



SERVICE BULLETIN

KODAK X-OMAT Processor

Eastman Kodak Company/Customer & Technical Services/Health Sciences Markets Division/Rochester, New York 14650

SERVICE BULLETIN No. 79

MAY 1986

Tubing Clamps, All Models of KODAK X-OMAT Processors

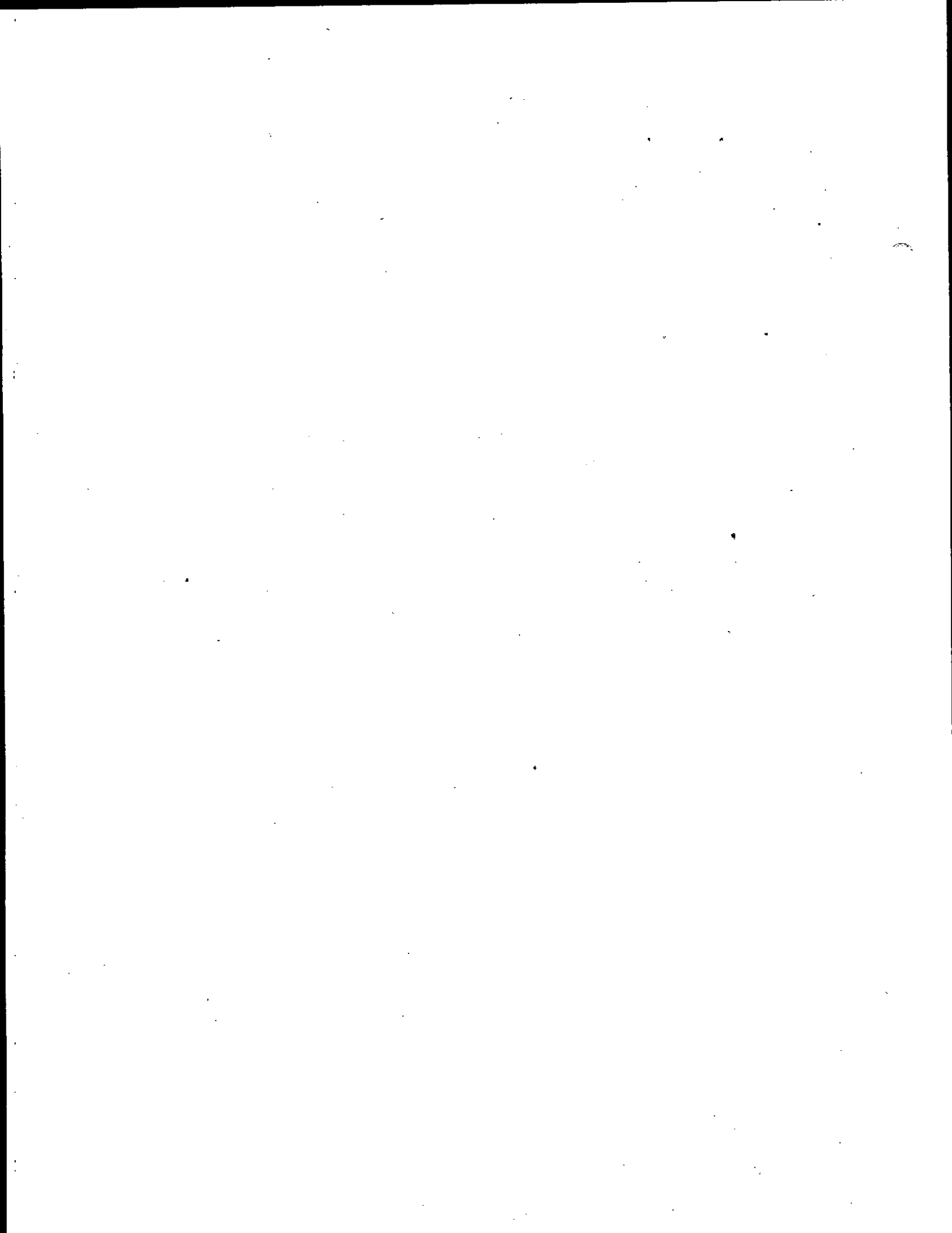
All adjustable metal band clamps used on KODAK X-OMAT Processor tubing to fitting connections must be checked for tightness at the time of processor installation.

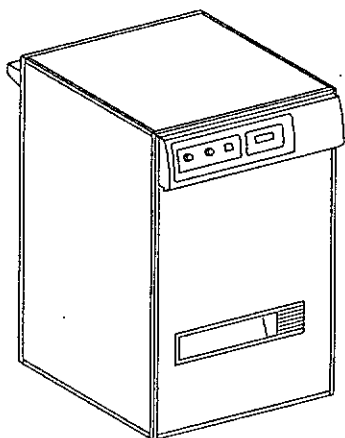
Although a clamp may be properly tightened at the time of factory installation, cold flow or shrinkage of the plastic tubing will take place beneath the clamp thus requiring further tightening of the clamp within a 2- to 4-week period.

This practice of rechecking clamp tightness should also be followed when replacement tubing is installed with adjustable band clamps.

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(N-70)





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.

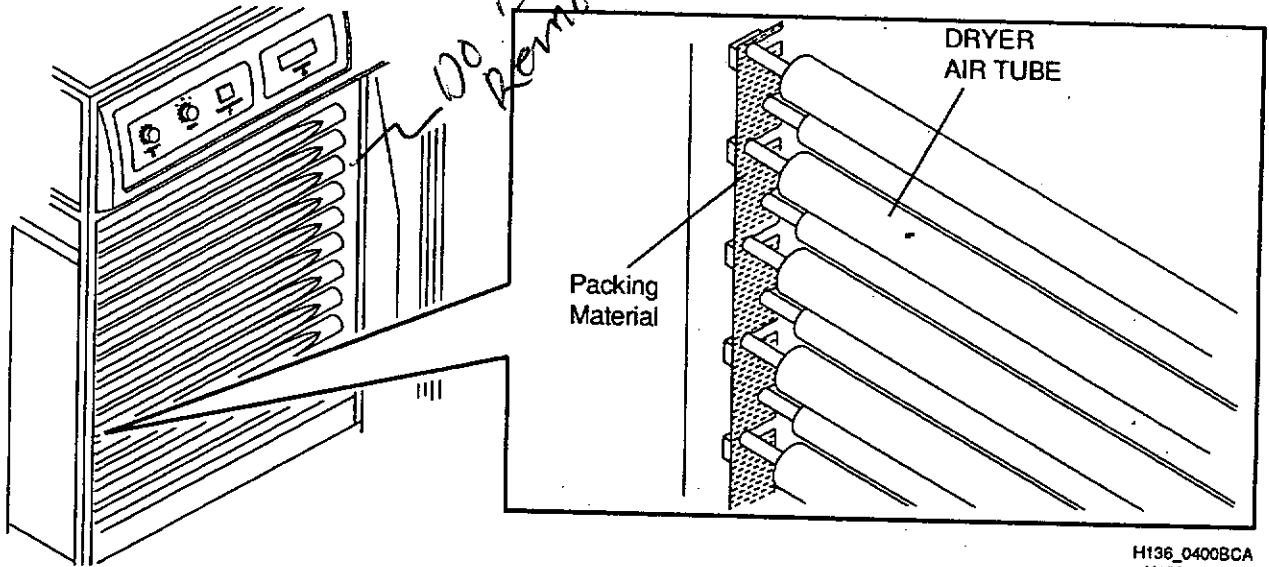
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Preparing the Processor for Installation

Unpacking

- [1] Remove the packing carton from the PROCESSOR.
- [2] Remove the RACKS from the packing carton.
- [3] Remove the TOP COVER and RECEIVING-END PANEL from the PROCESSOR.
- [4] Remove the packing material from the DRYER AIR TUBES.



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H136_0400BA

Removing the Processor from the Skid

WARNING

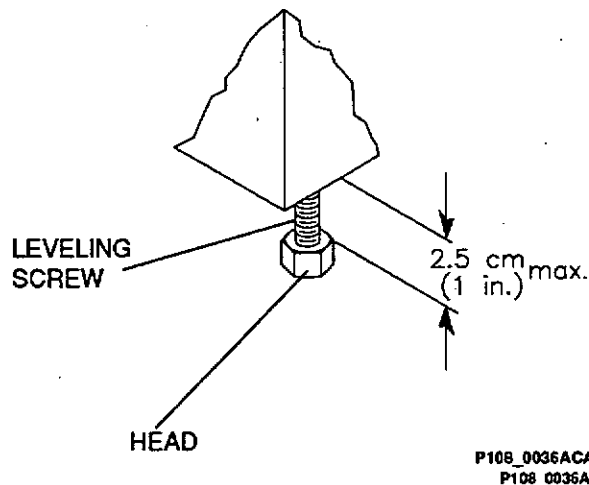
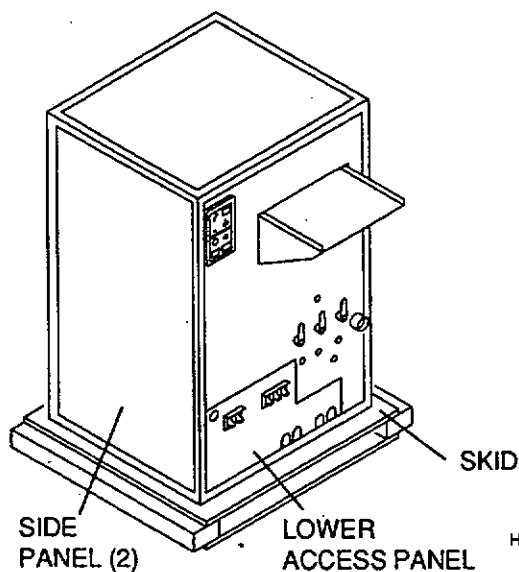
- Heavy Equipment
- The weight of the PROCESSOR is approximately 272 kg (600 lb). Use 2 persons to install the PROCESSOR.

- [1] Move the PROCESSOR, on the SKID, to the approximate position of installation.
- [2] Remove the LOWER ACCESS PANEL and the 2 SIDE PANELS.
- [3] Move the PROCESSOR so that one corner is off the SKID.

CAUTION

- Prevent damage to the LEVELING SCREWS and the PROCESSOR.
- Do not allow more than a 2.5 cm (1 in.) clearance between the bottom of the PROCESSOR and the HEAD of the LEVELING SCREW.

- [4] Insert a LEVELING SCREW into the corner of the PROCESSOR that is off the SKID.
- [5] Move another corner of the PROCESSOR from the SKID.
- [6] Insert a LEVELING SCREW into that corner of the PROCESSOR.
- [7] Do Steps 5 and 6 for the remaining 2 corners of the PROCESSOR.

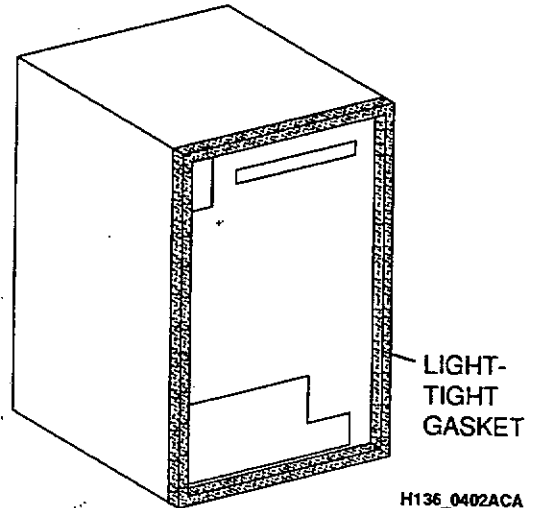


Installing the Lighttight Gasket

CAUTION

Do not stretch the GASKET.

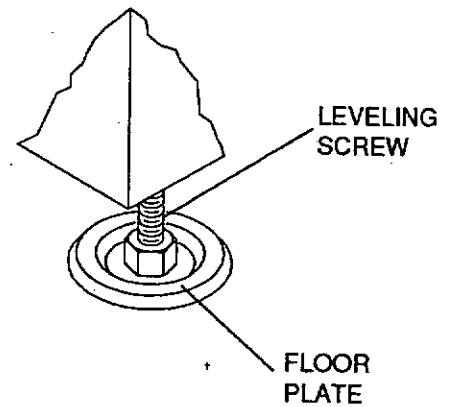
- [1] Install the LIGHTTIGHT GASKET onto the end of the PROCESSOR that will be against the darkroom wall.



H136_0402ACA
H136_0402AA

Moving the Processor into Position

- [1] Move the PROCESSOR against the wall to compress the LIGHTTIGHT GASKET.
- [2] Check that the center of the PROCESSOR is aligned with the center of the wall opening.
- [3] Install the 4 FLOOR PLATES under the 4 LEVELING SCREWS.

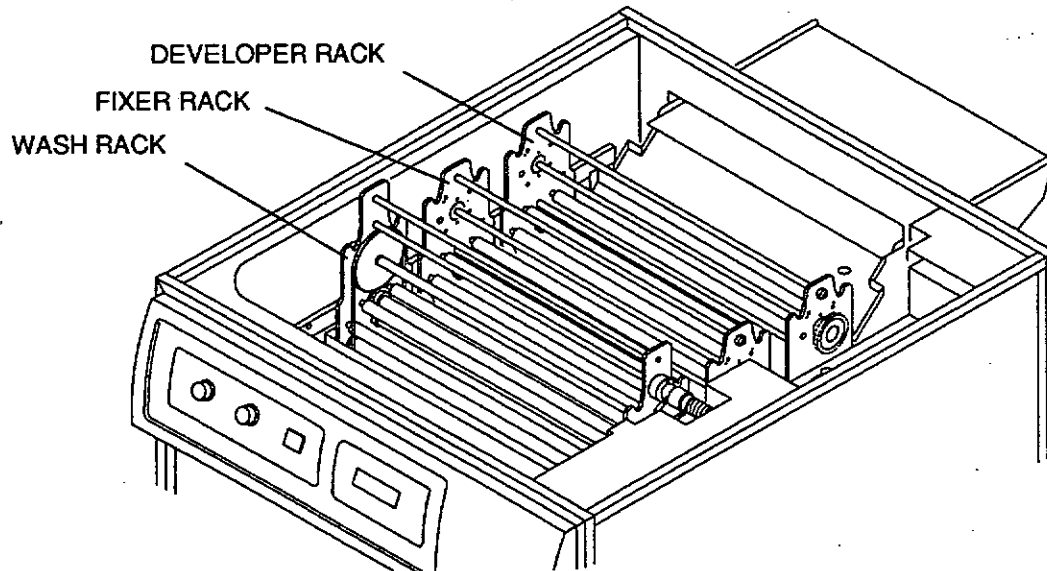


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P108_0037AA

Installing the Racks

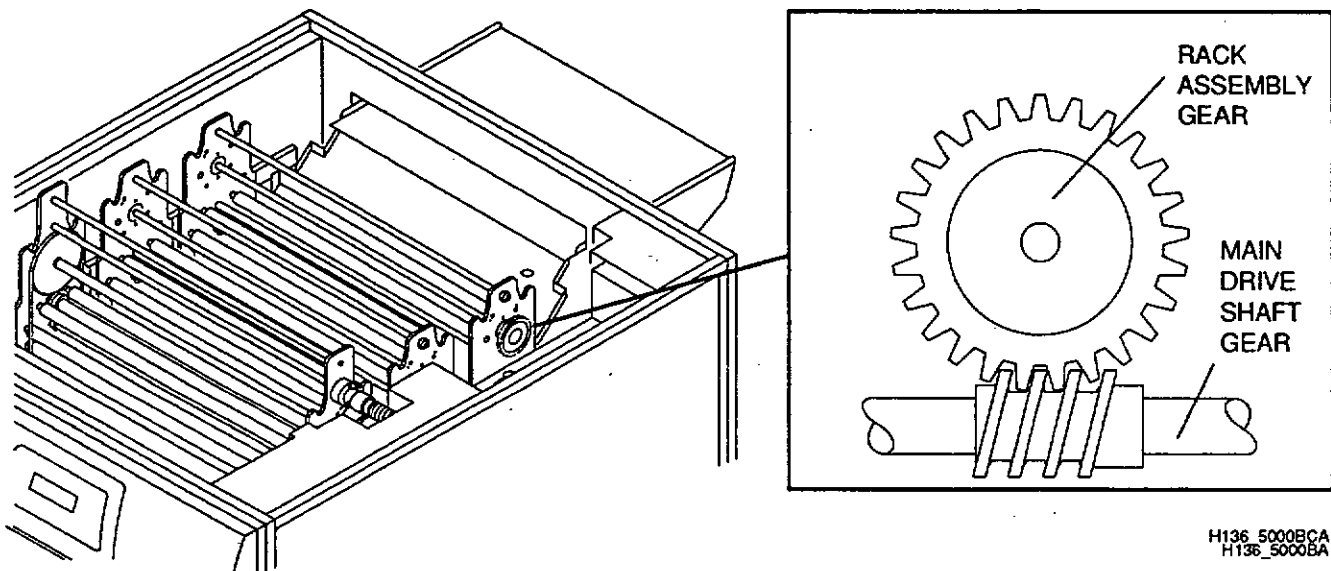
[1] Install:

- DEVELOPER RACK
- FIXER RACK
- WASH RACK.



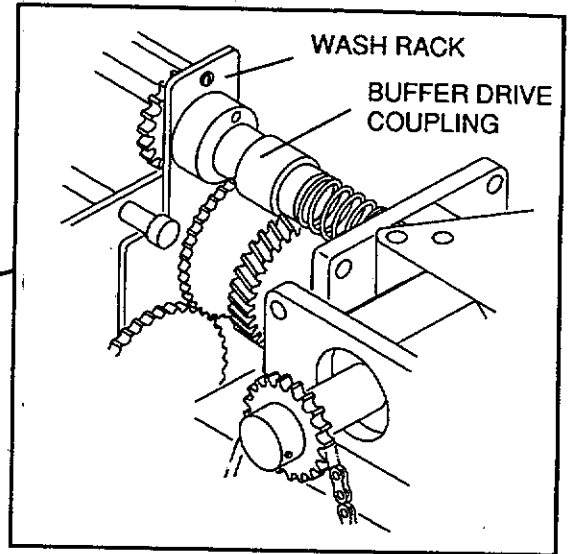
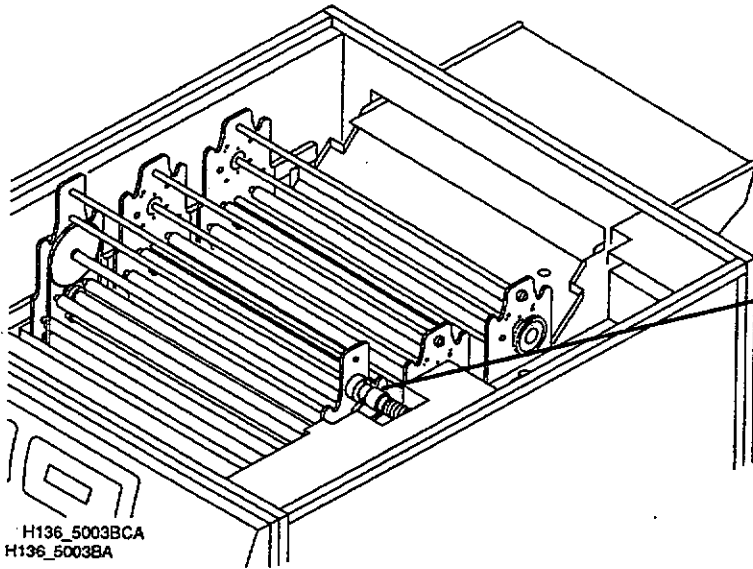
H136_3300BCA
H136_3300BA

[2] Check that the RACK ASSEMBLY GEARS engage with the MAIN DRIVE SHAFT GEARS.



H136_5000BCA
H136_5000BA

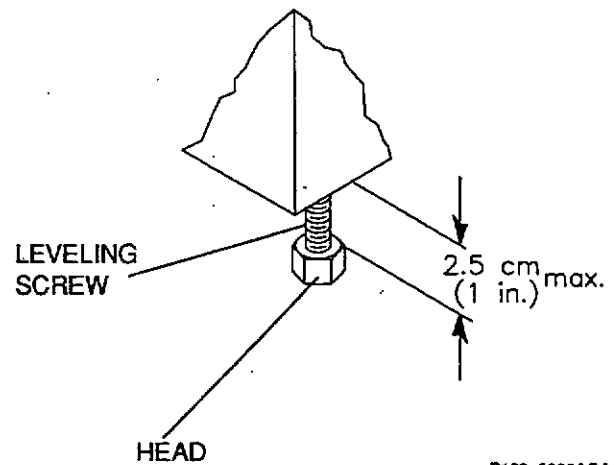
[3] Rotate the BUFFER DRIVE COUPLING until it releases and engages with the WASH RACK.



Leveling the Processor

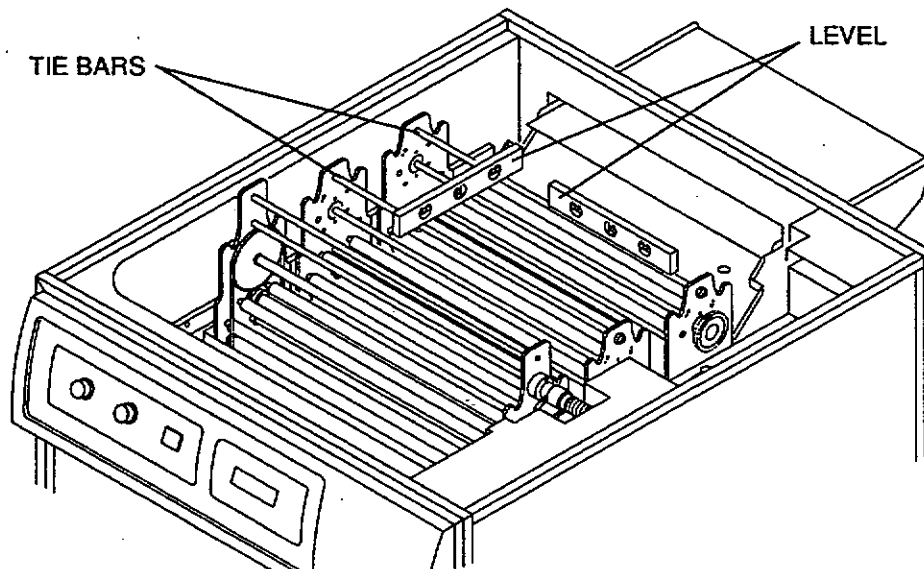
CAUTION

- Prevent damage to the LEVELING SCREWS and the PROCESSOR.
- Do not allow more than a 2.5 cm (1 in.) clearance between the bottom of the PROCESSOR and the HEAD of the LEVELING SCREW.



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P108_0036AA

- [1] Place a LEVEL on the TIE BARS. Adjust the LEVELING SCREWS to level the PROCESSOR front to back and side to side.

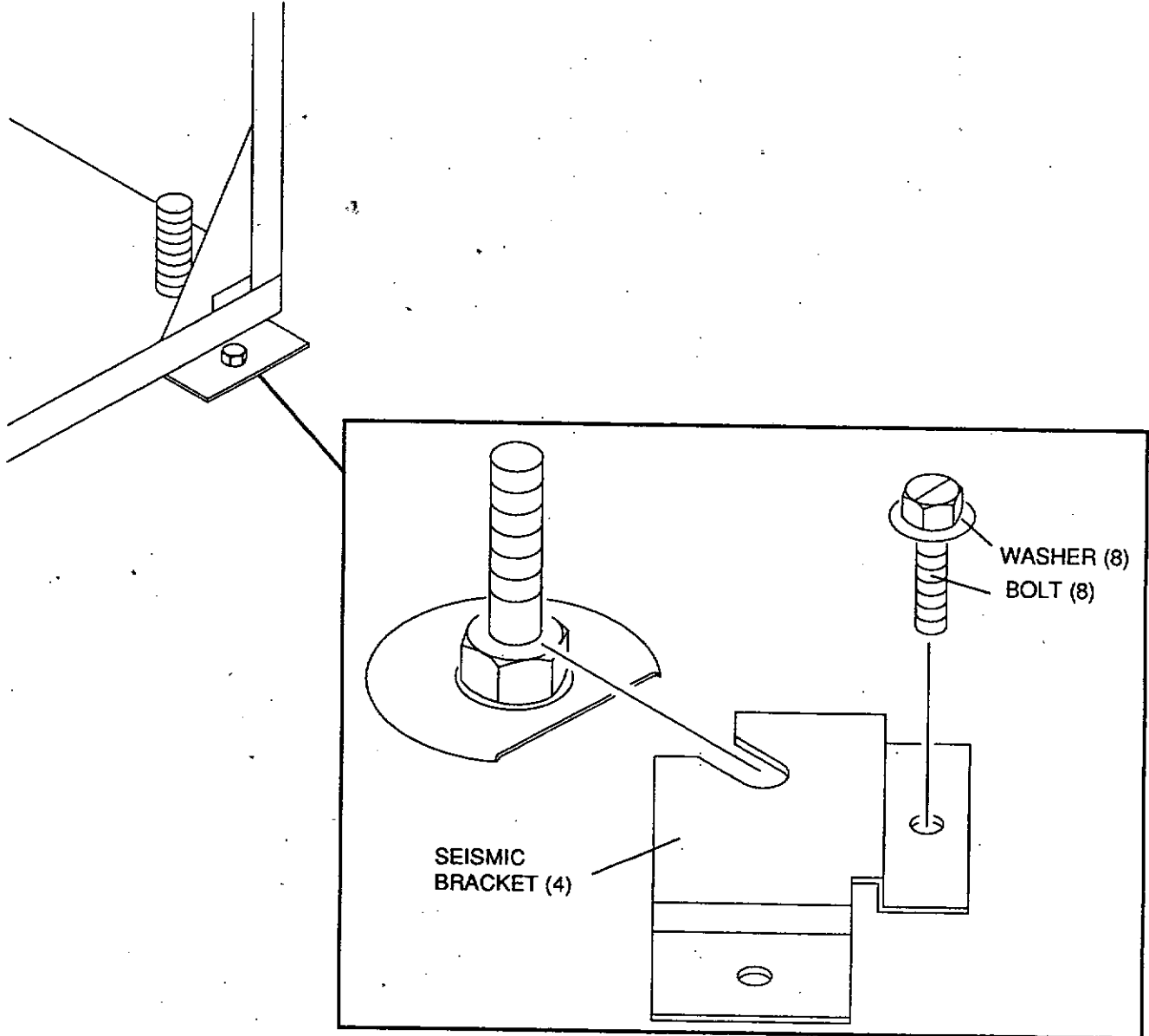


H136_0411BCA
H136_0411BA

IMPORTANT

- Installation of SEISMIC BRACKETS might be a requirement of local code.
- Do not install SEISMIC BRACKETS until the PROCESSOR is in position against the wall and is leveled.

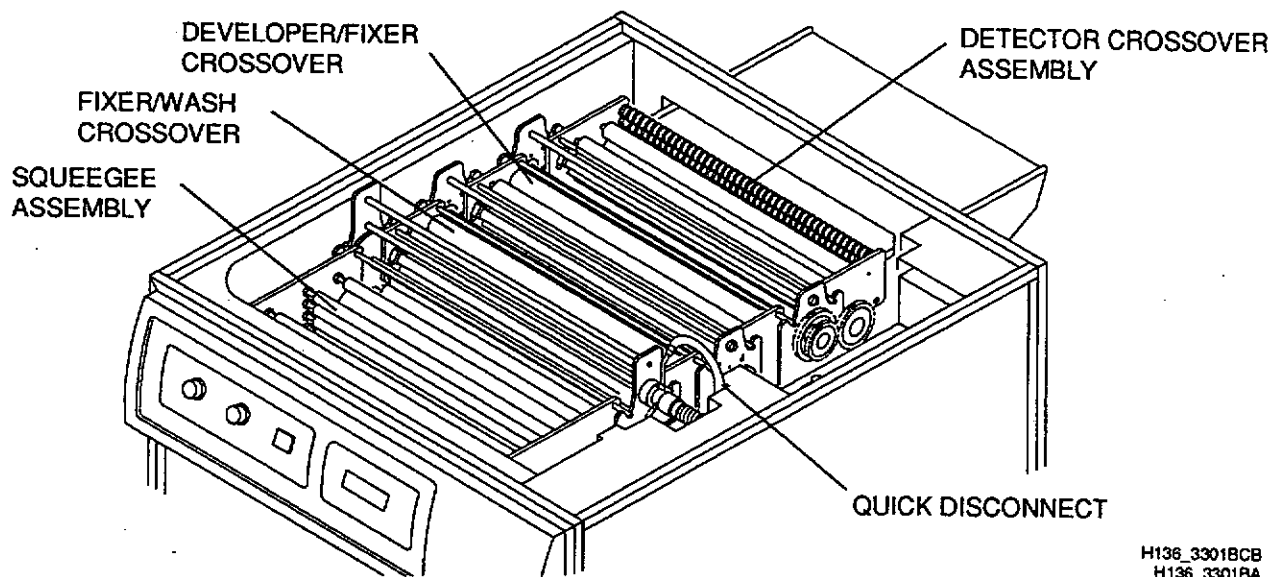
[2] If necessary, fasten the PROCESSOR in position. Use SEISMIC KIT 779133.



H136_0413DCA
H136_0413DA

Installing the Crossover and Squeegee Assemblies

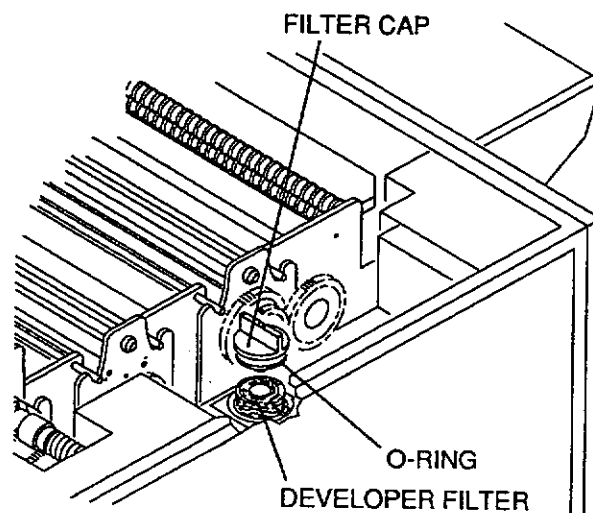
- [1] Install the DEVELOPER/FIXER and FIXER/WASH CROSSOVERS.
- [2] Connect the wash water QUICK DISCONNECT.
- [3] Install the DETECTOR CROSSOVER and SQUEEGEE ASSEMBLIES.



H136_3301BCB
H136_3301BA

Installing the Developer Filter

- [1] Remove the FILTER CAP.
- [2] Install a DEVELOPER FILTER.
- [3] Check that the O-RING is seated correctly.
- [4] Install the FILTER CAP.



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H136_3322AA

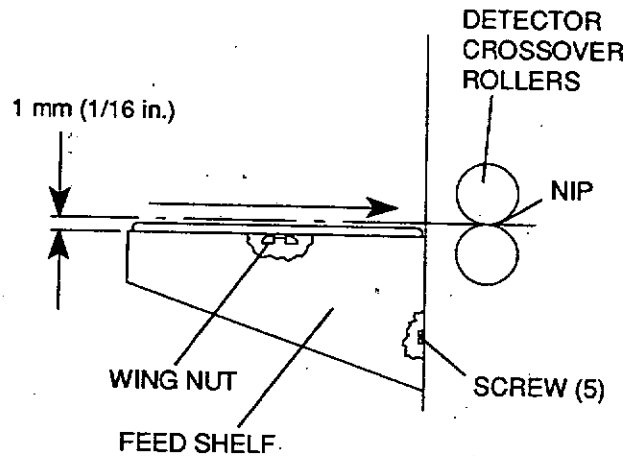
Installing the Feed Shelf

- [1] Install the FEED SHELF.
- [2] 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.

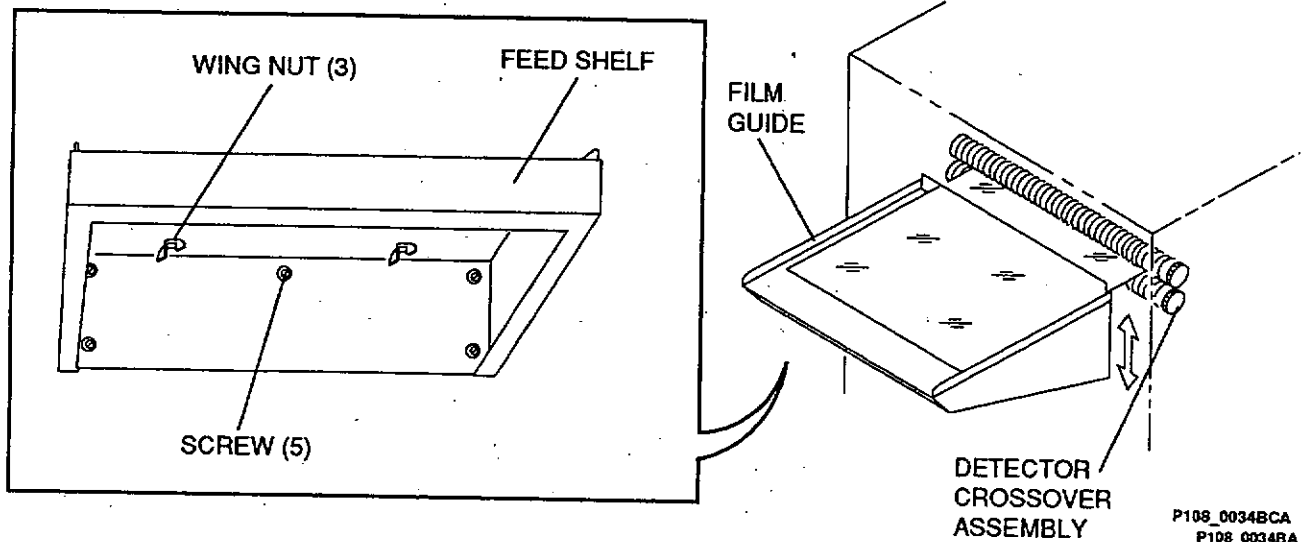
- [3] When the height is adjusted correctly, tighten the 5 SCREWS.



H136_0404ACA
H136_0404AA

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.



P108_0034BCA
P108_0034BA

Connecting the Processor

Making the Plumbing Connections

Connecting the Drains

The developer, fixer, and water effluent solutions are separated and exit the PROCESSOR through 3 separate outlets. The same outlets are used to drain the solutions from the PROCESSOR.

CAUTION

- Prevent corrosion.
 - Do not use brass or copper for the plumbing connections.
- [1] On the feed-end of the PROCESSOR, connect the 3 HOSES to the DEVELOPER, FIXER, and WASH DRAINS. Route the HOSES as necessary.

IMPORTANT

Do not make a solid connection between the WASH DRAIN and the FLOOR DRAIN.

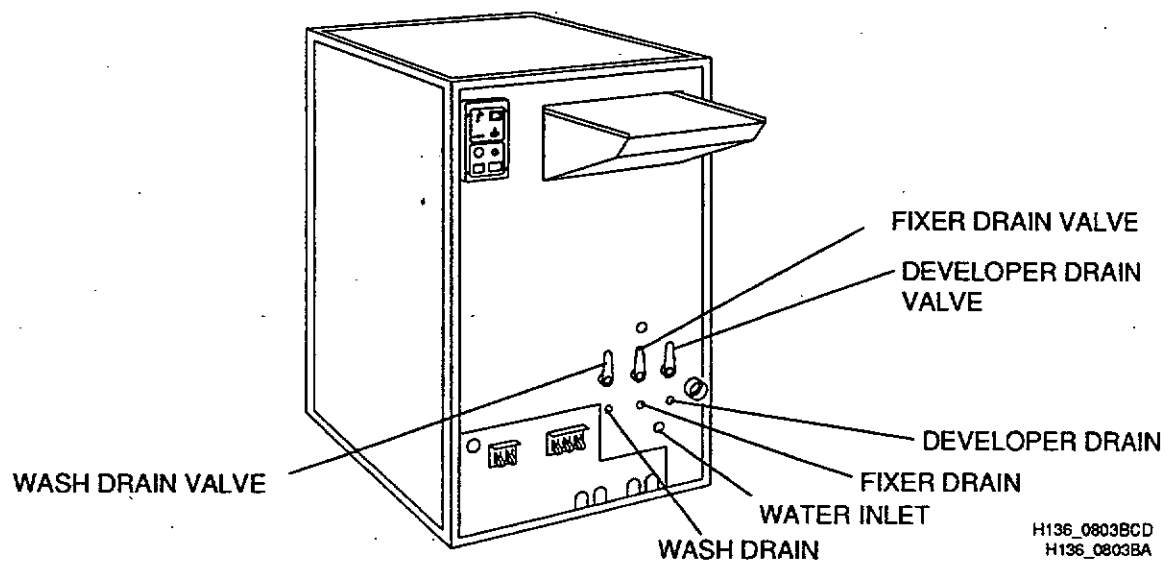
- [2] Route the wash water directly to the FLOOR DRAIN.

Connecting the Water

IMPORTANT

Before connecting the water, see the "Site Specifications" for information about water pressure and materials.

- [1] Install the plumbing to the WATER INLET.
- [2] Check that the DEVELOPER, FIXER, and WASH DRAIN VALVES are closed.



Installing Grommets and Replenishment Tubes

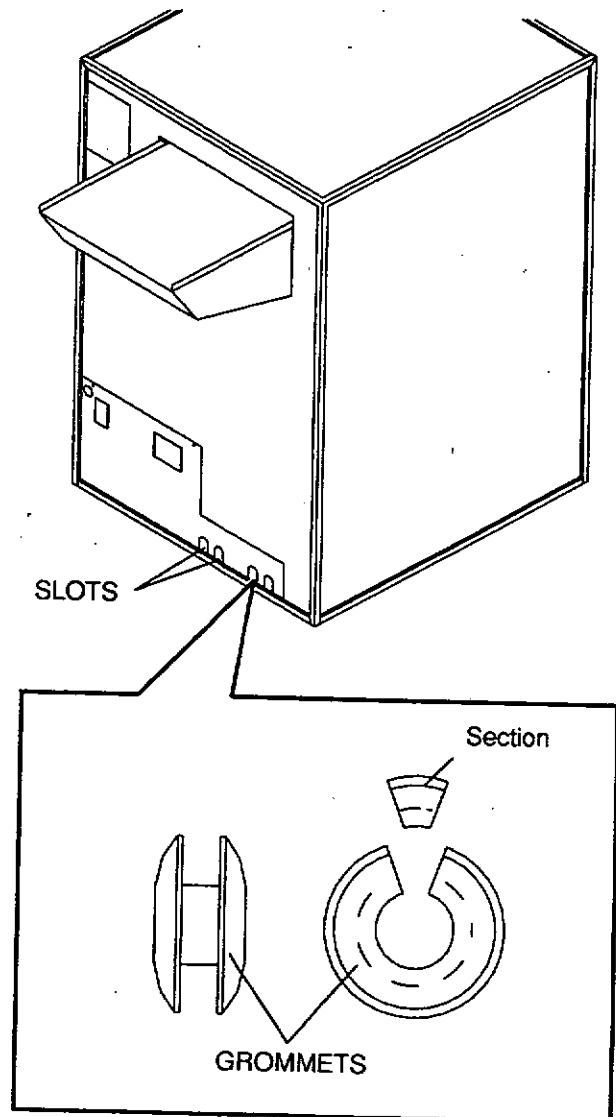
CAUTION

- Prevent contamination of the PROCESSOR solutions.
- Do the following procedure to install the DEVELOPER REPLENISHMENT TUBE to the DEVELOPER REPLENISHMENT TANK, then, do the same procedure to install the FIXER REPLENISHMENT TUBE.

- [1] Insert the REPLENISHMENT TUBE through one of the SLOTS in the feed-end of the PROCESSOR.

NOTE

- Because of the high suction of the REPLENISHMENT PUMP, use only 3/8 in. I.D x 9/16 in. O.D TUBING.
 - The tubing is not supplied.
- [2] Install a GROMMET onto the REPLENISHMENT TUBE. If necessary, remove a section of the GROMMET.
- [3] Compress the GROMMET and fit it into the SLOT.



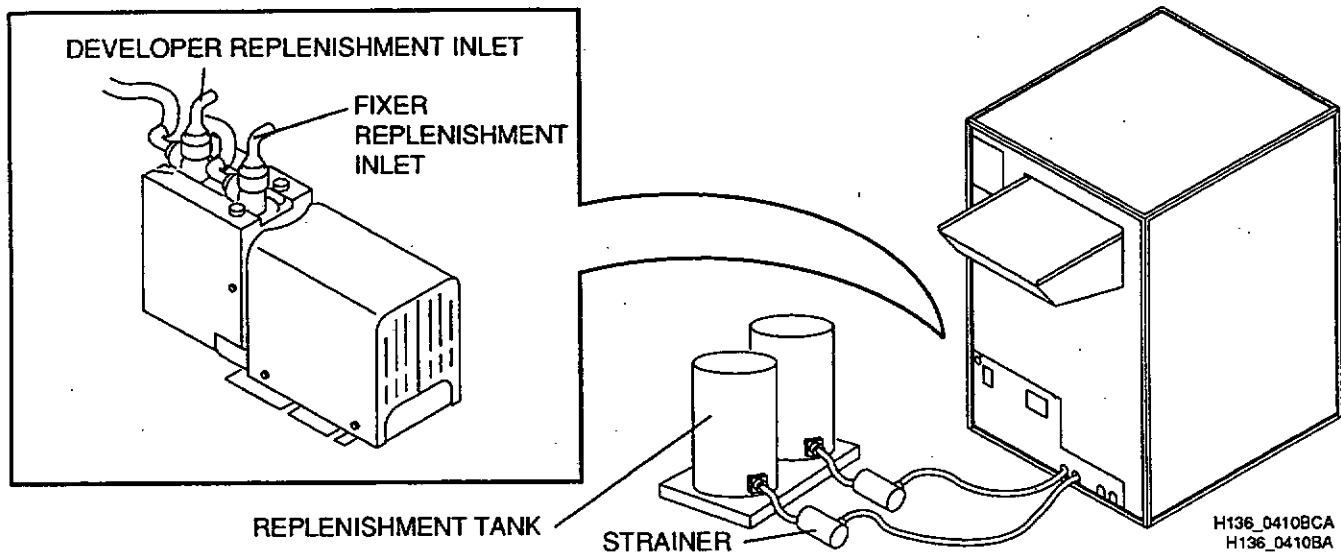
H136_0409CCA
H136_0409CA

Connecting the Replenishment Tanks

IMPORTANT

- Because this PROCESSOR has very high pumping rates, check that the TUBING is straight and no obstructions exist.
- Connect the DEVELOPER REPLENISHMENT TUBE first, then, connect the FIXER REPLENISHMENT TUBE.

- [1] Install one end of the STRAINER onto the TUBING leading from the REPLENISHMENT TANK.
- [2] Install the other end of the STRAINER to the TUBING leading into the PROCESSOR.
- [3] Connect the TUBING from the INLET on the REPLENISHMENT PUMP to the REPLENISHMENT TANK.
- [4] After installing the DEVELOPER REPLENISHMENT TUBE, do the connection procedures again to install the FIXER REPLENISHMENT TUBE.



Making the Electrical Connections

- [1] Determine the customer's electrical service. See the table.

Service Options

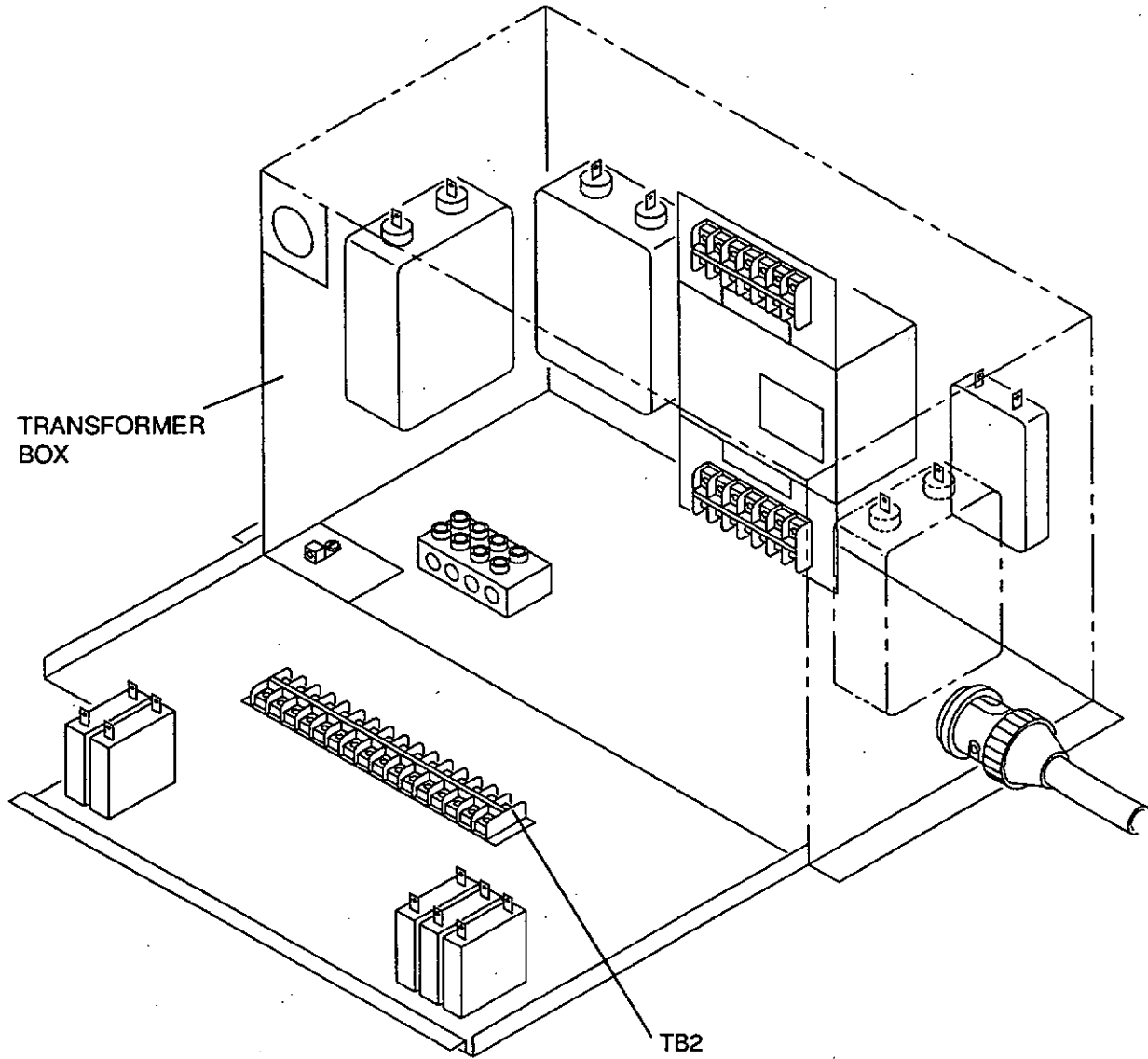
Voltage Volts	Frequency Hz	Service
200	50/60	2-Wire, Single Phase
220	50/60	2-Wire, Single Phase
230	50/60	2-Wire, Single Phase
240	50/60	2-Wire, Single Phase
100/200	50/60	3-Wire, Single Phase
120/240	50/60	3-Wire, Single Phase
200	50/60	3-Wire, 3-Phase, Delta
120/208	60	4-Wire, 3-Phase*, Wye
127/220	50	4-Wire, 3-Phase*, Wye
220/380	50	4-Wire, 3-Phase*, Wye
230/400	50	4-Wire, 3-Phase*, Wye
240/415	50	4-Wire, 3-Phase*, Wye

NOTE

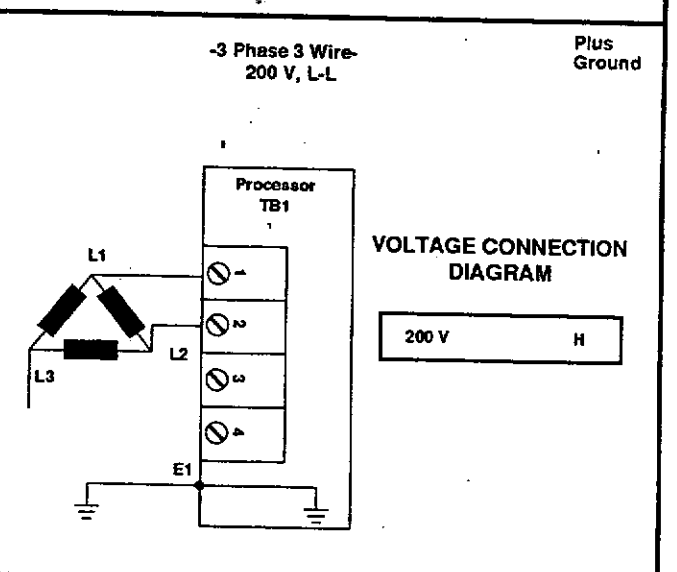
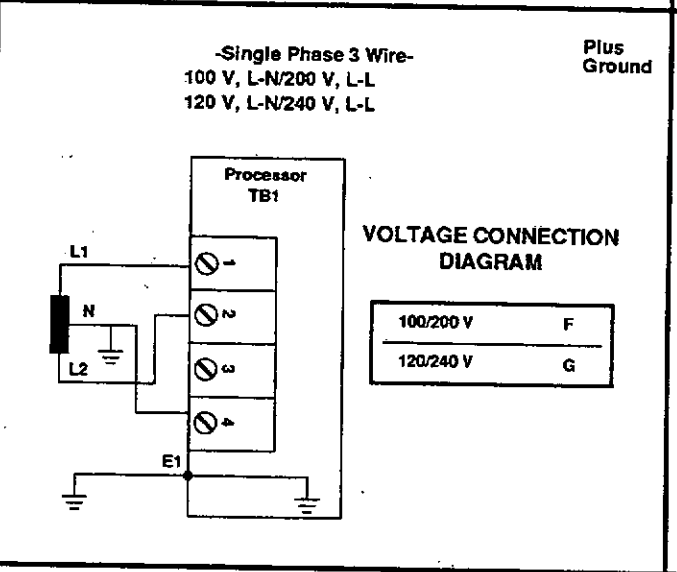
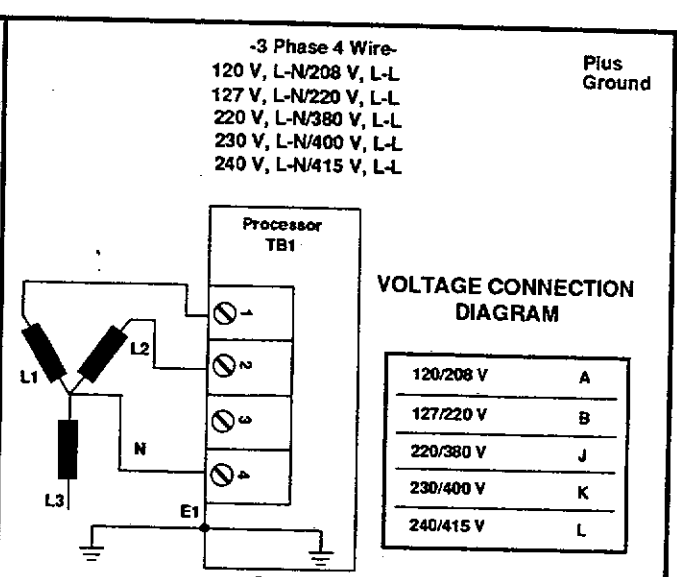
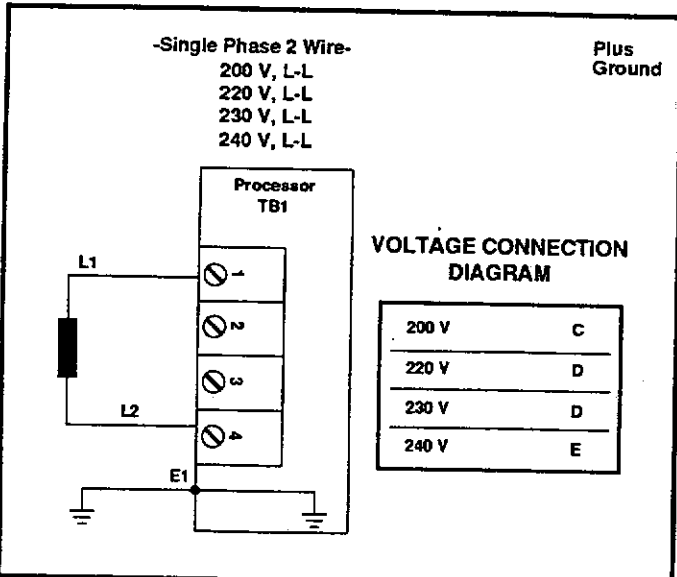
*L1, L2, and Neutral used in this configuration are sometimes referred to as Single-Phase Connections.

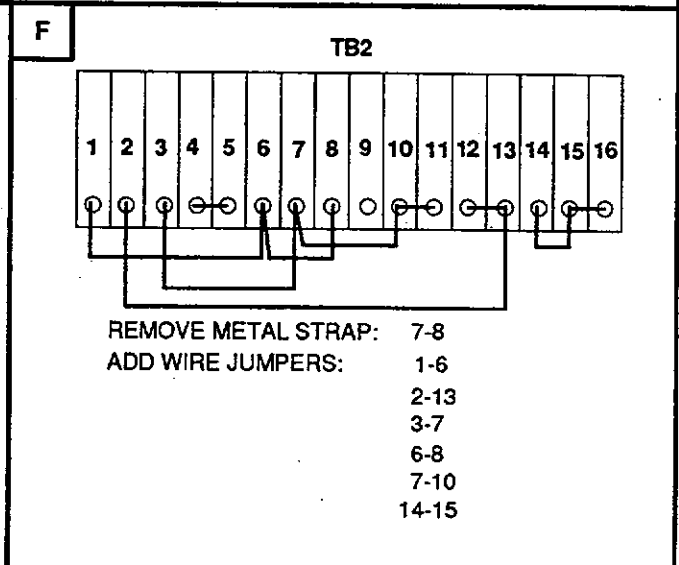
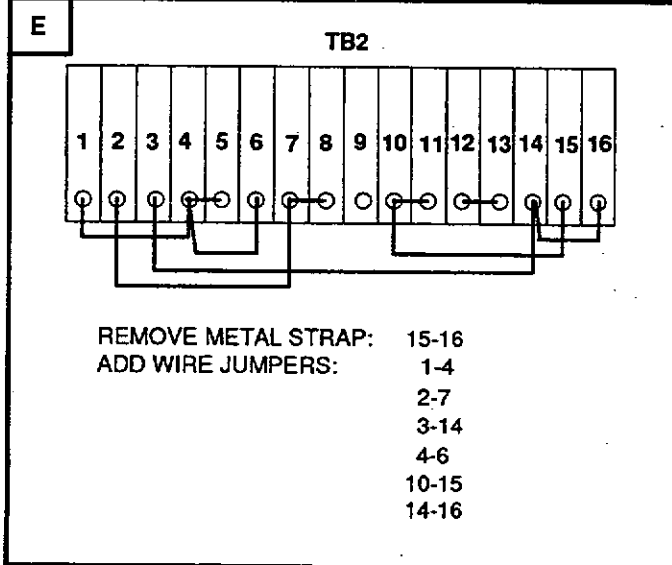
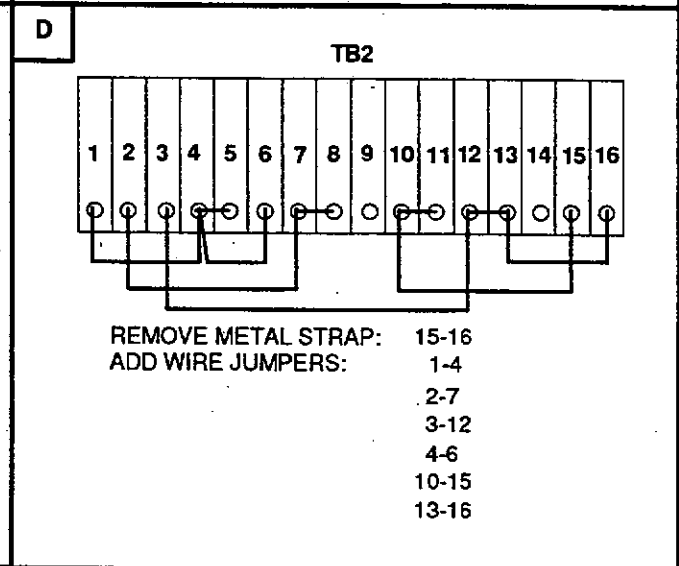
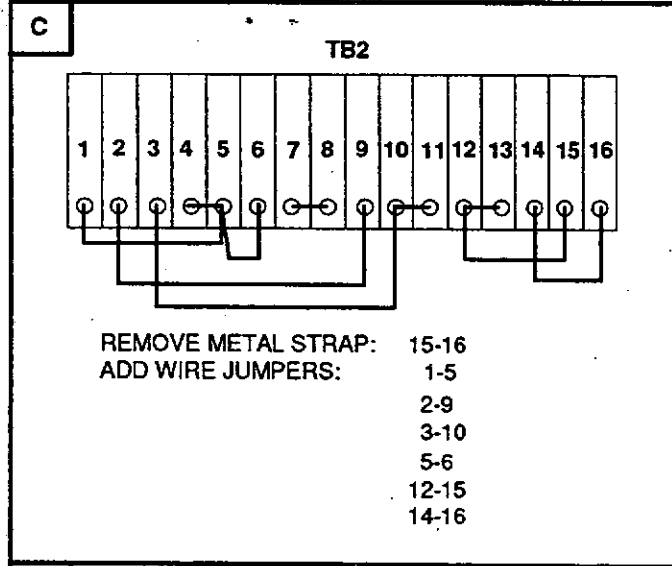
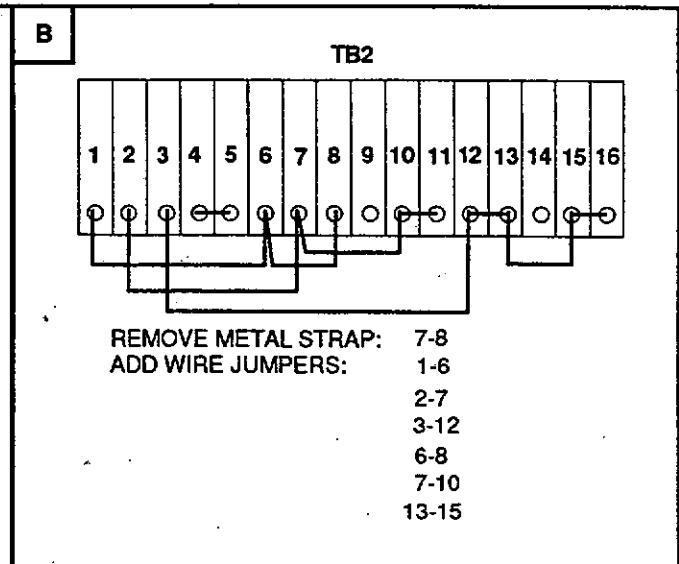
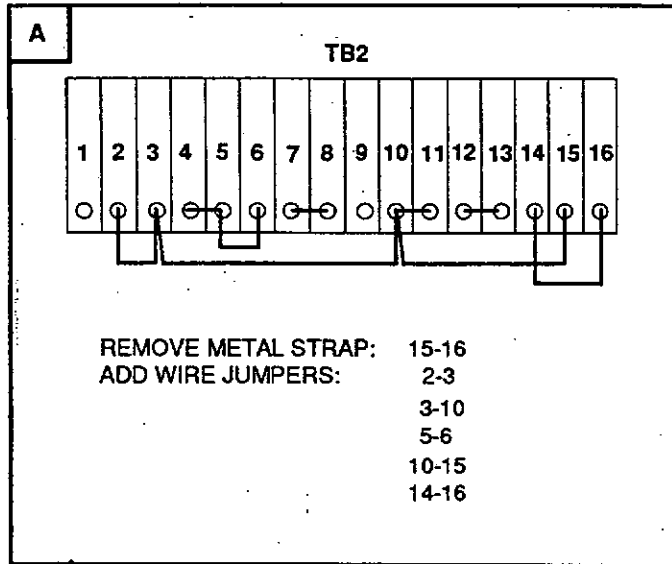
Connecting Jumpers at Terminal Strip TB2

- [1] Open the TRANSFORMER BOX.
- [2] Determine the supply voltage to be applied to the PROCESSOR.
- [3] Connect the JUMPERS to TB2. See the Connection Tables on pages 17 - 19.

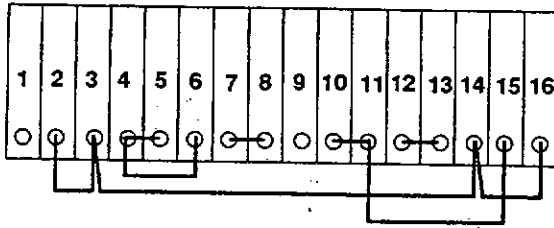


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H136_1904DA

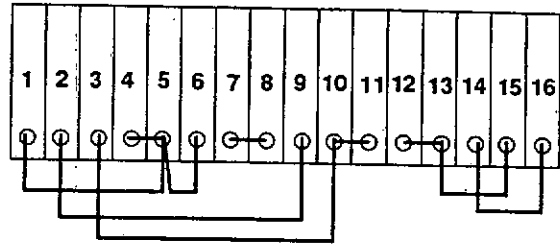




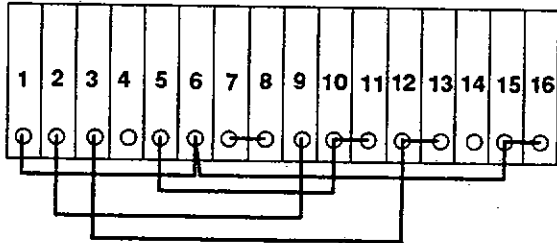
H136_9019EC

G**TB2**

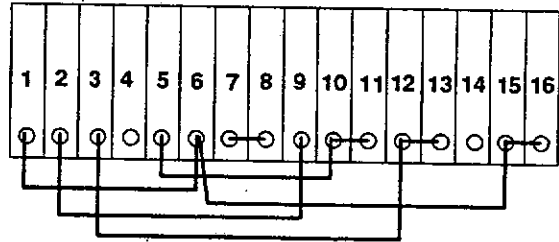
REMOVE METAL STRAP: 15-16
 ADD WIRE JUMPERS:
 2-3
 3-14
 4-6
 11-15
 14-16

H**TB2**

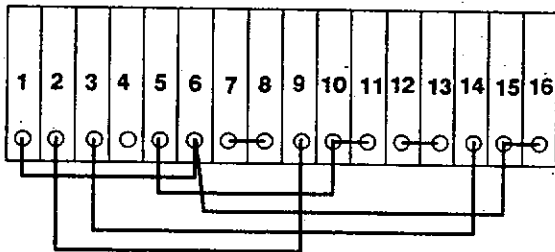
REMOVE METAL STRAP: 15-16
 ADD WIRE JUMPERS:
 1-5
 2-9
 3-10
 5-6
 13-15
 14-16

J**TB2**

REMOVE METAL STRAP: 4-5
 ADD WIRE JUMPERS:
 1-6
 2-9
 3-12
 5-10
 6-15

K**TB2**

REMOVE METAL STRAP: 4-5
 ADD WIRE JUMPERS:
 1-6
 2-9
 3-12
 5-10
 6-15

L**TB2**

REMOVE METAL STRAP: 4-5
 ADD WIRE JUMPERS:
 1-6
 2-9
 3-14
 5-10
 6-15

H136_9020EC

Connecting Main Power

WARNING

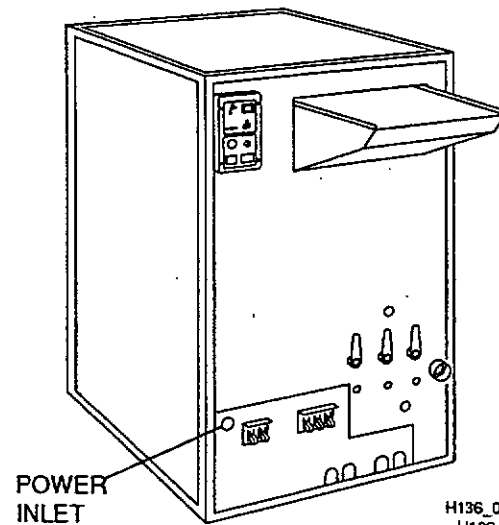
Dangerous Voltage

- [1] Check that the wall POWER SWITCH is in the "OFF" position.

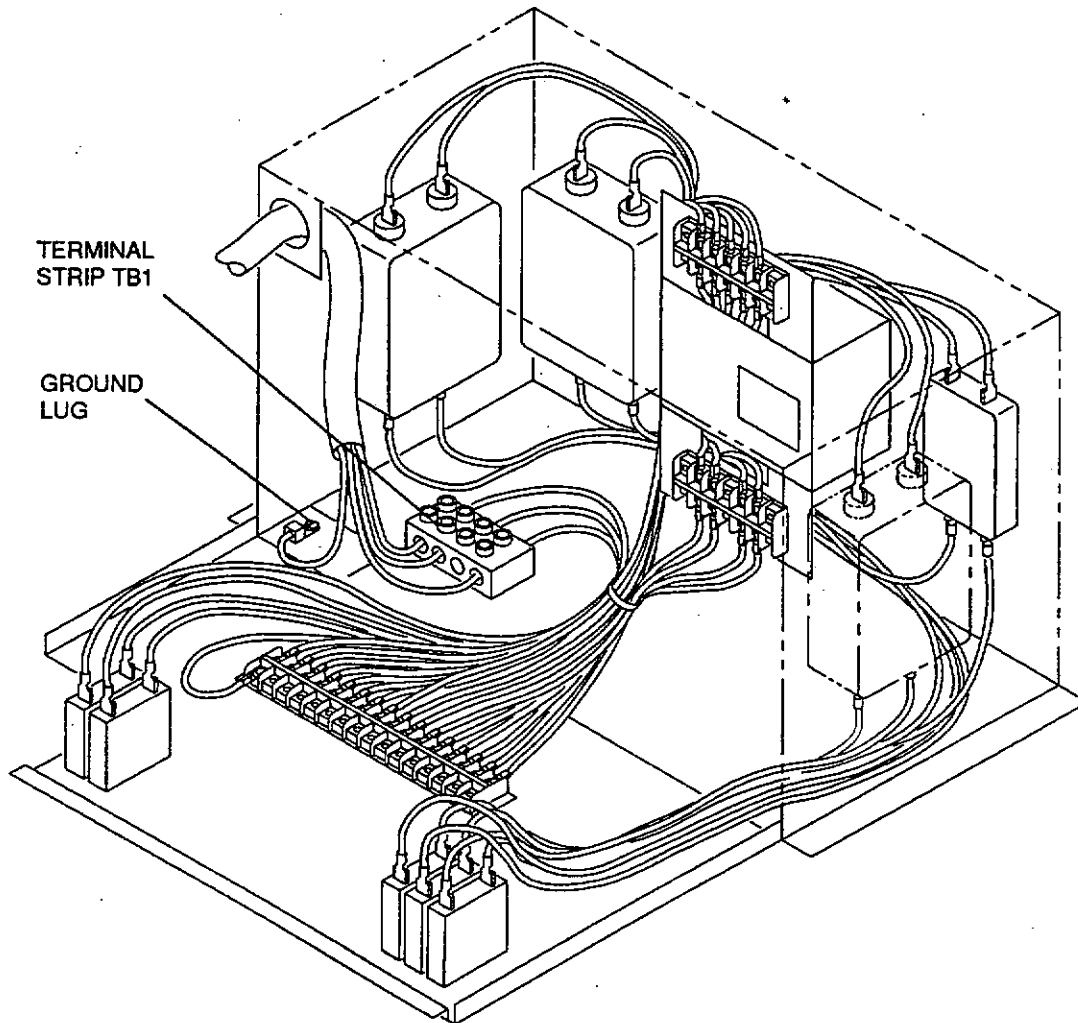
IMPORTANT

Wiring must meet all local codes.

- [2] Connect the main input wires, through the POWER INLET, to TERMINAL STRIP TB1 and to the GROUND LUG. See the Connection Table on pages 17.



H136_0803ACA
H136_0803AA



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H136_1903DA

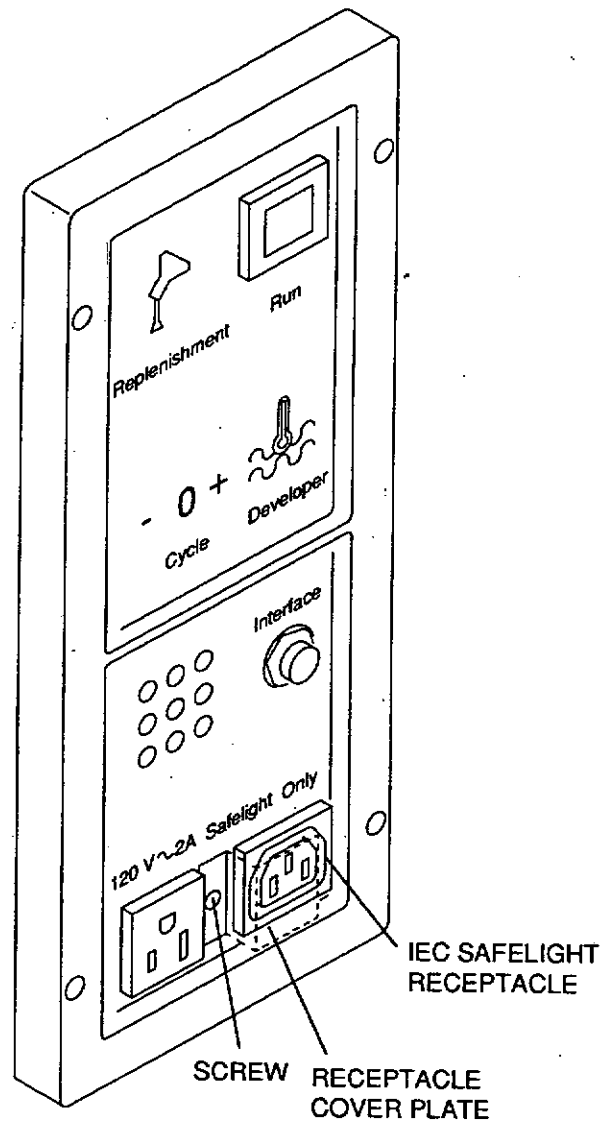
Changing the Processor for International Use

The factory setup of the SAFELIGHT RECEPTACLE is for use in North America. To make a conversion for international use, do the following procedure.

WARNING

Dangerous Voltage

- [1] Check that the wall POWER SWITCH is in the "OFF" position.
- [2] Remove the SCREW.
- [3] Reverse the position of the RECEPTACLE COVER PLATE to allow access to the IEC SAFELIGHT RECEPTACLE.
- [4] Install the SCREW.



H136_2500CCC
H136_2500CA

Making the Exhaust Connections

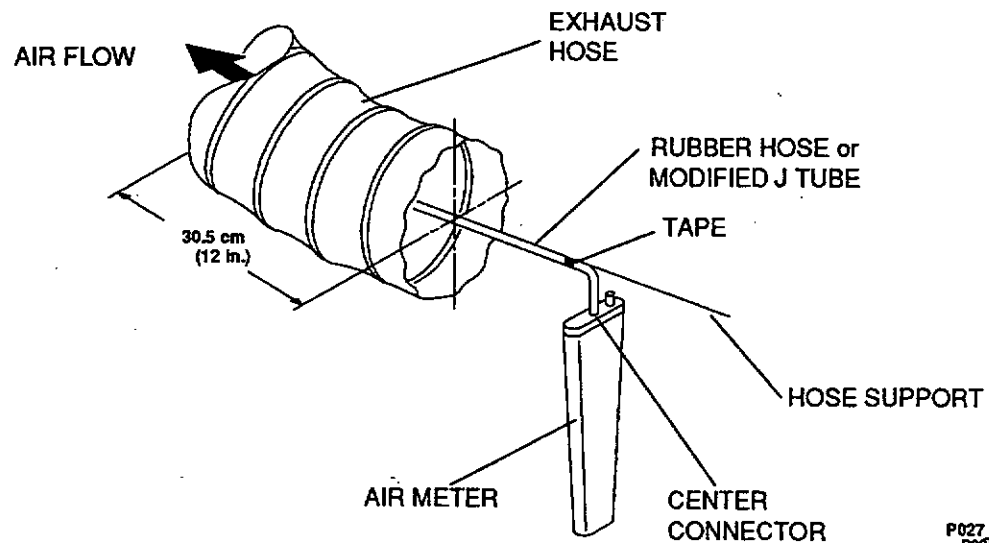
IMPORTANT

- Use 7.6 cm (3 in.) DUCT or HOSE.
- Do not make a solid connection at the building end.

[1] Connect either ELBOWS and a length of rigid DUCT or flexible EXHAUST HOSE to extend between the PROCESSOR and the EXHAUST DUCT of the building. Do not connect the EXHAUST DUCT to the PROCESSOR at this time.

CAUTION

- Prevent corrosion.
 - The specifications for venting must be maintained 24 hours a day, 7 days a week. Installation of an auxiliary ventilation fan might be necessary.
- [2] Measure the static pressure in the DUCT using a MODIFIED J TUBE (CHECK TUBE 592380) and AIR METER TL-2431. Make the measurement 30.5 cm (12.0 in.) from the end of the DUCT to be connected to the PROCESSOR.



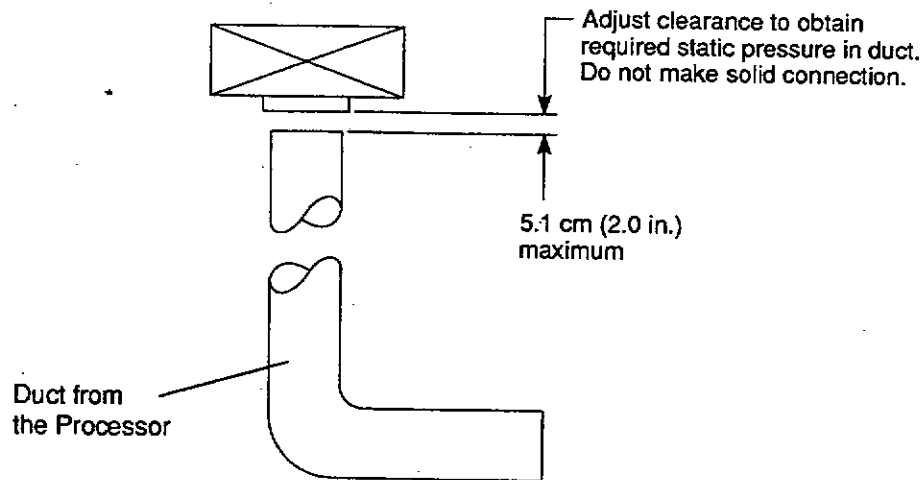
P027_0100BCA
P027_0100BA

- [3] To obtain the correct static pressure, adjust the clearance at the building end of the DUCT. See the table.

Static Pressures

Duct Diameter	Negative Static Pressure, (Water Head)	
	Minimum	Maximum
7.6 cm (3 in.)	0.76 mm (0.03 in.)	1.02 mm (0.04 in.)
10.2 cm (4 in.)	0.25 mm (0.01 in.)	0.51 mm (0.02 in.)

- [4] Connect the DUCT to the PROCESSOR.



H108_0008BCA
H108_0008BA

Checking for Correct Operation

Checking for Leakage

- [1] Fill the DEVELOPER, FIXER, and WASH TANKS to the overflow level with water.
- [2] Install the TOP COVER and RECEIVING-END PANEL.
- [3] Move CIRCUIT BREAKERS CB2 and CB3 to the "I" position.
- [4] Move the MAIN CIRCUIT BREAKER CB1 to the "I" position.
- [5] Check the PROCESSOR for leakage in the following areas:
 - QUICK DISCONNECT on the FIXER/WASH CROSSOVER
 - FITTINGS on the RECIRCULATION PUMP
 - CHECK VALVES on the REPLENISHMENT PUMP
 - FITTINGS on the TANKS
 - THERMOWELL ASSEMBLIES
 - PLUMBING FIXTURES
 - DRAIN VALVES
 - Main WATER INLET.
- [6] Check the following:
 - The DEVELOPER REPLENISHMENT HOSE and the FIXER REPLENISHMENT HOSE are connected correctly.
 - The REPLENISHMENT PUMP is operating.
 - The OVERFLOW HOSES are draining water from the TANKS.

Checking Miscellaneous Components

- [1] Check that the TOP COVER and RECEIVING-END PANEL are installed.
- [2] Check that the DRYER BLOWER MOTOR operates.
- [3] To check the WATER SOLENOID, listen for the sound of water entering into the PROCESSOR.

- [4] To check that the transport system and the REPLENISHMENT PUMP operate, feed one 35 x 43 cm (14 x 17 in.) sheet of processed film into the PROCESSOR.
- [5] Check that the transport speed is correct for the cycle selected. If necessary, see the "Service Manual" for the "Transport Speed" adjustment.
- [6] Measure the replenishment obtained when one sheet of 35 x 43 cm (14 x 17 in.) film is fed into the PROCESSOR. If necessary, see the "Service Manual" for the "Replenishment Rate Adjustment".

Checking the Control Panel

- [1] Check that the developer temperature illuminated on the CONTROL PANEL is within range, between 21 - 35°C (69.8 - 95°F), for the cycle selected.

Final Steps

- [1] Move the MAIN CIRCUIT BREAKER CB1 to the "O" position to deenergize the PROCESSOR.
- [2] Open the DEVELOPER and FIXER DRAIN VALVES to drain the TANKS.
- [3] Close the DEVELOPER and FIXER DRAIN VALVES.
- [4] Install all PANELS.
- [5] Check that the HOLDING SCREWS on the SIDE PANELS are tight.

IMPORTANT

After the PROCESSOR has been in normal operation for 1 or 2 days, check again for any leakage. If necessary, tighten any loose connections.

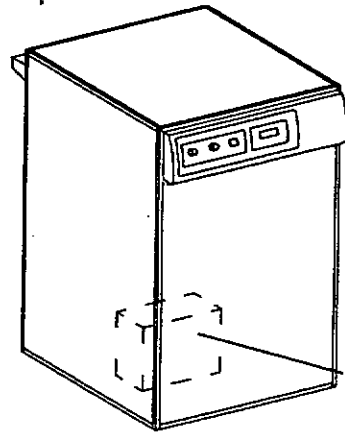
Final Checkout

Water Conservation Mode

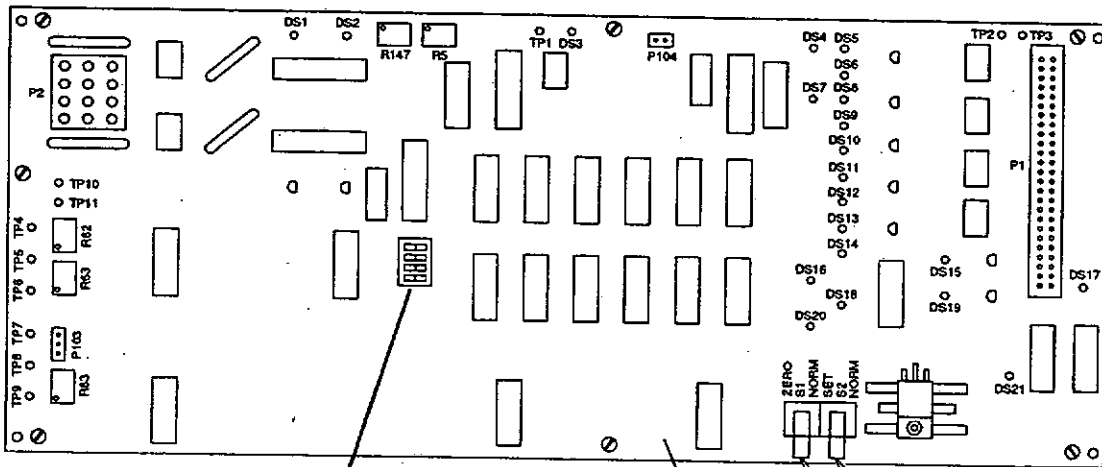


Possible damage from electrostatic discharge.

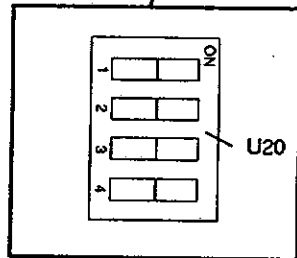
- [1] Open the ELECTRICAL BOX.
- [2] On the 100 CIRCUIT BOARD, check that SWITCH U20-2 is in the "ON" position for the Conservation Mode.



ELECTRICAL BOX
H136_1906ACA
H136_1906AA



100 CIRCUIT BOARD



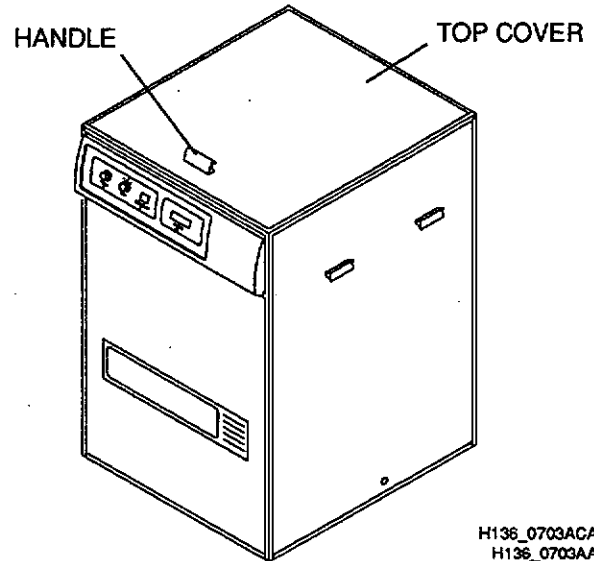
H136_1701DCA
H136_1701DA

Changing the Top Cover Position

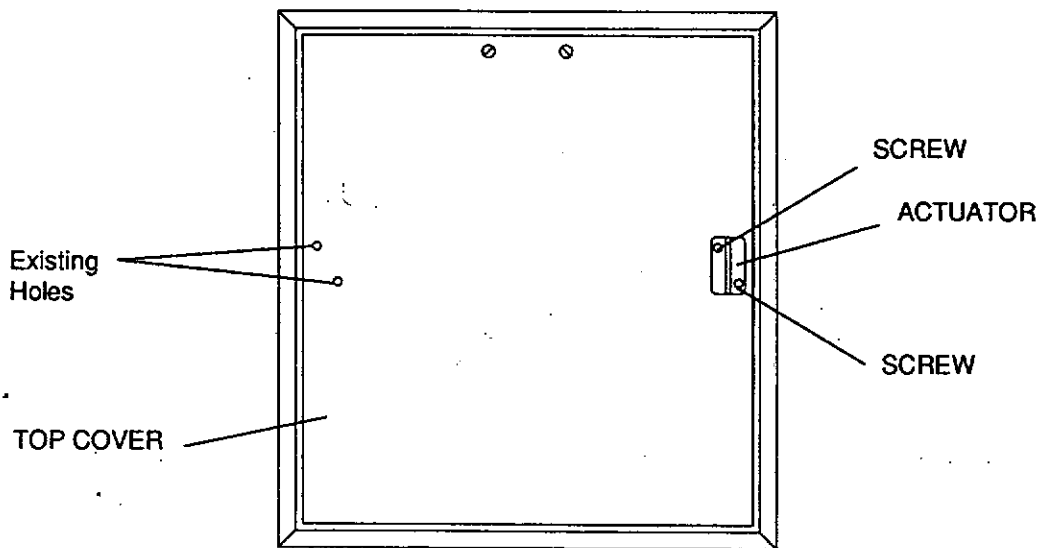
IMPORTANT

The normal position of the TOP COVER is with the HANDLE at the receiving end of the PROCESSOR. The ACTUATOR is installed for correct operation with the TOP COVER in this position. If it is necessary to use the TOP COVER with the HANDLE at the feed end, do the following procedure to change the position of the ACTUATOR.

- [1] Remove the 2 SCREWS and the ACTUATOR.
- [2] Install the ACTUATOR on the opposite side of the TOP COVER. Use the existing 2 holes and the 2 SCREWS from step 1.



H136_0703ACA
H136_0703AA



H136_0601BCA
H136_0601BA

Final Adjustments

As a final check, do the following adjustments for optimum operation of the PROCESSOR. See the "Service Manual".

- 9-Volt Adjustment
- Zero Adjustment of the Developer Temperature Meter
- Meter to Tank Temperature Adjustment
- Developer Temperature Adjustment
- Clear Time Circuit Adjustment
- Film Feed Signal Adjustment
- Drive Transport Speed Adjustment

Setup of Operating Values

The following table includes the factory setup values for process time and developer temperature. It is possible to change these values. For a special setup, see the "Service Manual" for the adjustment necessary to change the values. Record the new values in the "Cycles of Operation" procedure in the "Operator Manual" so that the information is available to the operator.

Cycle Information for the Processor

Cycle	Factory Setup	
	Process Time minutes	Developer Temperature
-	12	27.2°C (80.9°F)
0	10	28.6°C (83.5°F)
+	8	30.0°C (86.0°F)

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Health Sciences
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