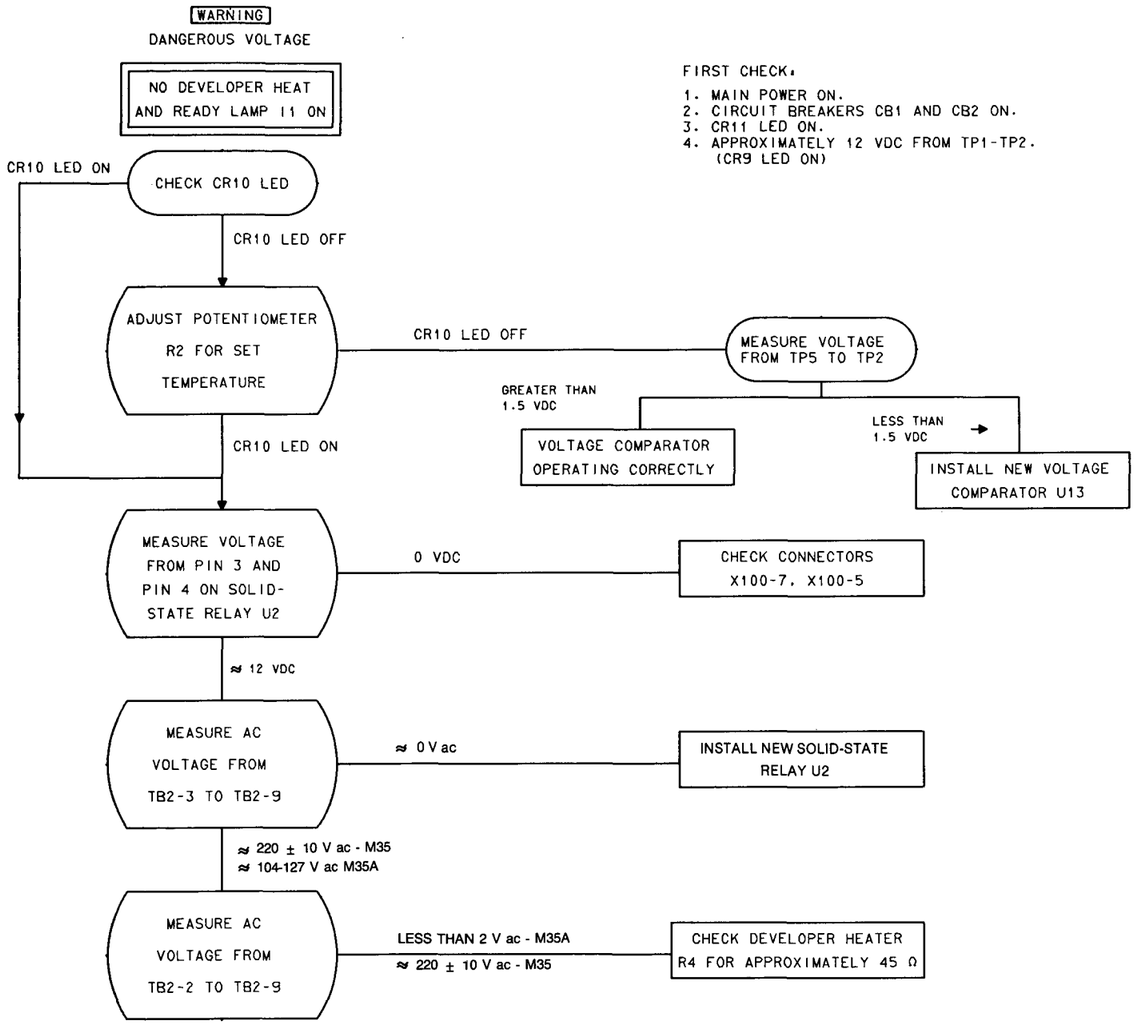


Figure 5-17 Diagnostic Flowchart for a Processor with a Malfunctioning Developer Temperature Control System and Temperature Ready Light -- for the M35 and M35A Processors

sheet 2 of 2
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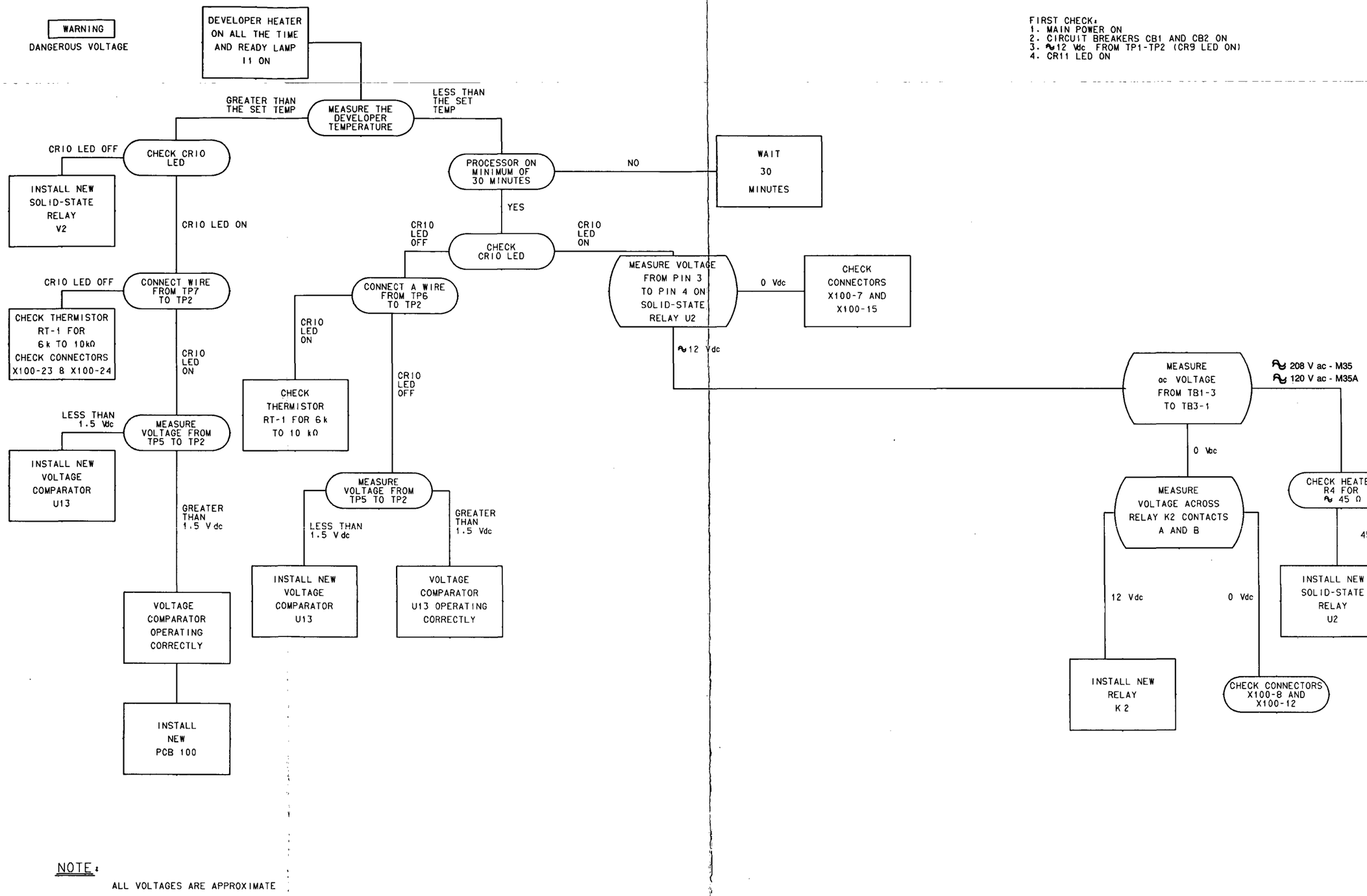


FIRST CHECK:
1. MAIN POWER ON
2. CIRCUIT BREAKERS CB1 AND CB2 ON
3. ~12 Vdc FROM TP1-TP2 (CR9 LED ON)
4. CR11 LED ON

Figure 5-18 Diagnostic Flowchart for the Complete M35 or M35A Processor

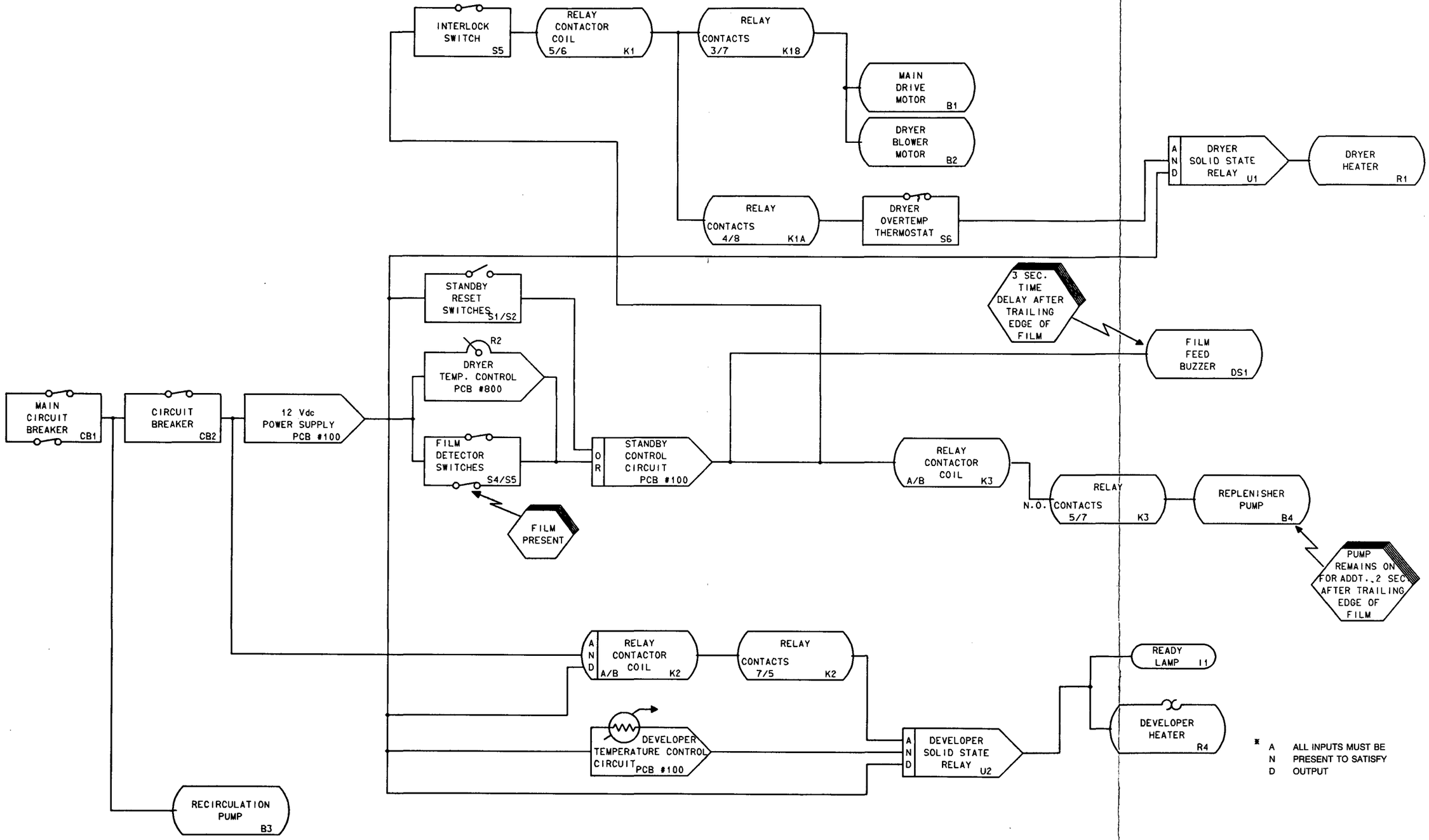


Figure 5-19 Sequence of Operation for the Complete M35 or M35A Processor

NOTES:

1. TRANSFORMER T1 INPUT VOLTAGE. (MOVE WIRE NO. 8A TO INDICATED TERMINAL ON TB5.)

VOLTAGE	TERMINAL
200 OR 208	TB5-2
220	TB5-3
240	TB5-4

2. DRIVE MOTOR B1 FREQUENCY. (JUMPER A)

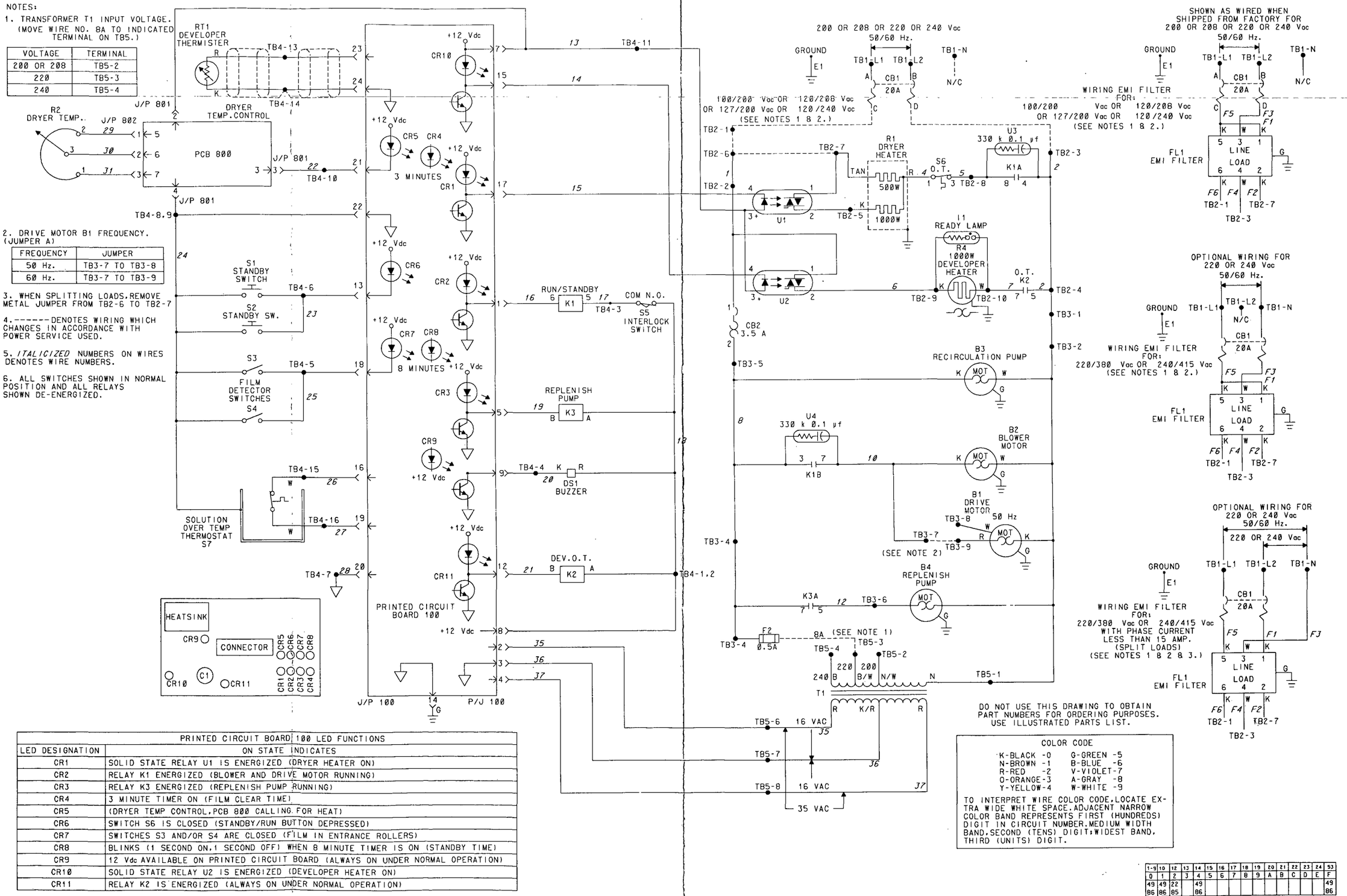
FREQUENCY	JUMPER
50 Hz.	TB3-7 TO TB3-8
60 Hz.	TB3-7 TO TB3-9

3. WHEN SPLITTING LOADS, REMOVE METAL JUMPER FROM TB2-6 TO TB2-7

4. ------ DENOTES WIRING WHICH CHANGES IN ACCORDANCE WITH POWER SERVICE USED.

5. *ITALICIZED* NUMBERS ON WIRES DENOTES WIRE NUMBERS.

6. ALL SWITCHES SHOWN IN NORMAL POSITION AND ALL RELAYS SHOWN DE-ENERGIZED.



PRINTED CIRCUIT BOARD 100 LED FUNCTIONS	
LED DESIGNATION	ON STATE INDICATES
CR1	SOLID STATE RELAY U1 IS ENERGIZED (DRYER HEATER ON)
CR2	RELAY K1 ENERGIZED (BLOWER AND DRIVE MOTOR RUNNING)
CR3	RELAY K3 ENERGIZED (REPLENISH PUMP RUNNING)
CR4	3 MINUTE TIMER ON (FILM CLEAR TIME)
CR5	(DRYER TEMP CONTROL, PCB 800 CALLING FOR HEAT)
CR6	SWITCH S6 IS CLOSED (STANDBY/RUN BUTTON DEPRESSED)
CR7	SWITCHES S3 AND/OR S4 ARE CLOSED (FILM IN ENTRANCE ROLLERS)
CR8	BLINKS (1 SECOND ON, 1 SECOND OFF) WHEN 8 MINUTE TIMER IS ON (STANDBY TIME)
CR9	12 Vdc AVAILABLE ON PRINTED CIRCUIT BOARD (ALWAYS ON UNDER NORMAL OPERATION)
CR10	SOLID STATE RELAY U2 IS ENERGIZED (DEVELOPER HEATER ON)
CR11	RELAY K2 IS ENERGIZED (ALWAYS ON UNDER NORMAL OPERATION)

DO NOT USE THIS DRAWING TO OBTAIN PART NUMBERS FOR ORDERING PURPOSES. USE ILLUSTRATED PARTS LIST.

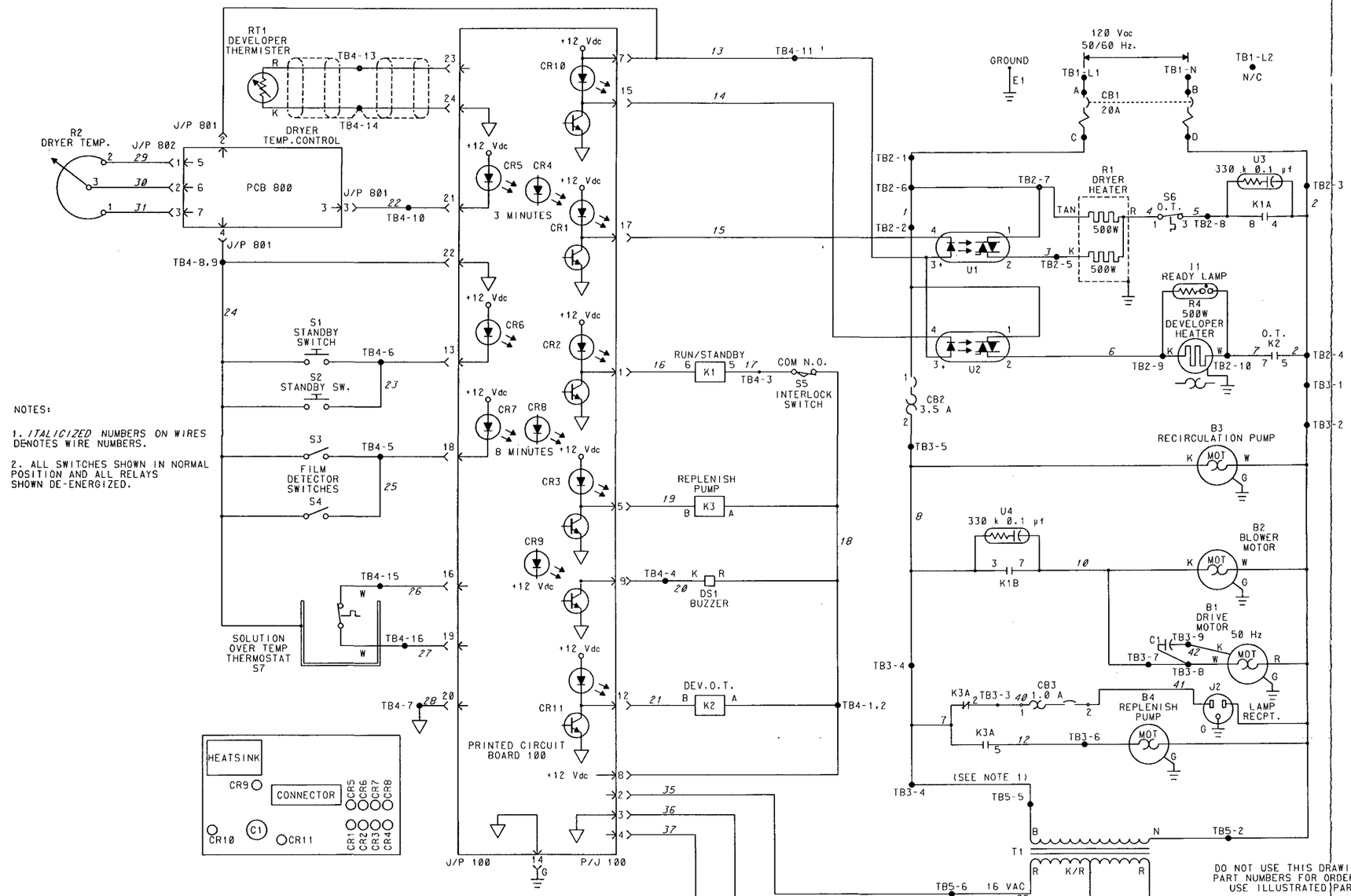
COLOR CODE

K-BLACK -0	G-GREEN -5
N-BROWN -1	B-BLUE -6
R-RED -2	V-VIOLET-7
O-ORANGE-3	A-GRAY -8
Y-YELLOW-4	W-WHITE -9

TO INTERPRET WIRE COLOR CODE, LOCATE EXTRA WIDE WHITE SPACE. ADJACENT NARROW COLOR BAND REPRESENTS FIRST (HUNDREDS) DIGIT IN CIRCUIT NUMBER. MEDIUM WIDTH BAND, SECOND (TENS) DIGIT; WIDEST BAND, THIRD (UNITS) DIGIT.

1-9	10	12	13	14	15	16	17	18	19	20	21	22	23	24	53
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
49 86	49 86	22 85		49 86											49 86

Figure 5-20 Circuit Diagram for the Complete M35 Processor



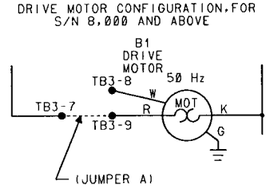
NOTES:

1. *ITALICIZED* NUMBERS ON WIRES DENOTES WIRE NUMBERS.

2. ALL SWITCHES SHOWN IN NORMAL POSITION AND ALL RELAYS SHOWN DE-ENERGIZED.

PRINTED CIRCUIT BOARD 100 LED FUNCTIONS	
LED DESIGNATION	ON STATE INDICATES
CR1	SOLID STATE RELAY U1 IS ENERGIZED (DRYER HEATER ON)
CR2	RELAY K1 ENERGIZED (BLOWER AND DRIVE MOTOR RUNNING)
CR3	RELAY K3 ENERGIZED (REPLENISH PUMP RUNNING)
CR4	3 MINUTE TIMER ON (FILM CLEAR TIME)
CR5	(DRYER TEMP CONTROL.PCB 800 CALLING FOR HEAT)
CR6	SWITCH S6 IS CLOSED (STANDBY/RUN BUTTON DEPRESSED)
CR7	SWITCHES S3 AND/OR S4 ARE CLOSED (FILM IN ENTRANCE ROLLERS)
CR8	BLINKS (1 SECOND ON,1 SECOND OFF) WHEN 8 MINUTE TIMER IS ON (STANDBY TIME)
CR9	12 Vdc AVAILABLE ON PRINTED CIRCUIT BOARD (ALWAYS ON UNDER NORMAL OPERATION)
CR10	SOLID STATE RELAY U2 IS ENERGIZED (DEVELOPER HEATER ON)
CR11	RELAY K2 IS ENERGIZED (ALWAYS ON UNDER NORMAL OPERATION)

DRIVE MOTOR CONFIGURATION,FOR S/N 8,000 AND ABOVE



DRIVE MOTOR B-1 FREQUENCY

FREQUENCY	JUMPER A
50 Hz	TB3-7 TO TB3-8
60 Hz	TB3-7 TO TB3-9

--------DENOTES WIRING WHICH CHANGES IN ACCORDANCE WITH POWER SERVICE USED

DO NOT USE THIS DRAWING TO OBTAIN PART NUMBERS FOR ORDERING PURPOSES. USE ILLUSTRATED PARTS LIST.

COLOR CODE

K-BLACK -0 G-GREEN -5
N-BROWN -1 B-BLUE -6
R-RED -2 V-VIOLET-7
O-ORANGE-3 A-GRAY -8
Y-YELLOW-4 W-WHITE -9

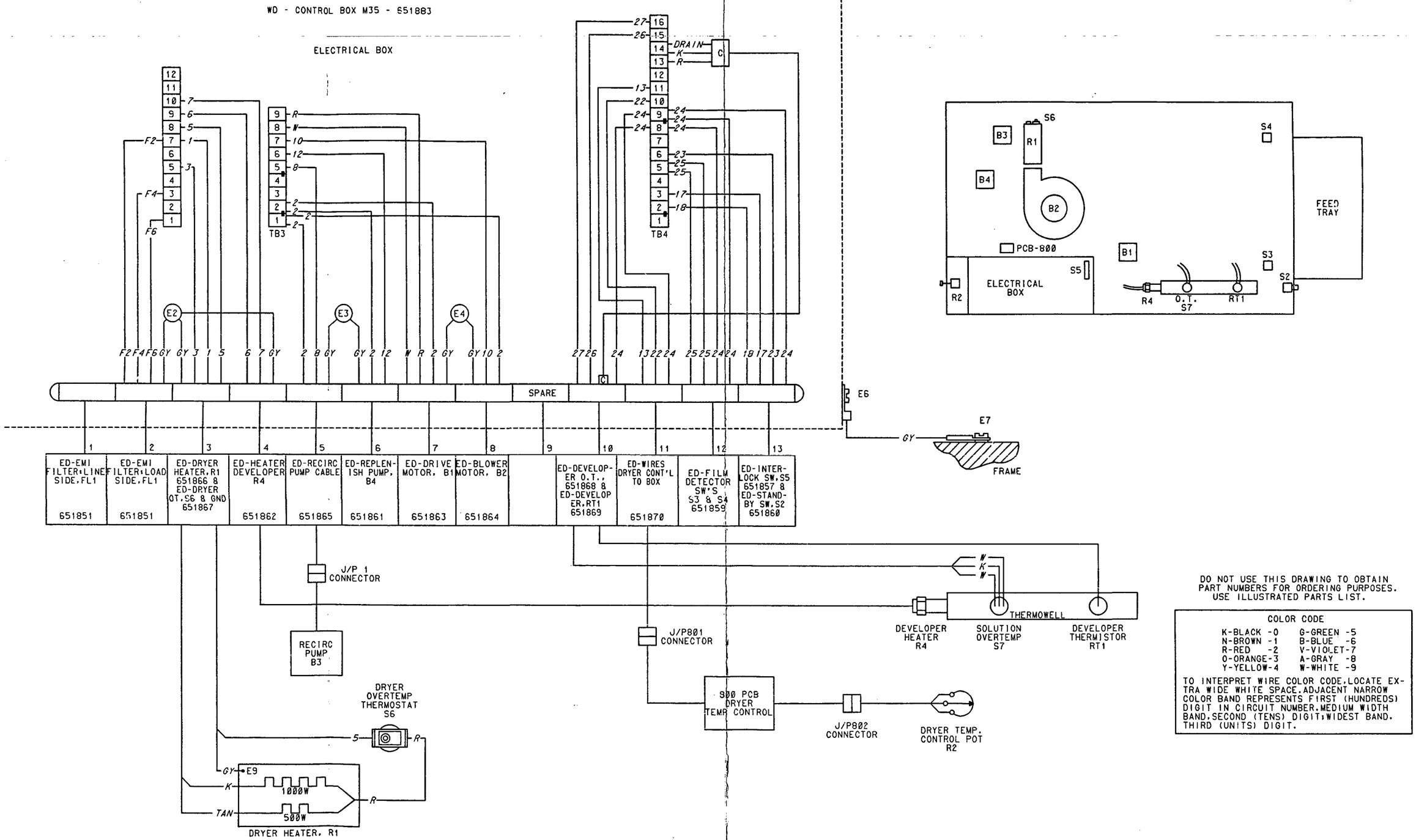
TO INTERPRET WIRE COLOR CODE,LOCATE EXTRA WIDE WHITE SPACE.ADJACENT NARROW COLOR BAND REPRESENTS FIRST (HUNDREDS) DIGIT IN CIRCUIT NUMBER.MEDIUM WIDTH BAND,SECOND (TENS) DIGIT;WIDEST BAND, THIRD (UNITS) DIGIT.

CIRCUIT DIAGRAM
X-OMAT M35A
SHEET 1 OF 1

MD

1-9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	53
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
4 86	4 86	3 86		3 86												4 86

Figure 5-21 Circuit Diagram for the Complete M35A Processor



DO NOT USE THIS DRAWING TO OBTAIN PART NUMBERS FOR ORDERING PURPOSES. USE ILLUSTRATED PARTS LIST.

COLOR CODE

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Y-YELLOW-4	W-WHITE -9

TO INTERPRET WIRE COLOR CODE, LOCATE EXTRA WIDE WHITE SPACE. ADJACENT NARROW COLOR BAND REPRESENTS FIRST (HUNDREDS) DIGIT IN CIRCUIT NUMBER. MEDIUM WIDTH BAND, SECOND (TENS) DIGIT; WIDEST BAND, THIRD (UNITS) DIGIT.

Figure 5-22 Wiring Diaram for the Complete M35 Processor

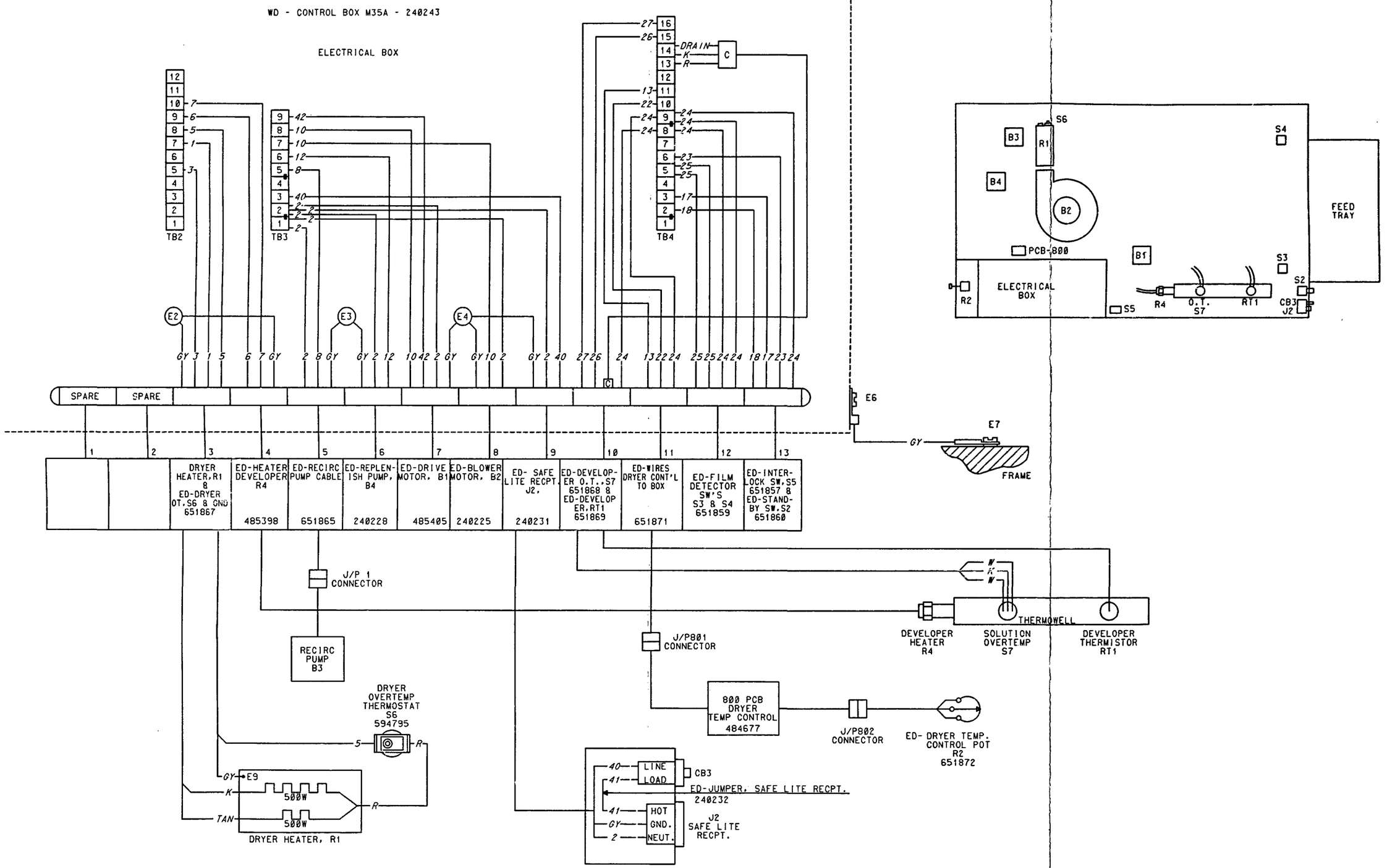
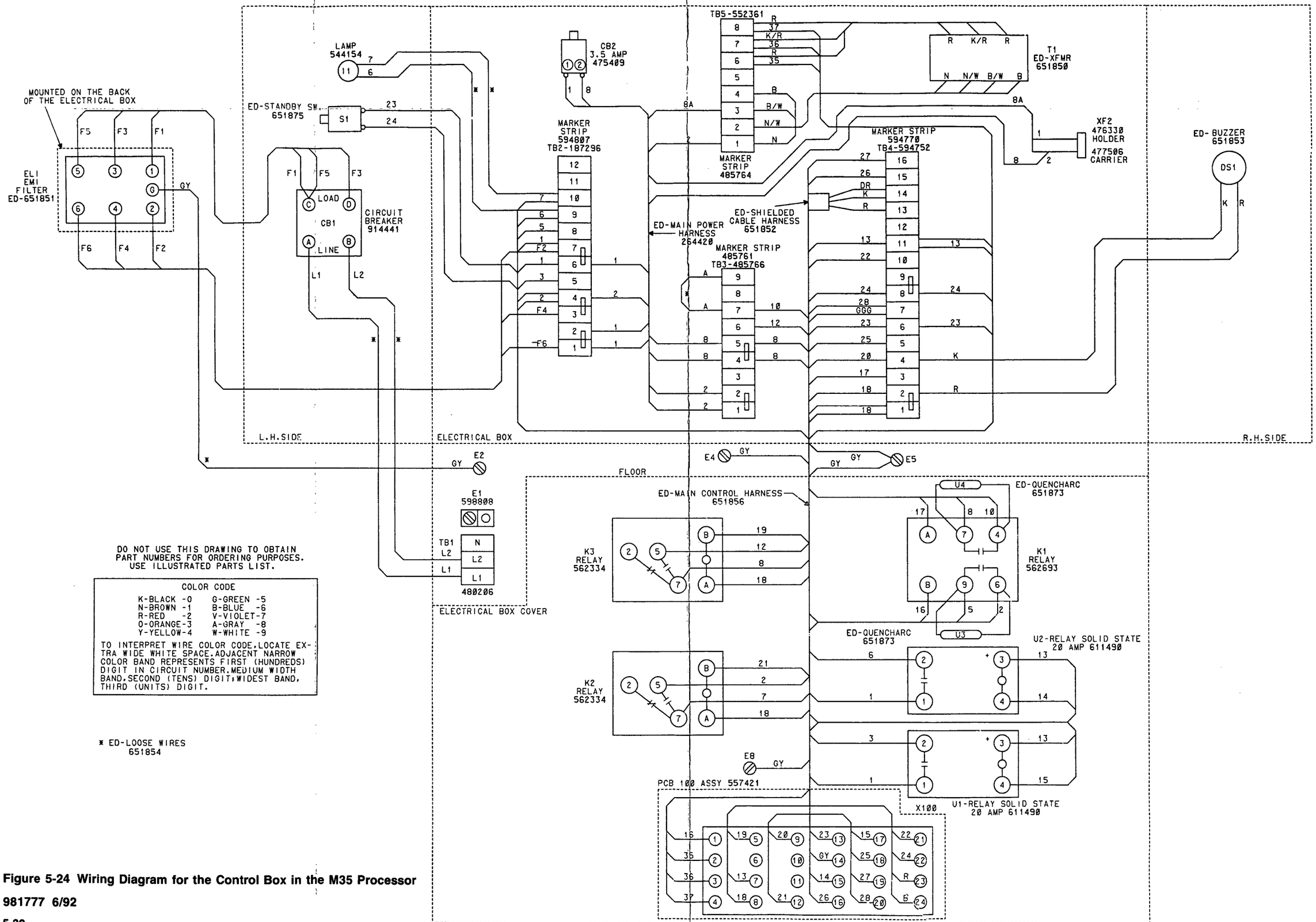


Figure 5-23 Wiring Diagram for the Complete M35A Processor



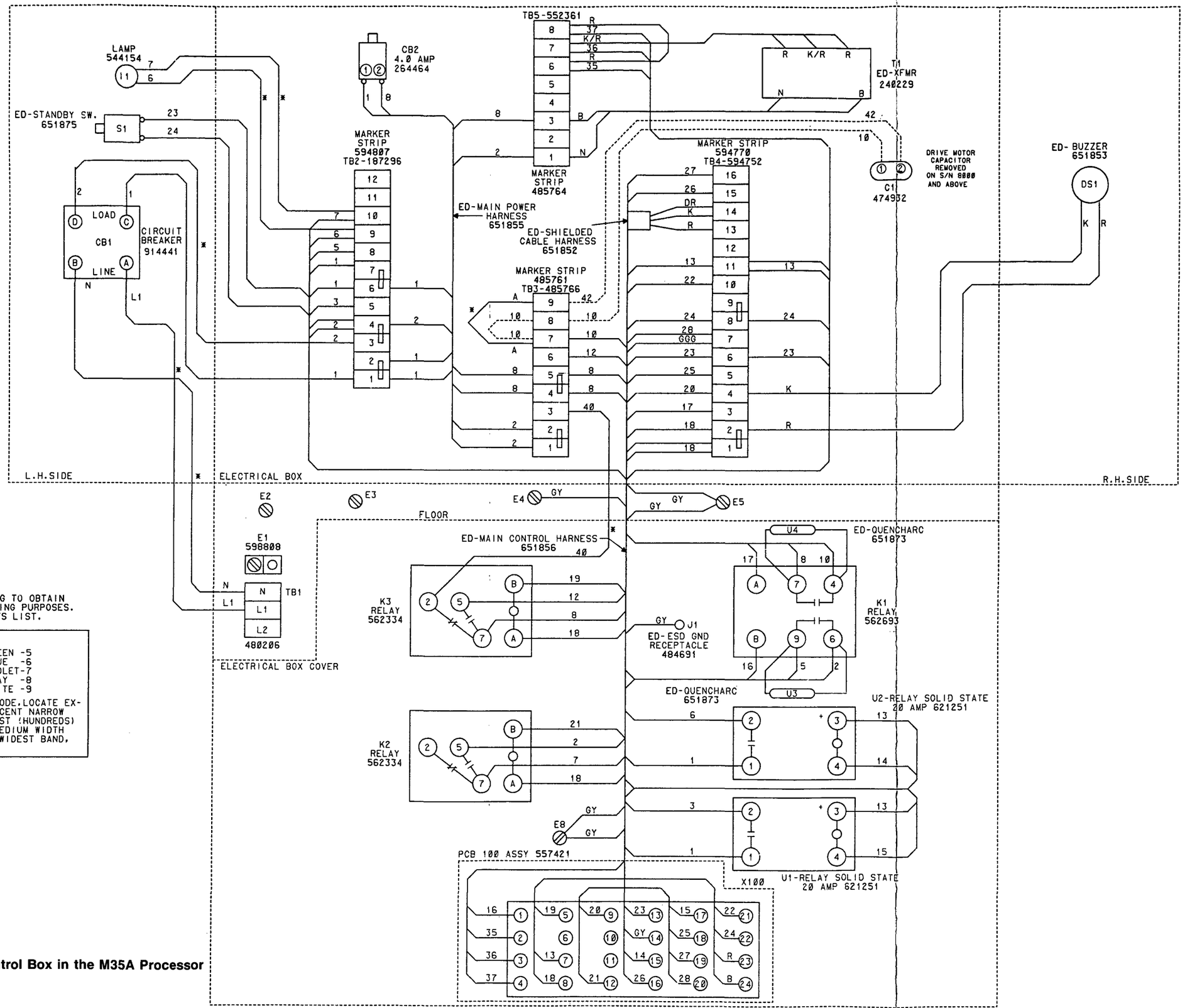
DO NOT USE THIS DRAWING TO OBTAIN PART NUMBERS FOR ORDERING PURPOSES. USE ILLUSTRATED PARTS LIST.

COLOR CODE	
K-BLACK -0	G-GREEN -5
N-BROWN -1	B-BLUE -6
R-RED -2	V-VIOLET-7
O-ORANGE-3	A-GRAY -8
Y-YELLOW-4	W-WHITE -9

TO INTERPRET WIRE COLOR CODE, LOCATE EXTRA WIDE WHITE SPACE. ADJACENT NARROW COLOR BAND REPRESENTS FIRST (HUNDREDS) DIGIT IN CIRCUIT NUMBER. MEDIUM WIDTH BAND, SECOND (TENS) DIGIT; WIDEST BAND, THIRD (UNITS) DIGIT.

* ED-LOOSE WIRES 651854

Figure 5-24 Wiring Diagram for the Control Box in the M35 Processor



DO NOT USE THIS DRAWING TO OBTAIN PART NUMBERS FOR ORDERING PURPOSES. USE ILLUSTRATED PARTS LIST.

COLOR CODE	
K-BLACK -0	G-GREEN -5
N-BROWN -1	B-BLUE -6
R-RED -2	V-VIOLET-7
O-ORANGE-3	A-GRAY -8
Y-YELLOW-4	W-WHITE -9

TO INTERPRET WIRE COLOR CODE, LOCATE EXTRA WIDE WHITE SPACE. ADJACENT NARROW COLOR BAND REPRESENTS FIRST (HUNDREDS) DIGIT IN CIRCUIT NUMBER. MEDIUM WIDTH BAND, SECOND (TENS) DIGIT; WIDEST BAND, THIRD (UNITS) DIGIT.

* ED-LOOSE WIRES
246841

Figure 5-25 Wiring Diagram for the Control Box in the M35A Processor

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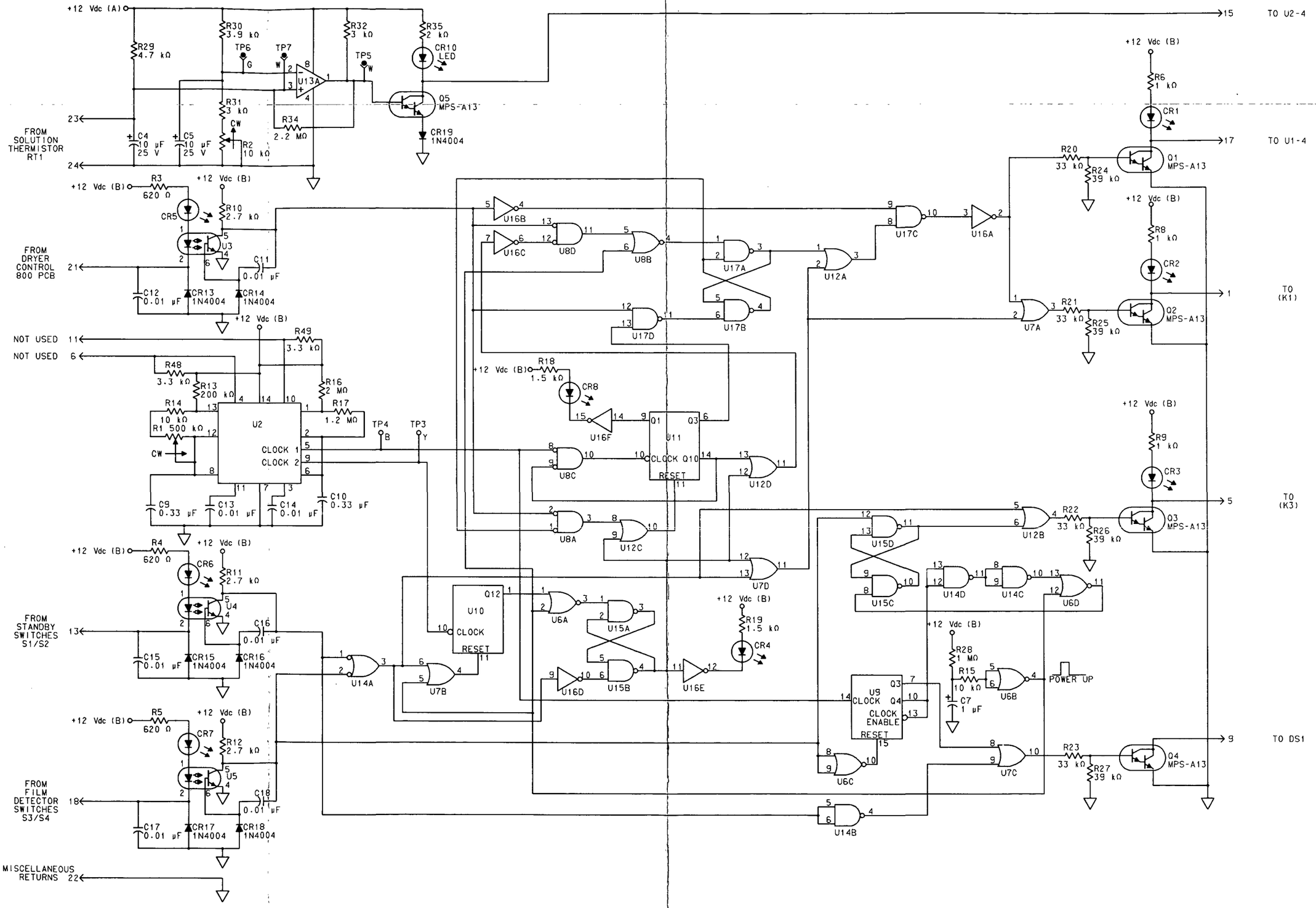
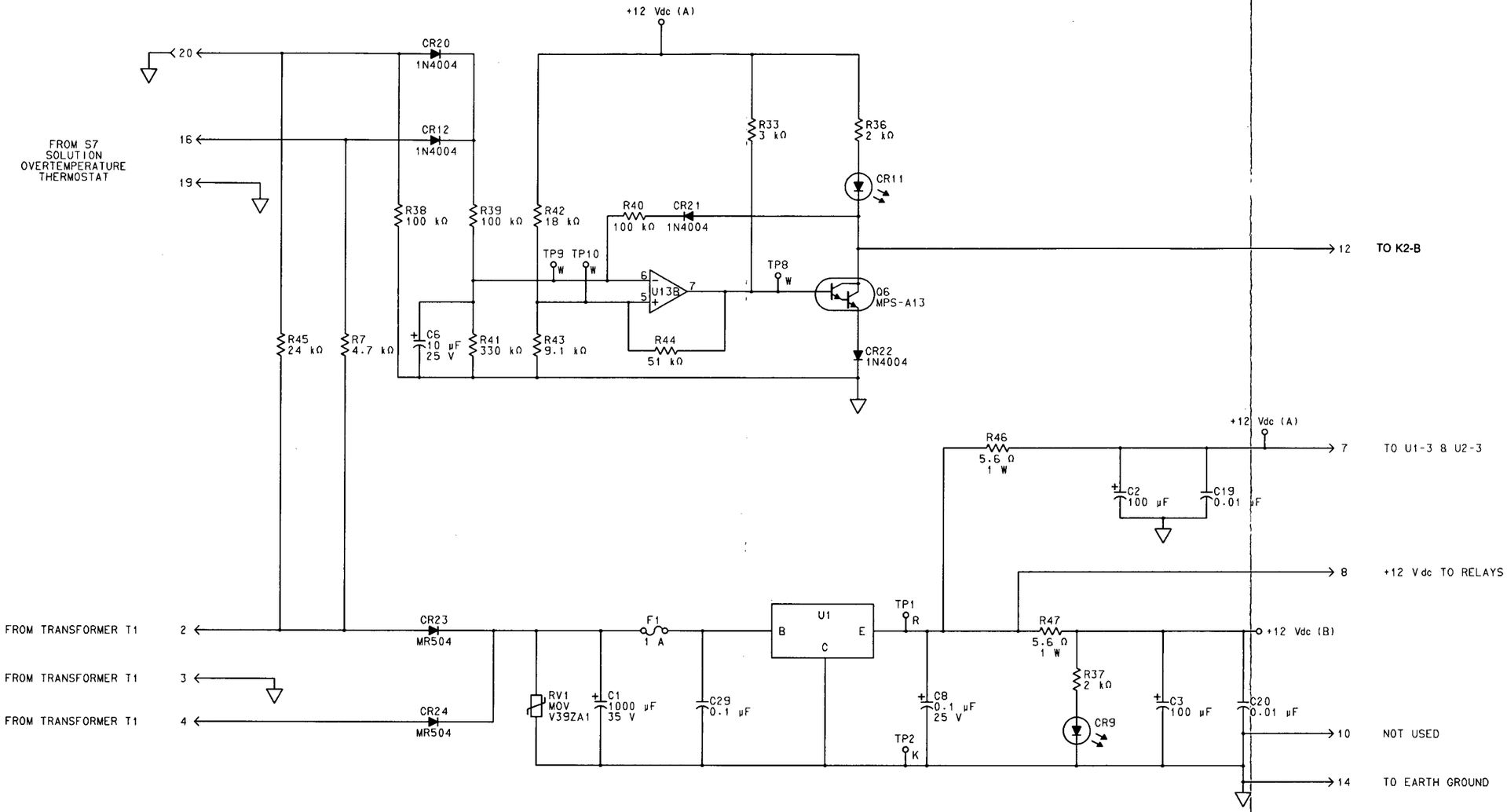


Figure 5-26 Circuit Diagram — 100 Circuit Board — for the M35 and M35A Processors



DESIGNATOR	TYPE	Vcc	RETURN
U1	LM340T-12	—	—
U2	NE556	14	7
U3,4,5	SOC-15	—	—
U6,8	CD4001	14	7
U7,12	CD4071	14	7
U9	CD4017	16	8
U10,11	CD4040	16	8
U13	LM393	8	4
U14,15,17	CD4011	14	7
U16	CD4049	1	8

Figure 5-26 Circuit Diagram -- 100 Circuit Board -- for the M35 and M35A Processors

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Publication Change Table

Rev. Date	ECO No.	PCN No.	Pub. No.	Affected Pages	Description
September 1992	4014-318	1	981777	All	Supersedes Publications No. 635819 and 635040. The Service Manuals for the M35 and M35A Processors were combined into one manual, and the information updated.

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