

ELECTROSTATIC DISCHARGE



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

CAUTION

ESD—electrostatic discharge—is a primary source of

- product downtime
- lost productivity
- and costly repairs.

While we can't even feel a static charge of less than 3,500 volts, as few as 30 volts can damage or destroy essential components in the electronic equipment you rely on.

And as solid-state technology continues to advance, these finely tuned components will be even more vulnerable to ESD destruction.

The conclusion is clear. To take charge of productivity and profitability, you must take charge of ESD, now.

Effective ESD control requires:

AWARENESS

Everyone in your organization needs to be aware of ESD, because partial ESD control is no ESD control at all. Everyone needs to remember that:

- ESD is a primary source of those frustrating equipment failures and intermittent malfunctions.
- ESD is affecting productivity and bottom-line profitability.
- ESD can be controlled.

ACTION

To take charge of ESD, you must take action. And that means *everyone*—from senior management to the evening security crew.

- If you repair and maintain electronic equipment, it means always wearing grounding straps and working at ESD-protected sites.
- If you ever work around electronic equipment, it means keeping static-generators like plastic trash bags away from sensitive components.
- For everyone, taking charge of ESD means making the simple ESD controls a way of life. (See the following sections for special tips.)

Effective ESD control is everyone's responsibility.

EVERY DAY

1. **Put trash in its place.** And that place is away from static-sensitive equipment. Plastic materials, like trashcan liners and plastic foam cups, generate the static electricity that damages or destroys electronic components.
2. **Look for the label.** Static-sensitive components are marked with bright graphic labels. Be on the lookout for these labels. Follow label directions.
3. **Spray the carpet.** ESD that's generated when you walk over carpet is a major culprit in component destruction. In some cases, especially in low-humidity environments, you may need to periodically spray carpets with an antistatic preparation, available at local stores.

AND DURING MAINTENANCE AND REPAIR

1. **Wear a grounding strap** when you deal with static-sensitive components. Always make sure that the clip is attached to a properly grounded, unpainted surface.
2. **Use a portable grounding mat** if you can't repair components at an ESD-protected workstation. (Kodak's Customer Equipment Services Division can assist you in setting up ESD-protected workstations.)
3. **Use protective packaging** when you transport components from one area to another. Transparent antistatic bags, available from a variety of manufacturers, shield your just-repaired components from further damage.

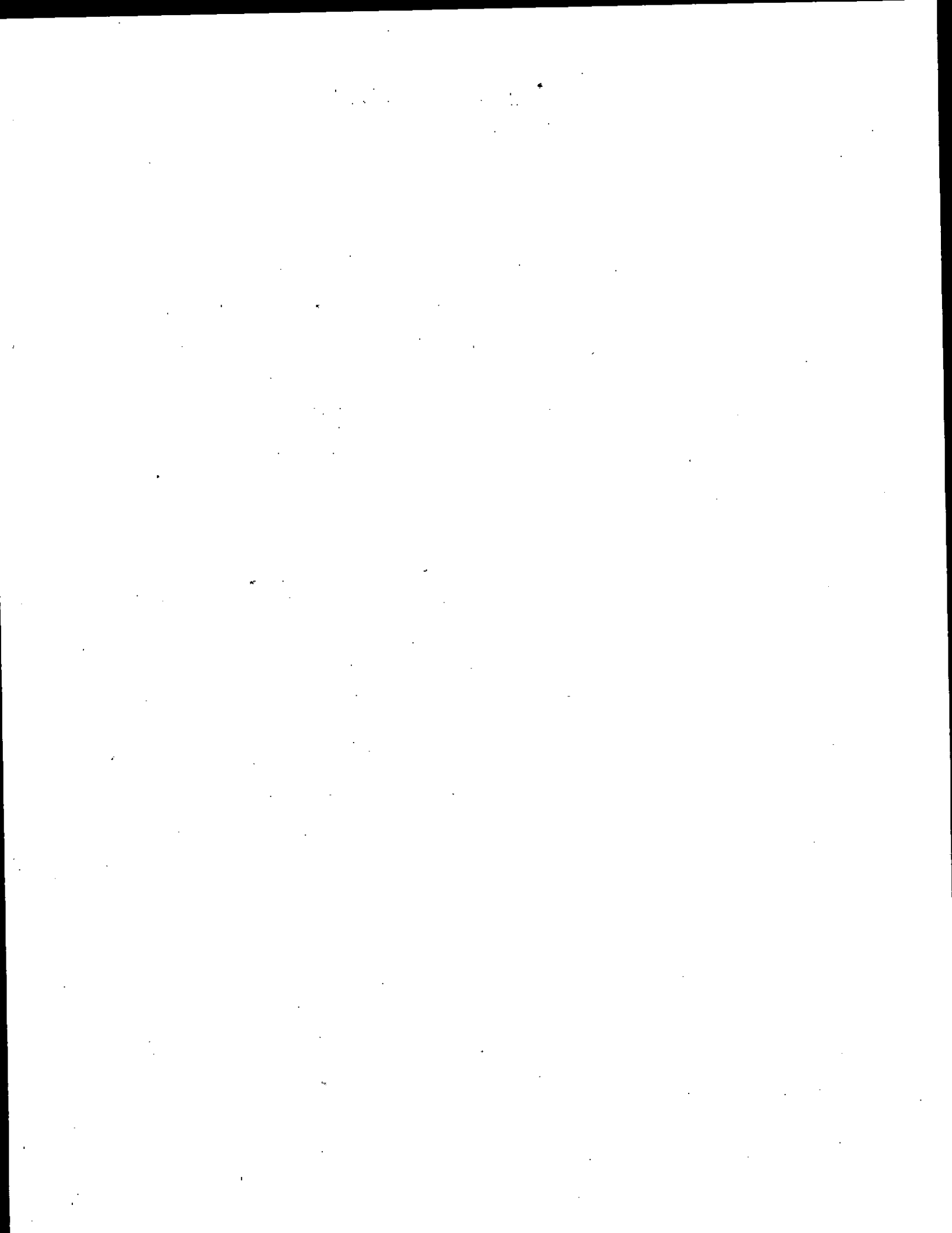
WE AT KODAK ARE READY TO HELP YOU TAKE CHARGE OF ESD.

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Health Sciences Division

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The Care and Cleaning of Stainless Steel Used in KODAK Processing Equipment

INTRODUCTION

Stainless steel is used as a construction material in photographic processing equipment because of its ability to resist corrosion. When it is exposed to oxygen, a thin layer of complex oxides forms rapidly on the surface. It is this protective layer that makes stainless steel "stainless."

However, because steel need oxygen to form this protective layer, anything (especially dirt, chemicals, and chemical fumes) that keeps oxygen from the surface can reduce and sometimes eliminate this protective layer. The steel will then corrode, pit, and eventually rust. This is why it is important to keep stainless steel surfaces clean.

Stainless steel can normally be kept free of most rust and corrosion by cleaning it regularly with warm water, a soft brush, a sponge, trisodium phosphate (available at paint and hardware stores) and soft, clean drying cloths. Always dry the surface immediately with a clean, soft cloth because iron from the plumbing or chemicals in the water can leave a film on the surface if the water is allowed to air-dry.

For a more thorough cleaning, systems cleaners and neutralizers should be used periodically.

IMPORTANT

1. Check that your processing equipment meets the specifications for correct exhaust and ventilation.
2. When the equipment is not in use, open the cover a small amount to prevent concentration of chemical fumes.
3. Filter the water supply following the instructions in the user's manual. Iron and other particles not filtered from the water can adhere to the surfaces and contribute to the development of corrosion.

NOTE

Plumbing material used between the filter and the equipment should be plastic, copper, or brass.

CLEANING MATERIALS

Following is a list of acceptable cleaning materials. If used regularly, they are all you will need to keep your equipment in optimum condition. Do not use any cleaning material that is not on this list.

ACCEPTABLE:

- clean, warm water
- soft fiber brush
- synthetic sponge
- soft, clean drying cloths
- trisodium phosphate
- a systems cleaner and neutralizer. For example, KODAK Fixer/Wash System Cleaner or KODAK Liquid Developer System Cleaner (or equivalent) plus KODAK Hypo Clearing Agent (or equivalent).

DO NOT USE:

- steel wool
- scrapers of any kind
- nails (as hangers) or steel brackets/shelves for drying

To avoid causing scratches and stains during the cleaning procedure, rinse the surface and the cleaning tools (sponge and brush) frequently with warm water.

CLEANING PROCEDURES

1. Soak the area to be cleaned with warm water.
2. Using the fiber brush and sponge, remove any loose chemical deposits and dirt.
3. Rinse thoroughly with warm water.
4. Dry the surface immediately with a clean, soft cloth.

Check the surface for any remaining chemical deposits, dirt, or surface film and, if additional cleaning is necessary:

1. Resoak the surface with warm water.
2. Soak the sponge with trisodium phosphate.
3. Using the sponge, remove the contamination.
4. Rinse thoroughly with warm water.
5. Dry the surface immediately with a clean, soft cloth.

When the above procedures do not remove all chemical deposits, dirt, or surface film, do the following:

WARNING

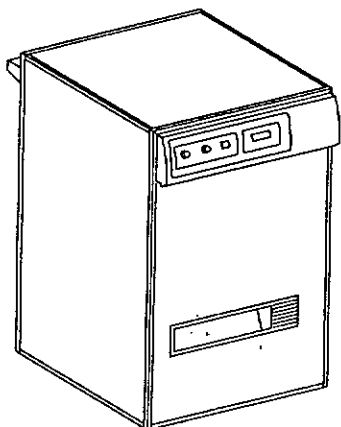
Use correct personal safety equipment.

Some commercial cleaners can cause contamination of photographic chemistry or damage to painted surfaces, fabrics, and rubber. If you plan to use a commercial cleaner, check with your Kodak representative.

1. Following the manufacturer's instructions, carefully prepare a commercial cleaner (for example, KODAK Fixer/Wash System Cleaner or KODAK Liquid Developer System Cleaner).
2. Soak the surface with water at the recommended temperature.
3. Using the applicator recommended by the manufacturer, apply the cleaning solution.
4. Allow the cleaning solution to soak the surface for the time recommended by the manufacturer, usually 5-10 minutes.
5. Use the sponge and the brush to loosen and remove any remaining particles and/or chemical deposits.
6. Rinse thoroughly with warm water.
7. Dry the surface immediately with a clean, soft cloth.
8. Check that the surface is clean and free of any chemical deposits, surface film, or loose particles.
9. If necessary, reapply the cleaning solution and clean, rinse, and dry the surface again.
10. Use a hypo-clearing bath (for example, KODAK Hypo Clearing Agent) to neutralize any remaining systems cleaner. Follow the manufacturer's instructions carefully.



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KODAK INDUSTREX B 2000 PROCESSOR



HEALTH SCIENCES

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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SECTION 1
Introduction

Required Tools

PART NUMBER	DESCRIPTION
TL-1434	Level - approximately 30 cm (12 in.)
TL-1926	Magnetic Power Warning Sign
TL-2170	Clamp, quantity of 4
TL-2431	Air Meter
TL-3230	Silastic Sealant RTV 102
TL-3346	Grounding Kit
TL-3421	Interlock Key
TL-4114	Model 87 Multimeter
489188	Stud Removal Tool

Electrostatic Discharge

Overview

ESD (Electrostatic Discharge) is a primary source of:

- product downtime
- lost productivity
- costly repairs.

While you 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 that you adhere to the following guidelines.

Personnel Awareness

Personnel throughout the organization need 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

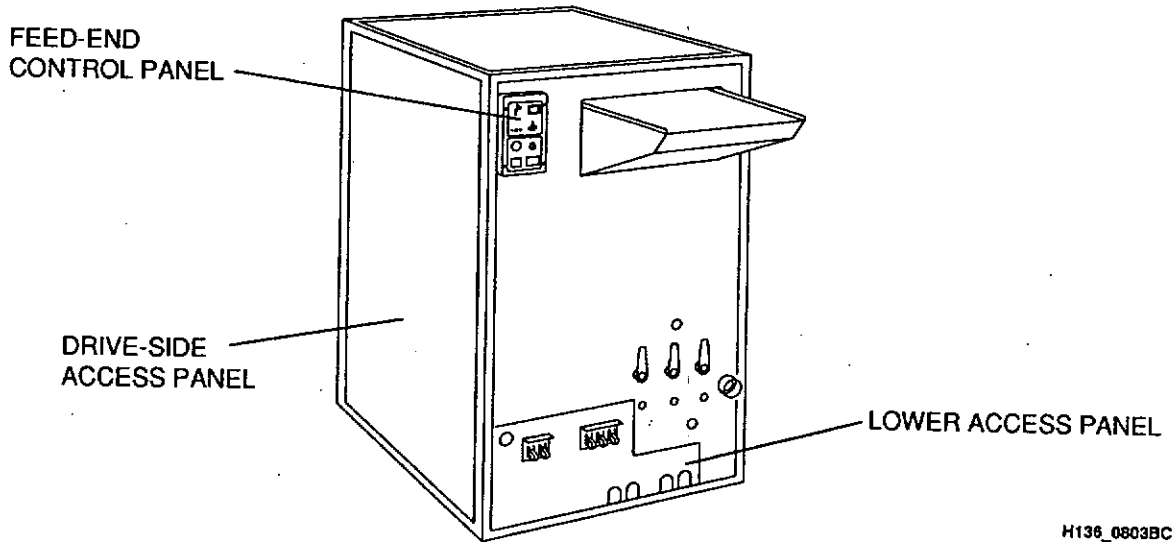
- [1] **Do not** store trash near static-sensitive equipment.
- [2] **Do not** place plastic materials near electronic components. Trash can liners and styrofoam cups generate static electricity that can damage or destroy electronic components.

Preventive Measures

- [1] 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 that frequently include instructions. Follow all label instructions.
- [2] If the work area is carpeted, spray the carpet with an anti-static solution. In low-humidity environments, spray carpets periodically with an anti-static solution available at local stores or available through Kodak as TL-3832.
- [3] Wear a grounding strap when handling static-sensitive components. Make sure that the clip remains attached to a properly grounded, unpainted, clean surface.
- [4] Repair static-sensitive components at an ESD-protected work station. If you cannot repair static-sensitive components at a protected work station, then be sure to use a portable grounding mat. (If you would like assistance in setting up ESD-protected work stations, contact your Kodak representative.)
- [5] Use ESD-protective packaging when transporting static-sensitive components from one area to another. By inserting static-sensitive components into transparent anti-static bags, available from a variety of manufacturers, you will greatly reduce the possibility of ESD damage to those components.

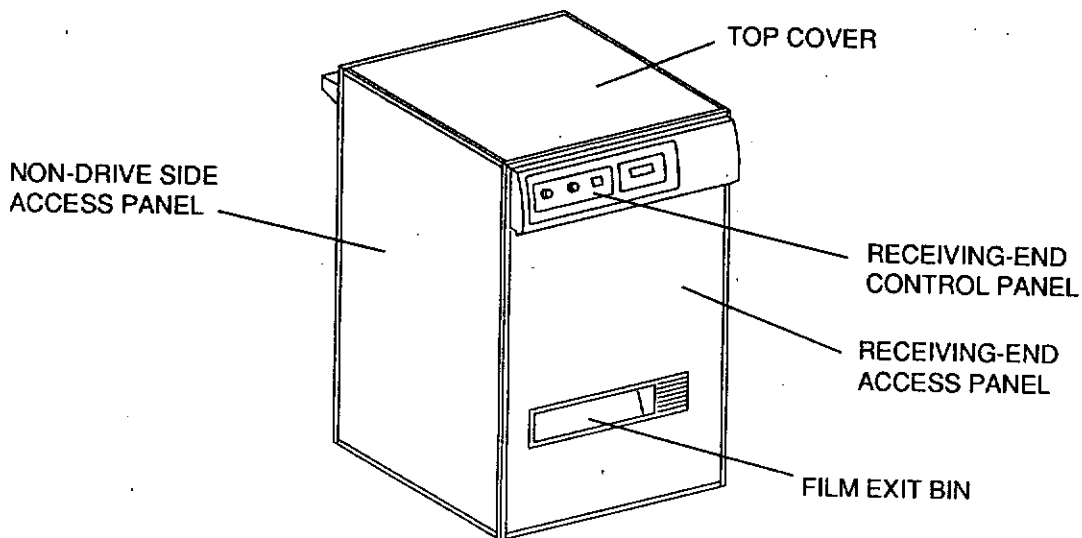
Overview of Processor

In many of the following procedures the PROCESSOR must be deenergized and the TOP COVER and ACCESS PANELS must be removed from the PROCESSOR before beginning the procedures. This section shows the location of the MAIN CIRCUIT BREAKER, TOP COVER, ACCESS PANELS, RACKS, CROSSOVERS, and other main components.



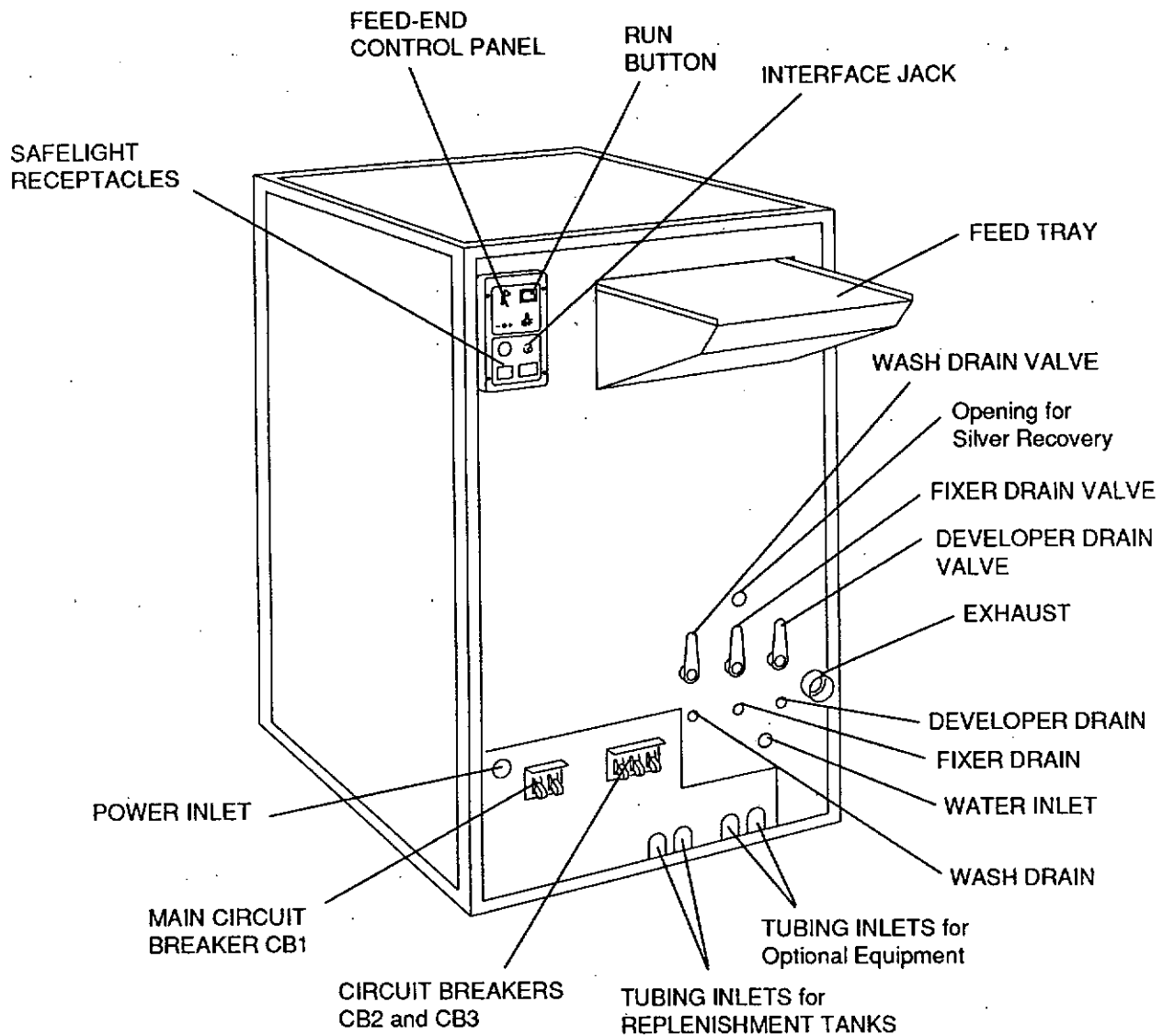
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Feed-End View



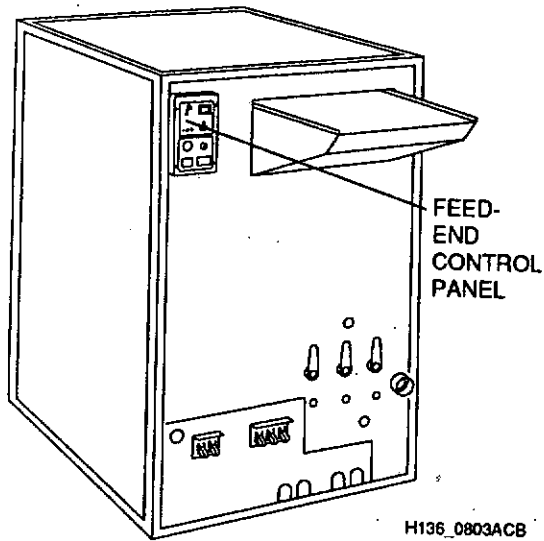
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Receiving-End View

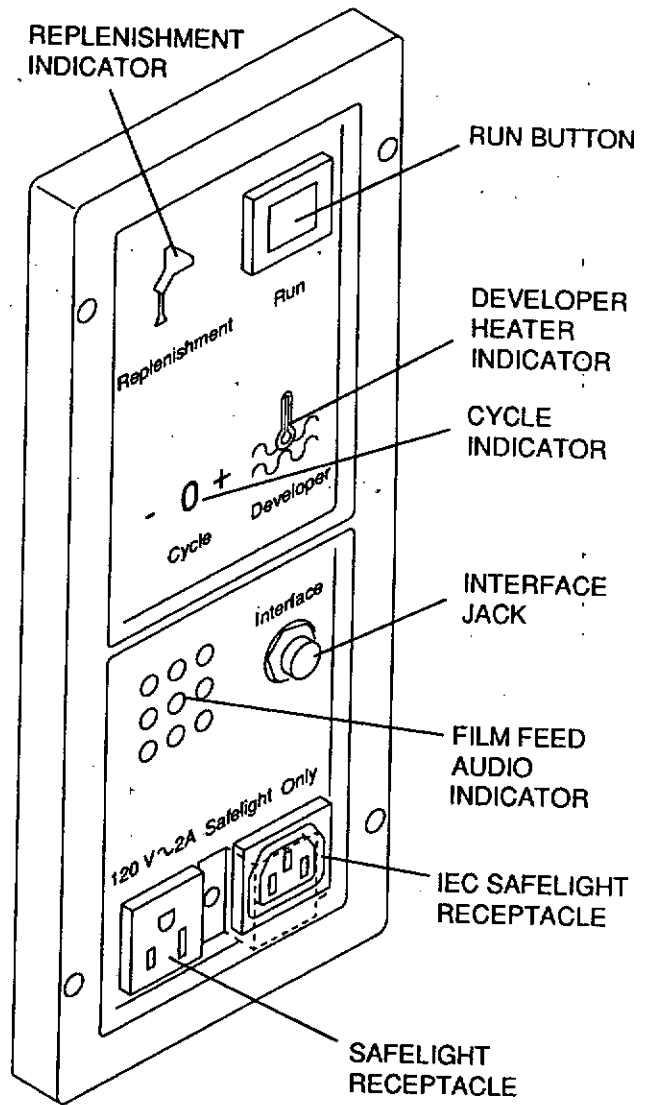


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Main Components



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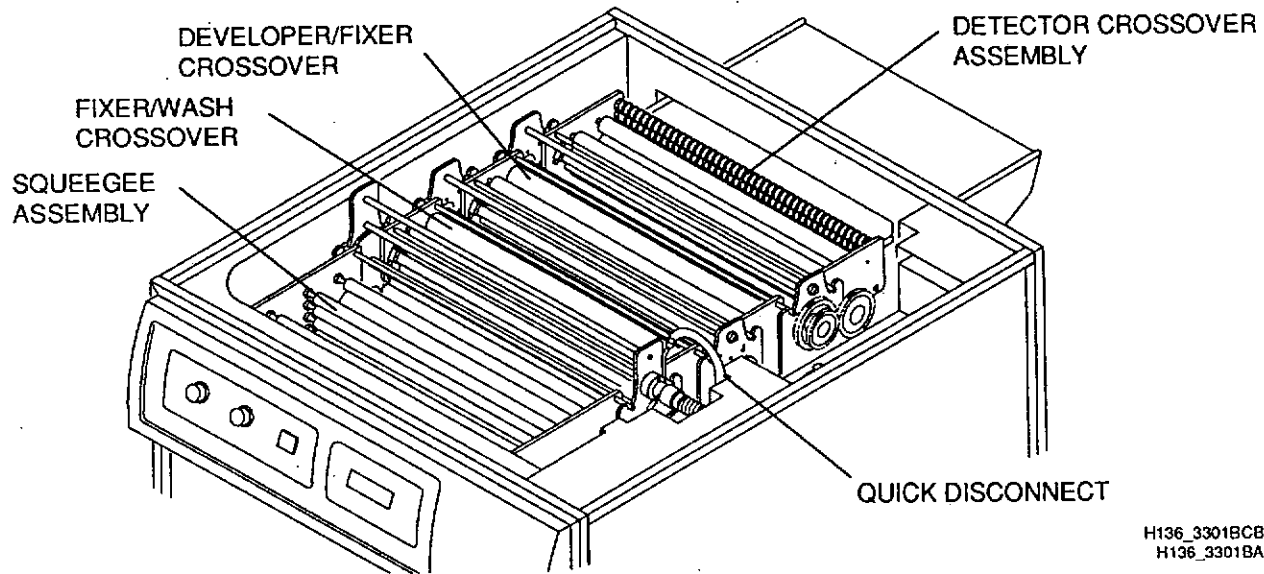


Feed-End Control Panel

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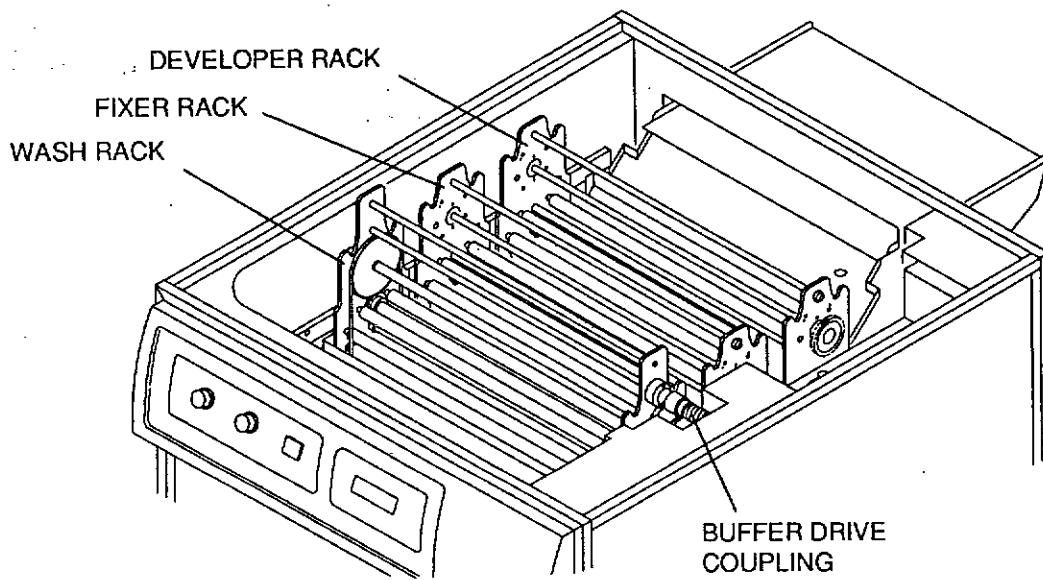
WARNING

- Heavy Parts
- Use a RACK CRANE to remove and install the RACKS.



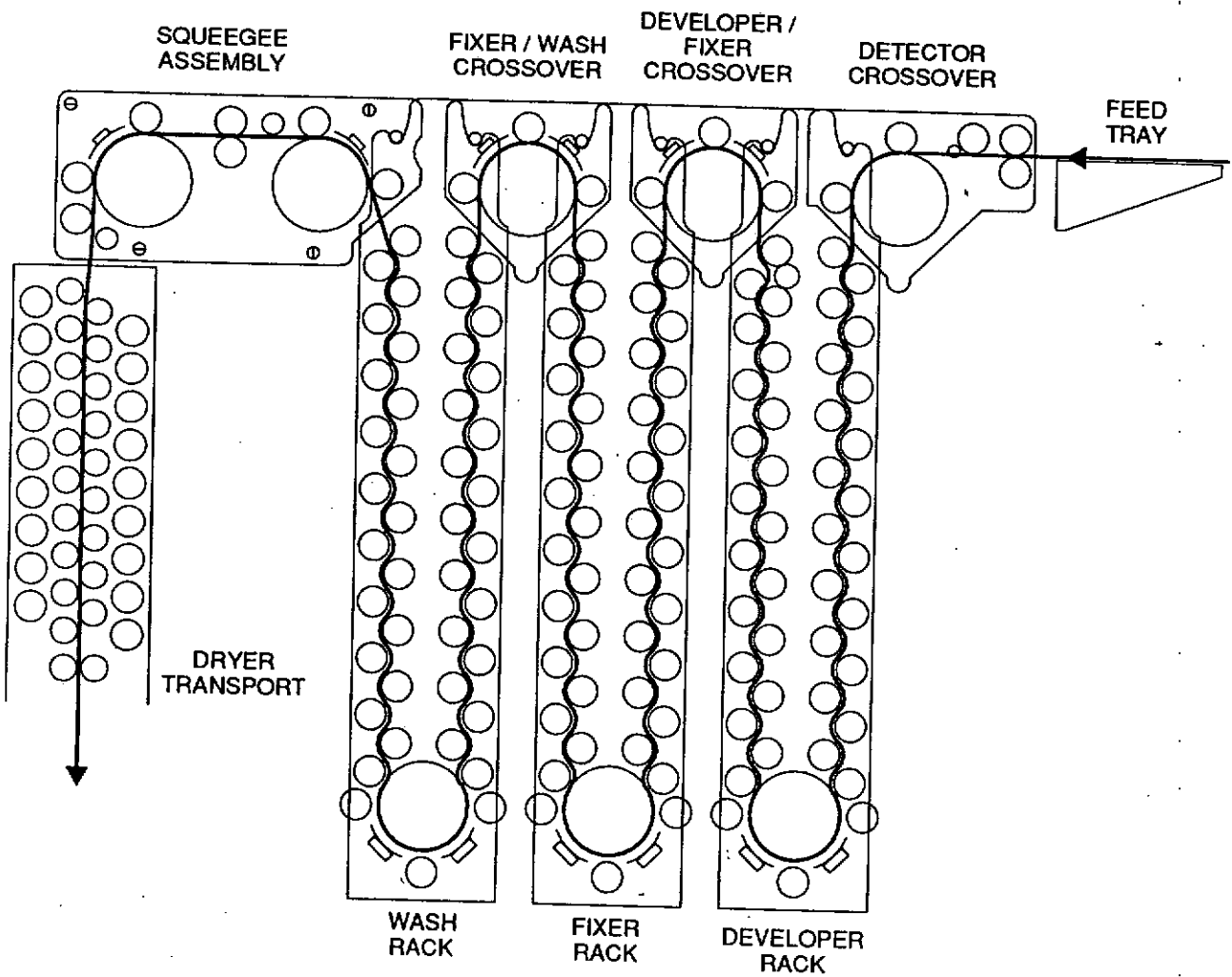
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Crossover Identification



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Rack Identification



Roller Transport

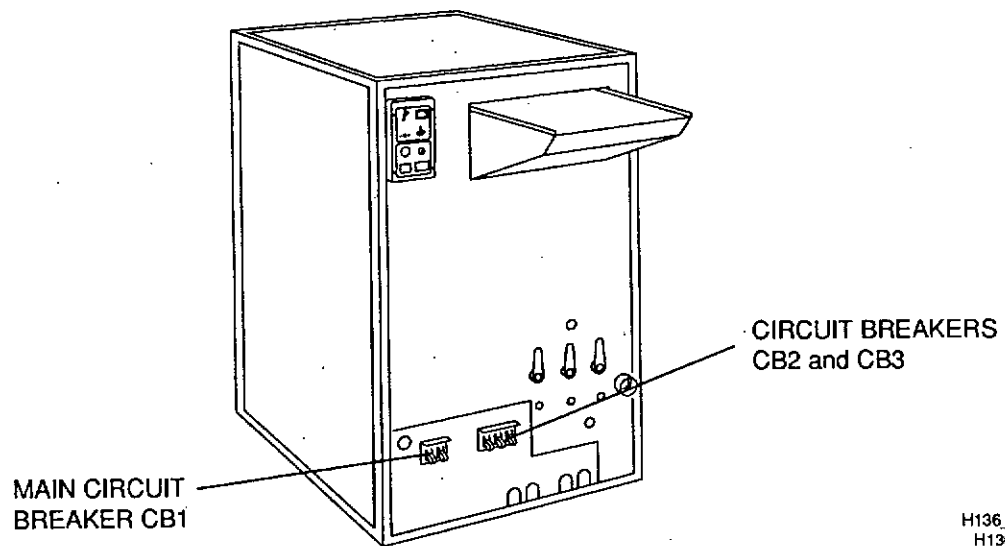
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Energizing the Processor

- [1] Move the wall POWER SWITCH to the "ON" position.
- [2] Move the CIRCUIT BREAKERS CB2 and CB3 to the "I" position.
- [3] Move the MAIN CIRCUIT BREAKER CB1 to the "I" position.

Deenergizing the Processor

- [1] Move the MAIN CIRCUIT BREAKER CB1 to the "O" position.
- [2] Move the CIRCUIT BREAKERS CB2 and CB3 to the "O" position.
- [3] Move the wall POWER SWITCH to the "OFF" position.
- [4] Attach the MAGNETIC POWER WARNING SIGN TL-1926 to the wall POWER SWITCH indicating that the PROCESSOR is being serviced.



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SECTION 2
Racks

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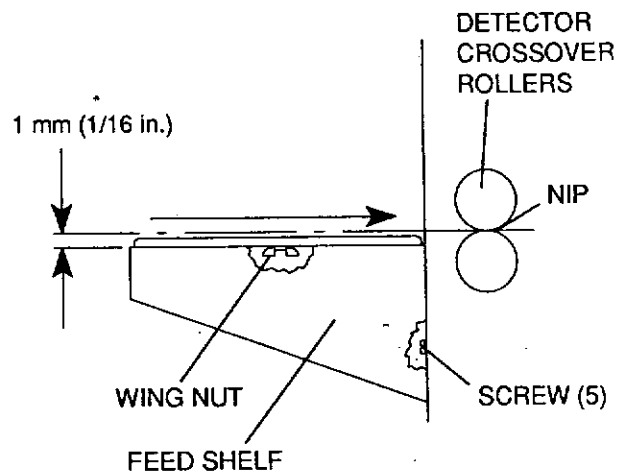
Adjusting the Height of the Feed Shelf

- [1] Adjust the position of the FEED SHELF so that it is approximately 1 mm (1/16 in.) lower than the NIP of the DETECTOR CROSSOVER ROLLERS.

IMPORTANT

Do not tighten the WING NUTS.

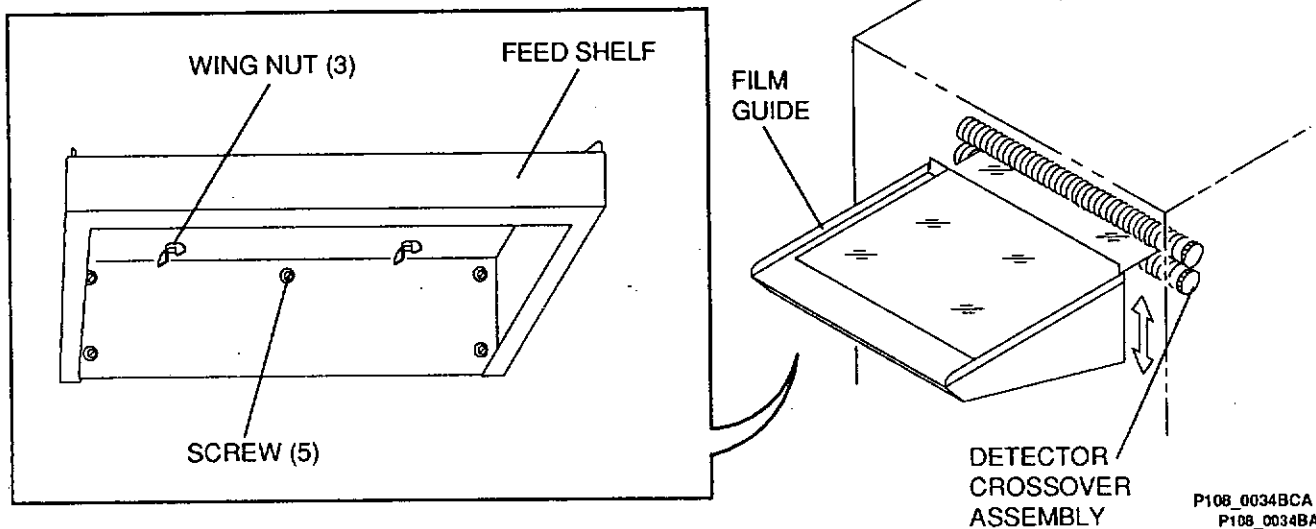
- [2] When the height is adjusted correctly, tighten the 5 SCREWS.



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Aligning the Film Guide

- [1] Align a 35 x 43 cm (14 x 17 in.) film against the right side of the FILM GUIDE.
- [2] Using the edge of the film, align the FILM GUIDE with the DETECTOR CROSSOVER ASSEMBLY.
- [3] Tighten the 3 WING NUTS.

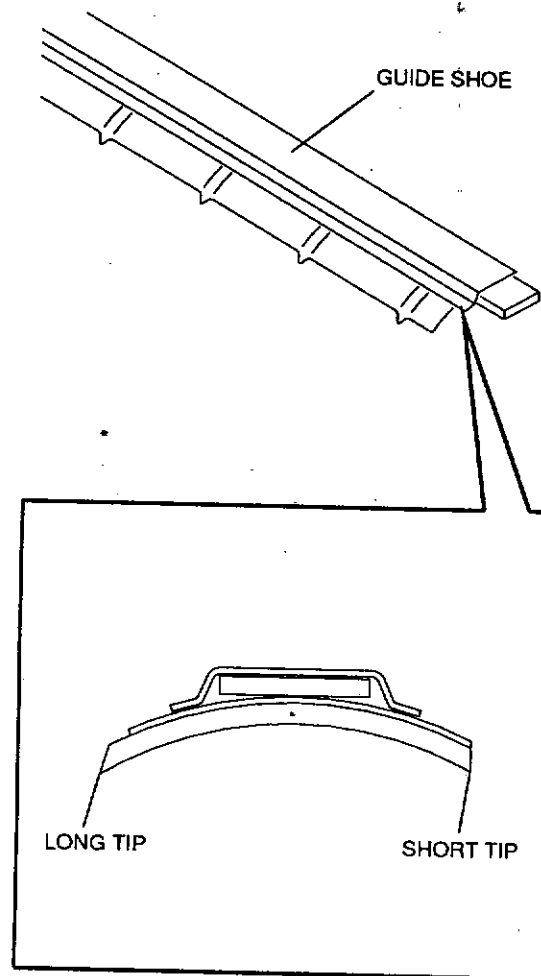
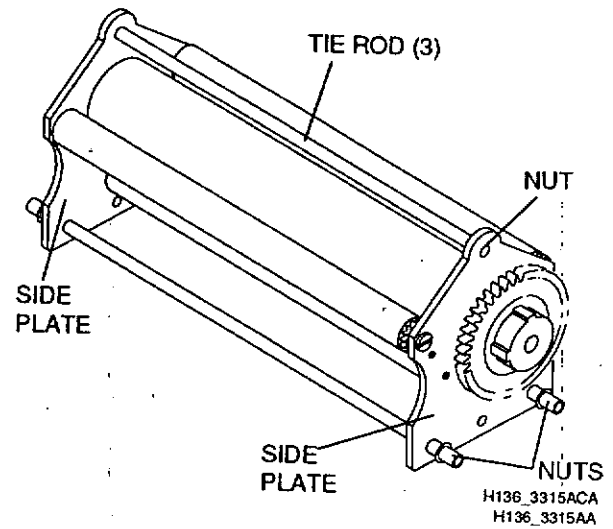


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Crossover and Turnaround Assemblies

Adjusting for Squareness

- [1] Remove the assembly from the PROCESSOR.
- [2] Set the assembly on a flat surface.
- [3] Loosen the NUTS at the ends of the 3 TIE RODS.
- [4] Check the straight sides of the SIDE PLATES for squareness against the flat surface.
- [5] Tighten the NUTS.
- [6] Check that the LONG TIPS of the GUIDE SHOES are in the direction of film travel.
- [7] Do this procedure for each CROSSOVER and TURNAROUND ASSEMBLY.



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Removing the Chain

- [1] To open the CHAIN, insert a SCREWDRIVER under each open end of a LINK.
- [2] Rotate the SCREWDRIVER to disassemble the CHAIN.
- [3] Connect the new CHAIN to the existing CHAIN, with the LINKS in the same direction as the existing CHAIN.
- [4] Pull the existing CHAIN through the RACK ASSEMBLY until the new CHAIN is in the correct position.
- [5] Disconnect the CHAINS.
- [6] Fasten the ends of the new CHAIN together.
- [7] Close the LINK.
- [8] Do the following adjustment.

Adjusting the Chain

- [1] Loosen the 6 HOLDING SCREWS on the drive and non-drive sides of the RACK ASSEMBLY.

NOTE

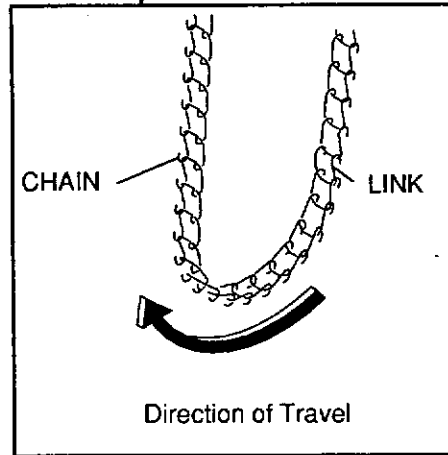
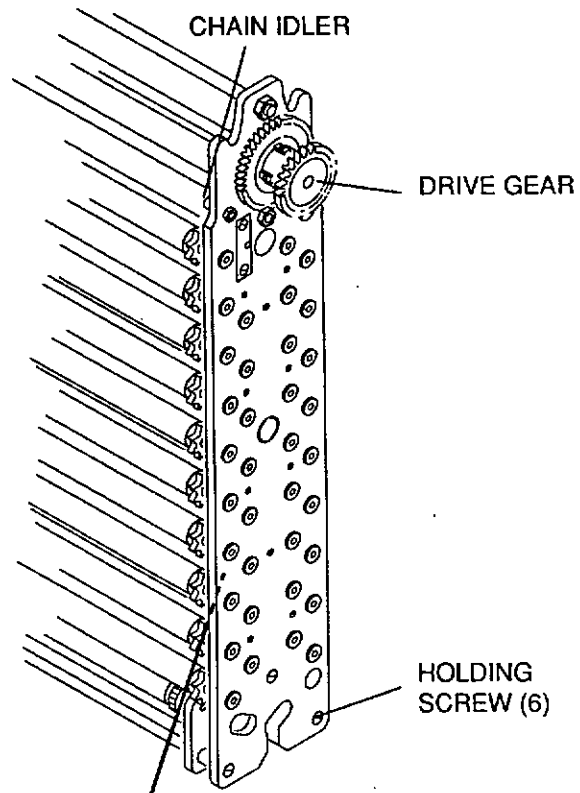
Loosening the HOLDING SCREWS allows the TURNAROUND ASSEMBLY to move by gravity and provide the correct tension on the CHAIN.

- [2] Rotate the DRIVE GEAR one complete rotation.
- [3] Tighten the 3 HOLDING SCREWS on the drive side.

NOTE

For the WASH RACK, the 3 HOLDING SCREWS are on the non-drive side.

- [4] If necessary, move the CHAIN IDLER in or out to increase or decrease the tension of the CHAIN.
- [5] Move the non-drive side of the TURNAROUND ASSEMBLY until the RACK ROLLERS and the TURNAROUND ROLLERS are parallel.
- [6] Tighten the 3 HOLDING SCREWS on the non-drive side.



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Removing the Turnaround Assembly

- [1] Remove the 2 STUDS and the ROLLER.

NOTE

Use the STUD REMOVAL TOOL 489188 to remove the snap-in STUDS.

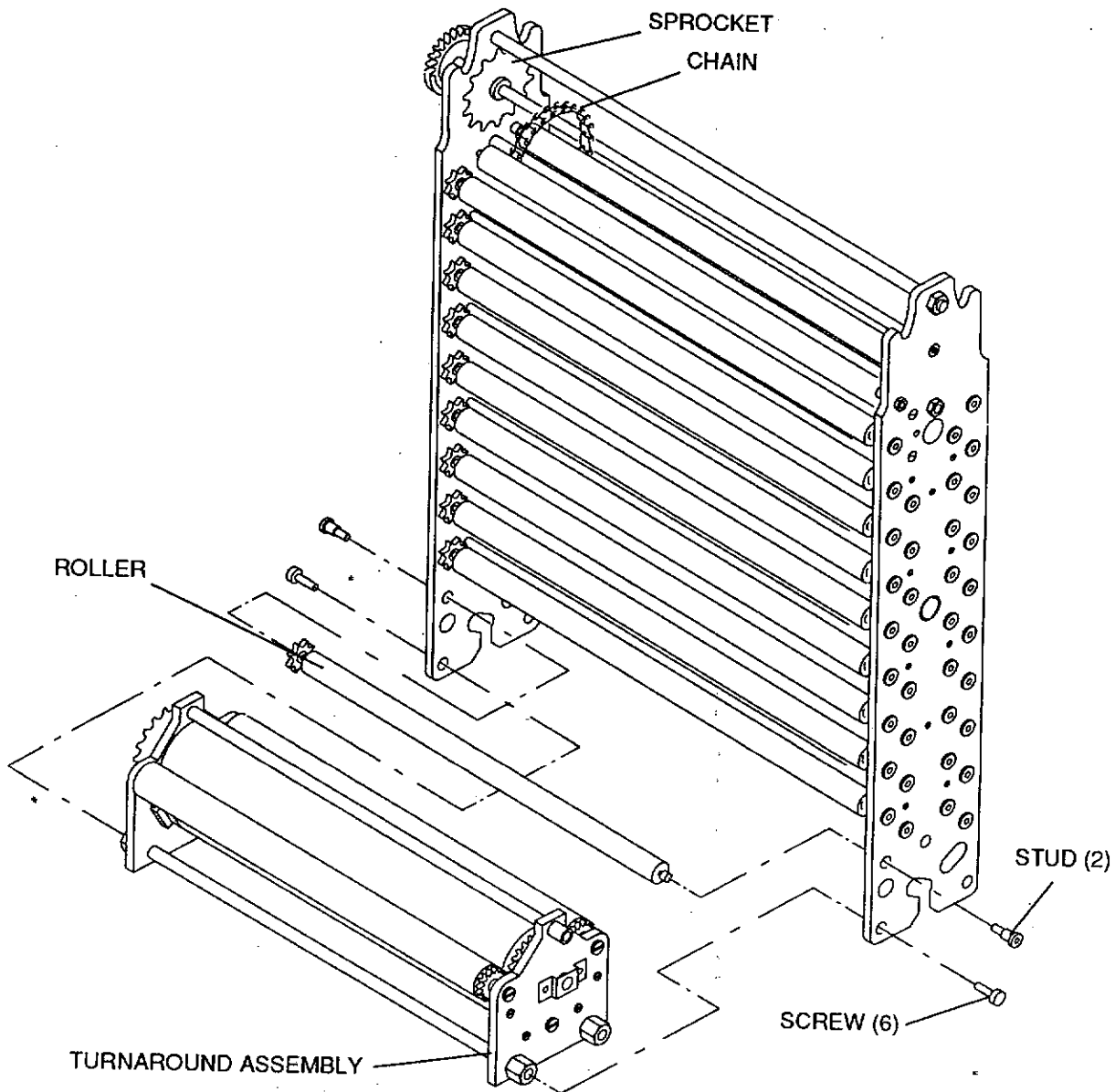
- [2] Remove the 6 SCREWS.
- [3] Lift the TURNAROUND ASSEMBLY to release the tension on the CHAIN.

- [4] Remove the CHAIN from the SPROCKET.

- [5] Remove the TURNAROUND ASSEMBLY.

- [6] Reverse this procedure to install the TURNAROUND ASSEMBLY.

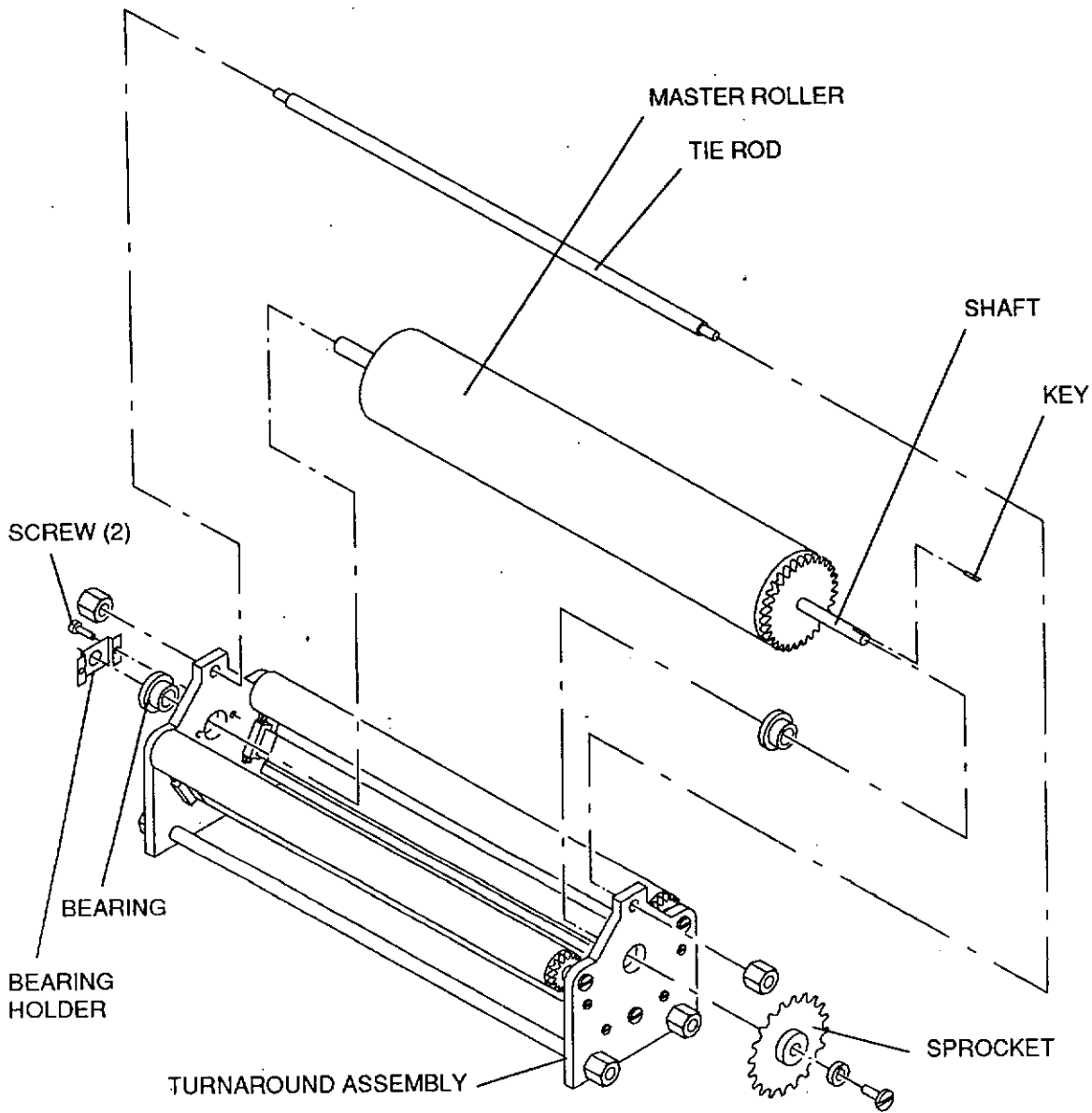
- [7] Do the "Adjusting the Chain" procedure on page 2-4.



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Removing the Master Roller

- [1] Remove:
 - Top TIE ROD
 - SPROCKET
 - KEY.
- [2] From the non-drive side, remove:
 - 2 SCREWS
 - BEARING HOLDER
 - BEARING.
- [3] Press the SHAFT into the ROLLER.
- [4] Remove the ROLLER and SHAFT.
- [5] Remove the SHAFT from the ROLLER.
- [6] Reverse this procedure to assemble the TURNAROUND ASSEMBLY.
- [7] Do the "Squareness Adjustment" procedure. See page 2-3.



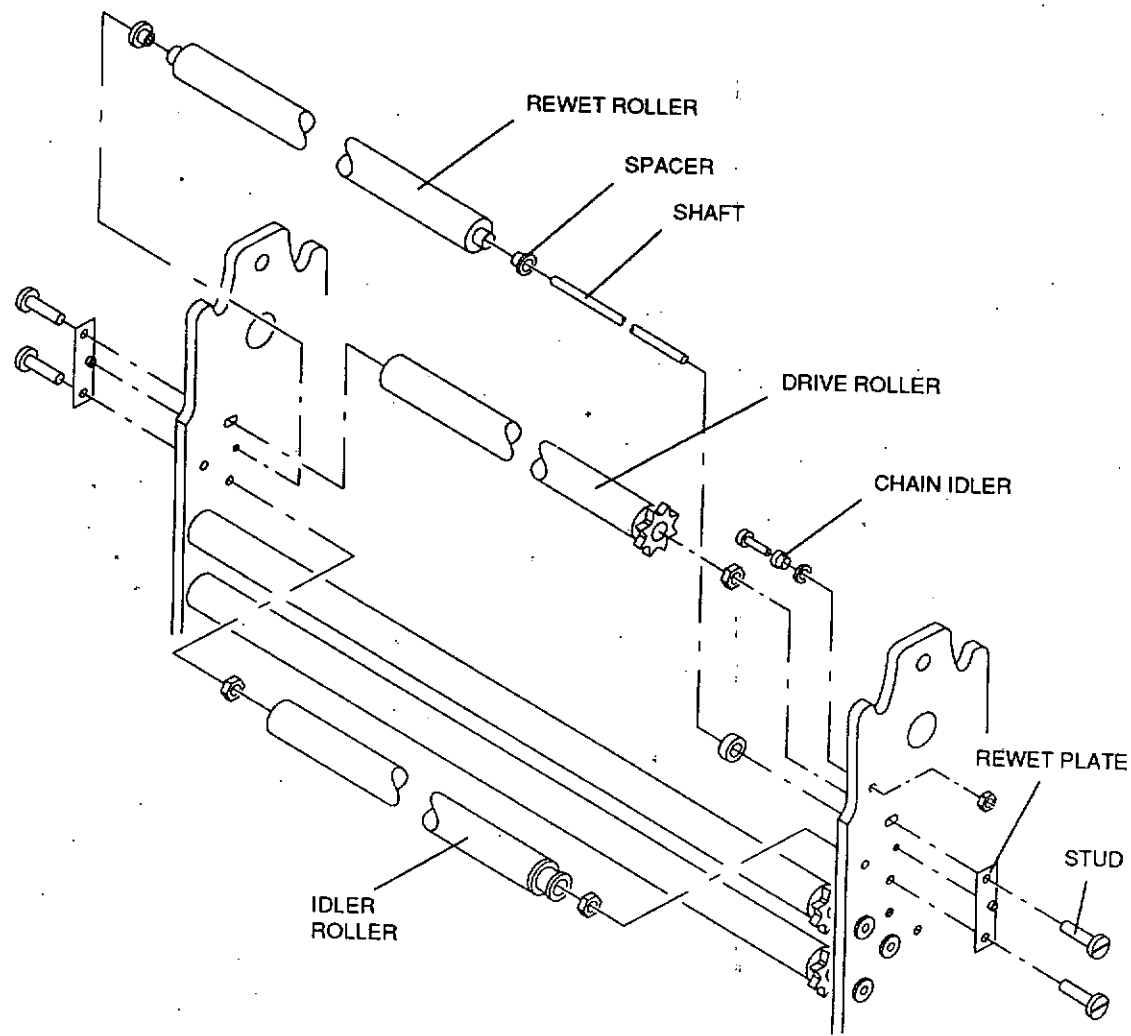
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Removing the Developer Rewet Roller

- [1] Remove:
 - CHAIN IDLER
 - DRIVE ROLLER
 - STUD
 - REWET PLATE.
- [2] Remove:
 - SHAFT
 - SPACER
 - DEVELOPER REWET ROLLER.
- [3] Reverse this procedure to install the DEVELOPER REWET ROLLER. Do not tighten the STUDS.
- [4] Adjust the DEVELOPER REWET ROLLER.

Adjusting the Developer Rewet Roller

- [1] Holding the drive and non-drive side REWET PLATES, move the DEVELOPER REWET ROLLER toward the DRIVE ROLLER until the tension is equal across the surfaces of the ROLLERS.
- [2] Tighten the STUDS on the DRIVE ROLLER and the IDLER ROLLER.
- [3] Manually rotate the DRIVE GEAR to check that the REWET, DRIVE, and RACK ROLLERS move freely.



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Removing the Buffer Roller

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Disconnect the wash water QUICK DISCONNECT.
- [3] Disengage the BUFFER DRIVE COUPLING.
- [4] Remove:
 - SQUEEGEE ASSEMBLY
 - FIXER/WASH CROSSOVER
 - WASH RACK.
- [5] Remove the ROLLER.

NOTE

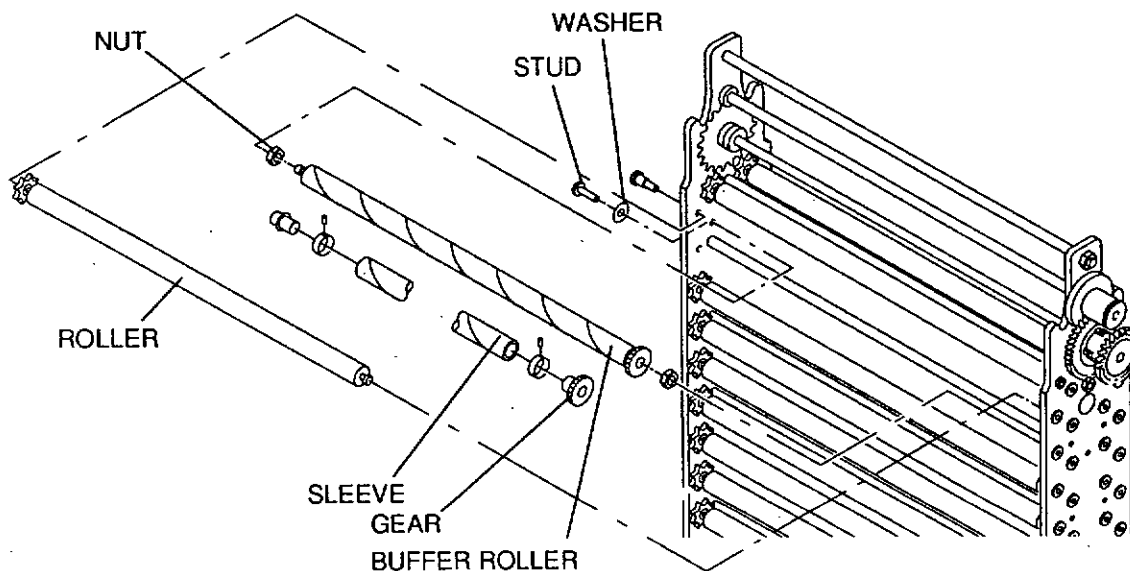
Use the STUD REMOVAL TOOL 489188 to remove the snap-in STUDS.

- [6] Remove:
 - STUD
 - WASHER
 - NUT
 - BUFFER ROLLER.
- [7] Disassemble the BUFFER ROLLER.
- [8] Remove the existing SLEEVE.
- [9] Install the new SLEEVE.

NOTE

The end of the SLEEVE with the hole is installed toward the GEAR.

- [10] Assemble the BUFFER ROLLER.
- [11] Reverse this procedure to install the BUFFER ROLLER.
- [12] Check the tension on the CHAIN. If necessary, do the "Adjusting the Chain" procedure on page 2-4.



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**SECTION 3
Main Drive**

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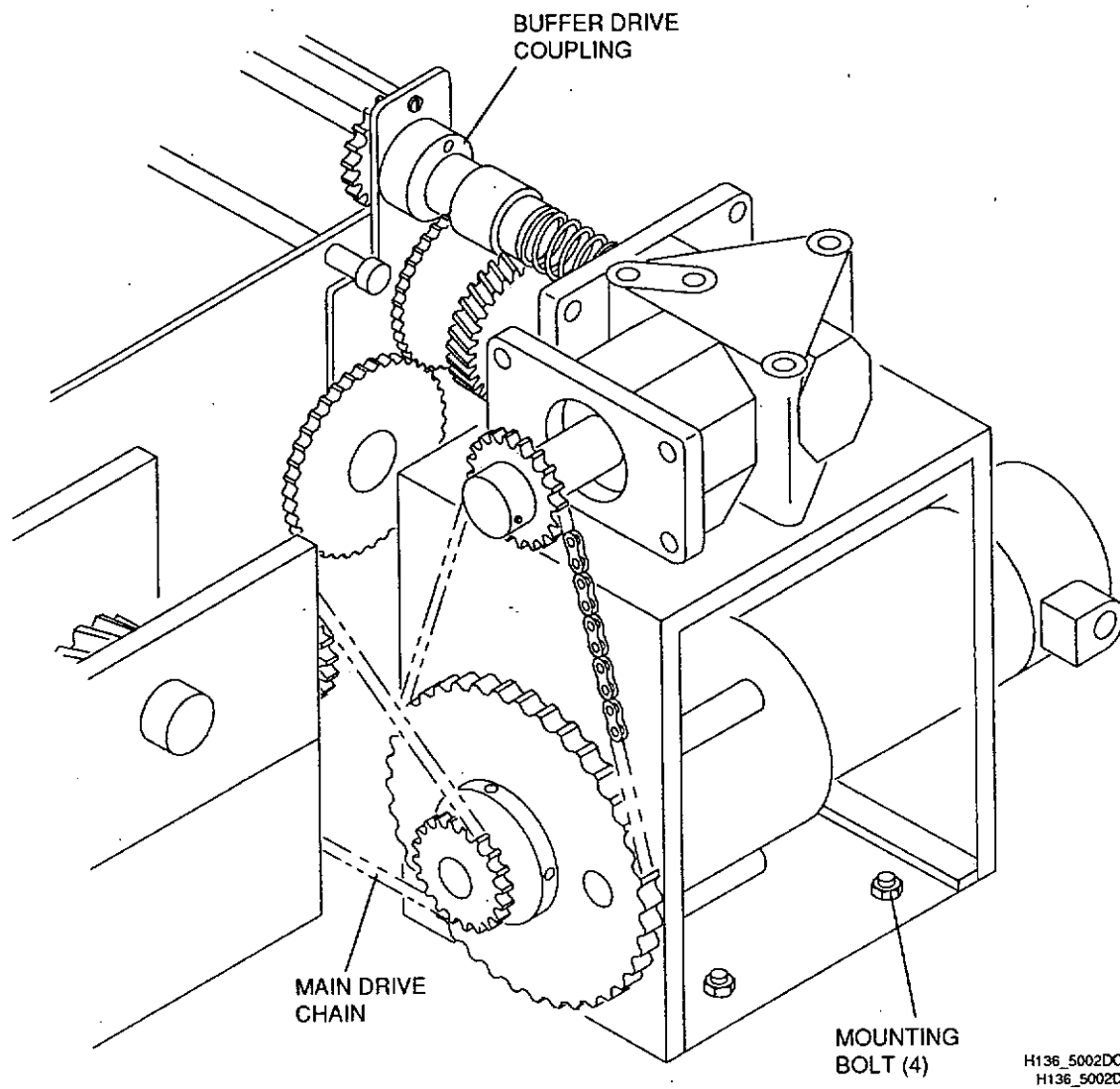
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Removing the Drive Shaft Assembly

WARNING

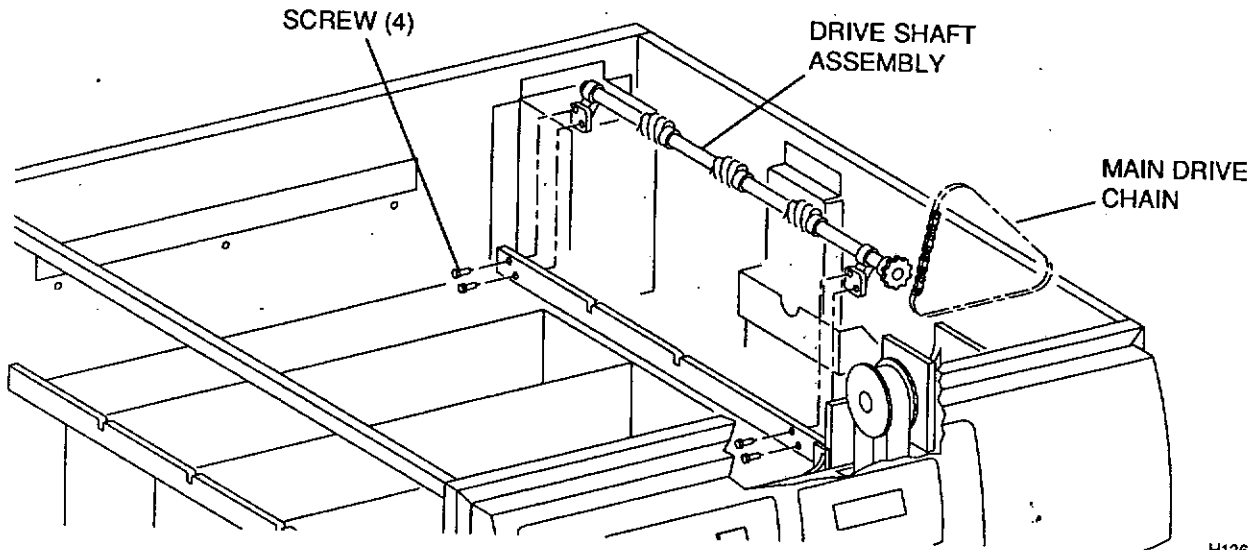
Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Disconnect the wash water QUICK DISCONNECT.
- [3] Disengage the BUFFER DRIVE COUPLING.
- [4] Remove:
 - CROSSOVER ASSEMBLIES
 - ENTRANCE DETECTOR ASSEMBLY
 - SQUEEGEE ASSEMBLY
 - RACKS.
- [5] Loosen the 4 MOUNTING BOLTS to release the tension on the MAIN DRIVE CHAIN.
- [6] Remove the MAIN DRIVE CHAIN.



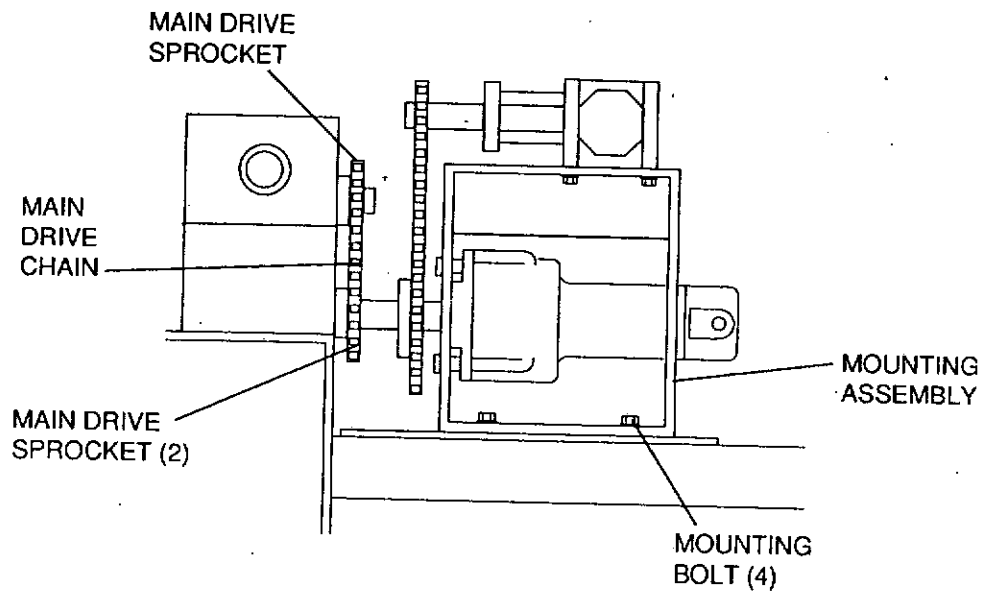
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H136_5002DA

- [7] Remove the 4 SCREWS and the DRIVE SHAFT ASSEMBLY.
- [8] Reverse this procedure to install the DRIVE SHAFT ASSEMBLY.



H136_5005BCA
H136_5005BA

- [9] Move the MOUNTING ASSEMBLY until:
 - Approximately 0.32 cm (1/8 in.) deflection is obtained on the MAIN DRIVE CHAIN.
 - The 3 MAIN DRIVE SPROCKETS are aligned.
 - The components of the BUFFER DRIVE COUPLING are aligned.
- [10] Tighten the 4 MOUNTING BOLTS.



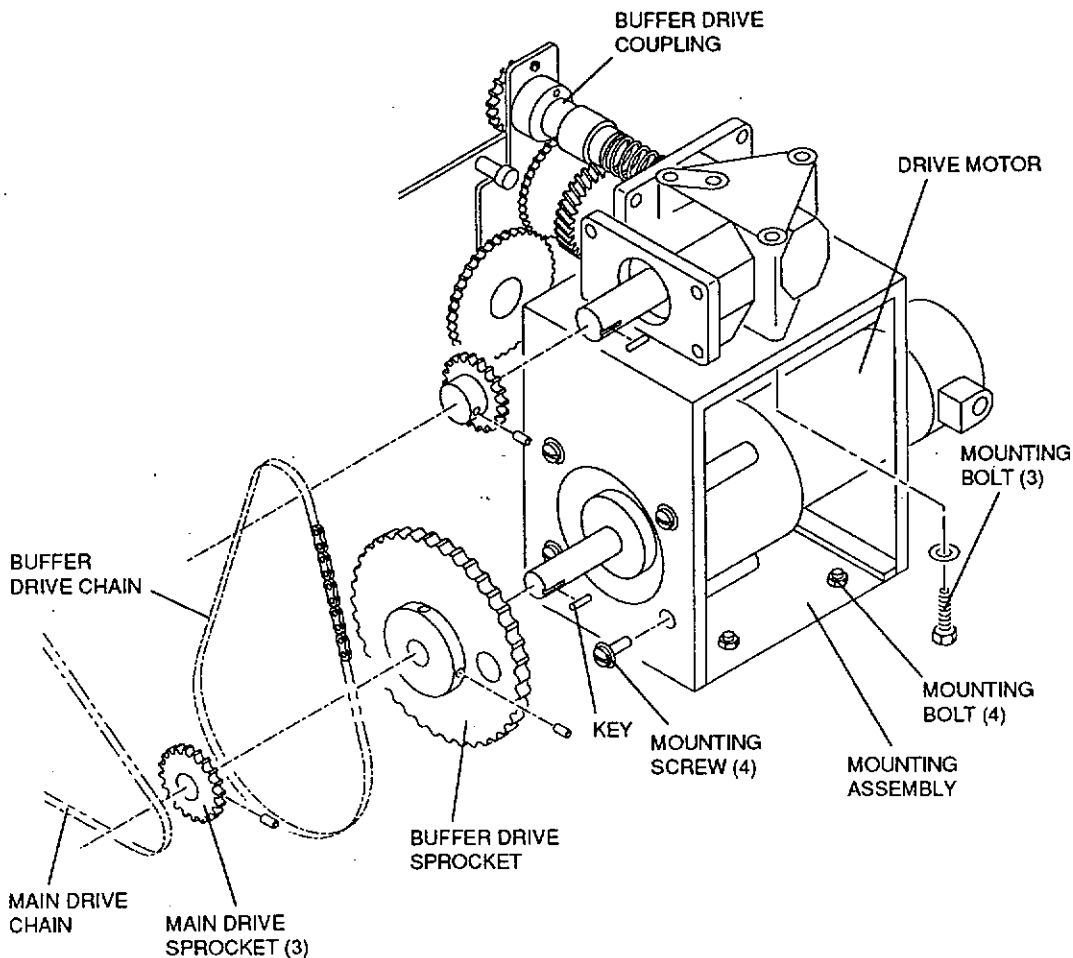
H136_5006BCA
H136_5006BA

Removing the Drive Motor

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Disconnect the wash water QUICK DISCONNECT.
- [3] Disengage the BUFFER DRIVE COUPLING.
- [4] Disconnect the DRIVE MOTOR CONNECTOR P/J26.
- [5] Loosen the 4 MOUNTING BOLTS to release the tension on the MAIN DRIVE CHAIN.
- [6] Remove the MAIN DRIVE CHAIN.
- [7] Loosen the 3 MOUNTING BOLTS to release the tension on the BUFFER DRIVE CHAIN.
- [8] Remove the BUFFER DRIVE CHAIN.
- [9] Remove the BUFFER DRIVE SPROCKET and the MAIN DRIVE SPROCKET.
- [10] Remove the 4 MOUNTING SCREWS.
- [11] Remove the DRIVE MOTOR.
- [12] Reverse this procedure to install the DRIVE MOTOR.
- [13] Move the MOUNTING ASSEMBLY until:
 - Approximately 0.32 cm (1/8 in.) deflection is obtained on the MAIN DRIVE CHAIN.
 - The 3 MAIN DRIVE SPROCKETS are aligned.
 - The components of the BUFFER DRIVE COUPLING are aligned.
- [14] Tighten the 4 MOUNTING BOLTS.



H136_5004DCA
H136_5004DA

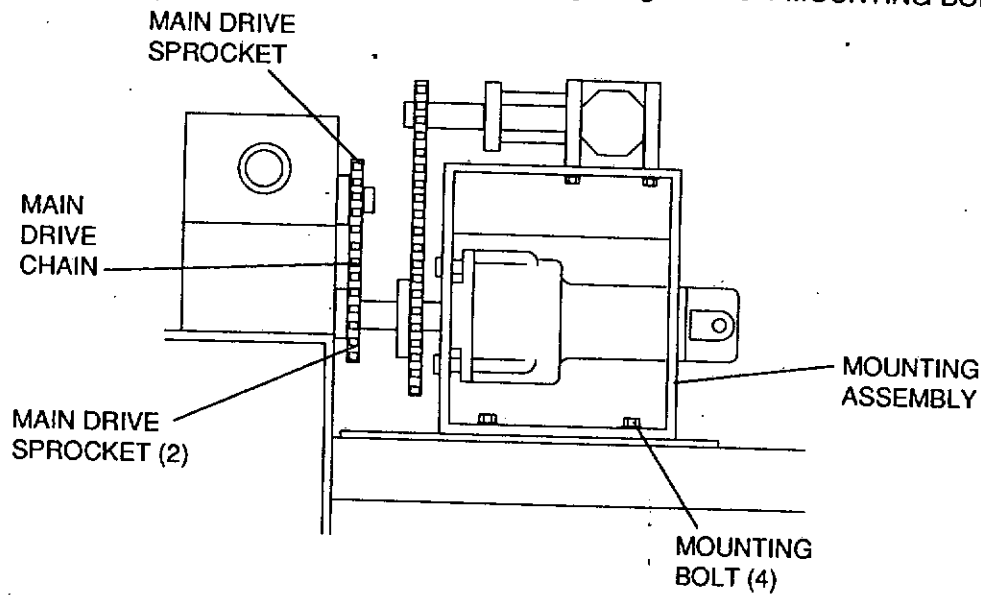
Adjusting the Main Drive Chain

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Loosen the 4 MOUNTING BOLTS.

- [3] Move the MOUNTING ASSEMBLY until:
 - Approximately 0.32 cm ($\frac{1}{8}$ in.) deflection is obtained on the MAIN DRIVE CHAIN.
 - The 3 MAIN DRIVE SPROCKETS are aligned.
 - The components of the BUFFER DRIVE COUPLING are aligned.
- [4] Tighten the 4 MOUNTING BOLTS.



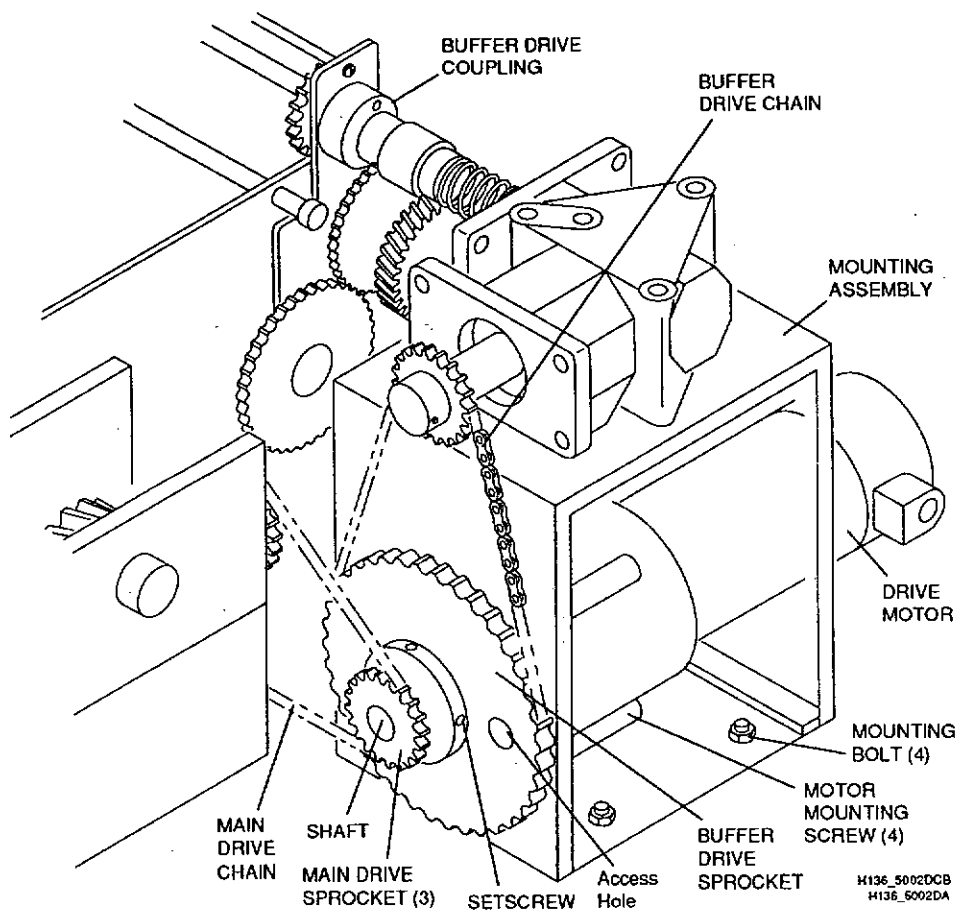
H136_5006BCA
H136_5006BA

Adjusting the Buffer Drive Chain

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Disengage the BUFFER DRIVE COUPLING.
- [3] Loosen the 4 MOUNTING BOLTS.
- [4] Remove the MAIN DRIVE CHAIN from the MAIN DRIVE SPROCKET.
- [5] Move the MOUNTING ASSEMBLY to access the MOTOR MOUNTING SCREWS.
- [6] Loosen the 2 SETSCREWS on the BUFFER DRIVE SPROCKET.
- [7] Rotate the BUFFER DRIVE SPROCKET to align the access hole with the top 2 MOTOR MOUNTING SCREWS.
- [8] Loosen the top 2 MOTOR MOUNTING SCREWS.
- [9] Loosen the bottom 2 MOTOR MOUNTING SCREWS.
- [10] Allow the DRIVE MOTOR to move down to obtain tension on the BUFFER DRIVE CHAIN.
- [11] Tighten the 4 MOTOR MOUNTING SCREWS.
- [12] Align one of the SETSCREWS with the flat side of the SHAFT.
- [13] Tighten the 2 SETSCREWS.
- [14] Install the MAIN DRIVE CHAIN.
- [15] Move the MOUNTING ASSEMBLY until:
 - Approximately 0.32 cm (1/8 in.) deflection is obtained on the MAIN DRIVE CHAIN.
 - The 3 MAIN DRIVE SPROCKETS are aligned.
 - The components of the BUFFER DRIVE COUPLING are aligned.
- [16] Tighten the 4 MOUNTING BOLTS.
- [17] Engage the BUFFER DRIVE COUPLING.



SECTION 4
Dryer

Table of Contents

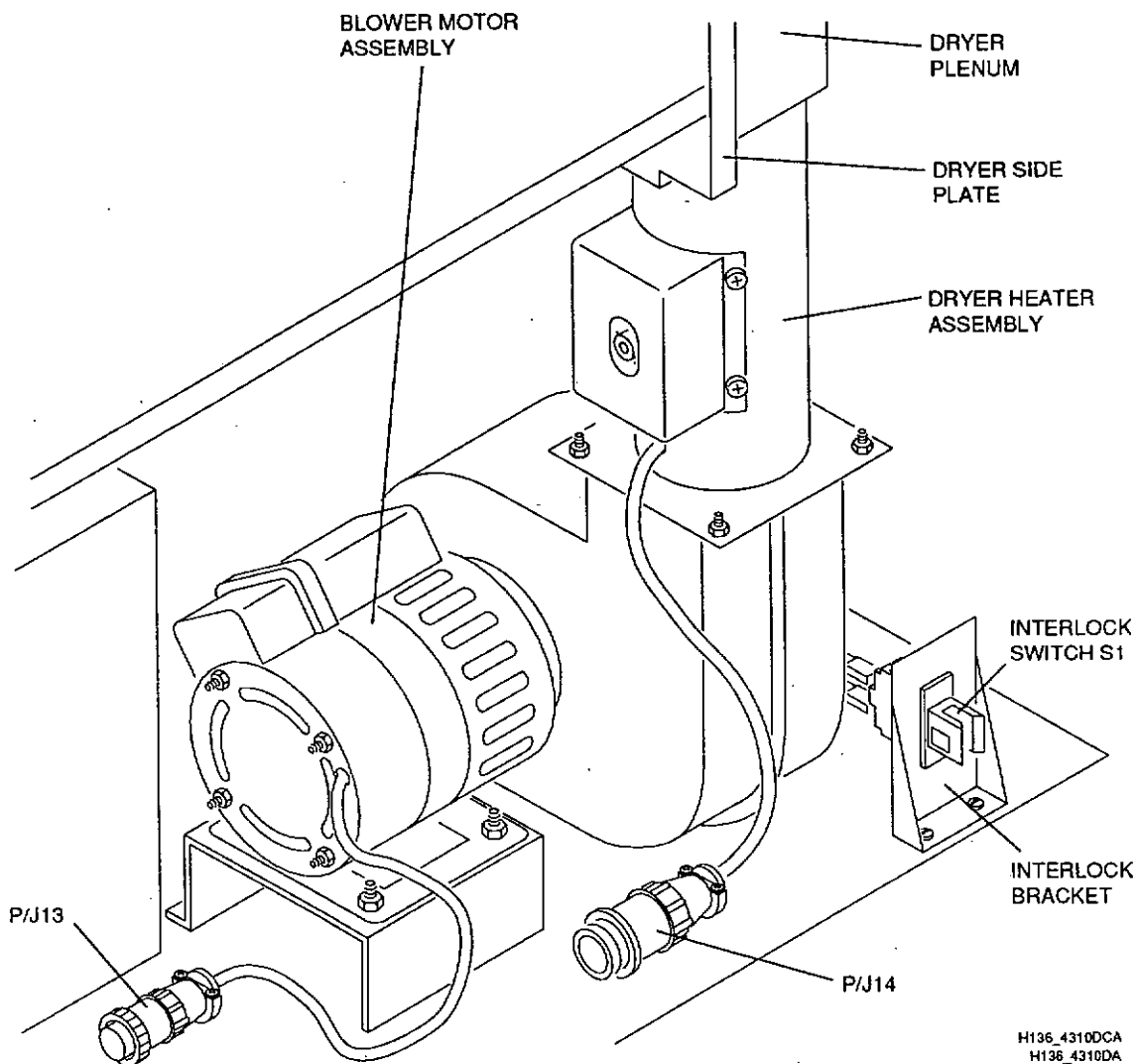
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Removing the Dryer Transport Pulley	4-3
Removing the Dryer Drive Belt and the Dryer Drive Pulley	4-4
Removing the Dryer Roller Support	4-5

Removing the Blower Motor and Dryer Heater Assemblies

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Remove the INTERLOCK BRACKET.
- [3] Disconnect the BLOWER MOTOR CONNECTOR P/J13.
- [4] Remove the hardware holding the BLOWER MOTOR ASSEMBLY to the BLOWER MOUNTING BRACKET.
- [5] Remove the hardware holding the DRYER PLENUM to the DRYER SIDE PLATE.
- [6] Disconnect the DRYER THERMISTOR CONNECTOR P/J25 and the DRYER HEATER CONNECTOR P/J14.
- [7] Remove the BLOWER MOTOR and the DRYER HEATER ASSEMBLIES.
- [8] Remove the DRYER PLENUM and BLOWER MOTOR ASSEMBLY from the DRYER HEATER ASSEMBLY.
- [9] Reverse this procedure to assemble the BLOWER MOTOR and DRYER HEATER ASSEMBLIES.
- [10] Install the INTERLOCK BRACKET.
- [11] Check that the INTERLOCK SWITCH S1 is actuated by installing the RECEIVING-END PANEL.
- [12] Adjust the INTERLOCK BRACKET, if necessary.



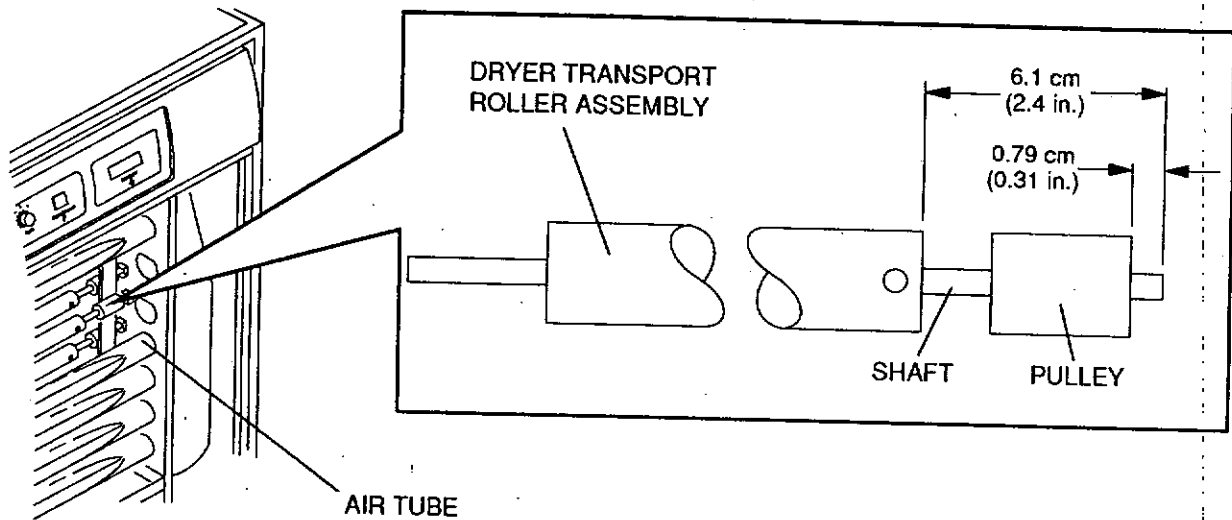
H136_4310DCA
H136_4310DA

Removing the Dryer Transport Pulley

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Remove the receiving-end ACCESS PANEL.
- [3] Remove any necessary AIR TUBES.
- [4] Remove the DRYER TRANSPORT ROLLER ASSEMBLY.
- [5] Remove the PULLEY from the SHAFT.
- [6] To lubricate the new PULLEY, place it in warm water.
- [7] Install and align the new PULLEY on the SHAFT.
- [8] Install the DRYER TRANSPORT ROLLER ASSEMBLY.



H136_4303BCA
H136_4303BA

Removing the Dryer Drive Belt and the Dryer Drive Pulley

WARNING

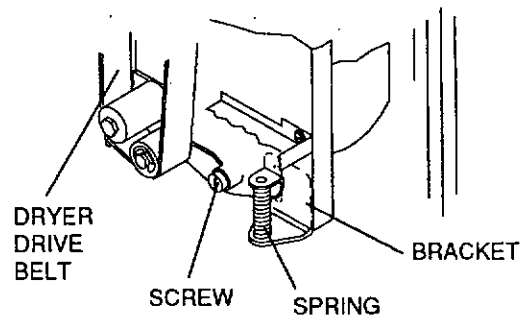
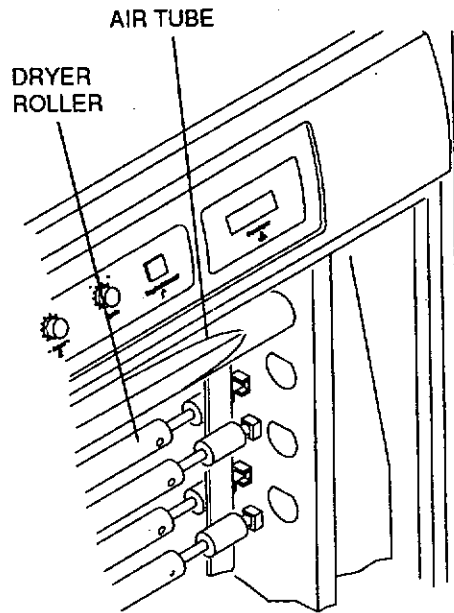
Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Remove the AIR TUBES and the DRYER ROLLERS.

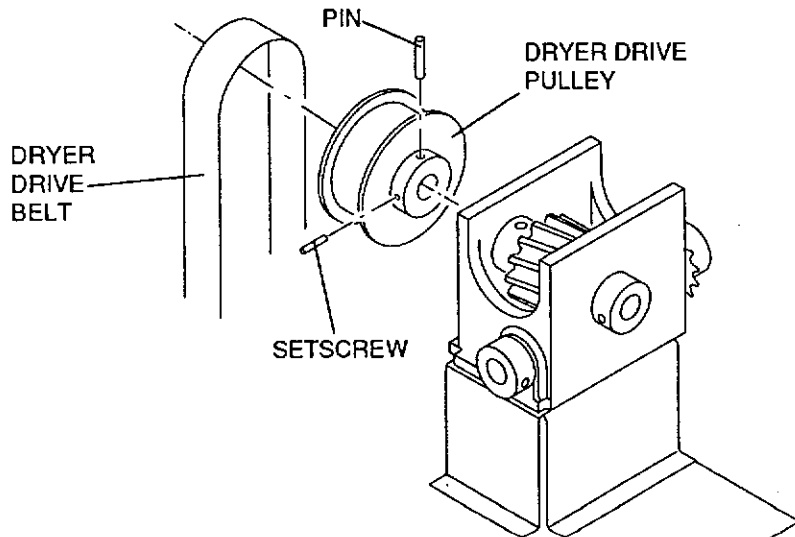
WARNING

The SPRING is compressed.

- [3] To release the tension on the DRYER DRIVE BELT, loosen the SCREW and remove the SPRING.
- [4] Remove the DRYER DRIVE BELT.
- [5] Remove the DRYER DRIVE PULLEY:
 - (a) Remove the PIN and SETSCREW.
 - (b) Remove the DRYER DRIVE PULLEY.
- [6] Reverse this procedure to install the DRYER DRIVE PULLEY and the DRYER DRIVE BELT.
- [7] If necessary, move the BRACKET up or down to increase or decrease the tension on the DRYER DRIVE BELT.



H136_4300CCA
H136_4300CA



H136_4306BCA
H136_4306BA

Removing the Dryer Roller Support

WARNING

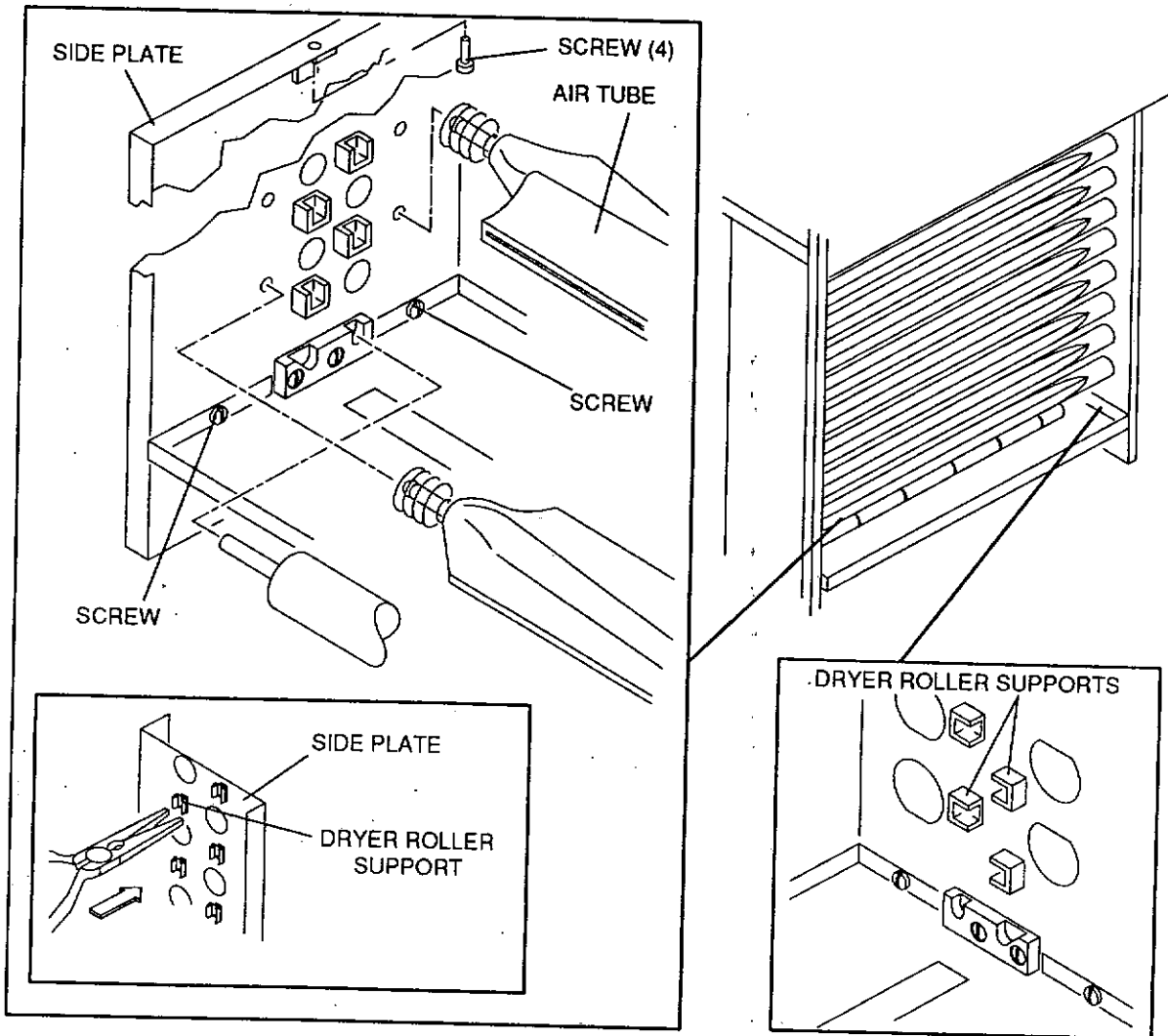
Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Remove the AIR TUBES and the DRYER ROLLERS.
- [3] On the non-drive side:
 - (a) Remove the 4 SCREWS.
 - (b) Remove the remaining 2 SCREWS and the SIDE PLATE.
 - (c) Compress the back of the DRYER ROLLER SUPPORT and remove it from the SIDE PLATE.

- [4] Snap the new DRYER ROLLER SUPPORT into the opening in the SIDE PLATE, with the opening toward the top of the PROCESSOR.

NOTE

- To access the DRYER ROLLER SUPPORTS on the drive side, it is necessary to remove the DRYER PLENUM.
 - The drive-side DRYER ROLLER SUPPORTS are installed with the opening toward the center of the DRYER.
- [5] Install the SIDE PLATE and the 6 SCREWS.



H136_4309DCA
H136_4309DA

SECTION 5
Plumbing

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Removing the Recirculation Pump	5-2
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Removing the Over-Temperature Thermostat.....	5-8
Removing the Developer Filter Canister	5-9
Removing the Tank Assembly.....	5-10

Removing the Recirculation Pump

WARNING

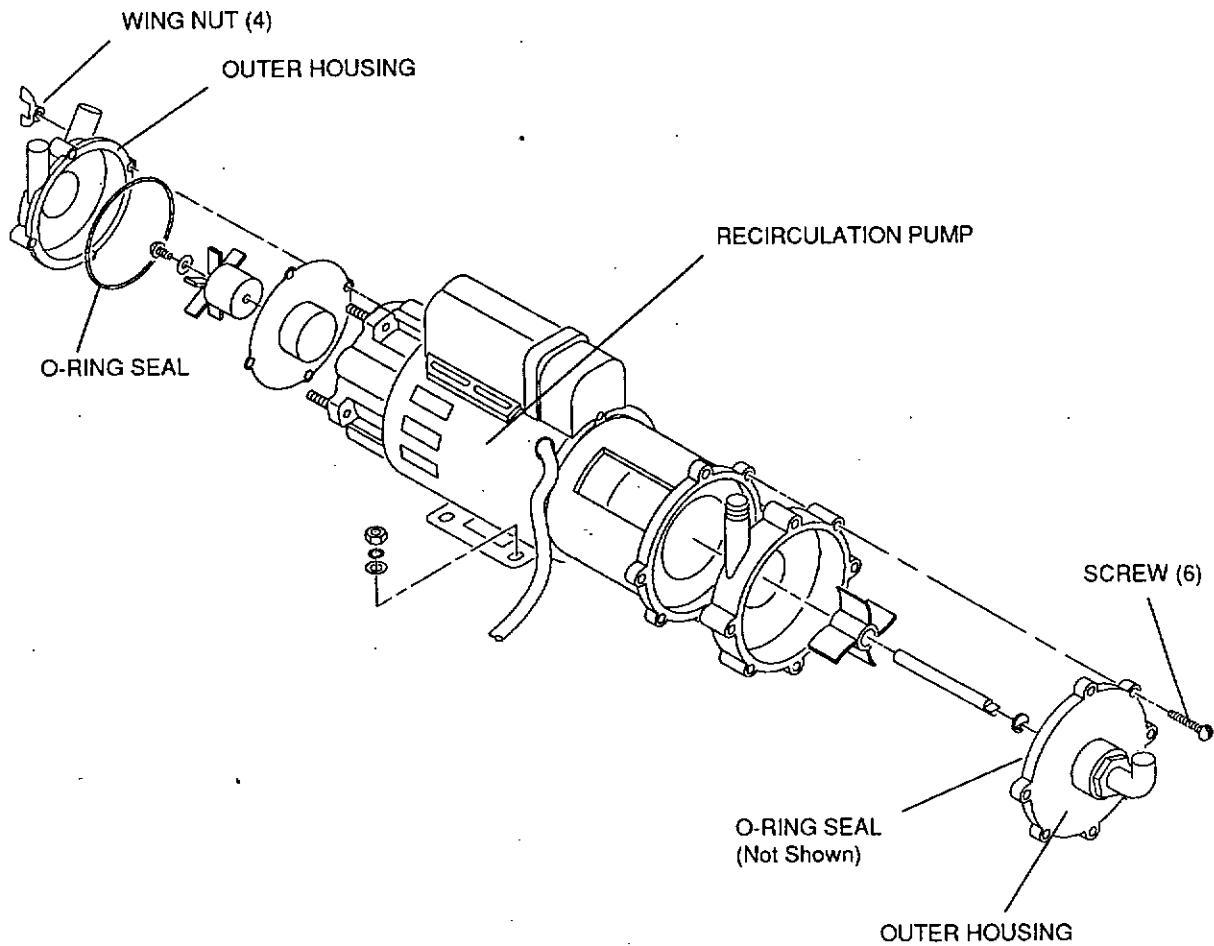
Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Remove the SPLASH COVER from the RECIRCULATION PUMP.
- [3] Install CLAMPS TL-2170 on the TUBING to prevent leakage of solutions.
- [4] Disconnect all TUBING from the RECIRCULATION PUMP.
- [5] Disconnect the RECIRCULATION PUMP CONNECTOR P/J9.

- [6] Remove the hardware that holds the RECIRCULATION PUMP in position.
- [7] Remove the RECIRCULATION PUMP.
- [8] Reverse this procedure to install the RECIRCULATION PUMP.

Removing the O-Ring Seal

- [1] Remove the 4 WING NUTS or the 6 SCREWS.
- [2] Remove the OUTER HOUSING.
- [3] Remove the existing O-RING SEAL.
- [4] Install the new O-RING SEAL.
- [5] Assemble the RECIRCULATION PUMP.



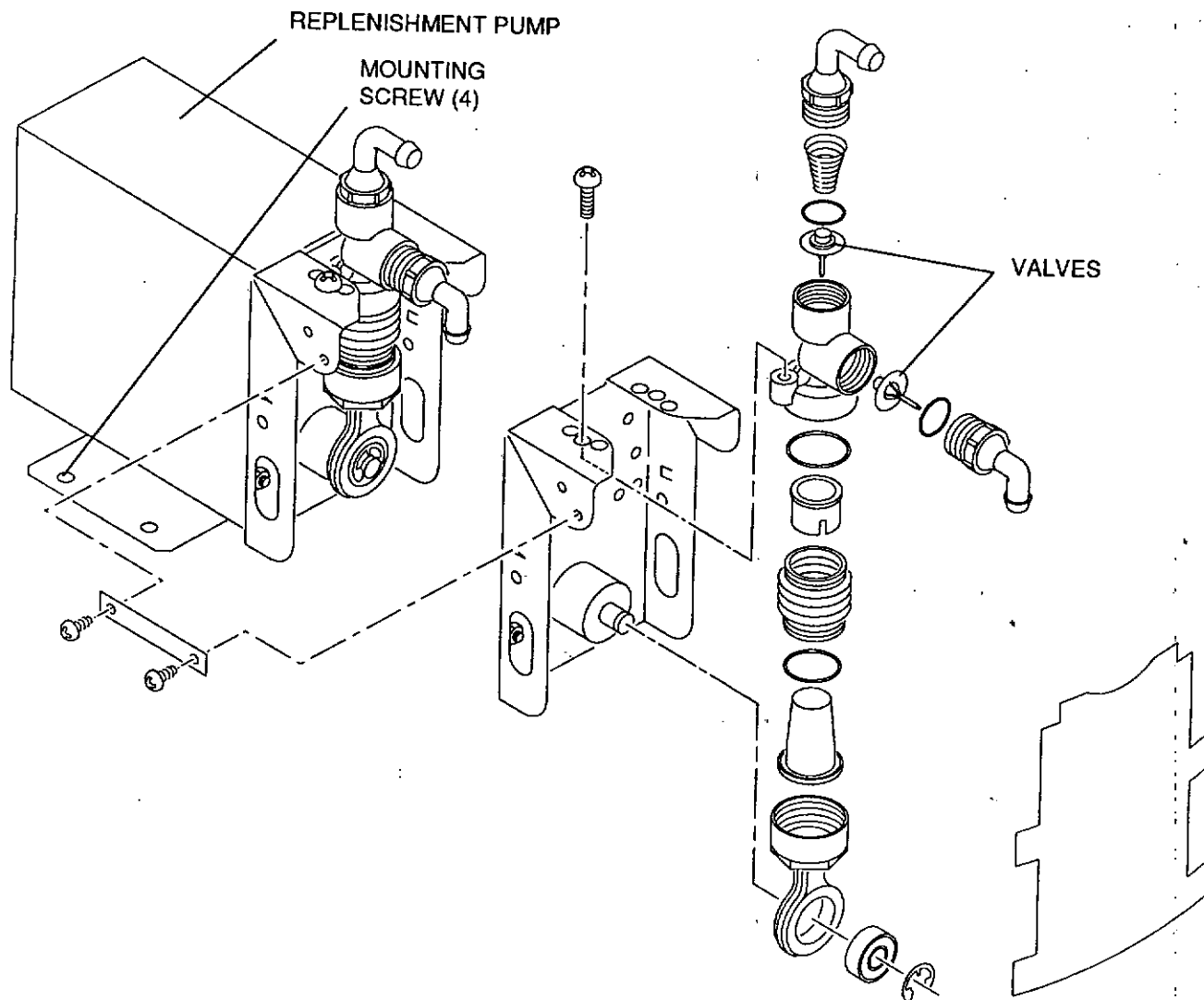
H136_2703DCA
H136_2703DA

Removing the Replenishment Pump

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Install CLAMPS TL-2170 on the TUBING to prevent leakage of solutions.
- [3] Disconnect the REPLENISHMENT PUMP CONNECTOR P/J12.
- [4] Remove the 4 MOUNTING SCREWS and the REPLENISHMENT PUMP.



Installing New Components

- [1] Disassemble the REPLENISHMENT PUMP.
- [2] Remove the existing component.
- [3] Install the new component.

IMPORTANT

Check that the 2 VALVES are inserted in the correct position.

- [4] Assemble the REPLENISHMENT PUMP.

H136_2704DCA
H136_2704DA

Adjusting the Replenishment Pump

CAUTION

Wear safety glasses when doing the following steps. Replenishment solutions drain fast and might splash.

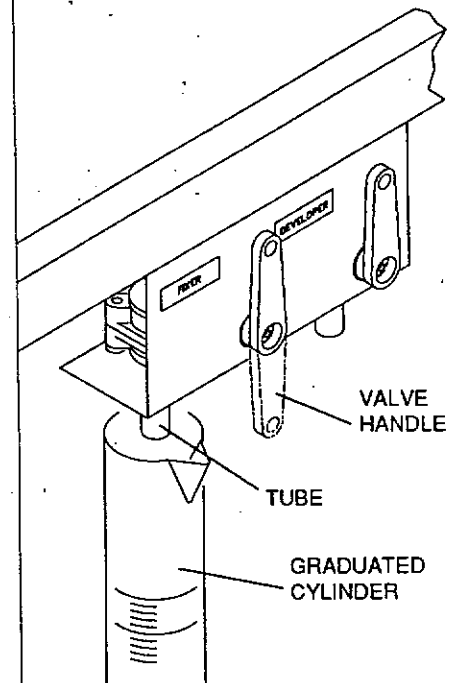
- [1] Remove the DRIVE-SIDE ACCESS PANEL.
- [2] Place a GRADUATED CYLINDER under the TUBE.
- [3] Move the VALVE HANDLE to the open position.
- [4] Select a cycle.
- [5] Press the "Replenishment" BUTTON for the time indicated in the table.

Cycle	Seconds
-	26
0	21
+	17

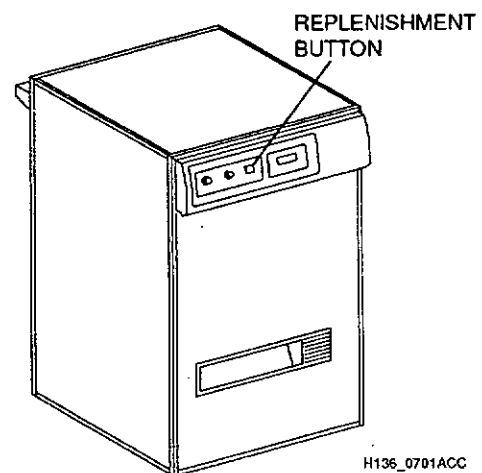
NOTE

The seconds indicated in the table is the time that the REPLENISHMENT PUMP operates for a 18-cm (7-in.) length of film.

- [6] Measure the solution in the GRADUATED CYLINDER.
- [7] Multiply the result by 2 to obtain the replenishment for a 35-cm (14-in.) length of film.



H136_2715CCA
H136_2715CA



H136_0701ACC
H136_0701AA

[8] Compare the average of 3 measurements with the specifications below for the developer and fixer.

Replenishment Rates

	Average Film Density	Developer	Fixer
Chemical Replenishment for 35-cm (14-in.) Length of Film	3.0	90 mL	170 mL
	4.0	100 mL	150 mL

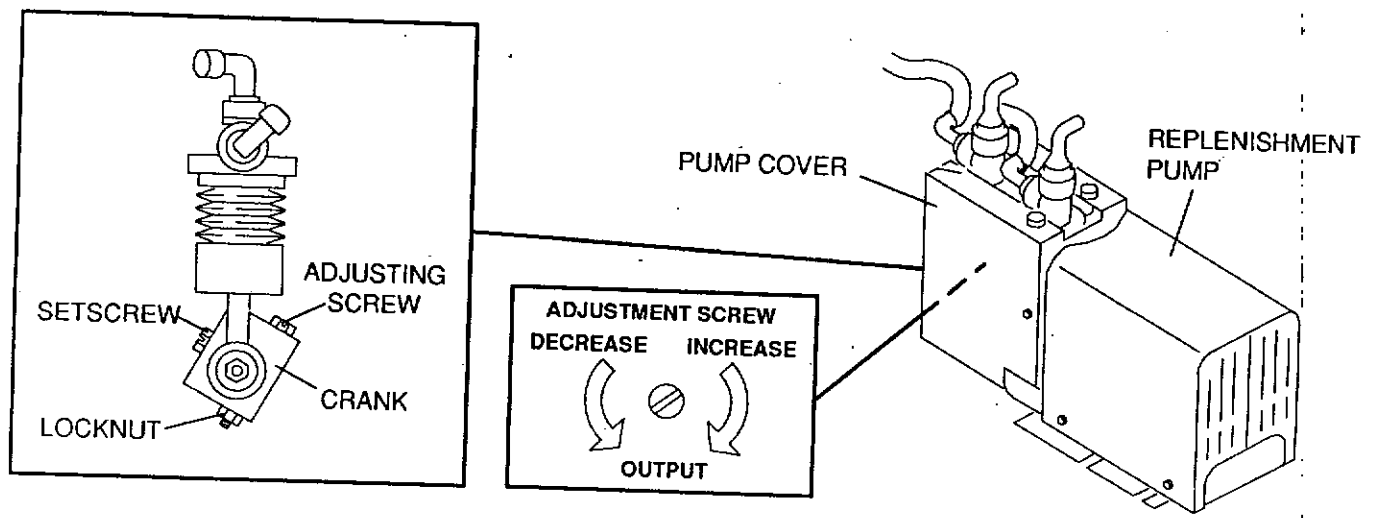
[9] If necessary, do the following to adjust the REPLENISHMENT PUMP:

CAUTION

Do not adjust the LOCKNUT.

- (a) Remove the PUMP COVER.
- (b) Loosen the SETSCREW.
- (c) Rotate the CRANK by hand to access the ADJUSTING SCREW.
- (d) Rotate the ADJUSTING SCREW clockwise ↻ to increase or counterclockwise ↺ to decrease the replenishment rate.
- (e) Tighten the SETSCREW.

[10] When the correct replenishment rate is obtained, move the VALVE HANDLE to the closed position.



H136_2716BCA
H136_2716BC

Removing the Developer Heater

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Do either a or b.
 - (a) Drain the DEVELOPER TANK.
 - (b) Install CLAMPS TL-2170 on the 2 TUBES to the THERMOWELL.
- [3] Disconnect the DEVELOPER HEATER CONNECTOR P/J8.
- [4] Remove the THERMOWELL from the PROCESSOR.

CAUTION

Solution spills might occur.

- [5] Remove the HEATER from the THERMOWELL.

- [6] Check that the HEATER LOCATOR is in position 13.9 cm (5.5 in.) from the end opposite the HEATER.

CAUTION

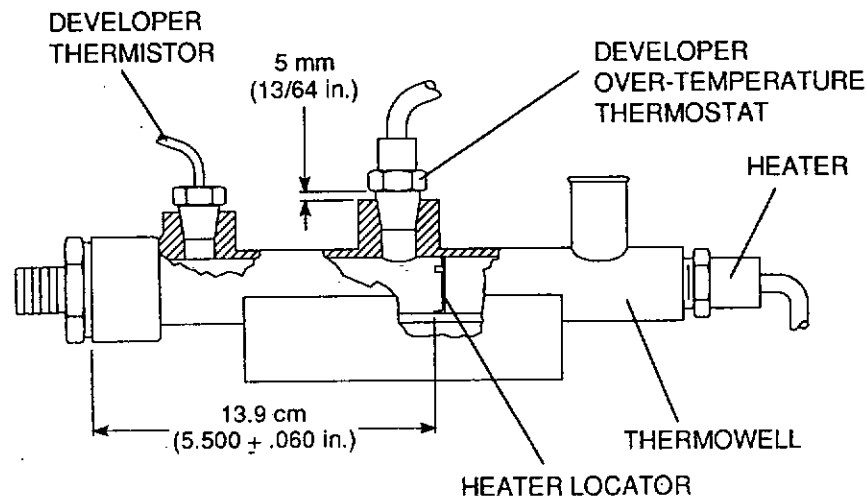
Prevent damage to the THERMOWELL. Do not excessively tighten the HEATER.

- [7] Install the new HEATER. Use SILASTIC SEALANT RTV 102 TL-3230 or equivalent.

NOTE

See the instructions provided with the SEALANT.

- [8] Tighten the HEATER by hand with an additional $\frac{1}{2}$ rotation.
- [9] Install the THERMOWELL into the PROCESSOR.
- [10] Make any necessary connections.
- [11] Remove the CLAMPS.



H048_0162BCB
H048_0162BA

Removing the Developer Thermistor

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Do either a or b.
 - (a) Drain the DEVELOPER TANK.
 - (b) Install CLAMPS TL-2170 on the 2 TUBES to the THERMOWELL.
- [3] Disconnect the DEVELOPER THERMISTOR CONNECTOR P/J18.

CAUTION

Solution spills might occur.

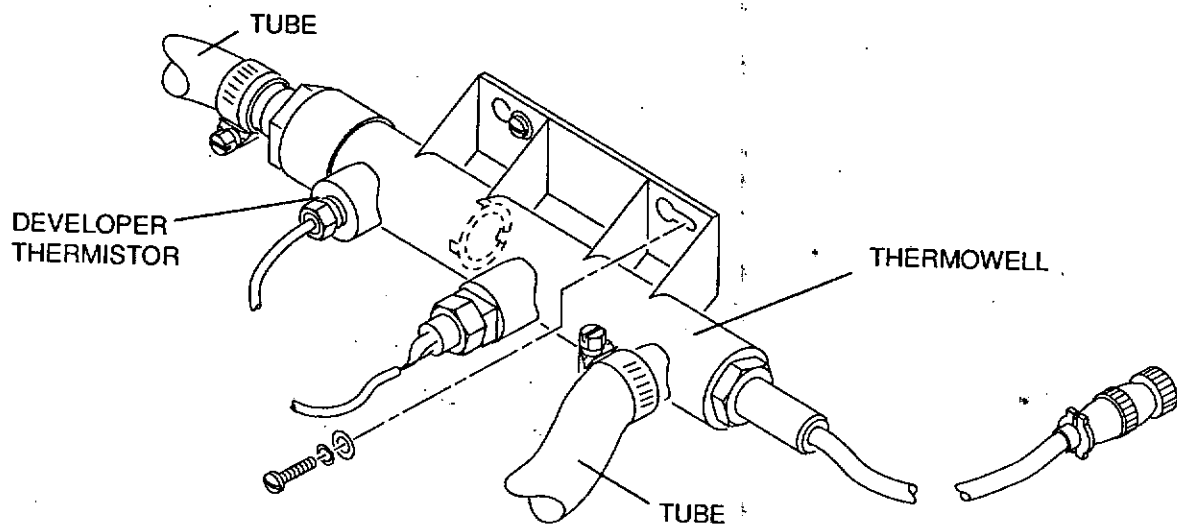
- [4] Remove the DEVELOPER THERMISTOR from the THERMOWELL.

- [5] Install a new DEVELOPER THERMISTOR. Use SILASTIC SEALANT RTV 102 TL-3230 or equivalent.

NOTE

See the instructions provided with the SEALANT.

- [6] Tighten the DEVELOPER THERMISTOR by hand with an additional $\frac{1}{2}$ rotation.
- [7] Make any necessary connections.
- [8] Remove the CLAMPS.



H136_2706BCA
H136_2706BA

Removing the Over-Temperature Thermostat

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Do either a or b.
 - (a) Drain the DEVELOPER TANK.
 - (b) Install CLAMPS TL-2170 on the 2 TUBES to the THERMOWELL.
- [3] Disconnect the OVER-TEMPERATURE THERMOSTAT CONNECTOR P/J17.

CAUTION

Solution spills might occur.

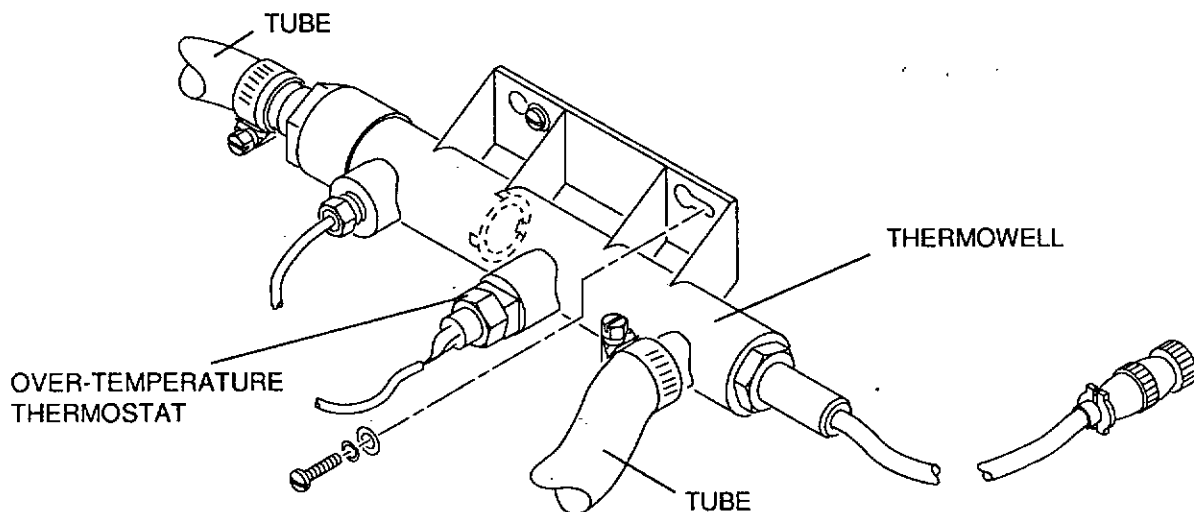
- [4] Remove the OVER-TEMPERATURE THERMOSTAT from the THERMOWELL.

- [5] Install a new OVER-TEMPERATURE THERMOSTAT. Use SILASTIC SEALANT RTV 102 TL-3230 or equivalent.

NOTE

See the instructions provided with the SEALANT.

- [6] Tighten the OVER-TEMPERATURE THERMOSTAT by hand with an additional $\frac{1}{2}$ rotation.
- [7] Make any necessary connections.
- [8] Remove the CLAMPS.



H136_2706BCB
H136_2706BA

Removing the Developer Filter Canister

WARNING

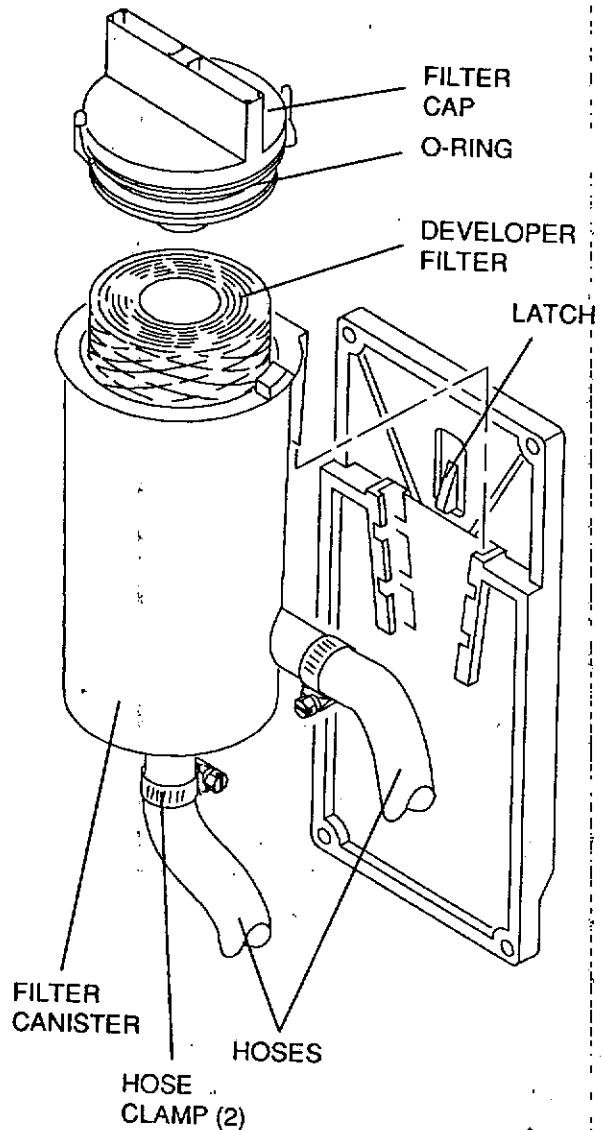
The FILTER CANISTER is under high pressure when the PROCESSOR is energized.

- [1] Deenergize the PROCESSOR.
- [2] Remove the FILTER CAP and the DEVELOPER FILTER.
- [3] Install CLAMPS TL-2170 on the 2 HOSES.
- [4] Loosen the 2 HOSE CLAMPS.
- [5] Disconnect the 2 HOSES from the FILTER CANISTER.
- [6] Push the LATCH and lift the FILTER CANISTER out of the PROCESSOR.
- [7] Install the new FILTER CANISTER.
- [8] Connect the 2 HOSES to the FILTER CANISTER.

CAUTION

Do not excessively tighten the 2 HOSE CLAMPS.

- [9] Tighten the 2 HOSE CLAMPS.
- [10] Remove the CLAMPS TL-2170 from step 3.
- [11] Install the new DEVELOPER FILTER.
- [12] Check the condition of the O-RING and that the O-RING is seated correctly.
- [13] Install the FILTER CAP.
- [14] Check the developer. If necessary, add developer to the DEVELOPER TANK.
- [15] Energize the PROCESSOR.
- [16] Check the FILTER CANISTER for any leakage.



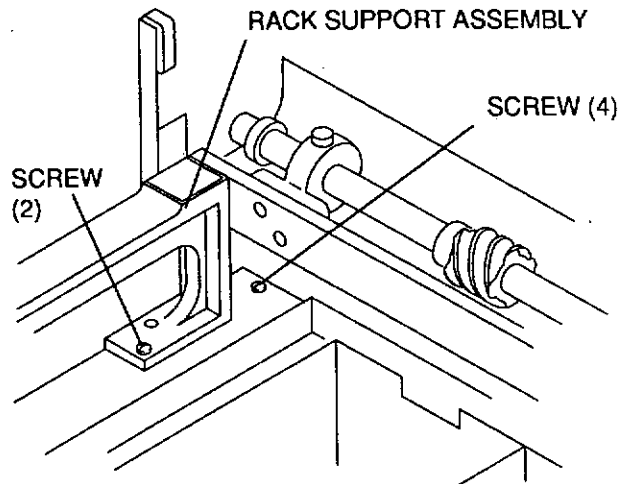
H108_0243CCB
P108_0243CA

Removing the Tank Assembly

WARNING

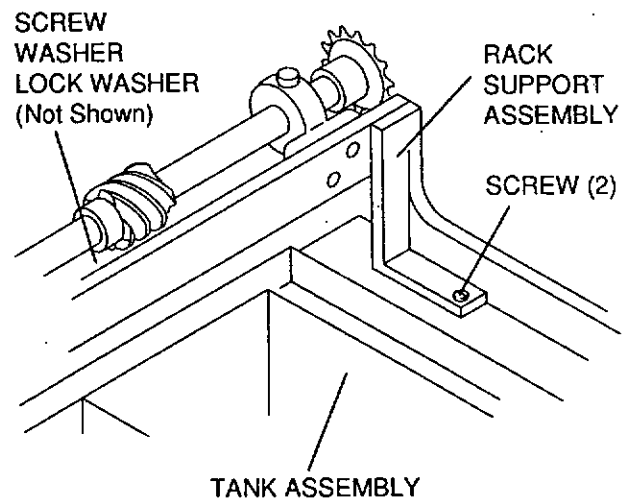
Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Turn off the water supply.
- [3] Drain the TANKS.
- [4] Disconnect the wash water QUICK DISCONNECT.
- [5] Disengage the BUFFER DRIVE COUPLING.
- [6] Remove:
 - CROSSOVER ASSEMBLIES
 - ENTRANCE DETECTOR ASSEMBLY
 - SQUEEGEE ASSEMBLY
 - RACKS
 - SPLASH GUARDS.
- [7] Disconnect all HOSES from the TANK ASSEMBLY.
- [8] Remove the 2 SCREWS from both sides of the RACK SUPPORT ASSEMBLY at the feed end and receiving end of the PROCESSOR.
- [9] Remove the RACK SUPPORT ASSEMBLY.
- [10] Remove the SCREW, WASHER, and LOCK WASHER from the TANK BRACKET and the DRIVE MOTOR BRACKET PLATE.
- [11] Remove the 4 SCREWS that hold the TANK ASSEMBLY.
- [12] Remove the TANK ASSEMBLY.
- [13] Reverse this procedure to install the TANK ASSEMBLY.
- [14] Do the following:
 - "Adjusting the Detector Switches", see page 6-3.
 - "Adjusting the Chain" procedure, see page 2-4.



H136_2707ACA
H136_2707AA

Feed End



H136_2708ACA
H136_2708AA

Receiving End

SECTION 6
Electrical

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Setting the Film Clear Time	6-14
Setting the Flooded Replenishment Switch	6-16
Setting the Water Conservation Switch	6-17
Adjusting the Film Feed Signal	6-18
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Summary of Adjustment Procedures

Adjustment	Purpose	Page
Detector Switches	To align the Detector Switches so that film is detected correctly.	6-3
9-Volt Power Supply	To set the 9-volt reference voltages.	6-5
Zero Adjustment of the Developer Temperature Meter	To calibrate the Developer Temperature Meter.	6-6
Developer Temperature	To check or change the temperature at which the developer is maintained for a selected cycle.	6-8
Meter to Tank Temperature	To obtain a correct temperature indication on the Developer Temperature Meter.	6-12
Film Clear Time	To adjust the run time so that the Processor will not enter standby when a film is processing.	6-14
Flooded Replenishment	To change the Processor to the Flooded Replenishment Mode.	6-16
Water Conservation	To change the Processor to the Water Conservation Mode.	6-17
Film Feed Signal	To adjust the delay time of the film clear signal.	6-18
Drive Transport Speed	To change the transport speed of a cycle.	6-19

Adjusting the Detector Switches

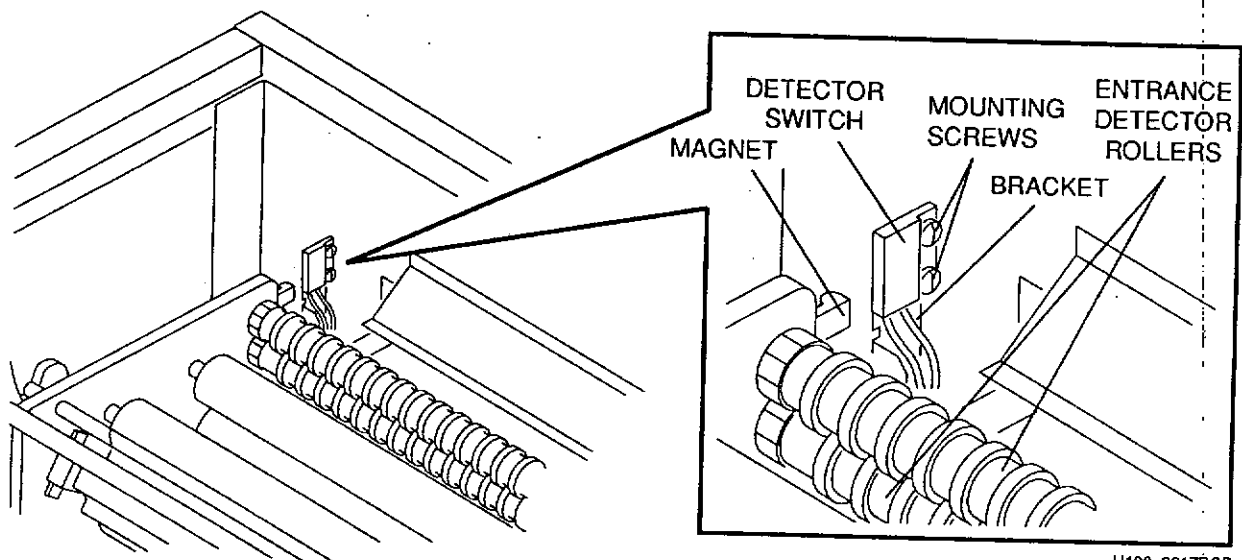
Purpose: Do this procedure to adjust an existing DETECTOR SWITCH or when a new DETECTOR SWITCH is installed.

Specification: The clearance between the MAGNET and DETECTOR SWITCH is 1.6 - 3.2 cm (1/16 - 1/8 in.).

IMPORTANT

If the REPLENISHMENT PUMP does not operate correctly, the DETECTOR SWITCHES might not be within specification.

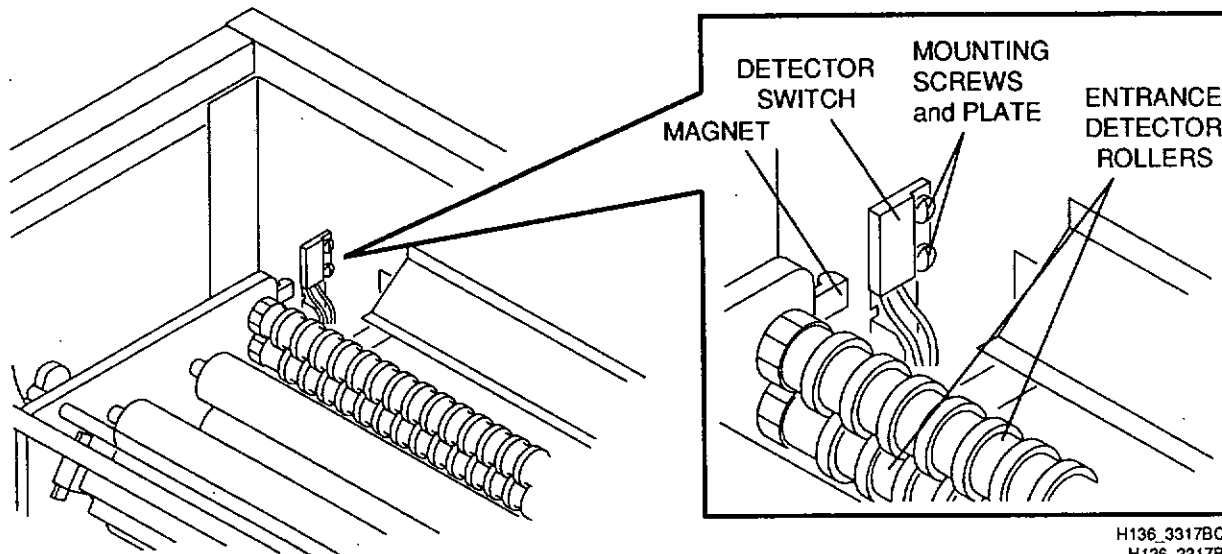
- [1] Align the center of each DETECTOR SWITCH with the center of the MAGNET. If necessary, move the BRACKET.
- [2] Move the MAGNET toward or away from the DETECTOR SWITCH to obtain a clearance of 1.6 - 3.2 mm (1/16 - 1/8 in.).
- [3] Disconnect the DETECTOR SWITCH S3.
- [4] For the DETECTOR SWITCH S4:
 - (a) Loosen the MOUNTING SCREWS.
 - (b) Move the DETECTOR SWITCH until the REPLENISHMENT PUMP begins to operate.
 - (c) Move the DETECTOR SWITCH in the opposite direction until the REPLENISHMENT PUMP stops.
 - (d) Move the DETECTOR SWITCH an additional 3.2 mm (1/8 in.) in the same direction.
 - (e) Tighten the MOUNTING SCREWS.
- [5] Place a 7.5 cm (3 in.) film between the ENTRANCE DETECTOR ROLLERS to actuate the DETECTOR SWITCH S4. Check that the REPLENISHMENT PUMP operates.
- [6] Remove the film.
- [7] Do the procedure again until the DETECTOR SWITCH S4 operates correctly.
- [8] Disconnect the DETECTOR SWITCH S4.
- [9] Connect the DETECTOR SWITCH S3.
- [10] Do steps 4 - 7 for DETECTOR SWITCH S3.
- [11] Connect the DETECTOR SWITCH S4.
- [12] Check again for correct operation of the DETECTOR SWITCHES.



H136_3317CB
H136_3317BA

Removing the Detector Switches

- [1] Remove the MOUNTING SCREWS and PLATE.
- [2] Disconnect CONNECTOR P/J22 on the drive side or P/J23 on the non-drive side.
- [3] Remove the old DETECTOR SWITCH.
- [4] Install the new DETECTOR SWITCH.
- [5] Install the MOUNTING SCREWS and PLATE.
- [6] Tighten the MOUNTING SCREWS.
- [7] Adjust the DETECTOR SWITCHES. See "Adjusting the Detector Switches" on page 6-3.



Adjusting the 9-Volt Power Supply

Purpose: Do this procedure to set the 9-volt reference voltages.



Specification: The voltage at TP5 is 9 ± 0.1 V dc.

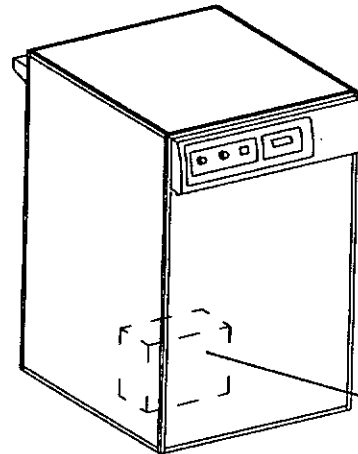
WARNING

Dangerous Voltage

CAUTION

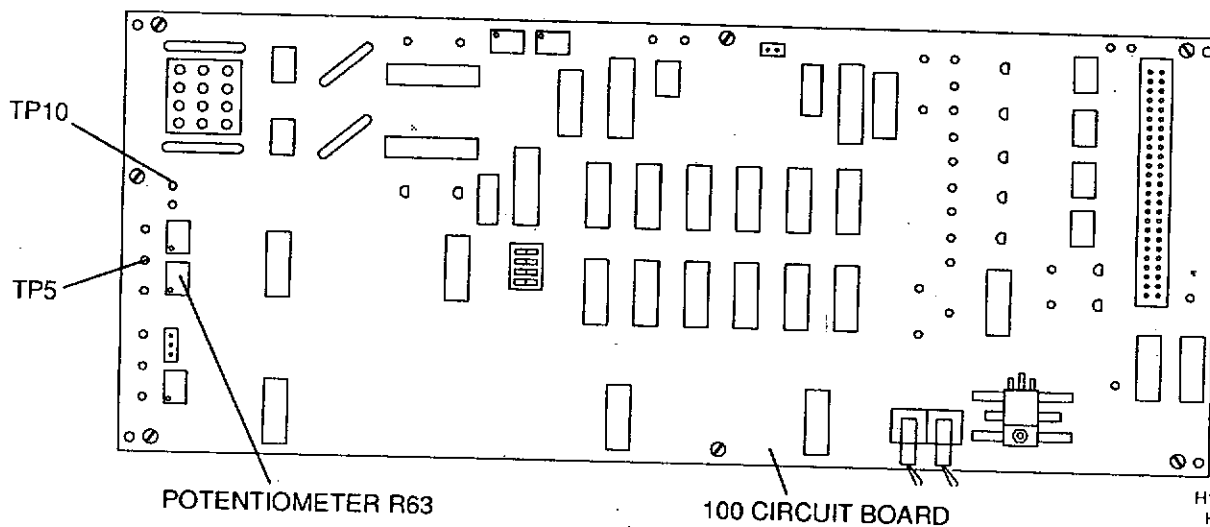
Possible damage from electrostatic discharge.

- [1] Open the ELECTRICAL BOX.
- [2] Using a voltmeter, connect the positive lead to TP5 and the negative lead to TP10 on the 100 CIRCUIT BOARD.
- [3] Check that the voltage at TP5 is 9 ± 0.1 V dc.
- [4] If necessary, rotate POTENTIOMETER R63 clockwise  to increase or counterclockwise  to decrease the voltage.



ELECTRICAL BOX

H136_1906ACA
H136_1906AA



POTENTIOMETER R63

100 CIRCUIT BOARD

H136_170iBCB
H136_1701BA

Zero Adjustment of the Developer Temperature Meter

Purpose: Do this procedure for correct zero calibration of the DEVELOPER TEMPERATURE METER.

Specification: The DEVELOPER TEMPERATURE METER indicates "00.0".

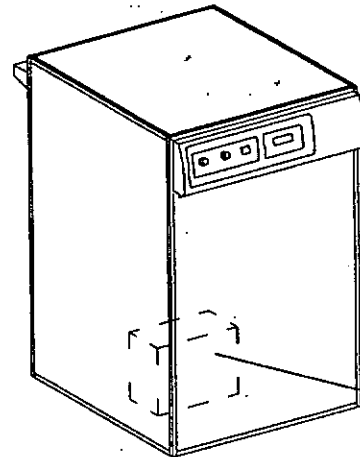
WARNING

Dangerous Voltage

CAUTION

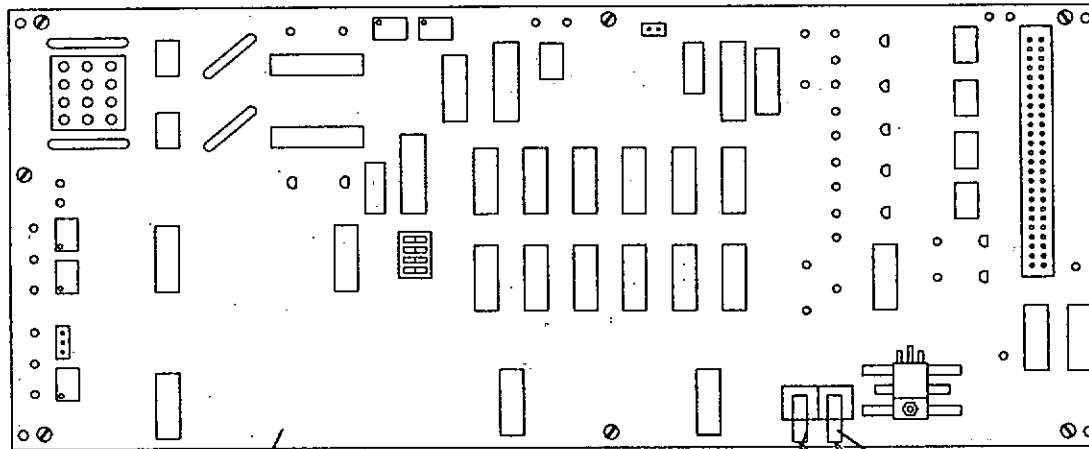
Possible damage from electrostatic discharge.

- [1] Open the ELECTRICAL BOX.
- [2] On the 100 CIRCUIT BOARD, move SWITCH S1 to the "Zero" position.
- [3] Move SWITCH S2 to the "Set" position.
- [4] If the DEVELOPER TEMPERATURE METER indicates "00.0", skip step 5.



ELECTRICAL
BOX

H136_1906ACA
H136_1906AA



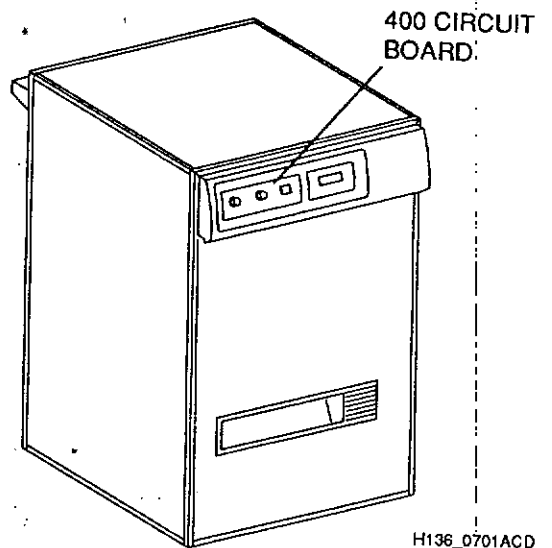
100 CIRCUIT BOARD

SWITCH S1

SWITCH S2

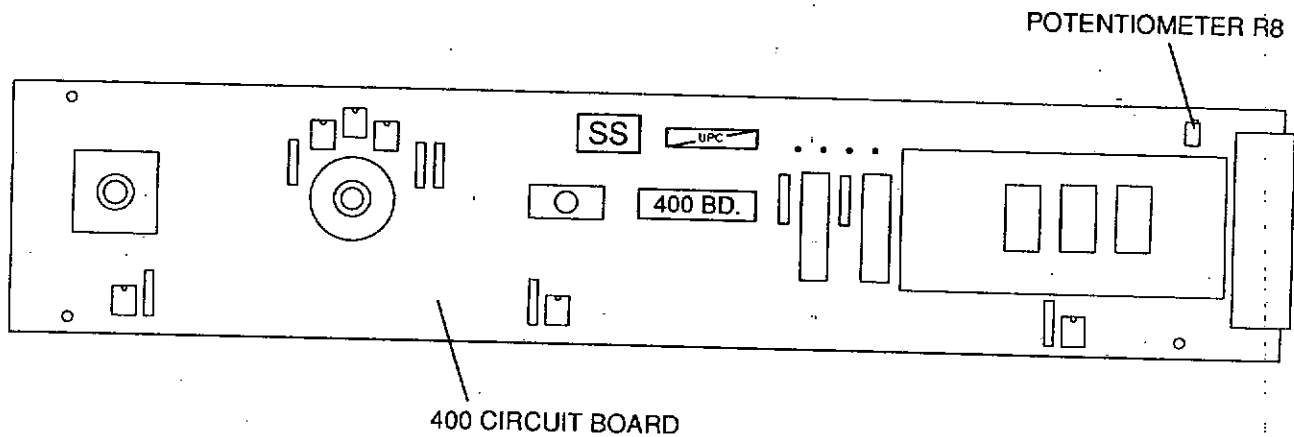
H136_1701BCC
H136_1701BA

- [5] If the indication on the DEVELOPER TEMPERATURE METER is not correct:
- (a) Remove the TOP COVER from the PROCESSOR.
 - (b) Remove the RECEIVING-END SPLASH GUARD to access POTENTIOMETER R8 on the 400 CIRCUIT BOARD.
 - (c) Adjust POTENTIOMETER R8 until the DEVELOPER TEMPERATURE METER indicates "00.0". Rotate the POTENTIOMETER clockwise ↻ to increase or counterclockwise ↻ to decrease the indication.
 - (d) Install the SPLASH GUARD.



H136_0701ACD
H136_0701AA

- [6] On the 100 CIRCUIT BOARD, move SWITCHES S1 and S2 to the "Norm" position.



H136_1704BCA
H136_1704BA

Adjusting the Developer Temperature

Purpose: Do this procedure to check or change the temperature at which the developer is maintained for a selected cycle.

- A. Do the "9-Volt Adjustment" on page 6-5 before beginning this procedure.
- B. Do steps 2 and 3 to check the factory setup values.
- C. Do steps 4 and 5 to change the values, for a special setup.

Specification: The approximate temperatures are obtained with the following voltages:

Cycle	Developer Temperature	V dc
- (12 min)	27.2°C (80.9°F)	3.584
0 (10 min)	28.6°C (83.5°F)	3.488
+ (8 min)	30.0°C (86.0°F)	3.391

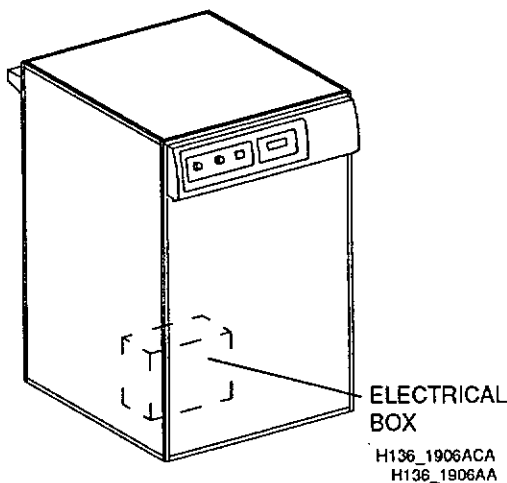
WARNING

Dangerous Voltage

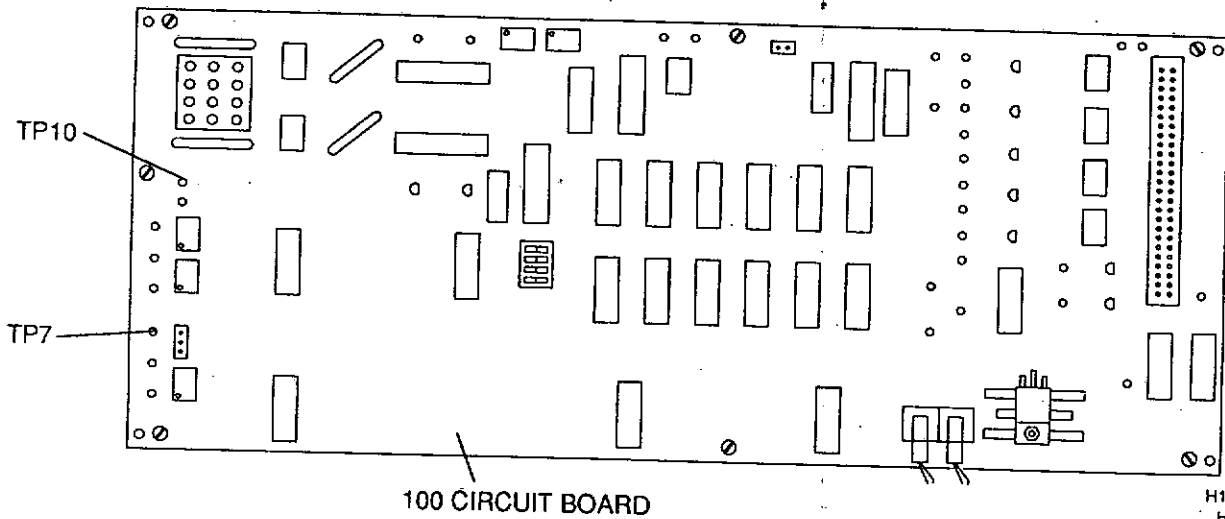
CAUTION

Possible damage from electrostatic discharge.

- [1] Open the ELECTRICAL BOX.



- [2] Check that the voltage between TP7 and TP10 is correct for each cycle.
- Select a "Cycle".
 - Using a voltmeter, connect the positive lead to TP7 and the negative lead to TP10 on the 100 CIRCUIT BOARD.

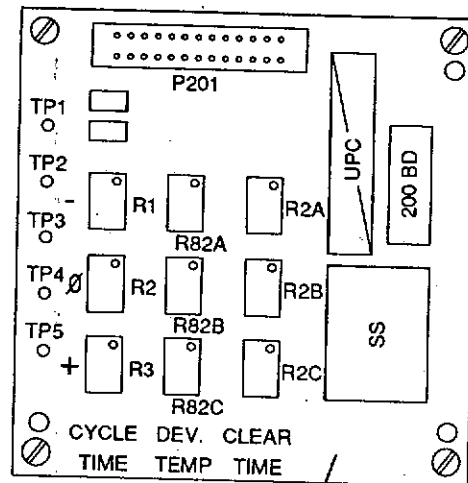


H136_1701BCD
H136_1701BA

- [3] On the 200 CIRCUIT BOARD, adjust the corresponding POTENTIOMETER until the voltage is correct for the selected cycle. Rotate the POTENTIOMETER counterclockwise ↺ to increase or clockwise ↻ to decrease the voltage.

IMPORTANT

- All PANELS and COVERS must be installed after each adjustment.
- Allow 25 - 30 minutes after each adjustment to allow the temperature of the developer to reach the set temperature.



200 CIRCUIT BOARD

H136_1700ACA
H136_1700AA

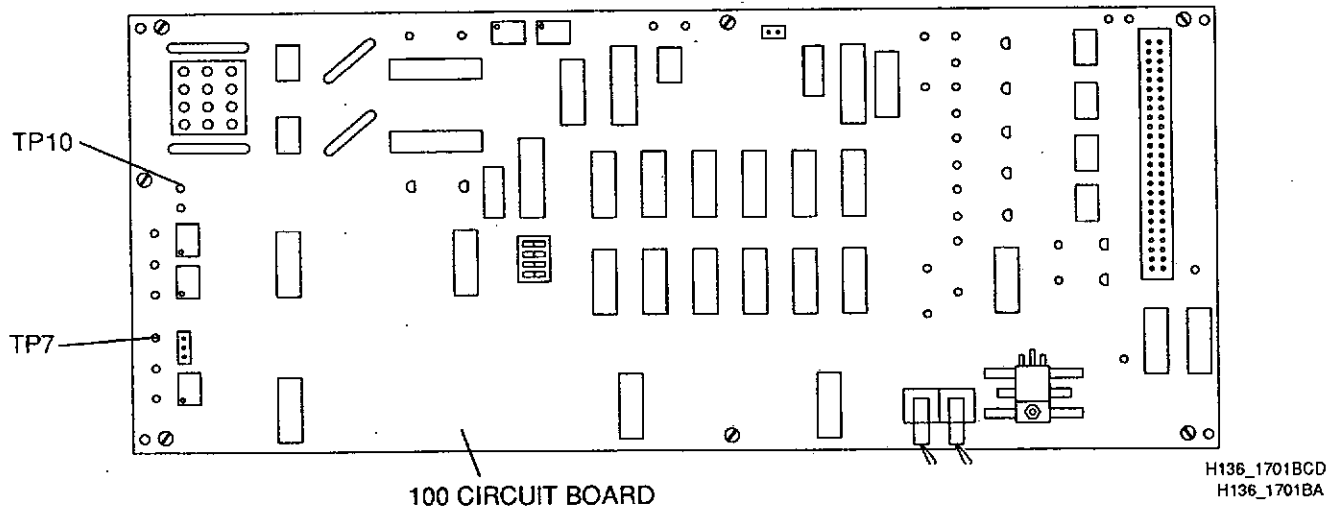
Approximate Values:

Cycle	Developer Temperature	V dc	Adjust:
- (12 min)	27.2°C (80.9°F)	3.584	R82A
0 (10 min)	28.6°C (83.5°F)	3.488	R82B
+ (8 min)	30.0°C (86.0°F)	3.391	R82C

CAUTION

Possible damage from electrostatic discharge.

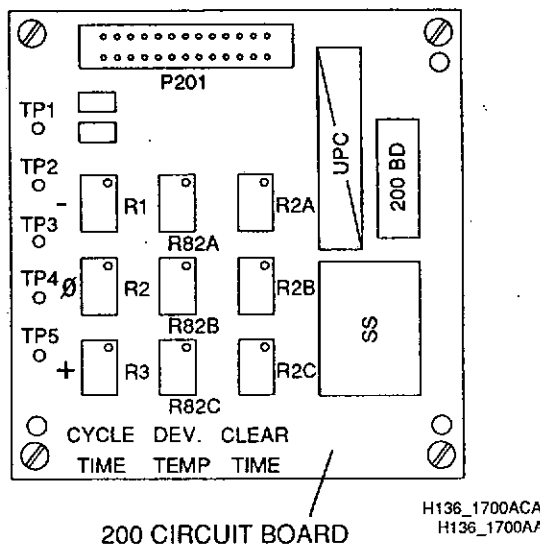
- [4] For a special setup of the developer temperature, do the following:
- (a) Select a "Cycle".
 - (b) Using a voltmeter, connect the positive lead to TP7 and the negative lead to TP10 on the 100 CIRCUIT BOARD.



- [5] On the 200 CIRCUIT BOARD, adjust the corresponding POTENTIOMETER to change the temperature for the selected cycle. Rotate the POTENTIOMETER counterclockwise ↺ to increase or clockwise ↻ to decrease the voltage. See the table on page 6-11.

IMPORTANT

- The developer temperature can be set from 21 - 35°C (69.8 - 95°F).
- All PANELS and COVERS must be installed after each adjustment.
- Allow 25 - 30 minutes after each adjustment to allow the temperature of the developer to stabilize.



Cycle	Adjust:
-	R82A
0	R82B
+	R82C

**Developer Temperature Adjustments
Approximate Settings and Values:**

Temperature Setting		Voltage Between TP7 and TP10
°C	°F	
21.0	69.8	4.003 V dc
21.5	70.7	3.970 V dc
22.0	71.6	3.936 V dc
22.5	72.5	3.903 V dc
23.0	73.4	3.869 V dc
23.5	74.3	3.836 V dc
24.0	75.2	3.802 V dc
24.5	76.1	3.768 V dc
25.0	77.0	3.734 V dc
25.5	77.9	3.700 V dc
26.0	78.8	3.666 V dc
26.5	79.7	3.632 V dc
27.0	80.6	3.597 V dc
27.5	81.5	3.563 V dc
28.0	82.4	3.529 V dc
28.5	83.3	3.494 V dc
29.0	84.2	3.460 V dc
29.5	85.1	3.426 V dc
30.0	86.0	3.391 V dc
30.5	86.9	3.357 V dc
31.0	87.8	3.323 V dc
31.5	88.7	3.289 V dc
32.0	89.6	3.254 V dc
32.5	90.5	3.220 V dc
33.0	91.4	3.186 V dc
33.5	92.3	3.152 V dc
34.0	93.2	3.118 V dc
34.5	94.1	3.084 V dc
35.0	95.0	3.050 V dc

Calibrating the Meter to Tank Temperature

Purpose: Do this procedure so that the DEVELOPER TEMPERATURE METER indicates the temperature of the developer solution.

Specification: The reading on the DEVELOPER TEMPERATURE METER is the same as the temperature of the solution in the DEVELOPER TANK.

IMPORTANT

Complete the "Developer Temperature Adjustment" on page 6-8 before beginning this procedure.

- [1] Set the "Dryer" control to "Off".
- [2] Remove the TOP COVER from the PROCESSOR.
- [3] Place a CALIBRATED THERMOMETER in the DEVELOPER TANK.
- [4] Allow the PROCESSOR to go into the standby mode.

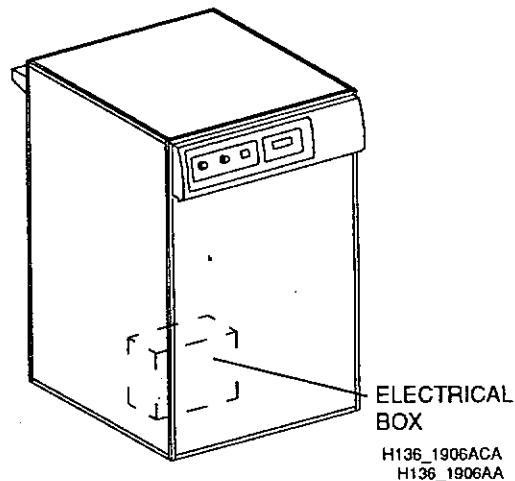
WARNING

Dangerous Voltage

CAUTION

Possible damage from electrostatic discharge.

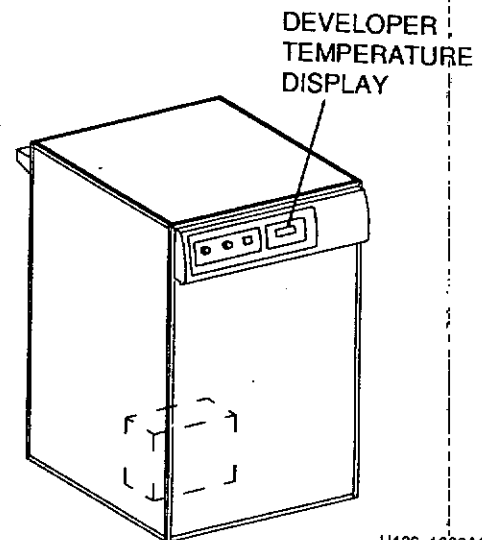
- [5] Open the ELECTRICAL BOX.



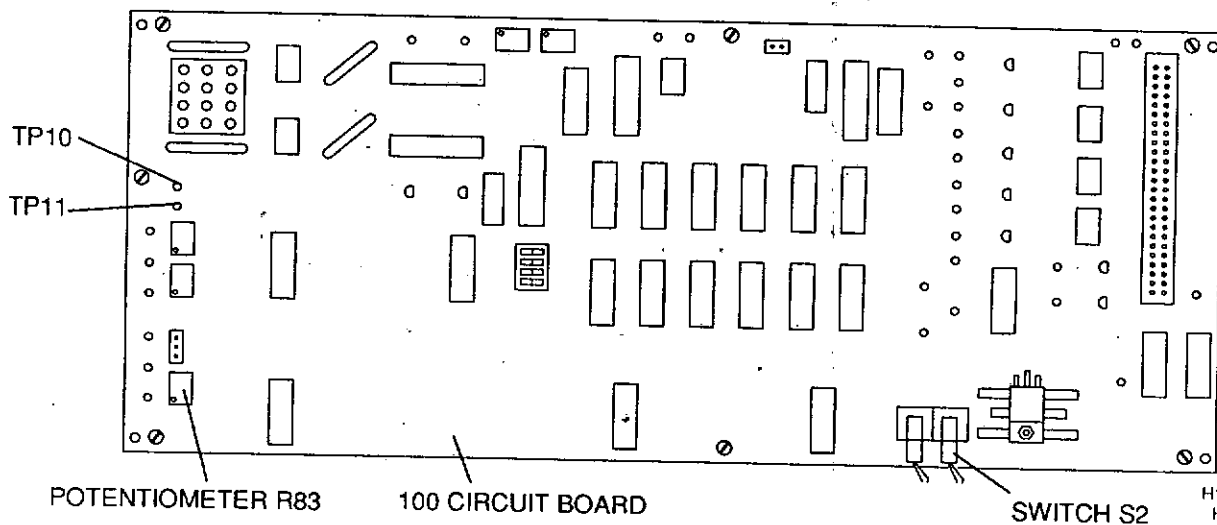
NOTE

The reading, in millivolts, is 10 times the indication on the DEVELOPER TEMPERATURE METER.

- [6] On the 100 CIRCUIT BOARD:
 - (a) Move SWITCH S2 to the "Set" position.
 - (b) Measure the voltage between TP10 and TP11.
 - (c) Rotate POTENTIOMETER R83 until the meter reading is the same as the temperature of the solution in the DEVELOPER TANK. Rotate the POTENTIOMETER clockwise ↻ to increase or counterclockwise ↻ to decrease the voltage.
- [7] Remove the THERMOMETER.
- [8] Move the SWITCH S2 to the "Norm" position.
- [9] Set the "Dryer" control, as necessary.



H136_1906ACB
H136_1906AA



H136_1701BCE
H136_1701BA

Setting the Film Clear Time

Purpose: Do this procedure to adjust the run time so that the PROCESSOR will not enter standby when a film is processing.

Specification: The clear time is set 30 - 60 seconds longer than the cycle time.

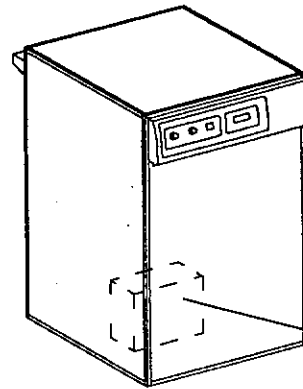
WARNING

Dangerous Voltage

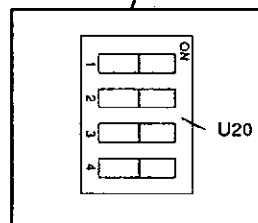
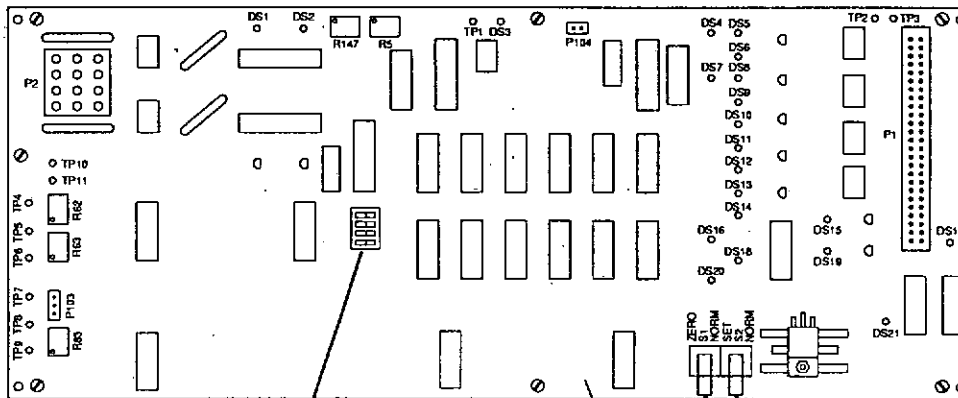
CAUTION

Possible damage from electrostatic discharge.

- [1] Open the ELECTRICAL BOX.
- [2] On the 100 CIRCUIT BOARD:
 - (a) Check that SWITCH U20-3 is in the "Off" position.
 - (b) Check that SWITCH U20-4 is in the "On" position.



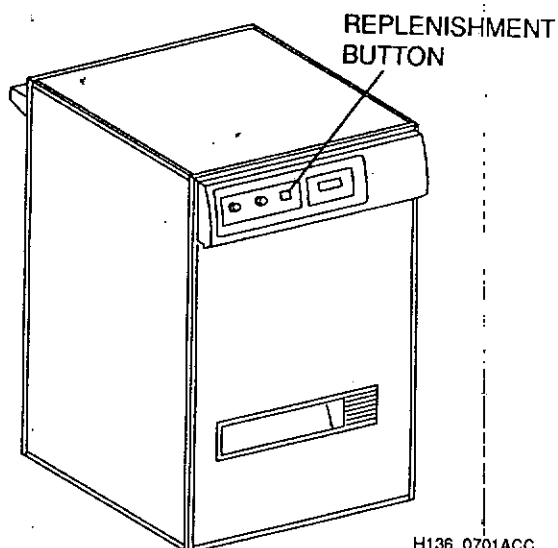
ELECTRICAL
BOX
H136_1906ACA
H136_1906AA



100 CIRCUIT BOARD

H136_1701DCA
H136_1701DA

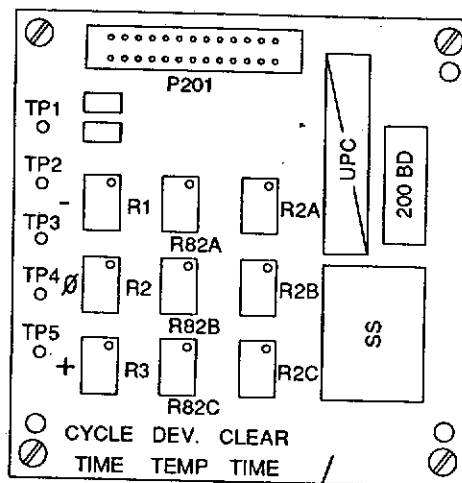
- [3] Set the "Dryer" control to the "Off" position.
- [4] Do the following for each Cycle:
- (a) Set the "Cycle" control.
 - (b) Press the "Replenishment" BUTTON.
 - (c) On the 200 CIRCUIT BOARD, adjust the corresponding POTENTIOMETER to obtain the necessary clear time. Rotate the POTENTIOMETER clockwise ↻ to increase or counterclockwise ↺ to decrease the time.



H136_0701ACC
H136_0701AA

- NOTE**
- Set the clear time 30 - 60 seconds longer than the cycle time to allow enough time for the film to exit the PROCESSOR.
 - Rotating the POTENTIOMETERS 3 rotations increases or decreases the clear time by approximately one minute.

Cycle	Adjust:
-	R2A
0	R2B
+	R2C



200 CIRCUIT BOARD

H136_1700ACA
H136_1700AA

IMPORTANT

If a MODEL 87 MULTIMETER TL-4114 or equivalent is available, do step 5 to set the clear time.

- [5] Set the frequency between TP1 and TP10 (GND) to:

Cycle	Cycle Time (minutes)	Clear Time (minutes)	Frequency (Hz)
-	8	9	3.85
0	10	11	3.15
+	12	13	2.65

Setting the Flooded Replenishment Switch

Purpose: Do this procedure to change the PROCESSOR to the Flooded Replenishment Mode.

Specification: The 100 CIRCUIT BOARD is set at the factory for 9.6 seconds. The range of adjustment is 4.4 - 17.5 seconds.

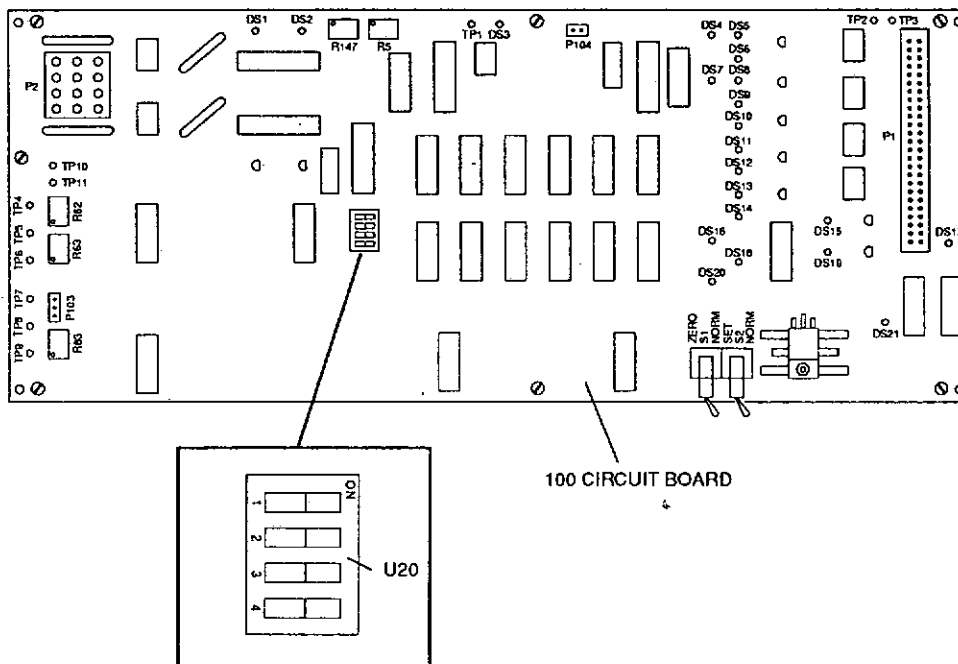
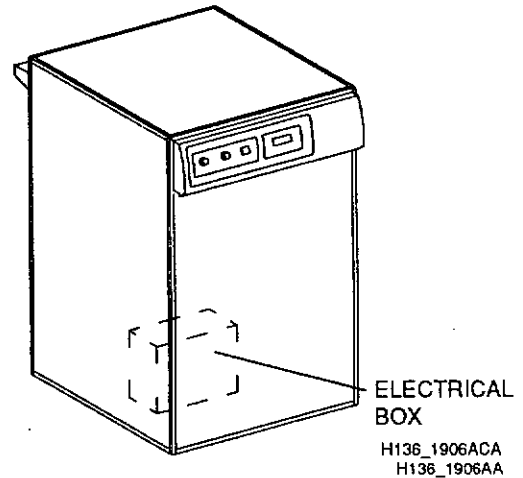
WARNING

Dangerous Voltage

CAUTION

Possible damage from electrostatic discharge.

- [1] Open the ELECTRICAL BOX.
- [2] On the 100 CIRCUIT BOARD, set SWITCH U20-1 to the "ON" position.
- [3] Adjust POTENTIOMETER R1 to change the time setting. Rotate the POTENTIOMETER clockwise ↻ to increase or counterclockwise ↻ to decrease the time.



H136_1701DCA
H136_1701DA

Setting the Water Conservation Switch

Purpose: Do this procedure to set the PROCESSOR to the Water Conservation Mode.

Specification: None.

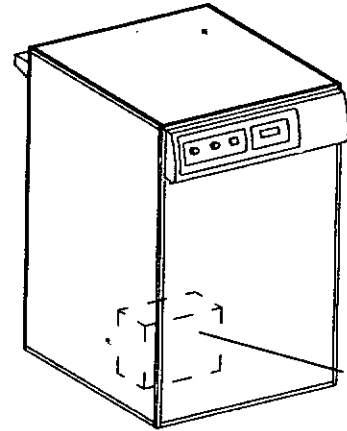
WARNING

Dangerous Voltage

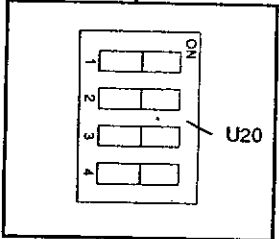
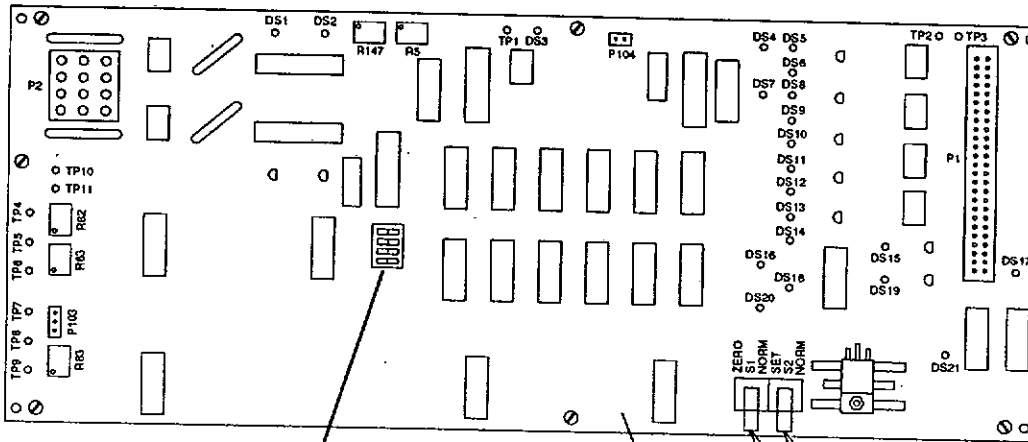
CAUTION

Possible damage from electrostatic discharge.

- [1] Open the ELECTRICAL BOX.
- [2] On the 100 CIRCUIT BOARD, set SWITCH U20-2 to the "ON" position.



ELECTRICAL BOX
H136_1906ACA
H136_1906AA



100 CIRCUIT BOARD

H136_1701DCA
H136_1701DA

Adjusting the Film Feed Signal

Purpose: Do this procedure to adjust the delay time of the film clear signal.

Specification: The delay time is set at 10 seconds. The range of adjustment is 3.0 - 13.0 seconds.

- [1] Actuate either DETECTOR SWITCH.
- [2] Measure the delay before the film feed signal.

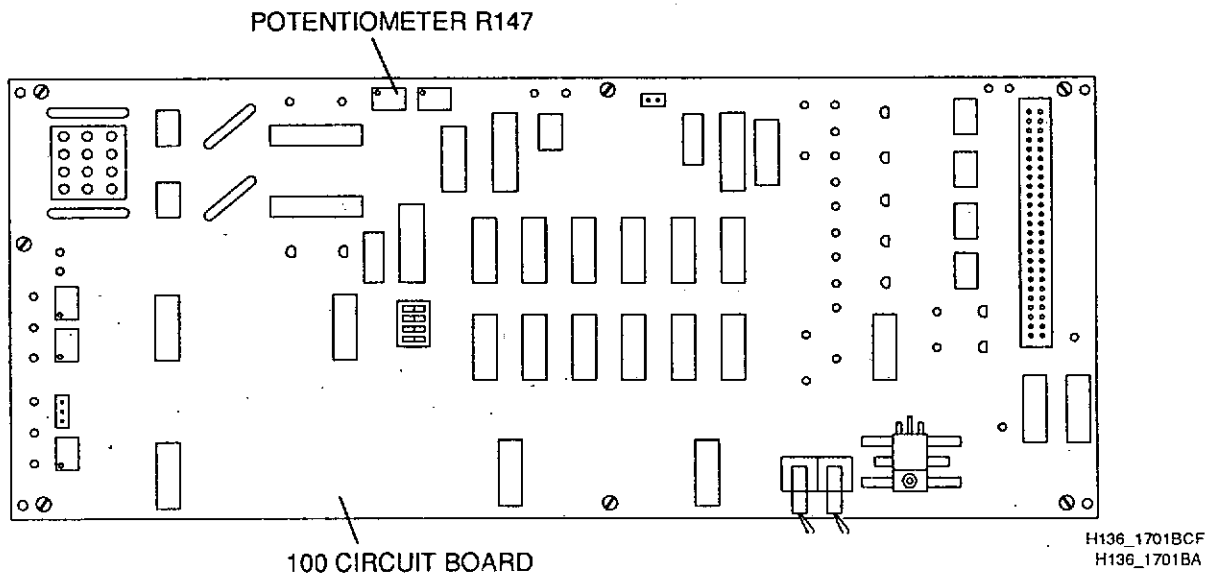
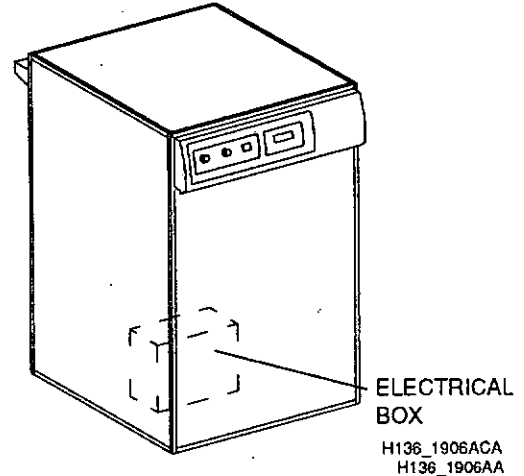
WARNING

Dangerous Voltage

CAUTION

Possible damage from electrostatic discharge.

- [3] Open the ELECTRICAL BOX.
- [4] On the 100 CIRCUIT BOARD, adjust POTENTIOMETER R147 to change the time setting. Rotate the POTENTIOMETER clockwise ↻ to increase or counterclockwise ↻ to decrease the time.



NOTE

The 100 CIRCUIT BOARD is set at the factory for 10.0 seconds. The range of adjustment is 3.0 - 13.0 seconds.

Adjusting the Drive Transport Speed

Purpose: Do this procedure to change the transport speed of a cycle.

Specification: See the "Transport Speed Setup" table.

- [1] Select a "Cycle".
- [2] Make 2 reference marks on the edge of the FEED TRAY, with 30.5 cm (12.0 in.) between the 2 marks.
- [3] Using a STOPWATCH, measure the time it takes a 35 cm (14 in.) or longer piece of film to travel between the 2 marks. See the table.

WARNING

Dangerous Voltage

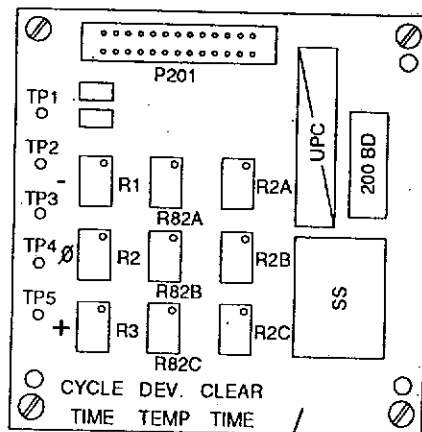
CAUTION

Possible damage from electrostatic discharge.

- [4] Open the ELECTRICAL BOX.
- [5] On the 200 CIRCUIT BOARD, adjust the corresponding POTENTIOMETER. Rotate the POTENTIOMETER counterclockwise ↺ to increase or clockwise ↻ to decrease the transport speed.

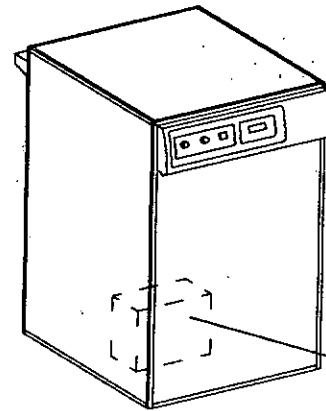
NOTE

Increasing the transport speed decreases the cycle time. Decreasing the transport speed increases the cycle time.



200 CIRCUIT BOARD

H136_170DACA
H136_170QAA



ELECTRICAL BOX

H136_1906ACA
H136_1906AA

Cycle	Adjust:
-	R1
0	R2
+	R3

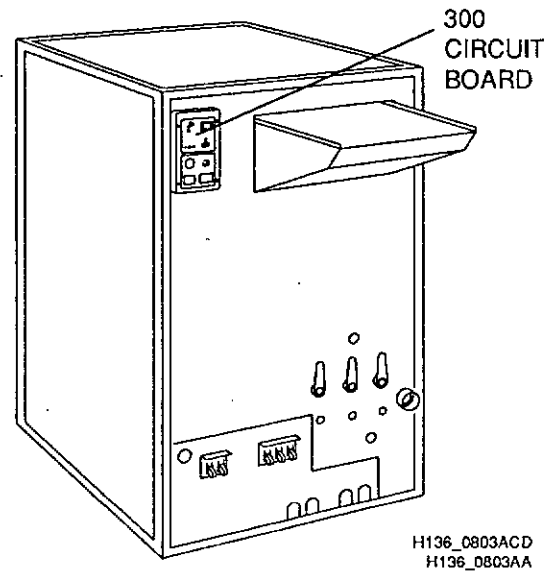
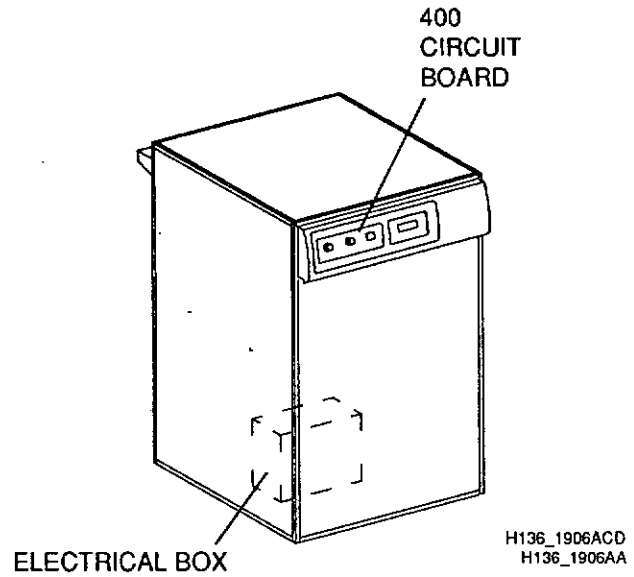
Transport Speed Setup

Factory Setting	Cycle Time (minutes)	Travel Time for 30.5 cm (12 in.) Film (seconds)
(-)	12.5	45.84
	12.0	44.00
	11.5	42.17
	11.0	40.34
	10.5	38.50
(0)	10.0	36.67
	9.5	34.84
	9.0	33.00
	8.5	31.17
	8.0	29.33
(+))	7.5	27.50
	7.0	25.67
	6.5	23.83
	6.0	22.00
	5.5	20.17
5.0	18.33	

Functions of the Circuit Boards

- The functions of the CIRCUIT BOARDS are indicated in the table. The removal procedures for these CIRCUIT BOARDS are included in the pages that follow.
- The 100 and 200 CIRCUIT BOARDS are located in the ELECTRICAL BOX.

Circuit Board	Function
100	Logic
200	Cycle Adjustments
300	Feed-End Controls
400	Receiving-End Controls



Removing the 100 Circuit Board

WARNING

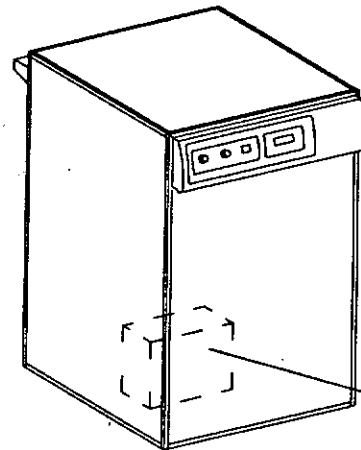
Dangerous Voltage

- [1] Deenergize the PROCESSOR.

CAUTION

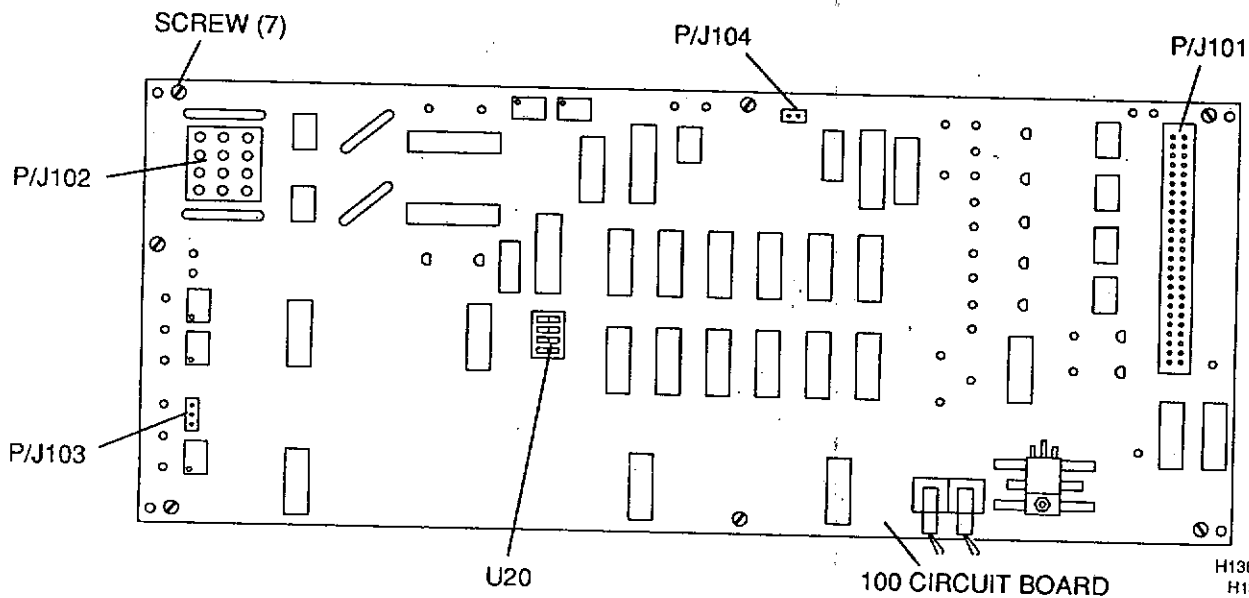
Possible damage from electrostatic discharge.

- [2] Open the ELECTRICAL BOX.
- [3] On the 100 CIRCUIT BOARD, disconnect CONNECTORS P/J101 - 104.
- [4] Remove the 7 SCREWS and the 100 CIRCUIT BOARD.



ELECTRICAL
BOX

H136_1906ACA
H136_1906AA



H136_1701BCG
H136_1701BA

- [5] On the new 100 CIRCUIT BOARD, check the position of the SWITCHES on SWITCH U20. See the table for the functions of the SWITCHES.

Switch	Position	Function
U20-1	ON	Sets the Processor to the Flooded Replenishment Mode.
	OFF	Sets the Processor to the Automatic Replenishment Mode.
U20-2	ON	Sets the Processor to the Water Conservation Mode. <ul style="list-style-type: none"> • Water is on when running film. • Water is on when the developer needs cooling.
	OFF	The non-conservation mode - water is off only during standby.
U20-3	Always OFF	No Function
U20-4	Always ON	Allows the clear time to operate.

- [6] Reverse this procedure to install the 100 CIRCUIT BOARD.

- [7] Do the following adjustments:

- 9-Volt, page 6-5
- Zero Adjustment of the Developer Temperature Meter, page 6-6
- Developer Temperature, page 6-8
- Meter to Tank Temperature, page 6-12
- Film Clear Time, page 6-14
- Flooded Replenishment, page 6-16
- Film Feed Signal, page 6-18.

Removing the 200 Circuit Board

WARNING

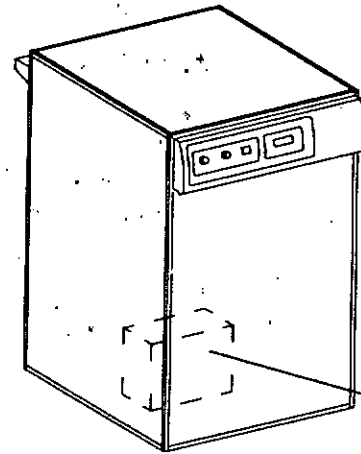
Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Open the ELECTRICAL BOX.

CAUTION

Possible damage from electrostatic discharge.

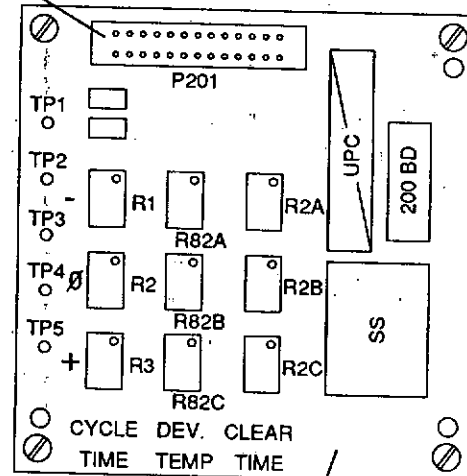
- [3] On the 200 CIRCUIT BOARD, disconnect CONNECTOR P/J201.
- [4] Remove the 4 SCREWS.
- [5] Remove the 200 CIRCUIT BOARD.
- [6] Reverse this procedure to install the 200 CIRCUIT BOARD.
- [7] Do the following adjustments:
 - Developer Temperature, page 6-8
 - Film Clear Time, page 6-14
 - Drive Transport Speed, page 6-19.
- [8] Check the following adjustments:
 - Zero Adjustment of the Developer Temperature Meter, page 6-6
 - Meter to Tank Temperature, page 6-12.



ELECTRICAL BOX

H136_1906ACA
H136_1906AA

P/J201



200 CIRCUIT BOARD

H136_1700ACB
H136_1700AA

Removing the 300 Circuit Board

WARNING

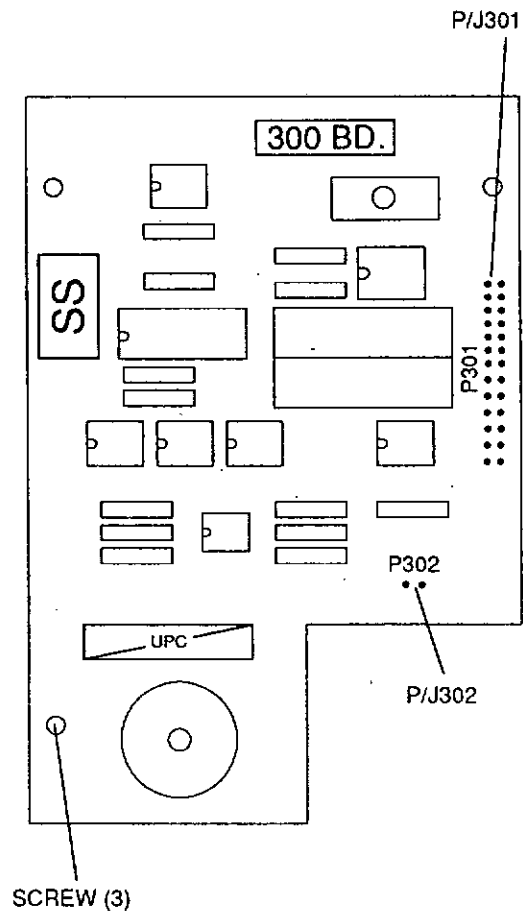
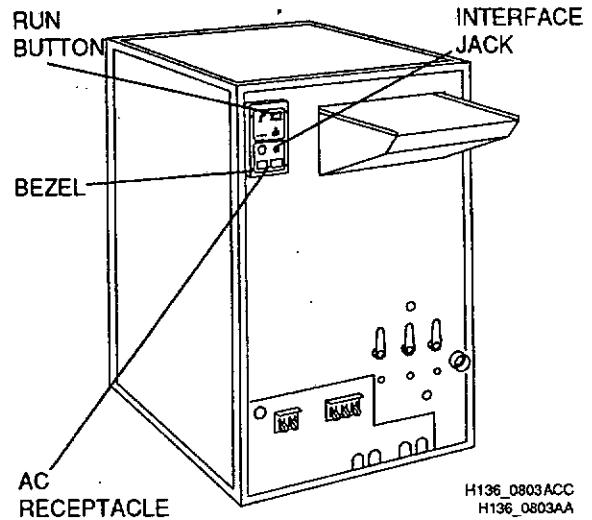
Dangerous Voltage

- [1] Deenergize the PROCESSOR.

CAUTION

Possible damage from electrostatic discharge.

- [2] Remove the BEZEL.
- [3] Disconnect CONNECTORS P/J301 and P/J302.
- [4] Remove the 3 SCREWS.
- [5] Remove the 300 CIRCUIT BOARD.
- [6] Reverse this procedure to install the 300 CIRCUIT BOARD.
- [7] Check that the following operate correctly:
- All status indicators
 - Film feed audio indicator
 - RUN BUTTON
 - INTERFACE JACK
 - AC RECEPTACLE.



Removing the 400 Circuit Board

WARNING

Dangerous Voltage

- [1] Deenergize the PROCESSOR.
- [2] Remove the TOP COVER from the PROCESSOR.

CAUTION

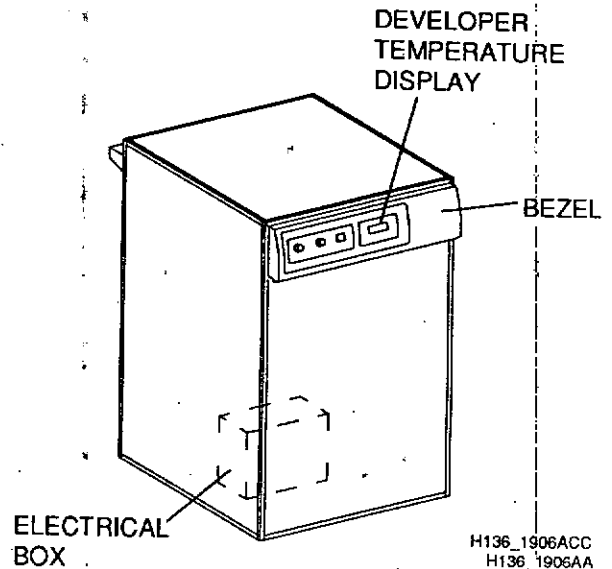
Possible damage from electrostatic discharge.

- [3] Remove the receiving-end SPLASH GUARD.
- [4] Remove the BEZEL.
- [5] Disconnect CONNECTOR P/J401.
- [6] Remove the 6 SCREWS and the 400 CIRCUIT BOARD.
- [7] Reverse this procedure to install the 400 CIRCUIT BOARD.

- [8] Do the Zero Adjustment of the Developer Temperature Meter on page 6-6.

- [9] Check the following adjustments:

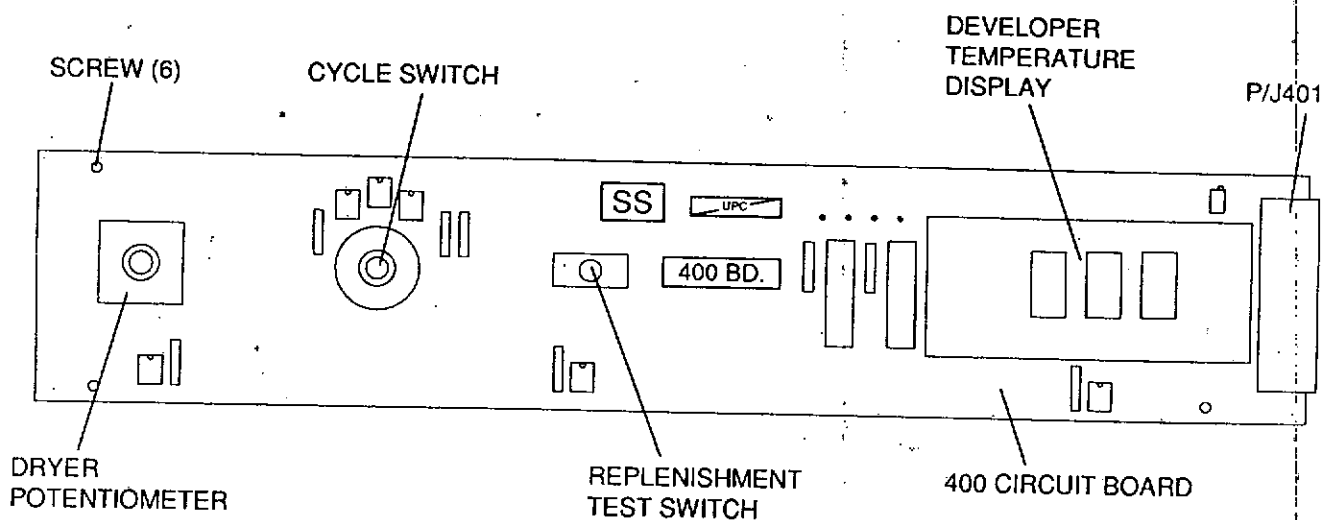
- Developer Temperature, page 6-8
- Meter to Tank Temperature, page 6-12
- Film Clear Time, page 6-14
- Drive Transport Speed, page 6-19.



H136_1906ACC
H136_1906AA

- [10] Check that the following operate correctly:

- All status indicators
- REPLENISHMENT TEST SWITCH
- CYCLE SWITCH
- DRYER POTENTIOMETER.



H136_1704BCB
H136_1704BA

Removing the Drive Motor Controller

WARNING

Dangerous Voltage

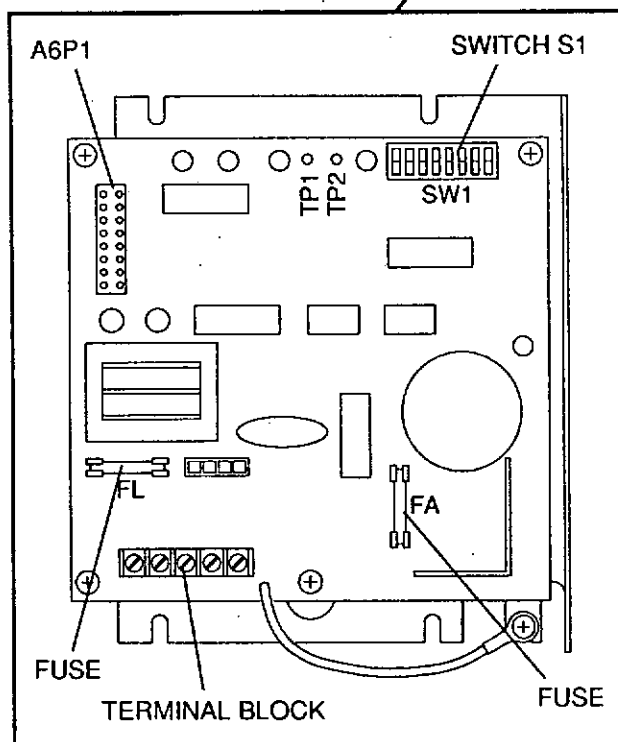
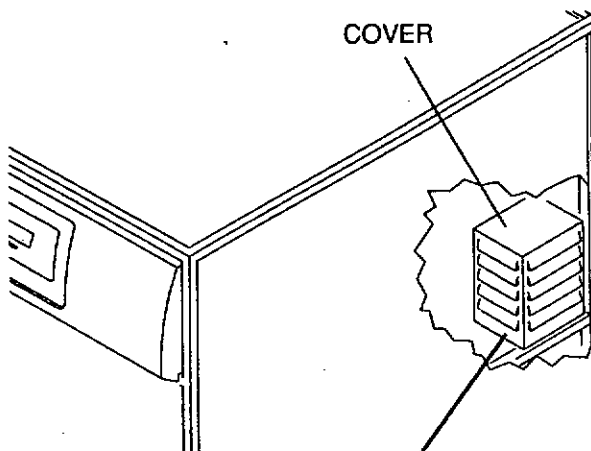
- [1] Deenergize the PROCESSOR.
- [2] Remove the drive-side ACCESS PANEL.

CAUTION

Possible damage from electrostatic discharge.

- [3] Remove the COVER.
- [4] Disconnect CONNECTOR A6P1 and the wires from the TERMINAL BLOCK.
- [5] On the new DRIVE MOTOR CONTROLLER, check that the "FL" FUSE and the "FA" FUSE are installed.
- [6] Check the settings on SWITCH SW1.

Switch	Setting
1	ON
2	ON
3	ON
4	ON
5	OFF
6	OFF
7	OFF
8	OFF



H136_1702CCA
H136_1702CA

- [7] Install the new DRIVE MOTOR CONTROLLER.
- [8] Connect the CONNECTOR A6P1.
- [9] Connect the wires to the TERMINAL BLOCK. See the table.
- [10] Check the drive transport speed for the 3 cycles. If necessary, do the "Drive Transport Speed Adjustment" on page 6-19.

Wire No.	Terminal
32	L
29	N
57	A1
58	A2
G/Y	GND

SECTION 7
Preventive Maintenance

Table of Contents

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WARNING

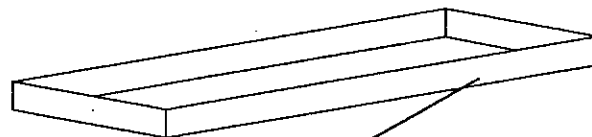
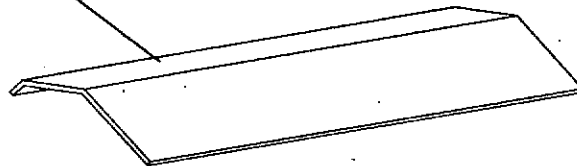
- Heavy Parts
- Use the optional RACK CRANE to remove and install the RACKS.

- [1] Move the wall POWER SWITCH to the "OFF" position.
- [2] Move the MAIN CIRCUIT BREAKER CB1 to the "O" position.
- [3] Turn off the water supply.

CAUTION

- To prevent fixer/developer contamination, use the SPLASH GUARD and RACK DRIP TRAY when removing or installing any of the RACKS.
- Do not use the same cloth to clean fixer parts and developer parts.

SPLASH
GUARD



RACK
DRIP
TRAY

P108_0035ACA
P108_0035AA

- [4] Remove all of the CROSSOVER ASSEMBLIES and RACKS.
- [5] Rinse and wipe the removed parts with a damp cloth.
- [6] Check that the RACK ROLLERS rotate freely.
- [7] Install the RACKS and CROSSOVER ASSEMBLIES. Check that each assembly is in the correct position.

Monthly

Once a month, check the calibration of the REPLENISHMENT PUMP. For the calibration procedure, see "Adjusting the Replenishment Pump" on page 5-4.

Every 3 Months

Once every 3 months, or as experience indicates, do the following procedure.

WARNING

- Mix the *Kodak* System Cleaners as directed. Wear rubber gloves, safety glasses, and protective clothing.
- Do not place the RACKS or CROSSOVER ASSEMBLIES in *Kodak* System Cleaner.
- To prevent chemical contamination, rinse ROLLERS, RACKS, CROSSOVER ASSEMBLIES, and TANKS thoroughly with warm water.

- [1] Remove and discard the DEVELOPER FILTER.
- [2] Do the following to clean the ROLLERS, RACKS, CROSSOVER ASSEMBLIES, and the empty processing TANKS:
 - (a) Clean the DEVELOPER RACK and the DEVELOPER TANK. Use *Kodak* Developer System Cleaner and a synthetic sponge.
 - (b) Clean the FIXER RACK and FIXER TANK. Use *Kodak* Fixer/Wash System Cleaner.
 - (c) Clean the WASH RACK with *Kodak* Fixer/Wash System Cleaner or a mild solution of chlorine bleach if biological growth exists. Use 60 mL (2 fl oz) of chlorine bleach for every 3.8 L (1 gal) of water.
- [3] Rinse all ROLLERS and RACKS thoroughly with warm water to remove all of the System Cleaner.
- [4] Open the FIXER and DEVELOPER DRAIN VALVES.
- [5] Using a HOSE, thoroughly rinse the inside of the TANKS with water.
- [6] Close the FIXER and DEVELOPER DRAIN VALVES.
- [7] Install all the RACKS.
- [8] Fill the TANKS with clean water.
- [9] Install the TOP COVER.
- [10] Energize the PROCESSOR by moving the MAIN CIRCUIT BREAKER CB1 to the "I" position.
- [11] Press and hold the "Replenishment" BUTTON, on the CONTROL PANEL, for approximately 3 seconds.
- [12] Allow the the water to recirculate for 5 minutes.
- [13] Deenergize the PROCESSOR by moving the MAIN CIRCUIT BREAKER CB1 to the "O" position.
- [14] Open all the DRAIN VALVES to drain the TANKS.
- [15] Do steps 10 - 14 again so that all the System Cleaner is removed.
- [16] Install a new DEVELOPER FILTER.
- [17] Check for correct operation of the PROCESSOR. See the "Maintenance Check List" on page 7-4.

Assembly/Component/Process	Check:
TURNAROUND ASSEMBLIES ROLLERS	The rollers are clean and smooth.
MAIN DRIVE ASSEMBLY DRIVE CHAIN BEARINGS and SPROCKETS	<ul style="list-style-type: none"> • The Chain has no excessive wear. • The Chain has correct tension. • The Chain has lubrication. • The parts do not have excessive wear. • The Teeth of the Sprocket are not too sharp. • The Worm Gears have no burrs.
Plumbing Connections	No leakage is occurring.
Recirculation System	<p style="text-align: center;">NOTE</p> <p>In addition to the periodic maintenance check, check the system when solutions are changed.</p> <ul style="list-style-type: none"> • The Pumps are operating. • The surface of the solutions indicate recirculation.
Developer Temperature	The developer solution is within specification.
Flow of Water to the Processor	<ul style="list-style-type: none"> • The Wash Tank fills within 8 - 12 minutes. • The Screen in the Wash Water Solenoid is clean.
Chemical Replenishment	The replenishment rates are correct.
TUBING	The Tubing is free from any obstructions.
STRAINER ASSEMBLIES	The Strainer Assemblies are not dirty.
DRYER DRIVE BELT BEARINGS AIR TUBES ROLLERS O-RINGS SUPPORTS Dryer Temperature	<ul style="list-style-type: none"> • The Drive Belt has no excessive wear. • The Bearings in the upper and lower Pulley Assemblies have no excessive wear. <p style="text-align: center;">NOTE</p> <p>If it is not possible to align the Pulley, install a new Bearing.</p> <ul style="list-style-type: none"> • The Air Tubes are clean. • The Rollers are clean and smooth. • The Rollers are correctly seated. • The O-Rings have no excessive wear. • The Supports are clean. • The Dryer Control is adjusted to the lowest possible temperature that provides dry films.

Lubrication Table

WARNING

- Deenergize the PROCESSOR before checking parts for lubrication.
- Keep hands and clothing free of moving parts.
- When lubricating parts, do not allow oil or grease to drip on the CROSSOVERS or RACKS, or into the solution TANKS.

Part	Lubricant	Frequency	To Provide Lubrication:
Main Drive Chain	NLG1 - No. 2 Lithium Ball and Roller Bearing Grease TL-2324	As necessary	Add to the surface of the Chain.
Recirculation Pump B3 Replenishment Pump B4	Light oil, such as SAE No. 20 Motor Oil TL-2199	6 months	Add a number of drops in the lubrication holes.
Bearings - Blower Motor B1	Not necessary	---	---
Gear Housing - Motor B2	Non-detergent oil, such as SAE No. 90 Motor Oil TL-2769	---	Add oil to the correct level.
Main Drive Shaft Assembly	Light oil, such as SAE No. 20 Motor Oil TL-2199	6 months	Add a number of drops in the lubrication holes.
Main Drive Motor B2	Not necessary	---	---

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