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Kodak DryView 8700/8500 LASER IMAGERS

SERVICE MANUAL, Rev. M

120-2688
78-6970-6528-8

Revision History

The original issue and revisions of the Service Manual for the *Kodak DryView* 8700/8500 LASER IMAGER are identified as follows:

Issue Date (Rev. A): 1/96, (Rev. B): 4/96, (Rev. C): 9/96, (Rev. D): 12/96, (Rev. E): 3/96, (Rev. F): 5/97, (Rev. G): 8/97, (Rev. H): 7/98, (Rev. J): 4/99, (Rev. K): 3/00, (Rev. L): 3/01, (Rev. M): 5/01

Section	Text Rev.	Pages Changed in Current Revision (M)
Title/a	M	Title and a pages
Warnings	L	–
TOC	M	xi, xiii, xviii
1	L	–
2	L	–
3	M	3-21
4	L	–
5	M	5-1, -4, -6, -7
6	L	–
7	M	7-1, this section was previously Section 8.
8	M	8-1, -30, -31, -44, -61 thru -65, this section was previously Section 9.
9	M	9-1, this section was previously Section 7, the revision level of the Functional Diagrams did not change.

Warnings and Cautions for *Kodak DryView* 8700/8500 LASER IMAGER

Safety Instructions

Read and understand all instructions before using.

⚠ WARNING

This equipment is operated with hazardous voltage which can shock, burn, or cause death.

Remove wall plug before servicing equipment. Never pull on cord to remove from outlet. Grasp plug and pull to disconnect.

Do **not** operate equipment with a damaged power cord.

Do **not** use an extension cord to power this equipment.

Position the power cord so it will not be tripped over or pulled.

Connect this equipment to **a grounded outlet**.

Use only the power cord supplied with this equipment.

Do not place a portable multiple–socket outlet (power strip) on the floor. Mount the power strip on a wall or on the underside of a table.

⚠ WARNING

Not protected against ingress of liquids including bodily fluids.

⚠ WARNING

For continued protection against fire, replace fuses only with fuses of the same type and rating.

⚠ WARNING

This equipment contains moving parts that may be accessible to the user. Loose clothing, jewelry, or long hair may cause minor personal injury or damage to the equipment. Do not operate equipment with the covers open. Do not operate equipment with any of the safety interlocks overridden.

⚠ WARNING

This equipment is not contained in a sealed cabinet. Therefore, it must not be used in locations where it can come in contact with liquids, including bodily fluids.

⚠ CAUTION

Do not use in the presence of flammable anesthetics, oxygen or nitrous oxide. This equipment does not have a gas-sealed electronics enclosure and could ignite any flammable or explosive gases present in its environment.

⚠ CAUTION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. Those limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- FCC ID: PA4870085007E2620

⚠ CAUTION

This equipment employs a 150 milliwatt laser. Laser radiation may be present when the machine operates without panels or covers installed.

Use of controls or adjustments, or performance of procedures other than those specified herein, may result in eye damage.

Covers shall be removed by authorized service personnel only.

⚠ CAUTION

This equipment is intended to connect to other medical devices. Only qualified service personnel may perform installation and service maintenance. The laser in the equipment is not a patient device. Therefore, the equipment must be installed no closer than 1.83 meters from a patient bed or chair.

⚠ CAUTION

U.S. Federal law restricts this device to the sale by, or on the order of, a licensed health care practitioner.

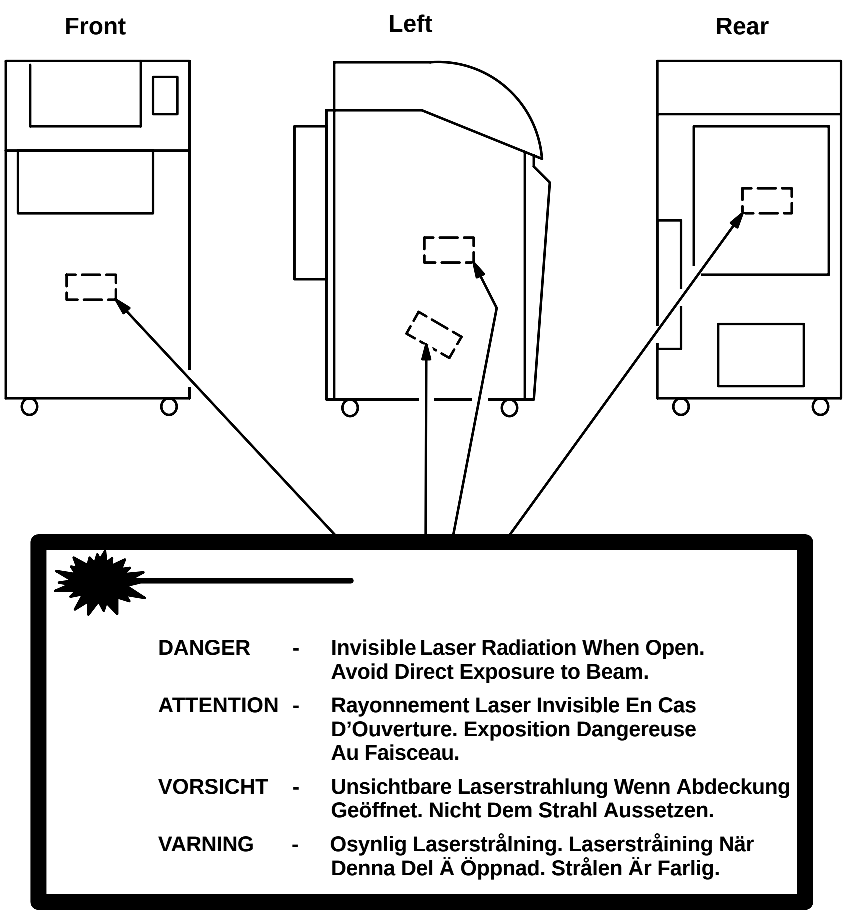
⚠ CAUTION

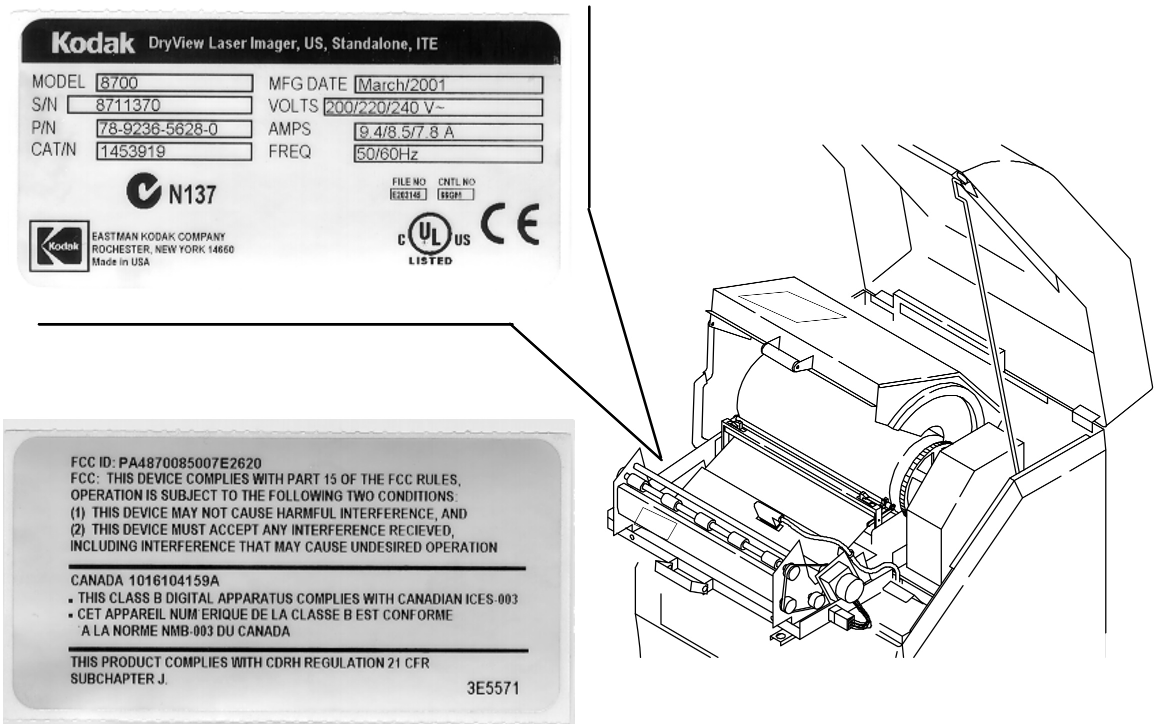
Do not substitute or modify any part of this equipment without approval of Eastman Kodak Company.

⚠ CAUTION

General External Cleaning: This equipment may be cleaned with a damp cloth using water with mild detergent, or commercial electronic equipment cleaner.

Class 1 Laser
Laser de catégorie 1
Laser-Klasse 1
Laser di Classe 1
Klass 1 Laser





Label located on back of IMAGER.

Warnings and Cautions for External Interface Box Accessories

Read and understand all instructions before using.

Classifications

UL Classified

File Number E183646

Control Number 9R46

Medical Equipment

UL 2601-1 CAN/CSA No. 601.1

Classified by Underwriters Laboratories Inc.® With Respect to Electric Shock, Fire, Casualty and Medical Hazards only in Accordance with UL 2601-1, CAN/CSA C22.2 No. 601.1 and IEC 601.1.

CAUTION

Do not use in the presence of flammable anesthetics, oxygen or nitrous oxide. This equipment does not have a gas sealed electronics enclosure and could ignite any flammable or explosive gases present in its environment.

WARNING

This equipment is operated with hazardous voltage which can shock, burn, or cause death.

Remove wall plug before servicing equipment. Never pull on cord to remove from outlet. Grasp plug and pull to disconnect.

Do **not** operate equipment with a damaged power cord.

Do **not** use an extension cord to power this equipment.

Position the power cord so it will not be tripped over or pulled.

Connect this equipment to **a grounded outlet**.

Use only the power cord supplied with this equipment.

Do not place a portable multiple–socket outlet (power strip) on the floor. Mount the power strip on a wall or on the underside of a table.

⚠ WARNING

Not protected against ingress of liquids, including bodily fluids.

⚠ WARNING

For continued protection against fire, replace fuses only with fuses of the same type and fuse rating.

⚠ WARNING

This equipment is not contained in a sealed cabinet. Therefore, it must not be used in locations where it can come in contact with liquids, including bodily fluids.

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

⚠ CAUTION

General External Cleaning: This equipment may be cleaned with a damp cloth using water with mild detergent, or commercial electronic equipment cleaner.

Type B Applied Part

Agency, Regulatory and CE Marking Compliance

All agency, regulatory and CE marking information may be found in the User Guide for these models.

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Section 1 – Specifications

1-1. Dimensions

Height:	1279 mm (50.4 in.) – Top Cover closed 1641 mm (64.6 in.) – Top Cover open
Width:	661 mm (26.0 in.) – Left Door closed 1218 mm (47.9 in.) – Left Door open
Depth:	813 mm (32.0 in.) – Supply and Filter Doors closed 1392 mm (54.9 in.) – Supply and Filter Doors open
Weight:	250 kg (550 lbs)

1-2. Electrical

Voltage:	200/220/240 VAC ± 10% 50/60 Hz ± 3%
Current Draw:	9 Amperes (maximum)
Power Consumption:	1800 watts (maximum) during warm up

1-3. Storage Environment

Temperature:	–35° to 60°C (–31° to 140°F)
Humidity:	10% to 90% RH, Noncondensing

1-4. Operating Environment

Temperature:	15° to 35°C (59° to 95°F)
Humidity:	20% to 85% RH, Noncondensing
Vibration:	0.01 Gs (maximum)
Magnetic Field:	≤ 100 Gauss
Leveling:	2 degrees or 3/4 inch difference maximum from front to back and side to side

1-5. Environmental Effects

Heat Load:	2300 BTU/Hr (average)
Floor Load:	200 lb/ft^2 (976 kg/m^2)
Acoustical Noise:	55 dB at one meter (70 dB momentarily)

1-6. Host Control

- RS232 or RS422 (jumper selectable) connection to IMAGER or UKEIB.
- Can be located up to one kilometer (3280 feet) from IMAGER when using a UKEIB and fiber cable.

1-7. Keypad

- Available image formats include 1:1, 2:1, 4:1, 6:1, 9:1, 12:1, 15:1, 16:1, and 20:1, as well as up to 4 custom formats (for custom formats, images in the same row must all be the same format).
- Images can be acquired and stored in random or sequential order.
- Can be located up to one kilometer (3280 feet) from IMAGER (fiber cable).

1-8. Cables

- Keypad: Not plenum rated
  3 m (10 ft.), 10 m (33 ft.)
  30 m (98 ft.), 60 m (197 ft.)
- RS232: Supplied by OEM
  Not plenum rated
  15 ft.
- Digital: Plenum rated
  3 m (10 ft.), 10 m (33 ft.)
  30 m (98 ft.), 60 m (197 ft.)
- Analog: Plenum rated
  3 m (10 ft.), 10 m (33 ft.)
  30 m (98 ft.), 60 m (197 ft.)
- Fiber Optic: Plenum rated
  3 m (10 ft.), 10 m (33 ft.)
  30 m (98 ft.), 60 m (197 ft.)
  100 m (330 ft.), 150 m (490 ft.)
  200 m (653 ft.), 250 m (816 ft.)
  300 m (1090 ft.), 500 m (1652 ft.)
- Characteristics:
  Fiber (glass): 62./125 µm
  Bandwidth: 160 MHz/km
  Attenuation < 4 db/km at 850 nm
  Test attenuation per FOTP 171 S–T Connector

Section 2 – Installation

2-1. Unpacking

Note

Steps 1 through 7 of this procedure can be performed by dock personnel or a Kodak-trained technician. Steps 8 through 32 must be performed by a Kodak-trained technician.

Note

Refer to Figure 2-1 while performing steps 1 through 7 of this procedure.

1. Remove the accessories box from the top of the shipping crate.
2. Remove the wire clamps that secure the front panel of the shipping crate, then remove the front panel.
3. Install the front panel as a ramp:
   a. Lay the front panel down in front of the crate.
   b. Unfold the small ramp at the top end of the front panel.
   c. Set the bottom end of the front panel on the front edge of the crate. Align the holes in the panel with the holes in the crate.
   d. Use the two bolts stored underneath the IMAGER to secure the ramp to the crate.
4. Remove the foam packing from the front and top of the IMAGER.
5. Grasp the tape handle on the front of the IMAGER. Slowly pull the IMAGER out of the crate and ease it down the ramp.
6. Remove the filter from the crate.
7. Roll the IMAGER to the installation location.

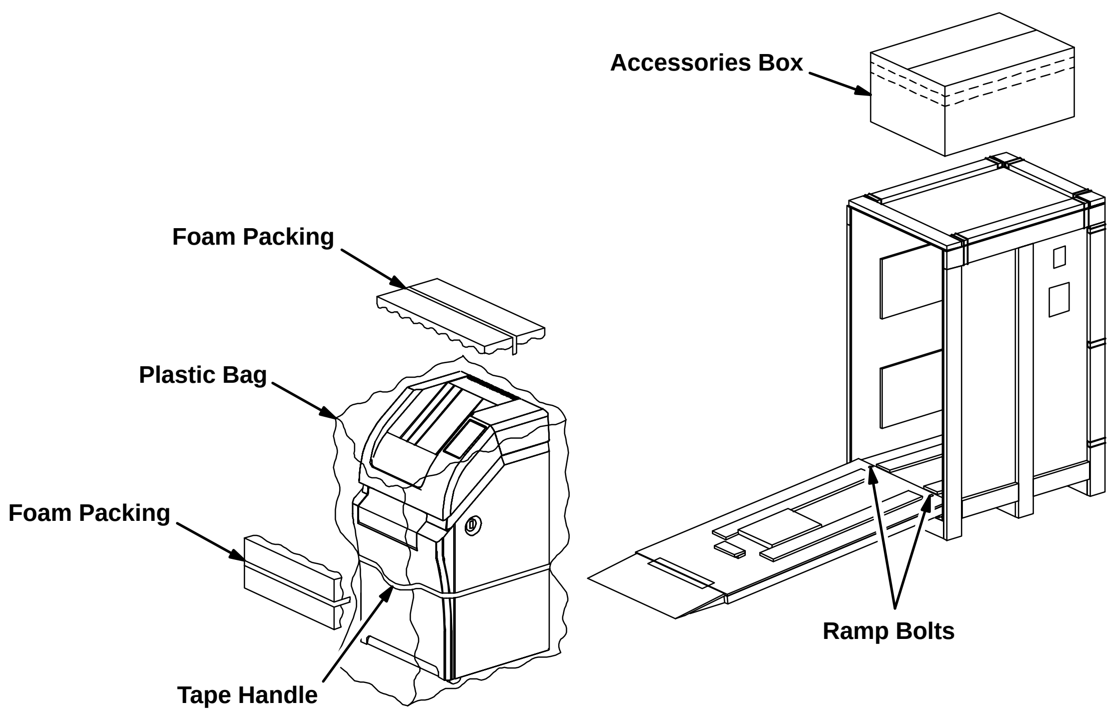


Figure 2-1.

Note

The remaining steps of this procedure must be performed by a Kodak-trained technician.

8. Remove the plastic bag from the IMAGER.
9. Remove the power cord, warranty, User Guide, and installation kit from the exit tray.
10. Remove all the filament tape from the exterior of the IMAGER.
11. Remove the plastic sheet from the local panel.
12. Open the top cover.
13. Open the left side and supply doors via their mechanical releases.
14. To gain access to the shipping screw on the right side of the exposure module:
    a. Remove the bracket (three screws) that secures the top edge of the front cover.
    b. Lift the front cover up and away from the frame.

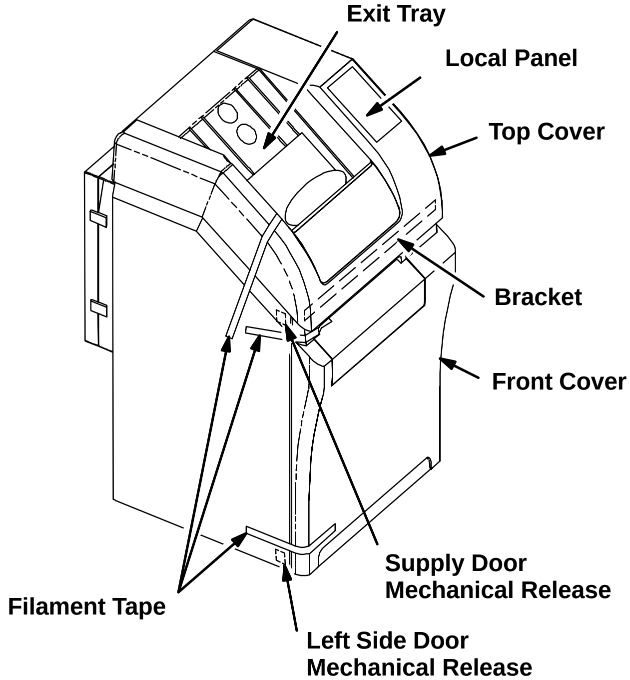


Figure 2-2.

15. Use a 4 mm ball-end Allen wrench to remove the three shipping screws that secure the exposure module to the frame. There are two screws on the left side and one on the right (front). Discard the screws.

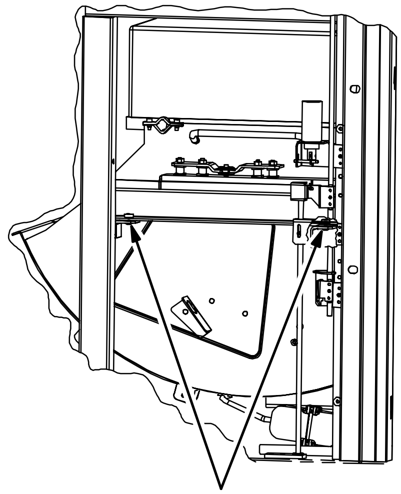


Figure 2-3.

16. Remove the filament tape from the pickup arms.
17. Pull the pickup arms down and remove the foam block located above the pickup assembly.

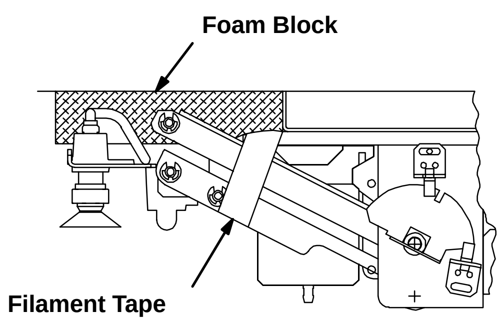


Figure 2-4.

18. Remove the filament tape from the rollback handle.
19. Remove the filament tape from the wood block that is located between the frame and the transport assembly, then remove the wood block.

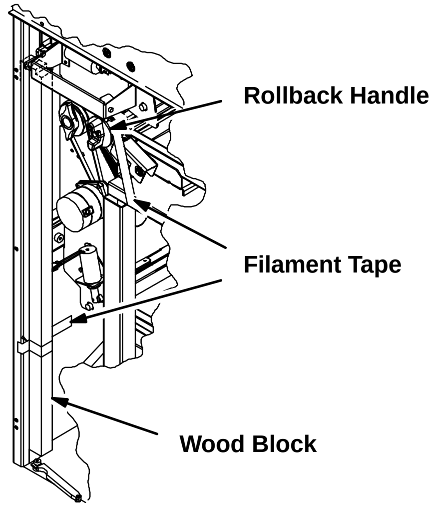


Figure 2-5.

20. Remove the yellow caution tag from the handle on the transport assembly.
21. Release the processor latch and slide it to the right.
22. Grasp the handle on the front of the processor/exit assembly and pull the assembly out to its extended position.
23. Remove the filament tape from both ends of the processor cover.

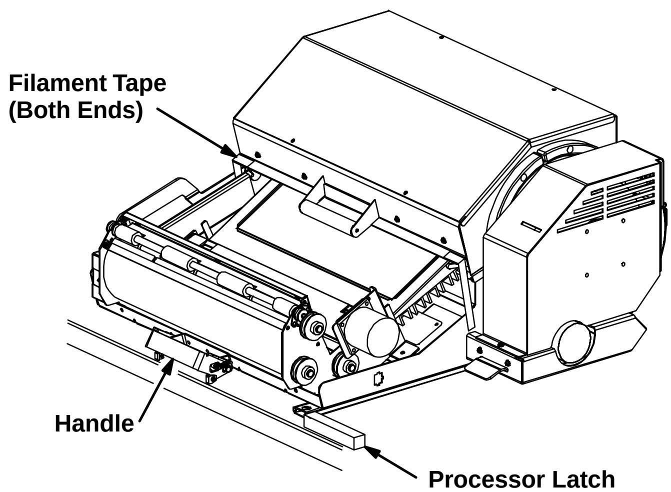


Figure 2-6.

24. Open the processor cover.
25. Remove the tape from the foam sheet that is wrapped around the drum, then slowly pull the foam sheet out of the processor.
26. Close the processor cover by lifting the cover slightly and pulling the support arm forward.
27. Press the blue release lever on the right side of the processor, then slide the processor/exit assembly back into place.
28. Slide the processor latch to the left to secure the processor/exit assembly.
29. Install the front cover and bracket.
30. Close the supply door and left side door.
31. Close the top cover by lifting the cover slightly and pushing the support rod backward.

32. Install the charcoal filter in housing at back of machine.

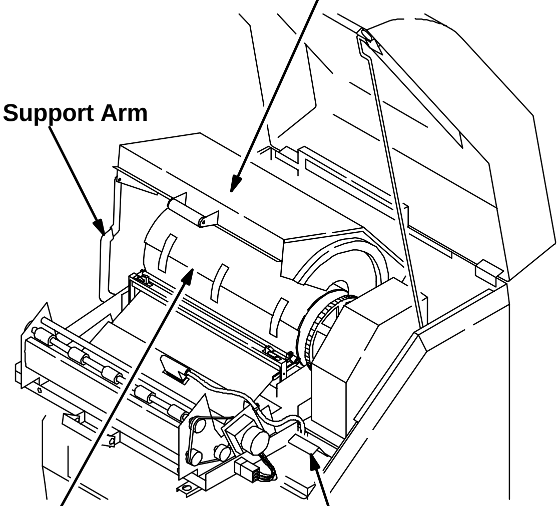


Figure 2-7.

2-2. Voltage Setup

Caution

The IMAGER can be configured to connect with 200, 220, or 240 VAC power sources. Before applying power, ensure that the IMAGER is set for the voltage that most closely matches the AC line voltage.

1. Measure the AC voltage at the wall outlet.
2. Remove the tag from the handle of the power module at the rear of the IMAGER. The tag indicates the factory set voltage. If this setting does not match the line voltage, perform the remaining steps of this procedure.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

3. Flip down the circuit breaker on the rear of the IMAGER, then unplug the power cord.
4. Remove the ventilation plate from the upper left corner of the power module (to gain access to the terminal block above the transformer). Refer to Figure 2-8.
5. Move the black wire to the terminal that most closely matches the AC line voltage.
6. Replace the ventilation plate.

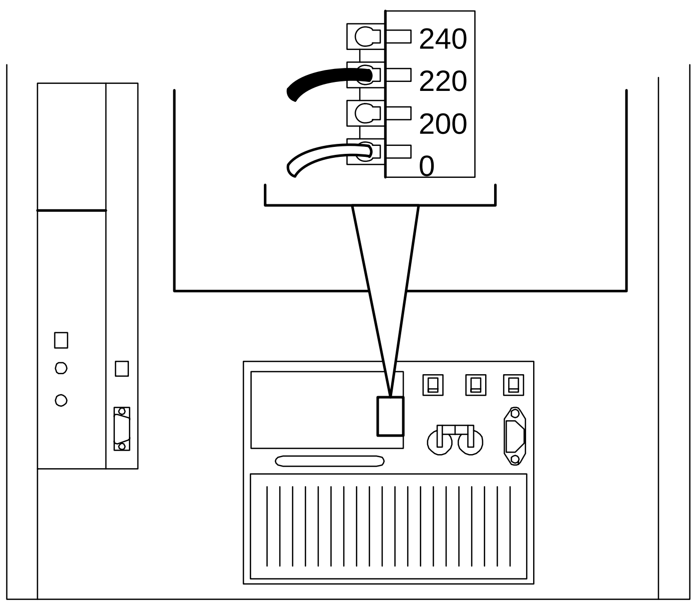


Figure 2-8.

2-3. Cable Connections

2-3-1. Compact Keypad to TDB/C

Note

The compact keypad is no longer available, but may still be on site in some customer locations.

1. If a keypad extension cable is being used, connect it to the compactkeypad cable. Refer to Figure 2-9.
2. Connect the keypad cable (or keypad extension cable) to the TDB/C at the rear of the IMAGER. Refer to Figure 2-9.

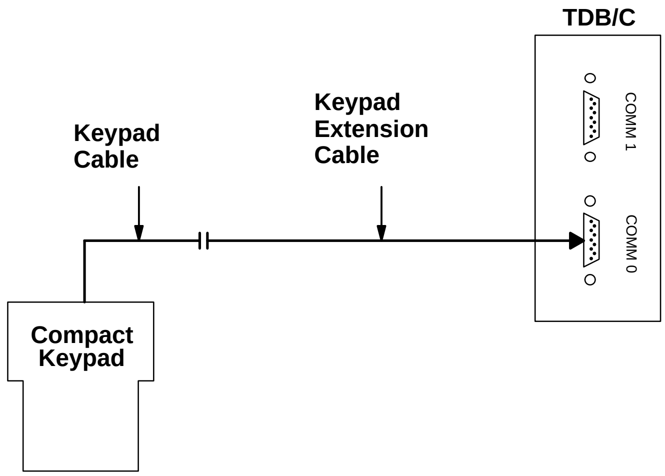


Figure 2-9.

2-3-2. Touch-Screen Keypad to KFEIB to TDB/F

Note

The KFEIB (Keypad/Fiber External Interface Box) only supports touch-screen keypad users. A UKEIB is required for host control users.

1. Connect the keypad cable to the keypad and the KFEIB. Refer to Figure 2-10.

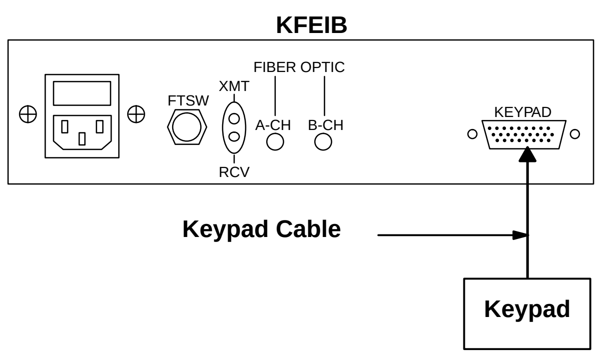


Figure 2-10.

2. If an optional footswitch is to be used, connect it to the KFEIB. Refer to Figure 2-11.

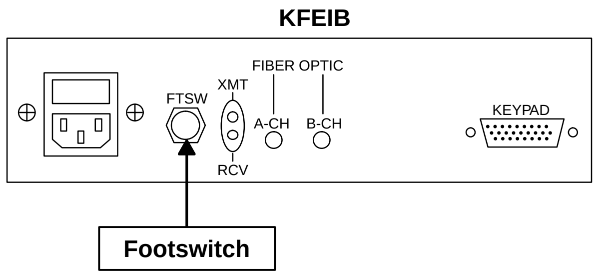


Figure 2-11.

3. Connect the fiber optic cable to the KFEIB. Refer to Figure 2-12.
4. Connect the fiber optic cable to the TDB/F at the rear of the IMAGER. Refer to Figure 2-12.

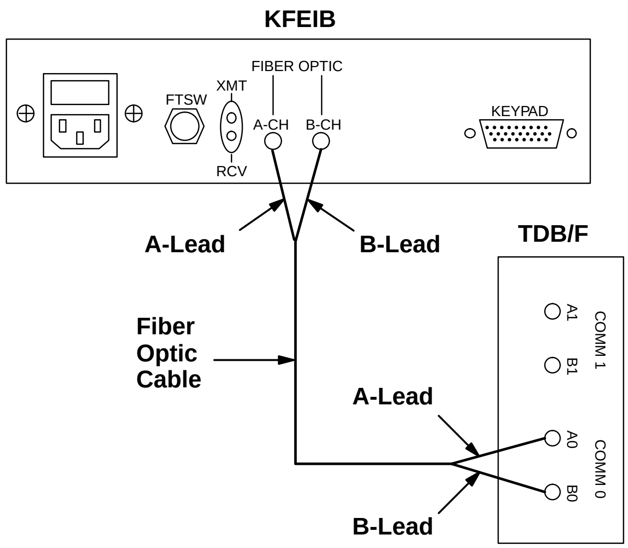


Figure 2-12.

5. Connect the KFEIB power cord. For installations outside the U.S. and Canada, the KFEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The KFEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

2-3-3. Touch-Screen Keypad to UKEIB to TDB/C

Caution

The switches in the UKEIB must be set before any cables are connected to it. Use only approved cables and ensure that the cables are connected to the proper connectors on the UKEIB. If the switches are not set correctly when cables are connected, or unapproved cables are used, or cables are connected incorrectly, components within the UKEIB may be damaged.

1. Set the switches in the UKEIB (Universal Keypad External Interface Box) as required. Refer to Procedure 2-4-1.
2. Connect the keypad cable to the keypad and the UKEIB. Refer to Figure 2-13.
3. If an optional footswitch is to be used, connect it to the UKEIB. Refer to Figure 2-14.

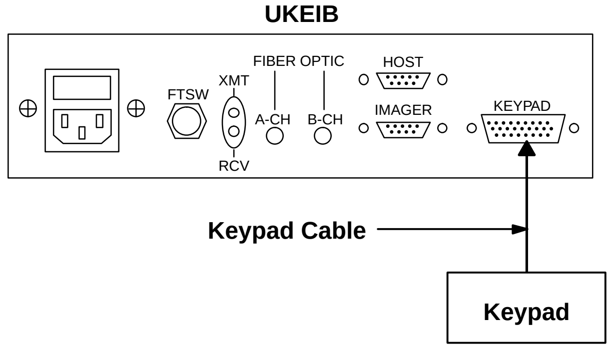


Figure 2-13.

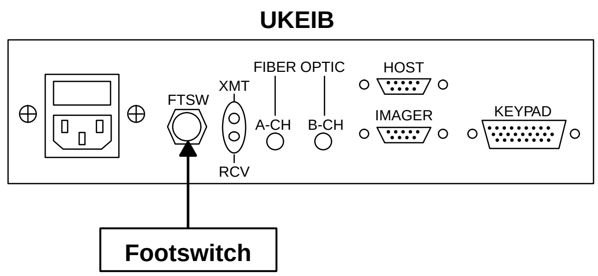


Figure 2-14.

4. Connect the KEIB cable to the UKEIB. Refer to Figure 2-15.
5. Connect the KEIB cable to the TDB/C at the rear of the IMAGER. Refer to Figure 2-15.
6. Connect the UKEIB power cord. For installations outside the U.S. and Canada, the UKEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The UKEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

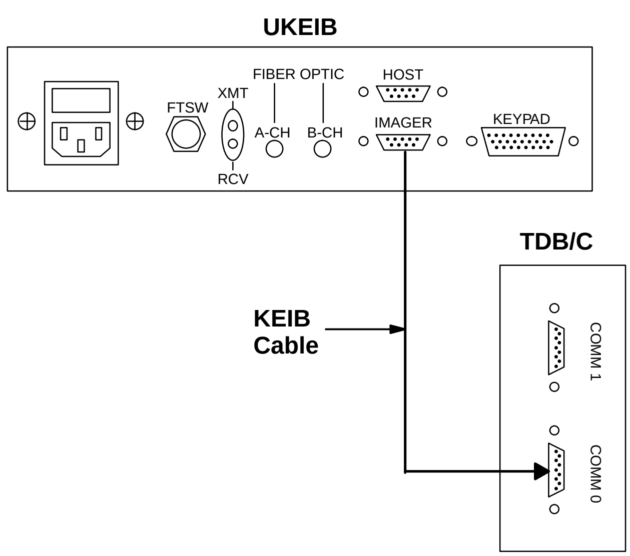


Figure 2-15.

2-3-4. Host Control to UKEIB to TDB/F

Caution

The switches in the UKEIB must be set before any cables are connected to it. Use only approved cables and ensure that the cables are connected to the proper connectors on the UKEIB. If the switches are not set correctly when cables are connected, or unapproved cables are used, or cables are connected incorrectly, components within the UKEIB may be damaged.

Note

Refer to subsection 5-4 for pinouts of the various host adapter cables.

Note

A translator keypad is required for hosts programmed with OEM commands other than Siemens. The translator keypad translates the OEM commands to Kodak commands that can be interpreted by the IMAGER. Different translator keypads are required for different OEMs.

A Siemens' SHPT is not required for the IMAGER. The TDB translates the Siemens commands. For setup instructions refer to the MPC for *Windows* Comm parameters.

1. Set the switches in the UKEIB (Universal Keypad External Interface Box) as required. Refer to Procedure 2-4-1.
2. Connect the host adapter cable to the UKEIB. Refer to Figure 2-16.

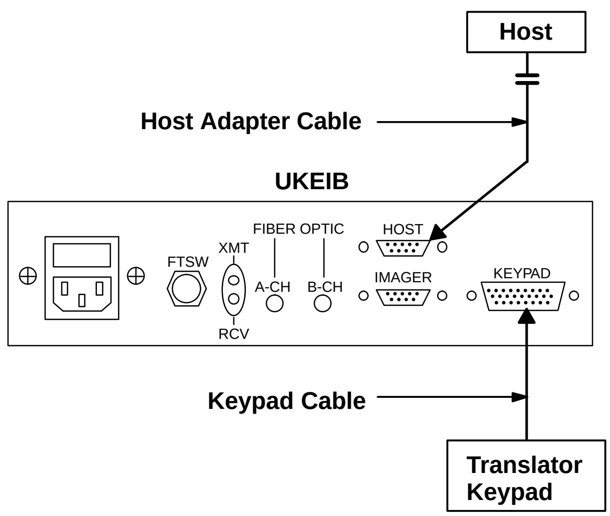


Figure 2-16.

3. If a translator keypad is required, connect the keypad cable to the keypad and the UKEIB. Refer to Figure 2-16.
4. If an optional footswitch is to be used, connect it to the UKEIB. Refer to Figure 2-17.

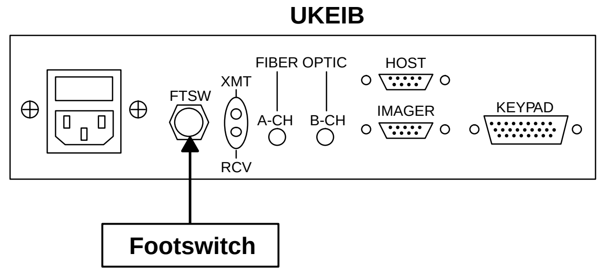


Figure 2-17.

5. Connect the fiber optic cable to the UKEIB. Refer to Figure 2-18.
6. Connect the fiber optic cable to the TDB/F at the rear of the IMAGER. Refer to Figure 2-18.
7. Connect the UKEIB power cord. For installations outside the U.S. and Canada, the UKEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The UKEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

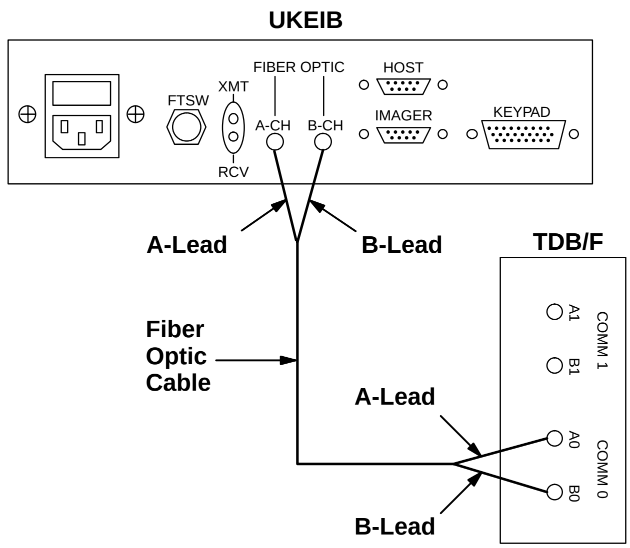


Figure 2-18.

2-3-5. Video Source to VEIB to FIB

1. Check/set the jumpers in the VEIB. Refer to Procedure 2-4-3.
2. Use an analog cable to connect the video signal from the modality to the appropriate Video In connector on the VEIB. Refer to Figure 2-19.
3. If the modality provides a pixel clock signal, use an analog cable to connect it to the appropriate Ext Clock In connector on the VEIB. Refer to Figure 2-19.

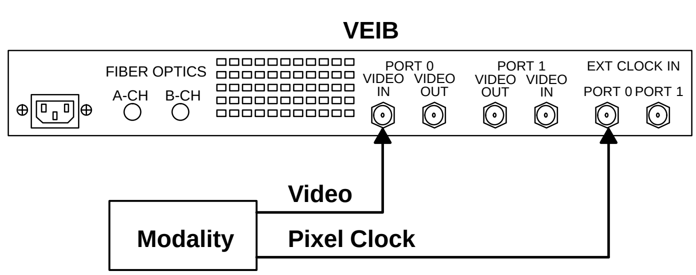


Figure 2-19.

4. Connect the fiber optic image cable to the VEIB. Refer to Figure 2-20.
5. Connect the fiber optic cable to the FIB at the rear of the IMAGER. Refer to Figure 2-20.

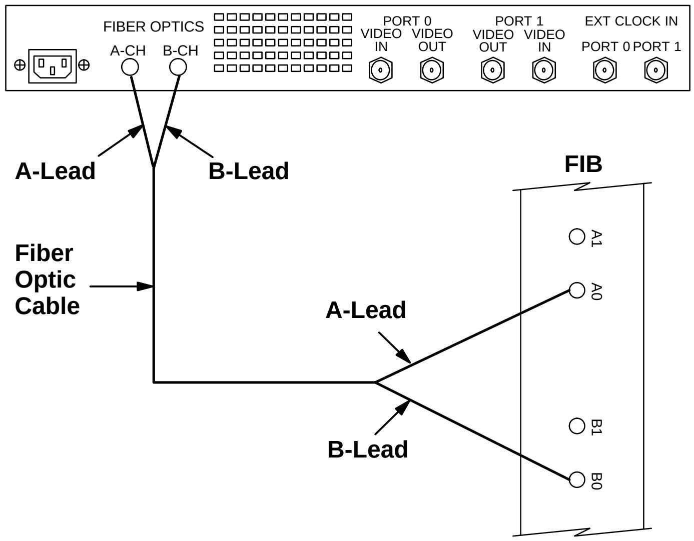


Figure 2-20.

6. Connect the VEIB power cord. For installations outside the U.S. and Canada, the VEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The VEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

2-3-6. Video Source to VIB

1. Use an analog cable to connect the video signal from the modality to the appropriate Video In connector on the VIB at the rear of the IMAGER. Run the analog cable through the ferrite core as shown on the machine label. Refer to Figure 2-21.
2. If the modality provides a pixel clock signal, use an analog cable to connect it to the appropriate Ext Clock In connector on the VIB at the rear of the IMAGER. Refer to Figure 2-21.

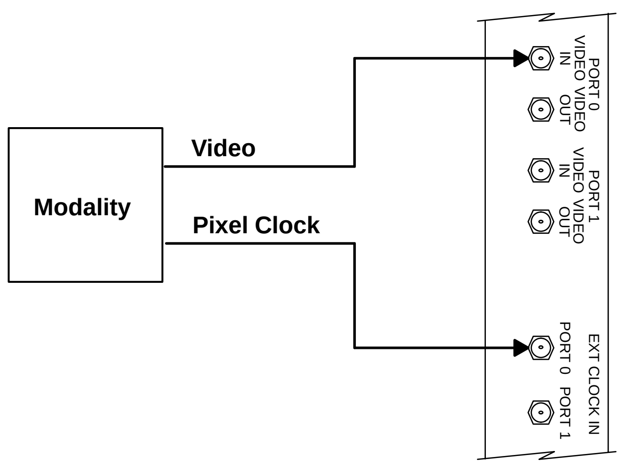


Figure 2-21.

2-3-7. Video Source to EVEIB to FIB

1. Check/set the jumpers in the EVEIB. Refer to Procedure 2-4-5.
2. If the modality provides a pixel clock signal, use an analog cable to connect it to the appropriate Ext Clock In connector on the EVEIB. Refer to Figure 2-22.

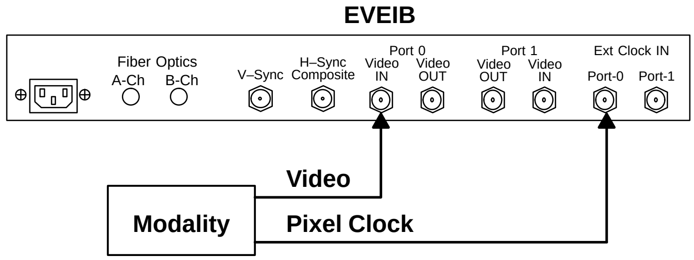


Figure 2-22.

Note

Port 0 is the only port that supports separate Sync inputs. Port 1 only supports standard composite video.

3. The video connections vary depending on the type of video output by the modality:
   - If the modality provides standard composite video, use an analog cable to connect the video signal from the modality to the appropriate Video In connector on the EVEIB. Refer to Figure 2-22.
   - If the modality provides SVGA output (like the PowerPC), an adaptor cable is required. Refer to Figure 2-23. Connect the green BNC cable to the Video In Port 0 connector on the EVEIB. Connect the black BNC cable to the H-Sync/Composite connector. If the modality provides a separate vertical sync signal, connect the yellow BNC cable to the V-Sync connector. The two 15-pin connectors on the adapter cable connect to the PC (longer cable) and the monitor cable.

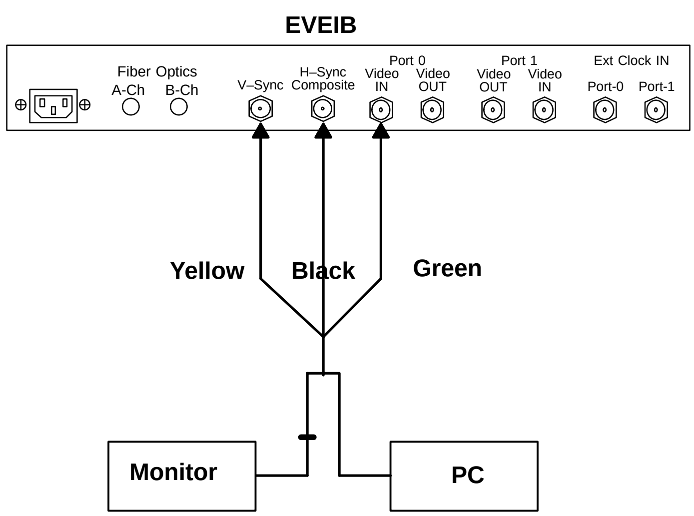


Figure 2-23.

4. Connect the fiber optic image cable to the EVEIB. Refer to Figure 2-24.
5. Connect the fiber optic cable to the FIB at the rear of the IMAGER. Refer to Figure 2-24.
6. Connect the EVEIB power cord. For installations outside the U.S. and Canada, the EVEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The EVEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

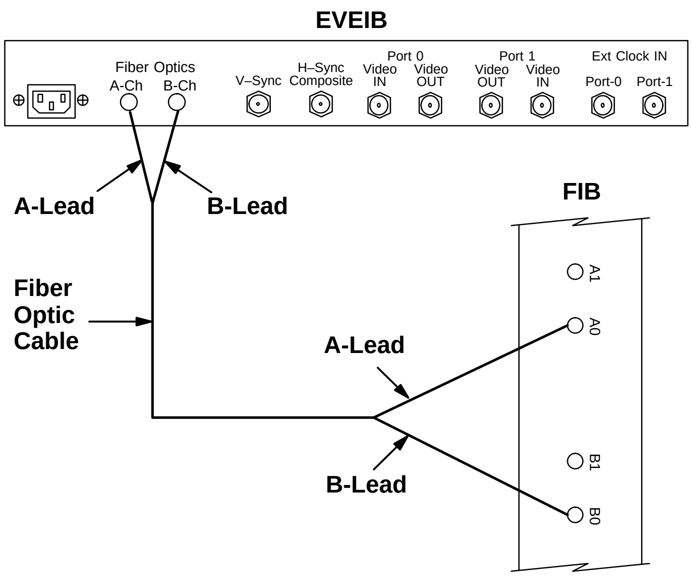


Figure 2-24.

2-3-8. Digital Source to DEIB to FIB

1. Check/set the jumpers in the DEIB. Refer to Procedure 2-4-6.
2. Use a digital cable to connect the modality to the appropriate Digital In connector on the DEIB. Refer to Figure 2-25.

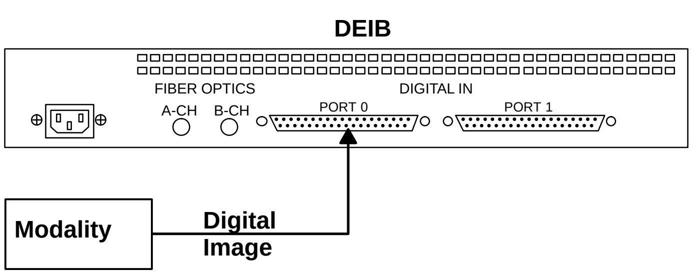


Figure 2-25.

3. Connect the fiber optic image cable to the DEIB. Refer to Figure 2-26.
4. Connect the fiber optic cable to the FIB at the rear of the IMAGER. Refer to Figure 2-26.

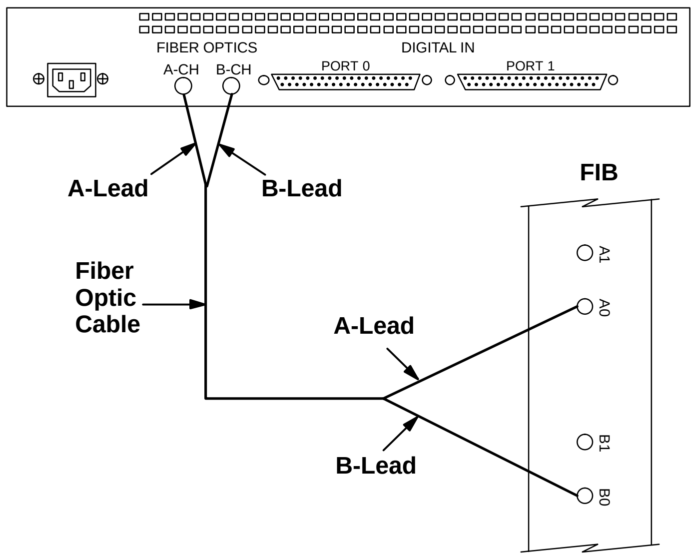


Figure 2-26.

5. Connect the DEIB power cord. For installations outside the U.S. and Canada, the DEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The DEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

2-3-9. Digital Source to DIB

1. Use a digital cable to connect the modality to the appropriate port on the DIB at the rear of the IMAGER. Refer to Figure 2-27.

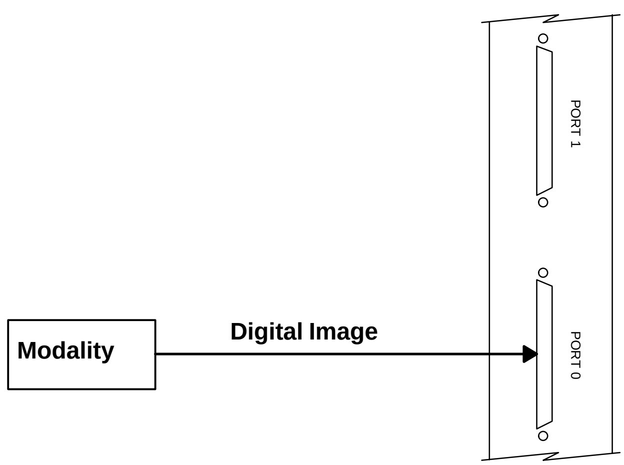


Figure 2-27.

2-3-10. *Kodak DryView* 8800 MULTI-INPUT MANAGER or *Kodak Digital Science* 969 HQ LASER IMAGER to 8700/8500 IMAGER

1. At the 8800 MULTI-INPUT MANAGER or 969 HQ IMAGER, route the fiber optic cable through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
2. Connect the fiber optic cable to the appropriate fiber optic connectors on the local fiber interface. Refer to Figure 2-28. Secure the cable using the hook and loop material on top of the card cage.
3. Connect the fiber optic cable to the DPRI at the rear of the 8700/8500 IMAGER. Refer to Figure 2-28.

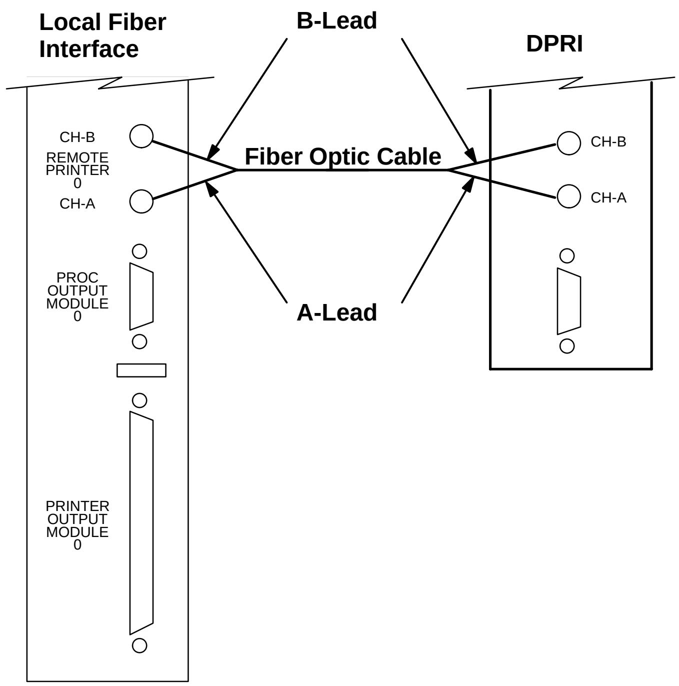


Figure 2-28.

2-4. Switch and Jumper Settings

2-4-1. UKEIB

Caution

The switches in the UKEIB must be set before any cables are connected to it. If the switches are not set correctly when cables are connected, components within the UKEIB may be damaged.

Caution

Use only approved cables and ensure that the cables are connected to the proper connectors on the UKEIB. If unapproved cables are used, or cables are connected incorrectly, components within the UKEIB may be damaged.

Note

Refer to Figure 2-29 (on the following page) for switch locations.

Signal Path

SW1 determines which signal path is enabled within the UKEIB. The various control sources require different signal paths. Set the switches as indicated in the table on the following page.

Host Connector Signals

SW2 determines which signals will be present on Pins 5 and 9 of the HOST connector. For normal operation, set SW2 to the center position. If an OEM fiber optic kit is being installed, set SW2 as directed in the kit instructions.

Signal Path Enabled	SW1 Switch Positions					
	1	2	3	4	5	6
Keypad to TDB	On	Off	On	On	On	On
RS232 Host to TDB	Off	On	Off	Off	On	Off
RS422 Host to TDB	Off	On	Off	On	On	On
RS232 Host to Translator Keypad to TDB	On	Off	On	Off	Off	On
RS422 Host to Translator Keypad to TDB	On	Off	On	On	On	On

SW2 Position	HOST Connector (P3) Signals	
	Pin 5	Pin 9
Left	5V	GND
Center	KP-IN	KP-OUT
Right	+12V	–12V

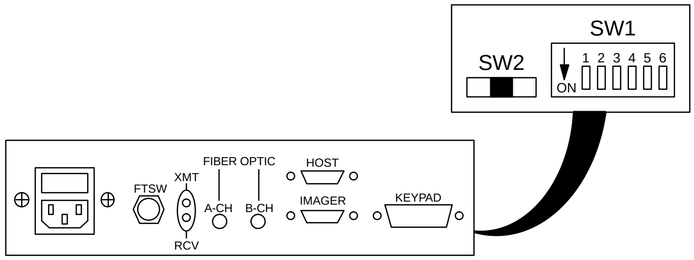


Figure 2-29.

2-4-2. Copper TDB

Jumpers W1 and W4

Jumpers W1 and W4 configure J1 and J2 for RS422 or RS232 input. W1 configures J1 (Comm 0) and W4 configures J2 (Comm 1). Set the jumper to the left for RS232 and to the right for RS422.

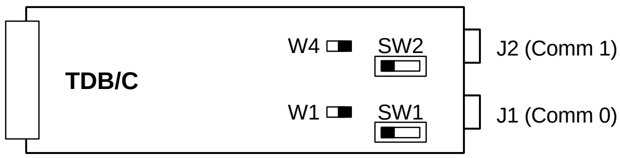


Figure 2-30.

Switches SW1 and SW2

Switches SW1 and SW2 control which signals are routed to pins 5 and 9 of J1 and J2. SW1 controls J1 (Comm 0) and SW2 controls J2 (Comm 1). Each switch can be placed in one of three positions, as described in the following table.

Caution

SW1 and SW2 must be set correctly. An incorrect setting could result in damage to the equipment connected to the TDB, and/or blow fuses on the TDB.

Position	Pin 5	Pin 9	Used For
Left	+5V	GND	UKEIB, Genesis Cable, Kodak Fiber Optic Converter, other RS422 hosts.
Center	RTS	CTS	RS232 handshaking (RTS output, CTS input). Currently not used; may be used in the future for Toshiba host control.
Right	+12V	–12V	Siemens external fiber optic converter, compact Keypad.

2-4-3. VEIB

Pixel Clock Source

Two jumpers in the VEIB specify the pixel clock source. The clock may be external (provided by the source modality) or internal (generated by a Phase Lock Loop module installed in the VEIB). The jumpers are factory set, and should not need to be changed unless a PLL module is added or removed. Refer to Figure 2-31.

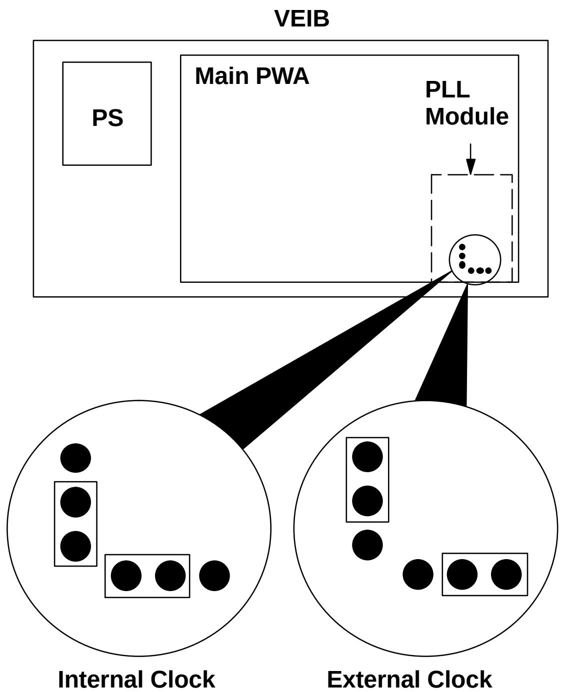


Figure 2-31.

2-4-4. VIB

Pixel Clock Source

Two jumpers on the VIB specify the pixel clock source. For an internal clock (generated by a Phase Lock Loop module installed on the VIB), set the jumpers to E1-E2 and E4-E5. For an external clock (provided by the source modality), set the jumpers to E2-E3 and E5-E6. The jumpers are factory set, and should not need to be changed unless a PLL module is added or removed. Refer to Figure 2-32.

Continuous Acquire Mode

When a jumper is connecting pins E7 and E8, the VIB operates in continuous acquire mode. This may be useful when attempting to examine the source video signal. However, for normal operation the two pins must not be connected (place the jumper block on a single pin; this is the factory setting).

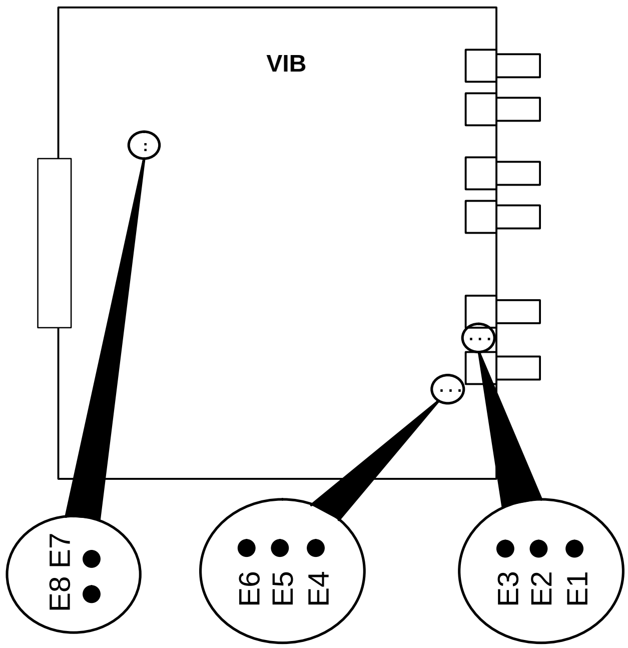


Figure 2-32.

2-4-5. EVEIB

Pixel Clock Source

Jumpers W5 and W6 specify the pixel clock source. The clock may be external (provided by the source modality) or internal (generated by a Phase Lock Loop module installed in the EVEIB). The jumpers are factory set, and should not need to be changed unless a PLL module is added or removed. Refer to Figure 2-33.

Termination

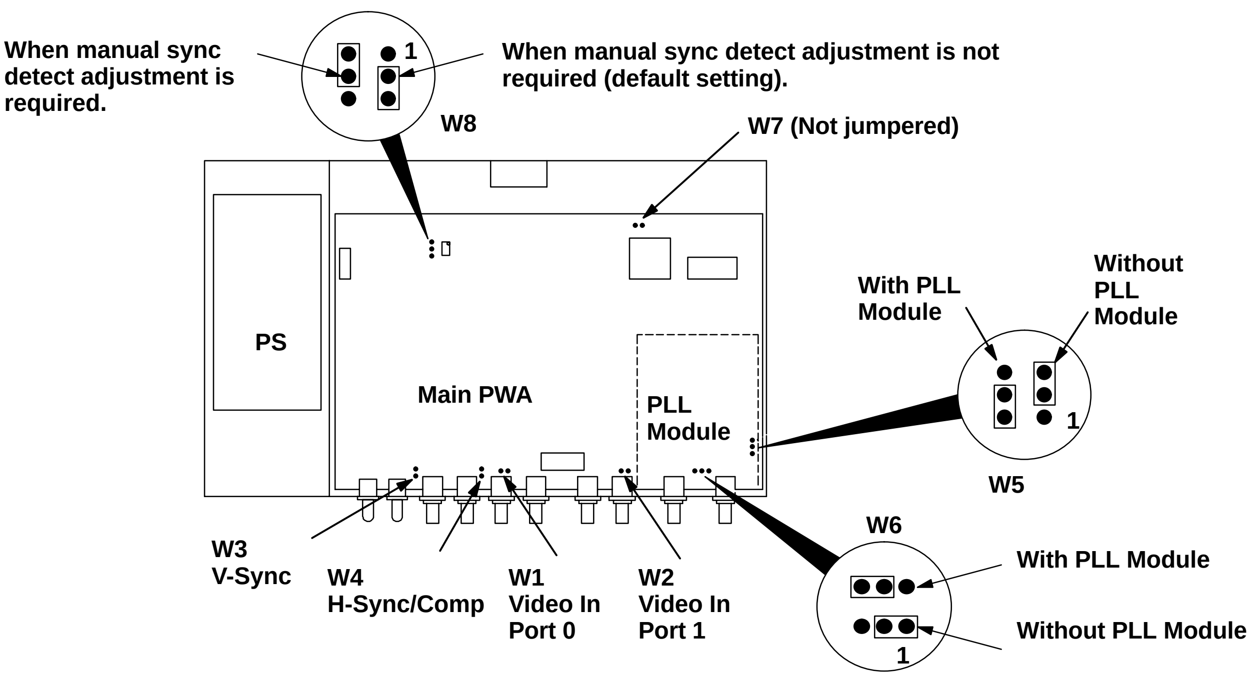
Jumpers W1 through W4 determine whether or not the Video In and Sync ports are terminated at 75 ohms. For each port, if the jumper is installed, termination is provided. This is the default setting. The jumper should only be removed if a T-connector is being used on the port. Refer to Figure 2-33.

Sync Detect Potentiometer

Jumper W8 determines whether or not the manual sync detect potentiometer (R6) is enabled. Refer to Figure 2-33. By default, R6 is disabled. The following paragraphs describe the situation in which R6 might need to be enabled.

The width of the horizontal sync pulse should be approximately 7.5% of the horizontal line time. It it is significantly different (<5% or >10%), the EVEIB may not be able to detect horizontal or vertical sync. Two modalities known to have this problem are the ADAC 4100 and the Toshiba X-Vision.

Before enabling R6 and performing a manual sync detect adjustment, be sure to try each of the 16 combinations of settings for Vertical Sync Detect and Black Level Window available in the Advanced Video Parameters screen in MPC for *Windows*. Refer to the MPC help screens for details. If a manual sync detect adjustment is required, refer to the EVEIB Installation Instructions.



W1, W2, W3, W4: Jumper on = 75 ohm termination; Jumper off = High Z.

Figure 2-33.

2-4-6. DEIB

Transfer Clock Speed

Two jumpers in the DEIB specify either single (10 MHz) or dual (12.5 MHz) transfer clock speed.

When a DEIB is connected to the IMAGER, it must always be set for single (10 MHz) transfer clock speed. This is the factory default setting.

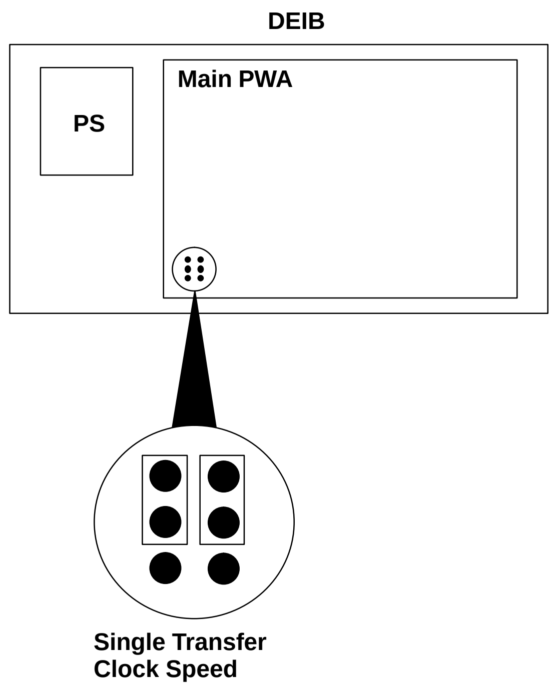


Figure 2-34.

2-5. System Configuration

After all cables have been connected, and all switch and jumper settings have been verified, perform the following configuration procedures.

2-5-1. Power Up the IMAGER

Caution

The IMAGER can be configured to connect with 200, 220, or 240 VAC power sources. Before applying power, ensure that the IMAGER is set for the voltage that most closely matches the AC line voltage. Refer to procedure 2-2.

1. Connect the power cord to the IMAGER and the wall outlet.
2. Flip up the circuit breaker at the rear of the IMAGER.
3. Turn on the IMAGER.

2-5-2. Connect the MPC to the IMAGER

1. Connect a straight-through serial cable (9-pin female to 9-pin male) between the serial port of the MPC and the MPC connector at the rear of the IMAGER.
2. Install a hardlock key on the printer port of the MPC.
3. Turn on the MPC, and start the MPC for *Windows* program.

Note

If a “Subsystem Not Communicating” message is displayed, select Preferences from the Operations menu, then check the Direct Connect Baud and Com settings.

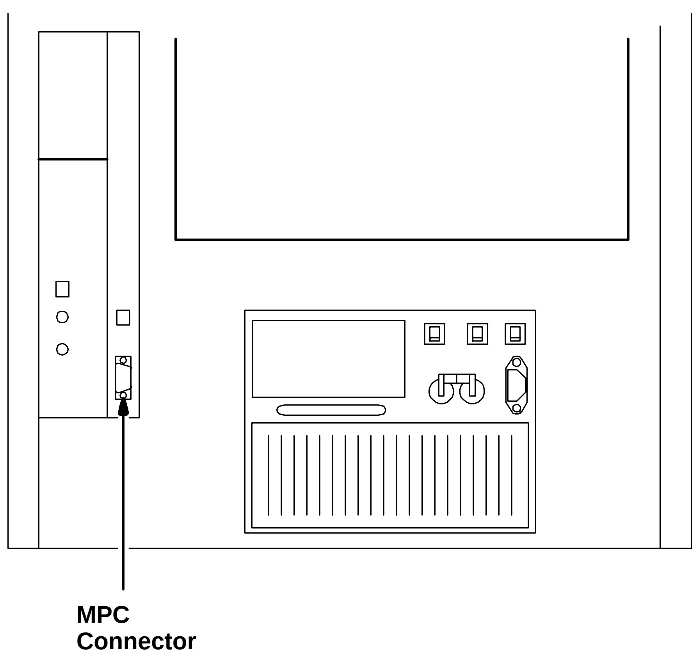


Figure 2-35.

Note

The MPC for *Windows* program is used to load configuration parameters into NVRAM within the various system components. Context sensitive help is available throughout the program via the F1 key. For example, for a description of a particular parameter, move the highlight to that parameter, then press F1. The MPC for *Windows* Help file will open and display the topic associated with the highlighted parameter.

2-5-3. Set the System Clock

1. Select Clock from the Utilities menu.
2. Enter the date and time in the Clock window, then select the OK button.

2-5-4. Load IMS Parameters

1. Select the IMS subsystem.
2. Select Output 0 Comm 0 from the component select dropdown list box (to the right of the subsystem buttons).
3. Select the Comm window display button.
4. Select the Printer Defaults button, then select the Save button.
5. Select the first user from the component select dropdown list box.

Note

Users are identified by slot/comm (e.g., Input 1 Comm 0) or modality name, depending on the User Display setting in the Preferences window.

6. If a script file is available for this user, select the Script window display button. Specify the script file name and location in the Select Script File window, then select the OK button. If a script file is not available, or the script file settings need to be modified, proceed to the next step.
7. Select the Comm window display button. Select the appropriate Defaults button, modify the parameter settings as needed for host control users, then select the Save button.
8. Select the Image window display button. Modify the parameter settings as needed, then select the Save button.
9. Select the Host window display button. Modify the parameter settings as needed, then select the Save button.
10. Select the System window display button. Modify the parameter settings as needed, then select the Save button.
11. If the system includes a second user, select the second user from the component select dropdown list box. Repeat Steps 6 through 10.
12. After all the IMS parameters have been loaded, power cycle the IMAGER.

2-5-5. Load SCB Parameters

1. Select the SCB subsystem.
2. Select the Config window display button. Modify the parameter settings as needed, then select the Save button.

2-5-6. Load AIQC Parameters

1. Select the AIQC subsystem.
2. Select the Config window display button. Select the Display Defaults button. Modify the parameter settings as needed, then select the Save button.

2-5-7. Load Keypad Parameters

1. Select the Keypad (KPD) subsystem.
2. Select the first keypad from the component select dropdown list box.
3. Select the Config window display button. Modify the parameter settings as needed, then select the Save button.

Note

The following step applies to touch-screen keypads only.

4. If custom formats are to be loaded for this keypad, select the Load window display button. Select the format (the letter designations correspond to the labels displayed on the keypad's custom format buttons). Specify the custom format file name and location in the Load Keypad Custom Format window, then select the OK button.
5. Repeat Steps 2 through 4 for each keypad listed in the component select dropdown list box.

2-5-8. Digital Modality Setup

Note

Load digital parameters from a script file whenever possible (refer to Step 6 of Procedure 2-5-4). If a script file is not available for the modality, enter parameters manually. To determine the correct settings, refer to the OEM specifications, contact the OEM site engineer, or contact the National Service Center.

1. Select the EIB subsystem.
2. Select the first DEIB or DIB user from the component select dropdown list box.
3. Select the Config window display button. Modify the parameter settings as needed, then select the Save button.

Note

When the Save button is selected, the digital parameters are loaded into the DEIB or DIB. If the save operation fails (when using a DEIB), check the fiber optic cables (use a flashlight), the DEIB power supply, and input module communications (use MPC for *WIndows* diagnostics).

4. Verify that the modality is generating an image.
5. Select the Acquire button.

Note

If the acquire fails, recheck the digital parameter settings. Modify the settings as needed. Save the new settings, then try to acquire again.

6. Select the Print button. Verify that the image is printed successfully.

2-5-9. Video Modality Setup

2-5-9-1. Inspect Signals from Modality

1. Verify that the modality is generating an image.
2. Inspect the video and pixel clock signals:
   a. **Check for two video modes.** Check with the OEM to determine if the modality can operate in two different modes that require different video parameters. Some OEMs have one set of video parameters for Live (Scan) mode and another set for Review (Off Tape) mode. Set up for one or the other.
   b. **Check for double termination.** Observe the host monitor while connecting the video cable to a powered up VEIB/VIB/EVEIB. If the monitor image improves or stays the same, there is no problem. If the monitor image suddenly goes bad (ghosting, blurring, faint, etc.), the video signal may already be terminated once, and connecting to the VEIB/VIB/EVEIB causes a double termination problem. If so, resolve this problem before proceeding.
   c. **Check the pixel clock signal.** Connect the pixel clock cable to the oscilloscope (do not terminate the scope). The pixel clock signal must be above 0.5 volts peak to peak and must be stable. (A pixel clock filter may help eliminate glitches in the pixel clock, but it may also make it worse!) If the signal is okay, connect the pixel clock cable to the VEIB/VIB/EVEIB.
   d. **Avoid ground loops.** To prevent a possible ground loop, connect the VEIB/EVEIB power cord to the same power source as the OEM modality. If this cannot be done, and image noise problems are experienced later during image fine tuning, check for a ground loop problem as follows: Temporarily disconnect the ground wire from the VEIB/EVEIB. Run a ground wire from the VEIB/EVEIB to the OEM ground. If the noise goes away, there is a ground loop problem.

2-5-9-2. Enter Rough Video Parameters

Note

Load video parameters from a script file whenever possible (refer to Step 6 of Procedure 2-5-4). If a script file is not available for the modality, enter parameters manually. This requires that an oscilloscope be used to measure some parameters; other parameters are calculated based on these measurements. Refer to the video parameter help screens in MPC for *Windows*.

1. Select the EIB subsystem.
2. Select the first VEIB/VIB/EVEIB user from the component select dropdown list box.

Note

If an EVEIB is being used, verify that the Video Input parameter setting (in the Video Parameters window) is correct. Also verify that the Passes parameter setting is correct. (The EVEIB digitizes incoming video slightly slower than the VEIB. The VEIB would sometimes work with the number of passes set lower than the recommended setting, but the EVEIB will not acquire if the setting is incorrect.)

3. Select the Config window display button. Enter rough parameter settings, then select the Save button.

Note

When the Save button is selected, the video parameters are loaded into the VEIB/VIB/EVEIB. If the save operation fails (when using a VEIB/EVEIB), check the fiber optic cables (use a flashlight), the VEIB/EVEIB power supply, and input module communications (use MPC for WIndows diagnostics).

4. Select the Acquire button.
   - If successful, proceed to Step 12.
   - If not successful, proceed to Step 5.
5. Temporarily set framing parameters to crop the image to a 100 line by 100 pixel square. (This is done to ensure that a vertical or horizontal sync pulse is not sampled; the parameters will be set for a full frame in Step 12.)
   - Set Image Lines to 100 and Horiz Active Pixels to 100.
   - Set Horizontal Delay and Vertical Delay to select this 100 x 100 square from the center of the image.
6. Connect the host video cable to the oscilloscope (use a T connector with a 75 ohm terminator attached). Measure the video signal from sync tip to maximum white level. If less than 1 volt, set the Double Gain parameter to 0.5 to 1.0. If more than 1 volt, set the Double Gain parameter to 1.0 to 2.0 volts.
7. Set the following parameters to midpoints as indicated:
   - Clock Delay to 6.
   - Fine Pixel Delay to 180.
   - Black Level to 100.
8. Select the Save button.
9. Verify that the Enable LED is on. This indicates that the parameter set has been loaded and the VEIB/VIB/EVEIB is in a ready state. Refer to Figure 2-36 (VEIB), Figure 2-37 (VIB), or Figure 2-38 (EVEIB).

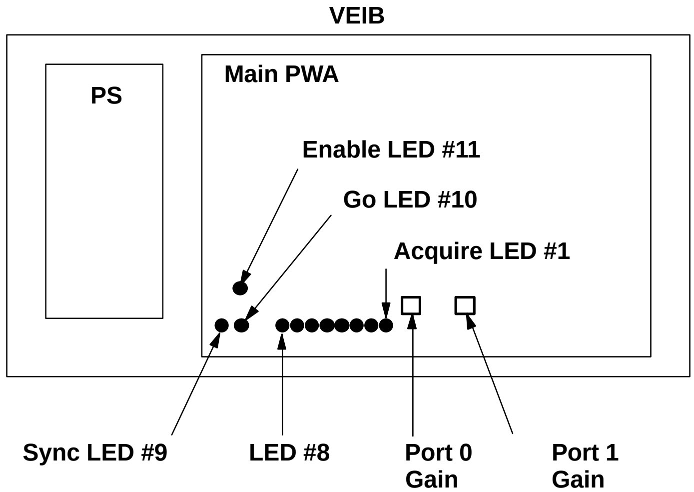


Figure 2-36.

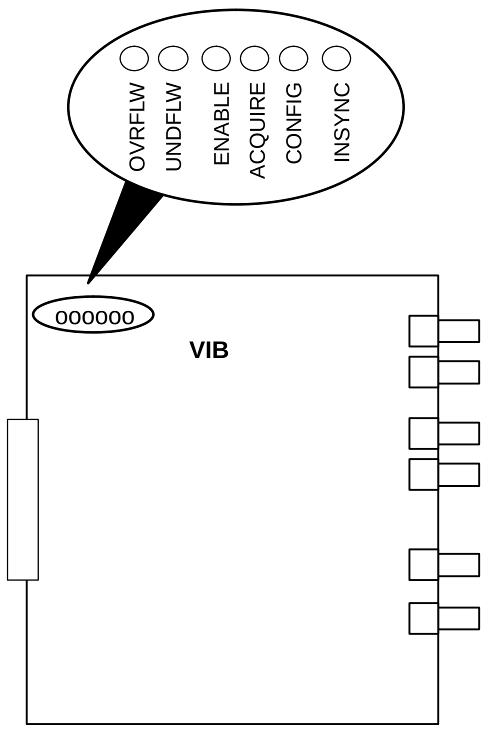


Figure 2-37.

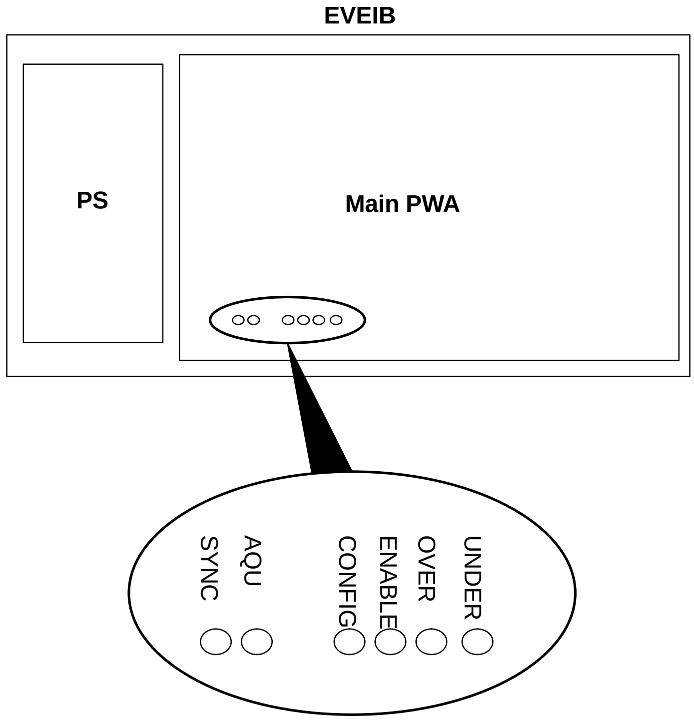


Figure 2-38.

Note

The following step refers to the gain pot in the VEIB. The VIB and EVEIB have no gain pots; they adjust the gain automatically. With this exception, the following step applies to the VEIB and the VIB/EVEIB.

10. Adjust the gain pot in the VEIB until the Sync LED turns on, then continue turning the pot in the same direction for at least three full turns. Refer to Figure 2-36.

    The Sync LED must stay on without flickering or acquires will fail! There must be at least three full turns of the pot during which the Sync LED remains on steadily. If not, check the video amplitude. The Double Gain parameter may need to be changed to the other setting.

    When the Sync LED is on, it indicates that the VEIB/VIB/EVEIB sees the video signal, and is successfully detecting horizontal and vertical sync pulses. The pixel clock has no effect on the state of the Sync LED.

    If the Sync LED does not turn on when the gain pot is turned (and the Enable LED **is** on), either no video is present, or the video that is present is completely unrecognizable to the VEIB/VIB/EVEIB (the VEIB/VIB/EVEIB cannot detect horizontal or vertical sync pulses.) In this case:

    - The video cable may be on the wrong port.
    - The video signal amplitude may be less than 0.5 volts (this could have several causes: double or triple termination, bad cables, bad video, etc.).
    - The video signal amplitude may be okay, but the signal may be bad.
    - One or more of the following parameters may be set incorrectly: Double Gain, Black Level, and/or Source.

11. Try acquiring (be sure the Sync, Enable, and Acquire LEDs are all on).
    - If successful, proceed to Step 12.
    - If unsuccessful, try acquiring two or three more times. If still unsuccessful, reset the IMAGER and the MPC, and try two or three more times. If still unsuccessful, double check Steps 1 through 10.
12. Adjust the following framing parameters to obtain the full frame (rough draft only; this will be done again during fine tuning):
    - Vertical Delay and Image Lines
    - Horizontal Delay and Horiz Active Pixels
13. Perform video fine tuning.

2-5-9-3. Fine Tune Video Parameters

Note

When printing images from **MPC**, the images are **replicated**. Replicate reproduces the image from the host exactly, without any smoothing. This is done so that any blurring or ghosting will be evident and not disguised by processing the image. When printing images from the **keypad**, the selected **interpolation** value (smooth to sharp) is used to process the image. This may make the image look better, but may also hide other problems. Therefore, it is best to print from MPC when performing fine tuning.

1. Display a SMPTE pattern on the OEM monitor. Be sure the SMPTE image is at OEM defined window and level. If a SMPTE pattern is not available, try using a customer image with all text removed and define the sampling area to include the grey scale. Another alternative is to window and level the customer image so that there are extreme blacks and whites across the whole image.
2. Select the Tune window display button.
3. Select the Gain/Black Level button in the Video Fine Tuning window.
4. An image is acquired, and then the Gain and Black Level Rectangle Selection window opens. Select the Retrieve button to download the acquired image to the MPC.

Note

Each time the Gain and Black Level Rectangle Selection window is opened, an image is acquired and the most recently downloaded (**not** the most recently acquired) image is displayed. This means that the window can be opened multiple times while configuring a modality without having to download an image each time. However, be sure to download an image for each modality, and be aware that the downloaded image may not match the most recently acquired image (for example, if the modality's screen saver kicks in after the image has been downloaded).

5. Examine the downloaded image:
    a. Identify an area that includes maximum blacks, but does not include any border (video blanking) area. **This is critical.** (The only area on a SMPTE pattern that contains maximum black is the 100% square; the other black bars are not maximum black.)
    b. Identify an area that includes maximum whites, but does not include any overwhite text. **This is critical.**
6. Click and drag to create a rectangle that surrounds the true black and true white areas identified in the previous step, then select the OK button.

Note

At this point, the IMS samples the video and passes the digital values to the MPC. The MCP adjusts the black level based on the sample and turns on the appropriate LED in the VEIB to indicate the gain (white level). This sampling and adjusting continues at approximately 4-second intervals.

7. The Gain & Black Level Fine Tune window opens, and displays the minimum and maximum digital values, along with the black level and (VIB/EVEIB only) the digital gain.

Note

If all the values are zero, the acquire has failed, and the cause should be investigated.

Note

The following step does not apply to the VIB/EVIB.

8. At the VEIB, adjust the appropriate gain pot until LED 6 or LED 7 turns on. Remember that the state of the LEDs is updated at approximately 4 second intervals.
9. At the MPC, select the Close button in the Gain & Black Level Fine Tune window.

Note

Because this is a rough gain and black level adjustment, the digital values displayed at this point are not important. They will become important when the final adjustment is performed later in this procedure.

10. Select the Bad Clock Delay button in the Video Fine Tuning window. Select the OK button when the Successful Acquire and Successful Print messages are displayed.
11. The image is acquired using each of 16 different coarse clock delay settings. The 16 images are printed on one sheet of film. The coarse delay setting is printed above each image. Identify any images that exhibit vertical line pixel shifting. Ignore any other image problems at this time.
12. In the Bad Clock Delays window, select those images identified in the previous step, then select the OK button.
13. Select the Fine Pixel/Clock Delay button in the Video Fine Tuning window. Select the OK button when the Successful Acquire and Successful Print messages are displayed.
14. The image is acquired and printed using 16 different combinations of fine pixel and clock delays. The 16 images are printed in a 4:1 format on 4 sheets of film. The clock delay and fine pixel delay are printed above each image. Identify the single best image, then proceed to Step 18.

Note

Performs Steps 15 through 17 if a single best image cannot be identified when the images are printed in 4:1 format.

15. Select the Print 1-Up button in the Video Fine Tuning window.
16. Select an image to print in the Video Fine
Tuning – Print Full Size window (image numbers are printed above each image on the 4:1 prints), then select the OK button. Select the OK button when the Successful Print message is displayed. Examine the image on the film.
17. Repeat Step 16 as needed. When the single best image has been identified, select the Cancel button in the Video Fine Tuning – Print Full Size window.
18. Select the Config window display button. Enter the clock delay and fine pixel delay settings that are printed above the previously identified image. Select the Save button.
19. Repeat Steps 2 through 7.

Note

The following step does not apply to the VIB/EVEIB.

20. At the VEIB, adjust the appropriate gain pot/wait/adjust/wait/etc. until LEDs 7 and 8 toggle. Wait for 3 or more flashes of the Sync LED between each adjustment; this allows the VEIB time to sample and adjust to the new gain level.
21. At the MPC, if the adjustment is correct, the following values will be displayed in the Gain & Black Level Fine Tune window:
    - For a VEIB, the maximum value will be below 511, and will be around 508 to 510. The minimum value will toggle between 0 and 4.
    - For a VIB, the maximum value will be below 1023, and should be 1016 for 8-bit pixels and 1022 for 12-bit pixels. The minimum value will be above 0, and should be 4 for 8-bit pixels and 1 for 12-bit pixels.
    - For an EVEIB, the maximum value will be below 1023, and should be 1016 for 8-bit pixels and 1020 for 12-bit pixels. The minimum value will be above 0, and should be 4 for 8-bit pixels and 2 for 12-bit pixels.
22. When the values listed in the previous step are displayed, select the Auto Adjust – Stop button to stop the continuous sampling of the video. If the values are close, but not right on, select the Auto Adjust – Once button to perform a single sample and adjust cycle (this can be repeated as required).

Note

The sampling circuitry in the VEIB/VIB/VEIB is susceptible to video noise which can affect image Dmin values. The image Dmin of *Kodak DryView* LASER IMAGING FILM is extremely critical. To ensure that image Dmin will be acceptable, the following step will increase the gain slightly to clip the noise from the video signal. This will decrease image Dmin (and Dmax) slightly.

23. To ensure that image Dmin will be acceptable, increase the gain as follows:
    - For a VEIB, rotate the gain pot slightly counterclockwise, then select the Manual Adjust – Once button. The intent now is to produce a maximum value of 511.
    - For a VIB/EVEIB, add one to the displayed Digital Gain value, then select the Manual Adjust – Once button. The intent now is to produce a maximum value of 1023.
24. Increasing the gain decreases Dmax as well as Dmin. To offset the gain increase, increase the displayed Black Level value by one, then select the Manual Adjust – Once button.
25. Select the Close button to accept the displayed values.
26. Acquire and print a SMPTE test pattern using the lowest available contrast setting (usually contrast #1). Check the black and white levels on the film. If the levels are set correctly, the 95% and 5% patches on the film will be equally visible.

    If a SMPTE pattern is not available, use a customer image and check the grey scale steps. Again, using the lowest available contrast setting, inspect the film for visual distinction of the first two and last two steps of the grey scale. (Note: A low contrast setting produces low contrast in the middle of the scale and high contrast at the ends of the scale.) Step 2 should not blend into step 1, and step 15 should not blend into step 16. If the OEM monitor is adjusted properly (refer to Procedure 2-5-9-5), its grey scale can be used for comparison purposes.

    If the VEIB/VIB/EVEIB is set up CORRECTLY: What is normally seen (using a contrast test) is that the contrast test #1 Dmax (0% square) is lighter than a dark border and Dmin (100% square) is equal to or slightly darker than a clear border. It is not until later contrast tests that image Dmax and Dmin equal film Dmax and Dmin. This is acceptable, gives good quality images, and results in the 95% and 5% patches on a SMPTE test film being equally visible. If desired, the image Dmax can be forced to match the border Dmax; there are two ways to accomplish this:

    - In the Image Parameters window, set the Match Border parameter to Yes.

- Increase the Black Level value by one or two digits. This will darken up the image Dmax, and will also darken up the image Dmin slightly. Do not go past the point of just matching image Dmax to border Dmax or the 5% patch will start to disappear.

If the VEIB/VIB/EVEIB is set up INCORRECTLY: Using contrast #1, either the 95% or 5% patch will be gone or faint. If using a customer image, step 2 of the grey scale will blend with or be only faintly darker than step 1, or step 15 will blend with or be only faintly lighter than step 16. (See Step 27 of this procedure for possible solutions.)

The other possible incorrect setup of the VEIB/VIB/EVEIB is that image Dmax is significantly lighter than film Dmax or that image Dmin is significantly darker than film Dmin. Using a contrast test, this can be seen by the fact that image Dmax and Dmin do not match film Dmax and Dmin until the last few contrast levels, or they never reach film Dmax and Dmin. (See Step 27 of this procedure for possible solutions.)

If the VEIB/VIB/EVEIB is set up PERFECTLY: All of the following will be true (with Match Border set to Yes):

- Contrast #1 Dmax and Dmin will match the border Dmax and Dmin.
- Increasing the final Black Level setting by one will make the contrast #1 Dmin slightly darker than a clear border.
- Decreasing the final Black Level setting by one will make the contrast #1 Dmax slightly lighter than a dark border.

This would be the perfect situation; however, in most cases, the VEIB/VIB/EVEIB does not seek black and white level this accurately.

27. If the black or white level is unacceptable, try any of the following:
    - Assuming that fine tuning has been done, try selecting a different sampling area (use different row and column settings) when performing the MPC gain adjustment.
    - Try a different image (see Step 1 of this procedure).
    - The Black Level setting can be increased by one or two digits to darken up the image Dmax. This will also darken up the image Dmin slightly.
    - If still having problems, contact TAC, a PST member, or the local video expert.
28. Make final adjustments to framing parameters to obtain the full frame. The preceding fine tuning steps may have shifted the horizontal delay so that a pixel is lost on the right or left side of the image. To check for this, print a film with clear borders (change the Border setting in the Image Parameters window to 4095). View the image. If a pixel is missing from the left or right side, add or subtract one pixel from the Horizontal Delay setting. **Be sure to change the Border setting back to 0 when fine tuning is complete.**
29. Proceed to Procedure 2-5-9-4.

2-5-9-4. Set Customer Preferences

When performing the following procedure, note that the method of setting customer preferences varies depending on the control source.

- For compact keypad and host control users, density and contrast are set at the local panel of the IMAGER. Refer to the User Guide for the 8700 IMAGER for details.
- For compact keypad and host control users, smooth/sharp image processing is set via MPC, based on interpolation settings. Refer to the MPC for *Windows* Help file for details.
- For touch-screen keypad users, density, contrast, and smooth/sharp are all set at the keypad. Refer to the User Guide for the 8700 LASER IMAGER for details.

1. Have the customer select a typical image that contains the range of contrasts they will be looking for.
2. Acquire the image and print a contrast test.
3. If everything looks too light or too dark, adjust the density setting. If the density setting looks okay, have the customer select a contrast setting.
4. If the customer finds the image unacceptable at any combination of density and contrast levels, it is possible that the gain/black level adjustment needs to be redone using a different image, or the OEM monitor may be misadjusted (refer to Procedure 2-5-9-5).
5. Have the customer select smooth or sharp image processing. If neither smooth nor sharp is acceptable to the customer, the interpolation settings may need to be changed. Refer to the MPC for *Windows* Help file for details on how to change interpolation settings.

2-5-9-5. OEM Monitor Adjustment

If the customer likes the images, there is no need to adjust the OEM monitor even though it may be slightly off. However, if the customer is unable to get an acceptable contrast on the images, it may be necessary to make the following checks and/or adjustments.

Theory

The OEM's video generator board outputs a video signal to the OEM monitor. This same video signal is sent to the VEIB/VIB/EVEIB. The window and level controls adjust this video signal, which affects both the image displayed on the OEM monitor and the image printed on the film. If the monitor's brightness and contrast are out of adjustment, the customer will compensate by adjusting the window and level controls until the image looks good on the monitor. The result of this is that the image on the film and the image on the monitor do not match. Therefore, it is important that after the brightness and contrast have been set correctly, the customer does not turn the brightness and contrast knobs. (Over time the monitor will tend to drift, and the brightness and contrast may have to be adjusted by the OEM.)

Check

With the SMPTE pattern at OEM defined window and level values, the 5% patches (both black and white) should be visible, and should have equal contrast to the enveloping 100% and 0% boxes around them. If the 5% patches are not visible, or are not equally visible, the OEM monitor should be adjusted.

- Ask the OEM to adjust the monitor.
- Be there when the OEM adjusts the monitor, and ensure that the ambient lighting is the same as the normal lighting the customer uses when filming.

Adjustment

1. Adjust the white first. Looking at the text, turn the OEM contrast knob until the whites just start to smear. Then back off the contrast just to the threshold of smearing. The 95%/100% patch in the SMPTE should now be visible.
2. Adjust the black. Turn the brightness knob until the image starts to fill in. Continue until the black in the image starts to turn grey. At this point, the 5%/0% patch should be visible. Back off the brightness until there is an equal balance in the visual ratio of 0% to 5% as 100% to 95%. **These two patches are the key.**

Section 3 – Adjustments

3-1. Processor Temperature

Specification

There are three temperature zones in the processor. Viewed from the front of the machine, Zone 1 is at the left end, Zone 2 is in the center, and Zone 3 is at the right end. The temperature measured in all three zones must be in the range of 122.2° – 122.8° C (252° – 253° F).

Note

This procedure should be performed whenever the processor assembly, processor drum, rotating processor board (RPB), processor communication board (PCB), or system controller board (SCB) is replaced, or if drum temperatures are suspected of causing image quality problems.

Special Tools

Temperature meter with probe and block Maintenance Personal Computer (MPC) MPC for Windows software package.

Note

A probe with a bar type element must be used to perform this procedure. Probes with circular type elements will not provide accurate readings.

The temperature meter and probe must be calibrated together as a pair at least once per year. If the probe breaks, a new probe and the meter must be sent in for calibration. Refer to procedure 5-2 for details.

The temperature meter must be at room temperature when performing this procedure. If the meter has been brought in from a hot or cold vehicle, allow it to acclimate to room temperature before use.

Measurement Setup

1. Raise the top cover of the 8700/8500.
2. Open the processor cover. Verify that the processor rollers are clean and free of deposits.

Caution

Deposits on the processor rollers could be knocked loose by the temperature probe, resulting in damage to the surface of the drum. If necessary, clean the processor before continuing with this procedure.

3. Close the processor cover.
4. Remove the four screws that secure the top cover of the processor clamshell. Do not remove the cover yet. Refer to Figure 3-1.
5. Remove the right side panel (4-1-3) from the IMAGER, and pull out the service interlock switch.
6. Close the top cover of the IMAGER.

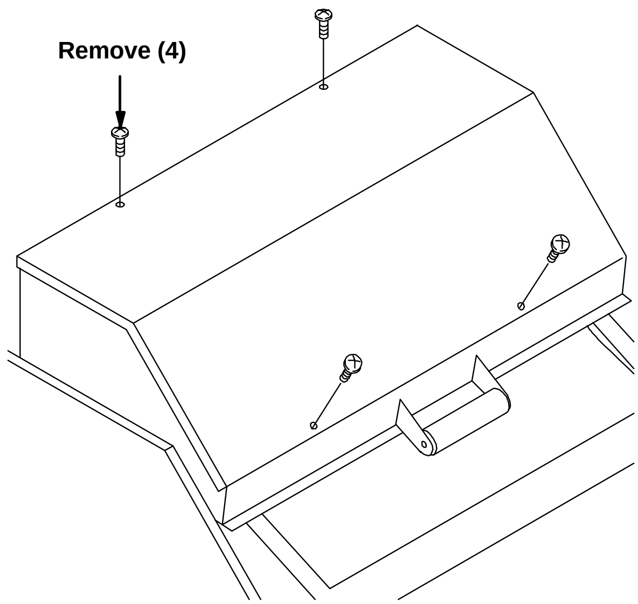


Figure 3-1.

7. Power up the 8700/8500.
8. Install the block on the probe as shown in Figure 3-2. Clean the probe with alcohol.

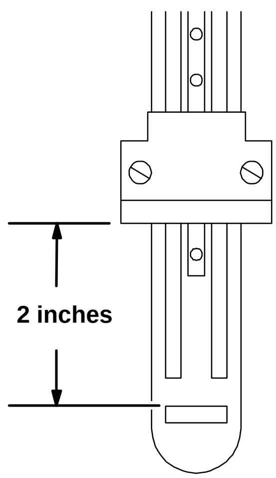


Figure 3-2.

9. Set the meter to display temperatures in Celsius.

Note

Celsius temperatures are displayed to one decimal point of accuracy. Fahrenheit temperatures are displayed as whole numbers. Therefore, the Celsius readings provide a more accurate measurement.

Measurement Procedure

1. When “Ready” is displayed on the the local panel, open the top cover of the IMAGER.
2. Remove the top cover from the processor clamshell.

Caution

Hot Surface

The surfaces around the slot in the top of the processor are hot, and hot air exits through the slot. Do not touch the surfaces around the slot, and do not hold the block above the slot for prolonged periods of time.

3. Use stainless steel cleaner to wipe clean the slot at the top of the processor and the two exhaust slots.
4. Check the Zone 2 temperature. Insert the probe in the center of the slot in the top of the processor. Refer to Figure 3-3.

Note

When looking straight down into the slot in the top of the processor, three rollers are visible. Insert the probe between the two rollers closest to the front of the machine. As the rollers turn they will draw the probe in toward the drum.

5. Allow the block to rest squarely in the slot (see Figure 3-3).

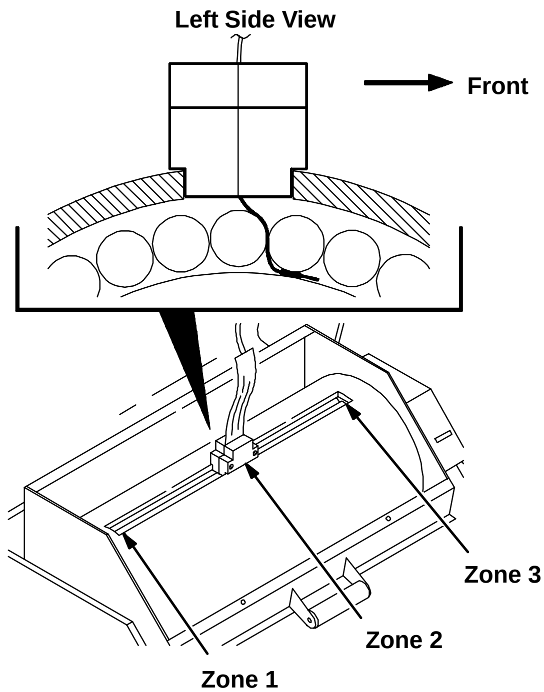


Figure 3-3.

6. The meter reading will vary slightly, and within approximately one minute should go through a high/low cycle. For example, the high reading may be 122.7° C, and the low reading may be 122.3° C. Both the high reading and the low reading must be in the range of 122.2° – 122.8° C. Note the readings.
7. Remove and clean the probe.

Caution

To prevent damage to the surface of the processor drum, remove and clean the probe after taking each temperature reading.

8. Check the Zone 1 temperature. Insert the probe at the far left end of the slot, between the two rollers closest to the front of the machine. Repeat steps 5 through 7.
9. Check the Zone 3 temperature. Insert the probe at the far right end of the slot, between the two rollers closest to the front of the machine. Repeat steps 5 through 7.
10. If all of the temperatures are within specification, replace and secure the processor clamshell top cover. If any of the temperatures are out of specification, replace (but do not secure) the processor clamshell top cover, then perform the following adjustment procedure.

Adjustment Procedure

Caution

To prevent damage to the surface of the processor drum, do not leave the probe installed while performing an adjustment, or while waiting for the processor temperatures to stabilize.

1. Connect the MPC to the MPC port on the rear of the IMAGER.
2. Power up the MPC and start the MPC for *Windows* program.
3. Do either of the following to select the processor subsystem:
   - Click on the PROC button.
   - Open the Operations menu, and select Subsystem→Processor.
4. Select the Calib button to display the Processor Calibration window.
5. Adjust the temperatures by clicking on the appropriate arrows or by entering positive or negative values (representing click counts) in the numeric fields below the arrows. For example, if the Zone 1 temperature is too low, click on the Zone 1 up arrow, or enter a positive value in the related numeric field. If the Zone 3 temperature is too high, click on the Zone 3 down arrow, or enter a negative value in the related numeric field. Each click produces a change of approximately .06° C.

Note

The adjustment of one zone will affect the temperature of the adjacent zone. Zone 2 will affect Zone 1 and Zone 3 more than Zone 1 or Zone 3 will affect Zone 2. In general, if Zone 2 and either outer zone are out of specification, adjust Zone 2 first. However, if there is a difference of more than 2.0° C between Zone 2 and the outer zone(s), adjust the outer zone(s) first, then Zone 2, then the outer zone(s) again.

6. Wait five minutes for temperatures to stabilize, then repeat the measurement procedure.

Note

For adjustments of more than 2.0° C, the processor may require more than 5 minutes to stabilize temperatures.

7. Once all zones are within specification, wait five more minutes, then repeat the measurement procedure to verify the adjustment.
8. Select the Save button to write the new settings into NVRAM.

3-2. Processor Drum Stripper

Specification

With the processor at operating temperature, there must be a gap of 0.007 ± .001 inches between the processor drum and the stripper, measured at the edges of the film path.

Note

The stripper mechanism expands when heated. To ensure accuracy, the following measurement must be performed with the processor at operating temperature.

Measurement

1. Raise the top cover of the IMAGER.
2. Open the processor cover.
3. Grasp the handle on the front of the processor/exit assembly and pull the assembly out to its extended position.

Caution

Hot Surface

The surface of the processor drum is hot. Take care when checking the gap.

Caution

The feeler gauge can damage the surface of the drum. Take care when checking the gap.

4. Use a .007 inch feeler gauge to check the gap between the drum and the stripper. Check the gap at the edges of the film path, approximately 1.5 inches in from each end of the stripper blade. Refer to Figure 3-4. If the gap is set incorrectly, perform the following adjustment procedure.

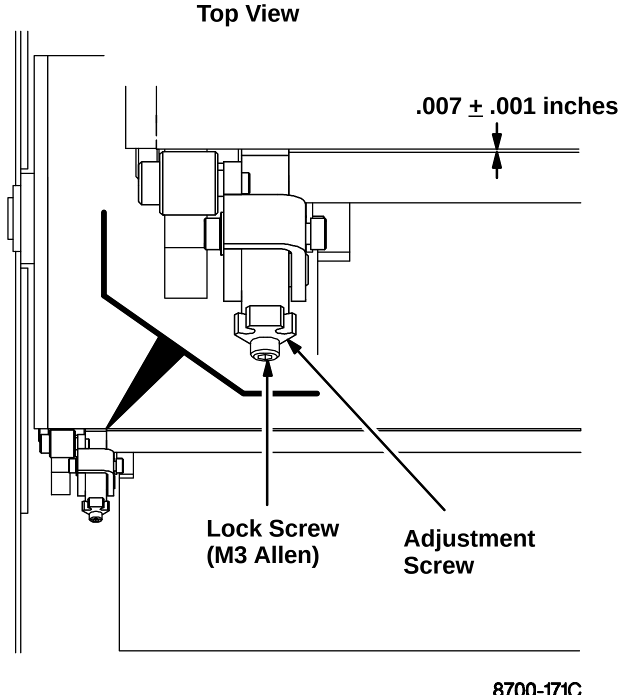


Figure 3-4.

Adjustment

1. Remove the lock screws (M3 Allen) at each end of the stripper.
2. Rotate the adjustment screws at each end of the stripper as required to create the gap of .007 ± .001 inches. Rotate counterclockwise to decrease the gap, clockwise to increase the gap.
3. There are three locking slots in each adjustment screw. Determine which locking slot is closest to the hole for the lock screw, then rotate the adjustment screw so this slot lines up with the hole. Install and tighten the lock screws.
4. Recheck the measurement.

3-3. Densitometer Calibration

Specification

The A/D Out (Gain) value must be 1640 ± 100, and the A/D Out (Offset) value must be 20 ± 2.

Note

This procedure should be performed whenever a new densitometer is installed. It should also be performed if the densitometer is suspected of causing AIQC problems; however, be aware that the densitometer may function perfectly even when not adjusted to specification (i.e., calibrating a densitometer that is out of specification will not necessarily solve an AIQC problem).

Special Tools

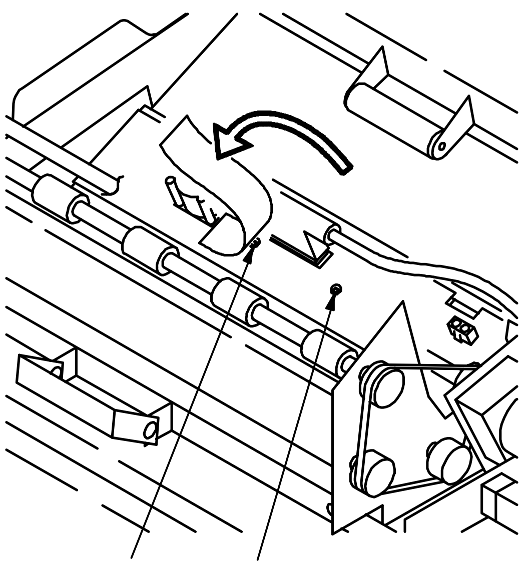
Maintenance Personal Computer (MPC)
MPC for *Windows* software package

Measurement

1. Connect the MPC to the MPC port on the rear of the IMAGER.
2. Power up the MPC and start the MPC for Windows program.
3. Open the Operations menu and select Diagnostics.
4. Do either of the following to select the processor subsystem:
   - Click on the PROC button.
   - Open the Operations menu, and select Subsystem→Processor.
5. Select the Densi button to display the Densitometer Test window.
6. Check the values displayed for A/D Out (Gain) and A/D Out (Offset). If either value is out of specification, perform the adjustment procedure on the following page.

Adjustment

1. Raise the top cover of the IMAGER.
2. Peel back the calibration label that covers the potentiometer access holes on the top side of the densitometer.
3. Adjust the gain and offset potentiometers as required to bring both readings within specification.



8700–108C

Figure 3-5.

3-4. Density Patch Offset

Specification

The top edge of the density patch must be located 7.0 ± 1.0 mm from the top edge of the film.

Special Tools

Small flat-blade insulated screwdriver

Measurement

1. Power up the imager and wait for it to warm up to operating temperature.
2. Initiate a density test from the local panel.
3. Measure the distance from the top edge of the test print to the top edge of the density patch. If it is not within specification, perform the following adjustment procedure.

Adjustment

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER, then unplug the power cord.
3. Remove the front panel (4-1-1).
4. Locate the offset potentiometer access hole on the front of the optics module. (The offset and gain pots are mounted on the Y-galvo driver board, approximately 1.5 inches behind the front cover of the optics module.)

Optics Module

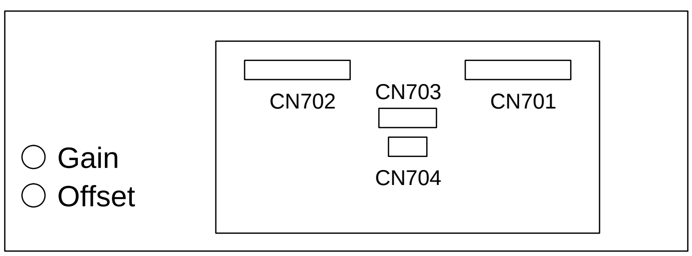


Figure 3-6.

Caution

To avoid damage to the Y-galvo driver board, wear an anti-static wrist strap when adjusting the offset potentiometer. Take care not to touch any other components on the Y-galvo driver board.

5. Use an insulated screwdriver to adjust the offset pot. A 1/4 turn of the pot moves the density patch approximately 0.5 mm. Turn the pot clockwise to increase the distance between the top of the film and the top of the density patch; turn the pot counterclockwise to decrease the distance.

Note

Do not adjust the gain pot. The gain pot affects the image size in the Y-direction.

6. Install the front panel and the supply cartridge.
7. Power up the imager and repeat the measurement procedure.

3-5. Exit Transport Sensor Actuator

Theory of Operation

The sensor actuator is mounted on a shaft. A spring is wrapped around the other end of the shaft. As film exits the imager, it pushes on the spring, which rotates the shaft and actuator slightly counterclockwise, unblocking the sensor. Once the film has cleared the spring, the spring drops back into the slot in the exit guide, which rotates the shaft and actuator slightly clockwise, blocking the sensor.

Specification

With the spring resting in the slot in the exit guide, the left edge of the sensor actuator must line up with the left edge of the sensor.

Adjustment

Rotate the actuator **counterclockwise** as required to line up the left edges of the sensor and actuator. The actuator can be rotated a full 360°; the spring will slip on the shaft. See Figure 3-7.

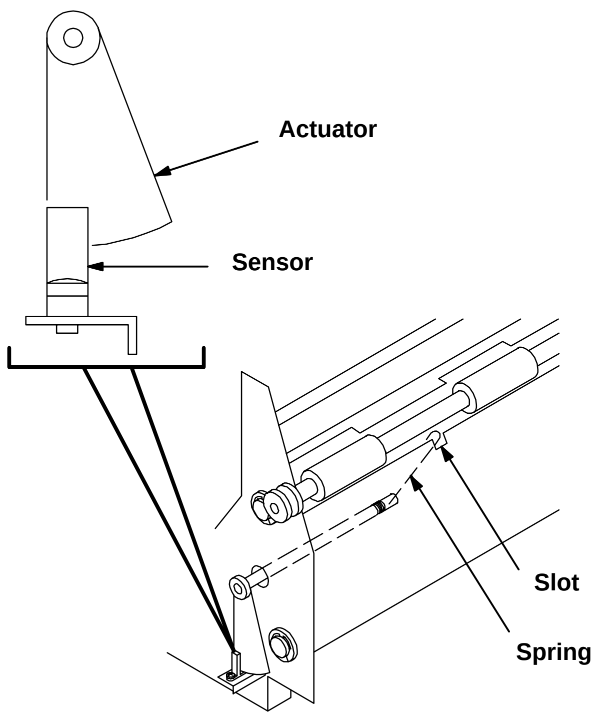


Figure 3-7.

3-6. Local Panel Display Contrast and Buzzer Volume

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Raise the top cover of the IMAGER.
2. Locate the potentiometer access holes in the local panel housing.
3. Turn the contrast potentiometer clockwise to darken the display, counterclockwise to lighten the display.
4. Turn the volume potentiometer clockwise to increase the buzzer volume, counterclockwise to decrease the volume.

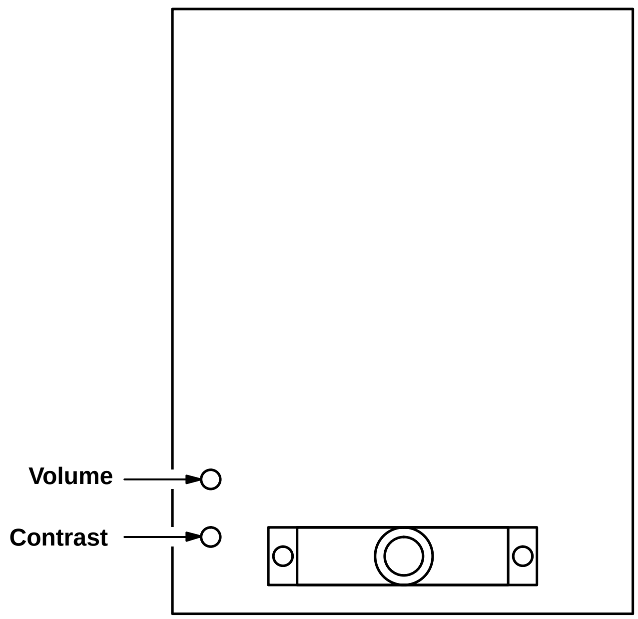


Figure 3-8.

3-7. Power Supply Voltages

3-7-1. +5, +17, –17, and +24 VDC Power Supply (PS901)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

Specification

PS901 must output the following DC voltages:

+5.1 ± 0.1 VDC
+17.3 ± 0.3 VDC
–17.3 ± 0.3 VDC
+24.3 ± 0.5 VDC

Special Tools

Digital Voltmeter

Measurement

1. Remove the right side panel (4-1-3).
2. Remove the electronics enclosure cover (4-1-4).
3. To gain access to the Machine Interface Board (MIB), swing out the panel that holds the memory boards.
4. Check the voltages by connecting a voltmeter to the appropriate test points on the MIB. The table below lists the test points; Figure 3-9 on the following page shows the test point locations. If any of the voltages are out of specification, perform the adjustment procedure.

MIB Test Points	
TP5H1 (+5V)	TP7G1 (LOGIC GND)
TP5I8 (+17V) TP6I1 (–17V)	TP5I9 (AGND)
TP7K1 (+24V)	TP6K1 (GND)

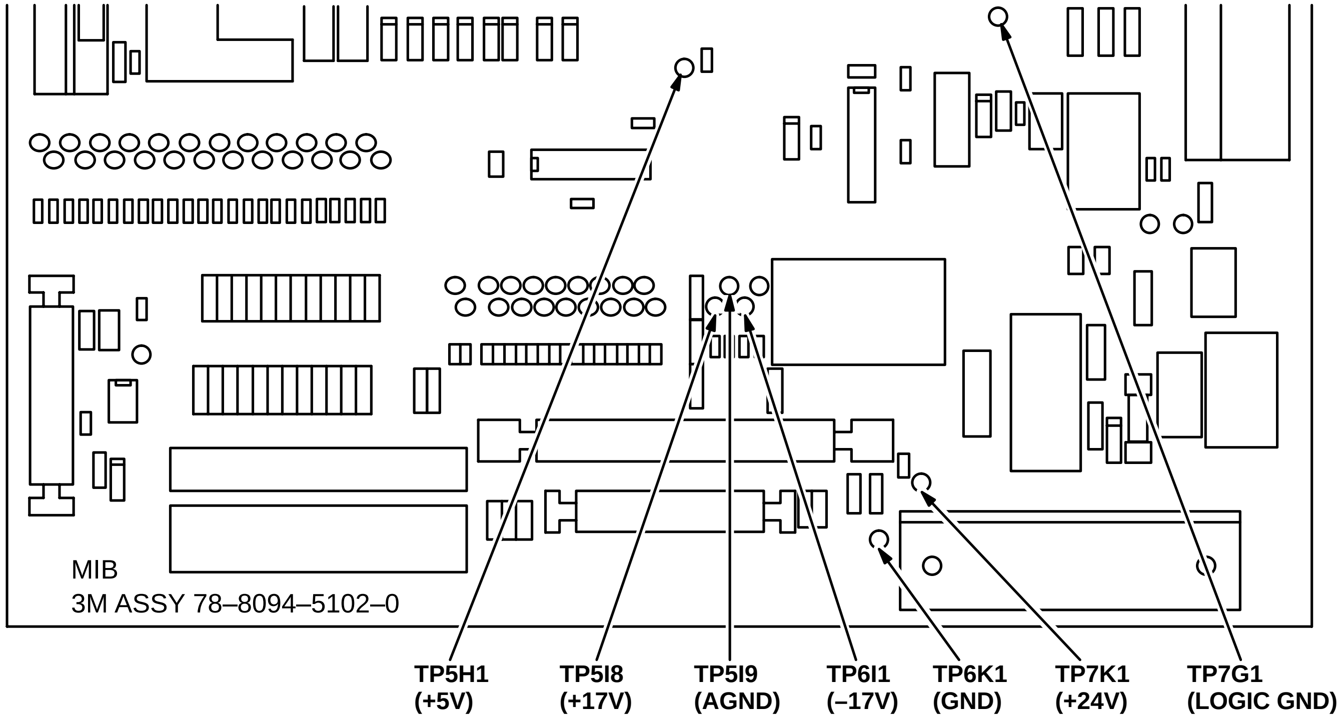

MIB
3M ASSY 78–8094–5102–0
TP5H1
(+5V)
TP5I8
(+17V)
TP5I9
(AGND)
TP6I1
(–17V)
TP6K1
(GND)
TP7K1
(+24V)
TP7G1
(LOGIC GND)

Figure 3-9.

Adjustment

1. Remove the rear panel (4-1-2).
2. Loosen the two screws that secure the power module.
3. Slide the power module out of the imager. Do not disconnect the power module cables.
4. Remove the plastic plugs covering the adjustment potentiometers.
5. Rotate the appropriate output adjustment potentiometer(s) as required. Refer to Figure 3-10.

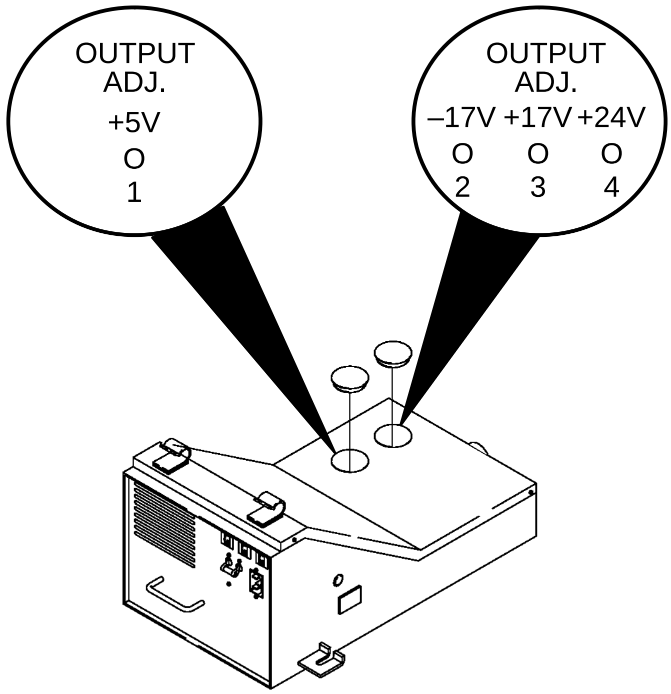


Figure 3-10.

3-7-2. -5.2 VDC Power Supply (PS902)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

Specification

PS902 must output -5.2 ± 0.2 VDC for the VIB.

Special Tools

Digital Voltmeter

Measurement

1. Remove the right side panel (4-1-3).
2. Remove the electronics enclosure cover (4-1-4).
3. Connect a voltmeter to TP31 and TPGND2 in the lower right corner of the VIB. Refer to Figure 3-11. If the voltage is out of specification, perform the adjustment procedure.

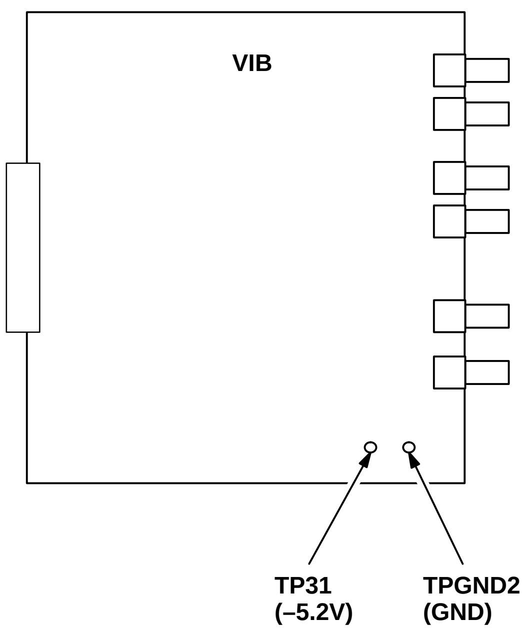


Figure 3-11.

Adjustment

1. Remove the rear panel (4-1-2).
2. Loosen the two screws that secure the power module.
3. Slide the power module out of the imager. Do not disconnect the power module cables.
4. Remove the power module cover. Refer to Figure 3-12.
5. Rotate potentiometer VR51 (next to the terminal block on PS902) as required.

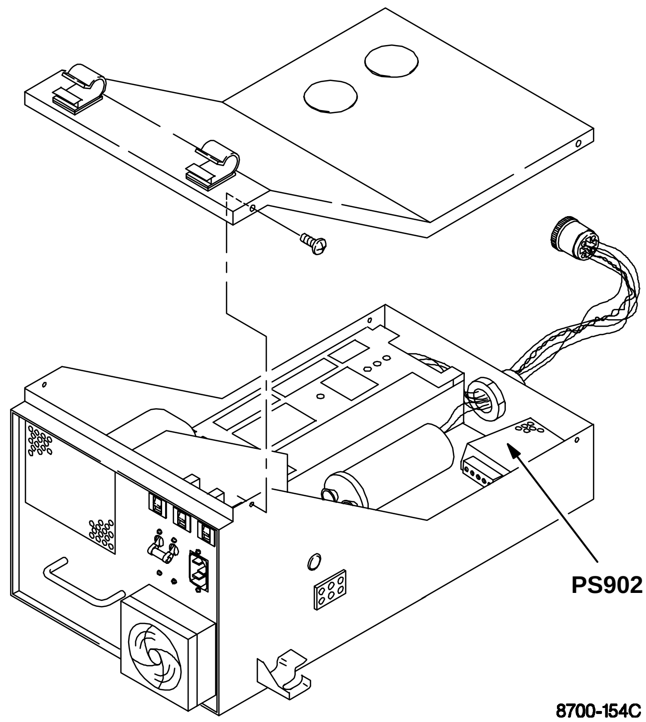


Figure 3-12.

3-8. Multifeed Board (MFB) Actuator

Note

This procedure should be performed only if the MFB or associated hardware has been replaced.

Special Tools

Maintenance Personal Computer (MPC)
MPC for Windows software package

Measurement

1. Connect the MPC to the MPC port on the rear of the IMAGER.
2. Power up the MPC and start the MPC for *Windows* program.
3. Open the Operations menu and select Diagnostics.
4. Click on the SCB button, or open the Operations menu and select Subsystem→SCB.
5. Select the Cmd button to display the Command window.
6. Type **show adc=9** in the Command field, then press Enter or click OK.
7. Calculate the average of the comma-separated numbers displayed in the Response field.

Note

The response actually includes 30 numbers; however, the average of the first 8 numbers is sufficient for this purpose. (The numbers should be in the range of 1000 to 3000.)

8. Type **show adc=10** in the Command field, then press Enter or click OK.
9. Calculate the average of the comma-separated numbers displayed in the Response field.
10. If the difference between the average values calculated in steps 8 and 9 is greater than 200, perform the following adjustment procedure. If the difference is less than 200, perform the pickup arm height calibration (3-10).

Adjustment

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

Note

When performing the following procedure, move the actuator in small increments. The adjustment is very sensitive.

1. Remove the supply cartridge.
2. Open the left side door.
3. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.
4. Use a long Phillips head screwdriver to loosen the screw that secures the actuator for the sensor on the MFB (Figure 3-13).
5. Move the actuator slightly and retighten the screw. (Move the actuator **up** if Channel 10 is higher. Move it **down** if Channel 9 is higher.)
6. Repeat the measurement and adjustment procedures as required.
7. Slide the transport back into place, close the left side door, and install the supply cartridge.
8. Perform the pickup arm height calibration (3-10).

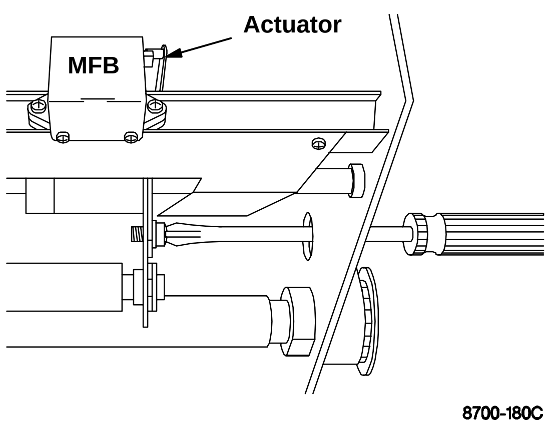


Figure 3-13.

3-9. Multifeed Board (MFB) Actuator (Alternative Adjustment)

Do this procedure only if the MFB or associated hardware has been replaced.

Specification

ADC values within 200 of each other and within a range of 1530 to1850

Special Tools

- Maintenance Personal Computer (MPC)
- MPC for Windows software package
- Dual-Trace Scope or Dual-Channel Digital Multimeter

Measurement

1. Connect the MPC to the MPC port on the rear of the IMAGER.
2. Power up the MPC and start the MPC for *Windows* program.
3. Open the Operations menu and select Diagnostics.
4. Click on the SCB button, or open the Operations menu and select Subsystem→SCB.
5. Select the Cmd button to display the Command window.
6. Type **show adc=9** in the Command field, then press Enter or click OK. Record the number.
7. Type **show adc=10** in the Command field, then press Enter or click OK. Record the number.
8. For both steps 6 and 7, calculate the average of the comma-separated numbers displayed in the **Response** field. The two averages must be within 200 of each other, and within the range of 1530 to 1850.

Note

The response actually includes 30 numbers. However, the average of the first 8 numbers is sufficient for this purpose.

9. If the average values or range are not within spec, perform the following adjustment procedure. If they are within spec, perform the pickup arm height calibration (3-10).

Adjustment

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the imager. These voltages can cause severe injury or death.

1. Remove the supply cartridge and open the left side door.
2. Squeeze the handle on the transport assembly and extend the assembly fully.
3. Hook up a two-channel scope to TP1 and TP2 on the Multifeed Board (Figure 3-14). (You can use a dual–channel multimeter, if you wish.) *Connect at least one ground lead to TP3*.

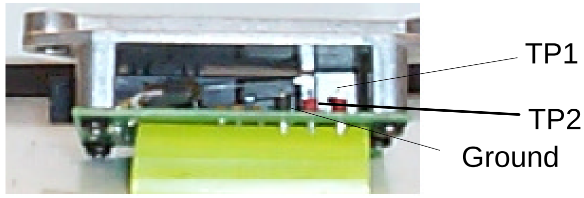


Figure 3-14.

4. Use a long Phillips head screwdriver to loosen the screw that secures the actuator for the sensor on the MFB (Figure 3-15).

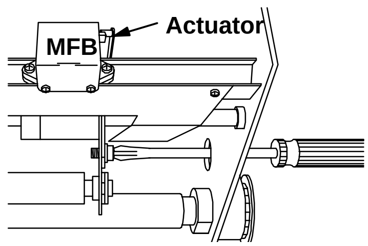


Figure 3-15.

5. Move the actuator slightly forward or backward until the scope traces overlay each other (at about 5 vdc). (Use the 2-Volt per Division scale.)

Note

On a multimeter the readings should be within 0.25 volts of each other.

6. Retighten the actuator screw.
7. Repeat the **Measurement** and **Adjustment** procedures as needed to achieve the difference spec (200).
8. If you cannot achieve the range value, adjust R6 (see Figure 3-16) to between 1530 and 1850.

Figure 3-16.

9. Slide the transport back into place, close the left side door, and install the supply cartridge.
10. Do the pickup arm height calibration (3-10).

3-10. Pickup Arm Height Calibration

Note

This procedure should be performed after the multifeed board (MFB) actuator adjustment (8 or 3-9) has been performed, or after the system control board (SCB) has been replaced.

Special Tools

Maintenance Personal Computer (MPC)
MPC for *Windows* software package

Adjustment

1. Connect the MPC to the MPC port on the rear of the IMAGER.
2. Power up the MPC and start the MPC for *Windows* program.
3. Click on the SCB button, or open the Operations menu and select Subsystem→SCB.
4. Select the Config button to display the 8700/8500 Imager Setup window.
5. Select the Pickup Arm Height button.
6. A confirmation window is displayed. Select the Yes button to initiate the calibration.

Note

For a detailed description of the events that occur during the calibration process, refer to the MPC for *Windows* Help file.

3-11. Processor Drum Brushes

This procedure must be performed every PM and when indicated by troubleshooting.

Specification

Brush surfaces must completely contact slip ring surfaces. Minimum height of ground brush must be 3.1 mm. Minimum height of other brushes must be 2.3 mm.

Measurement

1. Remove power and unplug the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Raise the top cover of the IMAGER. Grasp the handle of the processor/exit assembly and pull the assembly out to its extended position
3. Check the side-to-side and front-to-back alignment of the brushes with respect to the slip rings. The alignment must be as shown in Figure 3-17 and there must be no sign of arcing (burns). (Arcing will interrupt power to the RPB.) If necessary, adjust as instructed below.
4. Remove the processor drum (see procedure 4-2-1) and check the height of the brushes. If they are below the minimum heights shown in Figure 3-17, replace the brush assembly (see procedure 4-2-4).

Adjustment

Note

The brush assembly is mounted with two screws, and is longer on one side. If installed incorrectly, the brushes will touch the slip ring on only one corner.

1. Loosen two screws and adjust the brush assembly side-to-side so the brush surfaces completely contact the slip ring surfaces. Then tighten the two screws.
2. Slide the drum assembly side-to-side and verify that the slip rings and brushes remain in full contact. Readjust as necessary.

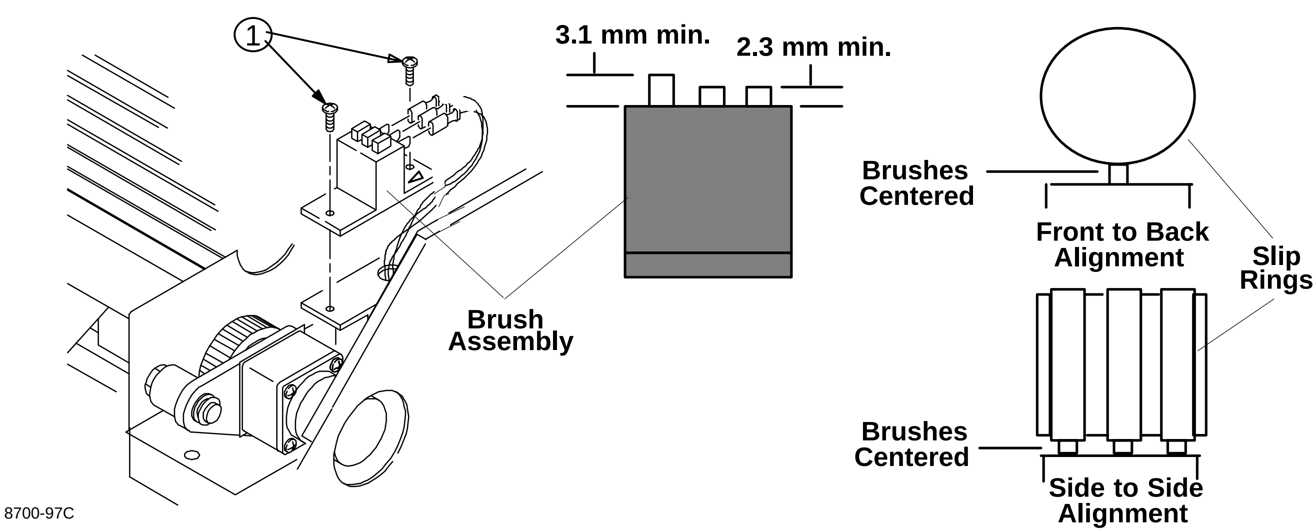


Figure 3-17. Brush to Slip Ring Alignment

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Section 4 – Disassembly/Reassembly

4-1. Covers and Panels

4-1-1. Front Panel

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.

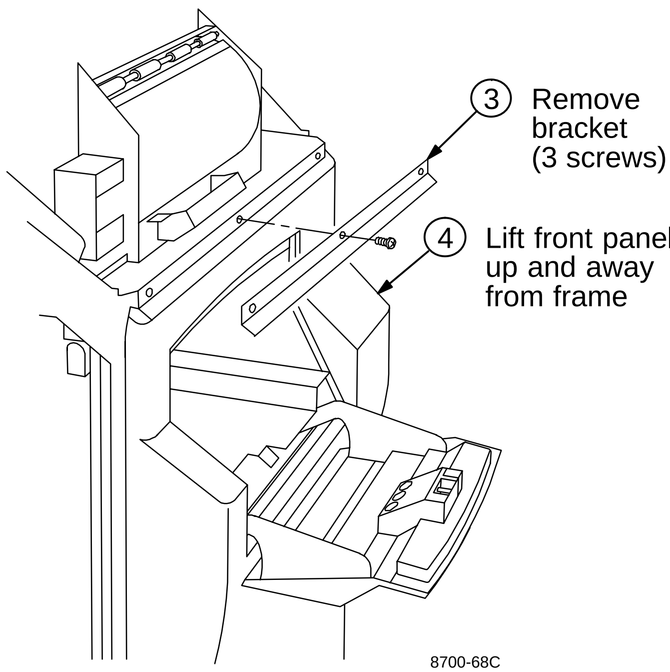


Figure 4-1.

4-1-2. Rear Panel

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Raise the top cover of the IMAGER.
4. Grasp the handle on the front of the processor/exit assembly and pull the assembly out to its extended position. Locate the connector on the inside rear wall of the imager (behind the processor).
5. Unlatch and open the filter housing. Remove the filter to reduce the weight of the housing.

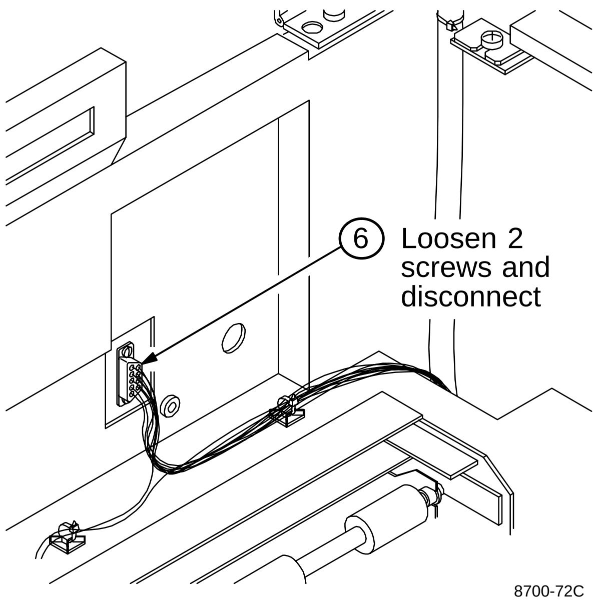


Figure 4-2.

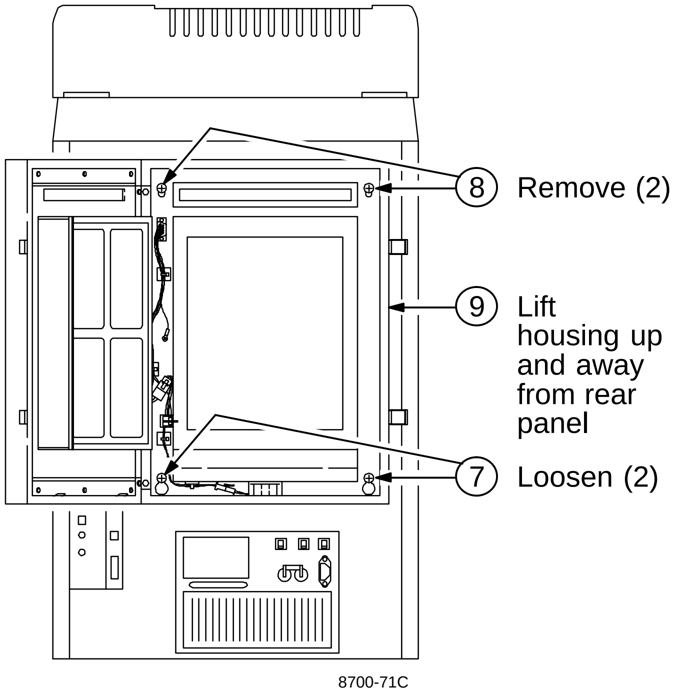


Figure 4-3.

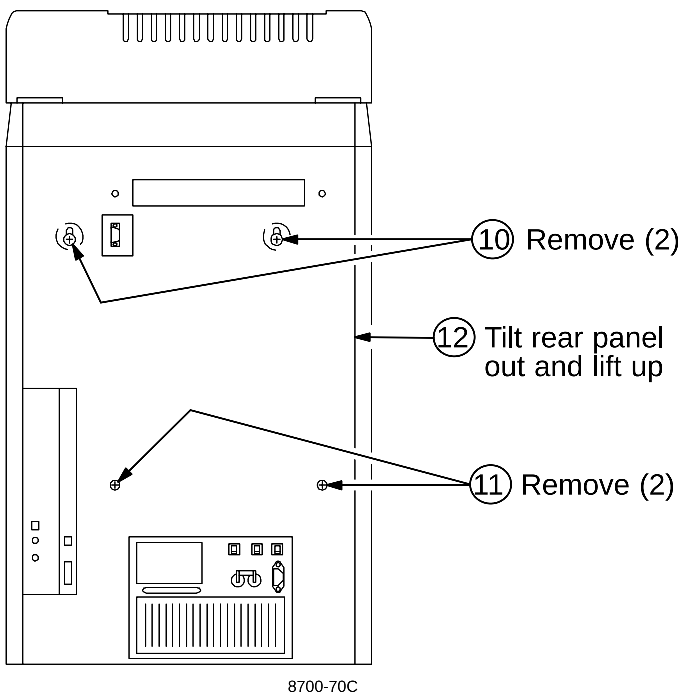


Figure 4-4.

4-1-3. Right Side Panel

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.

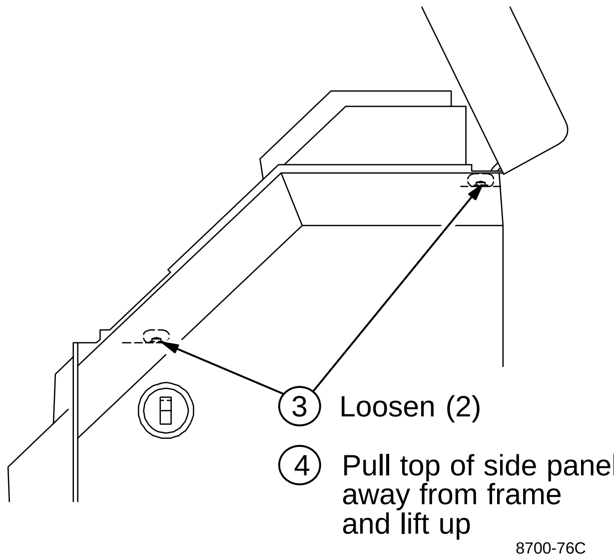


Figure 4-5.

4-1-4. Electronics Enclosure Cover

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the right side panel (4-1-3).

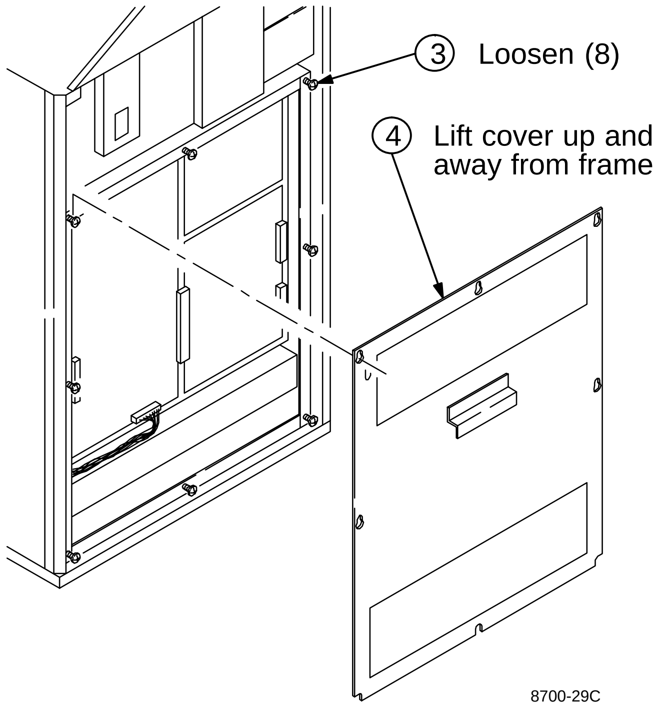


Figure 4-6.

4-2. Processor/Exit Assembly

4-2-1. Processor Drum

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.
3. Grasp the handle on the front of the processor/exit assembly and pull the assembly out to its extended position.

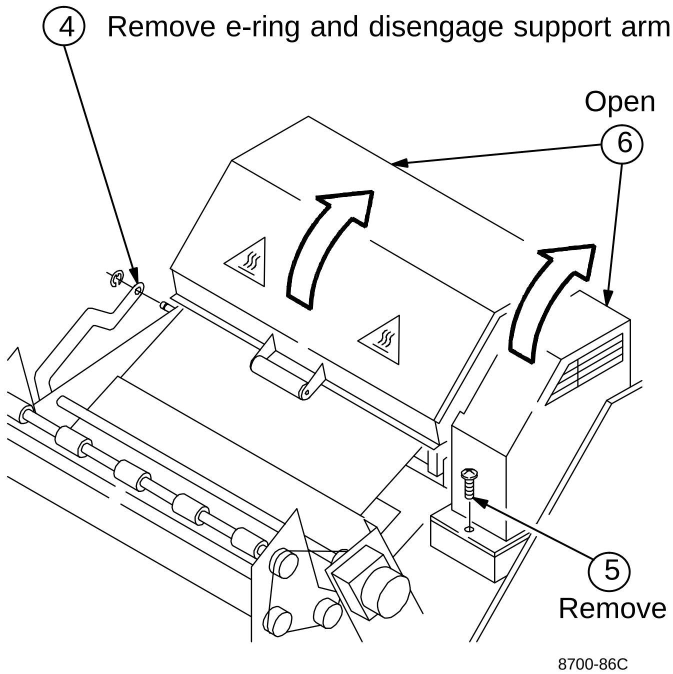


Figure 4-7.

Caution

Hot Surface

When the IMAGER is initially powered down, the processor drum and rollers are hot. Take care when removing the drum.

Caution

The surface of the drum is easily damaged by fingernails and jewelry. Handle the drum with one hand on the large gear and the other hand on the opposite endcap. Do not touch the gray silicone surface of the drum.

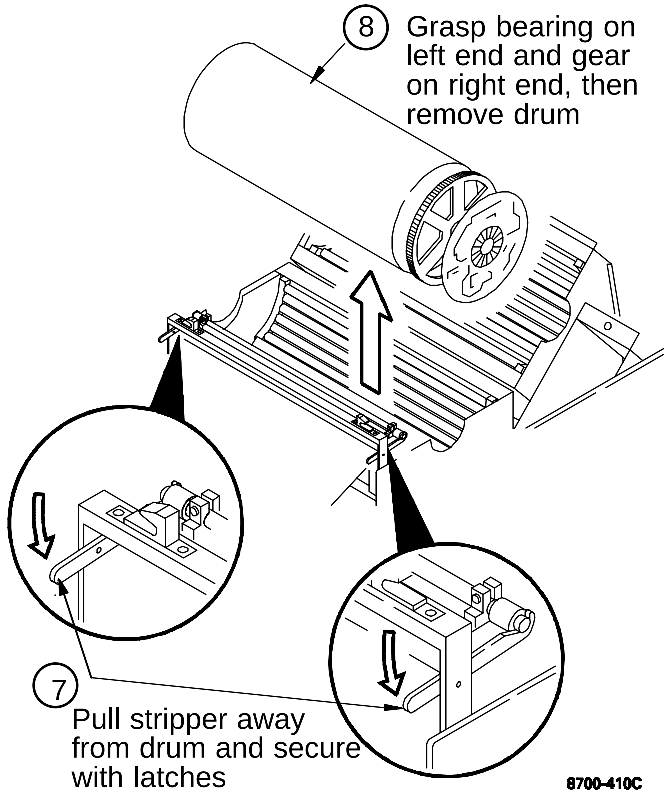


Figure 4-8.

Caution

The surface of the drum is easily damaged. Do not lay the drum on its side. Instead, lay a roll of tape on a table, then stand the drum on top of the tape. The type of tape is irrelevant, as long as the core of the roll has a diameter greater than 2 inches (51mm).

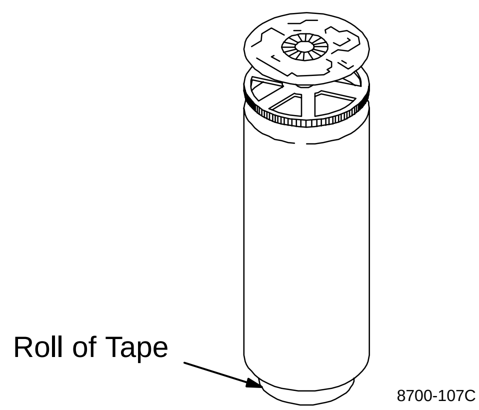


Figure 4-9.

Note

After a new drum has been installed, the processor temperature adjustment must be performed (procedure 3-1).

4-2-2. Processor Rollers

1. Remove power and remove the processor drum (4-2-1).

Note

There are three sets of rollers in the processor. The top and middle sets are in the upper half of the housing, and the bottom set is in the lower half of the housing. The middle and bottom sets each have ten rollers. The top set has only nine rollers. When replacing rollers in the top set, do not install a roller in the topmost location (closest to the handle on the processor cover).

The springs on the roller retainers are position-specific and must not be removed. If a spring is damaged, replace the retainer assembly.

Note

The **arrows** on the retainers should all point in the direction of Film Flow.

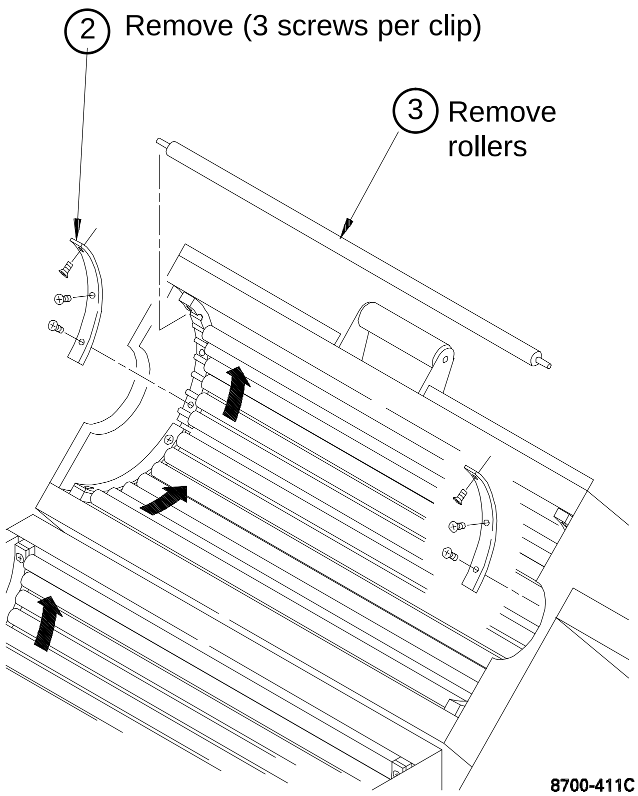


Figure 4-10.

4-2-3. Processor Motor (M301)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the processor drum (4-2-1).

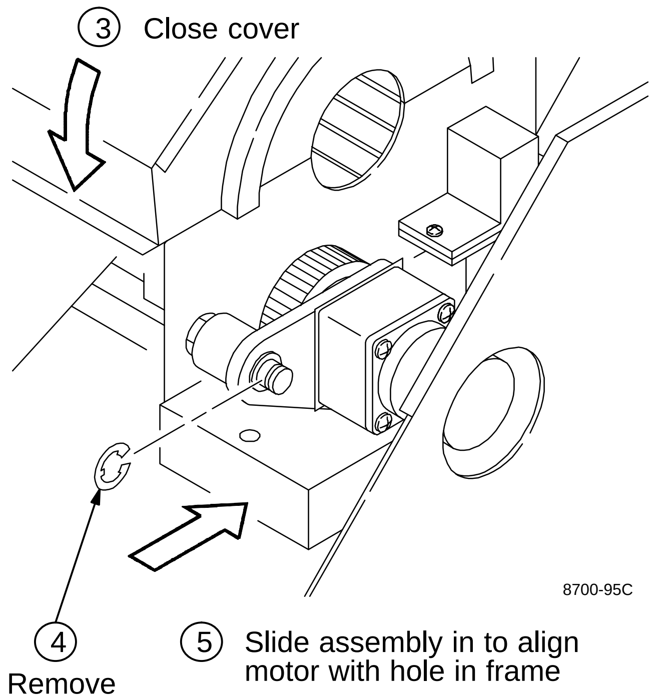


Figure 4-11.

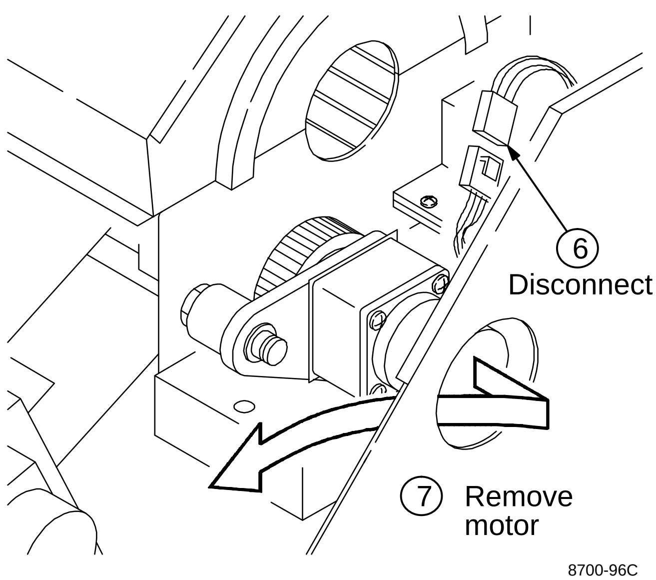


Figure 4-12.

4-2-4. Processor Brushes

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the processor drum (4-2-1).

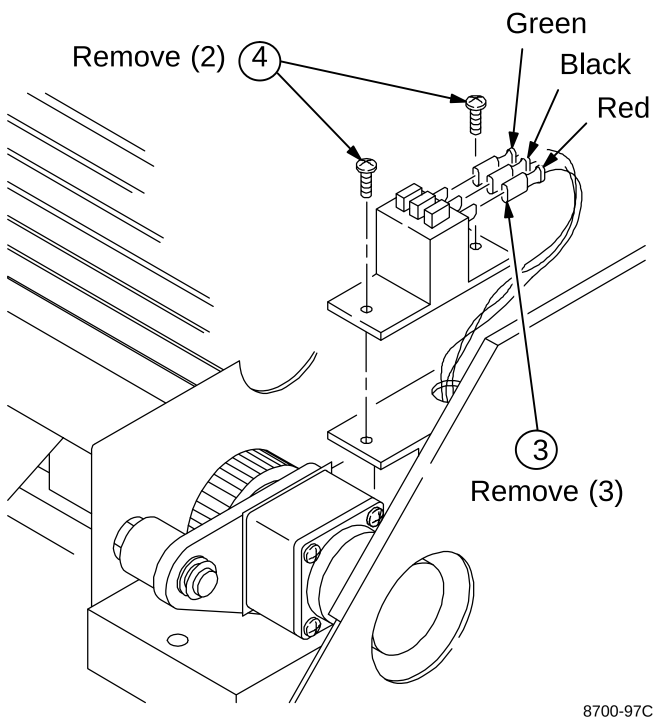


Figure 4-13.

4-2-5. Processor Communication Board (PCB)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.
3. Grasp the handle on the front of the processor/exit assembly and pull the assembly out to its extended position.

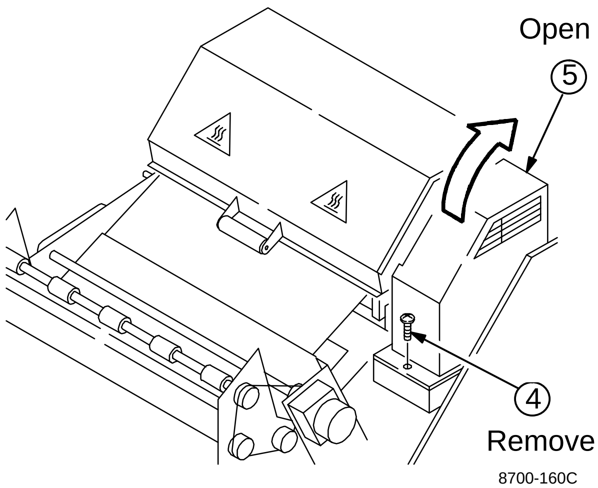


Figure 4-14.

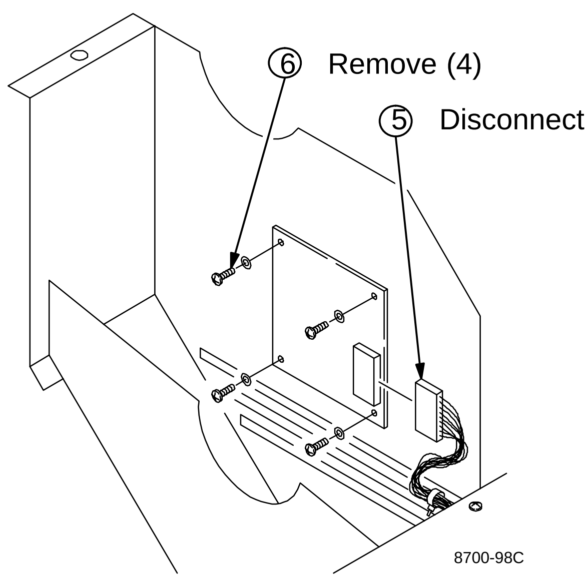


Figure 4-15.

Note

After a new PCB has been installed, the processor temperature adjustment must be performed (procedure 3-1).

4-2-6. Rotating Processor Board (RPB)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the processor drum (4-2-1).

Note

When reassembling, be aware of the colors of the four wires with spade connectors. The color code is printed next to the terminals on the RPB.

Note

After a new RPB has been installed, the processor temperature adjustment must be performed (procedure 3-1).

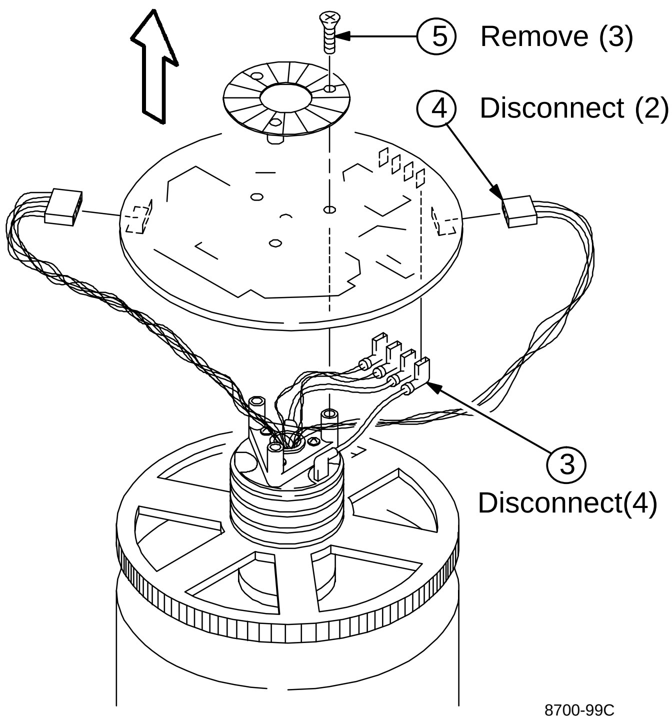


Figure 4-16.

4-2-7. Processor Slip Rings

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the processor drum (4-2-1).
3. Remove the rotating processor board (4-2-6).

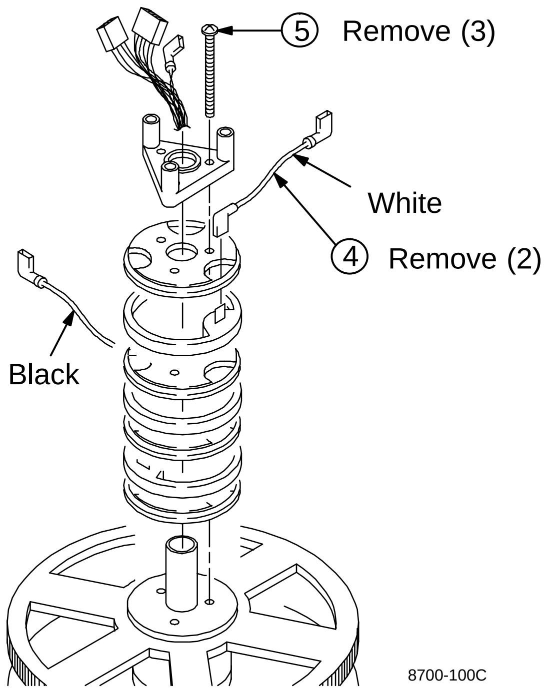


Figure 4-17.

4-2-8. Processor Thermal Fuses

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the processor drum (4-2-1).

Caution

The drum must be laid on its side in order to remove the thermal fuses. To prevent damage to the surface of the drum, lay the drum on a soft, lint-free object (for example, a folded cloth towel covered with the lint-free cloths used for cleaning the drum).

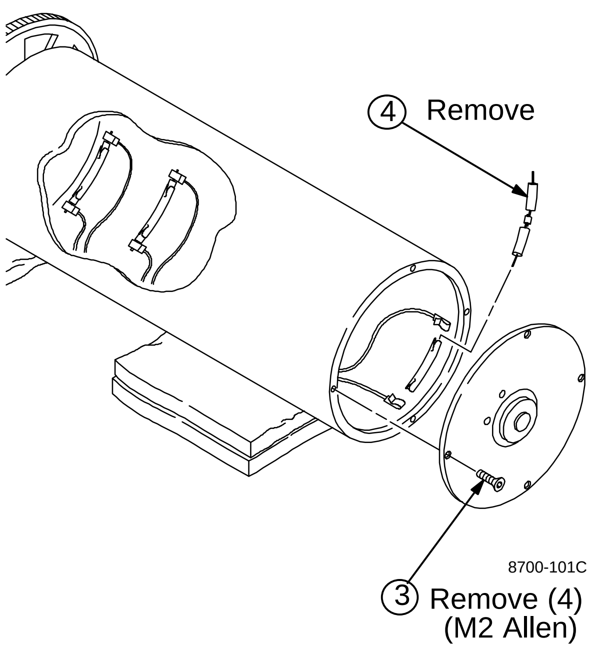


Figure 4-18.

4-2-9. Exit Assembly

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.
3. Grasp the handle on the front of the processor/exit assembly and pull the assembly out to its extended position.

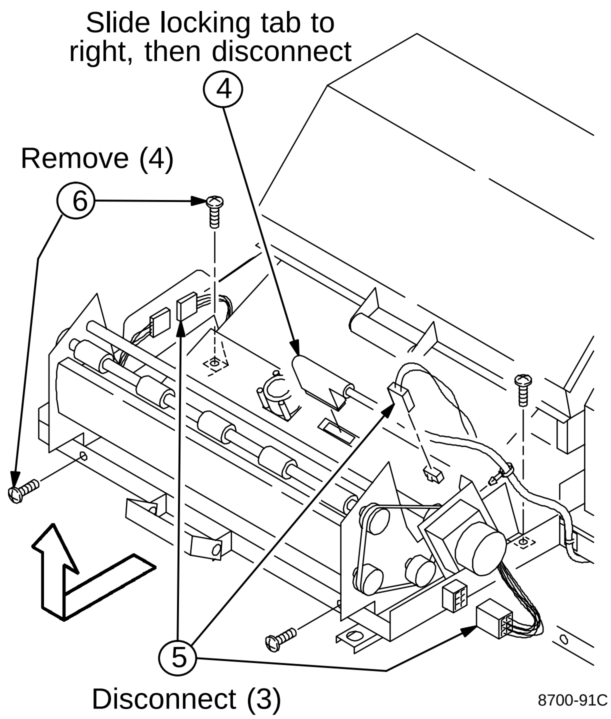


Figure 4-19.

4-2-10. Exit Motor (M303)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.
3. Grasp the handle on the front of the processor/exit assembly and pull the assembly out to its extended position.

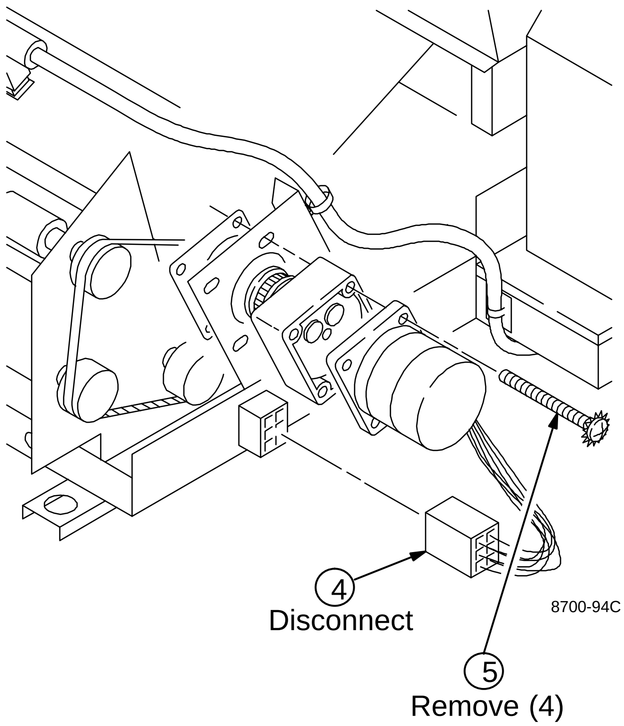


Figure 4-20.

4-2-11. Processor Exit Sensor (SW301)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the exit assembly (4-2-9).

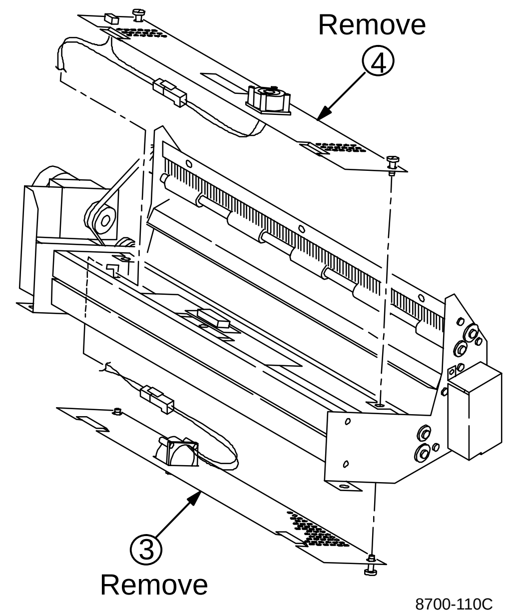


Figure 4-21.

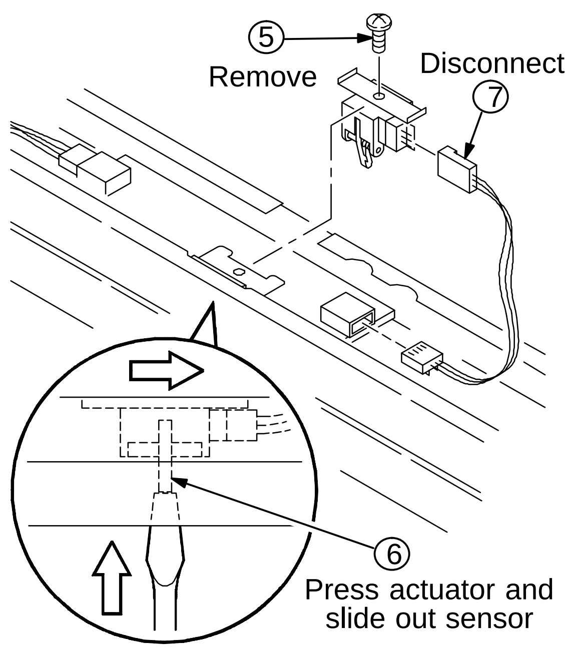


Figure 4-22.

4-2-12. Processor Entrance Sensor (SW302)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the processor drum (4-2-1).
3. Remove the exit assembly (4-2-9).

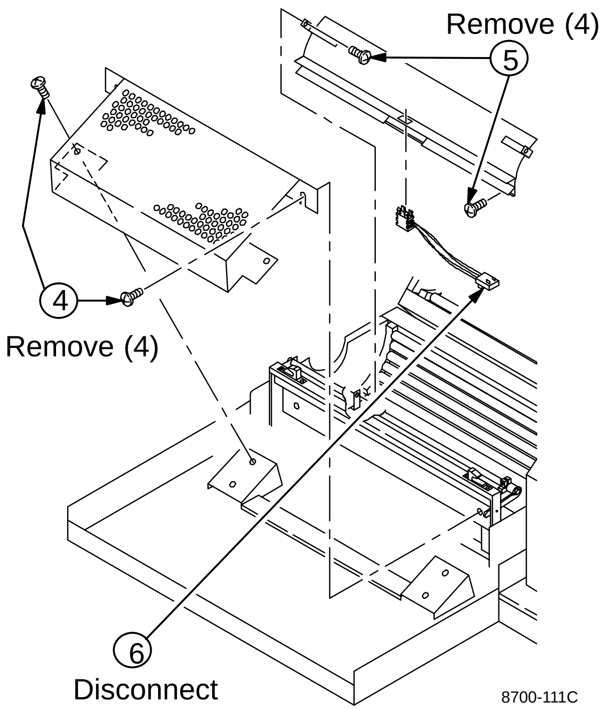


Figure 4-23.

4-2-13. Exit Transport Sensor (SW304)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.

Note

After reassemby, check the adjustment of the sensor actuator (procedure 3-5).

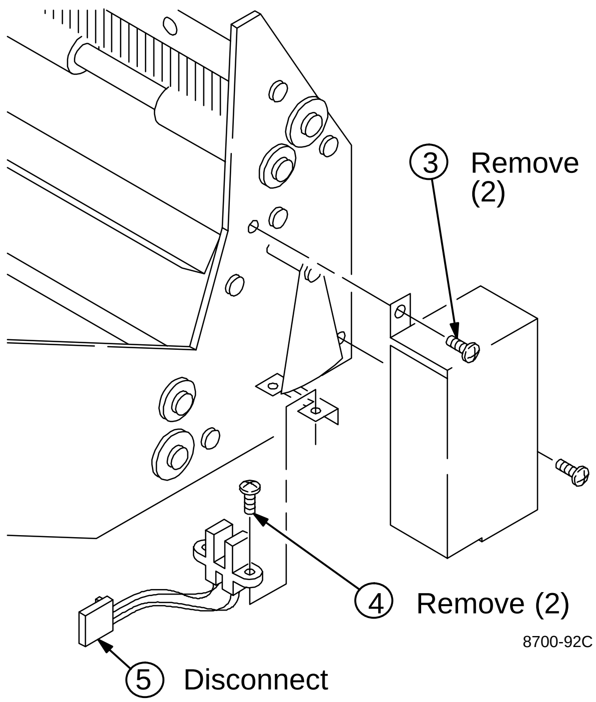


Figure 4-24.

4-2-14. Densitometer Assembly

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the exit assembly (4-2-9).

Note

After a new densitometer has been installed, a densitometer calibration must be performed (procedure 3-3).

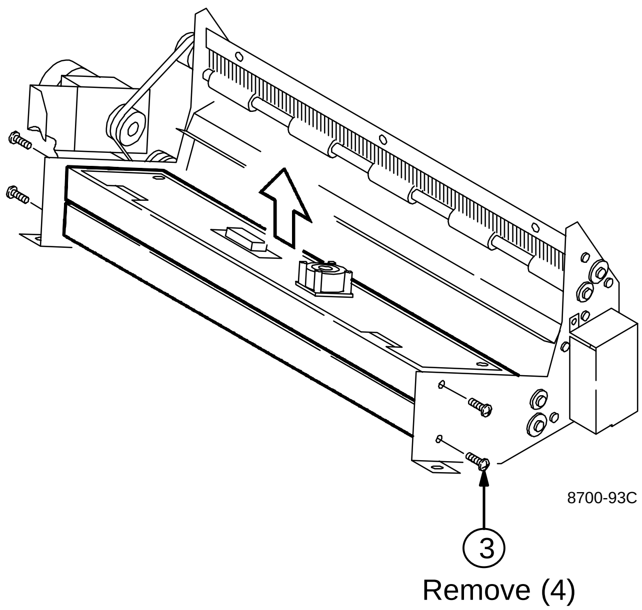


Figure 4-25.

4-3. Transport Assembly

4-3-1. Transport Motor (M402)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

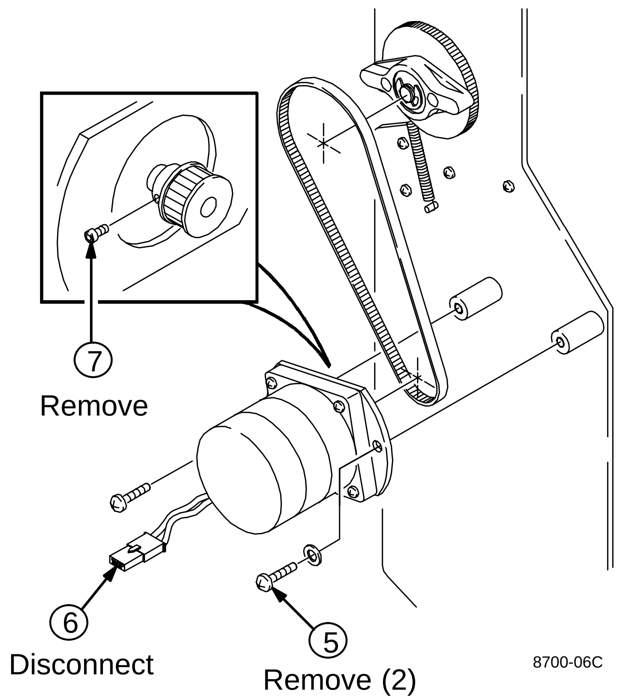


Figure 4-26.

4-3-2. Transport Feed Roll Motor (M401)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rear panel from the IMAGER (4-1-2).
4. Open the left side door.
5. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

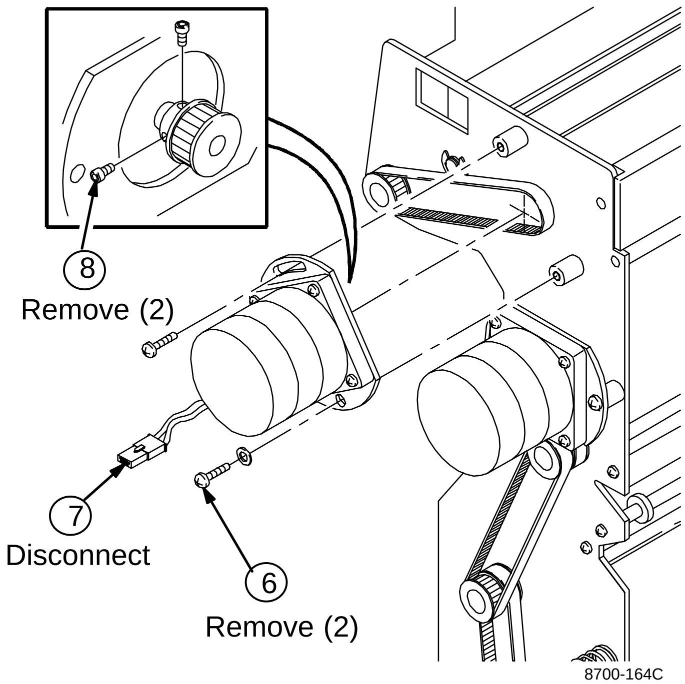


Figure 4-27.

4-3-3. Platen Motor (M403)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rear panel from the IMAGER (4-1-2).
4. Open the left side door.
5. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

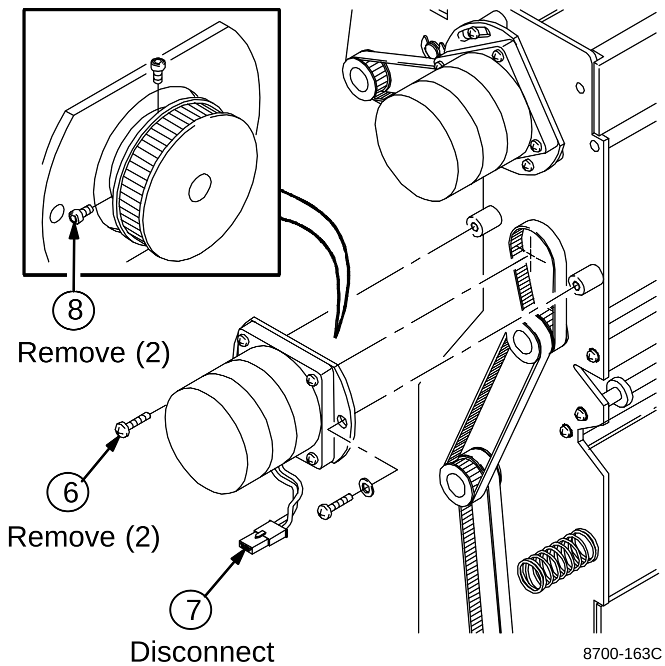


Figure 4-28.

4-3-4. Platen Entrance Sensor (SW402)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

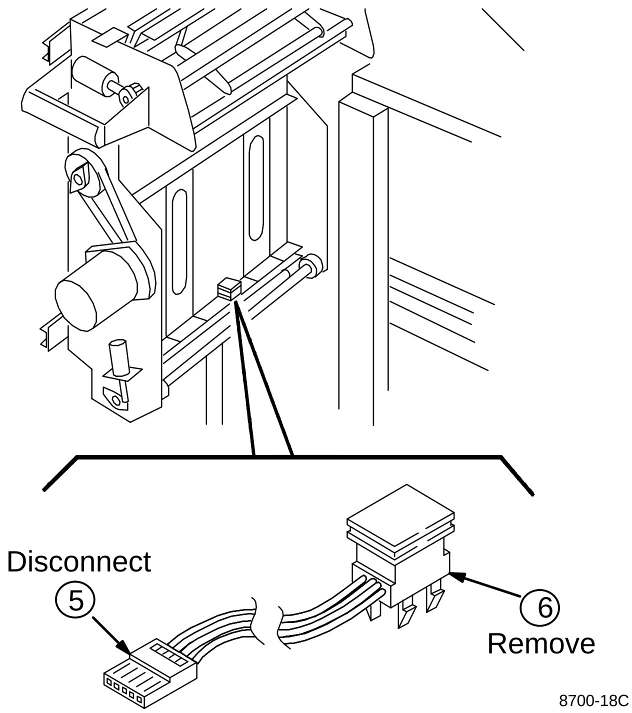


Figure 4-29.

4-3-5. Platen Exit Sensor (SW403)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

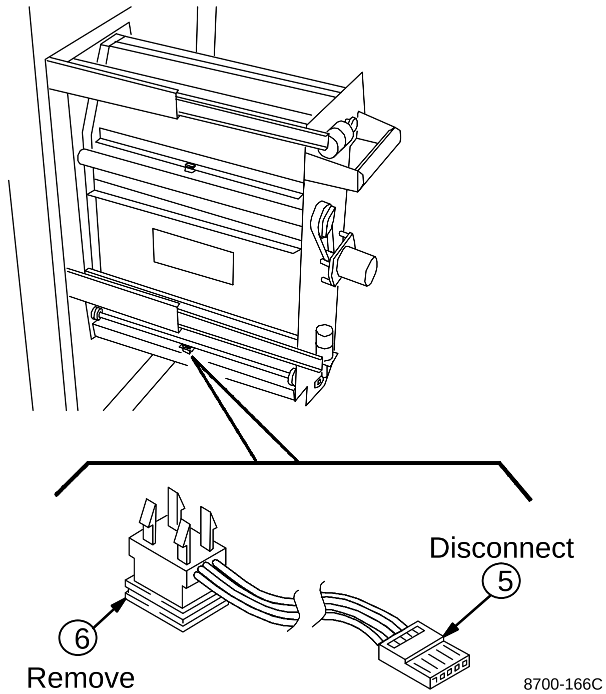


Figure 4-30.

4-3-6. Transport Midpoint Sensor (SW404)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

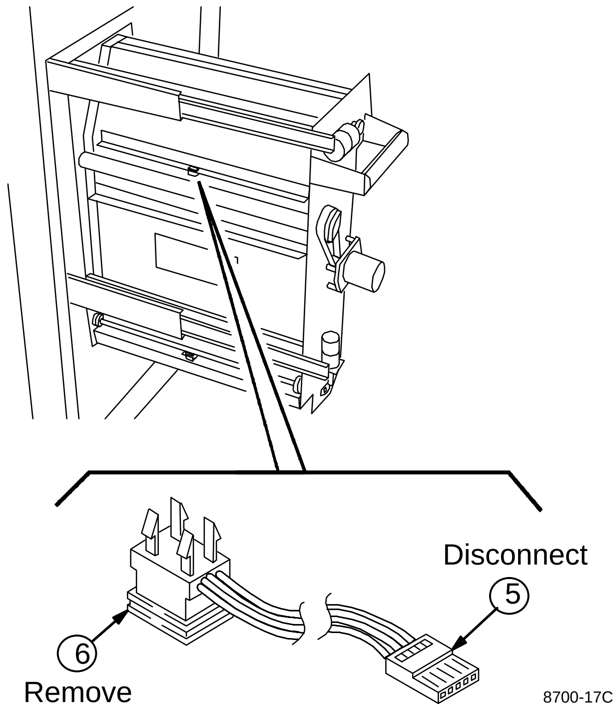


Figure 4-31.

4-3-7. Transport Feed Sensor (SW405)

Note

SW405 is no longer used in later production machines.

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

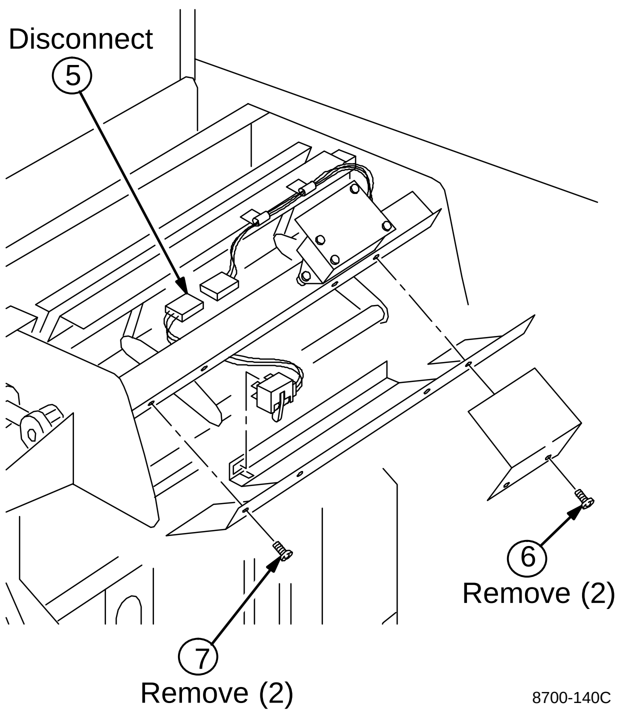


Figure 4-32.

4-3-8. Tongue Depressor Sensor (SW406)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

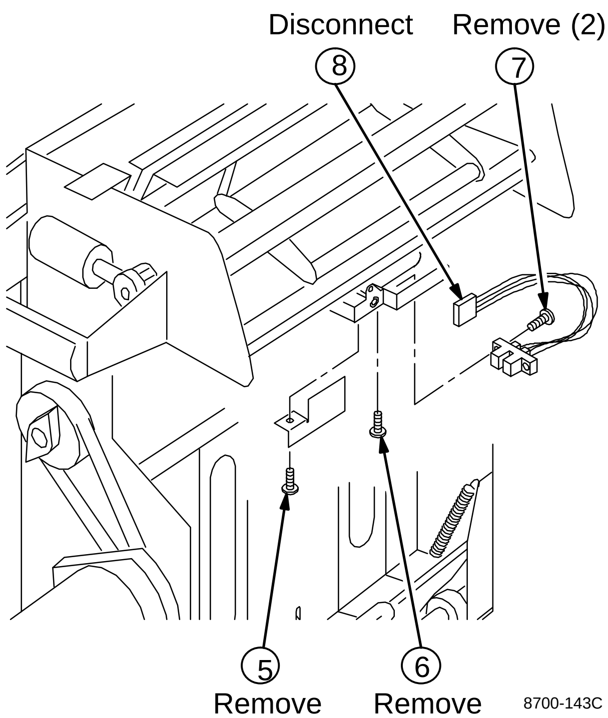


Figure 4-33.

4-3-9. Tongue Depressor Interrupt Switch (SW407)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

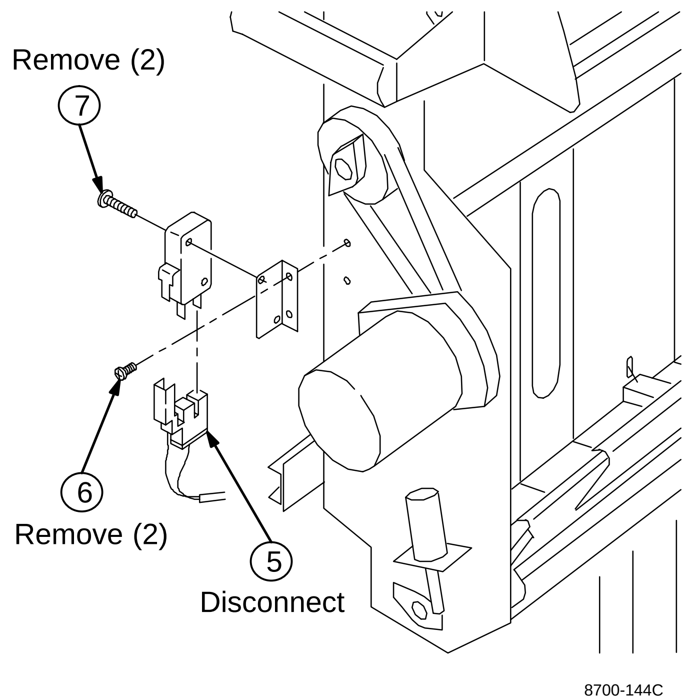


Figure 4-34.

4-3-10. Tongue Depressor Solenoid (Y401)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

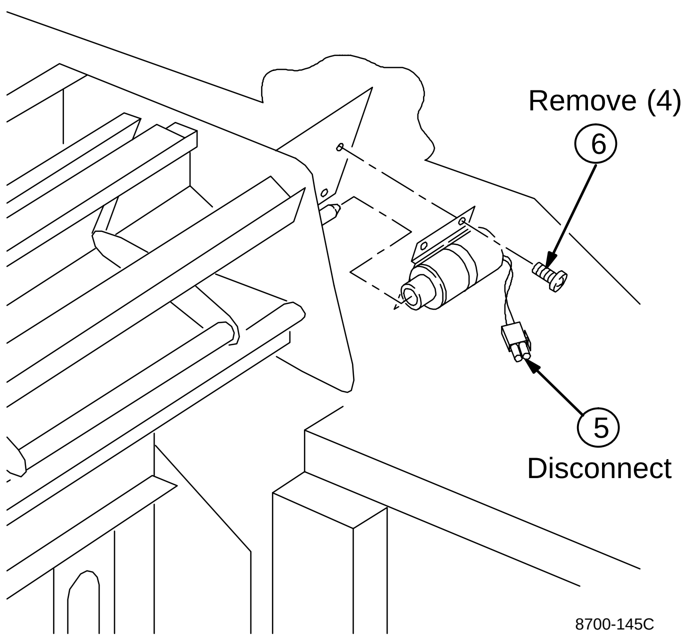


Figure 4-35.

4-3-11. Transport Feed Roll Solenoid (Y402)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

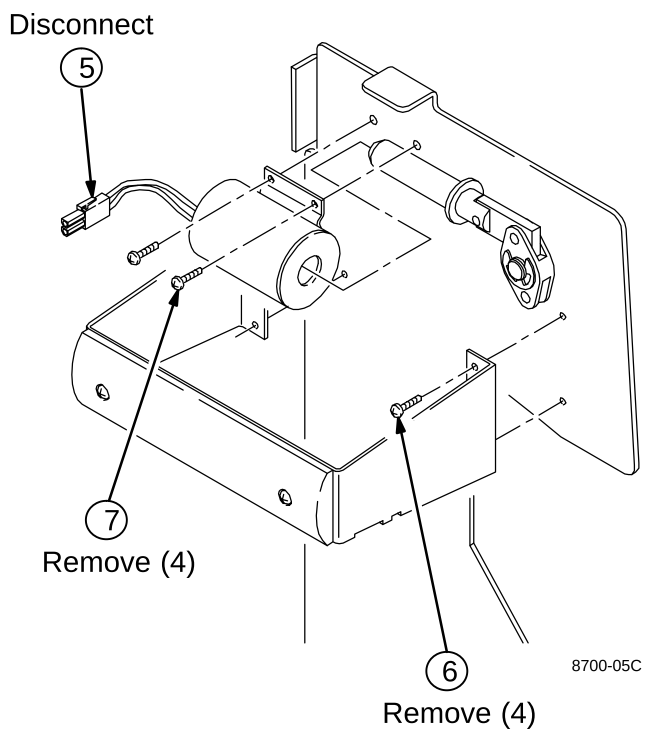


Figure 4-36.

4-3-12. Gate Solenoid (Y403)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

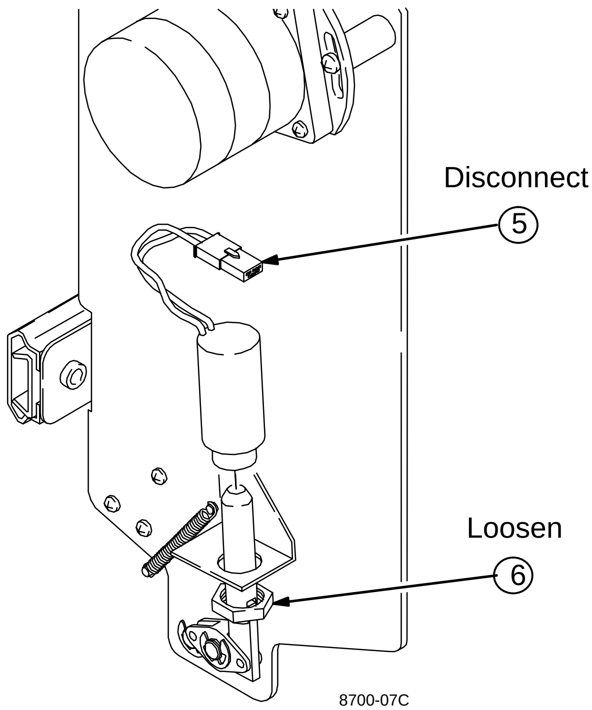


Figure 4-37.

4-3-13. Multifeed Board (MFB)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Squeeze the handle on the transport assembly and pull the assembly out to its extended position.

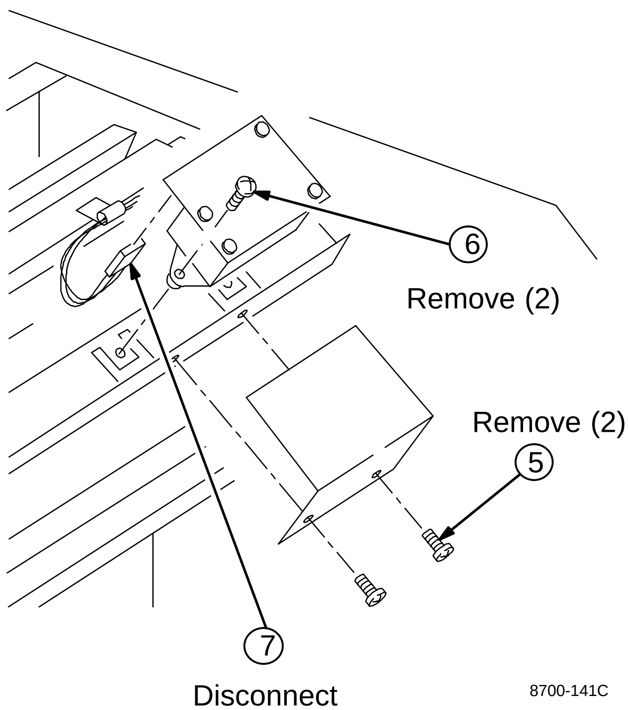


Figure 4-38.

4-4. Pickup Assembly

4-4-1. Pickup Module

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the front panel (4-1-1).

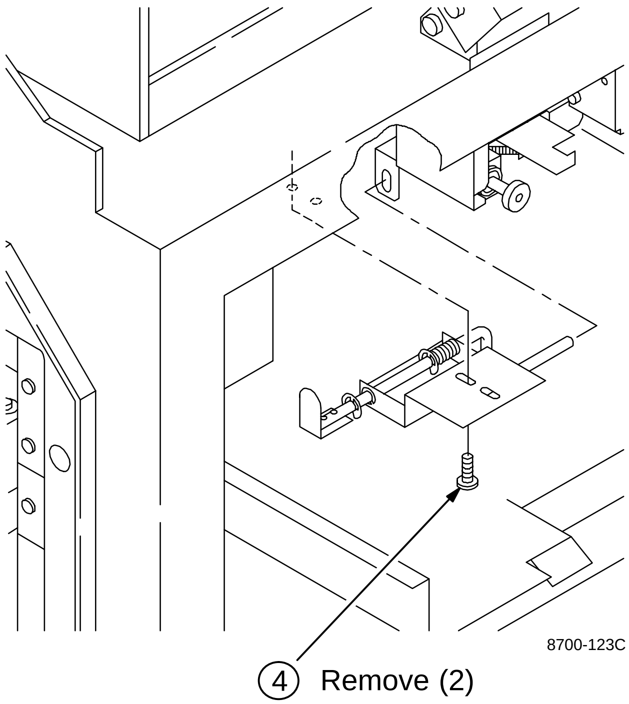


Figure 4-39.

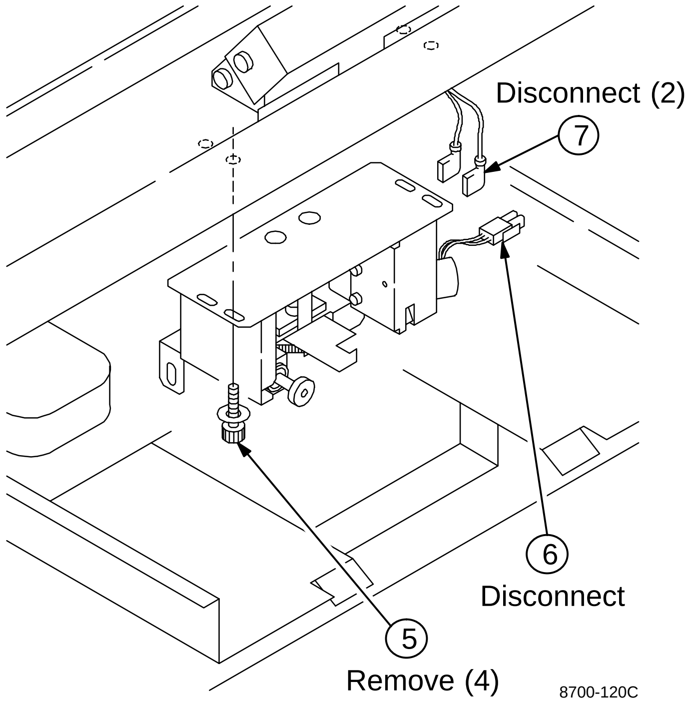


Figure 4-40.

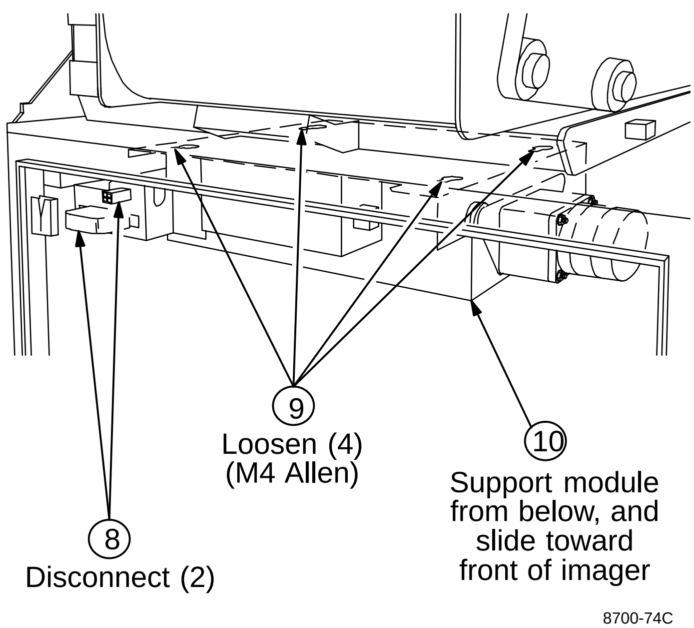


Figure 4-41.

4-4-2. Vacuum Relay (K501)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the front panel (4-1-1).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the relay.

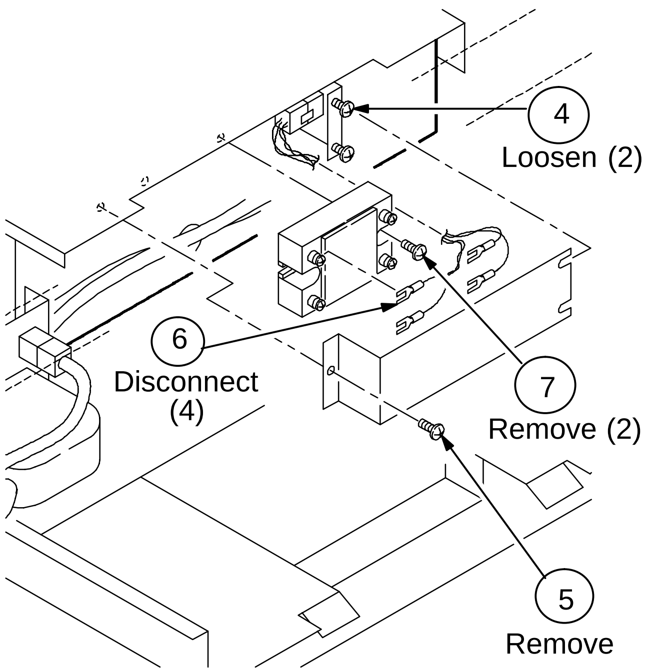


Figure 4-42.

4-4-3. Pickup Motor (M501)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the pickup module (4-4-1).

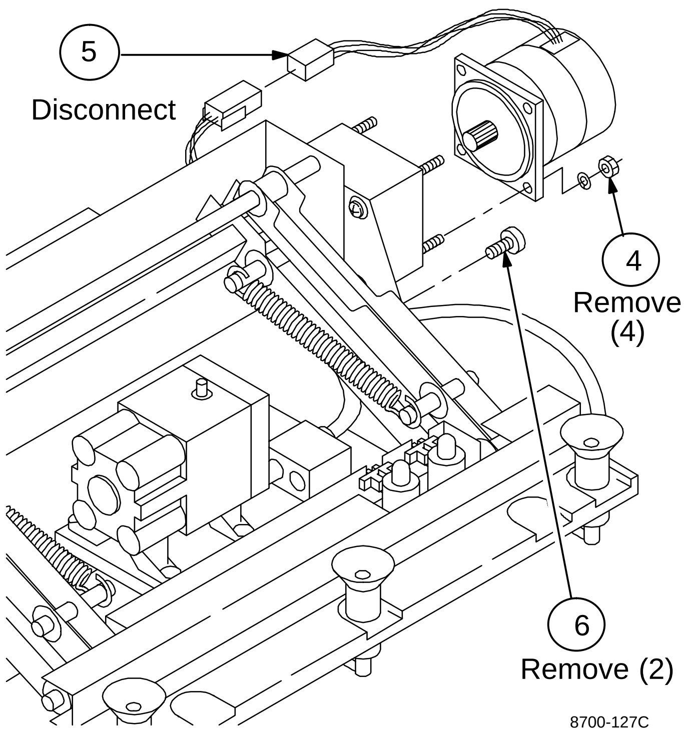


Figure 4-43.

4-4-4. Vacuum Pump (M502)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the pickup module (4-4-1).

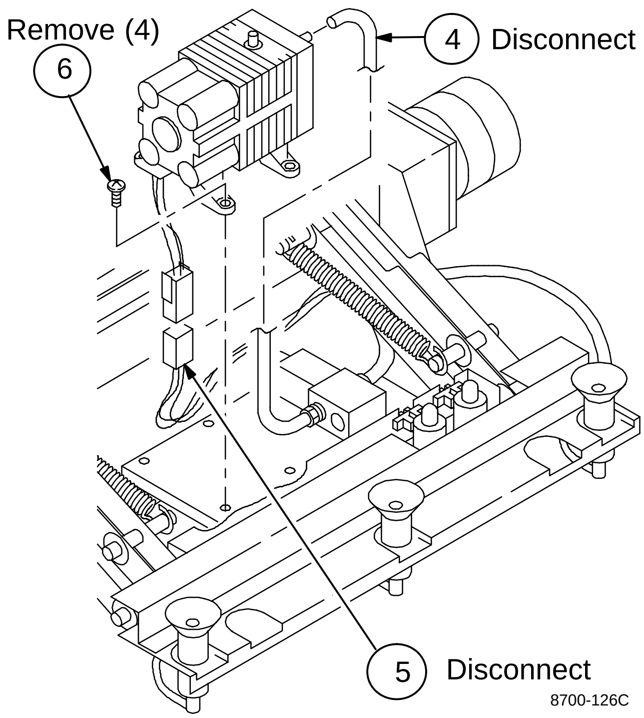


Figure 4-44.

4-4-5. Picker Down Sensor (SW501)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the pickup module (4-4-1).

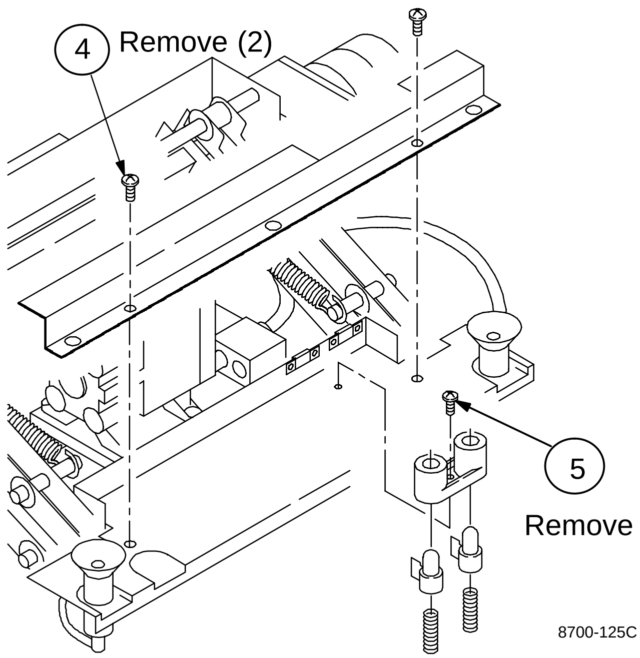


Figure 4-45.

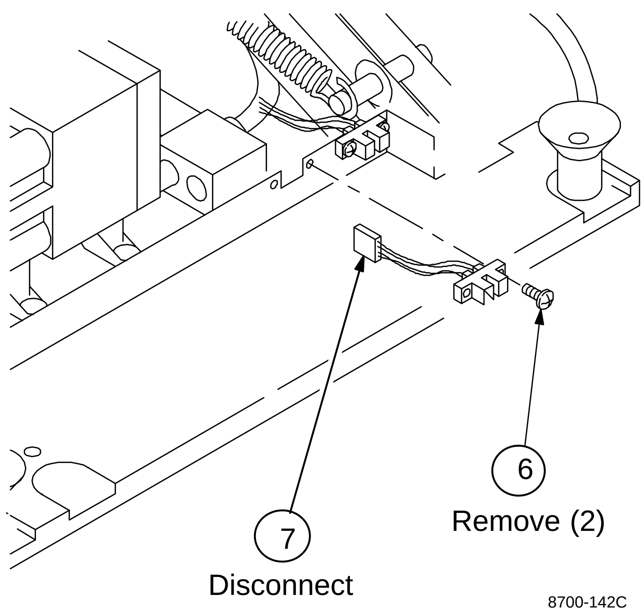


Figure 4-46.

4-4-6. Film Out Sensor (SW502)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the pickup module (4-4-1).

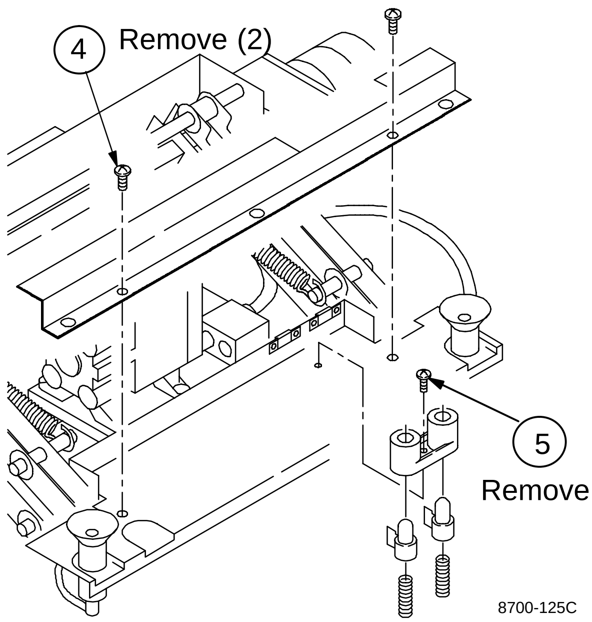


Figure 4-47.

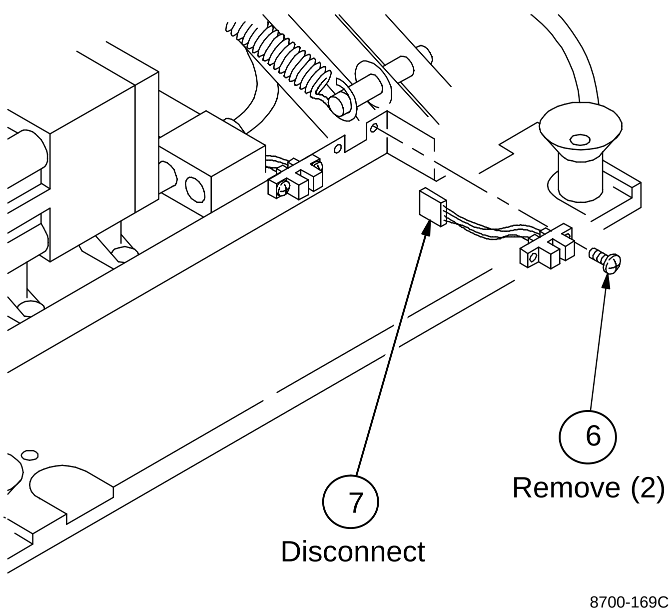


Figure 4-48.

4-4-7. Picker Up Sensor (SW503)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the pickup module (4-4-1).

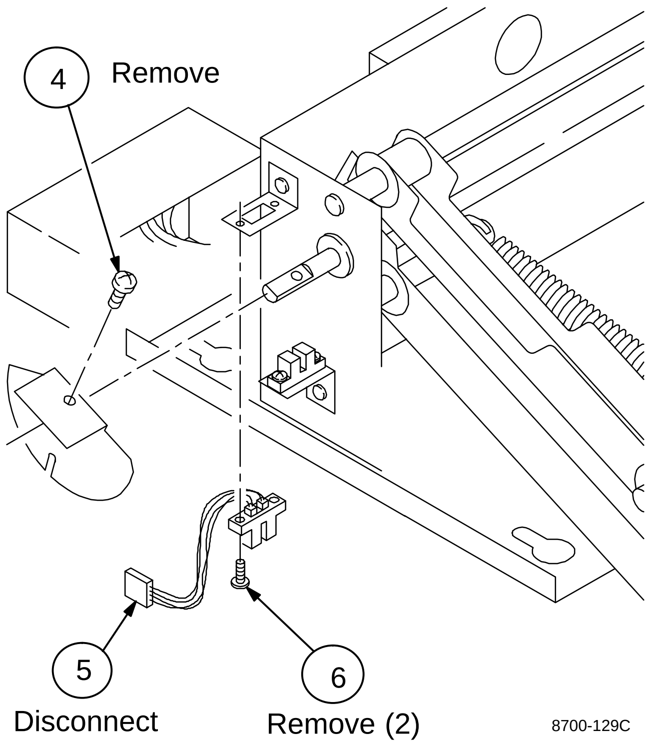


Figure 4-49.

4-4-8. Picker Extended Sensor (SW504)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the pickup module (4-4-1).

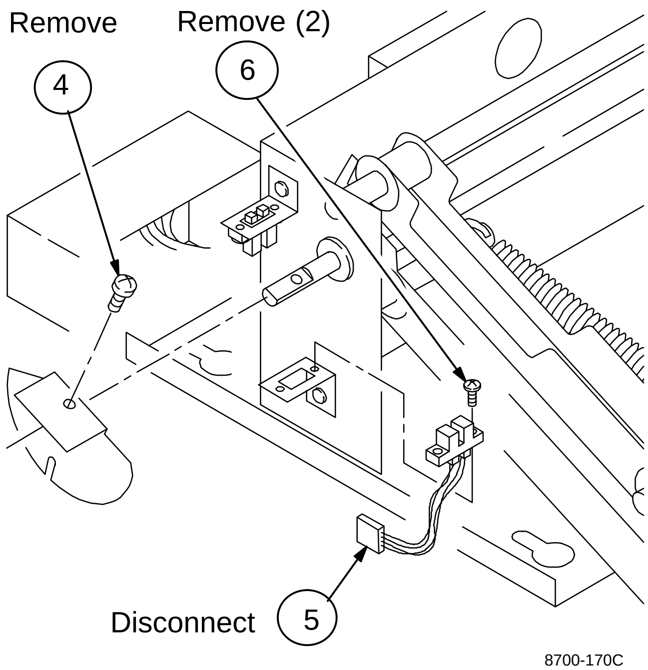


Figure 4-50.

4-4-9. Vacuum Solenoid (Y501)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the pickup module (4-4-1).

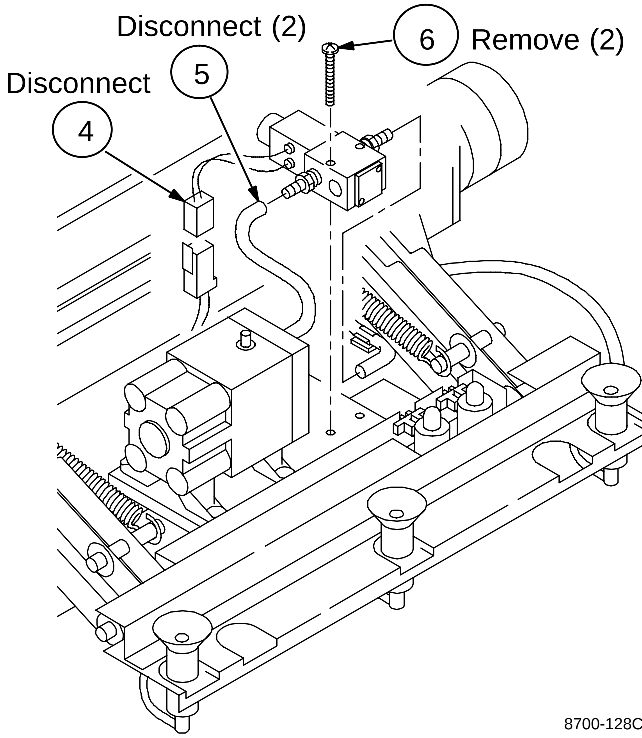


Figure 4-51.

4-5. Rollback Assembly

4-5-1. Rollback Module

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the front panel (4-1-1) and open the left side door.
4. Loosen two screws and disconnect connector.
5. Loosen two screws attaching end of module.
6. Remove two screws attaching large connector.
7. Disconnect Distribution Board cable from clip to provide cable slack.

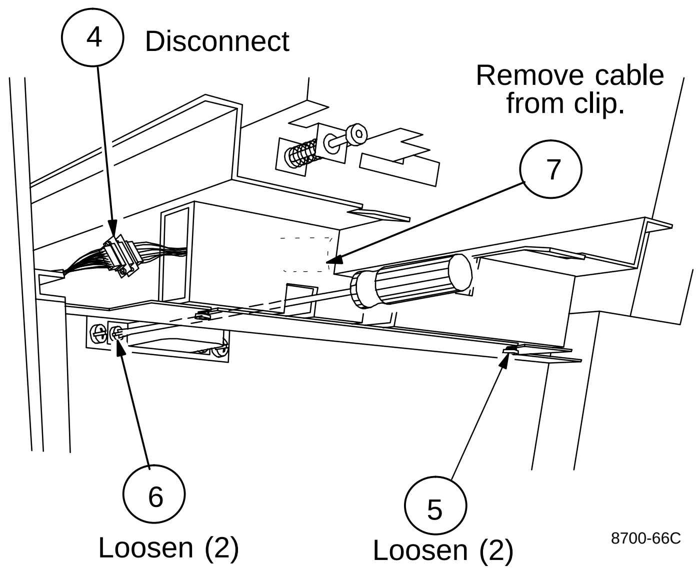


Figure 4-52.

Note

In Figure 4-53, the front edge of the rollback module is raised up to provide a better view of the cable connection and the Distribution Board.

8. Disconnect the large cable plug.
9. Remove two screws attaching the Distribution Board plug.
10. Lift up the end of the rollback module slightly, and remove the Distribution Board and attached cables from the recessed base area. (Cock the board so the right side is up and lift it out of the recess.)
11. Carefully slide the rollback module out of the IMAGER.

Note

When you replace the module in the machine, tip the left side of the Distribution Board down to insert it into the base recessed area.

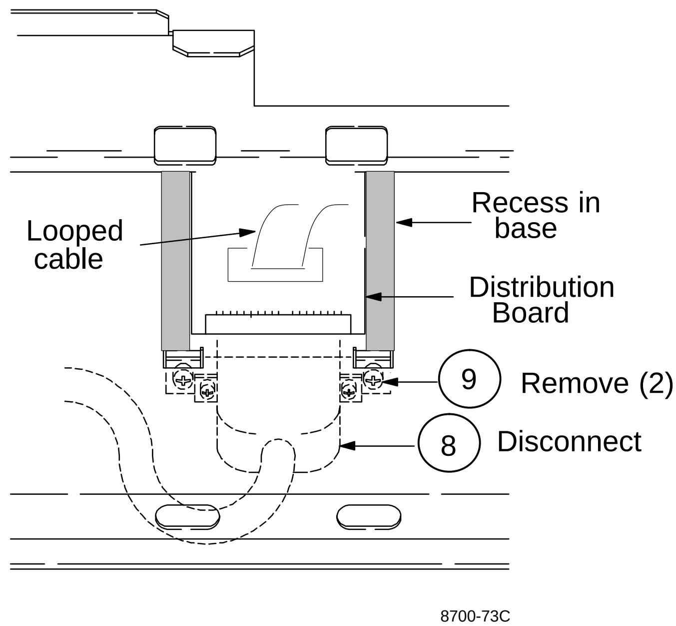

Recess in
base
Looped
cable
Distribution
Board
9
Remove (2)
8
Disconnect
8700-73C

Figure 4-53.

4-5-2. Rollback Motor (M601)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rollback module (4-5-1).

Note

When reassembling, be sure to line up the flat parts of the motor shaft and the rollback roller.

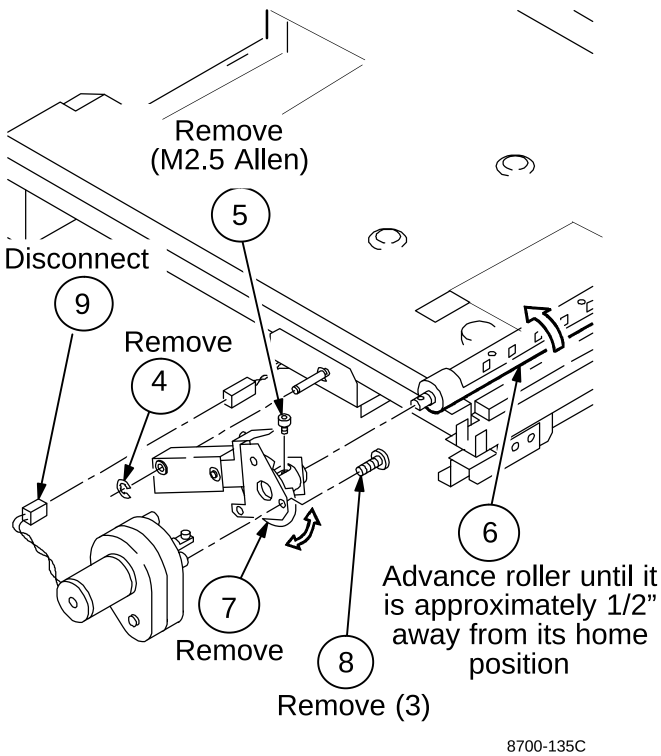


Figure 4-54.

4-5-3. Rollback Motor Home Sensor (SW601)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rollback module (4-5-1).

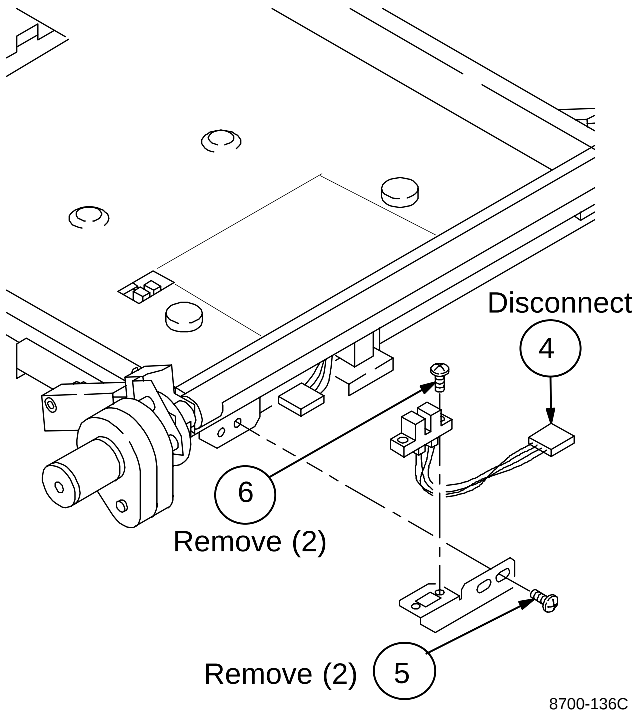


Figure 4-55.

4-5-4. Cartridge Open Sensor (SW603)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rollback module (4-5-1).

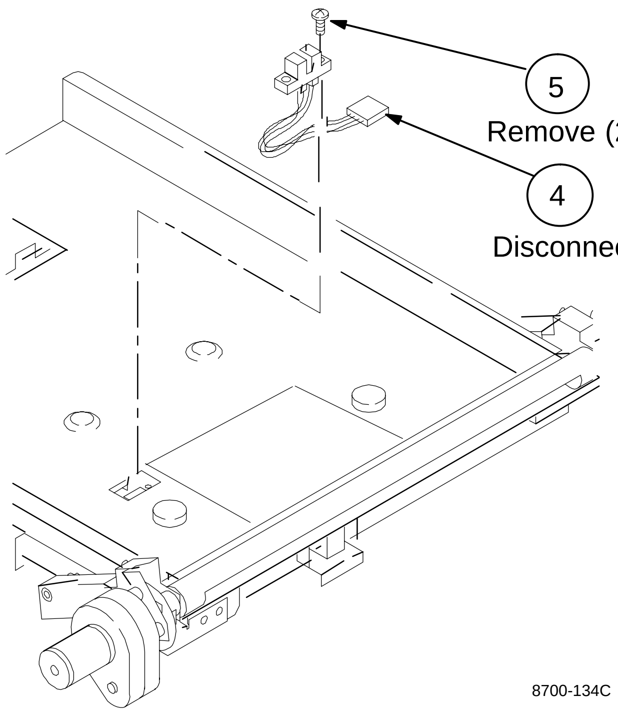


Figure 4-56.

4-5-5. Cartridge Present Sensor (SW604)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rollback module (4-5-1).

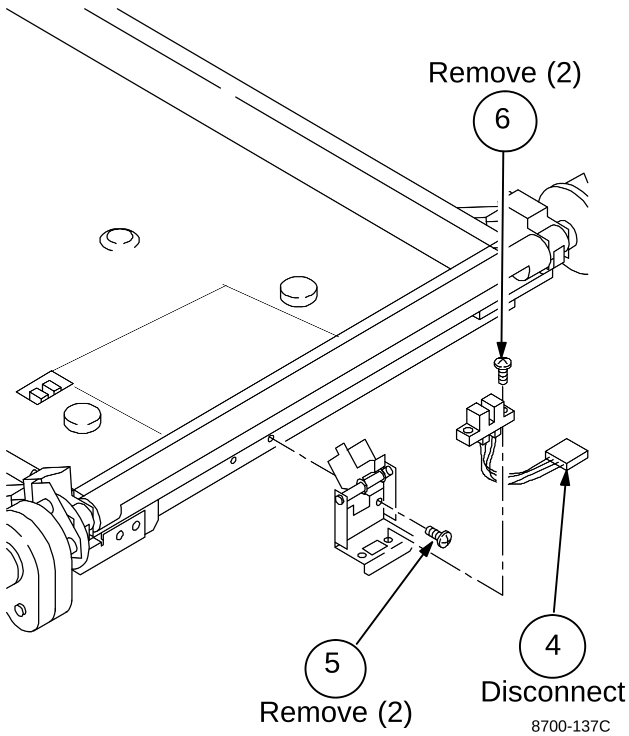


Figure 4-57.

4-5-6. RF Tag Interface Board and RF Reader Board

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rollback module (4-5-1).
4. Rotate the carriage assembly fully forward and place the module upside down on a work bench.
5. Remove four nuts from the circuit board cover (Figure 4-58).
6. Remove the cover.
7. Unplug two cables from the RF Tag Interface Board.
8. Lift the two boards free from the eight snap-top standoffs.
9. Separate the two circuit boards.

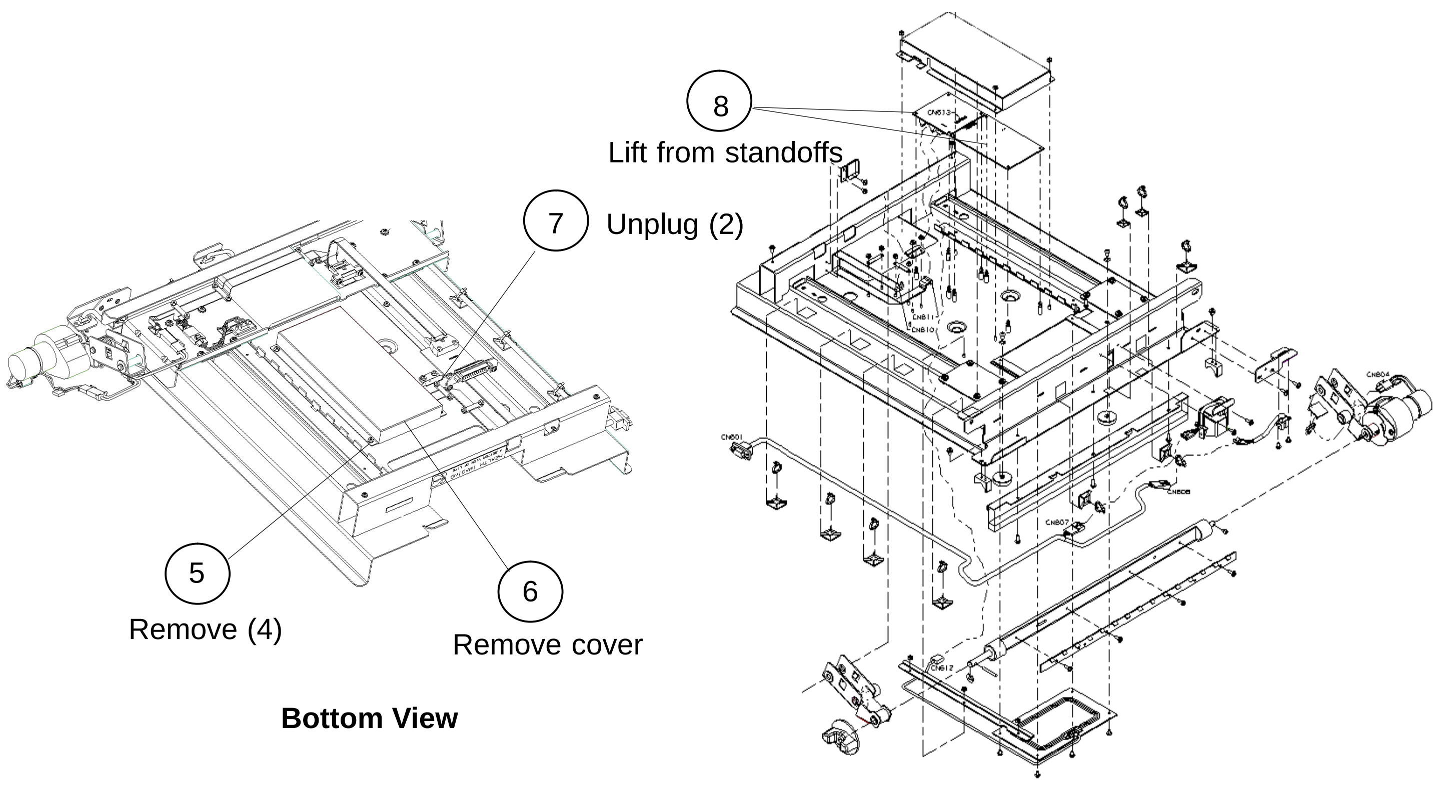


Figure 4-58.

4-5-7. RF Antenna Board

1. Remove the supply cartridge.

Warning

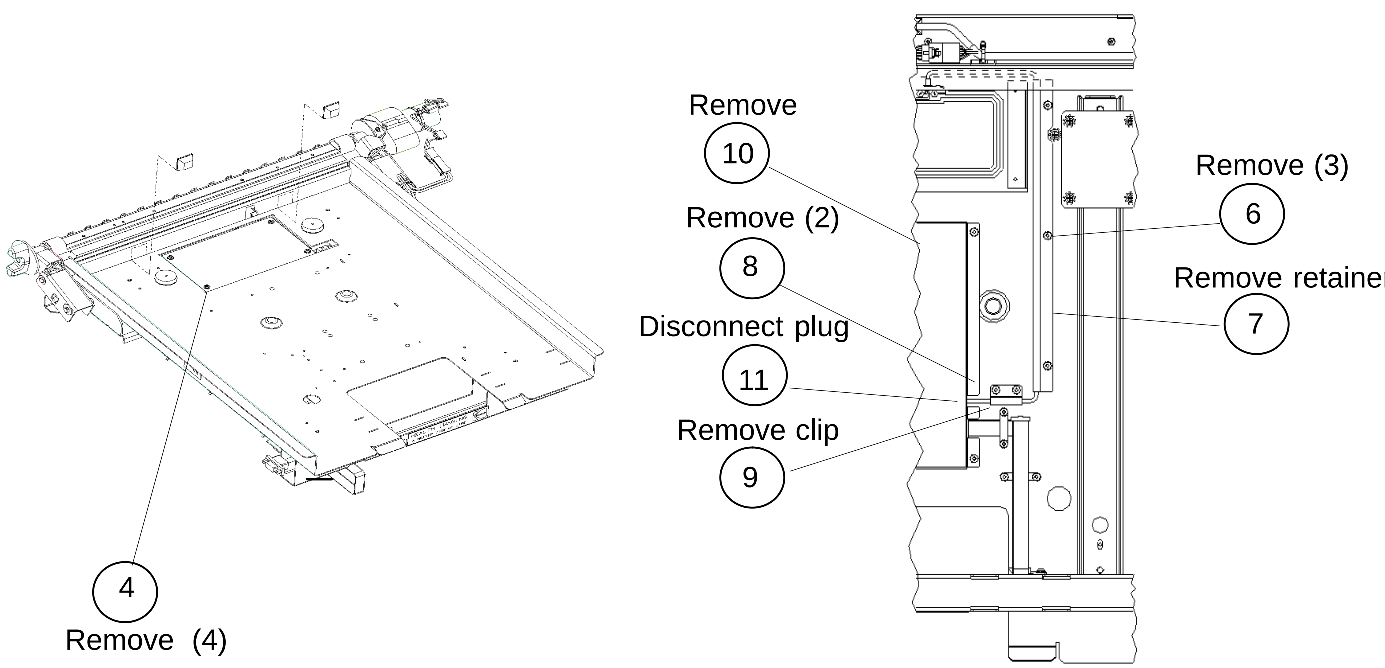
When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rollback module (4-5-1) and set it right side up on a work bench.

Note

Move the rollback carriage as necessary to access parts in the following steps.

4. Remove four screws to free the RF Antenna Board (Figure 4-59).
5. Turn the rollback module upside down.
6. Remove three hex nuts (M3).
7. Remove the coax cable retainer.
8. Remove two hex nuts.
9. Remove the coax cable clip.
10. Remove four hex nuts and remove the cover from the RF Tag Interface Board and RF Reader Board.
11. Unplug the coax cable from the RF Tag Interface Board.



Top View **Bottom View**

Figure 4-59.

4-6. Exposure Assembly

4-6-1. Platen and Optics Module

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left side door.
4. Remove the front panel (4-1-1).

Note

When reassembling, be aware that the cables which connect to CN701 and CN702 on the optics module are easily reversed. The thicker cable connects to CN702.

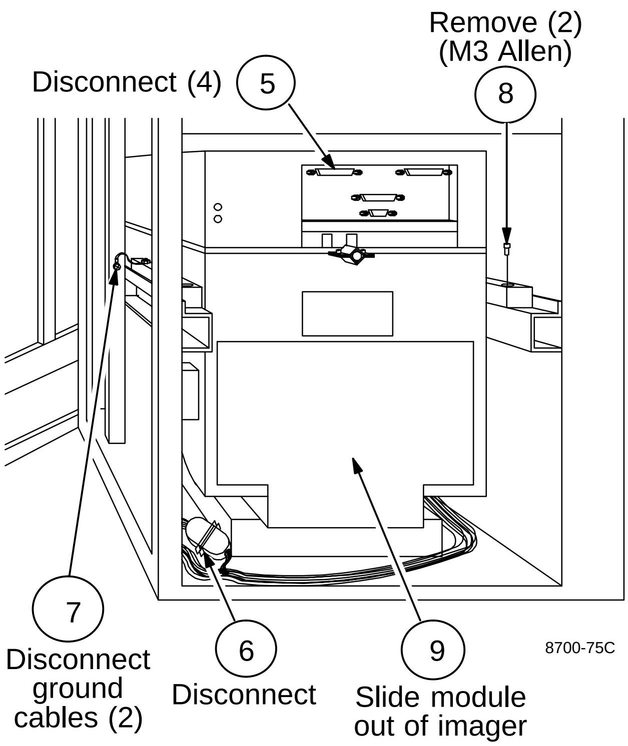
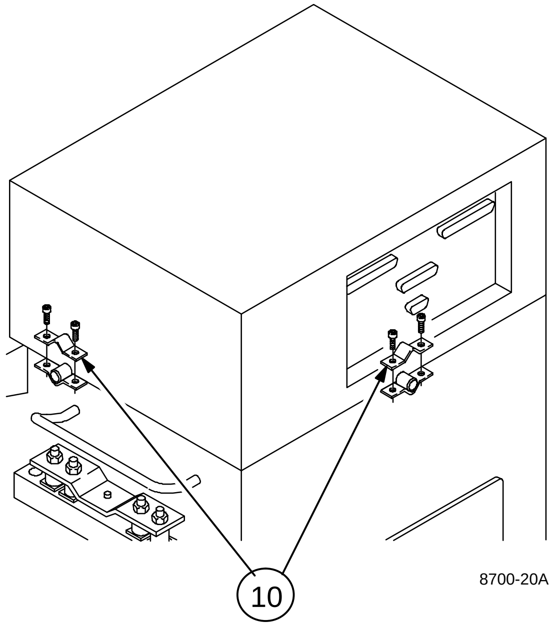


Figure 4-60.



To separate platen and optics module, remove 3 brackets (M3 Allen)

Figure 4-61.

4-6-2. Platen Access Plate

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the front panel (4-1-1).

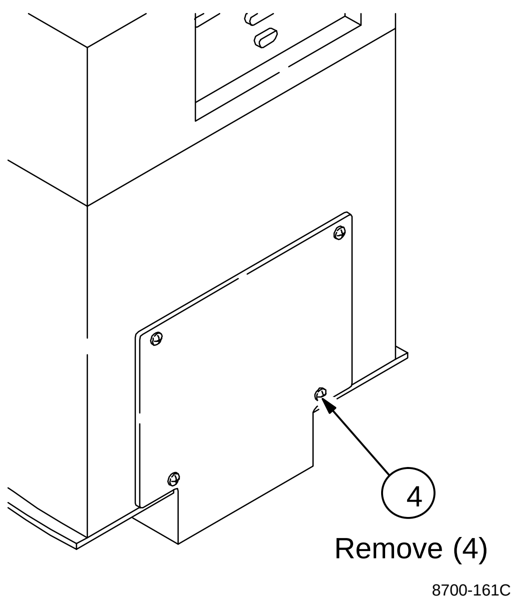


Figure 4-62.

4-6-3. Platen Bottom Sensor (SW701)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the platen module (4-6-1).
4. Remove the platen access plate (4-6-2).
5. Locate SW701 on the underside of the platen.

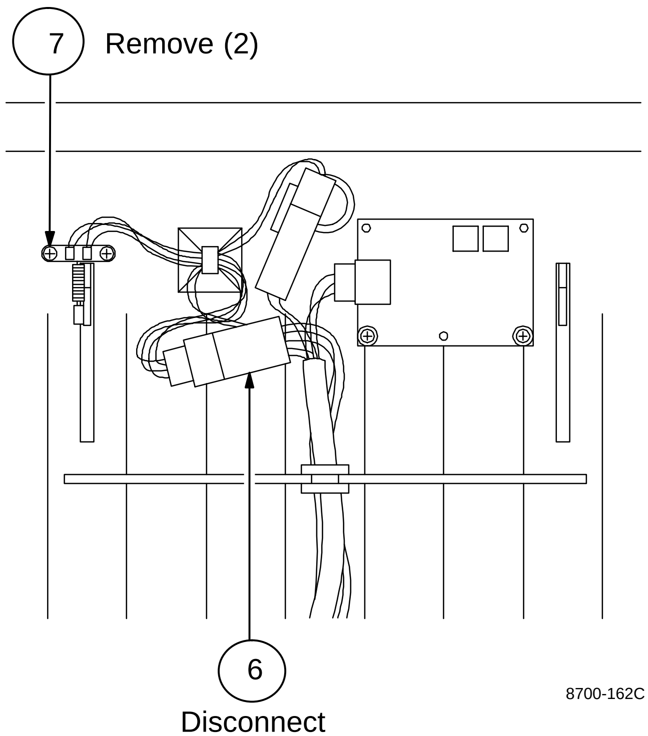


Figure 4-63.

4-6-4. Beam Power Board (BPB)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the platen module (4-6-1).
4. Remove the platen access plate (4-6-2).
5. Locate the BPB on the underside of the platen.

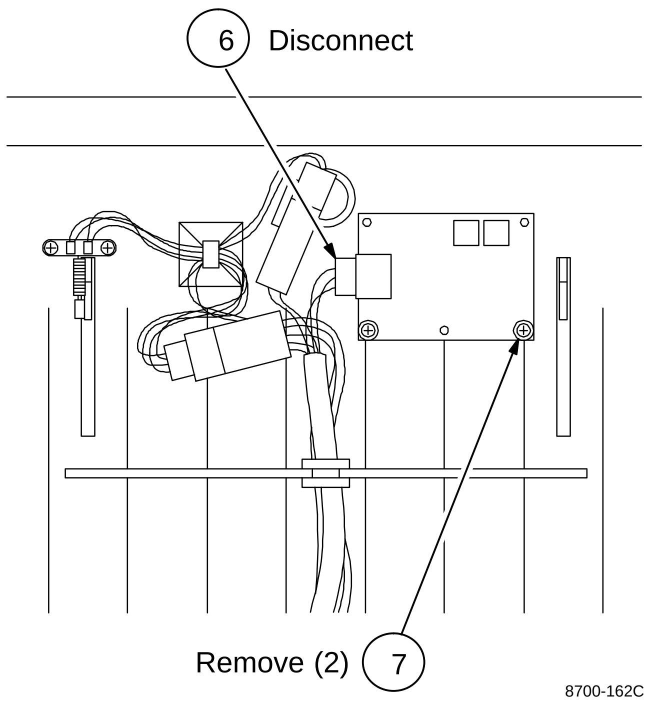


Figure 4-64.

4-6-5. Platen Kicker Solenoid (Y706)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the platen module (4-6-1).
4. Remove the platen access plate (4-6-2).

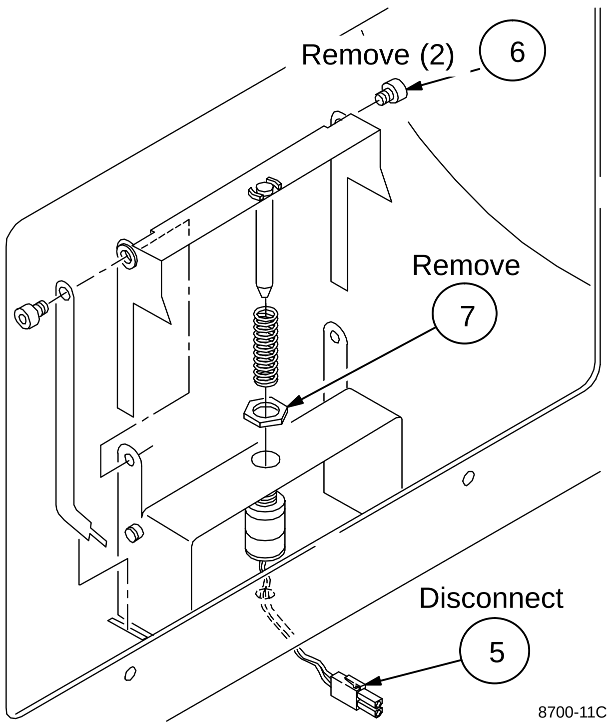


Figure 4-65.

4-6-6. Platen Door Interlock Sensor (SW703)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the front panel (4-1-1).
4. Remove the platen access plate (4-6-2).
5. Open the left side door.
6. Open the platen access door.

Note

When reassembling, ensure that SW703 is actuated when the platen access door is closed.

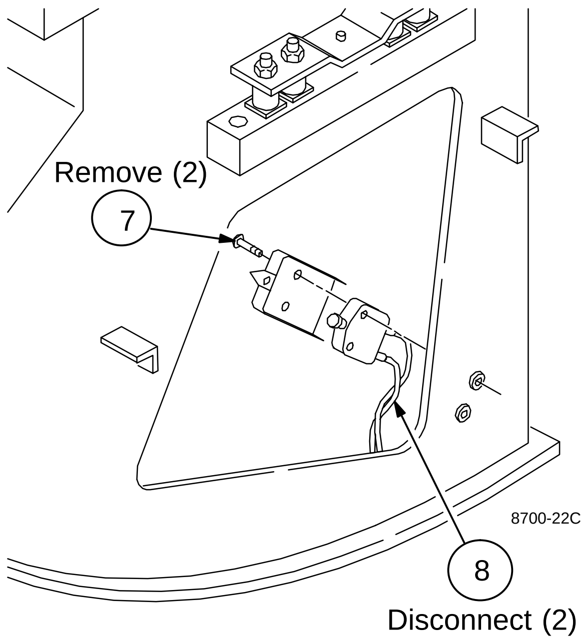


Figure 4-66.

4-6-7. Platen Top Solenoid (Y701)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the platen module (4-6-1).

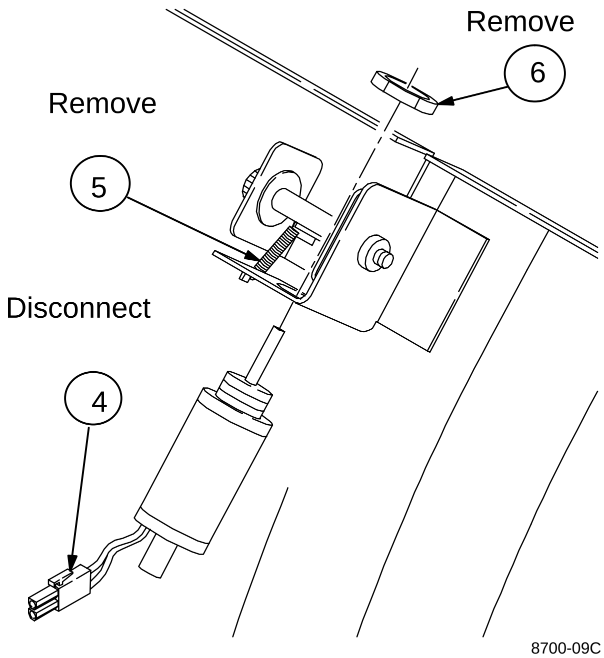


Figure 4-67.

4-6-8. Platen Alignment Solenoids (Y702 – Y705)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the platen module (4-6-1).

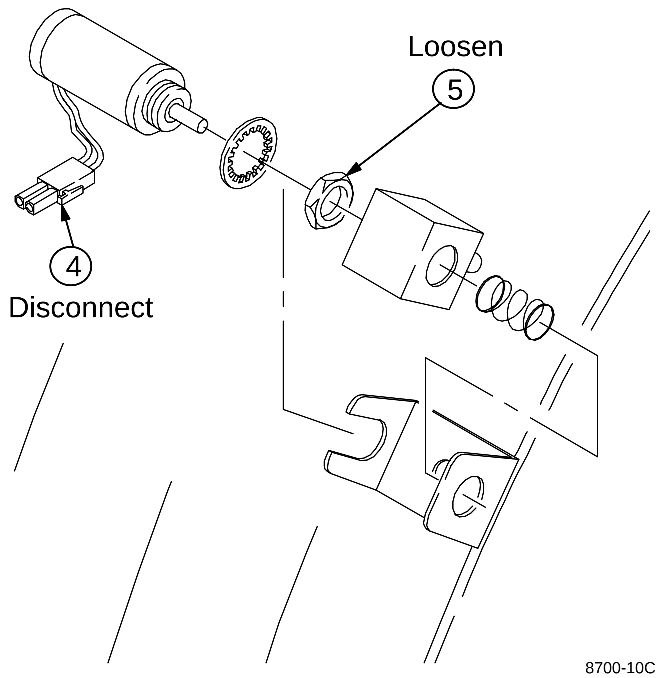


Figure 4-68.

4-7. Air Filtration System

4-7-1. Filtration Fan (M801)

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Unlatch and open the filter housing.

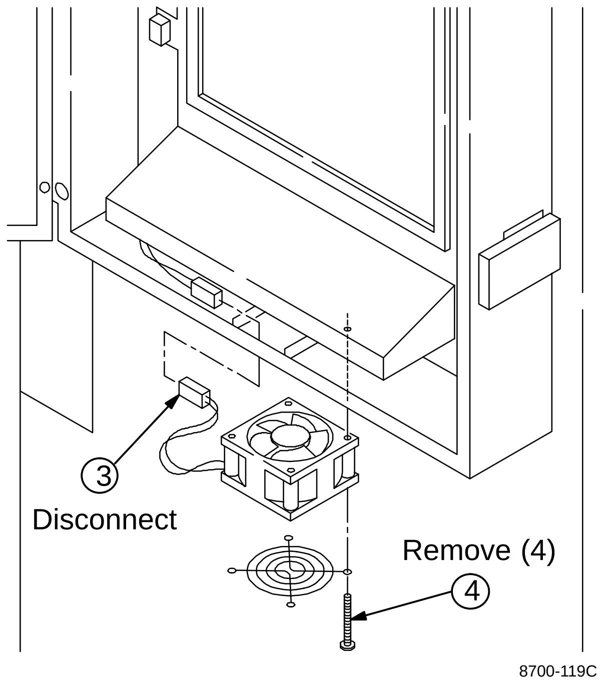


Figure 4-69.

4-7-2. Filter Present Switch (SW801)

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Unlatch and open the filter housing.

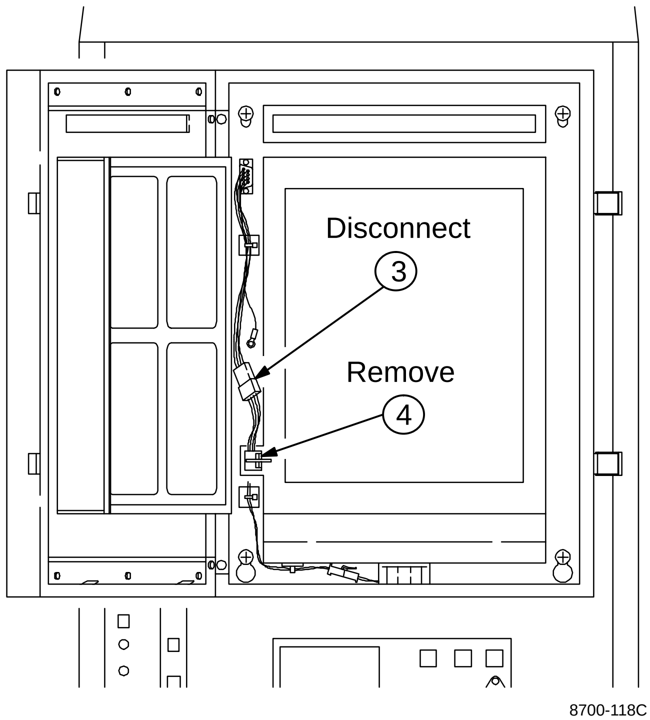


Figure 4-70.

4-8. Frame Mounted Parts

4-8-1. Power Distribution Board (PDB)

1. Remove the supply cartridge.

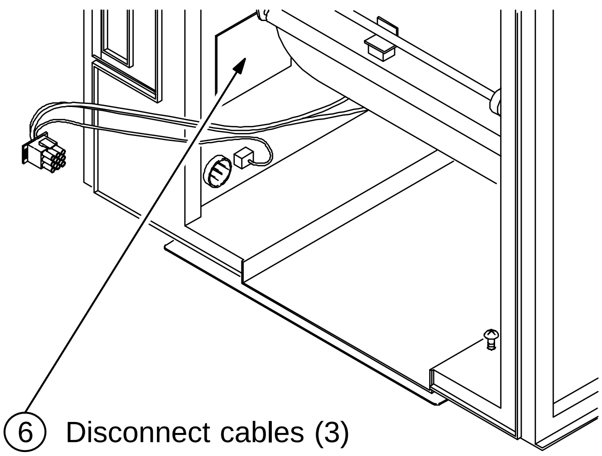
Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).
4. Remove the platen and optics module (4-6-1).
5. Slide the transport module out of the IMAGER.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.



6. Disconnect cables (3)
7. Remove screws (4)

Figure 4-71.

4-8-2. Processor Power Relay (K801)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rear panel (4-1-2).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the relay.

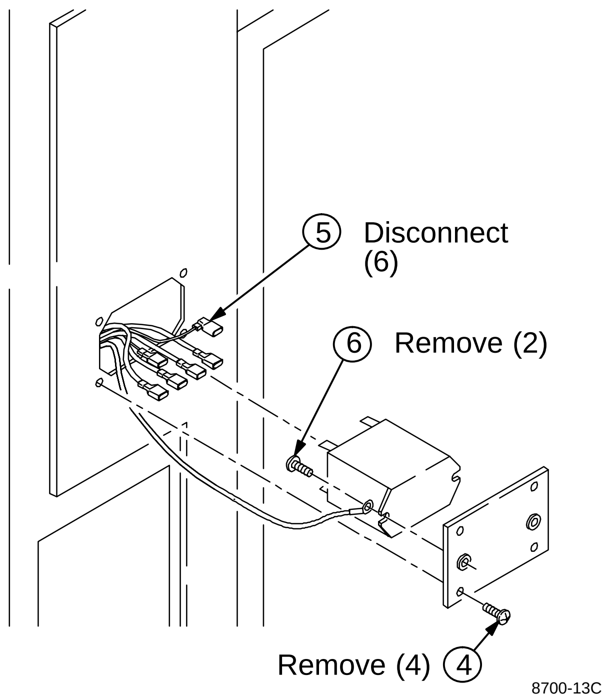


Figure 4-72.

4-8-3. Local Panel

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.

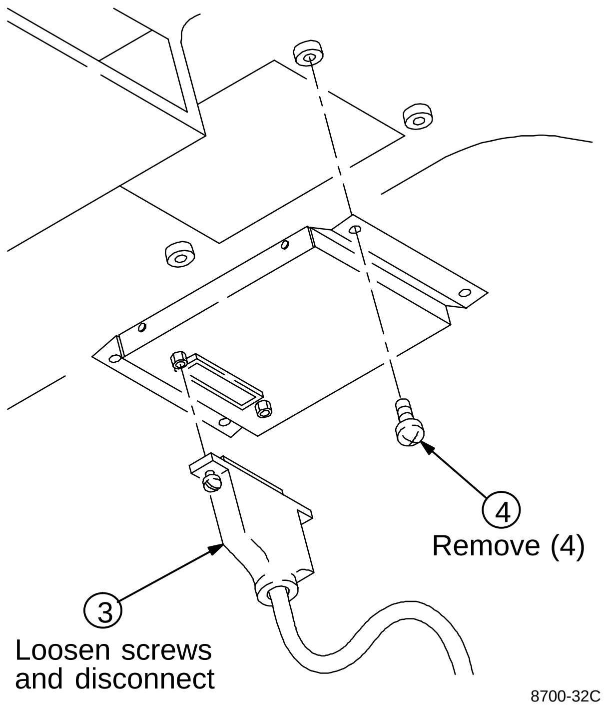


Figure 4-73.

4-8-4. Top Cover Interlock (SW802)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Raise the top cover of the IMAGER.
3. Lift the handle on the front of the processor/exit assembly, and slide the assembly out of the IMAGER.

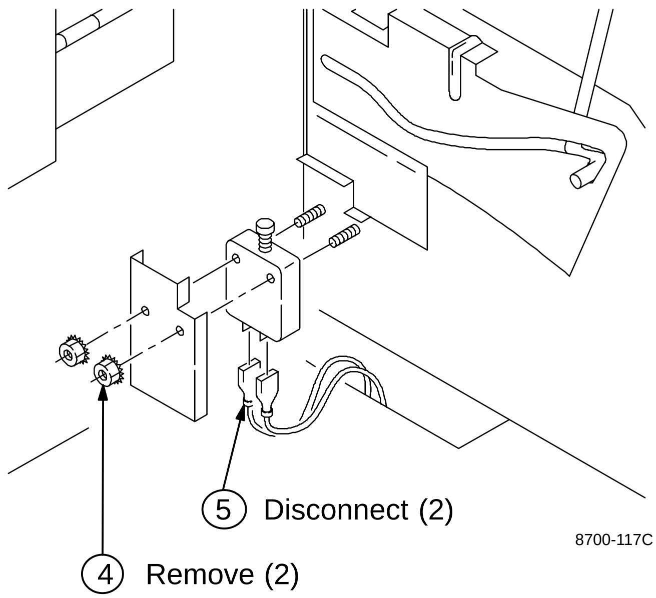


Figure 4-74.

4-8-5. Left Door Machine Interlock (SW803)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left door.

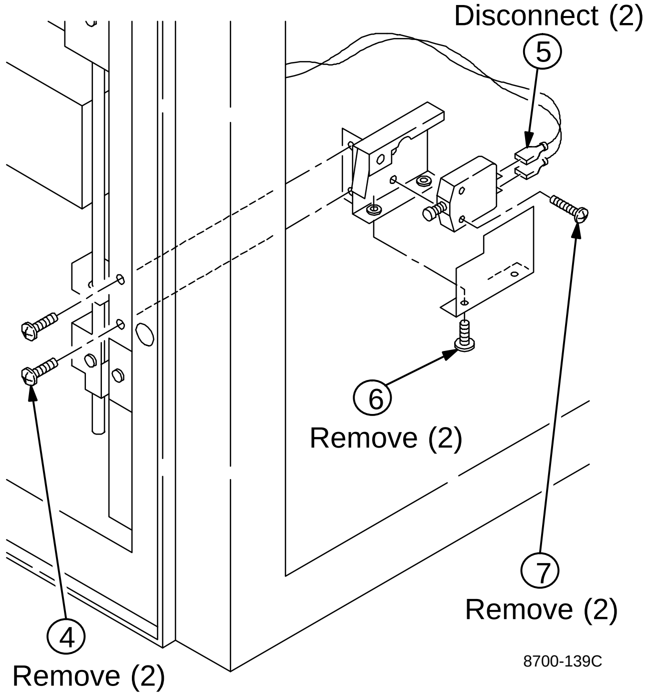


Figure 4-75.

4-8-6. Left Door Laser Interlock (SW804)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left door.

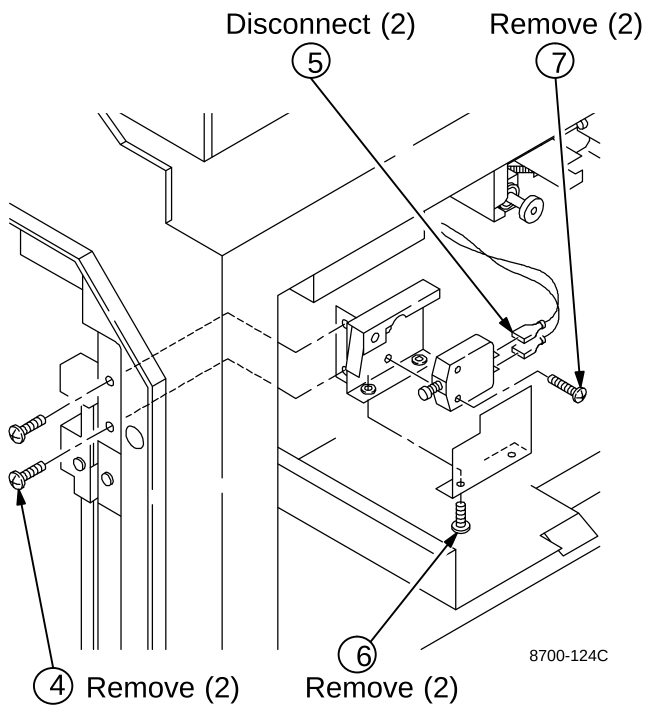


Figure 4-76.

4-8-7. Power Switch (SW805)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the right side panel (4-1-3).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The detail balloon in Figure 4-77 indicates the terminal numbers.

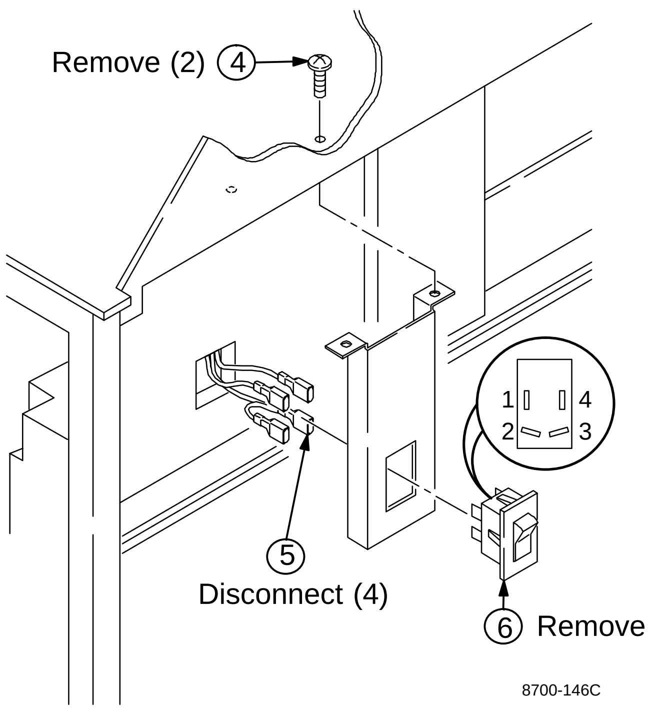


Figure 4-77.

4-8-8. Supply Door Interlock (SW806)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the front panel (4-1-1).

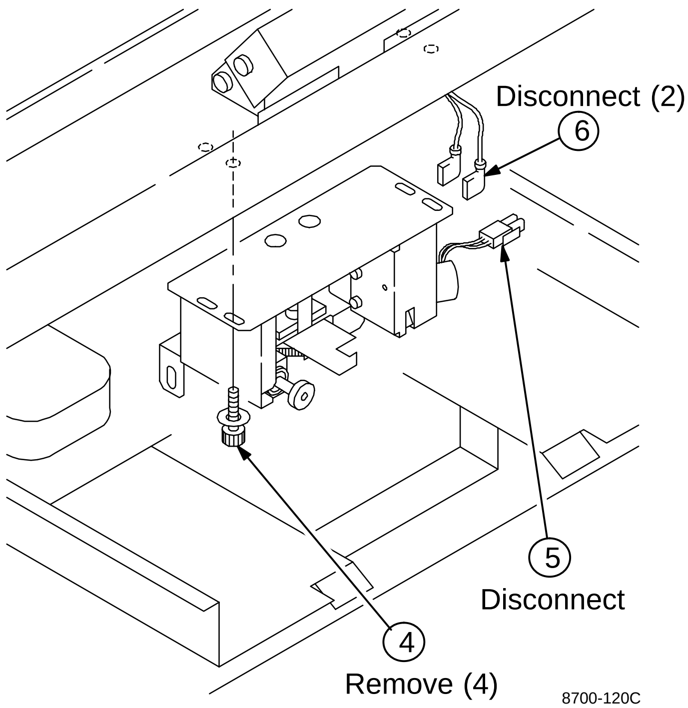


Figure 4-78.

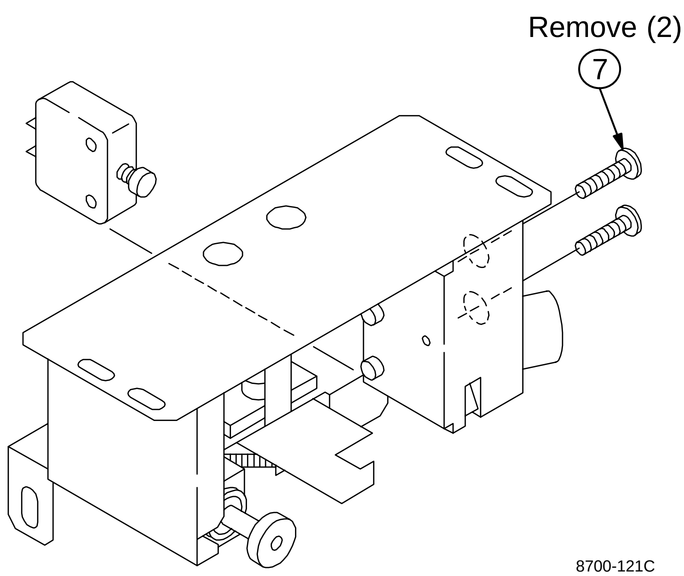


Figure 4-79.

4-8-9. Supply Door Solenoid (Y801)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the front panel (4-1-1).

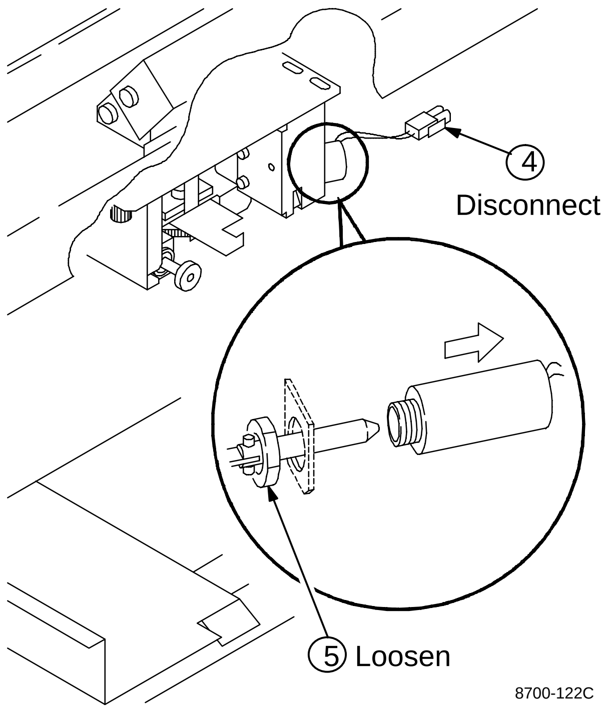


Figure 4-80.

4-8-10. Left Door Solenoid (Y802)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left door.

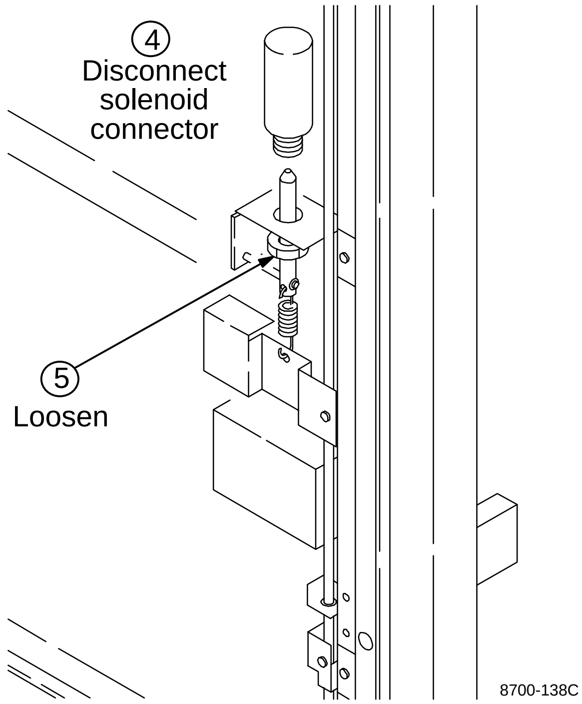


Figure 4-81.

4-8-11. Service Switch

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the right side panel (4-1-3).
4. Remove the electronics enclosure cover (4-1-4).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the side of the switch.

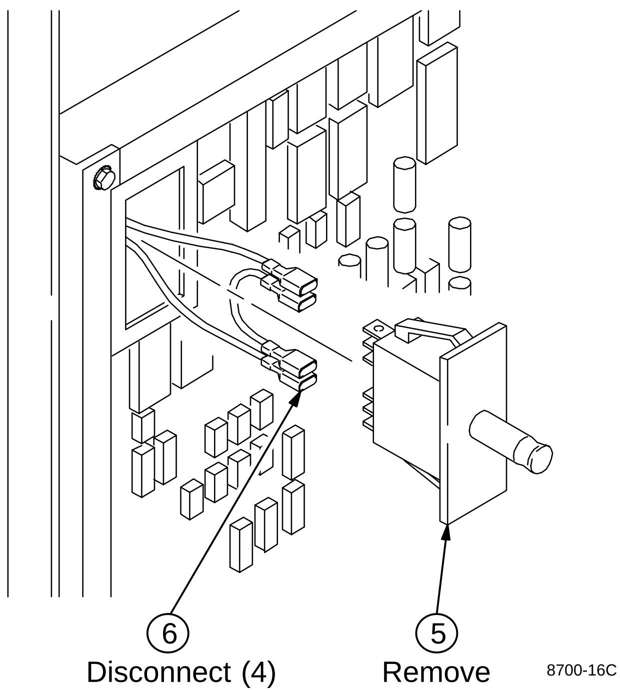


Figure 4-82.

4-9. Power Module Assembly

4-9-1. Power Module

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the rear panel (4-1-2).

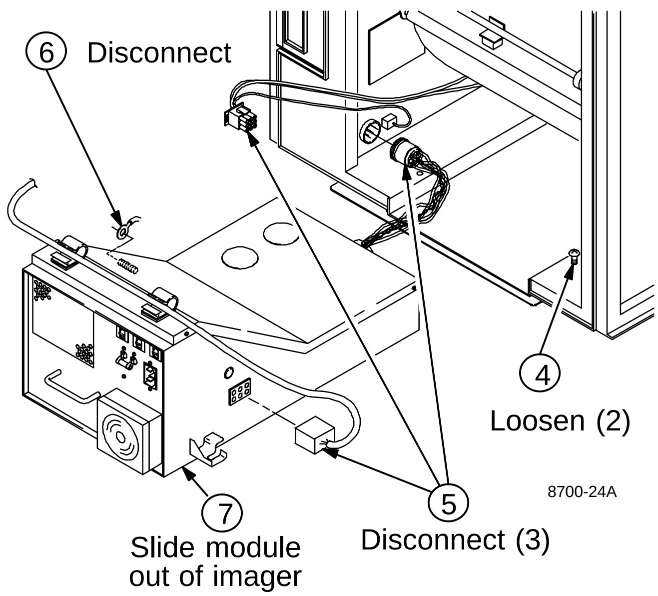


Figure 4-83.

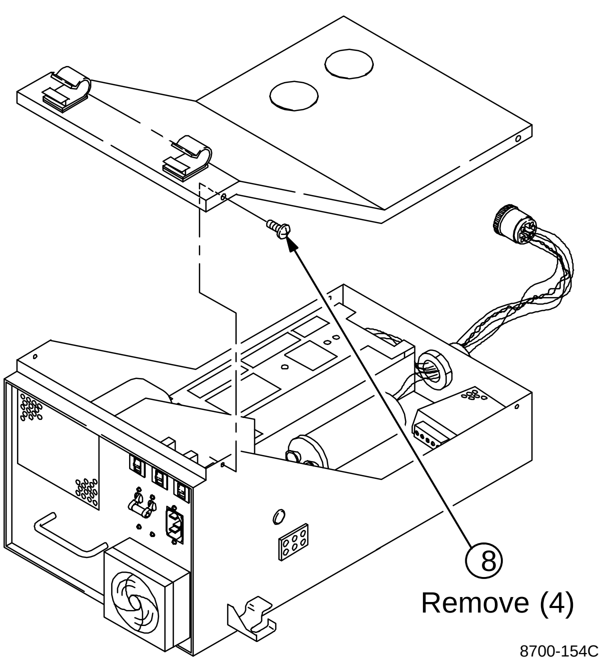


Figure 4-84.

4-9-2. Filter Capacitor (C901) and Varistor (V901)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, ensure that the wires are connected to the correct terminals. If in doubt, refer to the schematic located on the underside of the power supply cover.

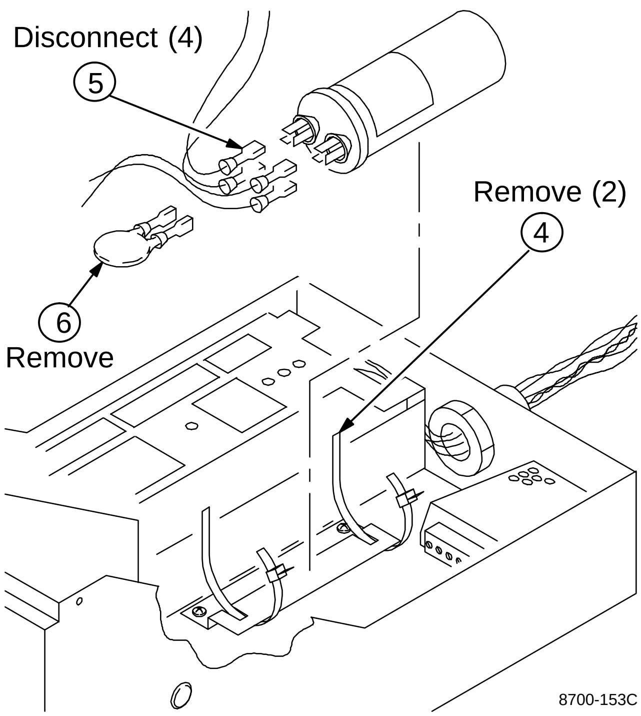


Figure 4-85.

4-9-3. Input Circuit Breaker (CB901)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the circuit breaker.

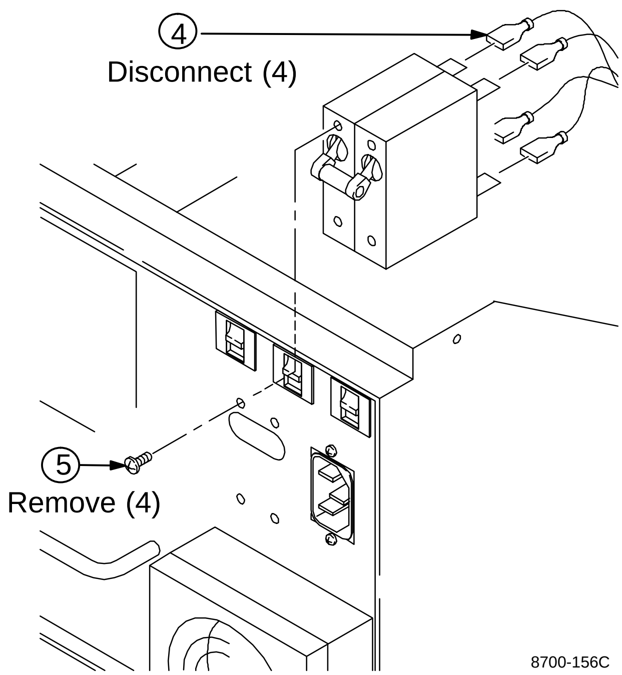


Figure 4-86.

4-9-4. Processor Circuit Breaker (CB902)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, ensure that the wires are connected to the correct terminals. If in doubt, refer to the schematic located on the underside of the power supply cover. (When the circuit breaker is mounted right side up, terminal 1 is the upper terminal.)

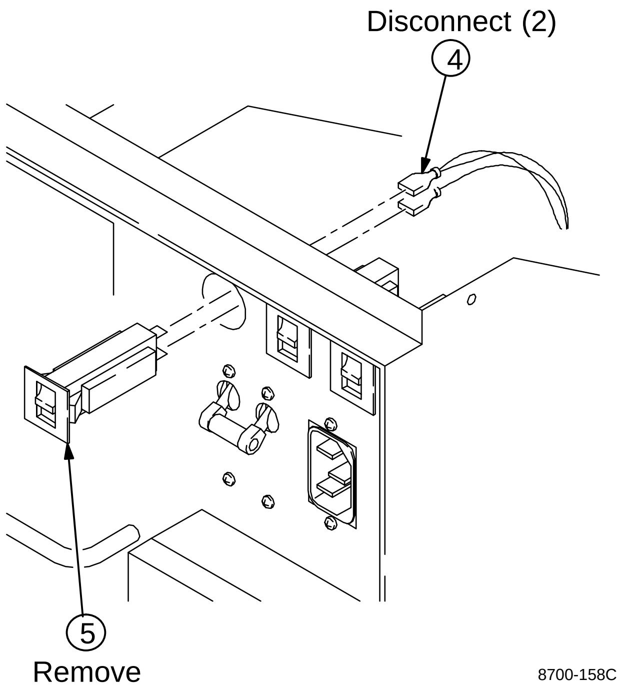


Figure 4-87.

4-9-5. Power Supply, Cooling Fans, and Vacuum Pump Circuit Breaker (CB903)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, ensure that the wires are connected to the correct terminals. If in doubt, refer to the schematic located on the underside of the power supply cover. (When the circuit breaker is mounted right side up, terminal 1 is the upper terminal.)

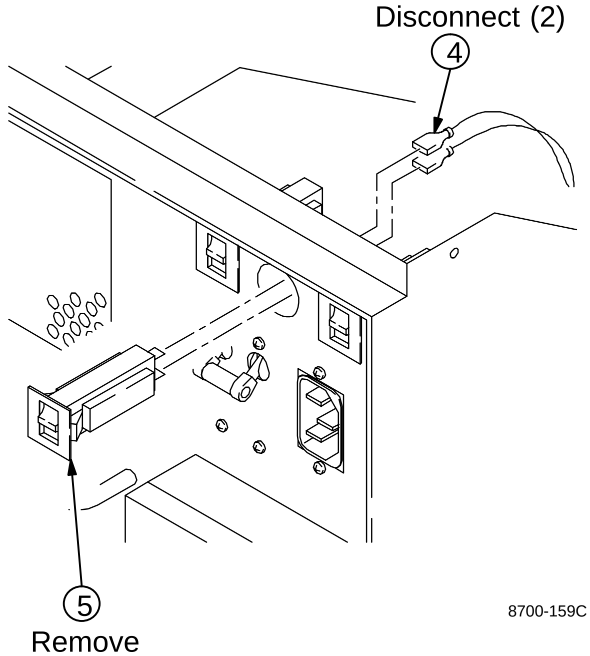


Figure 4-88.

4-9-6. 24 VAC Circuit Breaker (CB904)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, ensure that the wires are connected to the correct terminals. If in doubt, refer to the schematic located on the underside of the power supply cover. (When the circuit breaker is mounted right side up, terminal 1 is the upper terminal.)

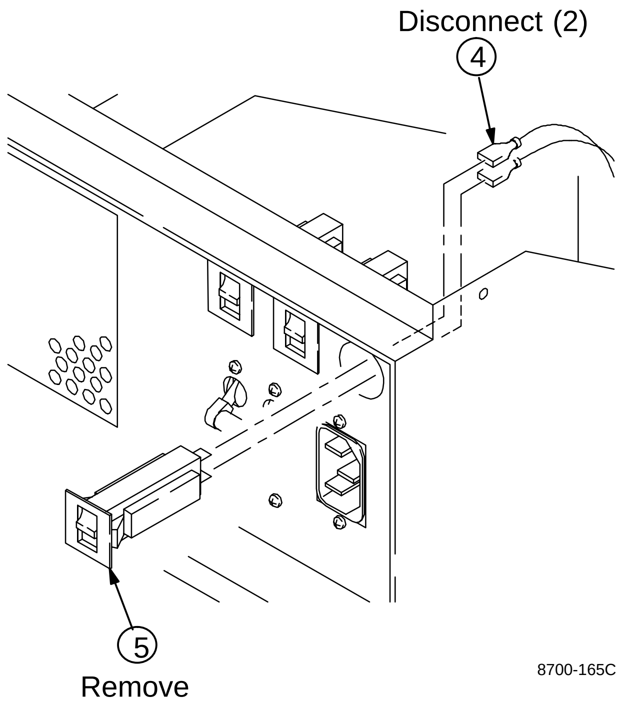


Figure 4-89.

4-9-7. Line Filter (LF901)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the line filter.

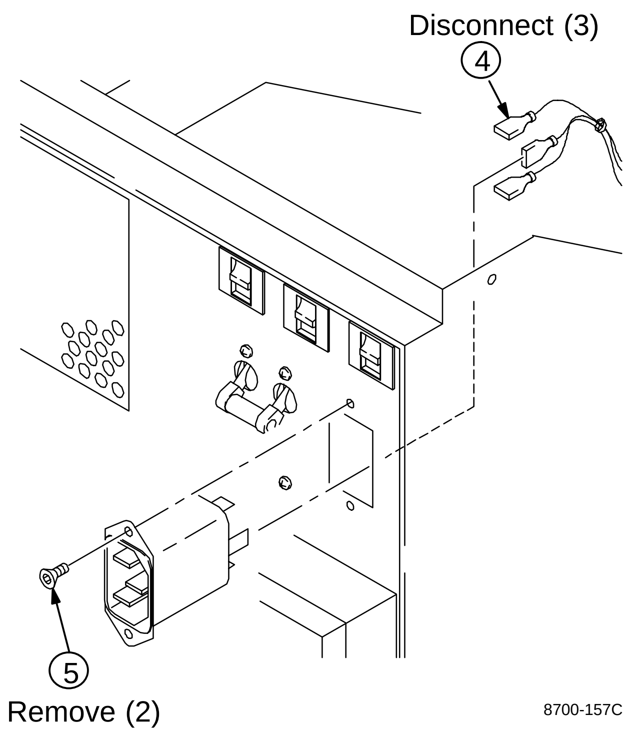


Figure 4-90.

4-9-8. Power Latch Relay (K901)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the relay.

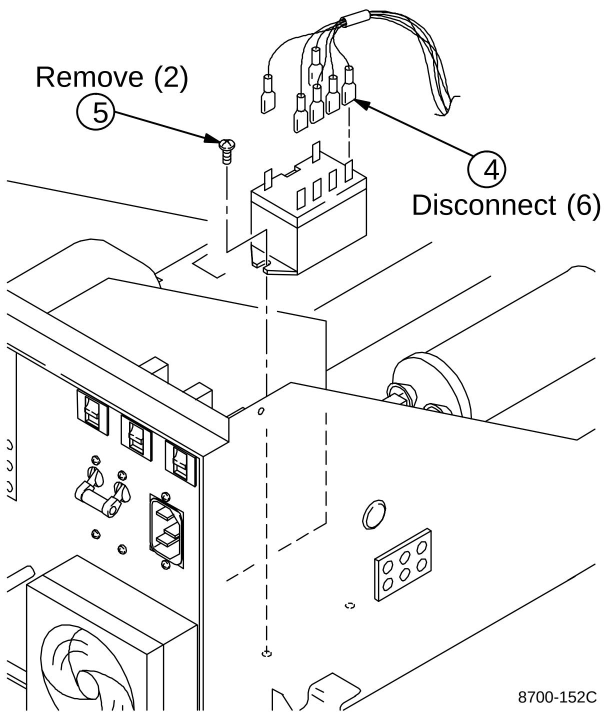


Figure 4-91.

4-9-9. Cooling Fan Motor (M901)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.

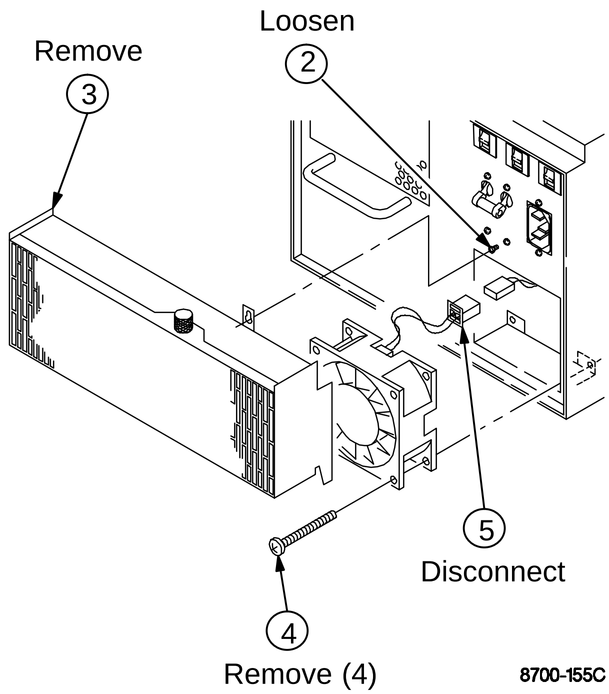


Figure 4-92.

4-9-10. +5, +17, –17, and +24 VDC Power Supply (PS901)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the power supply.

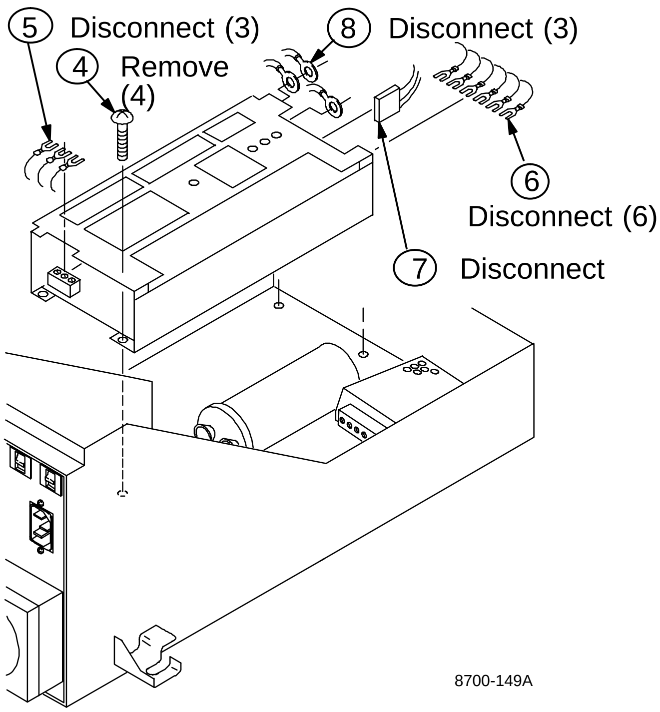


Figure 4-93.

4-9-11. –5.2 VDC Power Supply (PS902)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Remove the power module (4-9-1).

Note

When reassembling, check the labels on the wires to ensure that they are connected to the correct terminals. The terminal numbers are marked on the power supply.

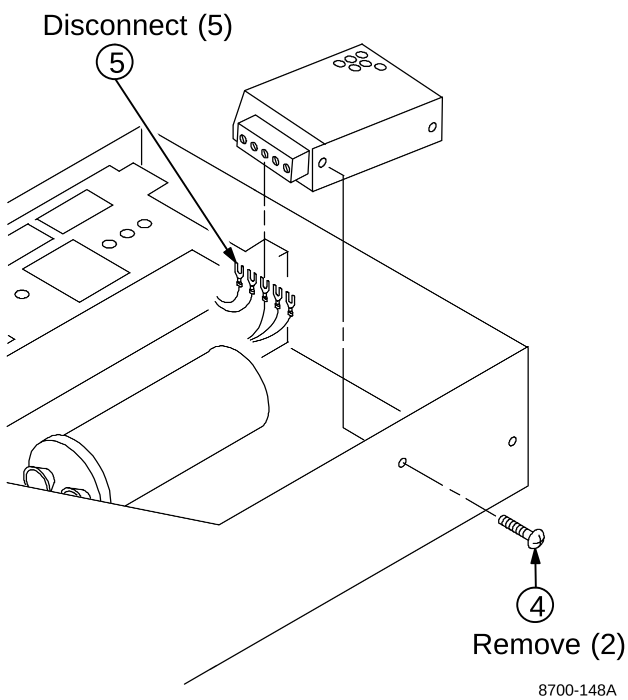


Figure 4-94.

4-10. Electronics Enclosure

4-10-1. Translator Daughter Board (TDB)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

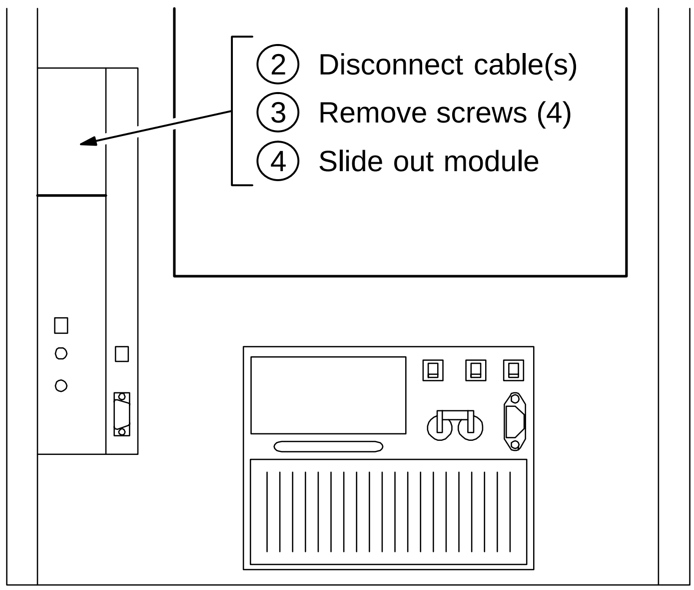


Figure 4-95.

4-10-2. Interface Boards (DIB/FIB/VIB)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

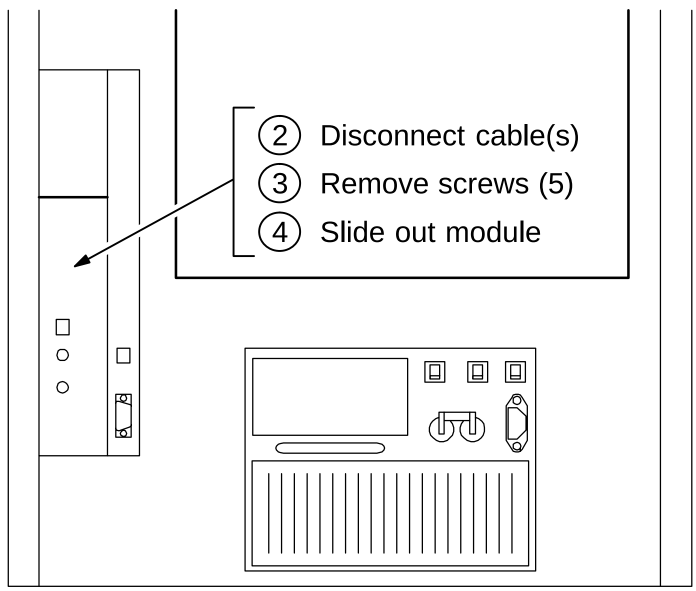


Figure 4-96.

4-10-3. Image Processor Board (IPB)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the right side panel (4-1-3).
3. Remove the electronics enclosure cover (4-1-4).
4. Remove memory daughter boards.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

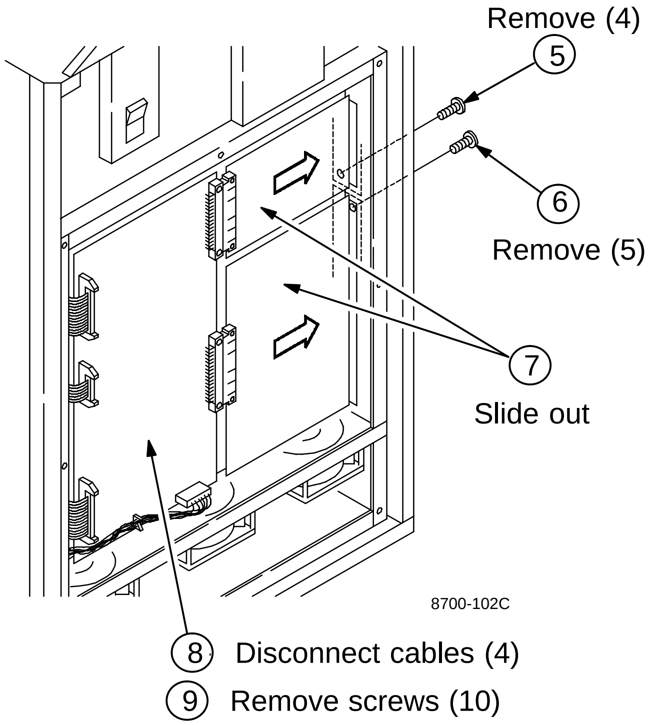


Figure 4-97.

4-10-4. Memory Daughter Board (MDB)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the right side panel (4-1-3).
3. Remove the electronics enclosure cover (4-1-4).

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

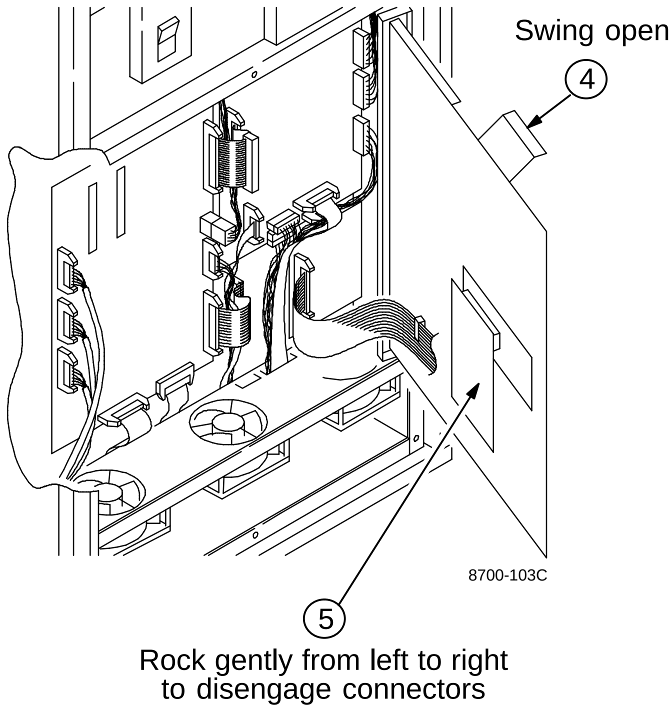


Figure 4-98.

4-10-5. System Controller Board (SCB)

1. Connect the MPC to the MPC port on the rear of the IMAGER.
2. Power up the MPC and start the MPC for Windows program.
3. Do either of the following to select the SCB subsystem:
   - Click on the SCB button.
   - Open the Operations menu, and select Subsystem→SCB.
4. Select the Config button to display the IMAGER Imager Setup window.
5. Note the Total Prints count, and the Maximum Pickup Retries and Language settings.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

6. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
7. Remove the right side panel (4-1-3).
8. Remove the electronics enclosure cover (4-1-4).

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

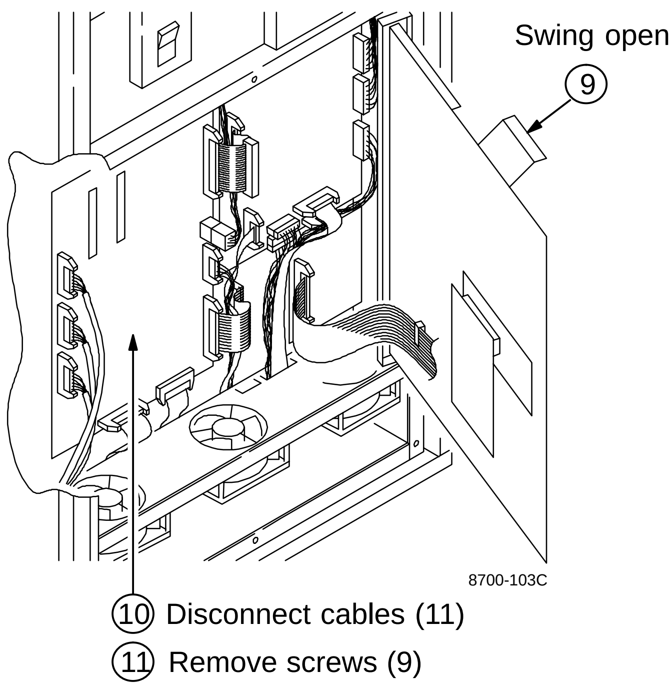


Figure 4-99.

Note

After a new SCB has been installed, set the IMAGER Imager Setup parameters to the values noted in Step 5, and perform the processor temperature adjustment (procedure 3-1).

4-10-6. Machine Interface Board (MIB)

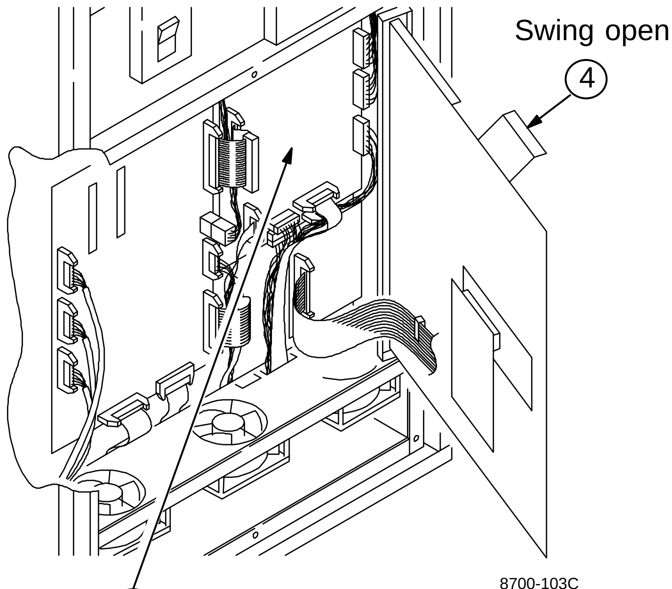
Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the right side panel (4-1-3).
3. Remove the electronics enclosure cover (4-1-4).

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.



5 Disconnect cables (9)

6 Disconnect power wires (4)

7 Remove screws (6)

Figure 4-100.

4-10-7. New Modem Board (NMB)

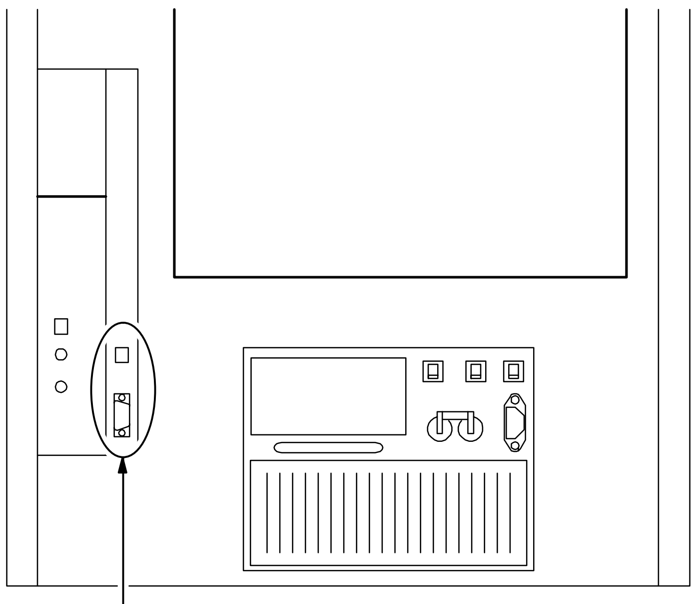
Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the right side panel (4-1-3).
3. Remove the electronics enclosure cover (4-1-4).

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.



4 Disconnect cable(s)

5 Remove connector standoff screws (2)

Figure 4-101.

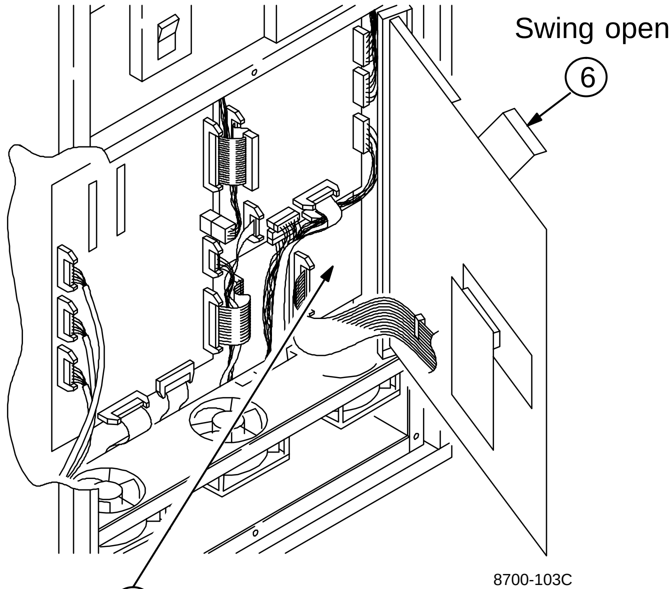

Swing open
6
8700-103C
7 Disconnect cable
8 Remove screw
9 Release plastic standoffs (2)

Figure 4-102.

4-10-8. Cooling Fan Motors (M1001 – M1003)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

1. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
2. Remove the right side panel (4-1-3).
3. Remove the electronics enclosure cover (4-1-4).

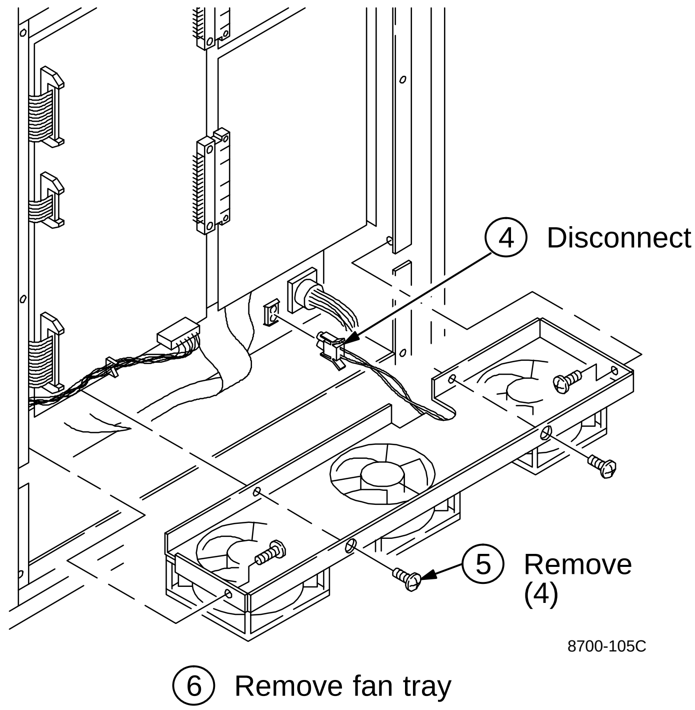


Figure 4-103.

Section 5 – Additional Information

5-1. Required Tools

In addition to standard hand tools (screwdrivers, etc.), the tools listed in this subsection are required to service the 8700/8500 IMAGER. All the tools are available from Service Parts Management. Note the following:

- With the exception of Items 7 through 9, the listed tools are a subset of the tools required to service the *Kodak* 969 HQ LASER IMAGER.
- Items 1 through 3 are provided to Kodak service technicians. Non-Kodak service technicians must obtain them locally.

1. Personal computer with:

   486 based processor
   32 MB RAM
   5 MB hard disk space available
   Parallel port
   Windows 95/98
   Serial port or PMCIA modem with 1200 baud or greater

Note

The specifications listed above reflect the minimum configuration required to run the MPC for *WIndows* software.

2. Fluke DVM, Model 87 (or equivalent)	TL-4114
3. Dual trace oscilloscope:	TL-3348
Band Width:	0 to 100 MHz
Sensitivity:	0.5 mv
Accuracy:	$\pm$ 3%
4. Cable, MPC Serial Port	26-1011-4592-3
5. Connector Assembly, 9-Pin Loopback (two required)	78-8075-2585-8
6. DEIB Test Pattern (SMPTE) EPROM Kit	78-8063-3993-9
7. Temperature Meter Kit (includes Minco temperature meter and 11 inch bar type probe, calibrated as a pair)	78-8099-9500-0
8. Probe (11 inch bar type)	26-1011-8560-6

Note

If a new probe is ordered, the probe and meter must be sent in for calibration. See procedure 5-2.

9. Block (for use with probe)	78-8064-5583-4
10. Connector, BNC T, F-M-F	83-1610-0141-3
11. Terminator, BNC, 75 Ohm	26-1008-4885-7
12. Adapter, BNC	83-1610-0154-6
13. Static Protection Kit (includes a static dissipative work surface, a ground cord, two sizes of wrist bands, and an alligator clip)	TL-3397

5-2. Temperature Meter and Probe Calibration

The temperature meter and bar type probe must be calibrated together as a pair at least once per year. Send the meter, probe, and calibration form to:

National Calibration and Testing Laboratories
6960 Madison Avenue West
Minneapolis, MN 55427

The calibration process takes approximately one week. Send the meter and probe in for calibration prior to going on vacation. This will ensure that they will be available for use when needed.

5-3. Serial Number Label Location

The serial number label is located on the frame behind the left door of the IMAGER. Use this serial number to report all service activity. Customers should be instructed to provide the model and serial number when requesting service. See Figure 5-1.

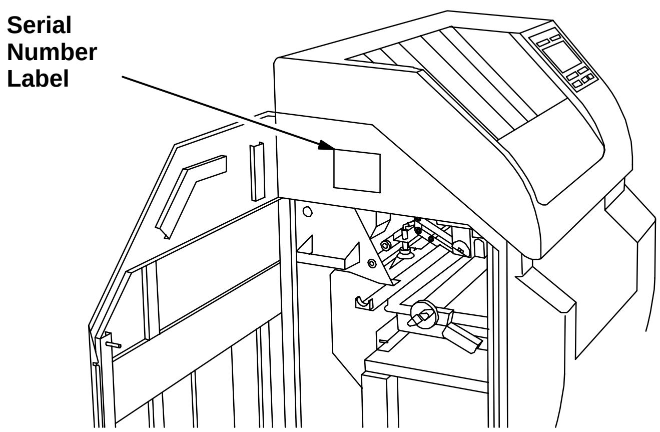


Figure 5-1.

5-4. Adapter Cable Pinouts

Figure 5-2 through Figure 5-4 provide the pinouts for the various host adapter cables that can be connected to the copper TDB or the UKEIB. Figure 5-5 provides the pinout for the 37 to 26 pin DDR to UKEIB adapter cable.

RS422 Host Adapter Cable
(78-8077-4159-6)

37 Pin	9 Pin	Signal
1	1	GND
21	2	RXD+
3	7	RXD–
20	3	TXD+
2	8	TXD–
4		
5		
8		
9		
22		
23		
26		
27		

Figure 5-2.

RS232 Host Adapter Cable
(78-8071-8331-0)

25 Pin	9 Pin	Signal
2	4	TX
3	6	RX
7	1	GND
6		
8		
20		
4		
5		

Figure 5-3.

Genesis Cable (GE only)

25 Pin	9 Pin	Signal
1	1	GND
9	2	RXD+
8	3	TXD+
22	7	RXD–
21	8	TXD–

Figure 5-4.

37 to 26 Pin
DDR to UKEIB Adapter Cable
(78-8063-4008-7)

37 Pin	26 Pin	Signal
1	1	GND
21	2	RX1+
3	3	RX1–
20	11	TX1+
2	12	TX1–
22	6	FT–
7	7	GND
4	4	FT+
11	5	GND
25	8	+12V
30	9	+12V
31	10	+12V
32	19	+12V
13	16	GND
14	17	GND
35	26	+12V
17	25	GND
5		
9		
23		
27		

Figure 5-5.

5-5. Preventive Maintenance

5-5-1. Preventive Maintenance Intervals

In order to consistently produce the highest quality images, the IMAGER should receive periodic routine maintenance. PM procedures must be performed:

- Every EM call
- Every 10,000 cycles
- Every 30,000 cycles (or annually)

Most of the parts and supplies required for a 10,000 cycle PM are included in the kit described below. Other required parts and supplies are listed following the kit components.

5-5-2. Supplies Required for PM

10,000 Cycle PM Kit (78-9998-2915-9, or xxx for customer first users) Supplies:

- Lint-free Cleaning Pads (1 bag) (78-8018-2802-7)
- *3M*™ *Troubleshooter*™ Cleaner (1 can) (96-0000-0066-9)
- *Dow Corning*™ Silicone 710 Oil (2 oz. bottle) (96-0000-1659-0)
- *3M*™ *Auto-Pak*™ Tack Cloth (1 bag) (96-0000-0118-8)
- Static Shielding Bag (1) (22-0001-1124-9)
- Bag with Tie-wrap (1) (78-9998-2868-0)
- PVC Drum Stand (1) (3E5676)
- Charcoal Filter Kit (1) (3E5769)
- Power Module Filter (1) (78-8095-9495-1)
- Felt Replacement Kit (1) (74-0401-8443-9) (Includes felt pad with clips)
- Springs, Torsion, Stripper (2) (78-8095-9395-3)
  (For stripper assemblies with lighter springs.)
- E–ring (spare) (78-8656-4001-1) (For processor prop rod)

Additional Supplies Required for 10,000 Cycle PMs (not included in Kit)

- *Krytox*™ Lubricant (26-1012-1130-3)
- *3M*™ Stainless Steel Cleaner and Polish (1 can) (96-0000-0064-4)
- Isopropyl Alcohol (1C8261)
- Insulated Rubber Gloves (5303TL) (These must be worn for any cleaning procedure that requires cleaners/solvents.)
- Transport Film (1546993) (For cleaning excess conditioner from drum after cleaning procedures)
- Lint-free Cloths (*TEXWIPE*s) (1C8271)
- Paper Towels (26-1005-2874-9)

Additional Parts Required for 30,000 Cycle PMs

- Felt Air Barrier (1) (96-0000-0939-7)
- Electronic Enclosure Filter (1) (78-8094-5979-1)
- Metal Grease Filter (1) (26-1011-6788-5)
- Felt Plate Assembly Kit (74-0401-8989-1) (Required only for one time update of felt plate assmebly to new configuration. Included as part of Mod 22.)

5-5-3. EM Call Checklist

If the number of cycles since the last PM is greater than 7,500, use the 10,000 Cycle Checklist (see next paragraph) rather than this EM Call checklist. If less than 7500:

1. □ Power off, open the processor cover (reference procedure 4-2-1), and check the drum for damage. (Do not remove it for inspection.) If the drum is damaged, replace it. (Perform step 2 below before installing the new drum.)

Caution

Wear rubber gloves for any cleaning procedure that requires cleaners/solvents.

2. □ Clean the processor rollers that are accessible without further disassembly (see Figure 5-6). (Do not remove the rollers.) Use a soft, lint-free pad to wipe the rollers clean with alcohol.
3. □ Clean the stripper blade by wiping it with alcohol and a lint-free cleaning pad.

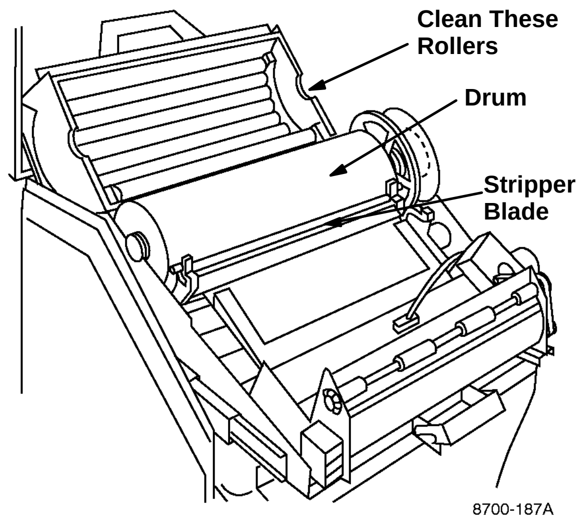


Figure 5-6.

5-5-4. 10,000 Cycle Checklist

After every 10,000 cycles, the Local Panel displays a message prompting the user to schedule a PM call. The user can remove this message by opening and then closing the filtration assembly door with power on. A PM should be set up at your and the user's convenience.

1. ☐ Check the Error Log and the Print Log. In the Error Log, look for film feed problems, for example. In the Print Log, look for inconsistent readings in DPatch, beam power, and kicker feed.
2. ☐ Perform processor 10,000 cycle cleaning (procedure 5-5-6).

Note

After completing cleaning, place the used cleaning pads in the disposal bag provided in the 10,000 cycle PM kit. Tie-wrap the bag and dispose of it properly.

3. ☐ Check the stripper gap and adjust as necessary (procedure 3-2).
4. ☐ Check processor slip ring and brush alignment and adjust as necessary (procedure 3-11).
5. ☐ Clean the platen using *3M*™ *Auto-Pak*™ Tack Cloth (procedure 5-5-7).
6. ☐ Do a calibration sheet and check the D Log E curve.
7. ☐ Replace the charcoal filter if the cycle count since the last filter replacement is greater than 7,500.

Note

After you replace the charcoal filter, if the cycle count is less than 10,000, you must reset the counter via MPC/SETUP/SCB/CONFIG/ FILTER COUNT

8. ☐ Replace the power module filter.
9. ☐ Clean the electronic enclosure filter.
10. ☐ Clean the grease filter in the backpack (Figure 5-7), and reverse the filter's orientation (sides) when reinstalling it.
11. ☐ Record the PM in the Service History Log.

5-5-5. 30,000 Cycle (or Yearly) Checklist

1. ☐ Perform steps 1 through 8 of the 10,000 cycle checklist. During processor cleaning:
   - ☐ Replace the felt air barrier with a new one (procedure 5-5-6-I).
2. ☐ Replace the electronic enclosure filter.
3. ☐ Replace the grease filter in the backpack (Figure 5-7).
4. ☐ Record the PM in the Service History Log.

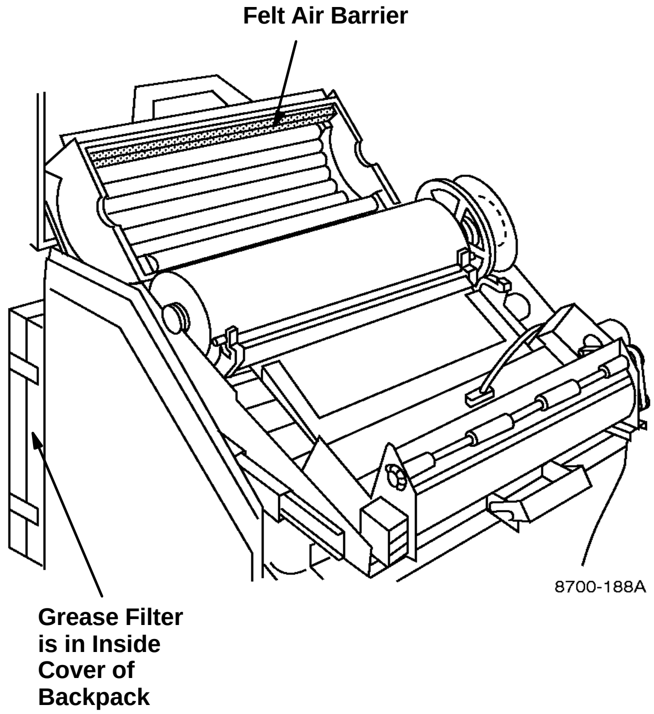


Figure 5-7.

5-5-6. Cleaning the Processor

Maintenance Interval

Every 10,000 prints

Cleaning Supplies Required

- Soft, Lint-free Cleaning Pads, Cloths, and Paper Towels
- *3M*™ *Troubleshooter* Cleaner
- *3M*™ Stainless Steel Cleaner
- *Dow Corning*™ Silicone Oil
- Static Shielding Bag and Drum Stand
- Bag with Tie-wrap (for cleaning waste disposal)
- Isopropyl Alcohol
- *Krytox*™ Lubricant
- Protective Gloves

Caution

Wear protective gloves for any cleaning procedure that requires cleaners/solvents.

Procedure

A. Cleaning the Processor Exhaust Slots and Chute

1. Remove power from the IMAGER and unplug the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Raise the top cover, and pull out the processor assembly to its fully extended position.

Note

Be aware as you begin disassembly and cleaning that the drum and rollers should be cleaned within 10 to 15 minutes after power removal, when they are still warm-to-hot.

3. Remove the clam shell cover (Figure 5-8).

Caution

Hot Surface

When the imager is initially powered down, the processor drum and rollers are hot. Take care when working in the processor area.

4. Scrape off debris and vacuum from the slot areas. Put on gloves, and use *Troubleshooter* and a pad to wipe clean the two exhaust slots and the slot at the top of the processor.
5. Use isopropyl alcohol to remove any residue left by the *Troubleshooter*.
6. Remove the eight screws securing the cover plate over the chute area (see Figure 5-8).

Note

Not all machines include this cover plate for chute access.

7. Thoroughly vacuum the chute area (chimney).
8. Replace the chute cover plate (8 screws) and the clam shell cover (4 screws).

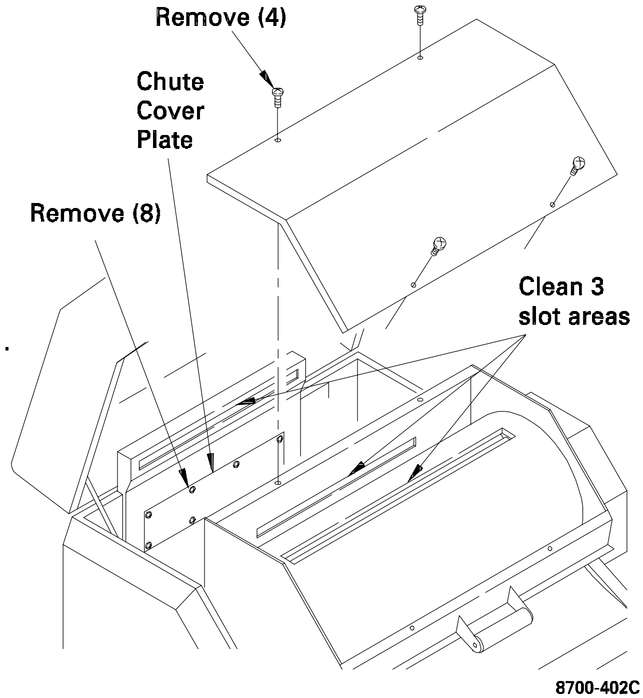


Figure 5-8.

B. Removing the Drum and Rollers

Caution

Before handling the drum, remove any jewelry (rings, bracelets, watches, etc.) that could accidentally contact the surface of the drum. Wear protective gloves while cleaning.

Note

A waste container, preferably a sink, is needed to clean the processor. If a sink is not available, an empty 14 by 17 inch film cartridge can be used. Be aware that this cleaning procedure produces fumes that may be objectionable to a customer. Try to find a cleaning area where complaints will be minimized.

1. Remove the hot drum (reference procedure 4-2-1). Set it on a drum stand.
2. Examine the surface of the drum for damage in the film path area. Look for cuts and gouges.

Note

If the drum is damaged, do not proceed with drum cleaning in the following procedures. The drum must be replaced. However, the other components of the processor must be cleaned.

3. Remove the hot processor rollers (reference 4-2-2). Place them in the sink (or cartridge).

C. Removing and Disassembling the Stripper Assembly

Some stripper assemblies have blades covered with plastic mylar (Kapton). Also some have heavy torsion springs. These differences require variations in disassembly and cleaning.

1. Unlatch the stripper latch(es) (Figure 5-9) and remove the felt plate assembly. Set it aside.
   a. If the blade is Kapton-covered, check that the Kapton is not delaminating. If it is, the blade must be replaced.
   b. Check that the two rollers that ride on the drum rotate freely and do not have flat areas. If the rollers are defective, the adjuster brackets (both sides) must be replaced.
2. Rotate the stripper assembly forward. Then remove the attaching screw (M3) and washers from each end of the stripper assembly, and remove the stripper assembly.
3. Disassemble the stripper assembly as follows:
   a. Pull the end adjuster bracket assemblies free of the stripper blade (Figure 5-9).
   b. Remove two shoulder screws (M2.5) to free the two mount brackets and torsion springs from the adjuster brackets.
   c. Remove the two shoulder screws (M4) that secure the two rollers.
4. Discard the two torsion springs if they are the lighter type. If they are the heavier type (colored), they must be washed (see next step).
5. Place the remainder of the stripper parts in the sink (or empty cartridge). **Exception**: If the stripper blade is coated with plastic mylar (Kapton), **do not** place it in the sink. Set it aside for later cleaning (reference procedure G).

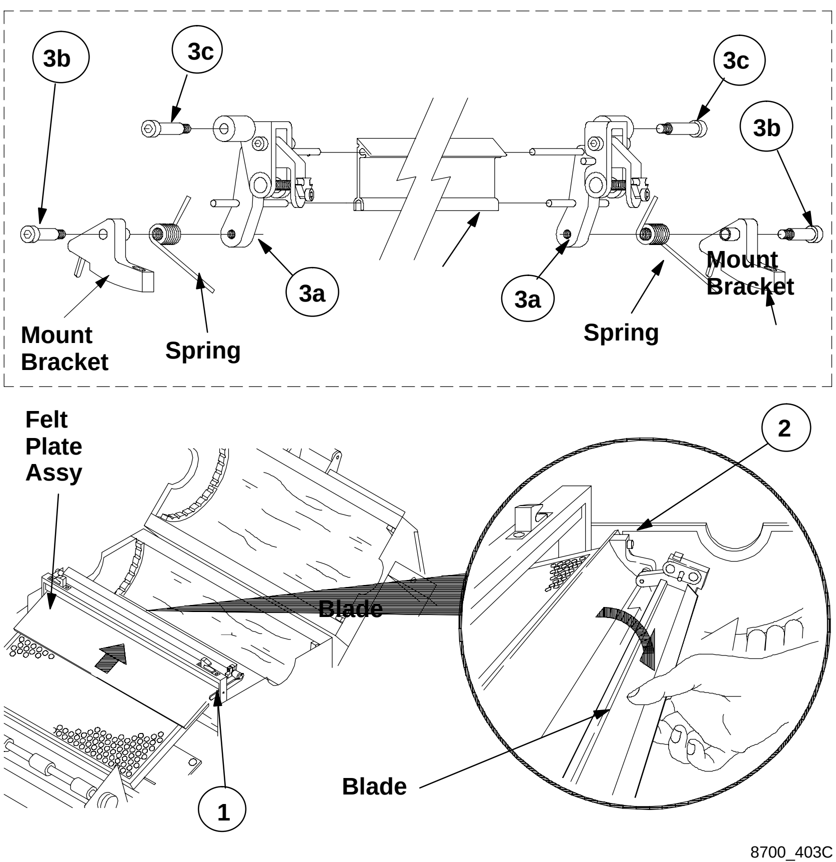


Figure 5-9.

D. Cleaning the Aluminum Foil and Cooling Tray

1. Wearing protective gloves, use a cleaning pad moistened in *Troubleshooter* to clean the surface of the aluminum foil inside the processor (Figure 5-10).
2. Wipe the cleaned surfaces of the aluminum foil with isopropyl alcohol to remove any residual *Troubleshooter*.

Caution

The cooling tray is factory polished. Do not mar the smooth finish.

3. Use isopropyl alcohol to wipe down the cooling tray. If a heavy buildup of FAZ is present, remove the tray (four screws) and clean it with *Troubleshooter*. Then wipe it with alcohol.
4. Vacuum out the interior of the processor as necessary.
5. Replace the cooling tray (if it was removed).

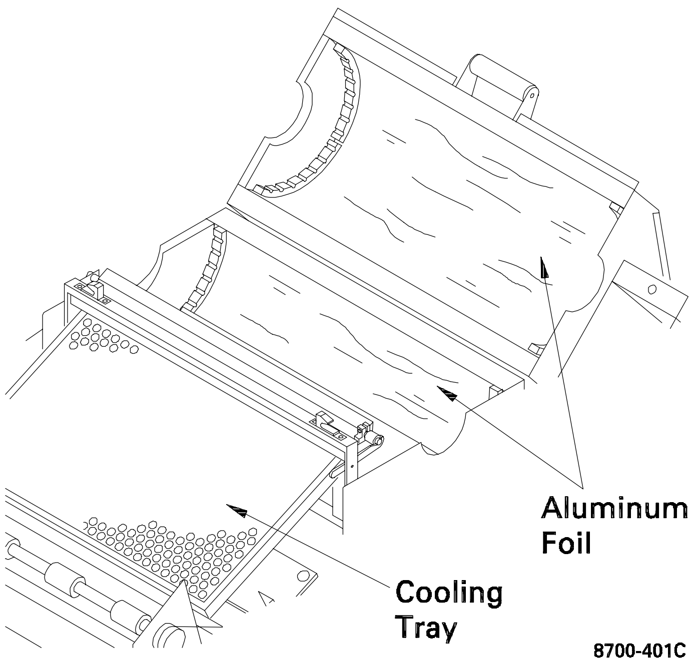


Figure 5-10.

E. Cleaning the Drum

Note

The drum and rollers must be warm-to-hot when you apply *Troubleshooter* to them.

1. Before cleaning the drum, spread out the processor rollers and the stripper parts on the bottom of the sink (or empty cartridge). Then spray them with *Troubleshooter* until they are entirely covered with the cleaner (about 1/3 to 1/2 half of the can). Allow them to soak for at least 5 minutes while you are cleaning the drum.
2. Place the drum (seated on its stand) in the sink (or empty cartridge), and place a static shielding bag over the electronic components at the top of the drum.
3. Wearing protective gloves, clean the drum with *Troubleshooter* as follows:
   a. While rotating the drum, spray it with *Troubleshooter* in a downward, sweeping motion. Make sure that the whole area of the drum that contacts film is sprayed.
   b. After a 5 minute wait, use a lint-free paper towel to wipe the *Troubleshooter* off the drum in a sweeping motion. (Wipe the drum in a top-to-bottom direction.) Rotate the drum and continue wiping until most of the *Troubleshooter* is removed.

Caution

The surface of the drum is easily damaged. Do not use excessive pressure while cleaning.

   c. Repeat steps a and b. (This should use up most of the can of *Troubleshooter*.)
4. Clean the drum with stainless steel cleaner by spraying and wiping in two cycles as described for *Troubleshooter* cleaning in step 3.

Caution

Do not rub a dry drum.

F. Cleaning and Installing the Rollers

1. Rinse the processor rollers with hot water to remove the *Troubleshooter* residue. (Use isopropyl alcohol if water is not available.)
2. Wipe the rollers dry and install them in the processor (see procedure 4-2-2).

G. Cleaning and Installing the Stripper Assembly

1. Remove the stripper parts from the sink and rinse them with hot water to remove the *Troubleshooter* residue. (Use isopropyl alcohol if water is not available.)
2. If the stripper blade has a Kapton covering, clean the blade by wiping it with alcohol and a cleaning pad. (This type of blade must not be cleaned with *Troubleshooter*.)
3. Wipe the stripper parts dry and reassemble them as shown in Figure 5-11. During reassembly:
   a. Install *new* torsion springs, if the assembly uses the lighter type springs.
   b. If the assembly uses heavy springs, install the *washed* springs. Note that the two springs are not identical. The red spring installs on the right side of the processor (as viewed from the front).

Caution

When the stripper is installed. the long side of the springs must rest against the machine frame or the assembly will not function right.

   c. Apply *Krytox*™ lubricant to all four shoulder screws before installing them.
   d. Install the stripper assembly in the processor.

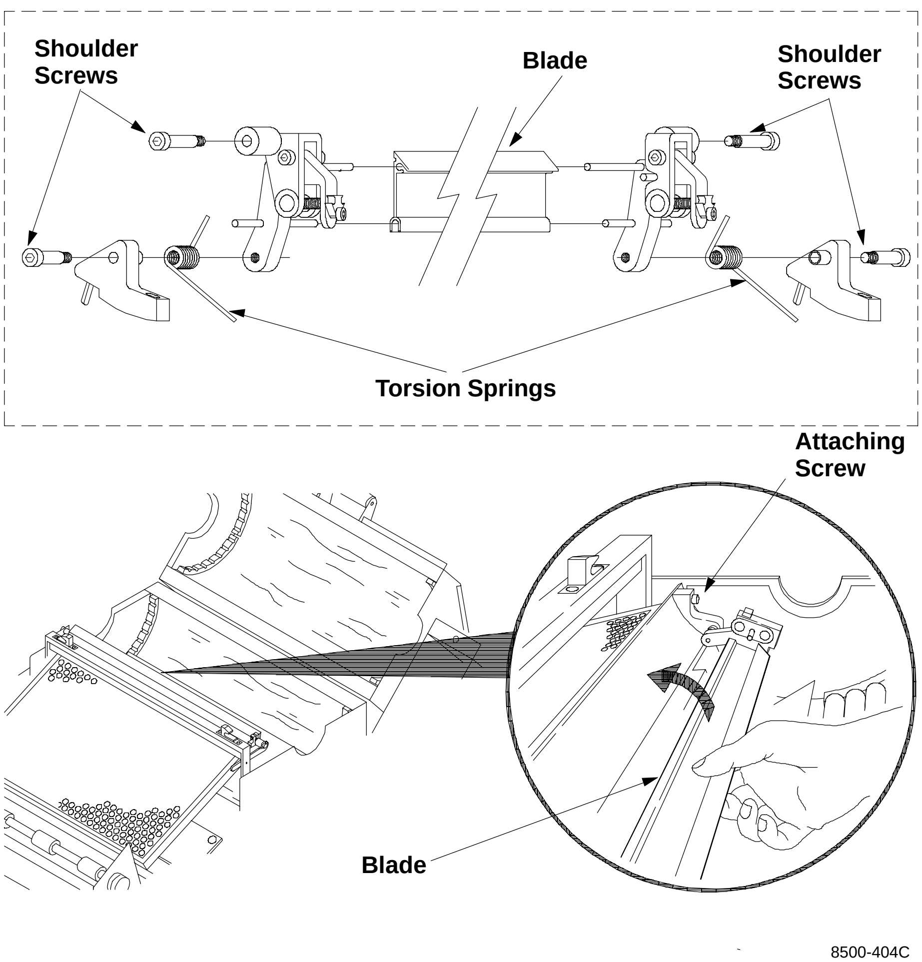


Figure 5-11.

H. Lubricating the Processor Roller Bearings

1. Slide all the rollers to one side of the processor.
2. Use a soft cloth or towel to remove any previous lubricant or dirt from the bushings/shafts at the ends of the rollers.
3. Slide the rollers to the other side of the processor and repeat the cleaning procedure on that side.

Note

Cleaning is completed when the cleaning cloth does not pick up any more dirt.

4. Rotate the nozzle of the *Krytox* oil dispenser to the o-ring opening. Do not cut the nozzle, since a small hole already exists.
5. With all rollers pushed to one side, place two or three drops of *Krytox* oil on each of the exposed bushing/shafts at the point of contact.
6. Slide the rollers to the opposite side and repeat the lubricating procedure.
7. Spin the rollers, sliding them from left to right a few times.
8. Wipe any accidentally spilled oil from the rollers.
9. Ensure that all rollers rotate freely.

I. Installing the Felt Plate Assembly and Felt Air Barrier

1. Check that the stripper is unlatched, and install a new felt plate assembly as follows:
   a. Hold the assembly upside down and insert its end pins in the machine slots (Figure 5-12).
   b. Pivot the assembly on its pins toward the front of the machine, insert the pad under the bar, and lay it down on the cooling tray.
   c. Relatch the stripper latch(es).

For 30,000 Cycle PMS only:

2. Remove the old felt air barrier from its end clips (Figure 5-12) and install a **new** one.

Caution

The installed felt air barrier must not interfere with rotation of the processor rollers.

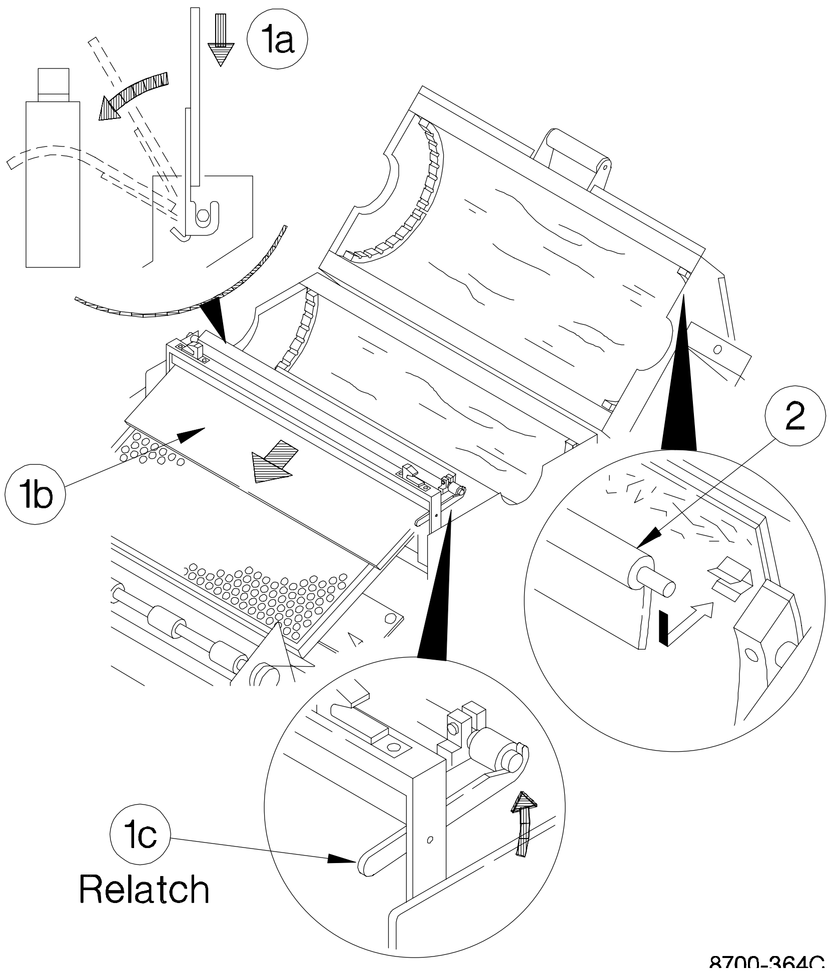


Figure 5-12.

J. Installing and Conditioning the Drum

1. Install the drum in the processor.
2. Reassemble and close the processor.
3. Apply power to the system and wait for approximately 5 minutes for drum warmup.
4. Open the processor assembly

Caution

Hot Surface

The processor drum is hot. Take care when working in this area.

5. Use a lint-free cloth (*TEXWIPE*) to wipe silicone oil over the surface of the drum.
6. Repeat the process to thoroughly rub in the oil until the full bottle is used or the drum repels the silicone.
7. Wipe off excess silicone oil from the drum.
8. Use the oil-soaked cloth to lightly coat the processor rollers with silicone oil. (Rotate the rollers to cover all surfaces.)
9. Close up the processor.
10. Apply power to the system and run “transport” film through the system until there is no excess conditioner visible on the film.
11. With the processor at normal operating temperature, check the stripper gap and adjust as necessary (procedure 3-2).
12. Issue a calibration print and confirm that image quality is acceptable.

5-5-7. Cleaning the Platen

Cleaning Interval

Every PM

Supplies Required

3M™ *Auto-Pak*™ Tack Cloth

Procedure

1. Remove the film cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the IMAGER. These voltages can cause severe injury or death.

2. Flip down the circuit breaker on the rear of the IMAGER. Then unplug the power cord.
3. Open the left door via its mechanical release.
4. Open the platen access door (see Figure 5-13).

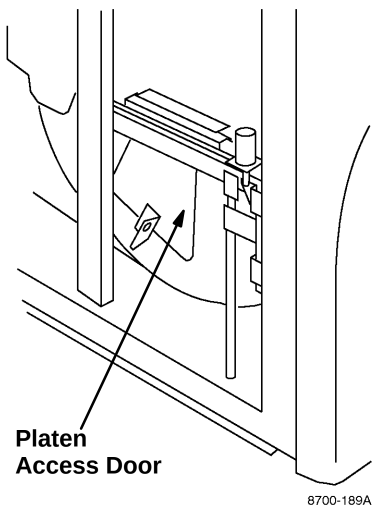


Figure 5-13.

Caution

The bottom, anti-reflective surface of the platen is easily damaged by fingernails and jewelry. Prior to cleaning the platen, remove any jewelry (rings, bracelets, watches, etc.) which may accidentally come in contact with the bottom surface of the platen.

If the *3M*™ *Auto-Pak*™ cloth catches on parts inside the platen, take care not to damage the parts when removing the cloth. Check for and remove any torn pieces of cloth.

5. If the Print Log indicated inconsistencies in beam power or attenuator readings, use compressed air to blow away foreign material from the beam power monitor access hole (see Figure 5-14).
6. Squeeze the handle on the transport assembly and pull the transport out fully.

7. Reach through the opening in the back of the platen (from the inside) and clean the back (outside) of the platen (see Figure 5-14).
8. Use an *Auto-Pak* cloth to wipe clean the bottom surface of the platen.

Note

The *3M*™ *Auto-Pak*™ cloth will not remove large particles. Use a flashlight to locate and fingers to remove large particles.

9. When finished cleaning the platen, close and latch the platen access door.

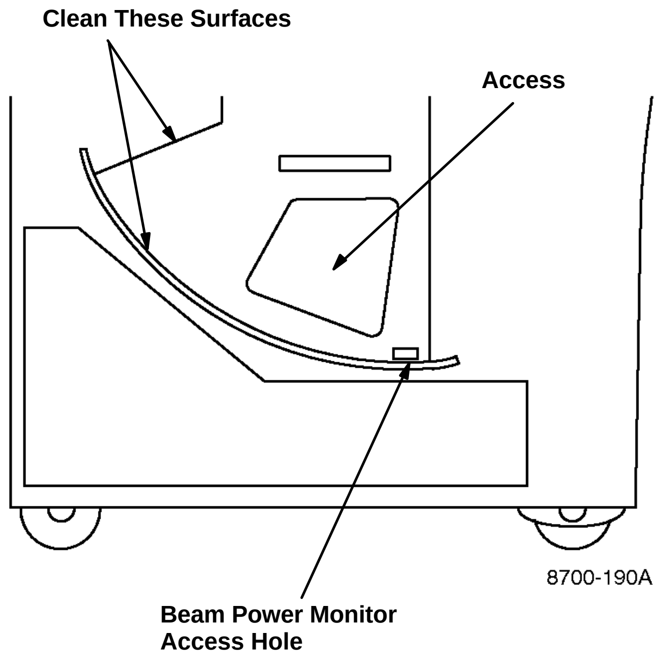


Figure 5-14.

5-5-8. Completing the PM

After cleaning or replacing the filters, as appropriate (see the 10,000 cycle or 30,000 cycle check list), record the PM in the Service History Log.

Section 6 – Theory of Operation

6-1. Overall System Architecture

The architecture of the IMAGER is designed to be modular for ease of assembly, service, and access for jam clearing. The system contains modules to open the film cartridge, pick up the film, transport the film from the cartridge to the exposure and processor stations, expose the film, and process the film. It also contains electronic modules for control and power conditioning components. Operator interfaces include the local panel (mounted to the top cover of the imager), and two different remote keypads (both of which are optional).

6-1-1. Module Architecture

The modules within the IMAGER have been assigned the following reference designations for ease in identifying the location and function of components.

Each electronic component within each module has been assigned a reference designation based upon the module designation.

Reference Designation	Module	Function
100	Local Panel	Operator commands & status messages
200	Densitometer	Reads the density patch on films.
300	Processor	Develops the exposed film and delivers it to the exit tray in the top cover.
400	Transport	Moves the film from the supply cartridge to the exposure module and from the exposure module to the processor module.
500	Pickup	Lifts the film from the supply cartridge to the transport module.
600	Rollback	Opens and closes the cover of the supply cartridge.
700	Exposure	Exposes the film. Consists of a laser optics system and an exposure platen.
800	Frame	Not a functional module, but used to identify components that are mounted to the frame (and not included in other modules).
900	Power	Contains the DC power supplies and AC power conditioning components.
1000	Electronic	Contains the control and image processing electronics.

6-1-2. System Electronics Architecture

The system electronics have been developed jointly by Kodak and two partners – Analogic and General Scanning Inc. They are divided into the following three functional sections:

- IMS – Image Management System (Analogic)
- LOS – Laser Optics System (GSI)
- MCS – Machine Control System (Kodak)

Figure 6-1 is a block diagram that summarizes the architecture of the overall system electronics. It illustrates the basic connections between the three functional sections and the printed circuit boards within each section. Each section is described in greater detail in subsequent paragraphs.

All of the IMS and the major boards of the MCS are located in the Electronic Enclosure Assembly. The smaller boards of the MCS are located in the other modules. All of the boards for the LOS are located within the optics enclosure provided by GSI.

The IMS has interfaces to receive image data and commands from the host. When it has received an image from a host, it sends a command over a serial interface to the MCS. The serial interface is also used to exchange status between the systems. The MCS sets up the control lines for the LOS over a control and status interface and starts the print process. The IMS has an interface to the LOS over which the image data is transferred.

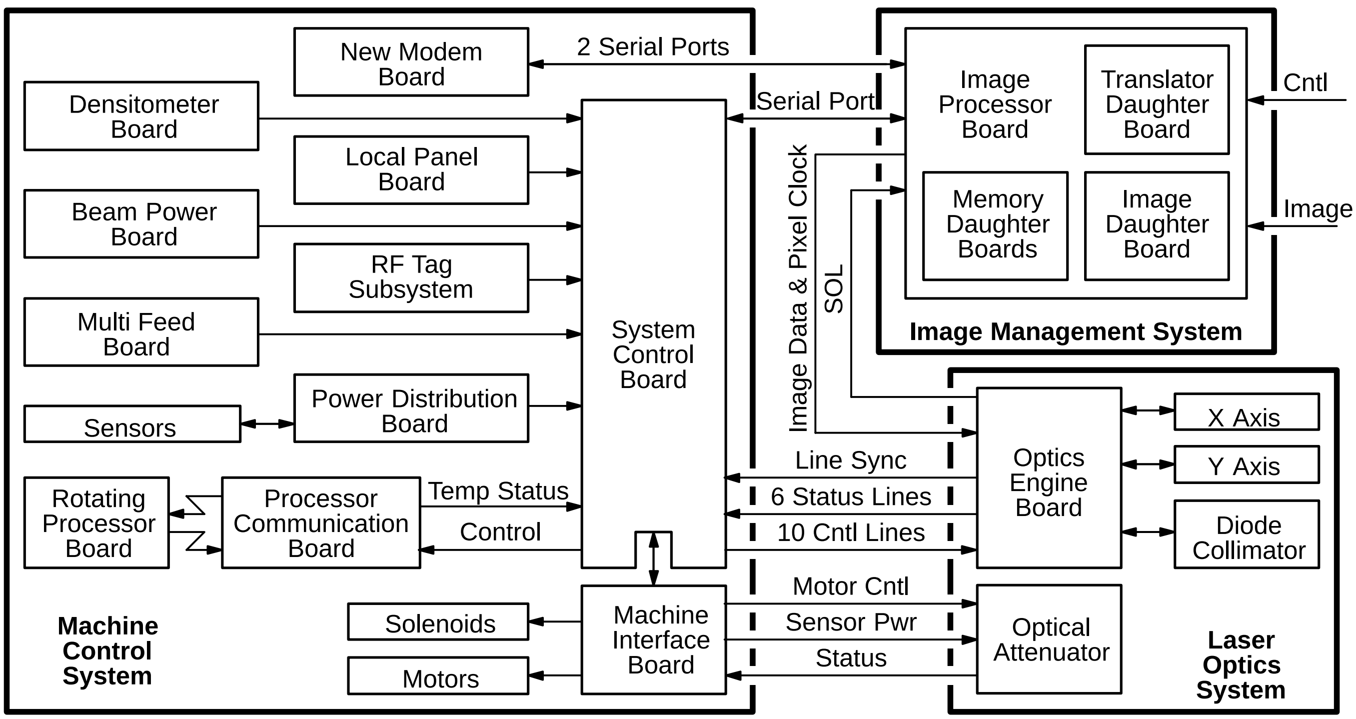


Figure 6-1.

6-2. Module Descriptions

6-2-1. Local Panel Assembly

The Local Panel is one of the operator interfaces to the system. The others are optional keypads. The Local Panel has function keys for input and an LCD to display system status and error messages. It is mounted on the cover of the system and interfaces to the System Control Board (SCB) through a 50 conductor shielded cable.

6-2-2. Densitometer Assembly

The densitometer is a subassembly of the Processor Assembly. It provides an analog signal which represents the density of the D-patch on the film to the SCB through a 15 conductor shielded cable.

6-2-3. Processor Assembly

The Processor Assembly is located in the top of the system. It is responsible for receiving the film from the Transport Assembly, developing it over a hot drum, cooling it, passing it through the densitometer and delivering it to an output tray in the cover.

The Processor Assembly contains the following electrical components:

Reference Designation	Description	Function
M301	Processor Motor	Drives the processor drum.
M303	Exit Motor	Drives the exit rollers.
SW301	Processor Exit Sensor	Senses the film as it enters the densitometer.
SW302	Processor Entrance Sensor	Senses the film as it enters the processor assembly.
SW304	Transport Exit Sensor	Senses the film as it enters the exit assembly.
PCB	Processor Communication Board	Board which communicates through an optical interface to the RPB to provide temperature status and control from the SCB.
RPB	Rotating Processor Board	Board responsible for controlling the temperature of the processor drum under software control from the SCB.

6-2-4. Transport Assembly

The Transport Assembly is located in the middle of the system along the back side. It is responsible for moving the film from the Pickup Assembly to the Platen in the Exposure Assembly for imaging and from there to the Processor Assembly for processing. The Transport Assembly can load a film into the Platen while unloading another. It can prestage a film for exposure while delivering another film to the processor.

The Transport Assembly contains the following electrical components:

Reference Designation	Description	Function
M401	Transport Feed Roll Motor	Drives the film from the pickup to the platen
M402	Transport Motor	Drives the film from the platen to the processor
M403	Platen Motor	Drives the film in and out of the platen
SW402	Platen Entrance Sensor	Senses the film at the platen entrance
SW403	Platen Exit Sensor	Senses the film at the platen exit
SW404	Transport Midpoint Sensor	Senses the film between SW403 and the processor
SW405*	Transport Feed Sensor	Senses the film between the feed rollers and SW402
SW406	Tongue Depressor Sensor	Senses whether the tongue depressor is down
SW407	Tongue Depressor Interrupt Switch	Interrupts the power to the tongue depressor solenoid when the Transport Assembly is pulled out
Y401	Tongue Depressor Solenoid	Actuates the tongue depressor
Y402	Transport Feed Roll Solenoid	Lifts the nip roll at the feed roll when loading film
Y403	Gate Solenoid	Opens the gate at the entrance of the platen
MFB	Multi Feed Board	Senses the number of films present at the feed roll when loading film

* SW405 is not used on later production machines.

6-2-5. Pickup Assembly

The Pickup Assembly is located in the middle of the system under the Processor. It is responsible for removing the film from the film cartridge and bringing it up to the feed rollers in the Transport Assembly.

The Pickup Assembly contains the following electrical components:

Reference Designation	Description	Function
K501	Vacuum Relay	Solid State Relay (SSR) which turns on the vacuum pump
M501	Pickup Motor	Drives the pickup arm
M502	Vacuum Pump Motor	Provides vacuum for suction cups
SW501	Picker Down Sensor	Senses that the picker arm is in the down position
SW502	Film Out Sensor	Senses that the film cartridge is empty
SW503	Picker Up Sensor	Senses that the picker arm is in the up position
SW504	Picker Extended Sensor	Senses that the picker arm is in the mid position
Y501	Vacuum Solenoid	Opens the line between the vacuum pump and suction cups

6-2-6. Rollback Assembly

The Rollback Assembly is located in the middle of the system under the Pickup Assembly. It is responsible for opening and closing the film

cartridge and reading the RF tag data on the bottom of the cartridge. The Rollback Assembly contains the following electrical components:

Ref. Desig.	Description	Function
M601	Rollback Motor	Drives the roller which opens and closes the cartridge
SW601	Rollback Motor Home Sensor	Senses that the roller is in the home position
SW603	Cartridge Open Sensor	Senses that the cartridge is open
SW604	Cartridge Sensor	Senses that the cartridge is present
–	RF Tag Subsystem. Includes the following components: RF Tag Interface Board RF Reader Board RF Antenna Board	Reads the data on the RF tag on the bottom of the cartridge. (Also has the ability to write to the RF Tag.) RF Tag Interface Board: Contains a micro which receives commands from the SCB, processes the commands, and sends them to the RF Reader Board (see paragraph 6-3-3-7 for details). RF Reader Board: Receives commands from the RF Tag Interface Board. Processes the commands for transmission of data to the RF Antenna. Receives RF data from the antenna and routes it to the RF Tag Interface Board. RF Antenna Board: Transmits to and receives RF energy from the RF tag.

6-2-7. Exposure Assembly

The Exposure Assembly is located in the lower portion of the system over the Power Module Assembly. It consists of the Laser Optics System (LOS) and the Platen Assembly. The Platen Assembly positions the film for exposure.

The Platen Assembly contains the following electrical components:

Reference Designation	Description	Function
SW701	Platen Bottom Sensor	Senses that the film is at the bottom of the platen
SW703	Platen Door Interlock Sensor	Senses that the platen door is closed
Y701	Platen Top Solenoid	Forces film to the bottom of the platen prior to exposure
Y702-705	Platen Alignment Solenoids	Centers the film in the platen prior to exposure
Y706	Platen Kicker Solenoid	Forces the film into the transport after exposure
BPB	Beam Power Board	Reads the power of the laser beam at the platen

6-2-8. Frame Assembly

The Frame Assembly is the skeleton of the system. It supports all of the rest of the assemblies. There are components on it which are not part of any other assembly.

The Frame Assembly contains the following electrical components:

Reference Designation	Description	Function
K801	Processor Power Relay	Provides power to the Processor Assembly
M801	Filtration Fan Motor	Circulates air through the filter in the backpack
SW801	Filter Present Sensor	Senses that the filter is present in the backpack
SW802	Top Cover Interlock	Machine interlock that senses that the top cover is open
SW803	Left Door Machine Interlock	Machine interlock that senses that the left door is open
SW804	Left Door Laser Interlock	Laser interlock that senses that the left door is open
SW805	Power Switch	Used to latch power relay in the Power Module Assembly
SW806	Supply Door Interlock	Machine interlock that senses that the supply door is open
Y801	Supply Door Solenoid	Unlocks the supply door
Y802	Left Door Solenoid	Unlocks the left door

6-2-9. Power Module Assembly

The Power Module Assembly (PMA) provides power for the system and is located at the bottom of the system. It contains an isolation transformer, which steps down the 200–240 VAC input voltage to 120 VAC for use within the system, and voltage filtering components. There are two DC power supplies within the PMA. The first is a 450 watt supply which supplies the +5, ±17, and +24 volts used by the system. The second is a 15 watt supply which supplies –5.2 volts for use by the copper connect video interface option.

The PMA contains the following electrical components:

Reference Designation	Description	Function
C901	Filter Capacitor	Conditions the 120 VAC of the transformer
CB901	Input Circuit Breaker	10 amp breaker; protects the input wiring
CB902	Processor Circuit Breaker	15 amp breaker; protects the processor wiring
CB903	Power Supply Breaker	8 amp breaker; protects the power supply, cooling fans, and vacuum pump wiring
CB904	24 VAC Circuit Breaker	3 amp breaker; protects the 24 VAC wiring
LF901	Input Line Filter	Filters the 200–240 VAC input
K901	Power Latch Relay	Latches the power to the system
M901	Cooling Fan Motor	Circulates air through the PMA
PS901	Main Power Supply	Provides +5, ±17, and +24 volts for the system
PS902	VIB Power Supply	Provides –5.2 volts for the video interface
T901	Isolation Transformer	Steps down the 200–240 VAC input voltage to 120 VAC
V901	Varistor	Protects against transient voltages on the 120 VAC

6-2-10. Electronic Enclosure Assembly

The Electronic Enclosure Assembly (EEA) is located along the right side of the system. It provides an RFI enclosure for the system control electronics. The EEA provides mounting and interconnect harnesses for the Image Management System (IMS) electronics and for some of the Machine Control System (MCS) electronics. The position of the boards within the EEA are shown in the IMS and MCS sections of this section. Cooling is also provided for the components within the EEA.

The EEA electrical component functions will be described in either the IMS or MCS section. the EEA contains the following electrical components:

Reference Designation	Description
DIB	Digital Interface Board (IMS)
FIB	Fiber Interface Board (IMS)
IPB	Image Processor Board (IMS)
MDB	Memory Daughter Board (IMS)
MIB	Machine Interface Board (MCS)
NMB	New Modem Board (MCS)
PDB	Power Distribution Board (MCS)
SCB	System Control Board (MCS)
TDB	Translator Daughter Board (IMS)
VIB	Video Interface Board (IMS)
M1001–1003	Cooling Fans (MCS)

6-3. Electronics Description

6-3-1. Image Management System

The IMS consists of a group of boards which perform image acquisition, interpolation, filtering, formatting, and output to the LOS. It has interfaces for up to two keypads or hosts through the TDB and interfaces for image sources through four alternate daughter boards. The IMS can be configured with either an 8-bit or 12-bit data path and image memory ranging from 16 to 128 megapixels. The IPB is the core of the IMS and acts as the back plane. All of the other boards in the IMS are daughter boards that plug directly into the IPB.

The IMS can be configured with combinations of the following boards:

Reference Designation	Name	Function
IPB	Image Processor Board	Image processing
MDB	Memory Daughter Board	Image memory – up to 4 boards per system
TDB	Translator Daughter Board	Keypad or host interface – any command set
DIB	Digital Interface Board	Digital host image interface
FIB	Fiber Interface Board	Fiber host image interface
VIB	Video Interface Board	Video host image interface

The IMS boards are mounted on an inner swing out panel in the Electronic Enclosure Assembly. The connectors for the TDB and image interface boards are accessible from the rear of the system. The boards are also removable from the rear of the system. The various image interface boards are all the same size and install in the same location. Only one image interface board can be installed at a time.

Figure 6-2 illustrates an example of one of the possible IMS configurations in which the image interface is a FIB. It also shows the position and order of the 4 MDBs which are installed on the back side of the IPB. The MDBs must be installed in the sequence shown. They must also be the same type; i.e., either 8 or 12-bit and either 16 or 32 megapixel.

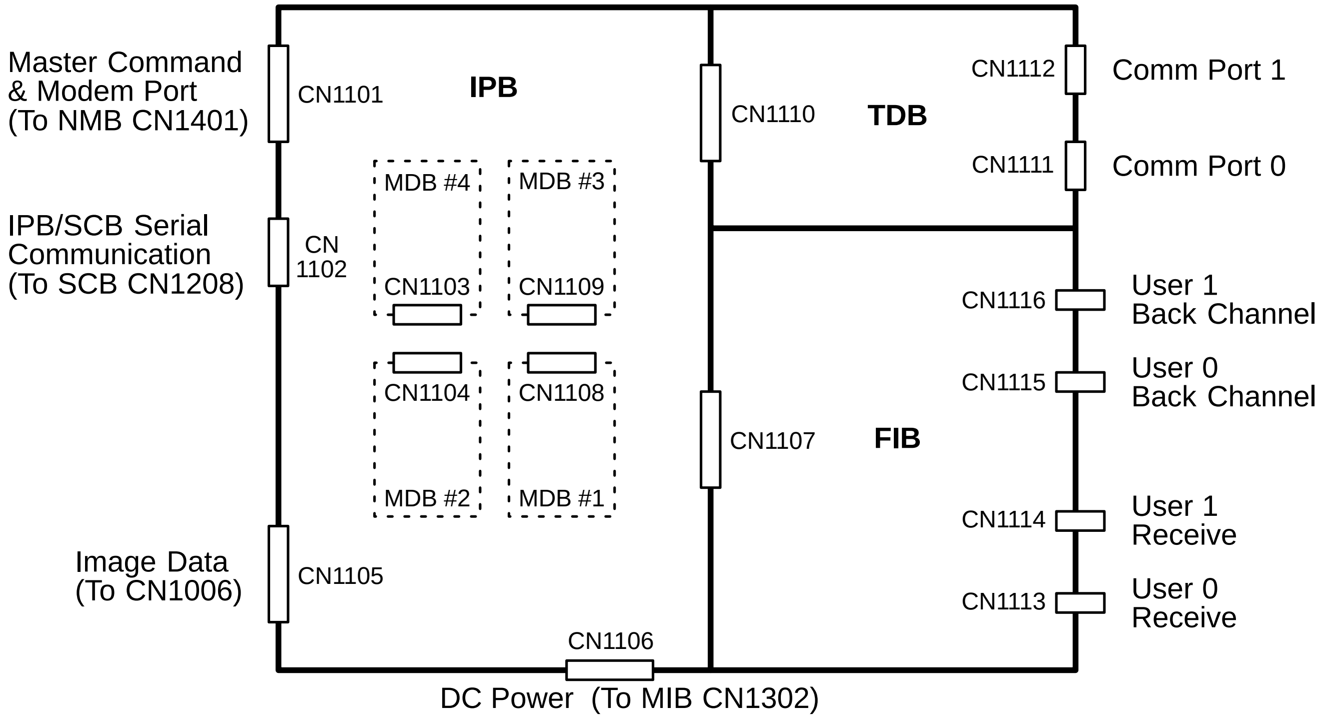


Figure 6-2.

6-3-1-1. Image Processor Board (IPB)

The IPB performs the acquisition, interpolation, filtering, formatting, and transfer of an image to the LOS. The IPB has the following logical blocks to perform these tasks:

Block	Function
Microprocessor	Controls the functions of the IPB and interface boards
Image Interface	Connects the IPB to one of the four possible image interface boards
Scale LUT	Maps the input pixel width to the memory width
Acquisition Control & Memory Timing	Controls image acquisition modes and generates the timing needed for the image memory
Image Memory	Consists of image memory control, an address generator, and connectors for the 4 MDBs
Interpolation	Performs image interpolation and filtering
Contrast Table	Provides a 10-bit to 12-bit output conversion and a linear 12-bit output path
Format	Controls the output to the LOS interface and switches between image and border
Printer Interface	Outputs the formatted image data to the LOS
Parameter	Stores acquisition and print parameters and performs parameter initialization between various logic blocks
Communication Microprocessor	Provides an interface to the TDB

The bold arrows in Figure 6-3 show the image data path through the IPB. Data enters through the Image Interface Block, passes through the Scale LUT Block, and is stored in the Image Memory Block. This path is active during an external image acquisition. The microprocessor can acquire images directly through the Scale LUT Block. During a print operation, this data is read from the image memory, is interpolated and filtered through the Interpolation Block and then is passed through the Contrast Table Block to the Printer Interface Block. In diagnostic mode, the Microprocessor Block can bypass the Printer Interface Block and intercept the output data at the Contrast Table Block.

The IPB uses a Motorola 68302 microprocessor. It is a highly integrated device with a 68000 core and several additional features. Among them are three serial communication controllers. One is used to control the serial port to the SCB over which system commands and status are exchanged. It is also used for receiving calibrated contrast tables from the SCB. The other two are used for the service modem (NDB). Only one of these serial ports can be active at a time. The two service modem ports are RS-232 compatible, while the SCB port is differential.

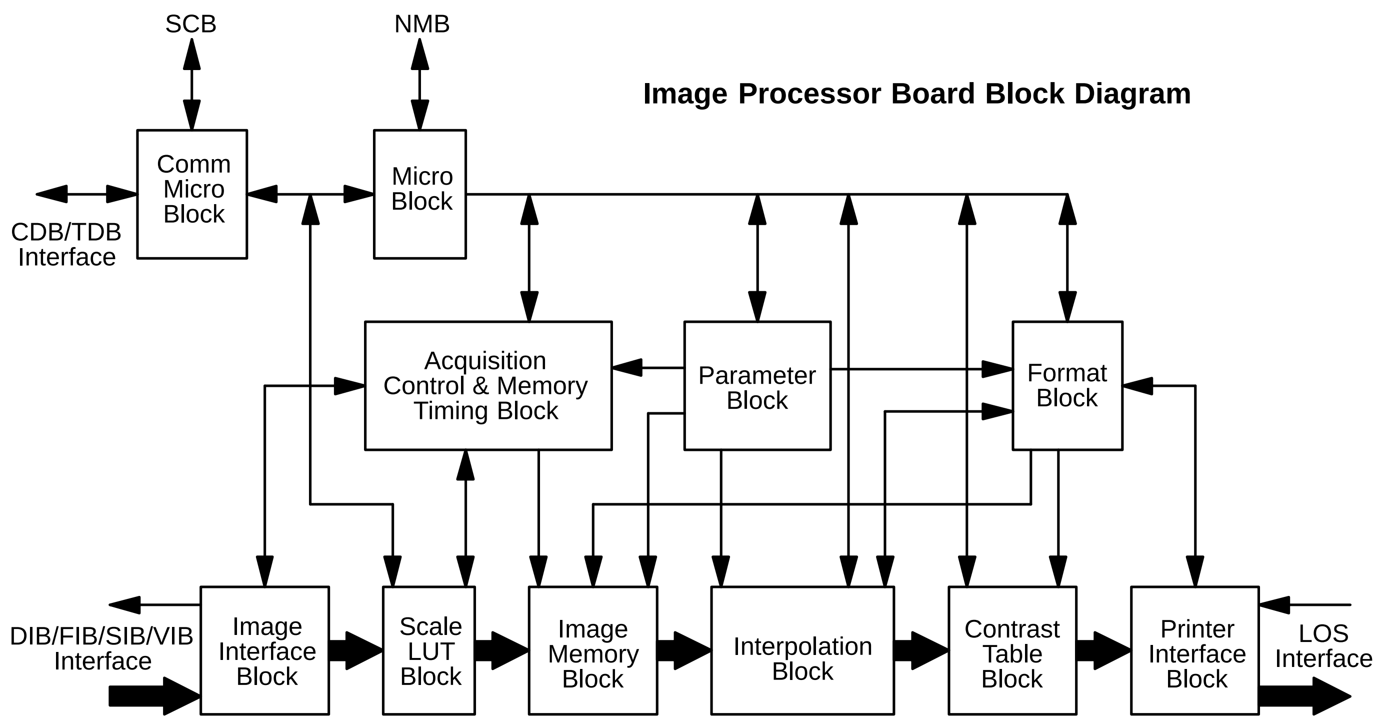


Figure 6-3.

6-3-1-2. Bandwidth

The system is designed for 120 nanosecond memory which requires a total memory bandwidth of 8.3325 MHz. The IPB has a 33.330 MHz system clock which is divided down to provide the required memory bandwidth. The bandwidth is divided as follows:

Image Transmission	4.16625 MHz
Image Acquisition	4.10225 MHz
Memory Refresh	0.06400 MHz

Note

The refresh cycle steals from the acquisition bandwidth in order to perform the refresh.

Image acquisition will support a line burst rate of 4 megapixels per second and have a maximum average transfer rate of 3 megapixels per second line to line. Acquisition of video images having a 110 MHz pixel frequency will be supported by allowing a maximum of 32 acquisition passes.

6-3-1-3. Memory Daughter Board (MDB)

Refer to Figure 6-4 for a block diagram of the MDB.

The MDB is available with 16 or 32 megapixels (MP) of memory. The 16 MP version has an 8-bit pixel width; the 32 MP version is available with an 8-bit or a 12-bit pixel width.

The MDB is built with 4 banks of memory. Each bank consists of thirteen DRAMs in a ZIP package. Each bank has an 11-bit address bus, 13-bit data input bus, 13-bit data output bus, and 3-bits of control. The memory is organized for 12-bit image pixels having 1-bit of parity. A fully configured board provides for a 12-bit data path and has 52 DRAMs.

The memory banks can be depopulated for an 8-bit image plus 1-bit parity configuration. The four least significant bits (0–3) are depopulated. A depopulated board provides for an 8-bit data path and has 36 DRAMs.

The address for each memory bank is provided through one of two address multiplexers which also double as the address drivers. One multiplexer drives banks 0 and 1 and the other drives banks 2 and 3. They take the lower 22 bits of the input address and convert these to row and column addresses to the DRAM. A single control signal from the IPB switches the multiplexers between the two DRAM addresses.

The presence or absence of a pull-down resistor at the IPB connector is used to indicate to the IPB whether a MDB is an 8 or 12-bit version. The IPB masks the four least significant bits for an 8-bit MDB. A pin is grounded at the IPB connector to indicate to the IPB whether a MDB is installed at that connector location. Another pin is grounded at the IPB connector to indicate to the IPB whether a MDB is a 16 or 32 MP version.

The information on which pins are grounded is used by a memory configuration register on the IPB to determine image memory width and size and the number of boards. The board size and number of boards installed are combined with the current address to generate board select signals. A memory out-of-bounds error is generated when a memory access is attempted to a board that is not installed. All boards must be installed in order. If a board is missing, the system will not recognize the boards that follow. If 8-bit and 12-bit boards are intermixed, then the system will assume that they are all 8-bit boards. In addition, 16 and 32 MP boards cannot be intermixed.

Memory Daughter Board Block Diagram

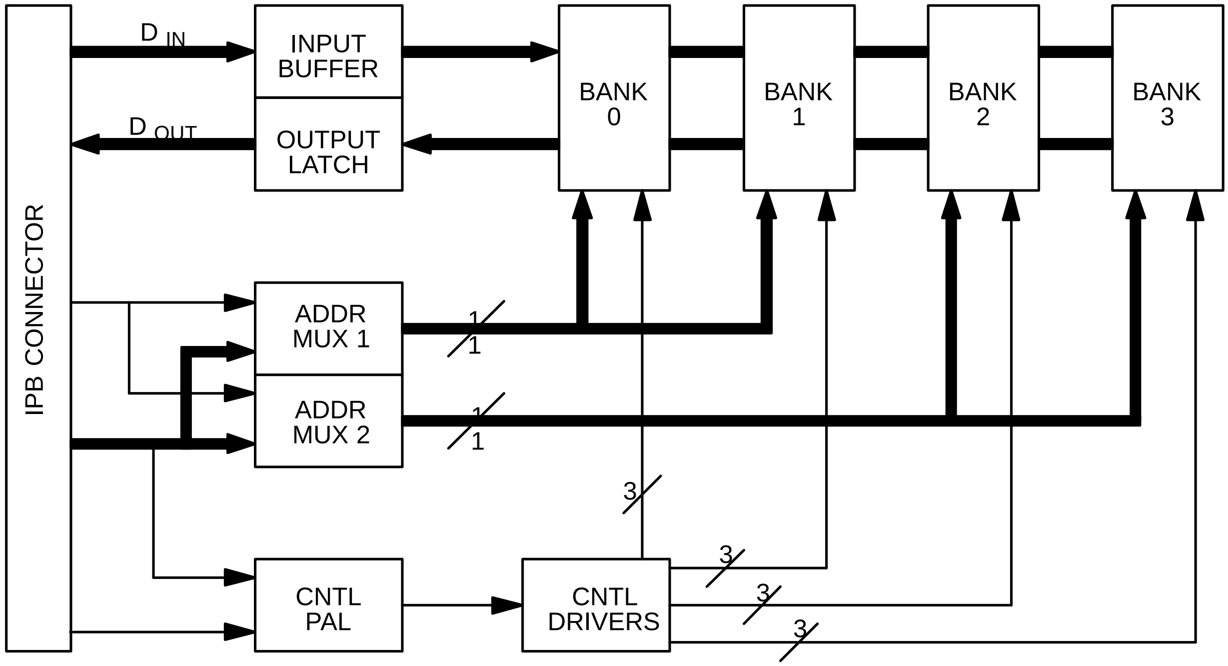


Figure 6-4.

6-3-1-4. Translator Daughter Board (TDB)

The TDB provides two serial communication interfaces between the IPB and two hosts and/or keypads. It is responsible for receiving commands from the hosts/keypads, checking for protocol and transmission errors, and sending the commands to the microprocessor on the IPB. It also receives responses from the IPB, formats these responses, and transmits them to the host/keypad.

The TDB has a microprocessor which is responsible for the functions on this board. Communication between the microprocessor on the TDB and the microprocessor on the IPB is handled through a dual-port RAM which resides on the IPB. The communication parameters for the two serial ports on the TDB are passed from the IPB to the TDB through the dual-port RAM after a power-up reset.

The two serial ports on the TDB are jumper selectable for either RS-232 or RS-422 operation. Both ports have only receive and transmit signals. There is no hardware handshaking on either port. They will support baud rates up to 19.2K.

The TDB will accept different command sets and translate them into a common command set. In this way, the IPB will only require a single command set to be active.

6-3-1-5. Image Interface Boards (DIB, FIB, VIB)

The system is capable of being configured for either a digital, fiber, or video input. The digital input may be from 1 or 2 sources and may be either 831/952/959 protocol or 969 protocol. The fiber input is capable of being connected to 1 or 2 external EIBs. The design allows two different types of EIBs to be connected at the same time. When 2 EIBs are connected, only one input on each can be used. The video input may be from one or two sources and may either provide an external clock or use a plug-in phase lock loop (PLL) board for internal clock generation.

6-3-1-6. Digital Interface Board (DIB)

The DIB provides for two digital host copper connections to the system through the IPB. The interfaces are multiplexed which allows only one interface to be active at a time. They are designed to handle the 831/952/959 and 969 protocols with a maximum pixel width of 12 bits. The inputs on each interface are optically isolated and are RS422 compatible on the request and re-transmit lines. The maximum image transfer rate is 4 MP/sec. The host system is responsible for ensuring that the 3 MP/sec average transfer rate is not exceeded.

The DIB interfaces to the IPB through the image source interface connector (CN1107). It provides a 12-bit image output to the IPB along with an input parity error detected signal and a strobe. The DIB receives its parameters over a 10-bit parameter bus and returns command status over a 2-bit command bus. Both functions provide a strobe signal. The DIB receives its power, clock, and power-up reset from the IPB through CN1107.

The DIB has test pattern generation circuitry. The test image data is stored in an EPROM which is supplied and installed by Kodak. The image is transferred at a 2 MP/sec rate. The maximum image size is 512x509 in 831/952/959 format and 512x511 in 969 format.

There are two defined forms of image transmission. The first is 831/952/959 digital protocol. In this format, a line by line handshaking is performed which requires a request for each line. The host terminates each line, except the last, with an EOM. The last line is terminated with an EOT. The second is 969 protocol. The entire image is transferred at once with no line by line handshaking with this protocol. The host terminates the transfer with an EOT. In both protocols, it is possible to transmit a 4 byte header prior to the image data to define the image size. The IMS treats the header as a separate image, which requires that it be terminated with an EOT.

6-3-1-7. Fiber Interface Board (FIB)

Refer to Figure 6-5 for a block diagram of the FIB.

The FIB has two optically coupled image source interfaces and provides an interface between the IPB and external interface boxes (EIBs). The source interfaces are multiplexed and allow only one source to acquire at a time. The IPB determines which source interface is active via the source of the acquisition command received from the TDB.

Each image source interface consists of a high speed optical receiver and low speed optical transmitter. The optical receiver circuit, referred to as the forward channel, is capable of operating at either 100 or 125 megabits/second. The transfer rate is jumper selectable on a per interface basis. The forward channel receives image data and transfer status information from the EIB. The optical transmitter circuit, referred to as the back channel, has a maximum transfer rate of 5 megabits/second. The back channel transmits commands and image acquisition parameters to the EIB. The actual parameter transmission rate is approximately 833 kilobits/sec.

Acquisition parameters must be sent to each EIB to enable the acquisition of images. Image acquisition parameters are transmitted on system power-up or reset to each interface over the fiber back channel. The EIB acknowledges the parameters with a status response over the forward channel. The system software may elect to re-transmit these parameters at any time, such as after a failed acquisition or a parameter change.

The FIB interfaces to the IPB through the image source interface connector (CN1107). It provides a 12-bit image output to the IPB along with an input parity error detected signal and a strobe. The FIB receives its parameters over a 10-bit parameter bus and returns command status over a 2-bit command bus. Both functions provide a strobe signal. The FIB receives its power, clock, and power-up reset from the IPB through CN1107. As an acquisition is taking place, the EIB transmits the digital image data over the fiber forward channel. The FIB receives and reconstructs the image data and transfers it to the IPB through CN1107 in parallel form.

Both the FIB and IPB can detect errors in the transmission of the image. When this occurs, the IPB may request a re-transmission of the image or image line depending on the transfer protocol. The FIB sends a re-transmit request to the proper EIB which in turn re-transmits the image or image line.

Fiber Interface Board Block Diagram

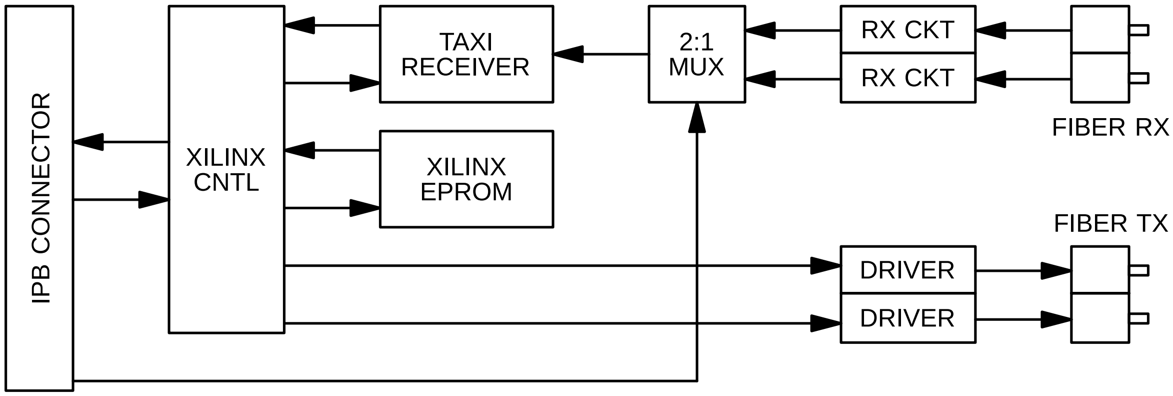


Figure 6-5.

6-3-1-8. Video Interface Board (VIB)

The VIB converts video image data to a digital format and transfers it to the IPB over the image source interface. The video image must be a composite video signal meeting the RS170/343 or equivalent standard and is usually the output of a D/A converter. The VIB also provides an input for the clock that samples the D/A converter. The video is digitized to 9-bits/pixel. The VIB supports external clock sampling up to 110 MHz by allowing a maximum of 32 passes for one acquisition. The same Phase Locked Loop (PLL) module as used in the VEIB can be plugged into the VIB to provide the clock for synchronous digitization when an external clock is not available. The VIB can accept video signals with interlaced or progressive scan modes.

The VIB has two video interfaces for image acquisition only one of which may acquire at any one time. Each interface consists of a video input, video output and a pixel clock input. The VIB interfaces to the IPB through the image source interface connector (CN1107). It provides a 9-bit image output to the IPB along with a strobe. the VIB receives its parameters over a 10-bit parameter bus and returns command status over a 2-bit command bus. Both functions provide a strobe signal. The VIB receives its power, clock and power-up reset from the IPB through CN1107.

6-3-2. Laser Optics System (LOS)

6-3-2-1. General Description

The LOS consists of a module purchased from GSI which contains a laser diode (provided by Kodak), optics, and electronics. The LOS electronics consist of an Optics Engine Board (OEB), X & Y Drivers, a Diode Driver, and an Attenuator. The LOS is attached to a film platen designed by Kodak and installed into the IMAGER as the Exposure Assembly.

The LOS electronics do not have a microprocessor to control their operation and require control from the SCB. They behave like a state machine, with the SCB responsible for setting up the LOS in the proper states for normal image printing or maintenance modes. The LOS provides status back to the SCB.

Corrected, 12-bit image data comes from the IPB. The image data must include data for the entire image including borders. A pair of ping-pong FIFOs are used in the LOS to allow a line-by-line transfer of data from the IPB. The LOS uses a nominal 700 Hz resonant scanner which scans each line 3 times in the X-axis. The triple pass line rate ranges from 228.0 to 238.7 Hz.

6-3-2-2. LOS Electronics

Figure 6-6 is a block diagram of the LOS electronics and its interconnection to the rest of the IMAGER electronics.

The majority of the interfacing between the LOS and the rest of the system electronics is done through the OEB. The LOS gets most of its power directly from the MIB with the exception of that for the laser diode. For safety reasons, the laser diode power is provided through a relay on the MIB which is controlled directly by interlock switches on the platen and left side doors.

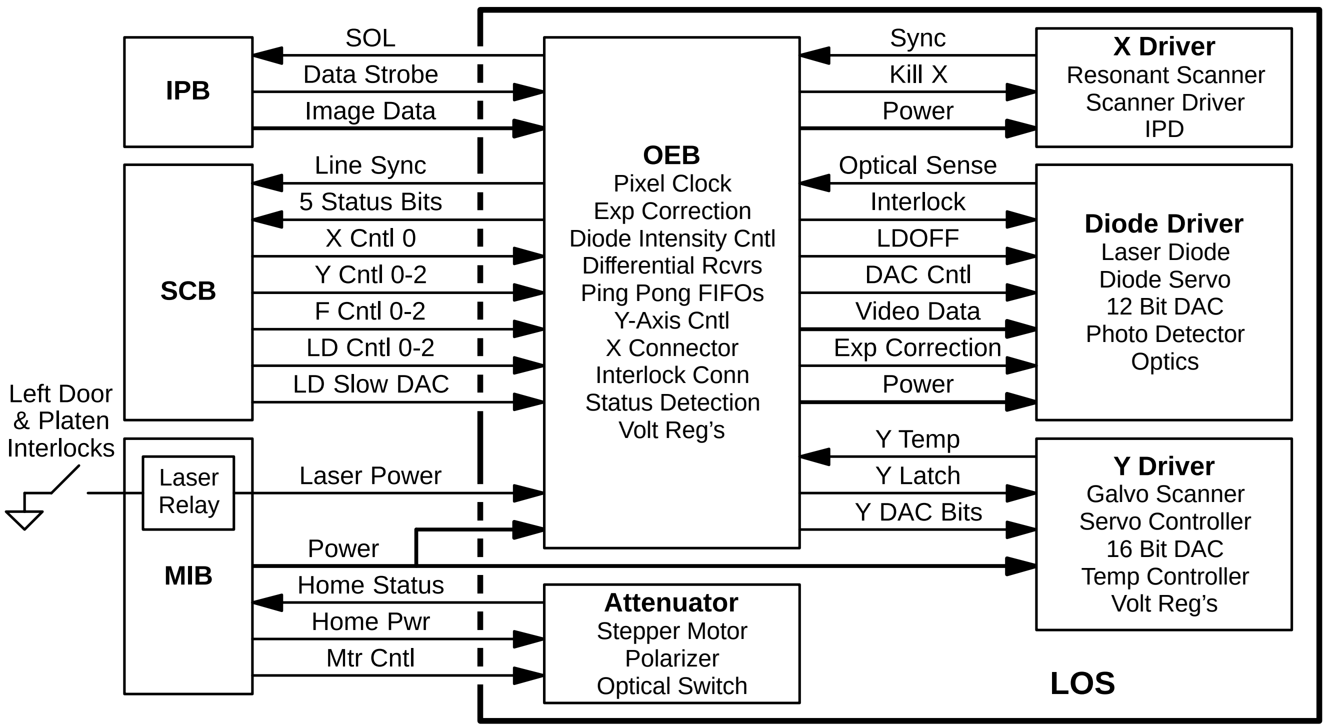


Figure 6-6.

6-3-3. Machine Control System (MCS)

6-3-3-1. General Description

The MCS electronics control the electromechanical components which affect the movement and processing of film. The electronics also control the LOS, communicate with the IPB, and read RF tag data. Four of the 14 boards are located in the Electronics Enclosure Assy (EEA). The rest of the boards are located on the various modules of the system.

6-3-3-2. MCS Components

The MCS consists of the following boards plus the motors, solenoids, and sensors distributed throughout the system.

Reference Designation	Name	Function
–	RF Tag Subsystem, including an RF Tag Interface Board, RF Reader Board and RF Antenna Board	See paragraph 6-2-6 for descriptions of the boards included in the RF Tag Subsystem.
BPB	Beam Power Board	Reads power of laser at platen.
FCB	Fan Control Board	Controls power to filtration fan.
LPB	Local Panel Board	Provides buttons for operator input and LCD to display menus and status information.
MFB	Multi Feed Board	Detects number of sheets entering transport from supply cartridge.
MIB	Machine Interface Board	Controls motors and solenoids.
NDB	New Densitometer Board	Reads density of D-patch on film.
NMB	New Modem Board	Provides interface for MPC & phone.
PDB	Power Distribution Board	Provides power to optical switches.
PCB	Processor Comm Board	Provides communication between RPB and SCB.
RPB	Rotating Processor Board	Controls drum temperature. Communicates with SCB via PCB.
SCB	System Control Board	Controls electromechanical functions and communicates with IPB.

6-3-3-3. EEA Electronics

Figure 6-7 shows the location of the MIB, NMB, PDB, and the SCB as well as the interface connectors to the rest of the system on the EEA. The MIB, NMB, and SCB are located behind the swing out inner panel on which the IMS boards are mounted. The PDB is mounted on the back side of the EEA.

All of the signal and control interfaces to the MIB and SCB go through shielded bulkhead connectors to minimize RFI problems. This approach also improves the modularity of the EEA.

DC power is brought into the EEA from the PMA through CN1013 to the MIB. The MIB distributes the power to the rest of the boards within the EEA. The boards are cooled by three 50 CFM fans which are mounted on a Fan Tray Assy in the lower third of the EEA. The tray is mounted so that it can be installed or removed easily.

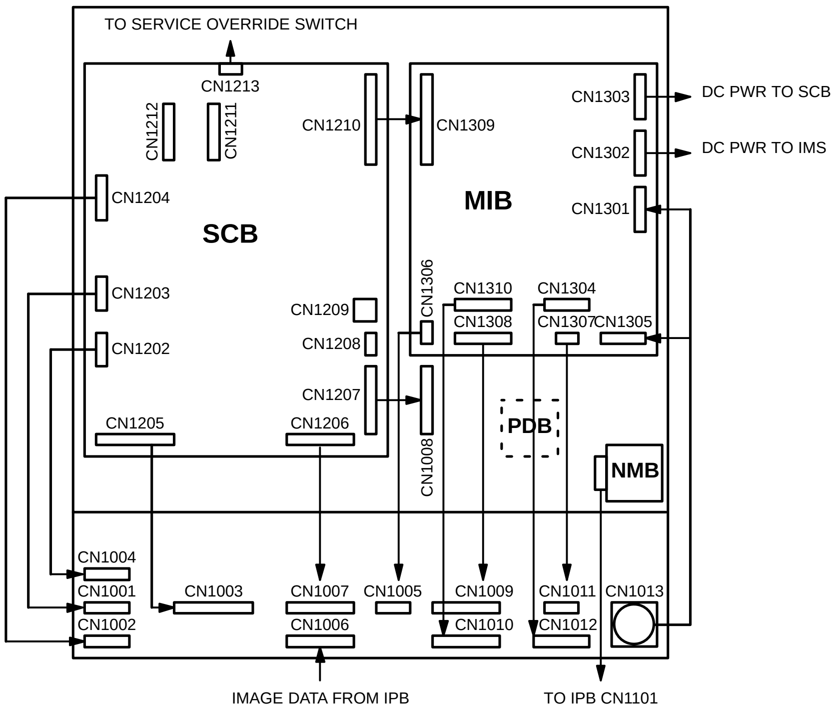


Figure 6-7.

6-3-3-4. Machine Interface Board (MIB)

Refer to Figure 6-8 for a block diagram of the MIB.

The MIB is a dumb machine controller directed by control signals from the SCB over a 60 pin interface. The functions of the MIB are to:

- Provide power and stepper motor drivers for the +24 VDC motors and solenoids located in the system modules.
- Provide stepper motor drivers for the attenuator motor within the LOS.
- Distribute power to the boards within the EEA & LOS.
- Create a line frequency clock to the SCB for synchronizing the processor temp control from a 24 VAC input.
- Provide a relay for interrupting the power to the laser diode within the LOS under control of the system's laser safety interlock switches.

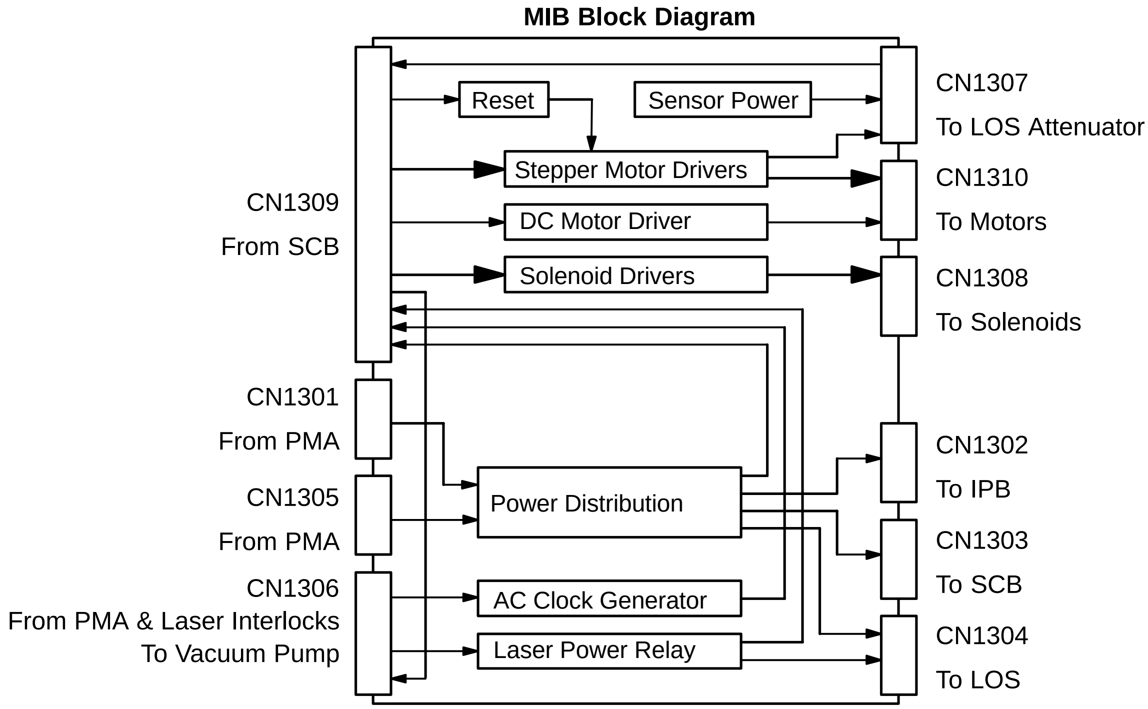


Figure 6-8.

6-3-3-5. System Control Board (SCB)

Refer to Figure 6-9 for a block diagram of the SCB.

The SCB is an embedded machine controller which has interfaces to all of the MCS boards (except the modem) and the control interface of the LOS. It also communicates with the IPB via a serial RS485 port.

Micro Control Unit (MCU)

The SCB uses a Motorola 68332 microprocessor. It is a highly integrated device with a 68020 core and several additional features. Among them are a CPU, a time processor unit (TPU), a system integration module (SIM), and a queued serial module (QSM). The CPU executes an enhanced 68020 instruction set. The TPU is a micro coded timer/counter which executes independently of the CPU. It executes micro coded programs from on board ROM to generate output frequencies for the system's stepper motors and is used to count non-interrupt events such as the line sync signal from the LOS. The SIM has chip selects under software control, and provides interrupt control, a watch dog timer, a programmable timer, and a clock synthesizer. The QSM contains one synchronous and one asynchronous serial port. The asynchronous serial port is used for communications with the IPB.

Memory

The SCB contains an array of universal memory sites that are jumper selectable to hold a variety of memory types. Jumpers are also used to select memory sizes between 256K and 8M bits. The memory is divided between code and data. The boot code memory is wired to the chip select boot on the 68332. The program code memory is connected to CS0. There are two types of data memory: volatile for storing working copies of system data or other temporary data, and non-volatile for system configuration parameters.

I/O

The SCB uses discrete byte wide buffers and latches. A single chip select from the MCU controls all of the digital I/O. Inputs use 74HC541 buffers. Outputs use 74HC652 latches. Analog signals are signal conditioned, buffered, and multiplexed into a 12-bit successive approximation ADC.

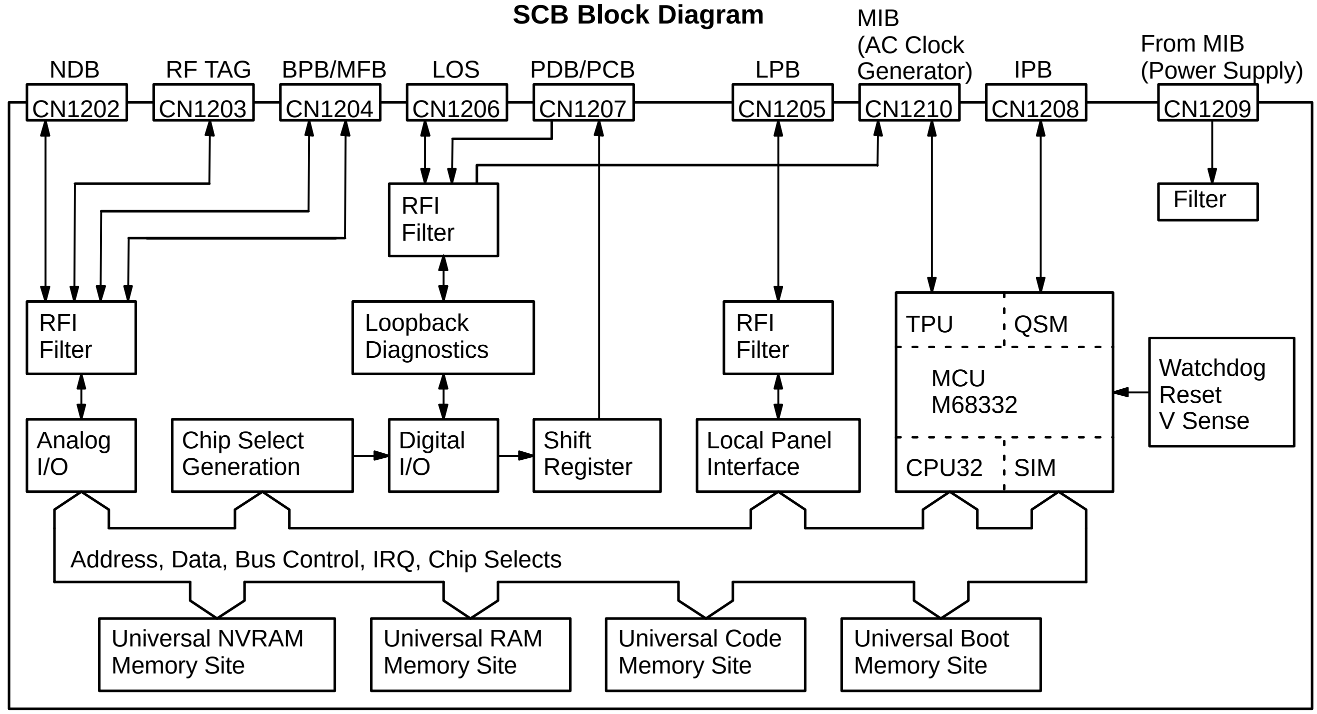


Figure 6-9.

6-3-3-6. New Modem Board (NMB)

Refer to Figure 6-10 for a block diagram of the NMB.

The “new” modem is based upon earlier designs used in other Kodak laser imagers, but has been simplified in order to fit within the EEA. It is a communication interface into the system which has two serial communication ports – a standard RS232 on a 9-pin connector and a modem on an RJ11 connector. Both interfaces to the IPB are RS232. The IPB handles the handshaking between them and allows only one of these ports to be active at a time.

The modem module on the NMB is only approved for use in the U.S. and Canada. For O.U.S. applications, the modem module is removed. An external modem is connected from an approved “medical” isolation transformer (refer to Figure 6-11). Removing the modem module makes the RJ11 input inoperative and allows either the external modem or the MPC to be connected to the RS232 input. The two versions of the NMB (one with and one without the modem module) have different part numbers.

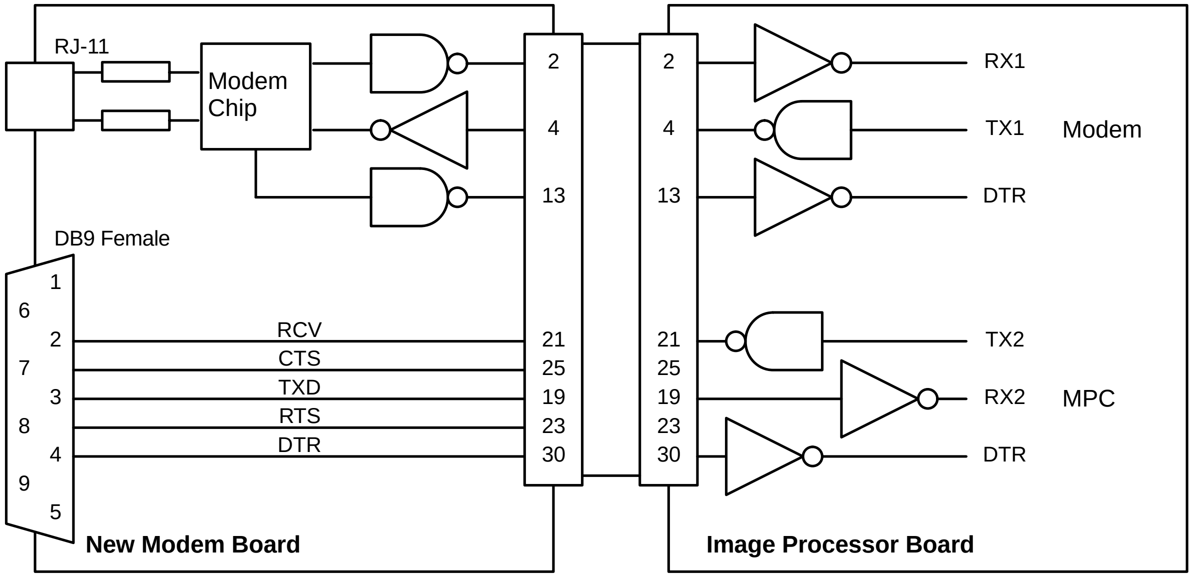


Figure 6-10.

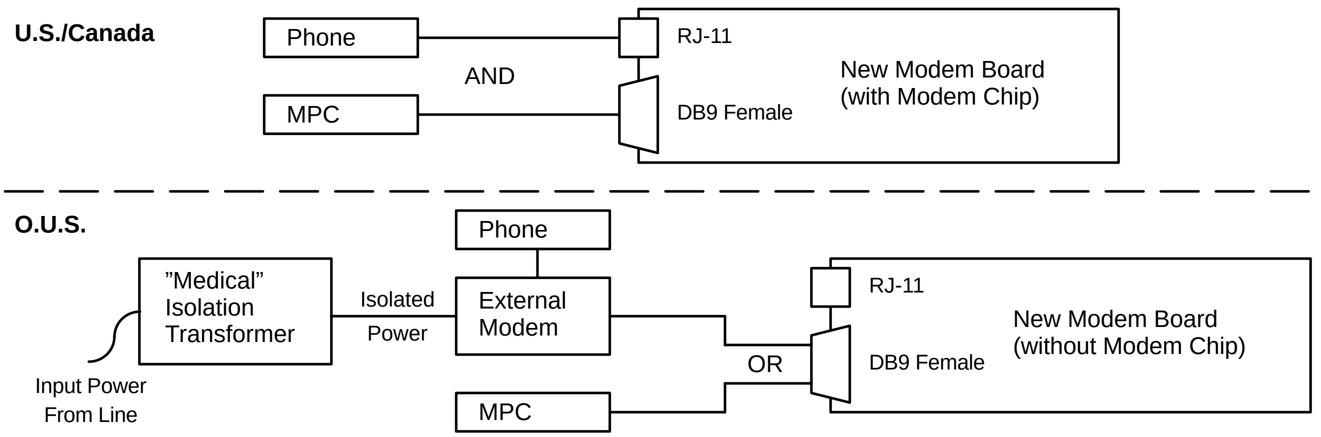


Figure 6-11.

6-3-3-7. RF Tag Subsystem

The RF Tag Subsystem reads cartridge ID information from the RF tag inside the film cartridge and reports it to the MCS. It can also write data onto the tag. Each cartridge tag currently includes:

- A four-byte tag ID.
- Five bytes of tag “details” such as the number of blocks on the tag and the number of bytes per block.
- Eight data blocks (four bytes per block), containing the same categories of information that are included on bar codes. In addition, the data blocks include space for writing the machine serial number, sheet count in the cartridge, total prints per machine, etc.

RF Tag Subsystem Components

The RF Tag Subsystem includes the following components (see Figure 6-12).

Note

For a more detailed illustration of the subsystem, see sheet 2 of the system functional diagram.

- **RF Tag Interface Board** – This board contains a microprocessor which receives TTL level commands (at 1 K baud) from the SCB. The micro reformats the commands so they can be recognized by the RF Reader Board, and sends them through a circuit which converts the TTL levels to ± 8 volt RS232 levels. The commands then are sent at 57.6 K baud to the RF Reader Board. Responses from the Reader Board go through a reverse conversion process before being input to the micro. The micro sends the data to the SCB on a separate line (+12 to 0 volt levels) at 100 baud. (This data is clocked to the SCB.)
- **RF Reader Board** – This board receives commands from the RF Tag Interface Board. It processes data for transmission to the RF Antenna, receives RF data from the antenna, and responds to the RF Tag Interface Board.
- **RF Antenna Board** – The antenna transmits and receives RF energy from the RF tag.

RF Tag Commands

The micro on the RF Tag Interface Board receives and processes the following commands from the SCB:

- Report Status
- Reset Software
- Execute Diagnostics
- Report Firmware Version Number
- Read a Block of Data from the Tag
- Write a Block of Data to the Tag
- Read RF Reader Board Error Code
- Lock a Block on the Tag (i.e., do not allow writing)
- Read the RF Tag ID
- Read the RF Tag Details
- Read Version Number of RF Reader Board

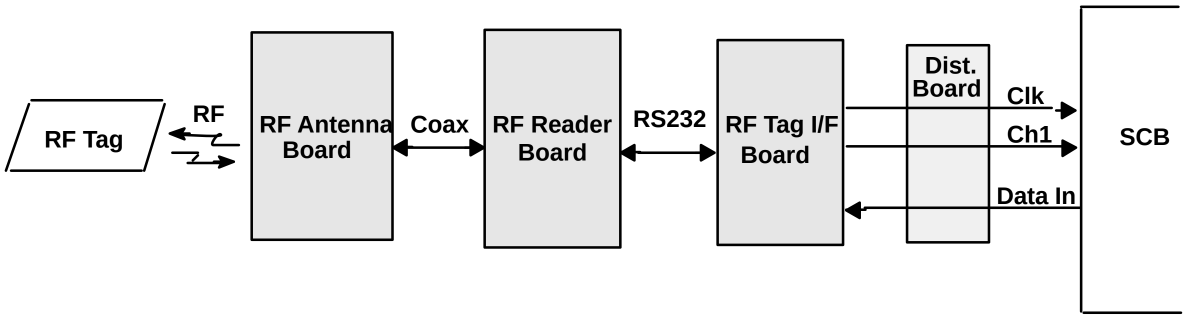


Figure 6-12.

6-3-3-8. Interlocks

Type of Interlocks

The IMAGER uses two types of interlocks. Machine interlocks interrupt specific machine processes, but not the laser diode. Laser interlocks interrupt only the laser diode.

Laser Interlock Function

Refer to Figure 6-13 for a laser interlock diagram.

There are two laser interlock switches, one for the left door (SW804) and one for the platen access door (SW703). The purpose of these interlocks is to prevent operators, manufacturing personnel, or service engineers from being exposed to any laser emission hazards after opening the left door or the platen access door. Opening either of these doors disables the laser diode.

The two laser interlocks are wired in series and directly control a relay (K1301) on the MIB whose contacts provide power (±17 VDC) to the LOS. Opening either the left door or platen access door will cause the relay contacts to open. The laser diode will be turned off as a result. An auxiliary set of relay contacts is used to notify the LOS logic that a door is open. The LOS logic changes the level on the interlock status signal which is read by the optics software on the SCB. The LOS logic also disables the operation of the laser diode under this condition. The machine control software does not have direct control of this function.

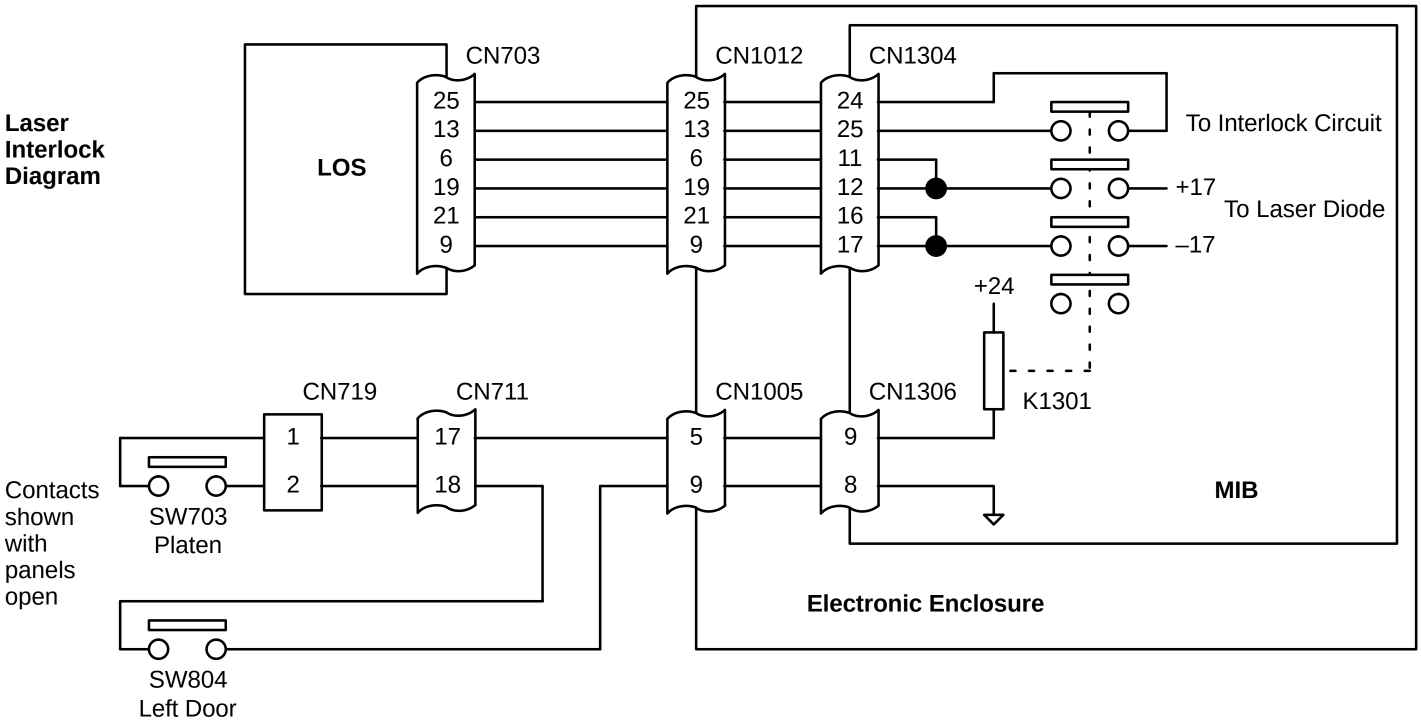


Figure 6-13.

Machine Interlock Function

Refer to Figure 6-14 for a machine interlock diagram.

There are three machine interlock switches, one for the left door (SW803), one for the supply door (SW806), and one for the top cover (SW802). The purpose of these interlocks is to prevent operators from being exposed to any hazards after opening operator access doors. Opening the left door or supply door stops all motors below the processor module. Opening the top cover stops the processor and exit transport motors and removes power to the processor.

The machine interlock switches do not directly remove power from any active components. The system software reads the status of the interlocks on a regular basis and determines if an operator access door has been opened and disables all active components in the area affected by the open door. The DC components can be safely stopped under software control by inhibiting the multiple control signals required to energize them in the same manner as they are normally stopped. The system software and hardware have multiple features which prevent components from continuing to run independent of software control.

The AC power to the processor is interrupted through the use of a relay (K801) under the control of the processor software (refer to Figure 6-15). The relay is required in this case because a typical failure mode of the temperature control triacs is for them to short in an ”on” mode which would then not respond to an off command from the software.

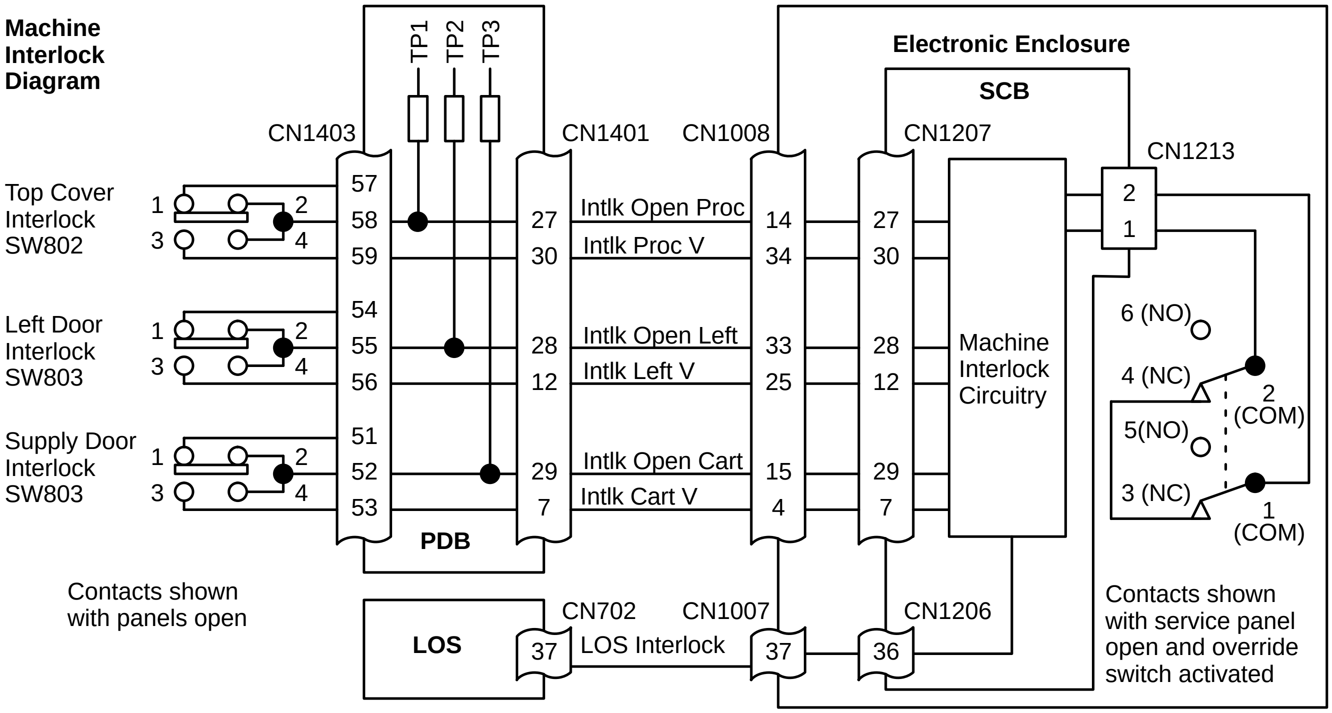


Figure 6-14.

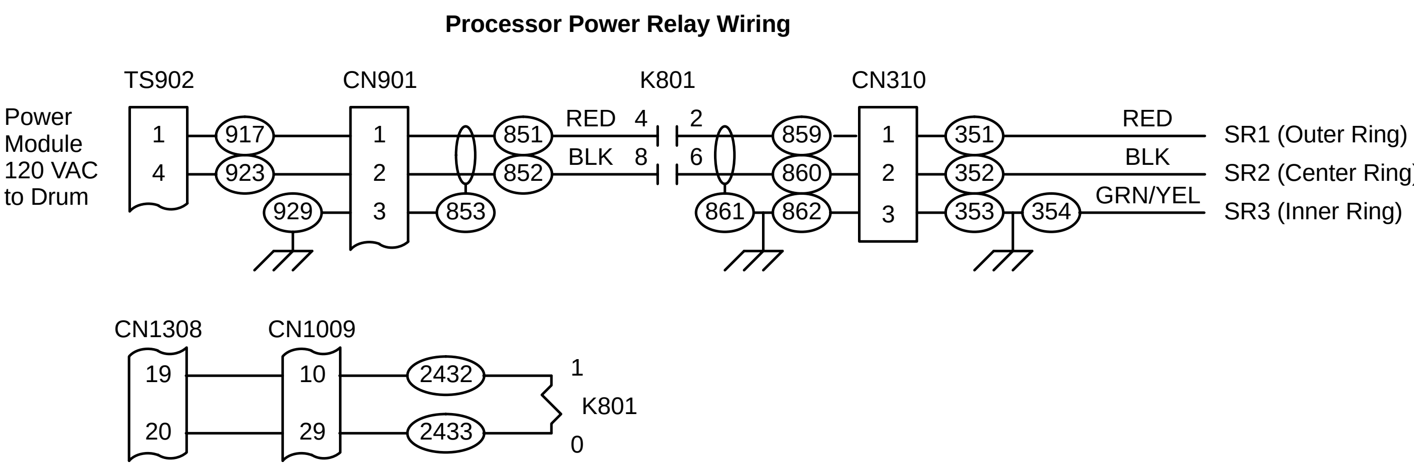


Figure 6-15.

Service Override

The machine interlocks can be overridden by a service switch located within the EEA which requires removing the right side panel. Replacing the panel disables the override function. The service override is required to allow a trained service engineer to test the system with panels open in order to solve field problems. The laser interlock is not overridden by the service override switch.

6-3-4. Operator Interfaces

Local Panel

The local panel supports two users and allows each to set contrast and density and to run contrast, density, and calibration tests. When the system is connected to a network, the density and contrast information is sent over the network. The supply button on the local panel closes the film cartridge and unlocks the supply door. The local panel also displays system status and error messages. In addition, it has power on and alarm indicators.

Optional Keypad

The system will support two keypads: the standard touch-screen keypad and a compact keypad. The compact keypad provides format selection, image acquisition, and printing functions. A character representing each key is translated into the appropriate SuperSet command by the TDB. The compact keypad is powered by the TDB and will operate up to 200 feet from the system.

Note

The compact keypad is no longer available.

6-3-5. System Firmware and Software

Firmware

All of the boards in the IMS and the MIB and SCB in the MCS have programmable devices for which firmware has been developed.

Software

The IMS and MCS have separate operating software. The operating software for the IMS resides in PROM on the IPB and the operating software for the MCS resides in PROM on the SCB. They communicate over the serial interface between the IPB and SCB.

Section 7 – Troubleshooting

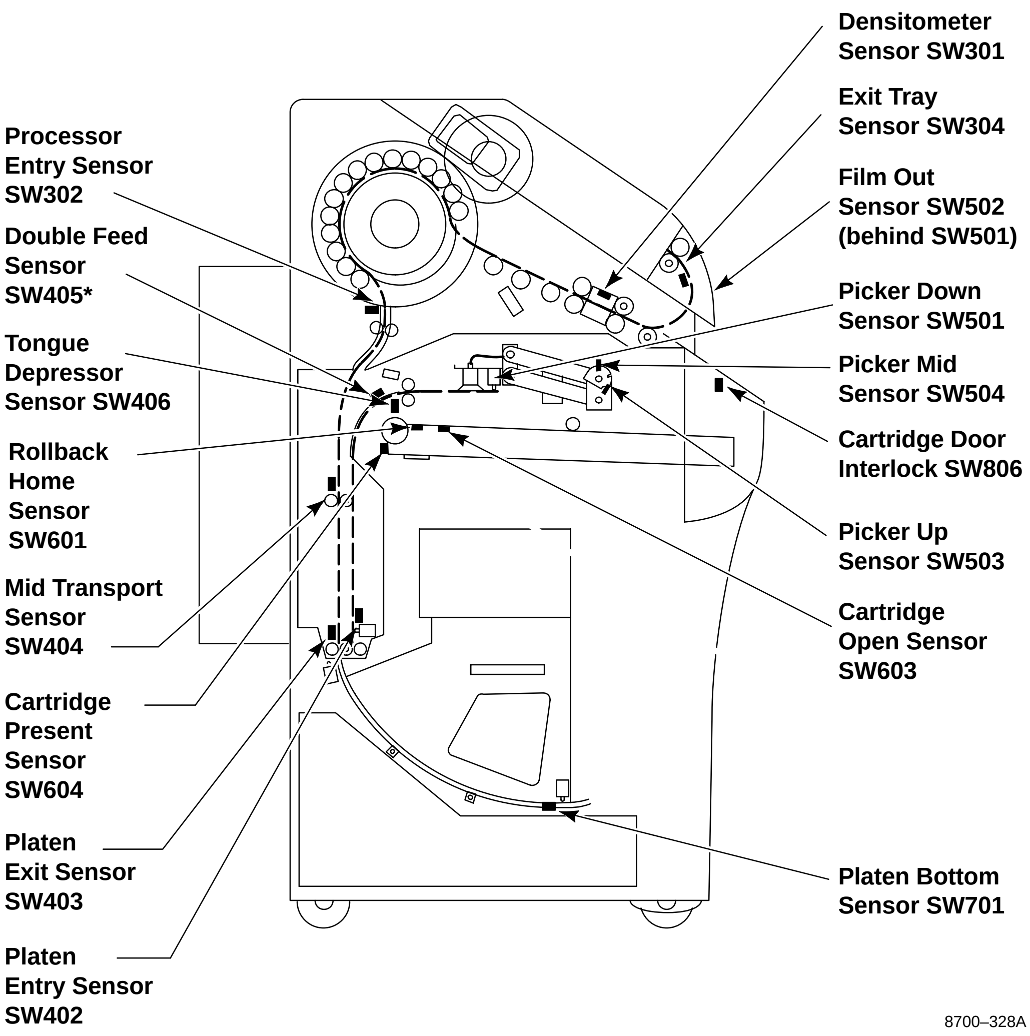
7-1. General

This section contains component troubleshooting procedures, process flowcharts, an error code index, and troubleshooting QuickSheets for the error codes.

7-2. Sensor/Interlock Trouble Analysis

7-2-1. Sensor Locations

Refer to Figure 7-1 for locations of all sensors in the film path.



* SW405 not used in later production machines

Figure 7-1. Sensor Locations

7-2-2. Sensor Troubleshooting

Sensor Substitution

For troubleshooting purposes, the filter present sensor can be temporarily substituted for any other “flag type” sensor.

Caution

Any time a flag type sensor is removed, the snap-on legs of the sensor can be rounded, resulting in unreliable sensor mounting. If a flag type sensor is removed, it should be replaced.

Also, the picker mid sensor can be removed and substituted for another “U” type sensor temporarily. Once power up is completed, the picker mid sensor can be removed and the IMAGER will continue to print normally.

Sensor Disconnect Test

If you disconnect a sensor, the sensor signal should be high (pull-up resistor is on the SCB). If it is not, either the SCB is bad or there is a short in the wiring.

Sensor Ground Test

Refer to Figure 7-2.

1. Disconnect the sensor and connect a jumper to pin 4.
2. Connect the other end of the jumper to machine ground.

Caution

If pin 5 (white) is shorted to ground, the 4 amp fuse F8E1 (pluggable) on the MIB will blow.

3. If the signal is not low, either the cable harness is bad (back to the SCB) or the SCB is bad.

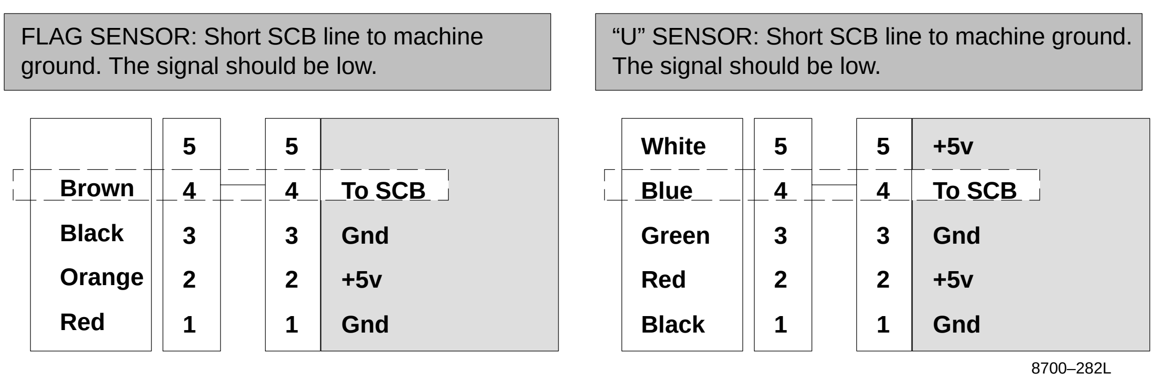


Figure 7-2.

Power Distribution Test Points

The power distribution board has test points that can be used to measure sensor signals. However, the filter and back panel must be removed to access the test points.

7-2-3. Measuring Sensor Signals at the SCB

"U" Type Sensors

- U Sensor blocked = Low to SCB (typically 53 mv).
- U Sensor unblocked = High to SCB, 5.0 volts.
- U Sensor open or disconnected = High at SCB, 5.0 volts measured at SCB sensor cable.

"Flag" Type Sensors

- Flag Sensor blocked (deactuated) = High to SCB, 5.0 volts at SCB sensor cable.
- Flag Sensor unblocked (actuated) = Low to SCB (typically 153 mv)
- Flag Sensor open or disconnected = High at SCB, 5.0 volts.

Making Sensor Measurements

With the sensor connected, measure the signal voltage at the SCB using a voltmeter or scope:

- A high state should be 5.0 volts.
- If a high or low state is near threshold levels, the SCB may interpret the signal inconsistently.

Note

The SCB interprets all voltages above 2.2 volts to be high, and all voltages below 2.2 volts to be low.

- A logic probe may also be connected to the service port pins. Refer to Figure 7-3.

Sensor Active States

The following table shows outputs of the sensors in the MPC “Checked” state:

Assembly	Sensor	Type	Physical State	Logic State	Svc Port Pin	Power Dist Bd Test Pt (PDB)
Rollback	Cart. Present SW604	U	Blocked	Low	13	TP8
Rollback	Rollback Home SW601	U	Blocked	Low	14	TP9
Rollback	Cartridge Open SW603	U	Blocked	Low	17	TP11
Transport	Tongue Depress SW406	U	Blocked	Low	19	TP13
Pickup	Picker Up SW503	U	Blocked	Low	10	TP6
Pickup	Picker Mid SW504	U	Unblocked	High	11	TP7
Pickup	Picker Down SW501	U	Blocked	Low	8	TP4
Pickup	Film Out SW502	U	Actuated	Low	9	TP5
Pickup	Double Feed SW405*	Flag	Actuated	Low	18	TP12
Exposure	Platen Entry SW402	Flag	Actuated	Low	20	TP14
Exposure	Platen Bottom SW701	U	Blocked	Low	21	TP15
Exposure	Platen Exit SW403	Flag	Actuated	Low	22	TP16
Transport	Mid Transport SW404	Flag	Actuated	Low	23	TP17
Transport	Processor Entry SW302	Flag	Actuated	Low	24	TP18
Transport	Exit Tray SW304	U	Actuated	High	26	TP20
Filter	Filter Present SW801	Flag	Actuated	Low	3	TP3

* SW405 not used on later production machines

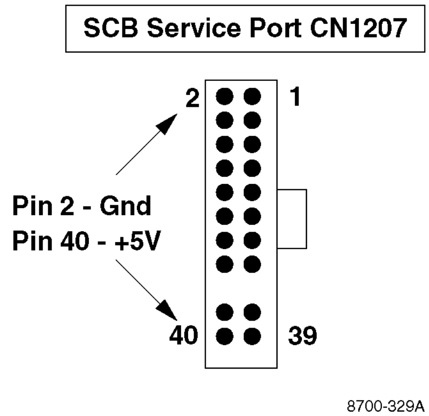


Figure 7-3.

7-2-4. Sensor to SCB Schematic

Refer to Figure 7-4 for a functional illustration of a single sensor line (flag type).

- With a flag-type sensor unblocked (actuated), the sensor collector shorts to ground and the SCB sees a low.
- Just the opposite is true for a U-type sensor. When the sensor is blocked, it conducts to ground and the SCB sees a low.
- If either type sensor is disconnected, the pull-up resistor on the SCB will cause the line to go high.

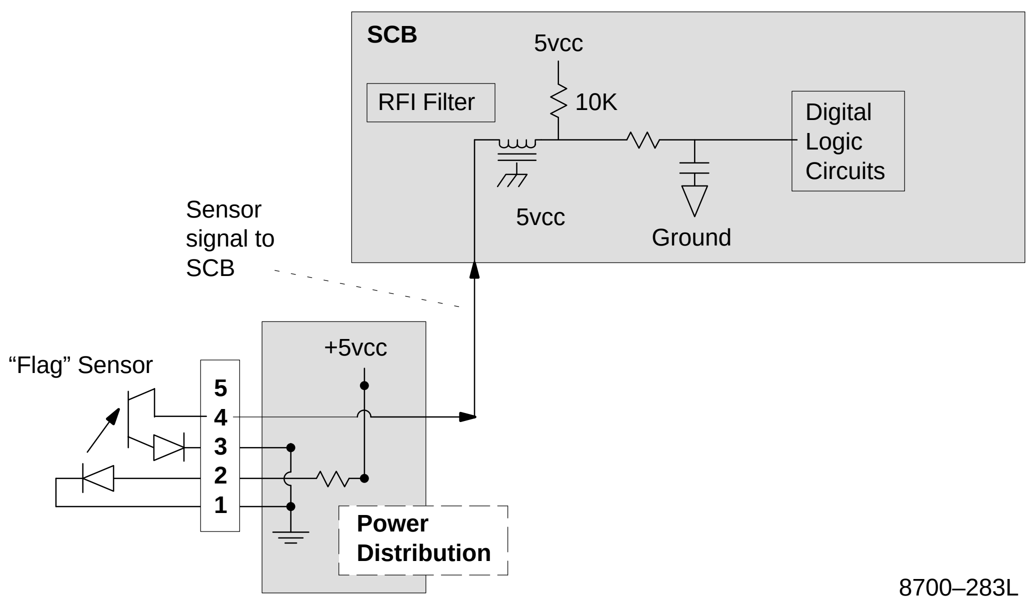


Figure 7-4.

7-2-5. Interlock Switches

The interlock switches in the IMAGER are pulsed high and then low every second for safety reasons. The following table explains the functionality:

SCB Sends to Interlock Switch	SCB Interprets Output State of Switch
High	High – Door Closed, Low = Door Open
Low	High = Short, Low = Undefined

If the SCB sends out a low to an interlock switch and receives back a high:

- An “interlock failed” error code, EC203 through EC206, will be logged after 1 second.
- The watchdog timer circuit on the SCB will shut down the SCB after 8 seconds, turning off all motors, heaters, local panel, communications, etc. The rotating segment display on the SCB will go blank

Note

The watchdog timer circuit could also shut down the SCB if the CPU locked up and could not check the interlocks every 8 seconds.

There are pulldown resistors on the SCB for the interlock inputs. Therefore a low output to the interlock with a low feedback is undefined.

Note

The service override interlock is a special case. Refer to EC203.

7-3. Motor/Solenoid Trouble Analysis

7-3-1. Motor Locations

Refer to Figure 7-5 for motor locations in the IMAGER.

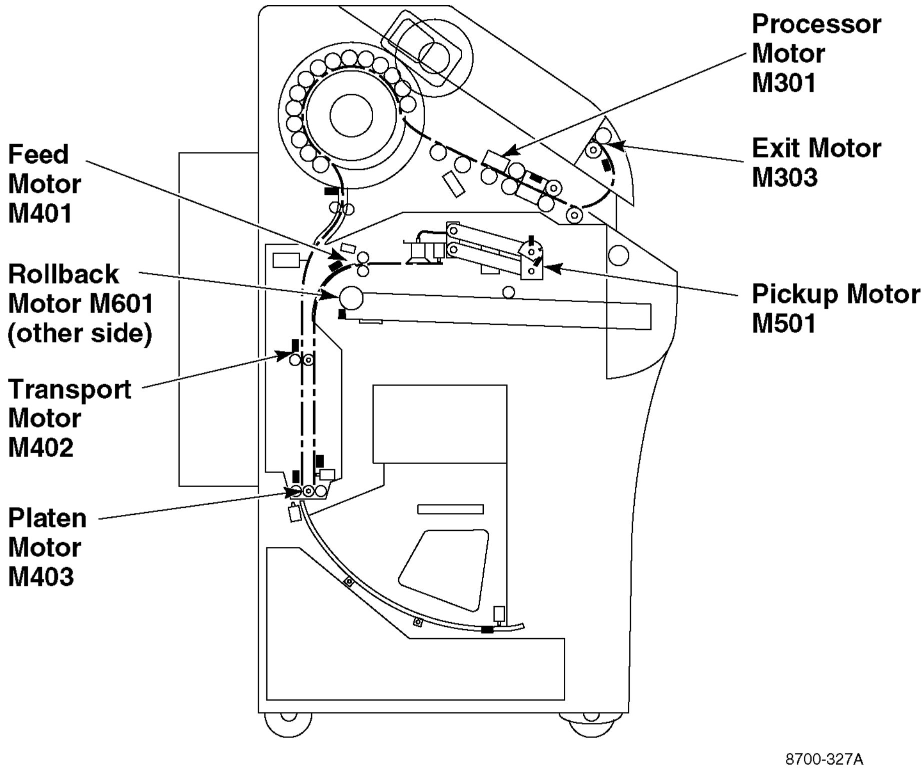


Figure 7-5.

7-3-2. Motor Troubleshooting

MPC/Diag/SCB/Motors will enable each of the motors for 10 seconds:

- The motor enable signals from the SCB to the MIB can be monitored at the service port between the SCB and MIB. The motor enable signals are high when the motor is enabled.
- The MIB outputs a 24 volt, 50% duty cycle signal to the motor. Refer to Figure 7-6. The signal can be viewed at the MIB test points.

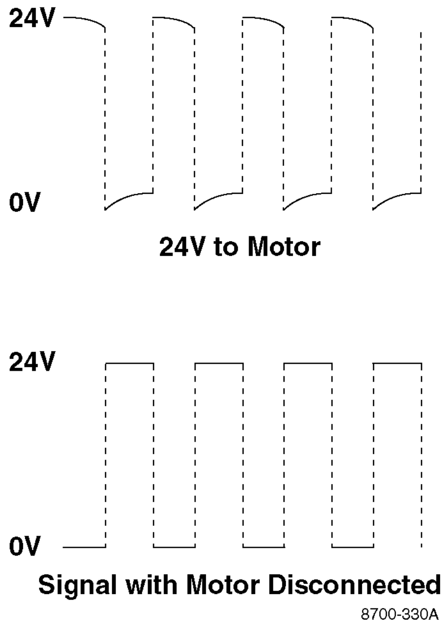


Figure 7-6.

7-3-3. Solenoid Locations

Refer to Figure 7-7 for solenoid locations in the IMAGER.

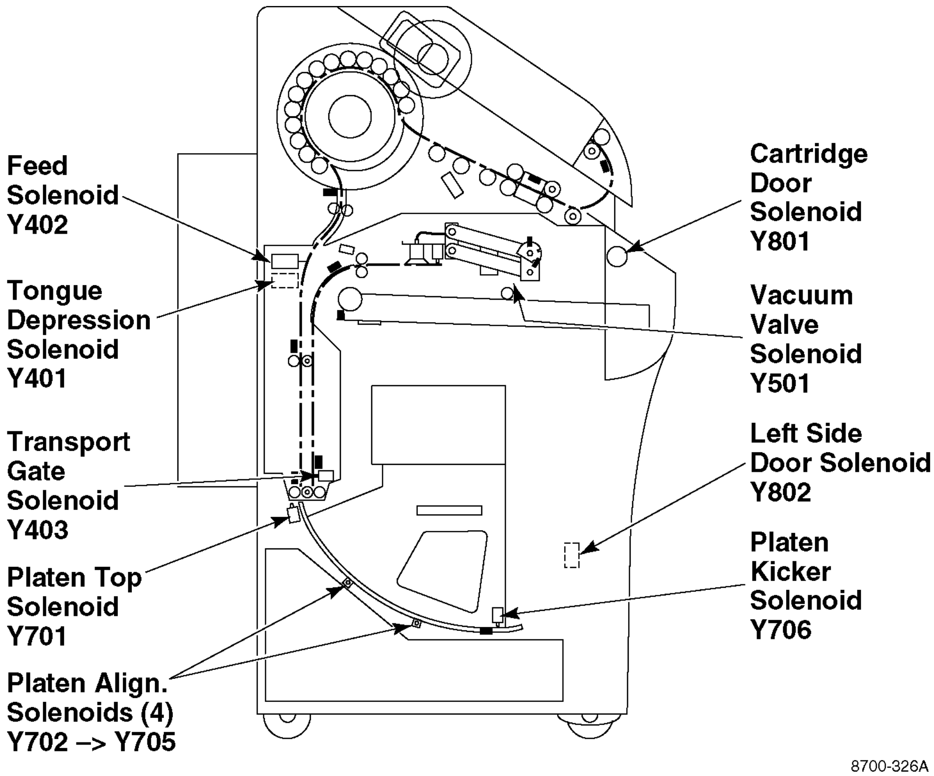


Figure 7-7.

7-3-4. Solenoid Troubleshooting

To test the solenoids in the IMAGER, use *MPC/Diag/SCB/Solenoid*s. The solenoids will be actuated for 5 seconds.

- The solenoid test points on the MIB can be monitored while you are doing a flex test of cables, to check if anything in the circuit wiring is marginal or bad.
- Logic control from the SCB to the MIB can be monitored via the service port on the SCB to MIB cable. Refer to the schematic for pinouts.

Caution

Do not leave the solenoid actuated longer than the maximum actuation time indicated in the table.

Assembly	Solenoid	MIB Resistor	Max. Actuation Time
Film Pickup	Vacuum	R4J5	Continuous duty
Film Pickup	Tongue Depressor	R4J6	20 seconds. Has 1 second startup voltage followed by 10 volt hold voltage. Transport Latch Sw407 is in line with this solenoid.
Transport	Feed	RI10	20 seconds PROBLEM: Some early IMAGERS had a weak, intermittent solenoid (part 9532 197388-01). SOLUTION: Replace.
Transport	Gate	R5J3	20 seconds
Optics Platen	Platen Top	R5J2	30 seconds*
Optics Platen	Platen Align A	R5J1	30 seconds*
Optics Platen	Platen Align B	R4J12	30 seconds*
Optics Platen	Platen Align C	R4J11	30 seconds*
Optics Platen	Platen Align D	R4J10	30 seconds*
Optics Platen	Platen Kicker	R4J9	20 seconds
Door Release	Supply Door	R4J7	20 seconds
Door Release	Left Door	R4J4	20 seconds

* If the platen hold and align solenoids are tested repeatedly, they may get hot and fail to actuate. Any testing should allow time for them to cool between testing.

7-4. Film Sequencing

7-4-1. Load Cartridge Sequence

Refer to Figure 7-8 for a flowchart of the cartridge load process.

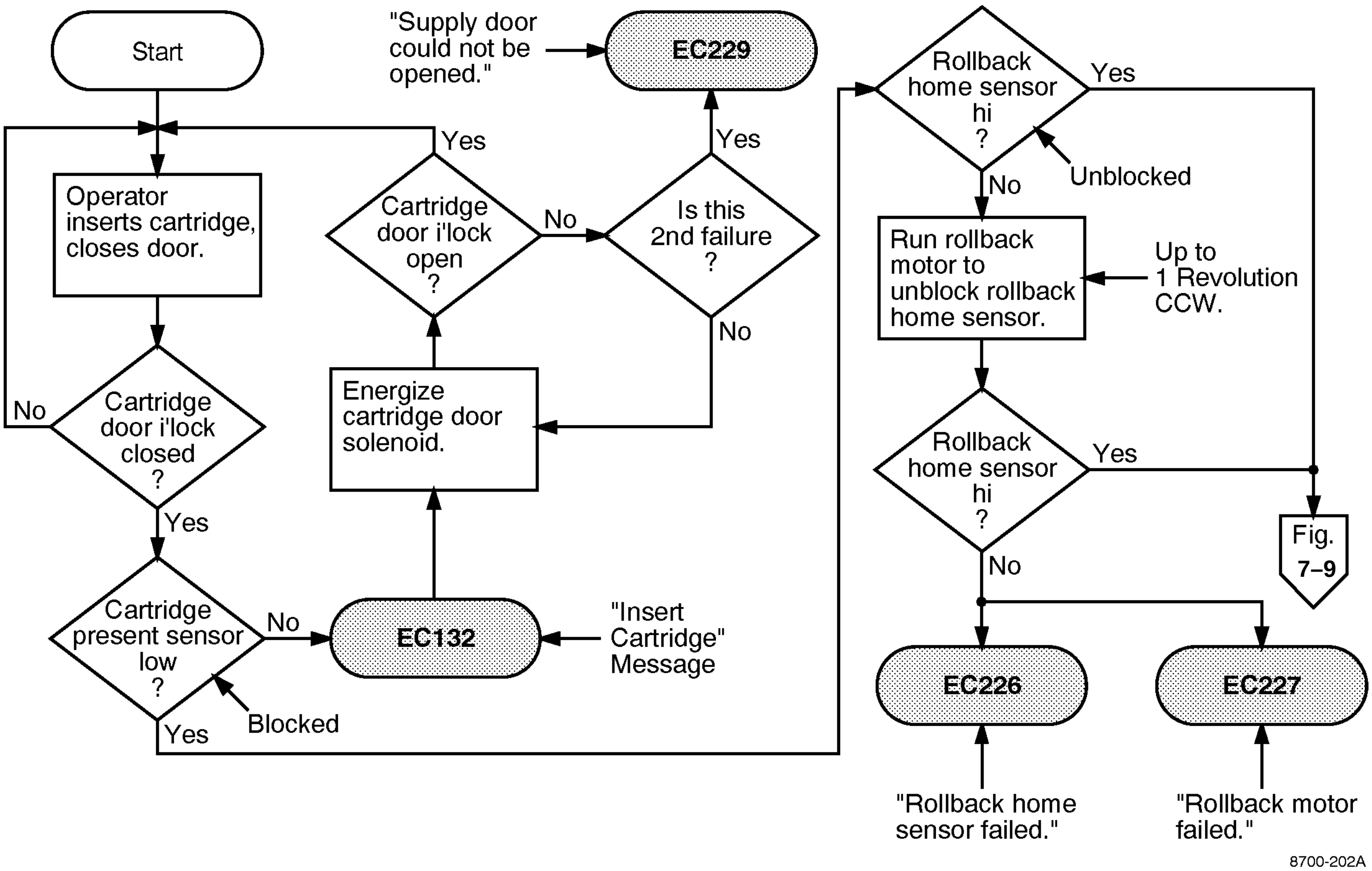


Figure 7-8. Load Cartridge Sequence

7-4-2. Open Cartridge Lid

Refer to Figure 7-9 for a flowchart of the cartridge lid opening process.

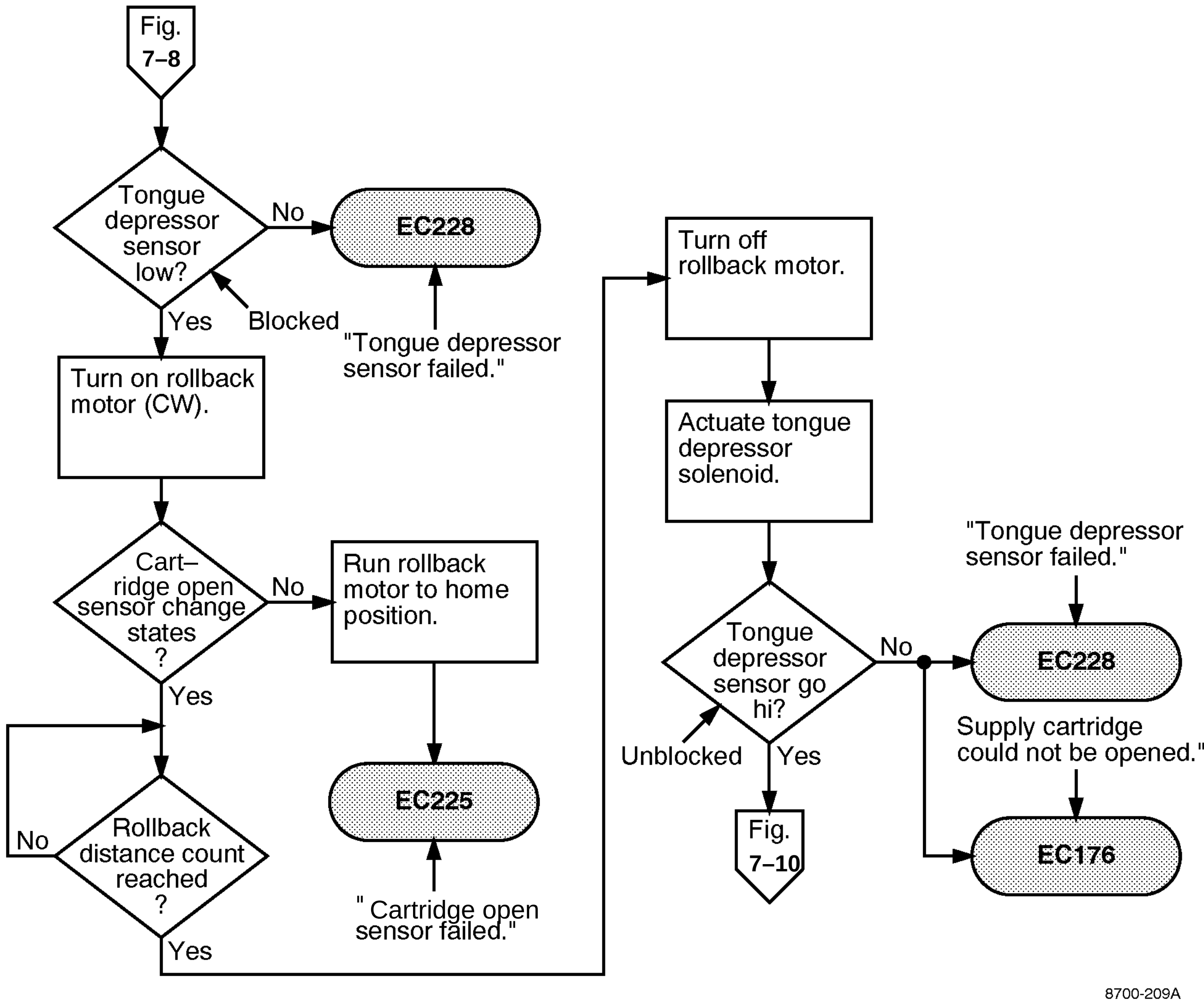


Figure 7-9. Open Cartridge Lid Sequence

7-4-3. Read RF Tag

Refer to Figure 7-10 for a flow chart of the RF tag read process.

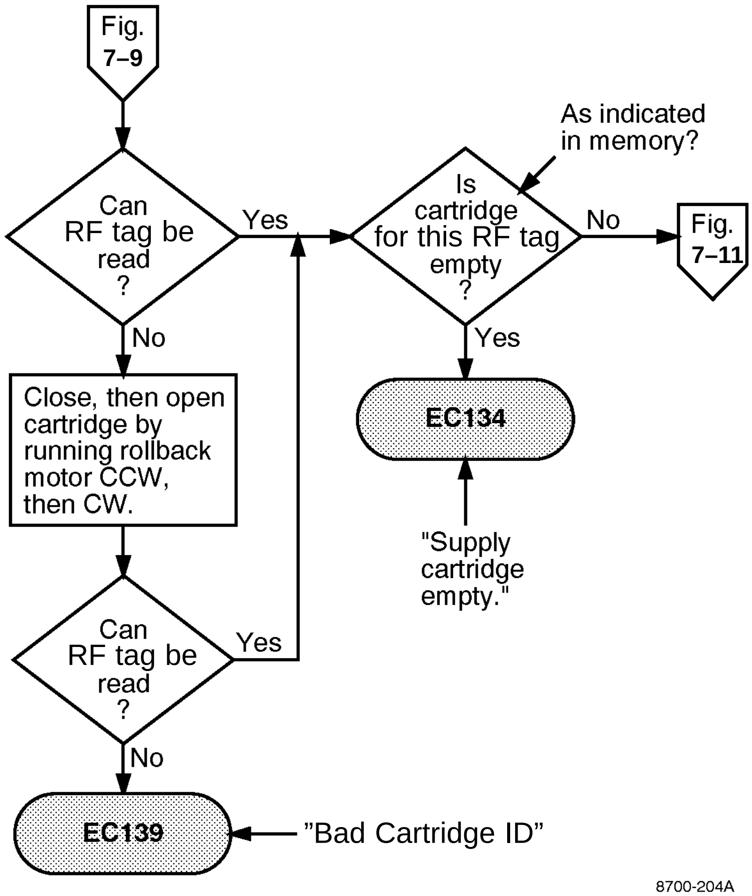


Figure 7-10. Read RF Tag Sequence

7-4-4. Position Pickup Arm

Refer to Figure 7-11 for a flow chart of the pickup arm positioning process,

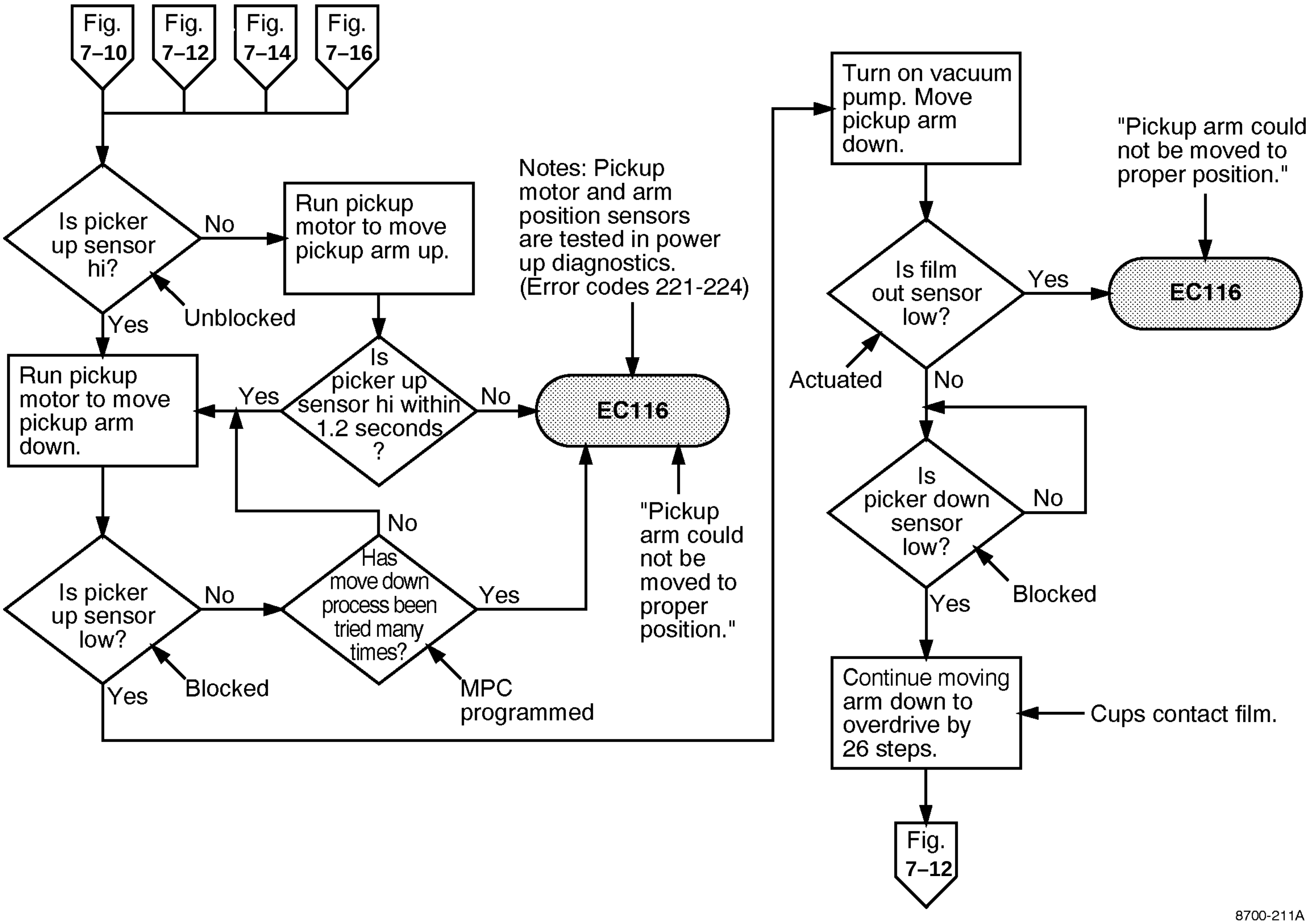


Figure 7-11. Position Pickup Arm Sequence

7-4-5. Pick Up Film

Refer to Figure 7-12 for a flow chart of the film pickup process.

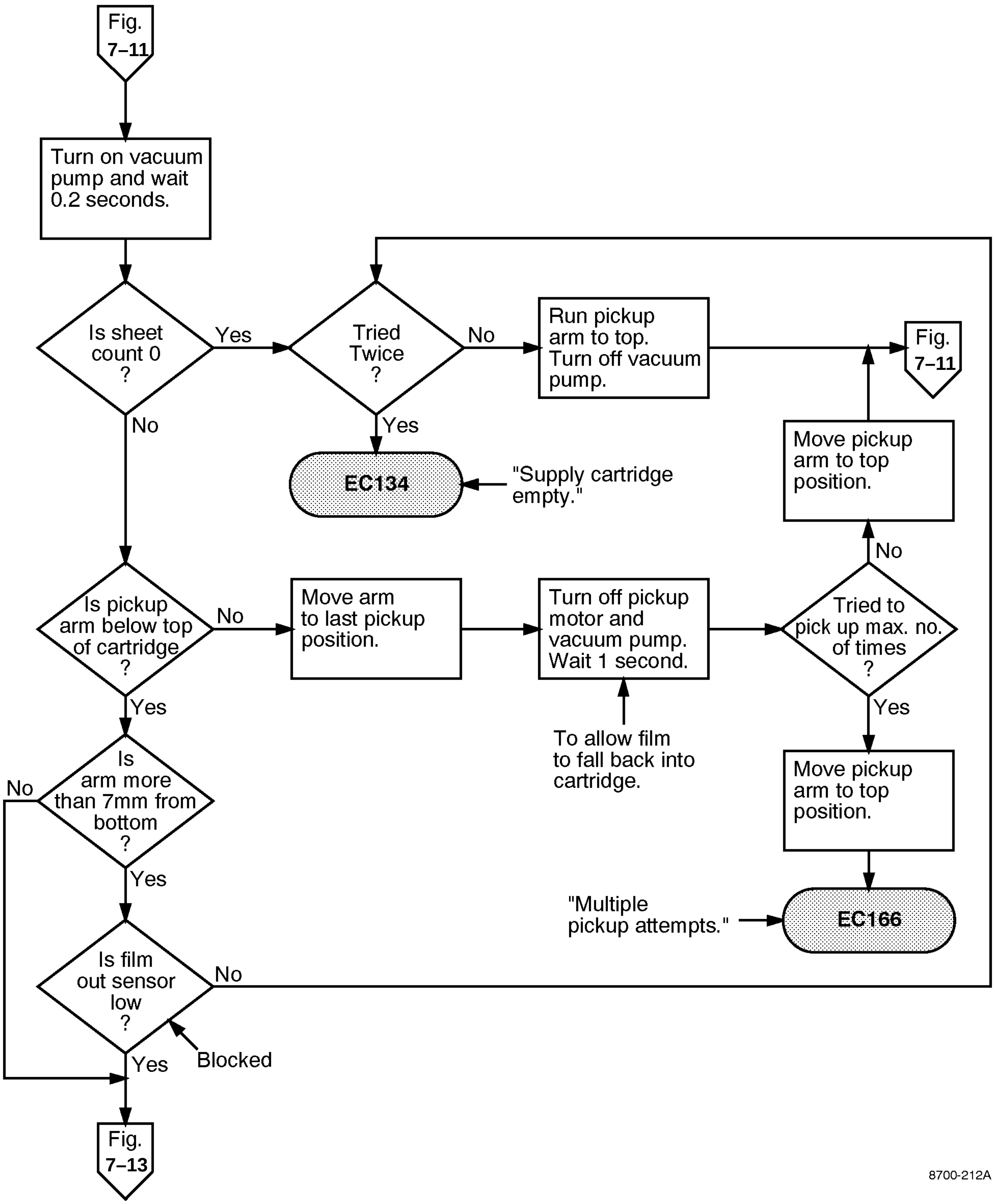


Figure 7-12. Pick Up Film Sequence

7-4-6. Move Film to Feed Position

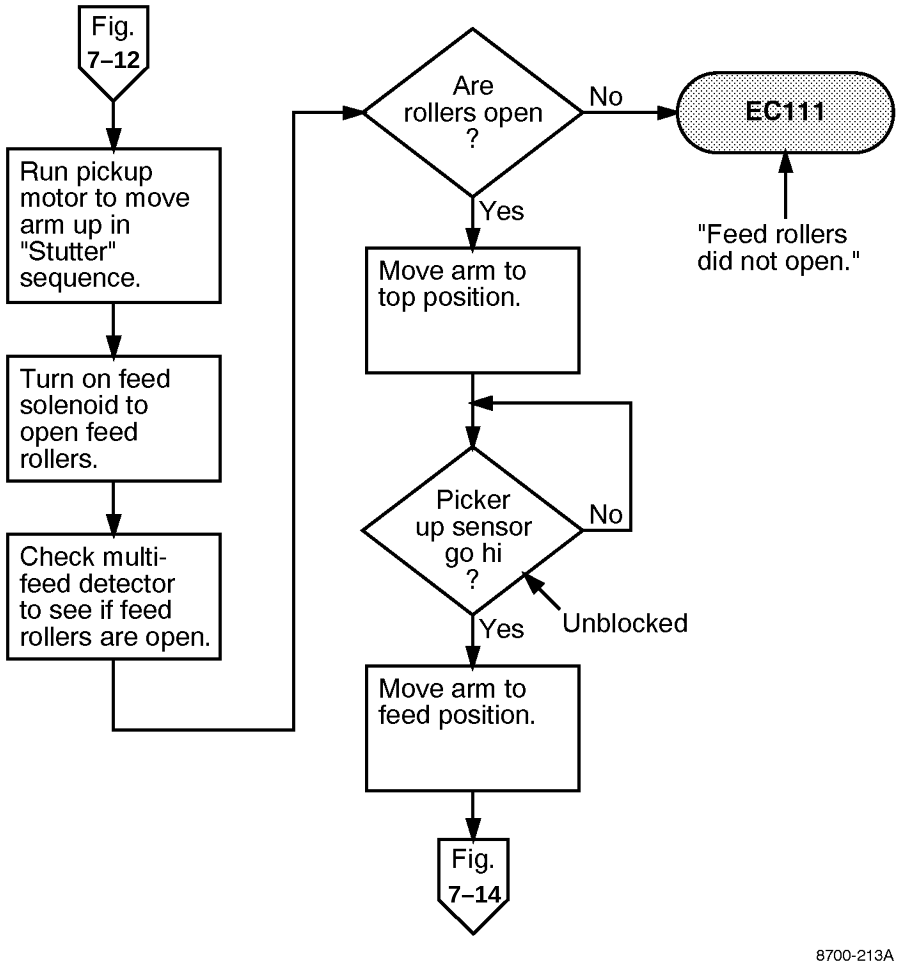


Figure 7-13. Move Film to Feed Position Sequence

7-4-7. Prepare to Feed Film

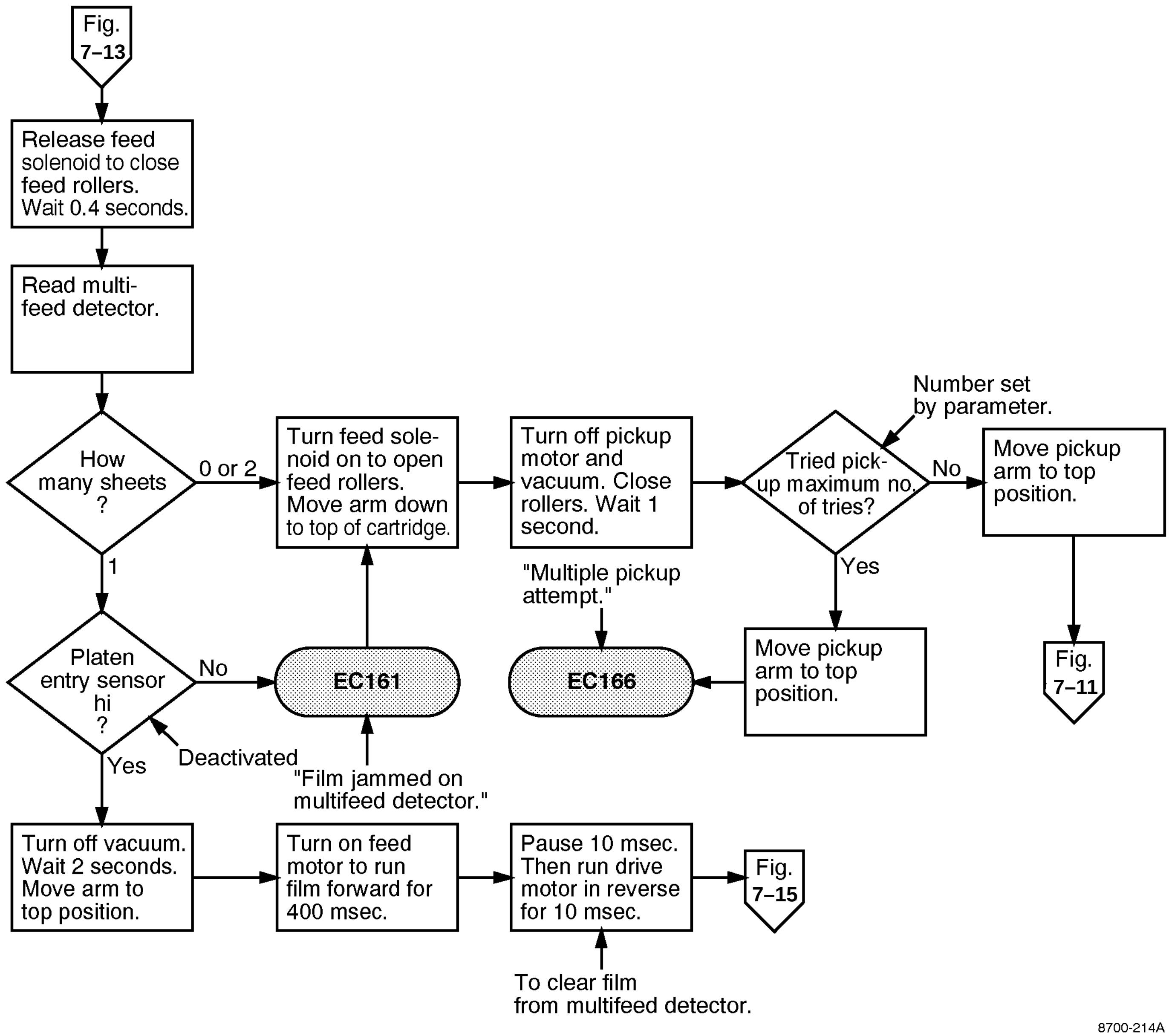


Figure 7-14. Prepare to Feed Film Sequence

7-4-8. Feed Film to Platen Entrance

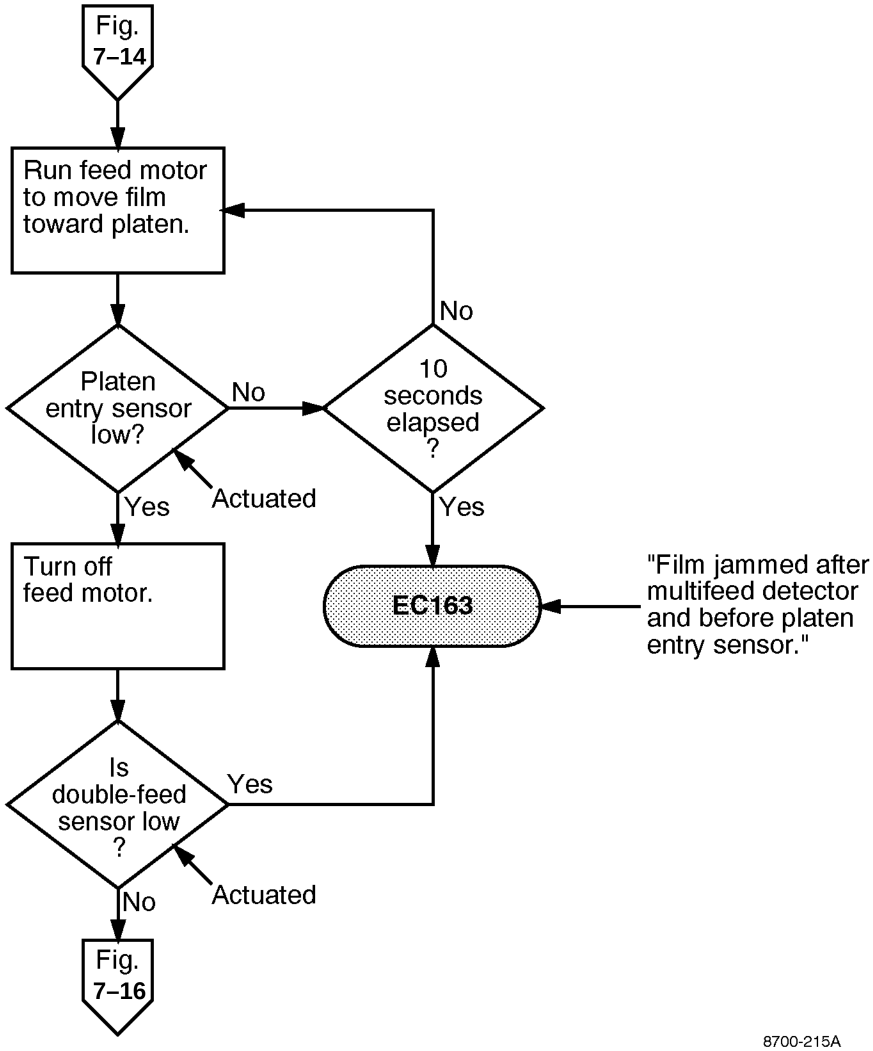


Figure 7-15. Feed Film to Platen Entrance Sequence

7-4-9. Close Out Pickup Cycle

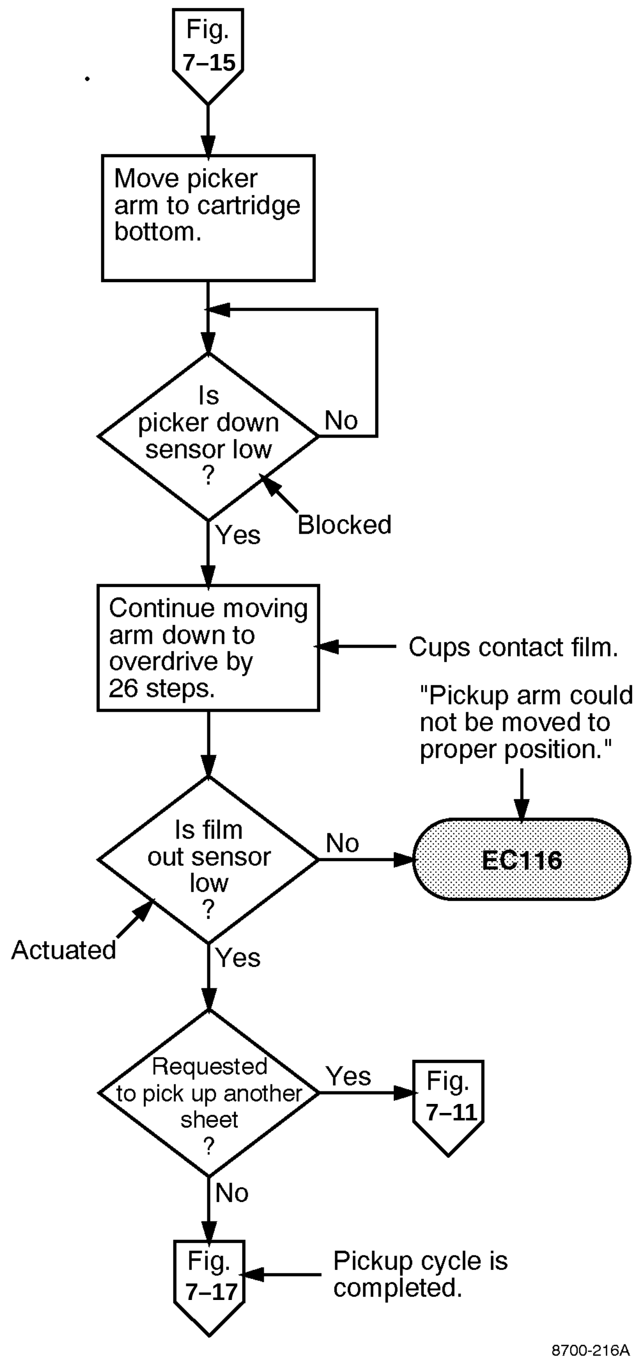


Figure 7-16. Close Out Pickup Cycle Sequence

7-4-10. Load Film into Platen

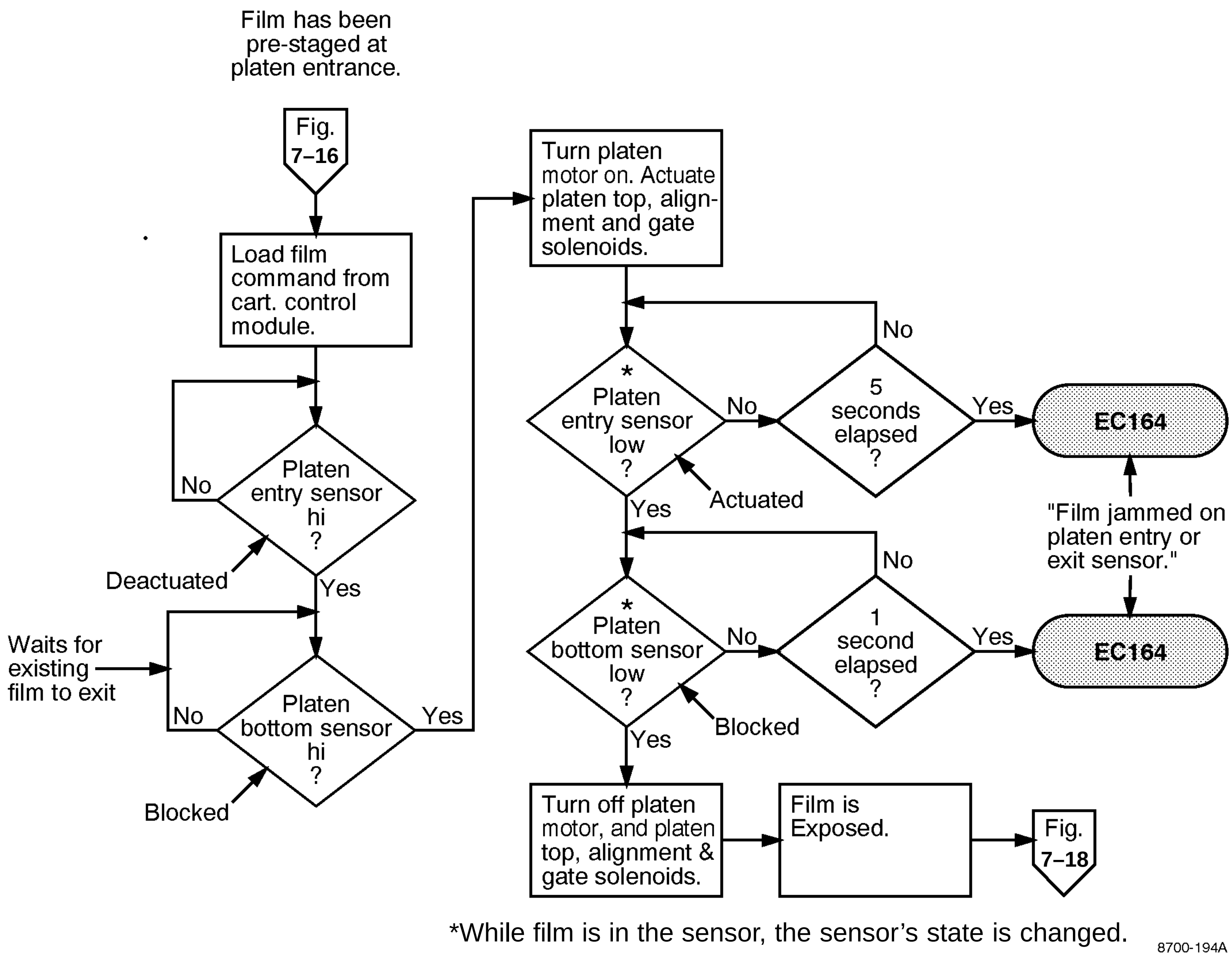


Figure 7-17. Load Film into Platen Sequence

7-4-11. Unload Exposed Film from Platen

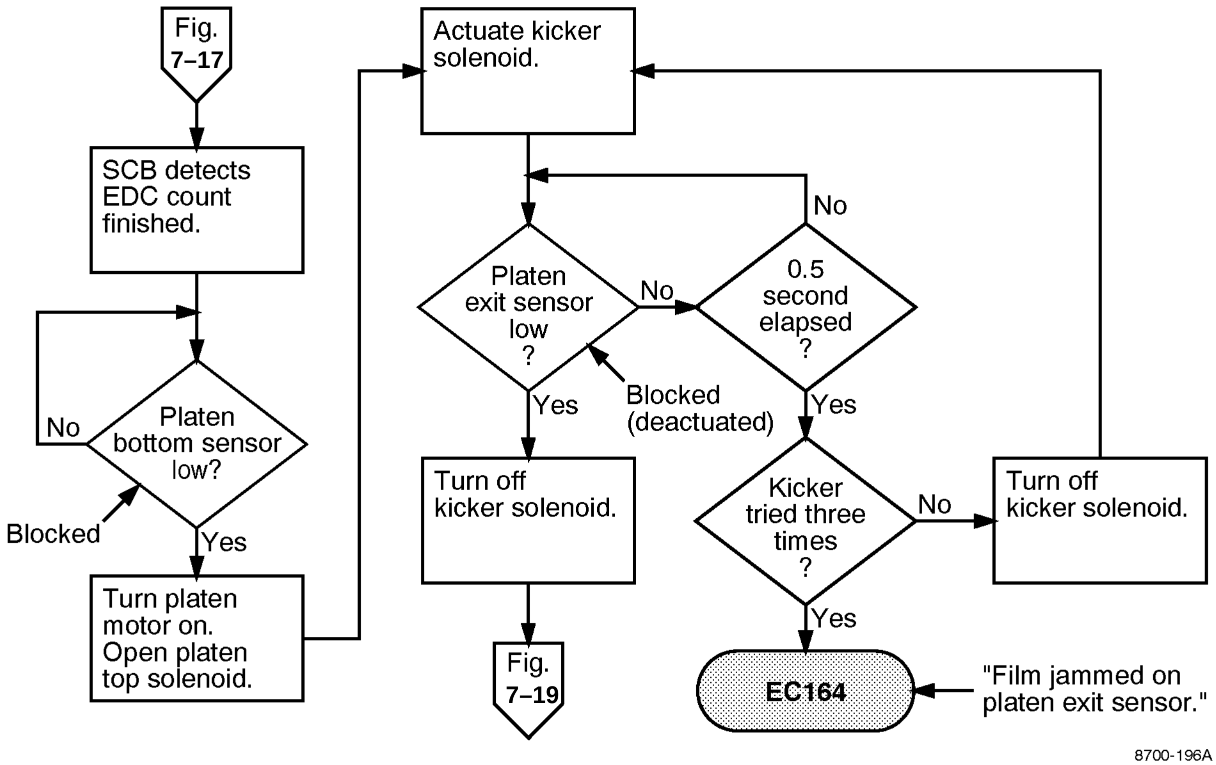


Figure 7-18. Unload Exposed Film from Platen Sequence

7-4-12. Drive Film Up Through Transport

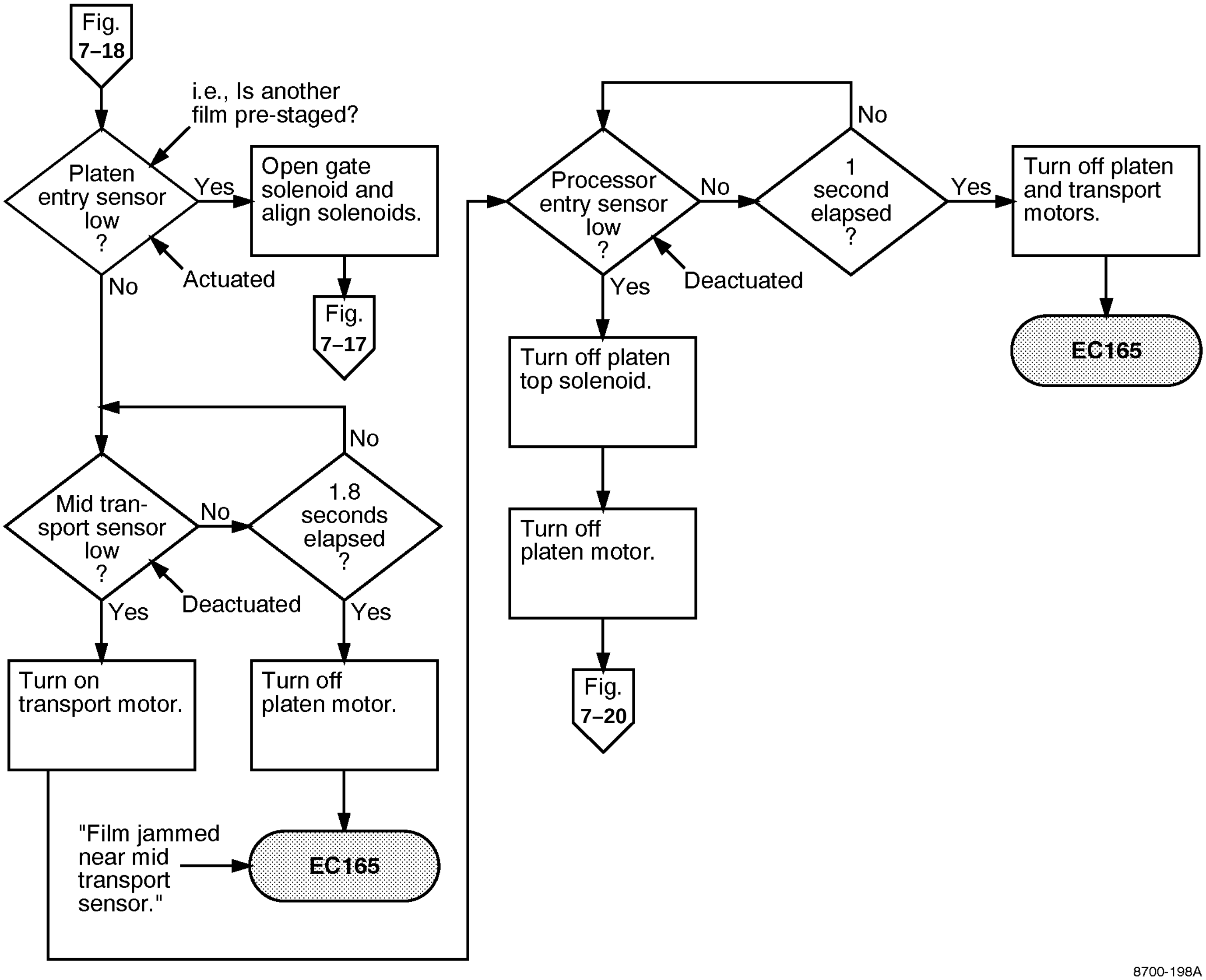


Figure 7-19. Drive Film Up through Transport Sequence

7-4-13. Drive Film Through Processor to Exit Tray

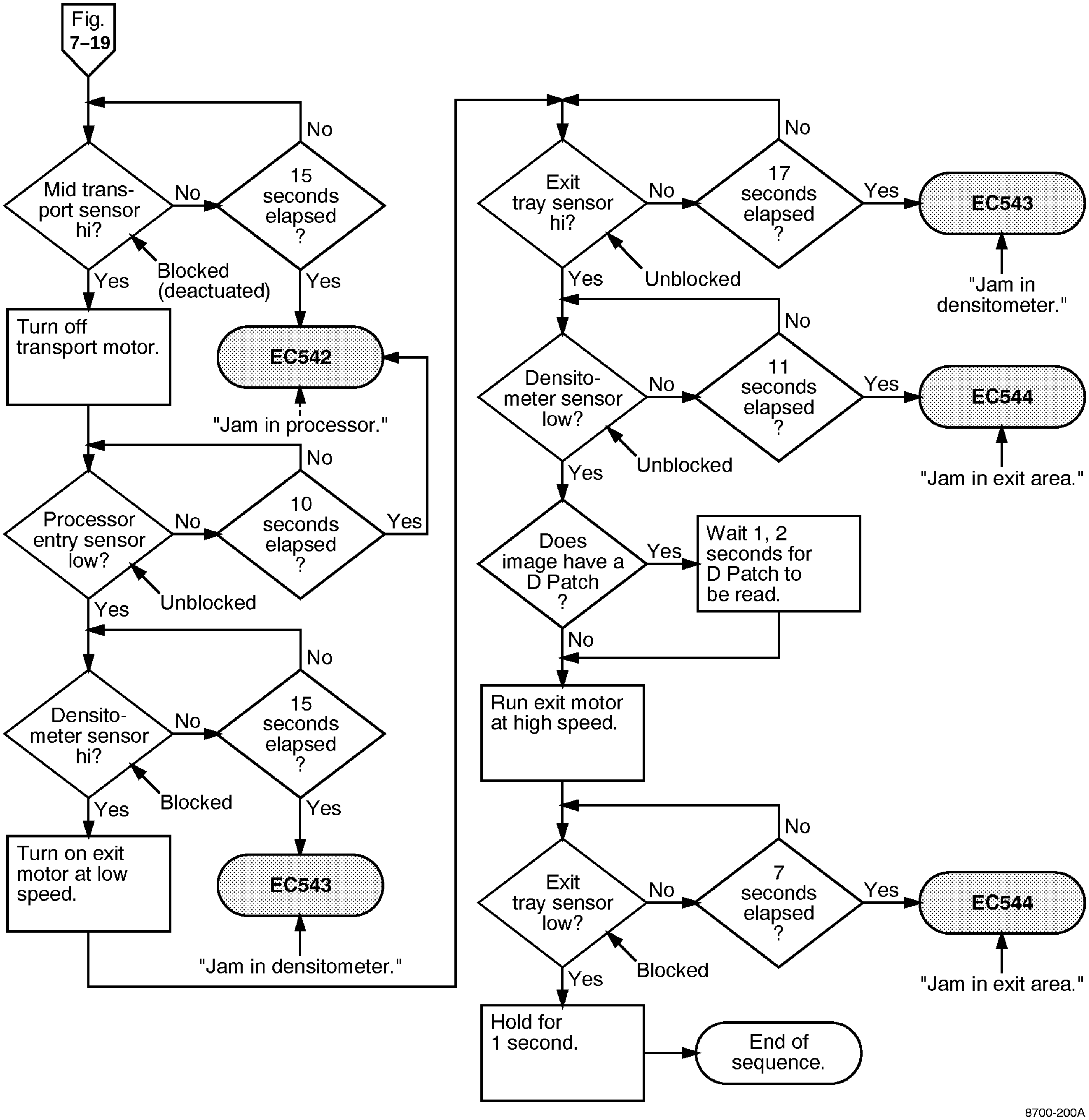


Figure 7-20. Drive Film through Processor to Exit Tray Sequence

7-5. Error Code Index

P#	K#	L#	952 ALM#	Description
None	K59	None	FAI,SET	Video or digital signal error during acquisition.
None	K65	L39	ALM,39	EIB (or IB) not detected by IPB.
None	None	L48	None	End of film timeout error.
None	K65	L59	ALM,39	IPB unable to load parameters to EIB (or IB).
None	K65	L59	ALM,65 FAI,SET	EIB (or IB) returned incorrect EOT, indicating that the acquire was done on the wrong input port.
None	K65	None	FAI,SET	Error detected when reading EIB (or IB) parameters from NVRAM.
None		L65		Data overflow or underflow.
None	K68	L68	ALM,68	Timeout waiting for pixels from EIB (or IB).
None	K72	L59	ALM,61	Error detected when reading EIB (or IB) parameters from NVRAM.
None	K72	L64	ALM,64	IPB detected parity error during acquisition.
None	K72	L66	ALM,66	Image memory address has crossed the boundary of available memory.
None	K72	L67	ALM,67	Too many pixels received from EIB (or IB).
None	K72	None	FAI,SET	IMS system memory (not input module memory) error occurred during acquisition.
None	K203	L75	None	Local panel failed.
None	K85	L85	FAI,MOV FAI,BSY	Image memory full.
None	None	L111	None	Cartridge feed roller open failed.
P116	K202	L116	ALM,60	Pickup arm could not be moved to proper position.
P121	K202	L121	ALM,60	Optics module attenuator error.
P122	K202	L122	ALM,60	SCB cannot communicate with optics module.
P123	K202	L123	ALM,60	Optics module temperature error.
P126	K202	L126	ALM,60	SCB unable to detect EOL signal from optics module.
P130	K215	None	ALM,14	Supply door open.
P132	K215	None	ALM,12	No supply cartridge.
P133	K204	None	FLO	Less than 20 sheets remain in supply cartridge.
P134	K218	None	ALM,10 ALM,16	Supply cartridge empty.
P139	K209	L139	ALM,31	Bad cartridge ID.
P145	K209	L145	ALM,31	Unsupported media type.
P146	K209	L145	ALM,31	Wrong media size.
P151	K202	L151	ALM,60	Optics module PLL error.
P154	K202	L154	ALM,60	NVRAM error.
P161	K211	L161	ALM,21	Film jammed on multifeed detector.

P#	K#	L#	952 ALM#	Description
P163	K211	L163	ALM,22	Film jammed after multifeed detector and before platen entrance sensor.
P164	K211	L164	ALM,23	Film jammed on platen entrance or exit sensor.
P165	K211	L165	ALM,26	Film jammed on mid transport sensor.
P166	None	L166	None	Multiple pickup attempts.
P171	None	L171	None	Supply door failed to open.
P173	K215	None	ALM,16	Platen door open.
P176	K210	L176	ALM,30	Supply cartridge could not be opened.
P177	K210	L177	ALM,31	Supply cartridge could not be closed.
P178	K215	L178	ALM,16	Top cover open.
P179	K215	None	ALM,16	Left side door open.
P202	None	None	None	Service override switch out.
None	None	L200	None	Transmit parity error.
None	None	L201	None	Module synchronization error.
None	None	L202	None	Transmit memory out of bounds.
P203	K202	L203	ALM,60	Service override interlock failed.
P204	K202	L204	ALM,60	Supply door interlock failed.
P205	K202	L205	ALM,60	Top cover interlock failed.
P206	K202	L206	ALM,60	Left side door interlock failed.
P208	None	L208	None	Left side door could not be opened.
None	None	L210	None	Acquire line buffer overflow.
None	None	L212	None	Handshake acquisition error.
None	None	L214	None	Line length error.
None	None	L216	None	Hardware real time error.
None	None	L217	None	Software loading real time error.
P221	K202	L221	ALM,60	Pickup top sensor failed.
P222	K202	L222	ALM,60	Pickup middle sensor failed.
P223	K202	L223	ALM,60	Film present sensor failed.
P224	K202	L224	ALM,60	Pickup motor failed.
P225	K202	L225	ALM,60	Cartridge open (rack) sensor failed.
P226	K202	L226	ALM,60	Rollback home sensor failed.
P227	K202	L227	ALM,60	Rollback motor failed.
P228	K210	L176 or L177	ALM,60	Tongue depressor sensor failed.
P229	K202	L229	ALM,60	Supply door could not be opened.
P230	K202	L230	ALM,60	Cartridge pickup calibration failed.
P301	K202	L301	ALM,60	HIB version not compatible with current software.
P302	K202	L302	ALM,60	Read or write to HIB border/patch register failed.
P303	K202	L303	ALM,60	HIB lookup table memory test failed.

P#	K#	L#	952 ALM#	Description
P304	None	None	None	HIB test print requested.
P501	K202	L501	ALM,17	Processor drum could not be moved.
P506	K202	L506	ALM,17	Processor communication error.
P507	K202	L507	ALM,17	Processor returning bad data.
P509	K202	L509	ALM,17	Processor failed to warm up in allotted time.
P510	None	L510	None	Calibration sheet printing.
P511	K222	None	ALM,17	Processor warming.
P512	None	None	None	Calibration sheet requested.
P522		L522		Bad densitometer.
P542	K227	L542	ALM,17	Jam in processor.
P543	K211	L543	ALM,17	Jam in densitometer.
P544	K211	L544	ALM,17	Jam in exit area.
P549	None	L549	None	Processor filter not present.
P550	None	L550	None	Clean processor and replace filter.
P551	K202	L551	ALM,17	Processor heater 1 failed.
P552	K202	L552	ALM,17	Processor heater 2 failed.
P553	K202	L553	ALM,17	Processor heater 3 failed.
P554	K202	L554	ALM,17	Processor temperature too high.
P561	None	L561	None	Invalid densitomer readings.
P601	K202	L601	ALM,60	Invalid power monitor offset.
P602	K202	L602	ALM,60	Invalid power monitor range.
P603	K202	L603	ALM,60	Invalid optical density range.
P604	K202	L604	ALM,60	Invalid laser dynamic range.
P605	K202	L605	ALM,60	Attenuator test failed.
P620	None	L620	ALM,57	No film model found.
P622	K202	L622	ALM,57	Corrupt film tables.
P623	None	L623	ALM,57	Bad transfer function.
P624	AIQC OFF	L624	None	Bad densitometer data.
P625	AIQC OFF	L625	None	Bad film contrast.
P631	AIQC OFF	L631	None	Film slow.
P632	AIQC OFF	L632	None	Film fast.
P633	K230	L633	None	System near calibration limits (film almost fast).
P634	K230	L634	None	System near calibration limits (film almost slow).
None	None	L635	None	Dpatch slow.
None	None	L636	None	Dpatch fast.
P910	K202 or K1	None	ALM,60	Imager detects no communication from IMS.
P913	K202	L913	ALM,60	HIB parity error.

7-6. Troubleshooting QuickSheets

This subsection includes QuickSheets for all the error codes generated by the system.

7-6-1. Error Code Descriptions

The following table lists the error codes with a brief description of the problem.

Table 7-1. Error Code Descriptions

Error Code	Description of Problem
EC39	EIC (or IB) not detected by IPB.
EC48	No End of File (EOF).
EC59	IPB unable to load parameters to EIB (or IB).
EC64	IPB detected error during acquisition.
EC65	Data overflow or underflow.
EC66	Image memory address has crossed the boundary of available memory.
EC67	Too many pixels received from EIB (IB).
EC68	Timeout waiting for pixels from EIC (or (IB).
EC75	Local panel failed.
EC85	Image memory full.
EC111	Nip Open Failed.
EC116	Pickup arm could not be moved to proper position.
EC121	Optics module attenuator error.
EC122	No Optics module.
EC123	Optics module temperature error.
EC126	SCB unable to detect EOL signal from optics module.
EC130	Supply door open.
EC132	No supply cartridge.
EC134	Supply cartridge empty.
EC139	Bad cartridge ID.
EC145	Unsupported media type.
EC151	Optics module PLL error.
EC154	NVRAM error.
EC161	Film jammed on multifeed detector.
EC163	Film jammed after multifeed detector and before platen entrance sensor.
EC164	Film jammed on platen entrance or exit sensor.
EC165	Film jammed on mid transport sensor.

Error Code	Description of Problem
EC166	Multiple pickup attempts.
EC173	Platen door open.
EC176	Supply cartridge could not be opened.
EC177	Supply cartridge could not be closed.
EC178	Top cover open.
EC179	Left side door open.
EC202	Service override switch out.
EC203	Service override interlock failed.
EC204	Supply door interlock failed.
EC205	Top cover interlock failed.
EC206	Left side door interlock failed.
EC208	Left side door could not be opened.
EC221	Pickup top sensor failed.
EC222	Pickup middle sensor failed.
EC223	Film present sensor failed.
EC224	Pickup motor failed.
EC225	Rollback open (rack) sensor failed.
EC226	Rollback home sensor failed.
EC227	Rollback motor failed.
EC228	Tongue depressor sensor failed.
EC229	Supply door could not be opened.
EC230	Pickup Arm Height Calibration failure.
EC301	HIB parity error 8.
EC302	HIB register read/write failed.
EC303	HIB lookup table memory failed.
EC501	Processor drum could not be moved.
EC506	Processor communication error.
EC507	Processor returning bad data.
EC509	Processor failed to warm up in allotted time.
EC511	Processor warming.
EC522	Bad densitometer.
EC542	Jam in processor.
EC543	Jam in densitometer.
EC544	Jam in exit area.

Error Code	Description of Problem
EC549	Processor filter not present.
EC550	Clean processor and replace filter.
EC551	Processor heater 2 failed.
EC554	Processor temperature too high.
EC561	Invalid densitometer readings.
EC601	Invalid power monitor offset.
EC602	Invalid power monitor range.
EC603	Invalid optical density range.
EC604	Invalid laser dynamic range.
EC605	Attenuator test failed.
EC620	No film model found.
EC622	Corrupt film tables.
EC623	Bad transfer function.
EC624	Bad densitometer data.
EC625	Bad film contrast.
EC631	Film slow.
EC632	Film fast.
EC633	System near calibration limits (film almost fast).
EC634	System near calibration limits (film almost slow).
EC635	Dpatch slow.
EC636	Dpatch fast.
EC910	Imager detects no communication from IMS.
EC913	HIB parity error.

7-6-2. EC39: EIB (or IB) not detected by IPB

Local Panel Message	HQ Keypad Message	Error Log OM IMX	952 Host Alarm
None.	K65 Image acquire failed. Try acquiring again.	L39 EIB_NOT_DETECTED	ALM, 39

Summary

The input module sent a command to the DEIB or VEIB on Fiber "A" and did not receive a response on Fiber "B."

Sequence of Events

1. When the imager is powered up, the IPB or Input Module loads the parameter set to the VEIB or DEIB through fiber optic cable "A."
2. The Enable LED on the VEIB or DEIB lights to indicate that it has received the parameter set and is in a ready state. (On the DEIB the User 1 or User 2 LED also lights at this time.)
3. The VEIB or DEIB sends a response back to the input module on fiber optic cable "B." If the input module does not receive a response from the VEIB/DEIB, EC39 is logged.

Phone Fix – Operator Correctable

1. **Cause:** EIB is locked up.

   Solution: Power cycle the EIB.
2. **Cause:** No power to the EIB.

   Solution: Have the customer check power to the EIB. (Are EIB power lights on?)

On Site – Technician Correctable

1. **Cause:** Wrong type EIB is selected in MPC.

   Solution: Reconfigure MPC/Setup/IMS/System.
2. **Cause:** Fiber optic cable is bad.

   Tech Tip

   Use a flashlight to test the fiber, or reconnect the fiber to a comm port and a UKEIB with 969 keypad.

   Solution: Replace or reterminate the cable. (A crimp termination kit for fiber optic cable is available via the Fed Ex Tool Bank) .
3. **Cause:** DEIB Transfer Clock Speed
   - Two jumpers in the DEIB specify either single (10 MHz) or dual (12.5 MHz) transfer clock speed. (Refer to 8700/8500 IMAGER or 8800 MULTI-INPUT MANAGER installation procedure.)
   - When a DEIB is connected to an 8700/8500 IMAGER, it must always be set for single (10 MHz) transfer clock speed. This is the factory default setting.
   - When a DEIB is connected to an 8800 MULTI-INPUT MANAGER, it must be set to match the Input Module jumper setting. Refer to installation procedure for MULTI–INPUT MANAGER.

   Solution: Try the EIB on a different Input Module or the other port on the FIB. Be sure to configure the new Input Module or port for the type of EIB you are connecting.

7-6-3. EC48: No End of File (EOF)

Local Panel Message	HQ Keypad Message	Error Log OM X IM	952 Host alarm
None	None	L48 EOF_Timeout	None

Summary

The IMS has timed out waiting for the End of Film (EOF) from the optics and SCB.

Sequence of Events

1. The IPB issues the print command to the SCB and the film is picked up.
2. When the IPB receives the SOL signal from the Optics module (which is under control of the SCB), the IPB strobes data to the Optics module.
3. If the IPB does not receive the full number of SOL's from the optics (via the SCB) within about 1 minute and 45 seconds, EC48 is logged.
   - This could occur because of a film jam that prevents the film from reaching the optics, or because something in the imaging chain (optics, parity error, etc.) is malfunctioning.
   - EC48 is usually accompanied by some other error such as a parity error, film jam, or optics error. The errors accompanying EC48 may provide better troubleshooting information.
   - The print job is retried a second time. If the second attempt also results in EC48, the print job is killed and the image is deleted from memory. (The job is not killed if jams are occurring.)

On Site – Technician Correctable

1. **Problem:** EC48, **No end of File**, on *every* film, including density tests.

   Cause: MPC/SCB(or MCS)/Config/Clear Border Lines is not initialized.

   Solution: Set Clear Border lines and **power cycle** the IMAGER. Refer to MPC help screen for more information on setting the field.

2. **Problem:** E48 and film jam errors together in the error log.

   Cause: Film jams or pickup errors.

   Solution: Refer to the appropriate EC QuickSheet for the jamming problem.

7-6-4. EC59: IPB unable to load parameters to EIB (or IB)

Local Panel Message	HQ Keypad Message	Error Log OM IMX	952 Host alarm
None	EC59 Acquire failed	L59 EIB Par Write Error or L59 ACQERR EIB 0 (0r 1)	ALM,39 ALM,65

Summary

EIB Parameter Write Error – the IPB could not load parameters into the EIB.

ACQERR EIB – EOT (End of Transmission) was not received from the host during the acquire.

Sequence of Events

Phone Fix – Operator Correctable

Power cycle the EIB and IMAGER.

On Site – Technician Correctable

EC59 EIB Parameter Write Error: Check that the MPC is configured for the correct EIB or IB.

EC59 ACQERR EIB:

1. **Problem:** EC 59 with Siemens.

   Cause: Some Siemens camera boards (the newer version) do not keep their STROBE signal levels at a high or low state. It will float the lines when idle. This is referred to as tri-stating the signal. This causes certain revisions of DEIBs to inconsistently interpret the data from Siemens.

   Solution:

   For new installations: When one of the above-mentioned modalities is included in your site plan, specify that a Modified DEIB Kit (78-8079-0736-1) be shipped instead of the regular DEIB Kit.

   For existing accounts: If acquires are failing with EC59 or 68 perform the following checks:

   Use an oscilloscope or meter to test for the presence and level of the strobe signals.

   If both pin 6 and pin 7 are low (less than .2 volts) in an idle state (host not sending any data), the host is tri-stating the strobe signal.

DEIB or DIB	Chip/ Non-inverting input	Inverting input	Output
DEIB Port 0	U7/6	7	5
DEIB Port 1	U2/6	7	5

   If Siemens is tri-stating the signal, order a modified DEIB (78-8079-0737-9). Order this part only if you are getting EC59 or EC68 and you know the modality is providing a tri-stated output.

2. **Problem:** EC59.

   Cause: If this is a new setup, the DEIB/DIB parameters may be incorrect.

   Solution: Use a script file, if available. If this fails, try different parameters. Header Line mode is the most common Header mode.

3. **Problem:** Acquires fail with EC68 or EC59.

   Cause: If the IMAGER reply to the host's header information takes longer than the host is willing to wait (host wait timing is out of spec), the host will error out and stop sending data.

   Solution: Set *MPC/Setup/IMS/System/ Memory* management to First fit. This will speed up the IMAGER reply after the header data, but **will result in slightly decreased memory performance**. If this does not solve the problem, try the following procedure:

   a. Set *MPC/IMS/EIB/Config/Header Mode* to Ignore Header Line. This will also speed up the IMAGER reply to the host header.
   b. Enter the values for Pixels Per Line and Image Lines that you retrieved earlier from the Image/Show screen.
   c. Be aware that while in Ignore Header Line mode, *MPC/Image/Show* will now display the values you just entered in the DEIB config screen even if the host is not sending any data.
   d. If Ignore Header mode fixes the problem, it can be used as a permanent fix only if the host sends a single size image. If the host changes image sizes, Ignore Header Mode cannot be used.
   e. If Ignore Header mode fixes the problem, you may want to set Memory Management in MPC back to Best Fit to maximize utilization of memory.

4. **Problem:** Digital acquires work with 969, but fails with the IMAGER.

   Cause: The 8700/8500 IMAGER cannot process digital image data as fast as the 969 IMAGER. (969 = 6 Mpixel max, 8700/8500 = 4 Mpixel max.)

   Solution: The digital transfer rate of the host must be less than 4 Mpixels per second. Have the OEM tech configure the modality for 952 setup. This will send a digital transfer rate of 1 Mpixel per second.

Note

The following hosts have a fast digital transfer rate: Picker MR and CT.

General Troubleshooting Tips

- Use the other port on the DEIB/DIB.
- Use the DEIB/DIB SMPTE TEST EPROMS (959SM/8-2-5) to send an image from the DEIB/DIB to the 969 IMAGER.
- Use your scope or logic probe to check signals on the modality (red, green, blue).

7-6-5. EC64: IPB detected parity error during acquisition

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
None	K72 Memory Error. Try acquiring again.	L64 ACQ_Parity_EIB_0(or1)	ALM,64

Summary

The IMS detected a parity error in the data from the EIB.

Phone Fix – Operator Correctable

Power cycle the EIB and the IMAGER.

On Site – Technician Correctable

DEIB: Check with OEM to ensure that the parity and word format in the *MPC/IMS/DEIB/Config* screen matches the host.

7-6-6. EC65: Data Overflow or Underflow

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
None		L65	

Summary

A data overflow or underflow has occurred, possibly because the VEIB is set up for internal pixel clock (PLL) but requires an external clock.

Phone Fix – Operator Correctable

On Site – Technician Correctable

VEIB: Check the external clock jumpers on the VEIB.

7-6-7. EC66: Image memory address has crossed the boundary of available memory

7-6-8. EC67: Too many pixels received from EIB (or IB)

Local Panel Message	HQ Keypad Message	Error Log OM IMX	952 Host alarm
None.	K72: Memory error. Try Acquiring again.	L67 FIFO_OVERFLOW	ALM,67

Summary

Too many pixels received during an acquire.

Sequence of Events

The IMS is expecting a certain number of pixels from the EIB/IB based on the values entered for Horiz Active Pixels in the config screen. If the input module receives more pixels than expected, the acquire fails and EC67 is logged. **The most likely causes of EC67 for the VEIB/VIB are:**

- The parameter settings are incorrect, and the VEIB is therefore trying to digitize during a sync pulse.
- The video signal is not stable (e.g., due to an intermittent connection).
- The double gain parameter and/or the gain pot in the VEIB is not providing sufficient video amplitude for the VEIB to digitize consistently.

On Site – Technician Correctable

Video:

1. **Cause:** The number of passes for a VEIB connected to aN 8700/8500 IMAGER must be double that of a VEIB connected to an 8800, 969 or 959 IMAGER.

   Solution: Change the video passes parameters per the help screen documentation.

2. **Cause:** This is a common setup problem when adjusting parameters with a VEIB.

   Solution: Refer to the installation procedure in the service manual.

Digital:

1. **Cause:** If this is a new setup, the DEIB/DIB parameters may be incorrect.

   Solution: Use a script file if available. If that fails, try different parameters. Header Line mode is the most common Header mode.

2. **Cause:** If the IMAGER reply to the host's header information takes longer than the host is willing to wait (host wait timing is out of spec), the host will error out and stop sending data, or will send the header data twice, etc.

   Solution: Set *MPC/Setup/IMS/System/Memory management* to First fit. This will speed up the IMAGER reply after the header data, but **will result in slightly decreased memory performance**. If this does not solve the problem, try the following procedure:

   a. Set *MPC/IMS/EIB/Config/Header Mode* to Ignore Header Line. This will also speed up the IMAGER reply to the host header.

   b. Enter the values for Pixels Per Line and Image Lines that you retrieved earlier from the *Image/Show* screen.

   c. Be aware that while in Ignore Header Line mode, *MPC/Image/Show* will now display the values you just entered in the DEIB config screen even if the host is not sending any data.

d. If Ignore Header mode fixes the problem, it can be used as a permanent fix only if the host sends a single size image. If the host changes image sizes, Ignore Header Mode cannot be used.

e. If Ignore Header mode fixes the problem, you may want to set Memory Management in MPC back to Best Fit to maximize utilization of memory.

3. **Problem:** Digital acquires work with 969, but fail with the IMAGER.

   Cause: The 8700/8500 IMAGER cannot process digital image data as fast as the 969 IMAGER. (969 = 6 MPixel max, 8700/8500 = 4 MPixel max.)

   Solution: The digital transfer rate of the host must be less than 4 Mpixels per second. Have the OEM tech configure the modality for 952 setup. This will send a digital transfer rate of 1 MPixel per second.

Note

Hosts with a fast digital transfer rate include Picker MR and CT.

General Digital Troubleshooting Tips

- Use the other port on the DEIB/DIB.
- Use the **DEIB/DIB SMPTE TEST EPROMS** to send an image from the DEIB/DIB to the IMAGER.
- Use your scope or logic probe to check signals from DEIB/DIB to host.

Note

On an IMAGER stand-alone with a touch-screen keypad, memory is not cleared unless Best Fit is selected.

7-6-9. EC68: Timeout waiting for pixels from EIB (or IB)

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host Alarm
None.	K68: Image acquire failed. Try acquiring again.	L68 TIMEOUT_EIB	ALM,68

Summary

The Image Processing Board (IPB) has timed out waiting for image data from the DEIB/DIB. This could happen either because the host system is not sending data, is sending invalid data, the DEIB/DIB is not transferring the data, or the DEIB/DIB configuration is incorrect.

Sequence of Events

1. The IPB downloads parameters to the DEIB/DIB during the power up sequence.
   - The DIEB/DIB “Enable” LED will light indicating that it has a valid parameter set.
   - The Port 0 (or 1) will also light.
   - The IPB will not download the parameters for that port again as long as acquires are successful.

   Error State: If the IPB does not receive acknowledgement from the DEIB/DIB that it successfully received the parameter set, EC39 will be logged. Refer to QS for EC39.

   Error State: If an acquire fails, EC64-68 will be logged and the IPB will reload the parameters to the DEIB/DIB on the next acquire after the first failed acquire.
2. The acquire command is received by the IPB, and the REQUEST line from DEIB/DIB to host goes high.
   - When the Keypad Acquire button is pressed (or a host “Acquire” command is received). The IPB then commands the DEIB/DIB to request the first line of data from the host. The DEIB/DIB does this by asserting the REQUEST line high to the host.

Note

The DEIB XMT LED or DIB REQ LED will go on whenever the REQ line is asserted. However, it is only a general indicator of the state of the REQUEST line. During normal transmission, it flashes on and off so fast that its off state cannot be detected.

3. HOST responds to DEIB’s REQUEST line by asserting its STROBE line high.

   When the host sees the REQUEST lines are high, it sets the data lines for the first message containing the image size data (pixels per line and image lines) if in header mode. Most hosts use Header Line mode. The host then causes the STROBE line to go high.
4. DEIB converts host parallel data to serial data and transfers it to the FIB .

   The DEIB converts the parallel data to serial data, and transfers it to the FIB (or Input module). The rate of the serial transmission between DEIB and FIB (or Input Module) is determined by the jumpers on the DEIB (matching jumpers on the input module.) For the 8700/8500 IMAGER, they must be set to 10 MHZ.
5. DEIB reads header data from host.

   When the DEIB sees the STROBE lines from the host go active, it will read the data on the lines.
6. IPB asserts REQUEST line low while it finds the best fit (or first fit) in memory for the image size.

Note

On an stand-alone IMAGER with a touch-screen keypad, memory is not cleared unless Best Fit is selected.

After the IPB has successfully received the header information (pixels and lines in the image), it causes the REQUEST line to go low while it calculates the best fit in memory to store the image.

Error State: If the IMAGER reply to the header information takes longer than the host is willing to wait, the host wait timing is out of spec:

- The host errors out and stops sending data with a resultant EC68 Acquire Timeout.
- Or, the host will send the header twice. (The IPB is expecting the second transmission to be image data, and errors out with EC59 - No EOT - End of Transmission).

7. IPB requests first line of image data.

   Once the 8700/8500 IMAGER or 8800 MULTI -INPUT MANAGER has found a spot in memory for the upcoming data, it will reassert the REQUEST line to an active state for the next line of image data and the host will respond with ... STROBE line active, then idle, then active... for each pixel across the line.

   - During normal transmission, the preceding sequence of events occurs very fast in relation to the XMT LED. During normal transmission, the XMT LED turns on, blinks, and then stays on as the image data is transferred.
   - Be aware that the XMT LED is only a general indicator of the transfer of data and may flash too rapidly to be able to use it for troubleshooting.

Phone Fix – Operator Correctable

1. **Cause:** No power to DEIB/DIB.

   Tech Tip

   Visually inspect the DEIB/DIB. The POWER LED should be lit.

   Solution: If the Power LED is not lit, try reconnecting the power cord. Check voltage at the wall outlet.

2. **Problem:** First acquire in the morning fails. Subsequent acquires are okay. (Problem only occurs with the first acquire after the DEIB is powered on.)

   Cause: If the DEIB loses power, it will lose its parameter set and fail the first acquire after the DEIB power up. However, it will succeed on the second acquire. This situation could happen if the DEIB receives it power from a host system that is powered down at night.

   Solution: Check the power source for the DEIB. It should have a power source that is independent of the host system. Refer to the above Sequence of Events for information on how and when the DEIB parameters are downloaded to the DEIB from the IPB.

3. **Cause:** The host system does not always have the digital data ready to be acquired, and may need to be in certain filming modes for digital transfer to the DEIB/DIB to occur.

   Solution: Check with the OEM tech to be sure the operator is operating the host system correctly.

On Site – Technician Correctable:

1. **Problem:** EC68 with Siemens.

   Cause: Some Siemens camera boards (the newer version) do not keep their STROBE signal levels at a high or low state. It will float the lines when idle. This is referred to as tri-stating the signal. This causes certain revisions of DEIB'S to inconsistently interpret the data from Siemens.

   Solution:

   For new installations: When one of the above-mentioned modalities is included in your site plan, specify that a DEIB-T Kit (78-8079-0736-1) be shipped instead of the regular DEIB Kit.

   For existing accounts: If acquires are failing with EC59 or 68 perform the following checks:

   Use an oscilloscope or meter to test for the presence and level of the strobe signals.

If both pin 6 and pin 7 are low (less than .2 volts) in an idle state (host not sending any data), the host is tri-stating the strobe signal.

DEIB or DIB	Chip/ Non-inverting Input	Inverting Input	Output
DEIB Port 0	U7/6	7	5
DEIB Port 1	U2/6	7	5

If Siemens is tri-stating the signal, order a DEIB-T (78-8079-0737-9). Order this part only if you are getting EC59 or EC68 and you know the modality is providing a tri-stated output.

Note

On a stand-alone IMAGER with a touch-screen keypad, you must select Best Fit to clear memory.

2. **Problem: EC68:**

   Cause: If this is a new setup, the DEIB/DIB parameters may be incorrect.

   Solution: Use a script file if available. If that fails, try different parameters. Header Line mode is the most common Header mode.

3. **Problem:** Acquires fail with EC67, 68, or 59.

   Cause: If the IMAGER's reply to the host's header information takes longer than the host is willing to wait (host wait timing is out of spec), the host will error out and stop sending data, or will send the header data twice, etc.

   Solution: Set *MPC/Setup/IMS/System/Memory management* to First fit. This will speed up the IMAGER's reply after the header data, but will result in slightly decreased memory performance. If this does not solve the problem, try the following procedure:

   a. Set *MPC/IMS/EIB/Config/Header Mode* to Ignore Header Line. This will also speed up the IMAGER's reply to the host header.
   b. Enter the values for Pixels Per Line and Image Lines that you retrieved earlier from the *Image/Show* screen.
   c. Be aware that while in Ignore Header Line mode, *MPC/Image/Show* will now display the values you just entered in the DEIB config screen even if the host is not sending any data.
   d. If Ignore Header mode fixes the problem, it can be used as a permanent fix only if the host sends a single size image. If the host changes image sizes, Ignore Header Mode cannot be used.
   e. If Ignore Header mode fixes the problem, you may want to set Memory Management in MPC back to Best Fit to maximize utilization of memory.

4. **Problem:** Digital acquires work with 969 IMAGER, but fails with the 8700/8500 IMAGER.

   Cause: The 8700/8500 IMAGER cannot process digital image data as fast as the 969 IMAGER. (969 = 6 Mpixel max, 8700/8500 = 4 Mpixel max.)

   Solution: The digital transfer rate of the host must be less than 4 Mpixels per second. Have the OEM tech configure the modality for 952 setup. This will send a digital transfer rate of 1 Mpixel per second.

Note

Hosts with a fast digital transfer rate include Picker MR and CT.

General Troubleshooting Tips

- Use the other port on the DEIB/DIB.
- Use the DEIB/DIB SMPTE TEST EPROMS to send an image from the DEIB/DIB to the IMAGER.
- Use your scope or logic probe to check signals from DEIB/DIB to host.

7-6-10. EC68: (Video): Timeout waiting for pixels from EIB (or IB)

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
None.	K68: Image acquire failed. Try acquiring again.	L68 TIMEOUT_EIB	ALM,68

Summary

The IMS has timed out waiting for the full number of pixels from the VEIB/VIB.

Sequence of Events

The IMS is expecting a certain number of pixels based on the Horiz Active Pixels and Image Lines parameters in *MPC/IMS/EIB/Config*. If it does not receive the full number of pixels and lines, EC68 is logged. **The most likely causes of EC68 for the VEIB/VIB are:**

- The parameter settings are incorrect, and the VEIB is therefore trying to digitize during a sync pulse.
- The video signal is not stable (e.g., due to an intermittent connection).
- The Double Gain parameter and/or the gain pot in the VEIB is not providing sufficient video amplitude for the VEIB to digitize consistently.

Phone Fix – Operator Correctable

Cause: The video cable is disconnected or bad.

Solution: Check/replace video cable.

On Site – Technician Correctable

1. **Cause:** The number of passes for a VEIB connected to a 8700/8500 IMAGER must be double that of a VEIB connected to an 8800 MULTI-INPUT MANAGER, or 969 or 959 IMAGER.

   Solution: Change the video passes parameters per the MPC help screen documentation.

2. **Cause:** This is a common setup problem when adjusting parameters with a VEIB.

   Solution: Refer to the installation procedure in the service manual.

3. **Cause:** The PLL is not seated fully due to the plastic standoffs being too long.

   Solution: Modify the standoffs so the PLL seats fully or replace with part number 26-1007-2402-5.

7-6-11. EC75: Local panel failed

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
None.	K203: The local panel is bad on laser imager X.	L75 LOCAL_PANEL_ERROR	None.

7-6-12. EC85: Image memory is full

Local Panel Message	HQ Keypad Message	Error Log OM IMX	952 Host alarm
None	K85 Image Memory is full.	L85 MEM_FULL	FAI,MOV or FAI,BSY

Summary

Not enough image memory is available to perform the store. This is a normal condition, but may be caused by factors that are not part of normal operation.

Note

On a stand-alone IMAGER with touch-screen keypad, you must select Best Fit to clear memory.

Phone Fix – Operator Correctable

1. **Cause:** The IMAGER is having difficulty picking up films. This results in repeated pickup tries, which slows down the system.

   Solution: Try a different cartridge.

2. **Cause:** Out of film condition is not noticed by customer until memory is full.

   Solution: Encourage customer to watch the keypad or host screen for film out message.

3. **Cause:** The user is pushing the system to the limits of its capabilities.

   Solution: Add more memory.

On Site – Technician Correctable

Setup: Set *MPC/Setup/Input/System/Memory Management* to Best Fit. This will make the most efficient use of the memory.

Note

On some digital modalities this may cause acquisition errors. If so, set back to First Fit.

Setup: Set the user with memory full problems to **high priority** via *MPC/PC/IMS/Input/System/User Priority.*

Setup: Siemens. There are delay parameters in the *MPC/COMM/Siemens* screens that will slow down our response to an acquire command by 1 to 3 seconds. This has the effect of slowing down the rate of acquiring to reduce the likelihood of memory full conditions. SHPT keypad also has delay parameters in the setup screen.

Siemens note: The SHPT will send a “memory full” to Siemens, but no error will show up in the 8800/8700/8500 error log. This is normal. The SHPT will poll the laser for memory available, and will not attempt an acquire if there is not enough available. Thus no EC85 will occur in the error log.

1. **Problem:** Memory full condition locks up the host.

   Cause: *MPC/HOST/MemFull* is set to the wrong message.

   Solution: GE and Picker should be set to MOV. For others, refer to the TRM (Technical Reference Manual) . Or try the other setting in MPC. There are only two choices (MOV or BSY).

2. **Cause:** Film pickup problems are slowing down the system.

   Solution: Check the error log for EC166 pickup tries. Refer to EC166 for more information on pickup problems.

3. **Cause:** Other problems such as jams or AIQC problems are slowing down the system.

   Solution: Look in the MPC Error Log.

7-6-13. EC116: Pickup arm could not be moved to proper position

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P116	K202: Laser imager X is not operational.	L116: PICKUP_CUP_ARM_UPPER_ERROR	ALM,60

7-6-14. EC121: Optics module attenuator error

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P121	K202: Laser imager X is not operational.	L121 ATTENUATOR_ERROR	ALM,60

Summary

At power up, the SCB drives the optics attenuator to its home position. If the attenuator cannot be moved to the home position after multiple attempts, **EC121 Attenuator Error** is declared. The imager must be power cycled to clear the error.

Sequence of Events

At power up, the attenuator is stepped to the home position.

Note

If you are trying to monitor signals during power up, be aware that the optics tests are performed at power up, and start running a few seconds after the optics kicker solenoid is energized three times. All doors must be closed for the optics tests to run.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

1. **Problem/Cause:** Poor connection at optics, SCB or MIB.

   Solution: Reseat cables. Be sure to check the connection at the firewall between the electronic enclosure and the optics. There have been several instances of poor connections at this juncture.

2. **Problem/Cause:** Bad optics module.

   Solution: Replace optics.

General Troubleshooting Tip

1. At the SCB command window (*MPC/Diag/SCB/Cmd*) enter “set attenuator –999.”
   MPC sensor display (*MPC/Diag/scb/sensors*) should show the attenuator in the home position (box checked).
2. At the SCB command window enter “set attenuator 200.”
   MPC sensor display should show the attenuator box unchecked.
   - During normal operation the attenuator is stepped to the home position. Once the home position is found, that position is called 0. Each attenuator position is one step of the stepper motor.
   - Closed position (full attenuation, clear film) is typically 80 steps.
   - Fully open position (minimum attenuation, dark film) is typically 480 steps.

The attenuator home signal can be monitored on the **SCB** at the bottom leg of resistor **R8K1**. The signal is low when the SCB optics cable is disconnected, and is pulled high by the optics module when the attenuator is in the home position.

7-6-15. EC122: Optics module not present

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P122	K202: Laser imager X is not operational.	L122 NO_OPTICS_MODULE	ALM,60

Summary

The SCB uses a dedicated signal OMCON to detect the presence of an optics module. Error State: If the OMCON signal is not detected low during power up, EC122 (no optics module) is logged.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Check OMCON signal from optics module. Measure on the SCB, at the bottom leg of resistor R7M1. The signal is high with the SCB/Optics control cable disconnected and is pulled low by the optics module when operating normally.

7-6-16. EC123: Optics module temperature error

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P123	K202: Laser imager X is not operational.	L123 OPTICS_TEMP_FAIL	ALM,60

Summary

The optics module has failed to come up to temperature within 15 minutes.

Sequence of Events

The SCB will not run the optics diagnostics at power up until it sees the Y-galvo “**YTempe**” signal pulled low by the optics module. The local panel will display “Printer is performing Self Test” until the temperature reaches specifications.

Error State: If the optics module does not achieve a 46 - 56° C (115 - 132° F) temperature within 15 minutes, **EC123 Optics Module Temp error** is declared.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Tech Tip

You can check the **YTempe signal** on the SCB at the top leg of **R7N3**. It should be high when the SCB optics cable is disconnected, and pulled low by an optics module that is up to temperature. If the signal is not correct, check/reseat the optics control cable from the SCB to the optics module. Be sure to reseat all three connections, including the bulkhead connection.

Note

This status message may be displayed longer than “____ minutes till ready” on the local panel if the optics is not up to temperature.

7-6-17. EC126: SCB unable to detect EOL signal from optics module

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Printer malfunction. P126	K202: Laser imager X is not operational.	L126 OPTICS_NO_EOL	ALM,60

Summary

The SCB is unable to detect the EOL signal from the optics module for each line of the film.

Sequence of Events

The SCB is expecting a LINESYNC signal (EOL) from the optics module for each line of the film.

If it does not receive the full number of lines, EC126 is logged. Note:

Note

This could occur because:

- The IPB has stopped sending data to the optics due to a parity error in the image data. Look in the MPC error log to see if parity errors are occurring. If they are, troubleshoot the "parity error."

Note

While the IMAGER is imaging the film, it runs into a parity error in the data. It then reverses the border to clear for 16 lines so the image is flagged as bad. After the parity error, the film will be imaged as normal.

- An intermittent or bad connection between IPB and Optics OR Optics and SCB.
- Bad optics module

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

1. **Cause:** The number of lines is different between the SCB and the IPB.

   Solution: Set clear border lines via **MPC/SCB/Config/Clear Border** lines, and power cycle the IMAGER.

2. **Cause:** The cable between the IPB and optics or SCB and optics is loose.

   Solution: Reseat the cable

3. **Cause:** The control cable between SCB and optics has a loose fitting connection at the bulkhead due to the cable securing screws bottoming out before the cables are fully seated.

   Solution: First, check the control cable to see if the cable is loose and the securing screws are bottomed out. Then shim the screws and sockets as needed to tighten up the two cables.

4. **Cause:** The fiber optic cable between the 8800 and 8700/8500 IMAGER is bad.

   Solution: Replace the cable. If replacing the cable does not fix the problem, try using a longer or shorter cable, or try coupling cables together.

Tech Tip

The LINESYNC signal can be checked at pin 9 of U6L1 on the SCB. It should change states for each line during imaging.

7-6-18. EC130: Supply door open

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Close supply door. P130	K215: A cover is open on laser imager X.	None.	ALM,14

On Site – Technician Correctable

Refer to paragraph 7-2 for more information on sensors.

7-6-19. EC132: No supply cartridge

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Insert cartridge. P132	K215 A cover is open on laser imager 1.	None	ALM,12

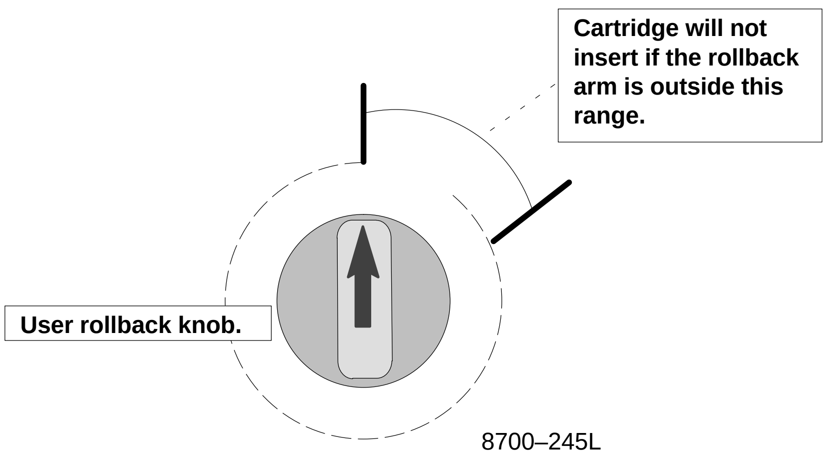
Summary

The Cartridge Present Sensor is not actuated.

On Site – Technician Correctable

Problem/Cause: The rollback bar is not in the home position.

Solution: Rotate the rollback bar to the home position. Refer to Figure 7-1 for sensor locations.



Theory

Refer to paragraph 7-2 for sensor troubleshooting details and paragraph 7-4 for information on film sequencing.

7-6-20. EC133: Less than 20 sheets remain in supply cartridge

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ☐ Output Log	952 Alarm
Cartridge has less than 20 sheets remaining. P133	K204: The media is low on laser imager X.	None.	None.

7-6-21. EC134: Supply cartridge empty

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Cartridge is empty. P134	K218. Supply cartridge is empty on laser imager 1.	None	ALM,10

Summary

The SCB has counted 125 sheets since the cartridge was first loaded.

Sequence of Events

1. When a new cartridge of film is loaded, the film count in SCB NVRAM is set to 125.
2. For each film picked up, the SCB decreases the film count for that cartridge.
3. When the count reaches 0, P134 Cartridge is Empty is displayed on the local panel. The cartridge lid is closed and the supply door solenoid is energized to open the door.

Note

The pickup arm is driven down to the cartridge a second time after each sheet is fed to check for film empty, using the film out sensor for feedback. A cartridge may also be declared empty if the film out sensor is deactuated when the empty check is made.

Phone Fix – Operator Correctable

Replace cartridge.

Cause: Film jams in the cartridge cause improper sensing of the film out sensor.

Solution: Clear the jam.

On Site – Technician Correctable

Check proper operation of the Film Out and Pickup Bottom Sensors.

Theory

Refer to paragraph 7-2 for sensor troubleshooting details and paragraph 7-4 for information on film sequencing.

7-6-22. EC139: Bad cartridge ID

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Could not read RF tag on cartridge. Replace cartridge. P139	K209: Problem with supply cartridge on laser imager X.	L139 BAD_CRTG ID	ALM,31

Summary

The SCB was unable to read the information on the RF tag in the cartridge.

Sequence of Events

Phone Fix – Operator Correctable

On Site – Technician Correctable

Refer to the RF Tag trouble analysis procedure in paragraph 7-11.

7-6-23. EC145: Unsupported media type

Local Panel Message	**HQ Keypad Message**	**Error Log Message** ☐ Input Log ■ Output Log	**952 Alarm**
Unsupported media type P145	K209	L145	ALM,31

Summary

Sequence of Events

Phone Fix – Operator Correctable

On Site – Technician Correctable

7-6-24. EC151: Optics module PLL error

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Printer malfunction. P151	K202: Laser imager X is not operational.	L151 OPTICS_OUT_OF_LOCK	ALM,60

Summary

At power up and before each print the SCB checks the XPLL line from the optics module. The signal is normally high, and is pulled low by the optics module when the optics module has determined that the X galvo is in sync.

Error State: If the line does not pull low, **EC151 Optics out of Lock** is logged.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

1. **Cause:** Optics module is bad.

   Solution: Make the following check first;

   a. Reseat the cables to the optics module, SCB and MIB.

   b. If the problem remains, replace the optics module.

2. **Cause:** The control cable between SCB and optics has a loose fitting connection at the bulkhead due to the cable securing screws bottoming out before the cables are fully seated.

   Solution: First, check the control cable to see if the cable is loose and the securing screws are bottomed out. Then shim the screws and sockets as needed to tighten up the two cables.

3. **Cause:** This problem can also be the result of a bad circuit on the SCB. (The SCB may not be processing the XPLL signal properly.)

Note

This error may appear alternating with EC601. Refer to the Quick Sheet for that error.

7-6-25. EC154: NVRAM error

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P154	K202: Laser imager X is not operational.	L154 NVRAM_ERROR	ALM,60

Summary

The SCB NVRAM has an error.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

1. Reinitialize the SCB NVRAM.
2. Besides the MPC parameters you backup, the SCB NVRAM also stores many other system and LUT parameters that are not backed up via MPC. If the SCB is behaving abnormally, and you suspect that the NVRAM's corrupted, do the following:
   a. Backup the system using a new filename. Keep the old backup.
   b. Do an *MPC/File/Restore* on the printer having the problem.

      c:\winmpc\scbinit0.sc for 8700/8500 IMAGER dual printer 0

      c:\winmpc\scbinit1.sc for 8700/8500 IMAGER dual printer 1

      This will reinitialize all the SCB NVRAM.
   c. Power cycle the system. The local panel will be blank for the first 30 seconds.
   d. Wait until EC154 and 622 appear on the local panel. Wait until the backup arm height calibration is done. (There will be a clunking noise as the feed roller is moved up and down repeatedly. Let it finish.)
   e. Power cycle the system again. It should power up okay now.
   f. Restore the MPC backup you made in step a. This will restore the drum temperature setpoints and the parameters in the SCB/Config screen.
   g. Set *SCB/Config/Clear Border* lines to 84 (default). Save the screen and power cycle the IMAGER.
   h. It is possible the SCB NVRAM was corrupted at the time you made the backup. If the new backup doesn't work, try the old backup.

7-6-26. EC161: FIlm jammed on multifeed detector

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Media jam at supply cartridge. Open left door and remove jam in area 1. P161 (Toggles with: Press supply button for 5 seconds to open door. This will expose XXX sheets. P138)	K211: Media is jammed in laser imager X. Check local panel.	L161 JAM_SUPPLY	ALM,21

Summary

A film is jammed on the multifeed detector.

Sequence of Events

Refer to paragraph 7-4 for flow charts of machine functions during film drive.

Phone Fix – Operator Correctable

Cause: Films stick together and double feed, or as top sheet is being lifted and fed, the sheet underneath it is pulled forward and mispositioned. This happens most at the beginning of the cartridge.

Solution:

- Remove the cartridge and try fanning the film.
- Try a new cartridge.

On Site – Technician Correctable

1. **Cause:** The multifeed board is out of adjustment.

   Solution: Adjust using the procedure in the service manual.
2. **Cause:** Debris in the multifeed rollers.

   Solution: Clean the rollers.

Theory

Refer to paragraph 7-4 for flow charts of machine functions during film drive.

7-6-27. EC163: Jam to exposure

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Media Jam in transport. Open left door and remove jam in area 2a. P163.	K211. Media is jammed in laser imager 1. Check local panel.	L163 Jam to Exposure	ALM,22

Summary

A film is jammed after the doublefeed sensor and before the platen entry sensor. The platen entry sensor did not come on.

Sequence of Events

Refer to paragraph 7-4 for flow charts of machine functions during film drive.

Phone Fix – Operator Correctable

Clear the jam. If the problem persists, try a new cartridge of film.

On Site – Technician Correctable

General Troubleshooting Tip: Refer to paragraph 7-2 for Sensor Troubleshooting Analysis.

Problem/Cause: The platen entry sensor is loose in its mounting, probably caused by the mounting legs of the sensor being rounded.

Solution: Replace the sensor.

Theory

Refer to paragraph 7-4 for flow charts of machine functions during film drive.

7-6-28. EC164: Jam exposure

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Media jam in platen. Open left door and remove jam in area 3. P164	K211: Media is jammed in laser imager X. Check local panel.	L164 JAM_EXPOSURE	ALM,23

Summary

The media is jammed in the exposure area (while entering/leaving the platen). Either the platen entry sensor did not turn off, or the platen bottom sensor (entering) or the platen exit sensor (leaving) did not come on.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing.

Phone Fix – Operator Correctable

Clear the jam.

On Site – Technician Correctable

General Troubleshooting Tip: Refer to paragraph 7-2 for Sensor Troubleshooting Analysis.

Solution: Refer to paragraph 7-2 for Sensor Troubleshooting Analysis.

Cause: The platen entry sensor is loose in its mounting, caused by the mounting legs of the sensor being rounded.

Solution: Replace the sensor.
Problem: Films are not being kicked out of the optics platen consistently.

Cause: The optics is not square with the transport assembly because one of the shipping screws was left in.

Solution: Remove the shipping screw.
Problem: Films are not being kicked out of the optics platen consistently.

Cause: The optics is being pushed towards the back of the machine, this causes the film that is being ejected from the optics platen to not hit between the two drive rollers in the transport. Instead, it is stubbing on the rear roller.

Solution: Determine why the optics is not centered.
Problem: The films are not being kicked fully and do not enter the transport nip rollers consistently.

Cause: The platen kick solenoid nylon bushings (Refer to Service Manual IPB Figure 8-14, item 29) are too tight and bulge. This extra dimension does not allow the kicker to travel to its full extension.

Solution: Loosen the screen holding the nylon bushing.

General Troubleshooting Tip: *MPC/Log/Printer Log/Kick Count* will show how many times the kicker solenoid was energized to kick the film out of the optics platen; this number should be 1, with an occasional 2 showing in the log.

Theory

Refer to paragraph 7-4, Film Sequencing.

7-6-29. EC165: Jam before processor

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Media jam in transport. Open left door and remove jam in area 2b. P165	K211: Media is jammed in laser imager X. Check local panel.	L165 Jam to Processor	ALM,26

Summary

The media is jammed after exposure. The platen exit sensor came on, but the mid transport or processor entry sensor did not come on.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing.

Phone Fix – Operator Correctable

Clear the jam.

On Site – Technician Correctable

General Troubleshooting Tip: Refer to paragraph 7-2 for Sensor Troubleshooting Analysis.

Cause: The mid transport sensor or processor entry sensor is loose in its mounting, caused by the mounting legs of the sensor being rounded.

Solution: Replace the sensor.

Cause: The set screw on one of the drive motors is loose.

Solution: Secure the loose screw.

Theory

Refer to paragraph 7-4, Film Sequencing.

7-6-30. EC166: Film pickup problems

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Imager has difficulty picking up media. Replace cartridge. P166	K211: Media is jammed in laser imager X. Check local panel.	L166 PICKUP_TRY L166 DOUBLE_PICKUP or L166 NO_PICKUP	ALM,21

Summary

L166 PICKUP TRY—One pickup attempt has failed. If the next pickup attempt succeeds, no further errors are logged, and nothing is displayed on the local panel. This error is transparent to the user.

If succeeding pickups fail, no more errors will be logged until the failed pickup retries match the number set in MPC/SCB/Config/Pickup Retries.

L166 NO PICKUP—IMAGER has failed to pick up the film after the number of attempts set in MPC/SCB/Config/Max Pickup retries. The local panel will display “The imager has difficulty picking up media. Replace cartridge. P166.”

L166 DOUBLE_PICKUP—One double feed has been detected by the multifeed board.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing.

Phone Fix – Operator Correctable

Problem: Double pickup and no pickup

Cause: Films stick together and double feed, or as top sheet is being lifted and fed, the sheet underneath it is pulled forward and mispositioned. This happens most at the beginning of the cartridge. When the next attempt is made to feed a sheet, it will not pickup (the film is too far forward to feed correctly). The situation usually corrects itself on subsequent pickup retries.

Solution:

- Remove the cartridge and try fanning the film.
- Try a new cartridge.

On Site – Technician Correctable

Solution: Refer to paragraph 7-2 for Sensor Troubleshooting Analysis.

1. **Problem:** Some of the early machines had a weaker solenoid that was intermittent in operation.

   Solution: Replace with newer solenoid. (The weaker solenoid had the part # 9532 197388-01).

2. **Problem:** False Double Pickup.

   Cause: Multifeed board is misadjusted.

   Solution: Adjust according to the service manual procedure.

Theory

Refer to paragraph 7-4, Film Sequencing.

7-6-31. EC173: Platen door open

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Exposure cover is open. P173	K215: A cover is open on laser imager X.	None.	ALM,16

Summary

Either the platen door laser interlock or the left door laser interlock is open.

Sequence of Events

The MIB distributes a constant +5V to the Optics Module. In addition, ±17 Volts from the MIB to the optics module is interlocked through the two optics interlocks (platen door and left door laser interlocks) The interlocks provide the ground return path for the Laser Power Relay coil on the MIB.

When the relay coil is energized (both doors closed) the **relay contacts** provide ±17V power to the optics module **and** provide a +17V signal to the SCB which tells the SCB that the optics doors are closed. This signal can be monitored at the service port between the MIB and SCB on pin 58. It should be high (+17V) with both doors closed, and low (LASER INTLK OPEN) with the doors open or the cable disconnected. **LED DS6K3** on the MIB will light (amber color) when +17V is being delivered to the optics and the SCB.

Phone Fix – Operator Correctable

Close the platen door or the left door. Make sure the platen door latch is turned fully clockwise.

On Site – Technician Correctable

Ohm out the optics platen door interlock and the left door laser interlock (top interlock of the two left side door interlocks).

7-6-32. EC176: Supply cartridge could not be opened

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Cartridge could not be opened. Check cartridge. P176	K210: Printer error. Check local panel on laser imager X.	L176 SUPPLY_ COVER_OPEN_ERROR	ALM,30

Summary

The tongue depressor sensor failed to go high during the cartridge lid rollback process, generating the message that the “cartridge could not be opened.”

Sequence of Events

Refer to paragraph 7-4, Film Sequencing.

Phone Fix – Operator Correctable

Check the cartridge for a possible film jam.

On Site – Technician Correctable

1. **Cause:** Tongue depressor arm is bent.

   Solution: Reform arm
2. **Cause:** Transport interlock SW407 is faulty.

   Solution: Repair/replace switch.
3. **Cause:** MIB board has **blown driver U8C1** due to the rollback motor leads rubbing against the frame and shorting to ground.

   Solution: Reposition and repair leads to motor. Replace MIB.

General Troubleshooting Tip

Solenoids: Use *MPC/diag/solenoids* to exercise the solenoid. Refer to paragraph 7-3 for additional information on solenoids.

Sensors: Test proper operation of tongue depressor sensor with *MPC/Diag/SCB/Sensors*. Refer to paragraph 7-2 for Sensor Troubleshooting Analysis.

Motors: Use *MPC/Diag/SCB/Motors* to exercise the rollback motor.

Theory

Refer to paragraph 7-4, Film Sequencing.

7-6-33. EC177: Supply cartridge could not be closed

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Cartridge could not be closed. Opening door will expose XXX sheets. P177 (Toggles with: Press supply button for 5 seconds to open the door. This will expose XXX sheets in the cartridge. P138)	K210: Printer error. Check local panel on laser imager X.	L177 SUPPLY_COVER_ CLOSE_ERROR	ALM,31

Summary

Sequence of Events

Refer to paragraph 7-4, Film Sequencing.

Phone Fix – Operator Correctable

Cause: Film jams.

Solution: Clear jam

On Site – Technician Correctable

1. **Cause:** Tongue depressor arm is bent.

   Solution: Reform arm
2. **Cause:** Transport interlock SW407 is faulty.

   Solution: Repair/replace switch.
3. **Cause:** MIB board has **blown driver <u>U8C1</u>** due to the rollback motor leads rubbing against the frame and shorting to ground.

   Solution: Reposition and repair leads to motor. Replace MIB.

General Troubleshooting Tip

Solenoids: Use *MPC/Diag/SCB/Solenoids* to exercise the solenoid. Refer to paragraph 7-3 for additional information on solenoids.

paragraph 7-2 for Sensor Troubleshooting Analysis.

Motors: Use *MPC/Diag/SCB/Motors* to exercise the rollback motor.

Theory

Refer to paragraph 7-4, Film Sequencing.

7-6-34. EC178: Top cover open

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Top cover is open. P178	K215: A cover is open on laser imager X.	None.	ALM,16

Summary

The top cover of the 8700/8500 is open, thus opening interlock switch SW802.

Sequence of Events

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

Phone Fix – Operator Correctable

Close the top cover.

On Site – Technician Correctable

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-35. EC179: Left side door open

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Close left door. P179	K215: A cover is open on laser imager X.	None.	ALM,16

On Site – Technician Correctable

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-36. EC202/203: Service override switch out (or fail)

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
P202 Override switch is open. P203 Printer malfunction.	None. K202: Laser imager X is not operational.	None. L203 OVERRIDE_ INTERLOCK_FAIL	None ALM,60

Summary

P202 – The service override switch is in the pulled out (electrically closed) position.

P203 – The service override switch is pulsed high and low alternately every 1 second. If the interlock is pulsed high and a low is detected by the SCB, P203 is declared. The SCB shuts down all motors, solenoids, and the local panel for safety reasons. The IMAGER must be power cycled to correct the problem.

Sequence of Events

SCB Sends to Override Interlock	Interlock Feedback and SCB Interpretation of the State	
Hi	Hi = undefined Low = short	
Low	HI = open (normal, non service mode)	Low = closed (service mode)

Note

There is a pull up resistor on the SCB. If the interlock is disconnected, the SCB will be in the normal (non service mode) state.

On Site – Technician Correctable

P202 – Check override switch with ohmmeter.

P203 – Check wiring harness to service interlock for a short to ground.

7-6-37. EC204: Supply door interlock failed

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Printer malfunction. P204	K202: Laser imager X is not operational.	L204 FRONT_INTERLOCK_FAIL	ALM,60

Summary

The cartridge door interlock has failed and the SCB watchdog timer has shut down the SCB.

Sequence of Events

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

On Site – Technician Correctable

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-38. EC205: Top cover interlock failed

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Printer malfunction. P205	K202: Laser imager X is not operational.	L205 TOP_INTERLOCK_FAIL	ALM,60

Summary

The top cover interlock has failed and the SCB watchdog timer has shut down the SCB.

Sequence of Events

The interlock switches in the IMAGER are pulsed both high and low every 1 second for safety reasons. The following chart explains the reasoning:

SCB Sends to Switch	SCB Interpretation of Interlock State	
Hi	Hi = Door closed	Low = Door open
Low	HI = Short	Low = Undefined

On Site – Technician Correctable

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-39. EC206: Left side door interlock failed

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Printer malfunction. P206	K202: Laser imager X is not operational.	L206 LEFT_INTERLOCK_FAIL	ALM,60

Summary

The left side door interlock has failed and the SCB watchdog timer has shut down the SCB.

Sequence of Events

The interlock switches in the IMAGER are pulsed both high and low every 1 second for safety reasons. The following chart explains the reasoning:

SCB Sends to Switch	SCB Interpretation of Interlock State	
Hi	Hi = Door closed	Low = Door open
Low	HI = Short	Low = Undefined

On Site – Technician Correctable

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-40. EC208: Left side door could not be opened

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
The left door has failed to open. P208	None.	L208 LEFT_DOOR_FAIL	None

On Site – Technician Correctable

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-41. EC221: Pickup top sensor failed

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P221	K202: Laser imager X is not operational.	L221 CARTRIDGE_TOP_SENSOR_FAILED	ALM,60

Summary

The pickup top sensor (SW503) has failed to operate during the pickup cycle run during powerup diagnostics.

Sequence of Events

This error code can occur only during the powerup diagnostic that cycles the film pickup assembly.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Use the sensor test screen of MPC to check out the pickup top sensor and the other sensors related to film pickup. It is possible that vibration of the pickup assembly during cycling can cause intermittent operation of the sensors.

7-6-42. EC222: Pickup middle sensor failed

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P222	K202: Laser imager X is not operational.	L222 CARTRIDGE_MIDDLE_SENSOR_FAIL	ALM,60

Summary

The pickup middle sensor (SW504) has failed to operate during the pickup cycle run during powerup diagnostics.

Sequence of Events

This error code can occur only during the powerup diagnostic that cycles the film pickup assembly.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Use the sensor test screen of MPC to check out the pickup middle sensor and the other sensors related to film pickup. It is possible that vibration of the pickup assembly during cycling can cause intermittent operation of the sensors.

7-6-43. EC223: Film present sensor failed

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P223	K202: Laser imager X is not operational.	L223 CARTRIDGE_FILM_SENSOR_FAIL	ALM,60

Summary

The film out sensor (SW502) has failed to operate during the pickup cycle run during powerup diagnostics.

Sequence of Events

This error code can occur only during the powerup diagnostic that cycles the film pickup assembly.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Use the sensor test screen of MPC to check out the film out sensor and the other sensors related to film pickup. It is possible that vibration of the pickup assembly during cycling can cause intermittent operation of the sensors.

7-6-44. EC224: Pickup motor failed

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P224	K202: Laser imager X is not operational.	L224 CARTRIDGE_PICKUP_MOTOR_FAIL	ALM,60

Summary

The pickup motor has failed to operate during the pickup cycle run during powerup diagnostics.

Sequence of Events

This error code can occur only during the powerup diagnostic that cycles the film pickup assembly.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

7-6-45. EC225: Cartridge open sensor failed

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P225	K202: Laser imager X is not operational.	L225 Cartridge Rack Sensor Fail	ALM,60

Summary

The cartridge open (rollback rack) sensor did not change states as expected after the cartridge was opened or closed.

Sequence of Events

Refer to paragraph 7-4-2, Film Sequencing, for the Open Cartridge Lid flowchart.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Problem: MIB board blew chip **U8C1** when opening cartridge.

Cause: Harness to rollback motor is incorrectly mounted, causing the harness to rub on the frame.

Solution: Secure harness away from frame. Replace MIB.

Theory

Refer to paragraph 7-4, Film Sequencing, for flow charts of machine functions during film load and drive.

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-46. EC226: Rollback home sensor failed

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P226	K202: Laser imager X is not operational.	L226 CARTRIDGE_BAR_HOME_ SENSOR_FAIL	ALM,60

Summary

The cartridge rollback bar home sensor is not functioning.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing, for the Load Cartridge Sequence flowchart.

Phone Fix – Operator Correctable

Close the cartridge, open the left side door, and look for any jams near the rollback bar. Try rotating the rollback bar to the home position.

On Site – Technician Correctable

Problem: MIB board blew chip **U8C1** when opening cartridge

Cause: Harness to rollback motor is incorrectly mounted, causing the harness to rub on the frame.

Solution: Secure harness away from frame. Replace MIB.

General Troubleshooting Tip: Monitor the sensor with MPC. Refer to Section 7-2, Sensor/Interlock Trouble Analysis.

Theory

Refer to paragraph 7-4, Film Sequencing.

7-6-47. EC227: Rollback motor failed

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Printer malfunction. P227	K202: Laser imager X is not operational.	L227 CARTRIDGE_ ROLLBACK_MOTOR_ FAIL L226 CARTRIDGE BAR HOME SENSOR FAIL L225 CARTRIDGE RACK SENSOR FAIL	ALM,60

Summary

The rollback motor has failed to operate during the cartridge load process.

Note

Failure of the rollback home sensor or rollback rack sensor will cause the same result.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing, for the Load Cartridge Sequence flowchart.

Phone Fix – Operator Correctable

Close the cartridge, open the left side door, and look for jams, etc. near the rollback bar. Try rotating the rollback bar to the home position (arrow up on the user knob).

On Site – Technician Correctable

Problem: MIB board blew chip **U8C1** when opening cartridge.

Cause: Harness to rollback motor is incorrectly mounted, causing the harness to rub on the frame.

Solution: Secure harness away from frame. Replace MIB.

General Troubleshooting Tip: Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis, and Section 7-3, Motor/Solenoid Trouble Analysis.

Theory

Refer to paragraph 7-4, Film Sequencing, for flow charts of machine functions during film load and drive.

7-6-48. EC228: Tongue depressor sensor failed

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. Make sure transport in area 2 is latched. P228 and Cartridge could not be opened. Replace cartridge. P176 or Cartridge could not be closed. Opening door will expose XXX sheets. P177	K210: Printer error. Check local panel on laser imager X.	L176 SUPPLY_COVER_ OPEN_ERROR or L177 SUPPLY_COVER_ CLOSE_ERROR	ALM,60

Summary

The tongue depressor sensor did not change states properly during cartridge lid opening. As a result, the left door solenoid has been energized to open the door.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing, for the Open Cartridge Lid flowchart.

Phone Fix – Operator Correctable

On Site – Technician Correctable

1. **Cause:** Tongue depressor arm is bent.

   Solution: Reform arm

2. **Cause:** Transport interlock SW407 is faulty.

   Solution: Repair/replace switch.

General Troubleshooting Tip:

- Test proper operation of tongue depressor sensor with *MPC/Diag/SCB/Sensors*.
- Test solenoids with *MPC/Diag/Sol* or use jumper to access solenoids. Refer to paragraph 7-3, Motor/Solenoid Trouble Analysis.

7-6-49. EC229: Supply door could not be opened

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Supply door failed to open. P229	None.	L229 SUPPLY_DOOR_OPEN_FAIL	None.

7-6-50. EC301: HIB parity error

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P301	K202: Laser imager X is not operational.	L301 HIB_VERSION_ERROR	ALM,60

7-6-51. EC302: HIB register read/write failed

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P302	K202: Laser imager X is not operational.	L302 HIB_REGISTER_FAIL	ALM,60

7-6-52. EC303: HIB lookup table memory failed

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P303	K202: Laser imager X is not operational.	L303 HIB_MEMORY_FAIL	ALM,60

7-6-53. EC501: Processor drum could not be moved

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. Lift top cover to reset processor. P501	K202: Laser imager X is not operational.	L501 PROCESSOR_DRUM_FAIL	ALM,17

Summary

If the SCB did not detect the drum turning within about the last 4 seconds, *EC 501 Drum could not be moved* is declared.

- Power is removed from the processor motor.
- The operator must open and close the top cover to clear the error.

Sequence of Events

1. The Processor Motor is enabled.

   At power up, a 24VDC pulsating signal is applied to the processor motor. MIB Test points for the motor will show this signal during normal operation.
2. The Processor Communication Board transmits and receives REFLECT (rotation) light.

Phone Fix – Operator Correctable

On Site – Technician Correctable

1. **Problem:** The clear plastic lens cap on DS4 on the PCB (Processor Communication Board) emitter/collector has come off.

   Solution: Replace the lens cap on photointerrupter (DS4) or order a new PCB. To replace the lens cap, order a new photointerrupter, remove its cap, and install it on the original photointerrupter (DS4). Do not remove the original photointerrupter from the PCB and solder on the new one.
2. **Problem:** The reflective plate on the RPB is dirty or deformed.

   Solution: Inspect the reflective plate.

7-6-54. EC506: No communication from processor

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. Lift top cover to reset processor. P506	K202: Laser imager X is not operational.	L506 PROCESSOR_COMM_ERROR	ALM,17

Summary

If the SCB does not receive communication from the drum Rotating Processor Board (RPB) after 10 attempts, **EC506 Processor Communication error** is generated by the SCB. The operator is instructed to open and close the top cover to clear the error.

Phone Fix – Operator Correctable

1. Lift and lower top cover to clear.
2. Power cycle the machine.

On Site – Technician Correctable

Problem: Error Code 506 – Processor Communications have failed after 10ten attempts.

Solution: The following checks should be made prior to changing any parts.

1. **60 Hz Phasing** - Pull out the processor to its extended position and move the Processor Communications Board out of the way. Refer to Figure 7-21. Using a dual trace oscilloscope, connect channel 1 to pin 7 of U8K1 on the System Control Board (SCB). Connect channel 2 to pin 8 of U3 on the Rotating Processor Board (RPB).

   Caution

   Energizing K801 will apply 117 VAC to the slip rings of the RPB.

   Energize K801 by shorting the side of R4J8 that is connected to pin 20 of CN1308 to ground on the Machine Interface Board (MIB). The signals on channel 1 & 2 should be out of phase.

   If the signals are not out of phase, the wiring to the RPB is out of phase.

2. **Slip Ring/Brush** - Check that the slip rings and brushes are properly aligned (see paragraph 3-11). There should be no signs of arcing. Arcing will cause an interruption in the power to the RPB. The brush holder mounting holes are slotted so the holder could be cocked with respect to the slip rings. Adjust or replace as necessary. Note that the holder is mounted with two screws and is longer on one end. Adjust as shown in Figure 7-22. (If assembled incorrectly, the brushes touch the slip ring only with one corner.)

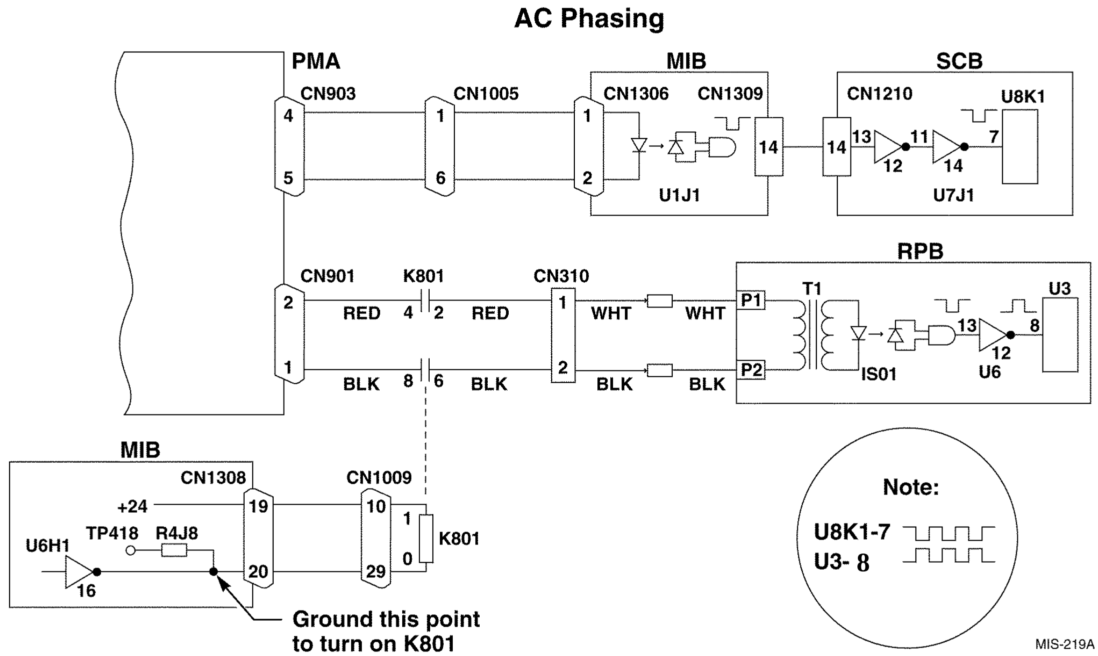


Figure 7-21. Checking 60 Hz Phasing

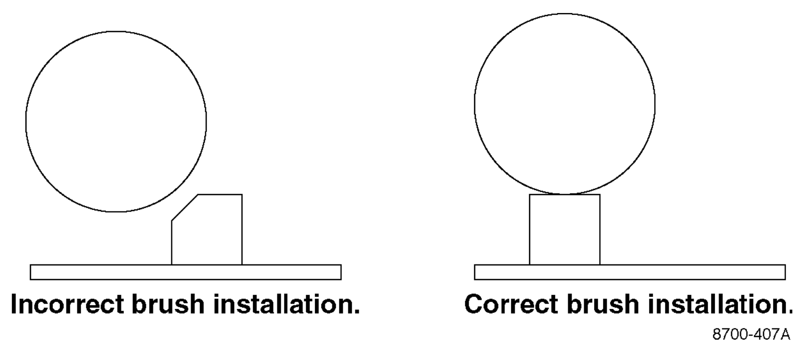


Figure 7-22. Slip Ring/Brush Alignment

7-6-55. EC507: Processor returning bad data

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P507	K202: Laser imager X is not operational.	L507 PROCESSOR_INV_ TEMP_DATA	ALM,17

Summary

If after transmitting a request for status from the Rotating Processor Board (RPB), the SCB receives a response, but the data is invalid (parity errors or corrupted data) or the reported drum temperature is outside the specified 50° to 300° F range, the SCB generates the following message: "**EC507 Processor returning bad data**." The operator is instructed to open and close the top cover to clear the error.

Phone Fix – Operator Correctable

Open and then close the top cover to clear the error.

On Site – Technician Correctable

Cause: Drum temperature is less than 50 degrees F due to storage in a cold room.

Solution: Allow drum to acclimate to room temperature.

7-6-56. EC509: Processor failed to warm up in allotted time

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P509	K202: Laser imager X is not operational.	L509 PROCESSOR_WARMUP_FAIL	ALM,17

Summary

If the drum temperature is below **122.25°C**, **P511 Processor warming , xx minutes until ready** is displayed. If the processor does not warm up in the time calculated by the SCB (and displayed on the local panel), **EC509 Processor failed to warm up in allotted time** is generated. The top cover must be lifted to clear this error.

Phone Fix – Operator Correctable

On Site – Technician Correctable

1. **Problem:** EC 552 or EC 553. Slow warm up/drum heater fail.

   Cause: Heater fuse is blown. The current fuses are known to have about a 3 to 4 year life before they fail due to age. A new style fuse is being redesigned.

Note

Some of the early IMAGER's did not have the connection clip soldered to the fuse leads. This created a poor connection with resultant premature failure of the fuses.

   Solution: If a fuse has failed due to age, replace all three fuses. Refer to Service Manual disassembly section. Solder connection clips to the fuse leads using a heat sink to keep the heat away from the fuse.

2. **Problem:** EC 551/552/553. Rotating Processor Boards blowing.

   Cause: Heat sink for transistor is not mounted correctly, causing the transistor to burn out.

   Solution: Order a new RPB, and inspect the new board to ensure that the transistor is sandwiched between the two heat sinks.

7-6-57. EC511: Processor warming

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Please wait XXX minutes for processor to finish warming. P511	K222: Film processor X is not ready. Minutes to ready: TTT.	None.	None.

Summary

If the temperature is below **122.2°C**, **P511 Processor warming, xx minutes until ready** is displayed.

7-6-58. EC522: Bad densitometer

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
			None.

Summary

The densitometer has failed.

Sequence of Events

Phone Fix – Operator Correctable

On Site – Technician Correctable

Replace the densitometer.

7-6-59. EC542: Jam in processor

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Media jam at processor. Lift top cover and remove all media in area 4. P542	K211. Media is jammed in laser imager 1. Check local panel.	L542 Jam in processor interior.	ALM,17

Summary

The media is jammed in the processing drum. The processor entrance sensor came on but the densitometer sensor did not come on.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing, for a description of machine functions as film is driven through the processor.

Phone Fix – Operator Correctable

Clear jam. Make sure the processor cover latches.

Note

All images on the current sheet are erased from memory and will have to be refilmed.

On Site – Technician Correctable

Jam at Drum/Stripper Interface

Jam Position: Film is found jammed right at the interface between the drum and stripper.

Film Description: Leading edge of film “clear d_min line” has a bent or severely **damaged corner**. This results when one corner of the leading edge of the film gets caught behind the stripper or between the drum and stripper. The total length of the film gets crunched (accordion style).

Cause:

1. Film is too aggressively adhering to the drum.
2. Larger than 7 Mil stripper gap as measured at the corners.

Solution:

Properly adjust **stripper gap to .007” ± .001”** using procedure in service manual.

Note

Stripper Adjustment

- As film is fed through the processor, the drum expands slightly over time due to absorption of chemicals from the film. This expansion is only in the film path while the stripper adjusts ride on a part of the drum that does not expand. Because of this, the gap should be checked (and adjusted, if necessary) at every service call.
- The stripper may not be perfectly straight. It is acceptable to have stripper that is closer to the drum at the ends than at the center. The ends are to be .007”+/-.001”. The stripper should always bow away from the drum in the center and not towards the center of the drum. If the film corners strip, the rest of the film will follow. Replace any stripper that is closer to the drum in the center than on the edges.

Jam at Cooling Section Due to Stall-Out

Jam Position: Film is found stopped with leading edge on cooling section (after the stripper, but before the densitometer).

Film Description: Leading edge of film is flat and undamaged. Trailing edge is still on drum and is overdeveloped. A small amount of film wrinkling (accordion style) may occur on the trailing edge, but for the most part the film is undamaged.

Cause: Intermittent toggle of processor entry sensor (SW302). If this switch toggles before it is truly the end of the sheet, the imager thinks the trailing edge has cleared the processor entrance and begins the timing countdown for the leading edge to reach the densitometer sensor (SW301). The leading edge does not reach the densitometer sensor in time, and film stops where it is.

Solution:

1. Verify processor entry sensor “feet” are fully clipped in.
2. Verify processor entrance switch flag is centered in slot, undamaged, and free to move.
3. Verify that entire processor module is pushed back and fully seated in the back/rear of the frame.
4. Verify processor entrance switch and Densitometer switch are working correctly. Refer to QS4-3 Sensors and Interlocks for sensor monitoring information.

Jam at Cooling Section Due to Felt Pad

Jam Position: Film is stopped with leading edge on felt or cooling plate (after stripper, but before densitometer).

Film Description: Leading edge of film, first 4 inches of film, and especially leading edge corners are undamaged. The remaining 13 inches of trailing edge are severely wrinkled (accordion style).

1. **Cause:** Hump in the cooling section felt or failure of the felt to lie flat. This causes the leading edge of the film to “dig” into the felt and jam at the cooling section.

   Solution: Verify the cooling section felt pad is flat and smooth. Try to smooth as required.

2. **Cause:** Processor motor shorted MIB drive board. Refer to 3.5 MIB for driver locations. Wiring harness is rubbing on frame and shorted to ground.

   Solution: Repair wiring harness. Replace MIB.

3. **Cause:** Motor stopped because of shorted driver on MIB. Wiring harness rubbing on frame and shorted to ground.

   Solution: Repair wiring harness. Replace MIB.

4. **Cause:** Developer housing not properly closing. This causes the idler rollers to not fully contact the drum.

   Solution:

   - Ensure that the clam shell rests on the top of the end bearings and still latches. If there is a gap there, the roller springs are compressed to their fullest, inhibiting roller rotation. Or there is interference somewhere else that prevents full contact of the processor rollers.
   - Instruct the user to make sure that the clam shell is latched securely after they have opened it. They should push firmly after the clam shell latches.
   - Lubricate the idle rollers with *Krytox*™ lubricant, 26-1012-1130-3.

7-6-60. EC543: Jam in densitometer

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Media jam at processor area. Lift top cover and remove all media in area 4. P543	K211. Media is jammed in laser imager 1. Check local panel.	L543 Jam at densitometer.	ALM,17

Summary

The media is jammed in the processing module at the densitometer. The densitometer sensor came on but the exit sensor did not.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing, for a description of machine functions as film is driven through the processor.

Phone Fix – Operator Correctable

Clear the jam.

Note

All images on the current sheet are erased from memory and will have to be refilmed.

On Site – Technician Correctable

7-6-61. EC544: Jam at exit

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Media jam near exit. Lift top cover and remove jam in area 5 P544	K211. Media is jammed in laser imager 1. Check local panel.	L544 Jam to Exit	ALM,17

Summary

The media is jammed in the processing module going to the exit assembly. The exit sensor came on but never went off.

Sequence of Events

Refer to paragraph 7-4, Film Sequencing, for a description of machine functions as film is driven through the processor.

Phone Fix – Operator Correctable

Clear jam.

Note

All images on the current sheet are erased from memory and will have to be refilmed.

On Site – Technician Correctable

Cause: Exit switch is sticking in roller. Groove is worn where the switch hits the roller.

Solution: Cut out the area that is worn off to widen the groove.

7-6-62. EC549: Processor filter not present

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Please insert filter. P549	None.	L549 FILTER_WAS_CHANGED	None.

On Site – Technician Correctable

Refer to paragraph 7-2, Sensor/Interlock Trouble Analysis.

7-6-63. EC550: Clean processor and replace filter

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Preventive maintenance and cleaning recommended. Please schedule with service. (See Operator's Guide for details) P550	None.	L550 CHANGE_FILTER	None.

Summary

The filter count in SCB NVRAM has exceeded 10,000 prints.

Phone Fix – Operator Correctable

Place a service call.

On Site – Technician Correctable

Perform PM procedure and replace filter. Refer to Service Manual PM procedure.

7-6-64. EC551, 552, 553: Processor heater 1, 2, 3 failed

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P551,552,553	K202: Laser imager X is not operational.	L551,552,553 PROCESSOR_HEATER1, 2,3 FAIL 551 – zone 1, 552 – zone 2, 553 – zone 3	ALM,17

Summary

The temperatures of one of the three heater zones is not within 70° F of the other two.

Phone Fix – Operator Correctable

On Site – Technician Correctable

1. **Problem:** EC 552 or EC 553. Slow warm up/drum heater fail

   Cause: Heater fuse is blown. The current fuses are known to have about a 3 to 4 year life (or less) before they fail due to age. A new style fuse is being designed.

Note

Some of the early IMAGER's did not have the connection clip soldered to the fuse leads. This created a poor connection with resultant premature failure of the fuses.

Solution: If the fuse opened due to age, replace all three fuses. Refer to the Service Manual disassembly section. Solder connection clips to the fuse leads using a heat sink to keep the heat away from the fuse.

Tech Tip

The reported temperatures from the processor are logged and can be retrieved via *MPC/Log/Printer Log/Processor*.

7-6-65. EC554: Processor over temp

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P554	K202: Laser imager X is not operational.	L554 PROCESSOR_ OVER_TEMP	ALM,17

Summary

If the temperature from any of the three heater zones is reported above 290°F, **EC554 Processor Over Temp** is declared and the SCB turns off power to the heaters. The top cover must be lifted to clear this error.

Sequence of Events

1. The RPB receives a status request from the SCB and calculates the heater temperatures by reading a voltage based on drum thermistor resistance. The three thermistors (green, orange, and blue wire sets) have resistances of about:
   - 1090 ohms at room temperature
   - 1460 ohms at operating temperature
2. If the voltage reading for any of the three heater zones indicates above 290°F, an error message is generated.

Phone Fix – Operator Correctable

Power cycle the IMAGER.

On Site – Technician Correctable

Measure the resistance of the thermistors.

Cause: Drum and RPB assy is bad.

Solution: Replace assy.

Tech Tip

The reported temperatures from the processor are logged and can be retrieved via *MPC/Log/Printer Log/Processor*.

7-6-66. EC561: Invalid densitometer data

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Automatic image quality control malfunction. P561	Automatic image quality control OFF.	L561 DENSITOMETER_ERROR	None.

Summary

The densitometer data is invalid.

Sequence of Events

When the leading edge of the film actuates the densitometer entrance sensor, the SCB turns on the densitometer LED and takes a density reading before the film is in the densitometer aperture path. The SCB uses this information to auto calibrate the densitometer before each sheet. If the values read are not within a reasonable range (i.e., a gain of 1400 through 2000 and an offset greater than 0), the error message is generated.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Adjust the densitometer. Refer to Section 3 for adjustment procedure.

7-6-67. EC601: Invalid power monitor offset

Local Panel Message	HQ Keypad Message	Error Log OM X IM	952 Host alarm
Printer malfunction. P601	K202: Laser imager X is not operational.	L601 INVALID_POWER_ MONITOR_OFFSET	ALM,60

Summary

A beam power monitor reading is taken with no laser beam hitting the BPM board. The value of this reading should be 13 ± 3. (Note: the BPM reading is taken only at power up.)

Error State: If the BPM offset is outside of a 1 through 25 reading, **EC601** Invalid power monitor offset is declared.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

1. **Cause:** Bad BPM board. If the problem persists, replace the board.
2. **Cause:** Bad peak detector circuit on the SCB.

7-6-68. EC602: Invalid power monitor range

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P602	K202: Laser imager X is not operational.	L602 INVALID_ POWER_MONITOR_ RANGE	ALM,60

Summary

Sequence of Events

This value must be within **50 to 70 mw**.

The SCB directs the Optics Module to fire a laser beam of specific intensity when the attenuator is in the wide open position (non attenuating). (The attenuator is a rotating polarizing filter within the Optics Module). The Beam Power Monitor board then reports the results of the intensity of the laser beam back to the SCB, via the **BPWR** signal line.

Error State: If the Maximum Laser Power reading is outside of 50 to 70mw, **EC602** is generated. The laser must be power cycled to clear the error state.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

1. **Problem/Cause:** Optics module bad.

   Solution: Replace the optics module. Make the following checks first:

   - Check the Beam Power Monitor aperture for dust or debris in the chute.
   - Reseat cables to Optics Module, SCB and MIB.

7-6-69. EC603: Invalid optical density range

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P603	K202: Laser imager X is not operational.	L603 INVALID_OPT_DENSITY_RANGE	ALM,60

Summary

If the Attenuator Dynamic range is outside of 80-120 EC603 (invalid Optical Density Range) is declared. The machine must be power cycled to clear the error.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Cause: Bad optics module.

Solution: Replace the optics. Make the following checks first:

1. Check the Beam Power Monitor aperture for dust or debris in the chute.
2. Reseat the cables to the optics module, SCB and MIB.

7-6-70. EC604: Invalid laser dynamic range

Local Panel Message	HQ Keypad Message	Error Log OM X IM	952 Host alarm
Printer malfunction. P604	K202: Laser imager X is not operational.	L604 INVALID_LASER_DYN_RANGE	ALM,60

Summary

If the Laser Dynamic Range is outside of the 200 to 4000 range, EC604 (Invalid Laser Dynamic Range) is declared. The machine must be power cycled to clear the error.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

1. **Cause:** Optics module is bad.

   Solution: Replace the optics. Make the following checks first:

   a. Check the Beam Power Monitor aperture for dust or debris in the chute.

   b. Reseat the cables to the optics module, SCB and MIB.

   c. If the problem remains, replace the optics module.

2. **Cause:** The control cable between SCB and optics has a loose fitting connection at the firewall due to the cable securing screws bottoming out before the cables are fully seated.

   Solution: First, check the control cable to see if the cable is loose and the securing screws are bottomed out. Then shim the screws and sockets as needed to tighten up the two cables.

7-6-71. EC605: Attenuator test failed

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
P605 Printer malfunction.	K202: Laser imager X is not operational.	L605 ATTEN_TEST_FAIL	ALM,60

Summary

The optics module attenuator could not rotate to a position which gives proper output power.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

Problem/Cause: Optics module is bad.

Solution: Replace the optics. Make the following checks first:

1. Check the Beam Power Monitor aperture for dust or debris in the chute.
2. Reseat the cables to the optics module, SCB and MIB.
3. If the problem remains, replace the optics module.

7-6-72. EC620: No film model found

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P620	None.	L620 NO_FILM_MODEL	ALM,57

Summary

The film model for the film in the cartridge could not be found in SCB NVRAM and the default film model was not found in SCB NVRAM.

Phone Fix – Operator Correctable

Power cycle the machine.

On Site – Technician Correctable

7-6-73. EC622: Corrupt film tables

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P622	K202: Laser imager X is not operational.	L622 CORRUPT_FILM_TABLES	ALM,57

Summary

The Transfer Function Tables (TFT's) on the SCB have failed the power up checksum test.

Phone Fix – Operator Correctable

Power Cycle The Machine.

On Site – Technician Correctable

7-6-74. EC623: Bad transfer function

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Printer malfunction. P623	None.	L623 BAD_TRANSFER_FUNCTION	ALM,57

Summary

The TFT's on the SCB have invalid data.

Phone Fix – Operator Correctable

Power cycle the IMAGER.

On Site – Technician Correctable

7-6-75. EC624: Bad densitometer data

Local Panel Message	HQ Keypad Message	Error Log OM X IM	952 Host alarm
AIQC malfunction P624	AIQC off	L624 Bad Densitometer Data	None.

Summary

EC624	Bad Densitometer Data	Dmin of the film is greater than **.3**. (**Note**: this could be caused by film that is past the expiration date, or has been stored at higher than spec temperatures. It could also be caused by a developer temperature that is too high.) Each step of the calibration sheet is not as dark or darker than the previous step (i.e., density is NOT increasing monotonically). (**Note**: this could be due to a fogged calibration sheet)

Phone Fix – Operator Correctable

Try another cartridge. If this fixes the problem, the bad cartridge may be taken to a darkroom and the top 10 sheets removed if fogging is suspected as being the problem.

On Site – Technician Correctable

1. **Problem:** Fogged film.

   Solution: Remove fogged film.

2. **Problem:** Dmin >.3

   Cause: Film has been stored in out of spec temperatures, or is past expiration date, or dev temp is out of spec.

   Solution: Check developer temperatures.

7-6-76. EC625: Bad film contrast

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Automatic image quality control is off. P625	Automatic image quality control OFF.	L625 BAD_FILM_CONTRAST	None.

Summary

EC625	Film Contrast Bad	Contrast of the calibrate sheet is unacceptable. (Densities of the steps in relation to each other are out of spec.)

Phone Fix – Operator Correctable

Cause: Fogged film

Solution: Try another cartridge of film.

On Site – Technician Correctable

Check the densitometer adjustment.

7-6-77. EC631: Film slow

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Automatic image quality control is off. P631	Automatic image quality control OFF.	L631 FILM_SLOW	None.

Summary

EC631	Film Slow	The darkest density of step 26 is not above 3.1 for blue film or 3.0 for clear film.

Phone Fix – Operator Correctable

Try a different cartridge of film or different lot.

On Site – Technician Correctable

- **Compare MPC/AIQC/DlogE densities** to an external densitometer measuring the same calibrate sheet. There may be some differences between the IMAGER and external densitometer readings (light source is a different wavelength), but the differences should remain proportional across the steps. If the IMAGER densitometer readings in MPC are invalid, check the densitometer.
- **Expose a film to room light**, then load it as the top sheet in a cartridge and run a print.
  – If 3.1 or 3.0 density cannot be achieved now, the processor temperature may be low or high.
  – If the processor temperature checks ok, the film is probably bad.
  – If processor temperatures are incorrect, adjust them using MPC. Refer to the service manual adjustment.

7-6-78. EC632: Film fast

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
Automatic image quality control is off. P632	Automatic image quality control OFF.	L632 FILM_FAST	None.

Summary

EC632	Film Fast	The film speed from the calibrate sheet is above 3.4. (Film Speed can be viewed in **MPC/AIQC/Dloge**.)

Phone Fix – Operator Correctable

Try a different cartridge. If this does not fix the problem, try a different lot of film.

Note

Set the density and contrast settings to optimize the image until a technician can arrive. When AIQC is turned off, there is a DENSITY setting displayed on the local panel and at the HQ keypads. (The DENSITY setting is independent of the DMAX setting.)

On Site – Technician Correctable

1. Compare *MPC/AIQC/DlogE* densities to an external densitometer measuring the same calibrate sheet. There may be some differences between IMAGER and external densitometer readings (light source is a different wavelength), but the differences should remain proportional across the steps. If the IMAGER densitometer readings in MPC are invalid, check the densitometer.
2. **Check the processor temperatures.**
   - If processor temperatures are incorrect, adjust them using MPC. Refer to the service manual adjustment.
   - If the temperatures look OK, check the Beam Power Monitor board and ensure that no dust or debris is blocking the beam.

7-6-79. EC633: System near calibration limits (film almost fast)

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
System is operating near calibration limits. P633	None.	L633 FILM_ALMOST_FAST	None.

Summary

EC633	Film Almost Fast	The film speed is between 3.3 and 3.4. This may be a normal condition caused by film variability, but may also be caused by other factors. **Note**: Film speed can be viewed in MPC/AIQC/DlogE.

Phone Fix – Operator Correctable

Try another cartridge or another lot of film.

On Site – Technician Correctable

1. Compare *MPC/AIQC/DlogE* densities to an external densitometer measuring the same calibrate sheet. There may be some differences between IMAGER and external densitometer readings (light source is a different wavelength), but the differences should remain proportional across the steps. If the IMAGER densitometer readings in MPC are invalid, check the densitometer.
2. **Check the processor temperatures.**
   - If processor temperatures are incorrect adjust them using the MPC. Refer to the service manual adjustment.
   - If the temperatures look OK, check the Beam Power Monitor Board and ensure that no dust or debris is blocking the beam.

7-6-80. EC634: System near calibration limits (film almost slow)

Local Panel Message	HQ Keypad Message	Error Log OM X IM	952 Host alarm
System is operating near calibration limits. P634	None.	L634 FILM_ALMOST_SLOW	None.

Summary

EC634.01	Film Almost Slow	The film speed is between 2.6 and 2.7. This may be a normal condition caused by film variability, but may also be caused by other factors. **Note**: film speed can be viewed in MPC/AIQC/DlogE.

Phone Fix – Operator Correctable

Try another cartridge or another lot of film.

On Site – Technician Correctable

1. Compare *MPC/AIQC/DlogE* densities to an external densitometer measuring the same calibrate sheet. There may be some differences between IMAGER and external densitometer readings (light source is a different wavelength), but the differences should remain proportional across the steps. If the IMAGER densitometer readings in MPC are invalid, check the densitometer.
2. **Check the processor temperatures.**
   - If the processor temperatures are incorrect adjust them using MPC. Refer to the service manual adjustment.
   - If the temperatures look OK, check the Beam Power Monitor Board and ensure that no dust or debris is locking the beam.

7-6-81. EC635: Dpatch slow

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
None.	None.	L635 MIDTONE_SLOW	None.

Summary

EC635	Midtone slow	The Dpatch density is outside of control limits.

Sequence of Events

The first Dpatch after a calibrate sheet is targeted to be **1.3**. However, the actual density of the first Dpatch after the calibrate sheet is read and its value becomes the target.

Example: First Dpatch after a cal sheet is 1.1, **1.1** now becomes the target Dpatch density.

On Site – Technician Correctable

Look in the *MPC/Log/Printer Log/Dpatch* and retrieve the Dpatch log. The readings should be consistent.

Note

Density test and contrast test Dpatches are not logged.

1. **Cause:** Some of the densitometers have a bent mounting bracket that causes the timing of the Dpatch reading to be off.

   Solution: Readjust the bracket to ~90 degrees.

2. **Problem (8800 only)** Actual Dpatches are not normal (1.0 to 1.4), but Printer Log/Dpatch shows very low densities (.45 tp .70).

   Cause: Dmax is set to 3.2.

   Solution: Set to 3.1. Software update 4.2 will fix this problem.

3. **Cause:** Dpatch is not 7 + or – 1mm from the top edge of the film.

   Solution: Check the registration of the film in the optics platen. If the film is being positioned correctly, adjust the position of the Dpatch by adjusting the Optics Module offset. Refer to the optics offset adjustment in the Service Manual.

   Compare *MPC/Log/Printer log/Dpatch recorded densities* to an external densitometer measurement of the Dpatch. There may be some differences between IMAGER and external densitometer readings (light source is a different wavelength), but the differences should remain proportional. If the IMAGER Dpatch readings in the MPC are invalid, check the densitometer.

7-6-82. EC636: Dpatch fast

Local Panel Message	HQ Keypad Message	Error Log OMX IM	952 Host alarm
None.	None.	L635 MIDTONE_FAST	None.

Summary

EC636	Midtone Fast	The Dpatch density is outside of control limits.

Sequence of Events

The first Dpatch after a calibrate sheet is targeted to be **1.3**. However, the actual density of the first Dpatch after the calibrate sheet is read and its value becomes the target.

Example: First Dpatch after a cal sheet is 1.1. Thus **1.1** now becomes the target Dpatch density.

On Site – Technician Correctable

Look in the *MPC/Log/Printer Log/Dpatch* and retrieve the Dpatch log. The readings should be consistent.

Note

Density test and contrast test Dpatches are not logged.

1. **Problem/Cause:** Some of the densitometers have a bent mounting bracket that causes the timing of the Dpatch reading to be off.

   Solution: Readjust the bracket to about 90 degrees.
2. **Problem (8800 only):** Actual Dpatches are normal (1.0 to 1.4), but the Printer Log/Dpatch shows very low densities (.45 to .70).

   Cause: Dmax is set to 3.2.

   Solution: Set Dmax to 3.1. Software update 4.2 will fix this problem.
3. **Problem/Cause:** Dpatch is not **7 ±1mm** from the top edge of the film.

   Solution: Check the registration of the film in the optics platen. If the film is being positioned correctly, adjust the position of the Dpatch by adjusting the optics module offset. Refer to the optics offset adjustment in the Service Manual.

   Compare *MPC/Log/Printer Log/Dpatch recorded densites* **to an** external densitometer measurement of Dpatch. There may be some differences between IMAGER and external densitometer readings (light source is a different wavelength), but the differences should remain proportional. If the IMAGER Dpatch readings in MPC are invalid, check the densitometer.

7-6-83. EC910: Printer Malfunction

Local Panel Message	HQ Keypad Message	Error Log OM IM	952 Host alarm
Printer malfunction P910.	The laser imager is not communicating.		ALM,60

Summary

EC910		

8700/8500 System

Symptom 1: IPB is not communicating to SCB, keypads, or MPC

Symptom 2: IPB is communicating to keypads and MPC, but is not communicating to SCB

8800 System

8800 to 8700/8500 Troubleshooting

8800 to 8700/8500 Schematic

SCB RX Data LED Troubleshooting

EC910 Overview

- If the SCB has not received a command from the IPB within the last 45 seconds, it declares EC910 on the local panel.

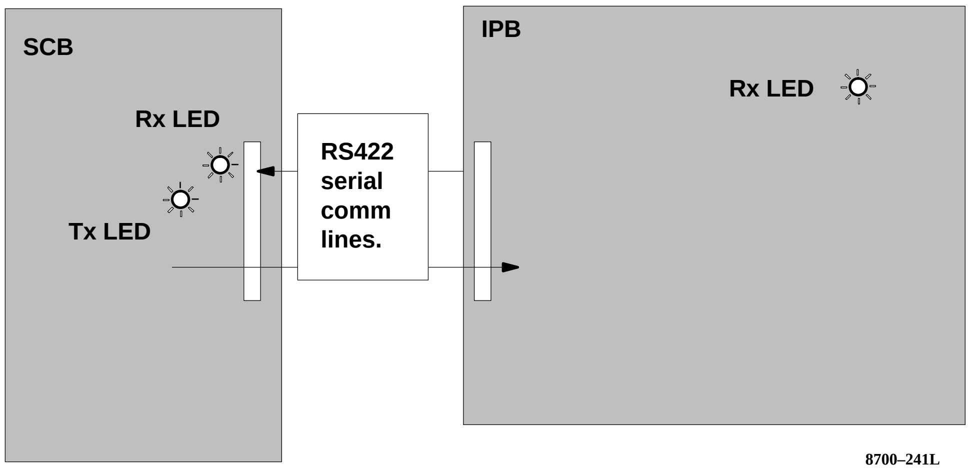
Note

The IPB always requests data, and the SCB responds. The SCB never initiates communication.

- EC910 does not show up in the error log. The error log is an IPB function and since communication is not working between the SCB and IPB, the IPB never receives the error.

IPB to SCB Communications Overview

EC910 Schematic



IPB Troubleshooting

1. **Symptom: IPB cannot communicate with keypads, MPC or SCB.**

   Solution:

   a. Press the reset button on the IPB. If this clears the problem, try to determine what preceded the IPB lockup. If this does not fix the problem, continue with b.

   b. Reconfigure the IPB to factory defaults by holding down RESET and CONFIG buttons. Then release RESET while continuing to hold CONFIG for 15 seconds. (This resets IPB/SCB comm parameters and MPC comm parameters. If this does not fix the problem, continue with c.

   c. Perform the following steps:

      1). Connect only the power cable and the SCB cable (CN1102 - 10 pin multi-colored cable). Then remove all other cables and boards. Does EC910 go away?

      2). Connect only the power cable and the MPC cable (CN1101 - upper left flat ribbon cable). Then remove all other cables and boards. Can you connect to the MPC? (Be sure *MPC/Operations/Preferences* is set to Com 1, 19200 baud.)

      3). Connect only the power cable and the TDB (remove all other cables and boards). Do the keypads communicate?

      4). If only one component is locking up the IPB, troubleshoot that component.

   d. If the IPB cannot communicate with the SCB, MPC, or keypads, after all of the above checks are performed, check the power supply to the IPB. If the power looks okay, the IPB is bad.

Note

If the Xilinx Eprom (U99) on the IPB is bad it will cause the IPB to fail it's self test with DS2 (red) remaining lit after a reset. If you have an extra Xilinx chip, you can try this first, otherwise just replace the IPB board.

2. **Symptom: IPB can communicate with MPC or keypads, but is not communicating with the SCB.**

   Solution: Reconfigure the IPB by holding the RESET and CONFIG buttons. Then release RESET while continuing to hold down CONF for 15 seconds. This resets IPB/SCB parameters and MPC comm parameters.

Troubleshooting - 8800 MULTI-INPUT MANAGER to 8700/8500 IMAGER

- If the SCB has not received a command from the 8800 MULTI-INPUT MANAGER within the last 45 seconds, it declares EC910 on the local panel.

Note

The 8800 always requests data, and the SCB responds. The SCB never initiates communication.

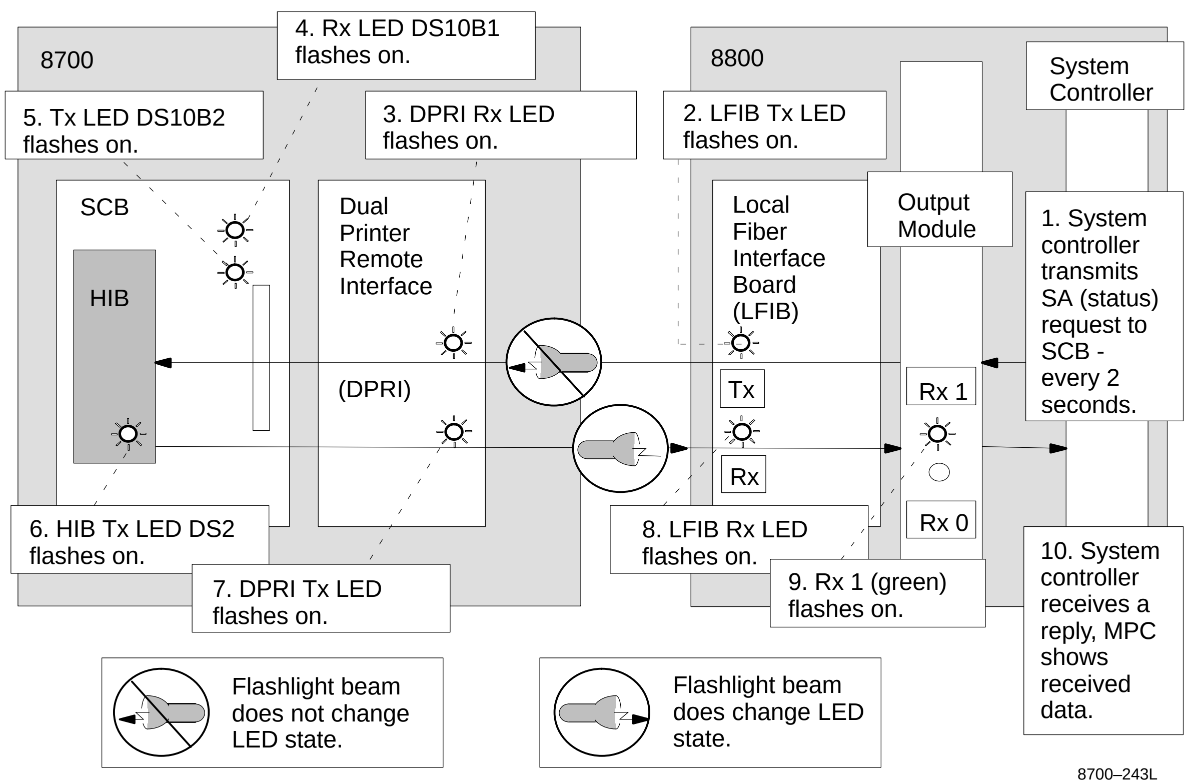
- EC910 does not show up in the error log. The error log is an 8800 function and since communication is not working between the SCB of the 8700/8500 IMAGER and the 8800, the 8800 never receives the error.
- Check or change the *MPC/Output module/Comm 1 config* and comm setups as follows:
  a. First set the Config to “8700/8500 printer” and save it.
  b. Then set the Comm parameters to default via the PRINTER button and save.
  c. The laser must be power cycled for any changes to take effect.

Note

Communication parameters between 8800 and 8700/8500 IMAGER are 19200, 7-e-1, EOM None, Protocol Packet, Char pacing 0.

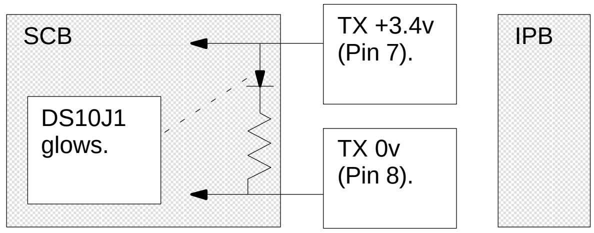
- If reconfiguring the Output Module does not fix the problem, refer to the following schematic diagram.

Schematic - 8800 MULTI-INPUT MANAGER to 8700/8500 IMAGER



- Use the LED’s to determine where the communication is failing.
- Use the 8800 loopback test to verify data integrity from the output module.
- Swapout between 969 IMAGER and 8700/8500 IMAGER: The DPRI in the 8700/8500 IMAGER and the DPEIB in the 969 IMAGER have interchangeable boards.

SCB RX Data LED Troubleshooting



8700–244L

Is the SCB receiving data from the IPB?

This is not an easy question to answer for the following reason. As the IPB sends data, the transmit lines will toggle polarity, in theory this causes the DS10J1 to turn off momentarily. The occurs so fast that the off condition of DS10J1 cannot be detected visually.

Complete the following steps to determine if the SCB is receiving data from the IPB:

1. Using MPC, set the baud rate to 2400 (MPC/Setup/Output module Comm 0).
2. Reset the IPB by pressing the reset button. On power up, the IPB tries to communicate with the SCB at 2400 baud. This is an invalid baud rate and the SCB cannot decipher the IPB data at this baud rate. However it will cause the DS10J1 LED to flash off when the data is received from the IPB.

   If the SCB is receiving data, the DS10J1 flashes every 10 seconds (a series of 9 flashes followed by 10 seconds with the LED on).
3. Set the parameters back to default and reset the IPB. MPC/Setup/Output Module Comm 0/Comm).

7-6-84. EC913: HIB parity error

Local Panel Message	HQ Keypad Message	Error Log Message ☐ Input Log ■ Output Log	952 Alarm
Printer malfunction. P913	K202: Laser imager X is not operational.	L913 HIB_PARITY_ERROR	ALM,60

7-7. General System Process Problems

7-7-1. SCB Power Up/ Not Ready

Problem Description	Cause	Problem Isolation Procedure
Local panel displays 2 minutes for warm-up, but it is taking longer.	Optics not up to temperature.	Refer to EC123.
SCB local panel and SCB segment display are blank even though there is power to the SCB (+5v, ±17V LED's lit on the SCB.	One of the interlock feedback circuits to the SCB is bad.	
SCB local panel and SCB segment display is blank, and one of the SCB power indicator LED's is blank.	Blown fuse on the MIB.	Check fuses on MIB.
MIB board failed.	A driver on the MIB shorted.	Look up error in error log.
Objectionable odor from machine.	Filter needs changing.	Change filter.
Objectionable odor from film.	Poor ventilation in viewing room. *DryView* LASER IMAGING FILM stored in vinyl jackets.	Increase site ventilation. If possible, store film in paper jacket.
The IMAGER worked for about 45 minutes and then died. It would start up later and run for a period then die again.	Power module fan being stopped due to edging grommet material contacting the fan blade.	Repair loose grommet material.

7-7-2. Image Acquisition

Problem Description	Cause	Problem Isolation Procedure
Acquire light won't stop flashing.	The user is in color blind mode.	From the main keypad menu select KEYPAD MENU, COLOR BLIND MODE OFF
For all other acquire problems, refer to one of the following quick sheets: 39, 59, 64, 66, 67, 68		

7-7-3. Film Transport

Problem Description	Area	Problem Isolation Procedure
Cartridge will not insert fully, or **Insert Cartridge** displayed even though the cartridge is installed.		Refer to EC132.
Cartridge will not open.		Refer to EC176.
Cartridge will not close.		Refer to EC177.
Film will not pickup, or jams at cartridge area.	Area 1	Refer to EC166, EC161.
Jam in transport.	Area 2a.	Refer to EC163.
Jam in transport.	Area 2b.	Refer to EC165.
Jam in the exposure platen.	Area 3.	Refer to EC164.
Jam in the processor (or at entrance to processor).	Area 4.	Refer to EC542.
Jam in densitometer.	Area 4.	Refer to EC543.
Jam at exit.	Area 5.	Refer to EC544.

7-7-4. Print Queue

- Image queues but fails to print
- Prints wrong number of copies
- Prints to wrong printer
- etc.

Problem Description	Cause	Problem Isolation Procedure
Images acquire, but fail to print (8800).	1. Wrong destination set by user. 2. Wrong printer type in MPC. EC910 will display on local panel. 3. Unprintable character in the MPC/IMS/System/User ID field	1. Set destination at the remote or local keypad or using *IMS/Input/System/Destination*. 2. Set printer type using *MPC/IMS/Output/Config* (and Comm). 3. Make sure that only the letters A-Z and numbers 1-9 are in the field.
Images acquire, but fail to print.	DZO from host is failing. Monitor communications using MPC to determine if this is the case.	Set *MPC/Setup/IMS/Host/Pixel Correction* to No.
Siemens with SHPT keypad. First copy prints, but second copy fails.		Set SHPT keypad to AUTOFORMAT OFF.
Partially imaged page.		
Contrast test does not print.	Image size it too large.	IMAGER cannot print a contrast test when the image lines are greater than 1024. Go to *MPC/Image/Show* to view image size from host.
Contrast test from a host user prints the IMAGER internal SMPTE pattern.	Time from acquire pass to the image being erased is shorter than the time it takes to generate a contrast test.	Open the supply cartridge and have the host acquire and print an image. Initiate a contrast test and wait 2 minutes. Close the cartridge. Both the users should print and the contrast test should exit.

7-7-5. Processor

Problem Description	Cause	Problem Isolation Procedure
Squeaking	1. Drum idler rollers. 2. Stripper idler rollers. 3. Exit idler rollers.	Lubricate the drum idler rollers, stripper rollers, and exit idler rollers with Krytox™ lubricant.
Black buildup on the drum idler rollers.	Idler rollers are not turning.	Lubricate with Krytox oil.
Black buildup on the drum rollers. and drum surface is forming into a black powder and migrating to the film and elsewhere. Initial symptoms are a white haze on the drum.	Stripper is too close to the drum. Aluminum from stripper is getting onto drum and rollers and creating a sandpaper effect. Idler rollers may need lubrication.	Adjust the stripper gap. (Refer to procedure 3-2.) Lubricate with Krytox.

7-7-6. AIQC

Problem Description	Cause	Problem Isolation Procedure
Dpatch log is showing incorrect values.		Refer to EC635 Dpatch slow or EC636 Dpatch fast.
For all other AIQC problems, refer to any of the following quick sheets: 624, 631, 632, 633, 634, 635, 636.		

7-8. Host Keypad Communications Trouble Analysis

7-8-1. Compact Keypad

Problem Description	Cause	Problem Isolation Procedure
Keypad is dead.	TDB is not supplying +12V to the compact keypad.	Set SW2 to right most position to supply +12V to compact keypad. Check and/or replace the +12V fuse on the TDB.

7-8-2. Touch-Screen Keypad

Problem Description	Cause	Problem Isolation Procedure
Acquire light won't stop flashing.	The user is in color blind mode.	From the main keypad menu, select KEYPAD MENU...COLOR BLIND MODE OFF.
Keypad and touch screen don't respond.	One of the mechanical switches is stuck down.	Press the key to free it up.
Need to access the keypad service screen.		Press the PRINT, ERASE, and the SEQUENTIAL ACQUIRE (large bottom key) keys simultaneously.
Keypad says **Not communicating with laser** while you are connected with MPC.	This is normal if you are in the EIB screen and have attempted an acquire or attempted the Gain/black level procedure.	Select the IMS button. The TDB will reset and about ten seconds later the keypad should communicate.

7-8-3. Local Panel of 8800 MULTI-INPUT MANAGER

Problem Description	Cause	Problem Isolation Procedure
Parameter settings on the 8800 local panel do not take effect.		The SET button must be pressed after making changes to the parameter settings. Also, the correct USER must be selected.
The 8800 local panel does not respond.	The service switch inside the front panel set to MPC.	Throw the switch to the LOCAL Keypad position.

7-9. MPC Trouble Analysis

Problem Description	Cause	Problem Isolation Procedure
Cannot connect with the MPC	1. 8800 – Set the service switch to the MPC position. MPC baud rate and IMAGER or 8800 baud rate do not match.	1. Try Setting *MPC/Operations/ Preferences Direct* connect to other baud rates.
	2. IPB MPC port is locked up.	2. Power cycle the IMAGER or 8800.
	3. IPB to MPC communication parameters are invalid.	3. Reconfigure the IPB. To do this, press and hold RESET and CONFIG. Then release RESET and hold CONFIG until the TDB red LED goes out. This reconfigures the MPC Comm parameters and the IPB to SCB comm parameters to defaults.
Gain/Black Level Adjustment		
1. Video Gain/Black Level RETRIEVE image procedure takes longer than normal; one to two minutes for a 512 x 512 image.	1. The A drive was last used, and the retrieved image is being sent to it by MPC.	1. Reselect the C: drive using MPC.
2. The Gain/Black level numbers (0 and 512) do not change or do not appear to be working correctly.	2. Images are in memory for the user.	2. Delete the images in memory using MPC/Image/Delete. Delete only the user images with the problems.
8800 Tip: MPC monitor program continues to display on your PC even when the service switch is set to local keypad.		

7-10. Image Quality Trouble Analysis

General Image Quality Troubleshooting Tips

- Lower the Dmax to minimum from the local panel or keypad. This will make some image quality problems more obvious.
- Make the following checks to see if the problem is confined to one user:
  - Is the density test okay, but the user image not okay?
  - Does the problem affect only one user?
  - Is the problem in the image area only, and not the border?
  - If only one user is having problems, troubleshoot the interfaces and check the MPC parameters for that user.

7-11. RF Tag Subsystem Trouble Analysis

This procedure uses MPC to isolate suspected problems in the RF Tag Subsystem. The MPC procedure consists of a series of three commands:

- *show emul* – This command requests a read of the emulsion number on the RF tag. If the test passes, assume that the RF Tag subsystem is functional. The other two tests are unnecessary. If the test fails, proceed with the other tests to isolate the problem.
- *show rfintf* – This command requests a read of the firmware version of the RF Tag Interface Board. If it passes, you can assume that the SCB can communicate with the RF Tag Interface Board. If it fails, the RF Tag Interface Board is faulty, or there is a bad cable connection.
- *show rfreader* – This command requests a read of the version number of the RF Reader Board. If it passes, you can assume that the RF Tag Interface Board can communicate with the RF Reader Board. If it fails, the RF Reader Board is faulty (assuming that the RF Tag Interface Board passed the preceding test).

Preliminary Procedure

1. Close the cartridge, remove system power, and remove the front panel.
2. Check the cable connections to the Distribution Board in the Rollback Module. Then replace the front panel.
3. Connect MPC to the IMAGER, turn on MPC, and start the MPC for *Windows* program.
4. Apply power to the IMAGER.

Running the “Show Emulsion” Test

1. Replace the film cartridge in the IMAGER with a different RF Tag cartridge.
2. In MPC, select *SCP*/*Operations*/*Diagnostics* and press the *CMD* button.
3. In the Command window, type **show emul**
   The response should be in the following format: **SHOW Y EMUL = 022845-042-B-012**.

   (The number is the film identifier read from the RF tag. This response indicates that the RF Tag Subsystem is working correctly.)
4. Install the original film cartridge in the IMAGER.

Running the “RF Interface” Test

In the MPC Command window, type **show rfintf**
The response should be in the following format: **SHOW Y INTF = 0.12**.

(The number is the firmware level of the RF Tag Interface Board. This response indicates that the RF Tag Interface Board is functional.)

Running the “RF Reader” Test

In the MPC Command window, type **show rfreader**
The response should be in the following format: **SHOW Y RFREADER = 263**.

(The number identifies the version number of the RF Reader Board. This response indicates that the SCB can communicate through the RF Tag Interface Board with the RF Reader Board.)

Section 8 – Illustrated Parts Breakdown

8-1. Illustrated Parts Breakdown (IPB)

This Illustrated Parts Breakdown (IPB) section contains the information necessary to locate and identify assemblies, sub-assemblies, and specific parts of the *Kodak DryView* 8700/8500 LASER IMAGER.

Part Numbers

All components available on a replacement basis are listed with their identification number. The parts identification list opposite each illustration provides the description adequate to identify components. If the component is available only as part of the next higher assembly, the description column provides the next higher assembly description or identification number.

Locating and Identifying a Part

If physical appearance and general location of an item are known, refer to the view for the assembly or sub-assembly and locate the item on the exploded view. If machine serial numbers determine a component, the part ID numbers in this manual are from the most current data available. Make sure part ID numbers for your component have not been amended by changes and updates made to your machine. Verify the serial number of your laser imager on the serial plate located inside the left door.

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Figure 8-1. Machine and Skins Assembly (Screen 1 of 2)

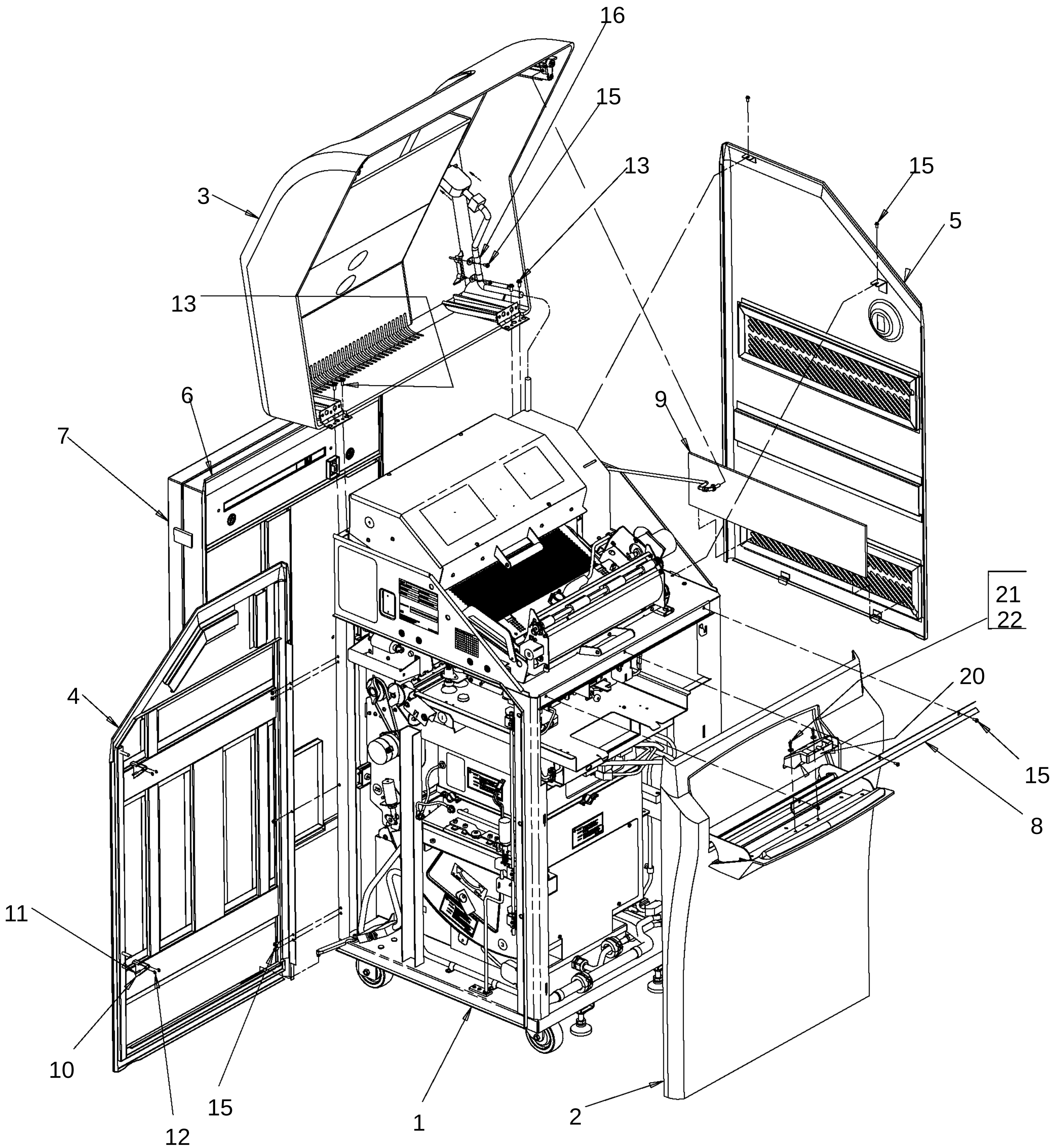

Figure 8-1. Machine and Skins assembly (Screen 2 of 2)

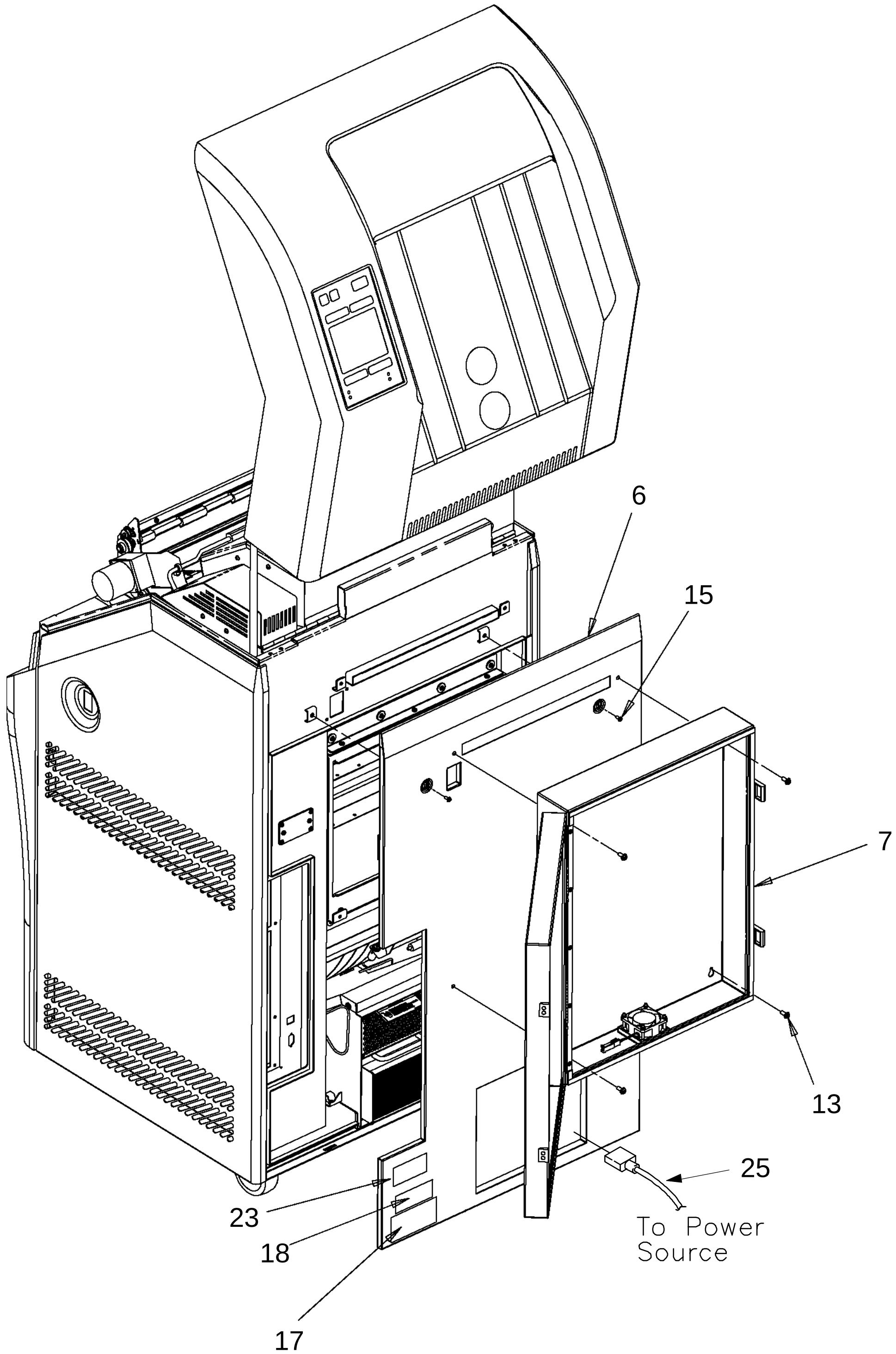

Figure 8-1. Machine and Skins Assembly

Item No.	Part Number	Description	Qty
0	Not Available	MACHINE AND SKINS ASSEMBLY	1
1A	Not Available	MACHINE ASSEMBLY, Standalone (See Figure 8-2)	1
1B	Not Available	MACHINE ASSEMBLY, Dual (See Figure 8-2)	1
2A	78-8094-5713-4	FRONT PANEL ASSEMBLY (Kodak and OEM except GE) (See Figure 8-4)	1
2B	78-8094-9031-7	FRONT PANEL ASSEMBLY (GE only) (See Figure 8-4)	1
3A	78-8094-5339-8	HOOD ASSEMBLY (Kodak) (See Figure 8-3)	1
3B	78-8094-9024-2	HOOD ASSEMBLY (GE) (See Figure 8-3)	1
3C	78-8094-9025-9	HOOD ASSEMBLY (OEM except GE) (See Figure 8-3)	1
4A	78-8092-4073-8	PANEL, Access (Kodak and OEM except GE)	1
4B	78-8094-9041-6	PANEL, Access (GE only)	1
5A	78-8092-4071-2	PANEL, Right (Kodak and OEM except GE)	1
5B	78-8094-9043-2	PANEL, Right (GE only)	1
6A	78-8092-4072-0	PANEL, Rear (Kodak and OEM except GE)	1
6B	78-8094-9045-7	PANEL, Rear (GE only)	1
7A	78-8094-5811-6	FILTER HOUSING ASSEMBLY (Kodak and OEM except GE) (See Figure 8-6)	1
7B	78-8094-9035-8	FILTER HOUSING ASSEMBLY (GE only) (See Figure 8-6)	1
8	78-8095-9538-8	PLATE, Locking	1
9	78-8094-5979-1	FILTER, Air, Right Side Panel	1
10	26-1006-7882-5	BEARING, .1265 ID X .1895 OD X.312	2
11	78-8094-5837-1	SHAFT, Lock	2
12	78-8656-4000-3	RING, Retaining, External, E-Ring	4
13	26-1003-7123-1	SCREW, Mach, Pan Head, Phil, Metric, M5 X 0.8 X 10.0	8
15	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0	14
16	Not Available	CLAMP, Cable,	2
17	Not Available	DECAL, Laser, CLI (International)	1
18	Not Available	LABEL, Warning, (DISCONNECT POWER)	1
19	Not Used		1
20	78-8094-5913-0	BRACKET, Catch, FD	1
21	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0	2
22	26-1008-9102-2	WASHER, Metric, Plain, M4	2
23	Not Available	LABEL, Agency Statements	1
24	26-1011-6809-9	WASHER, Lock, Metric, External Tooth, Stl, Blk, Zinc (Not Shown)	1
25	78-8094-5518-7	MAIN POWER CORD	1

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Figure 8-2. Machine Assembly (Screen 1 of 12)

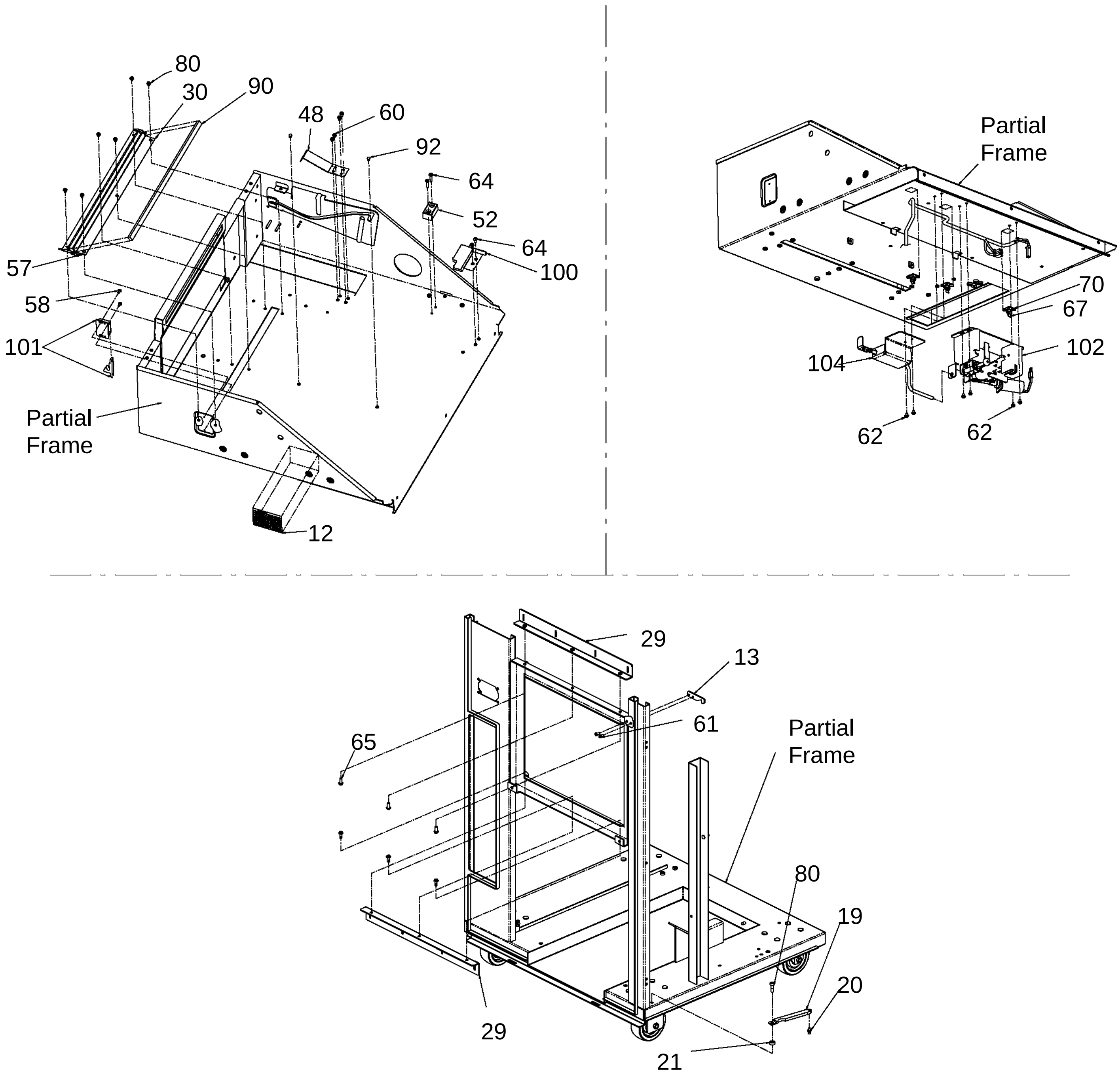


Figure 8-2. Machine Assembly (Screen 2 of 12)

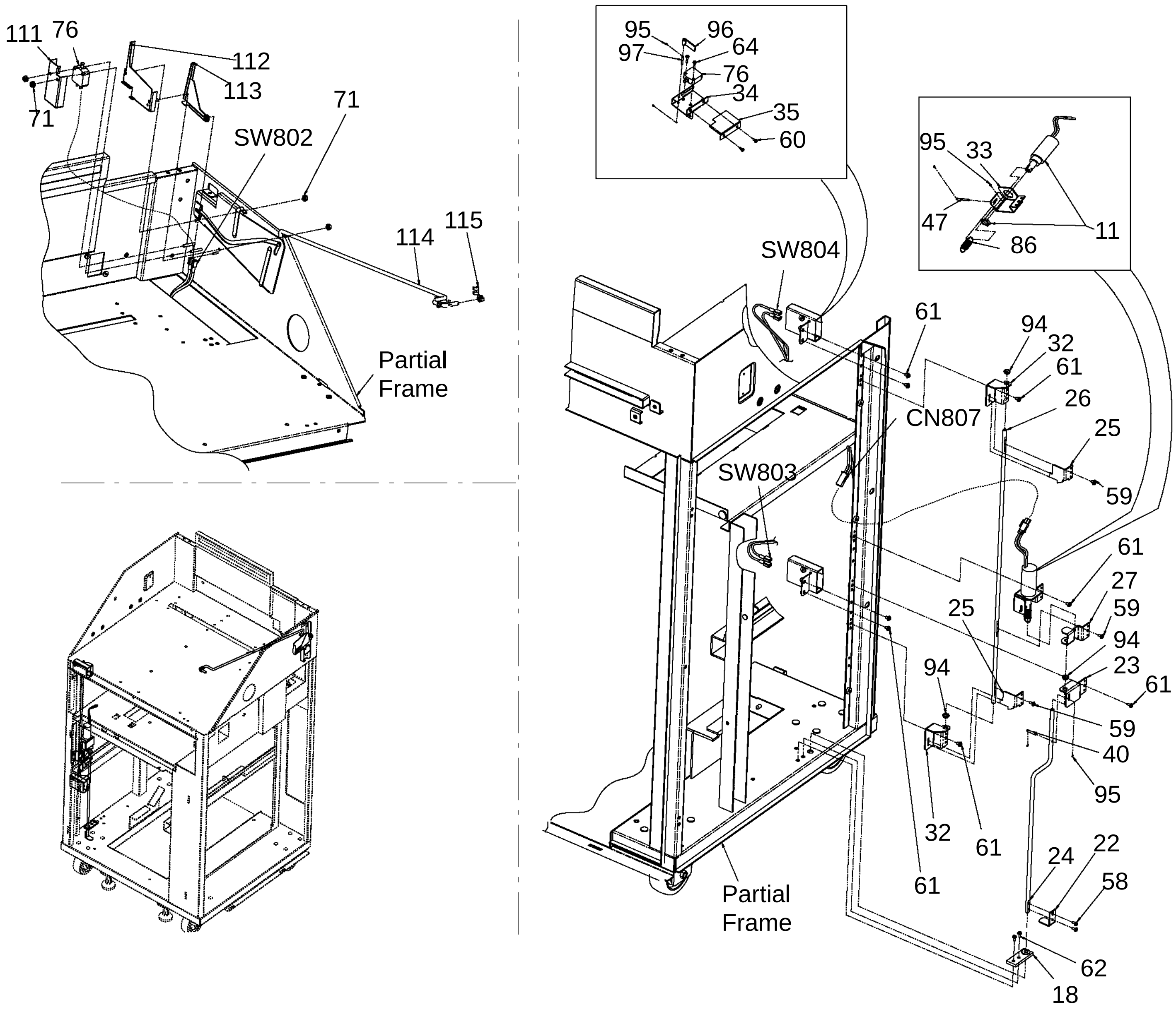


Figure 8-2. Machine Assembly (Screen 3 of 12)

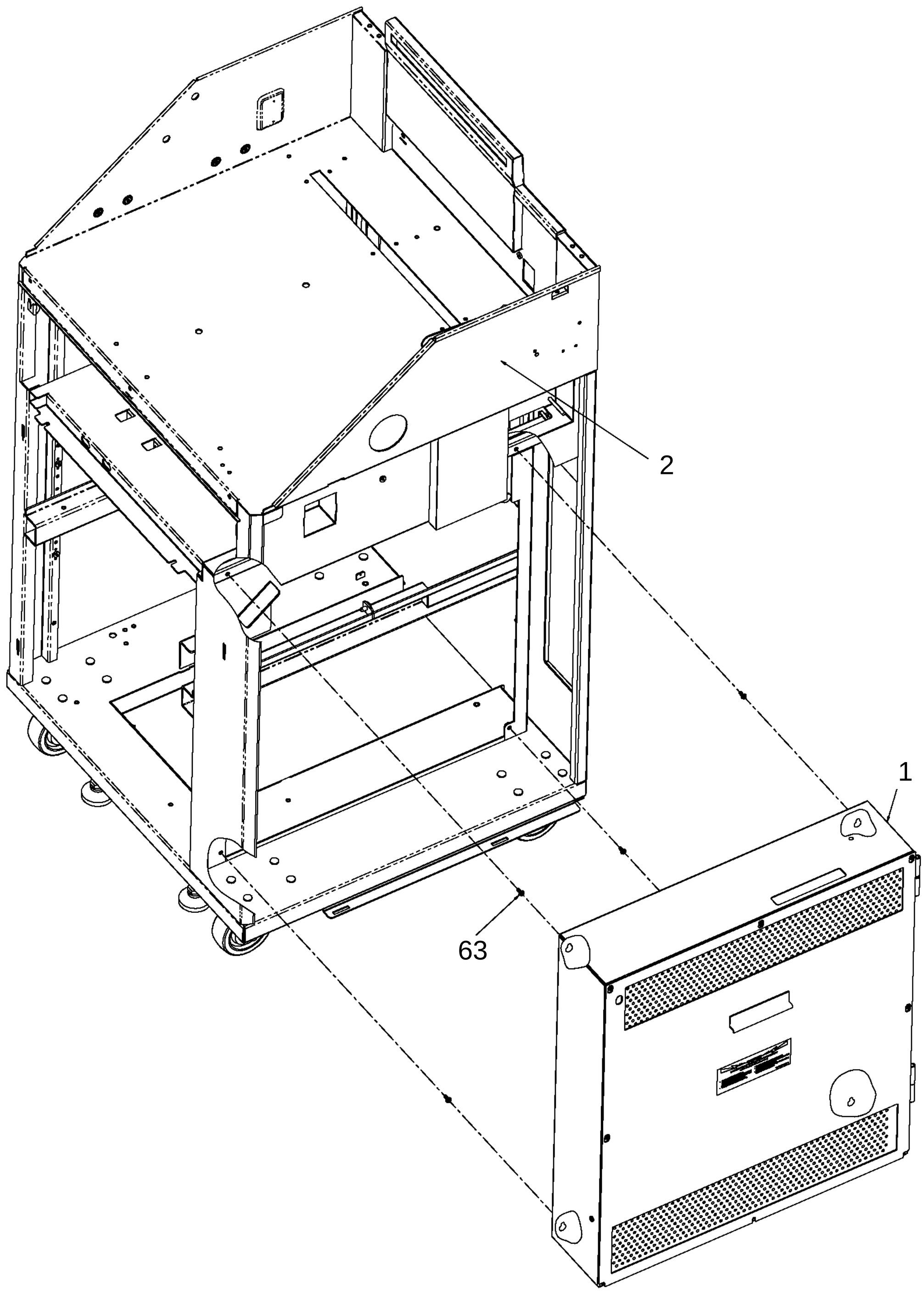


Figure 8-2. Machine Assembly (Screen 4 of 12)

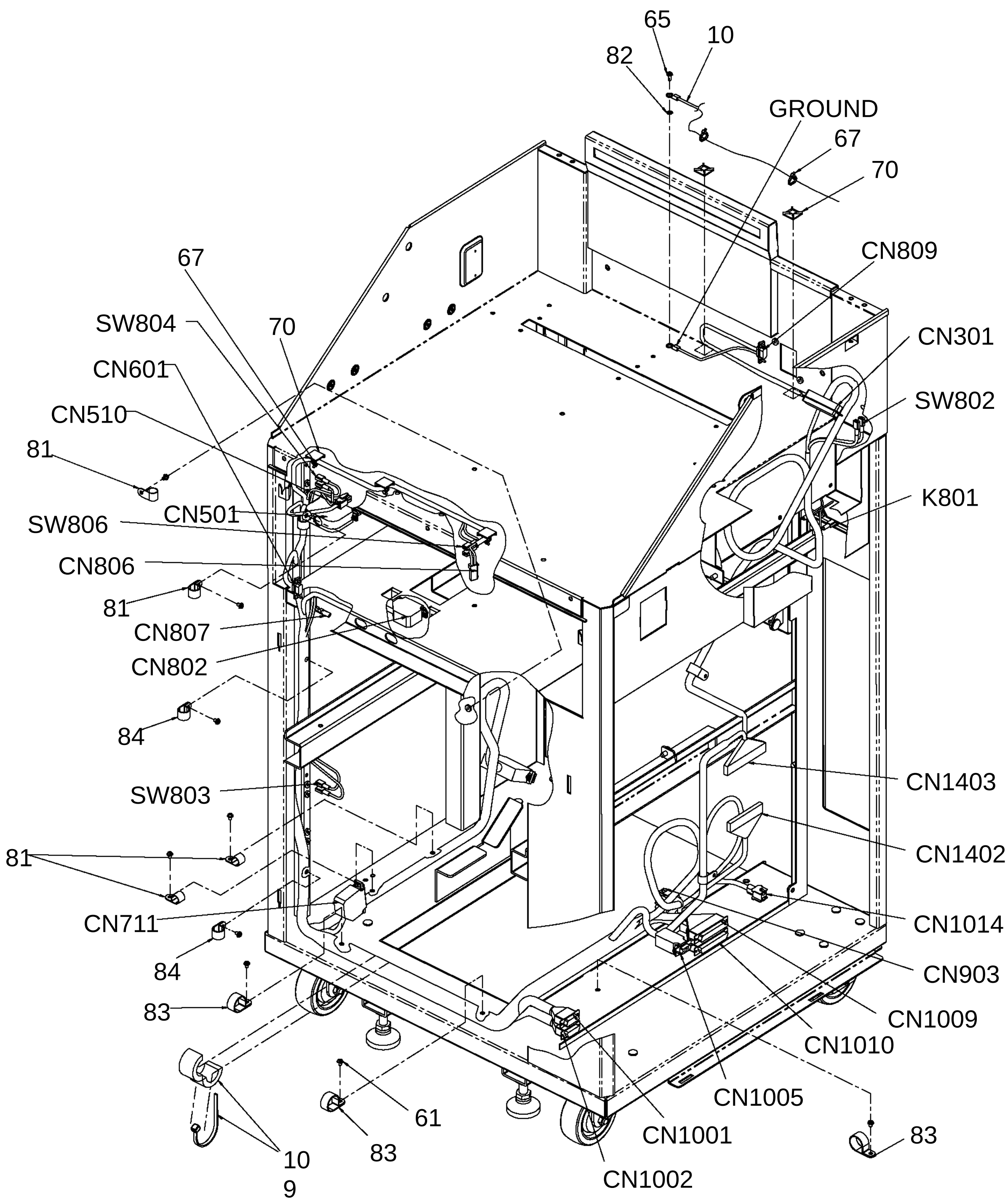


Figure 8-2. Machine Assembly (Screen 5 of 12)

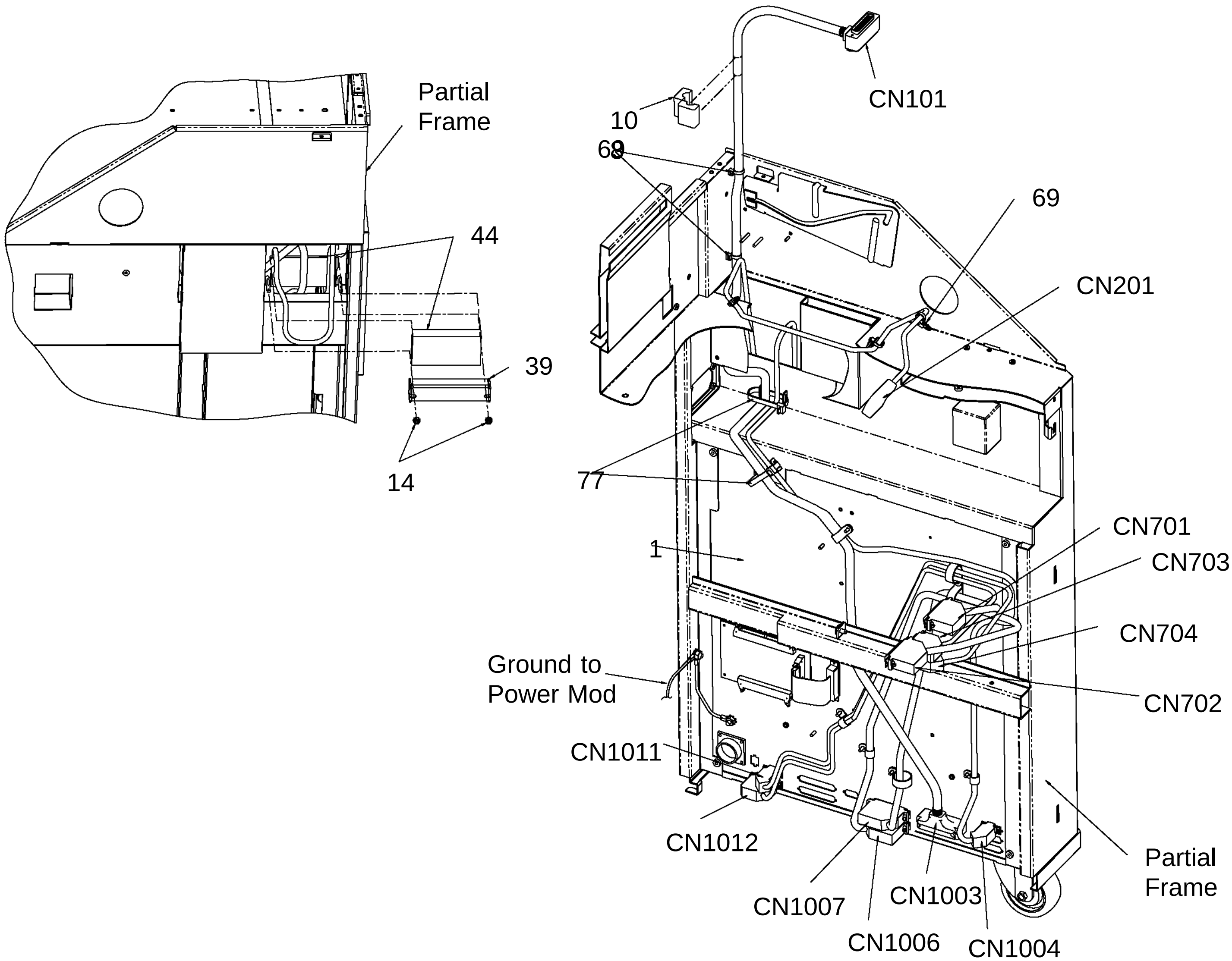
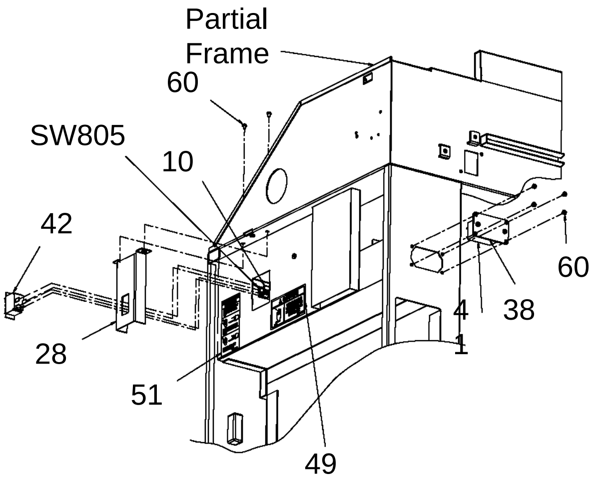


Figure 8-2. Machine Assembly (Screen 6 of 12)



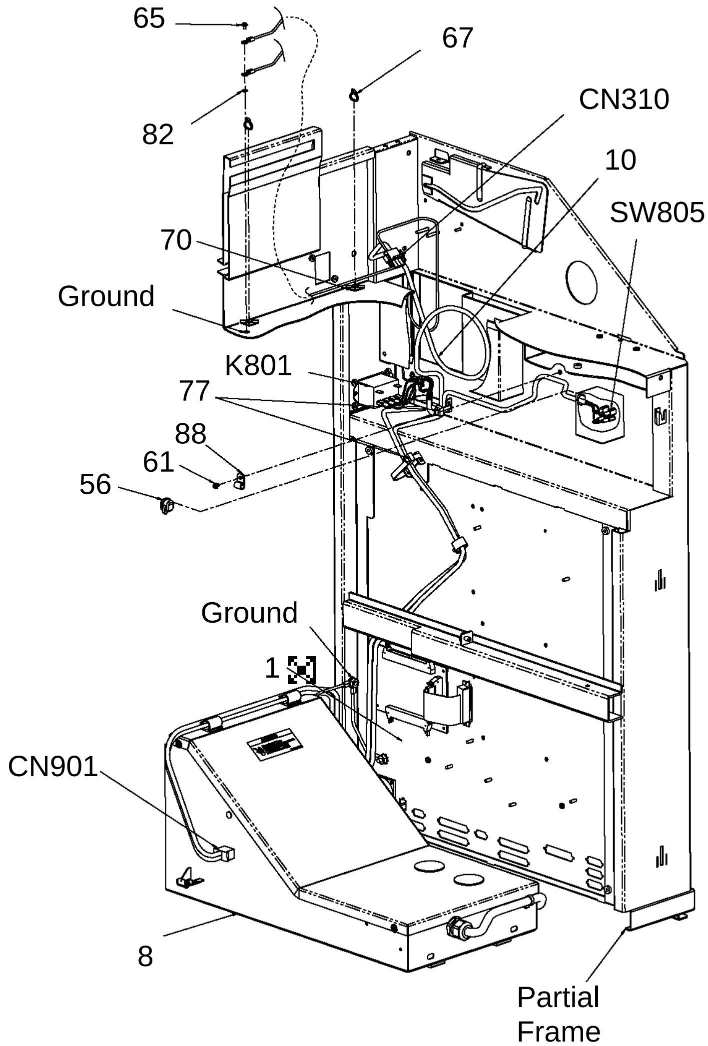


Figure 8-2. Machine Assembly (Screen 7 of 12)

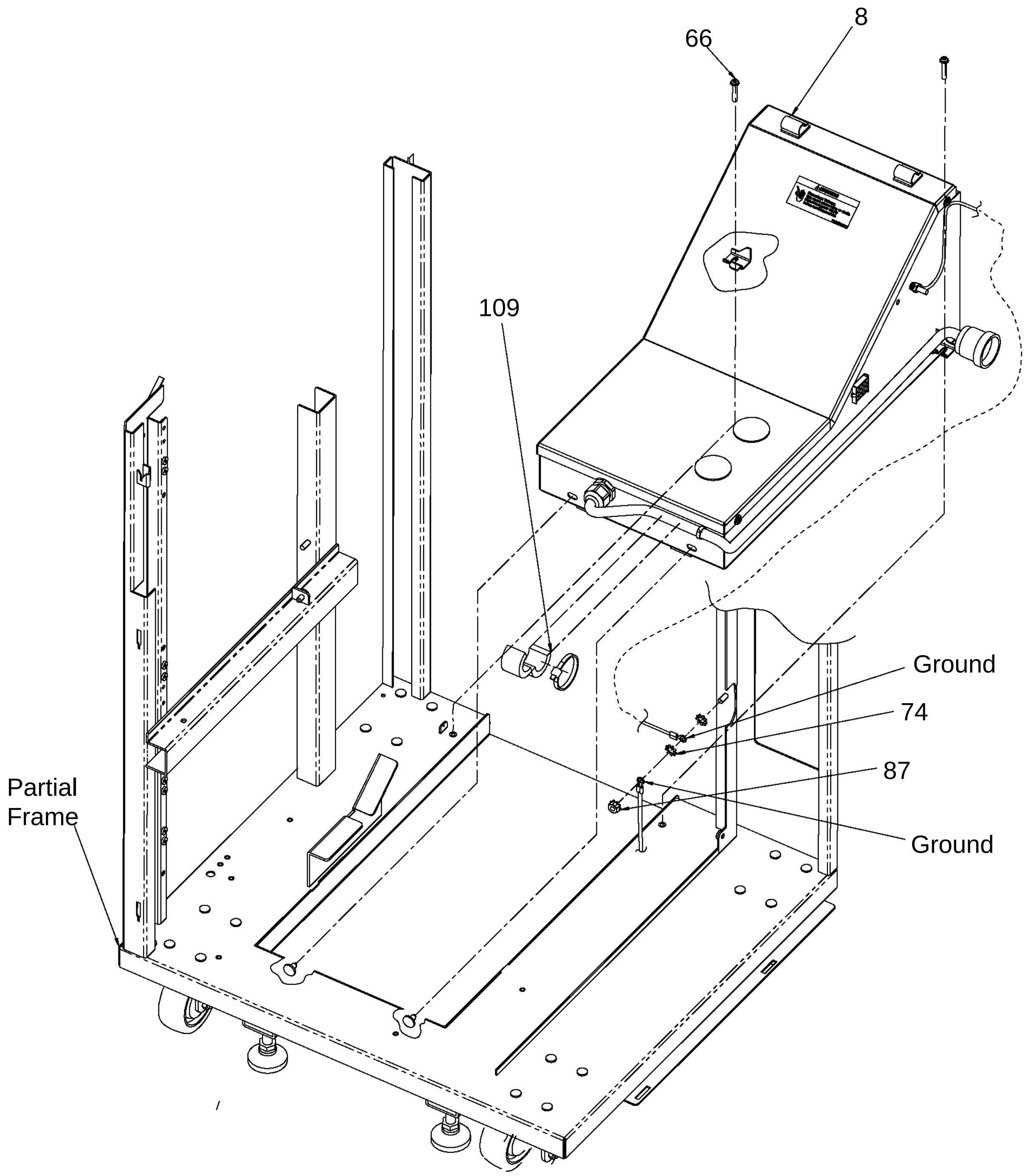


Figure 8-2. Machine Assembly (Screen 8 of 12)

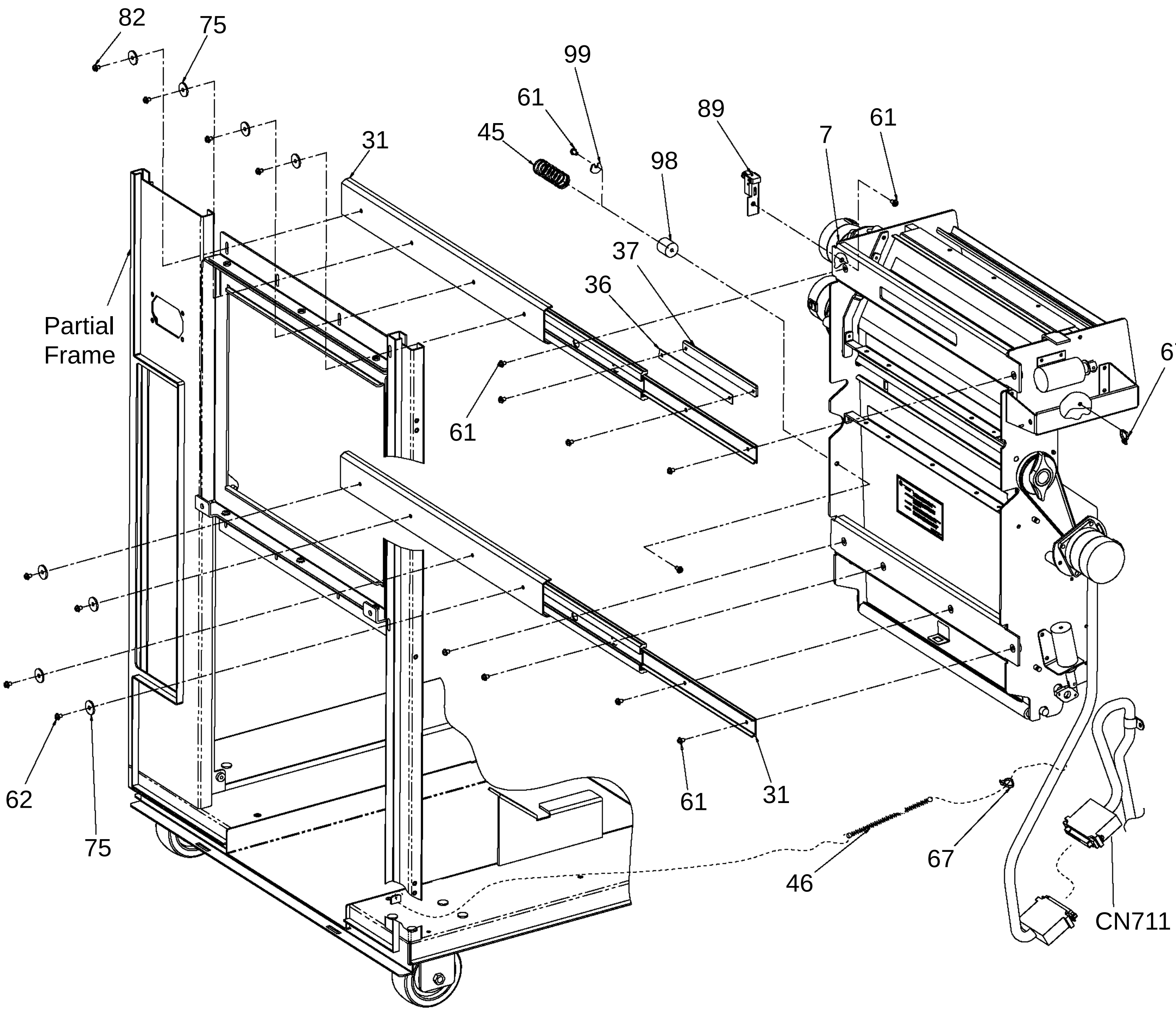


Figure 8-2. Machine Assembly (Screen 9 of 12)

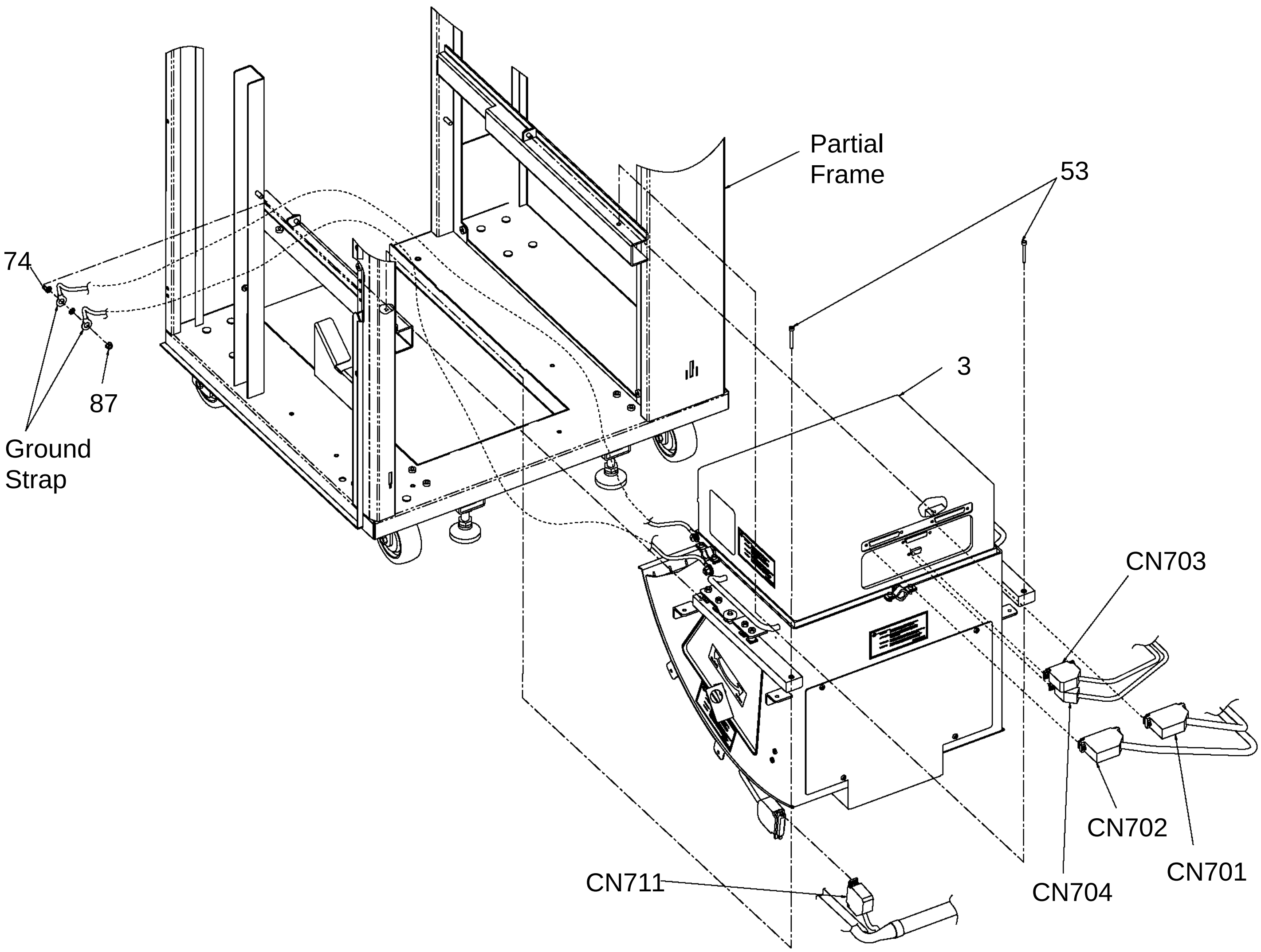


Figure 8-2. Machine Assembly (Screen 10 of 12)

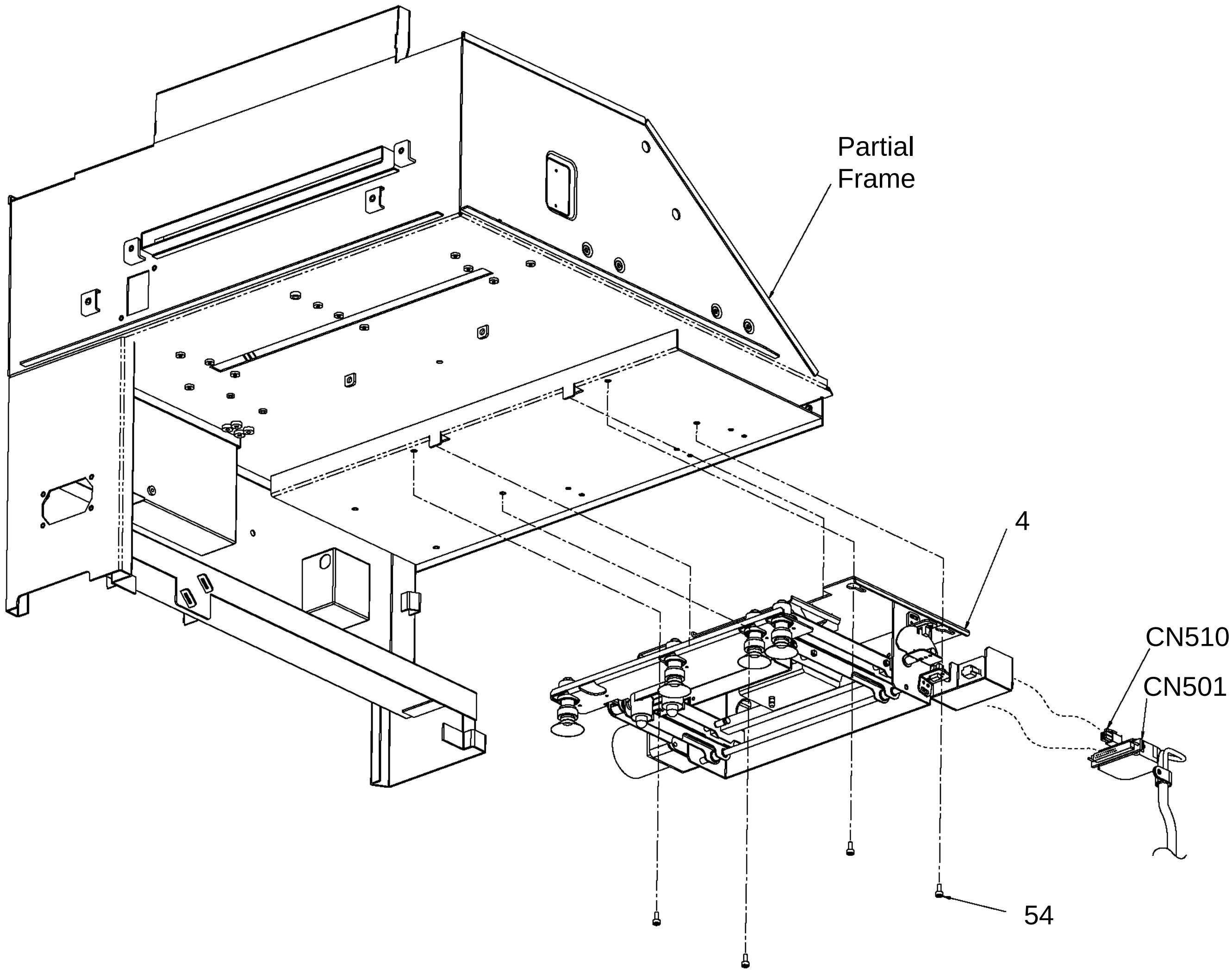


Figure 8-2. Machine Assembly (Screen 11 of 12)

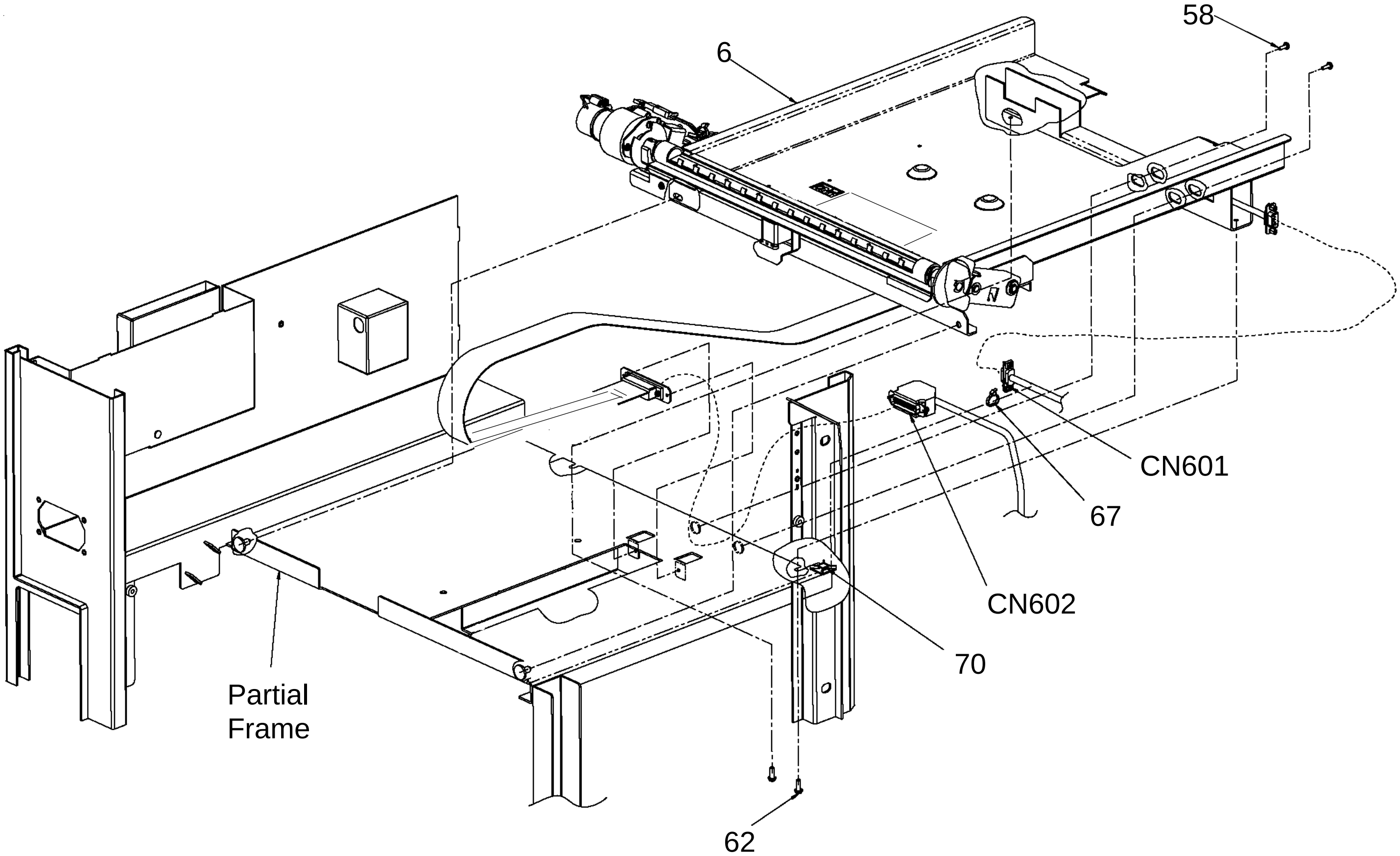


Figure 8-2. Machine Assembly (Screen 12 of 12)

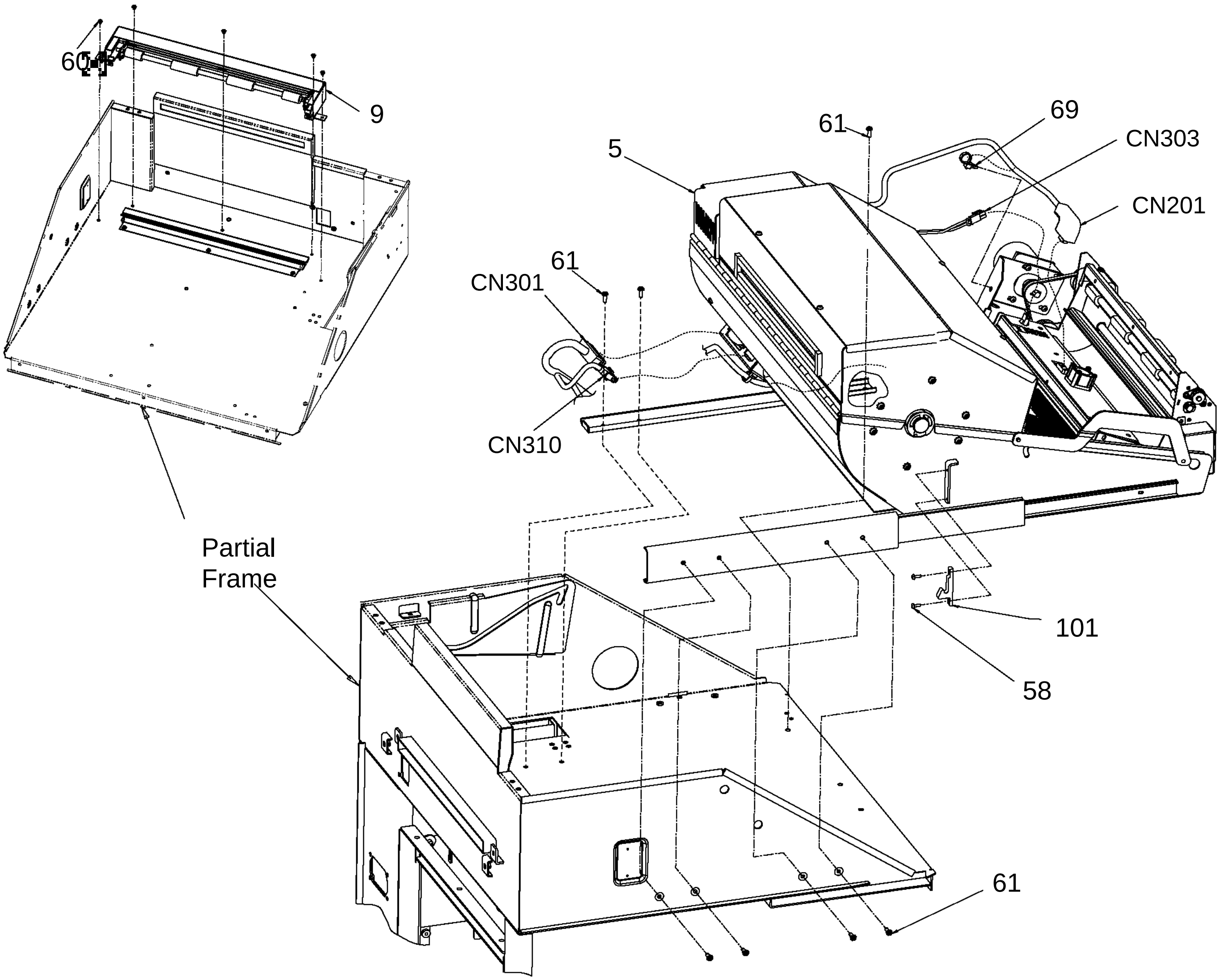


Figure 8-2. Machine Assembly

Item No.	Part Number	Description	Qty
0A	Not Available	MACHINE ASSEMBLY, Standalone	1
0B	Not Available	MACHINE ASSEMBLY, Dual	1
1A	Not Available	ELECTRONIC ENCLOSURE ASSEMBLY, Standalone (See Figure 8-22)	1
1B	Not Available	ELECTRONIC ENCLOSURE ASSEMBLY, Dual (See Figure 8-23)	1
2	78-8094-5874-4	FRAME ASSEMBLY	1
3	78-8094-5817-3	EXPOSURE MODULE ASSEMBLY (See Figure 8-13)	1
4	78-8094-5789-4	PICKUP MODULE ASSEMBLY (See Figure 8-10)	1
5	78-8095-9400-1	PROCESSOR ASSEMBLY (See Figure 8-16)	1
6	7E2665	ROLLBACK ASSEMBLY, RF Tag (See Figure 8-7)	1
7	78-8094-5700-1	TRANSPORT MODULE ASSEMBLY (See Figure 8-12)	1
8	78-8094-5738-1	POWER MODULE ASSEMBLY (See Figure 8-21)	1
9	78-8094-5822-3	PROCESSOR ENTRANCE ASSEMBLY (See Figure 8-15)	1
10	78-8094-5165-7	HARNESS ASSEMBLY, 818 (POWER SWITCH)	1
11	78-8094-5138-4	GATE DOOR SOLENOID ASSEMBLY	1
12	78-8025-4725-3	DECAL, Field Change Record	1
13	78-8094-5290-3	PLATE, Latch	1
14	26-1009-8112-0	NUT, Mach, Hex, Metric, M6 X 1.0	2
18	78-8095-9493-6	PLATE, Bearing	1
19	78-8094-5354-7	LINK, Stop	1
20	78-8094-5361-2	PIN, Stop	1
21	78-8094-5362-0	SPACER, Link	1
23	78-8094-5365-3	BRACKET, Bearing	1
24	78-8094-5366-1	ROD, Lower	1
25	78-8094-5368-7	LOCK	2
26	78-8094-5371-1	ROD, Release	1
27	78-8094-5372-9	LINK, Solenoid	1
28	78-8094-5413-1	BRACKET, Switch, Power	1
29	78-8094-5428-9	BRACKET, Slide	2
30	78-8094-5446-1	CHUTE, Film	1
31	78-8094-5454-5	SLIDE, Modified Transport	2
32	78-8094-5543-5	SUPPORT, Bearing	2
33	78-8094-5544-3	BRACKET, Solenoid	1
34	78-8094-5545-0	BRACKET, Switch	2
35	78-8094-5547-6	COVER, Bracket	2
36	78-8094-5587-2	SPACER, Slide	1
37	78-8094-5588-0	HANGER, Slide	1
38	78-8094-5644-1	PANEL, Relay	1
39	78-8094-5645-8	BRACKET, Cable	1
40	78-8094-5740-7	SHAFT, Latch	1
41	78-8094-5754-8	RELAY, Processor, 24VDC, (K801)	1
42	78-8094-5756-3	SWITCH, Power	1

Figure 8-2. Machine Assembly (continued)

Item No.	Part Number	Description	Qty
44	78-8094-5854-6	PAD, Foam	2
45	12-7996-1717-5	SPRING, Cprsn, .720 OD X .072 Wire Dia X 2.00	1
46	78-8094-5858-7	SPRING, Cable Retract	1
47	78-8094-5870-2	SHAFT, Solenoid	1
48	78-8095-9331-8	SPRING, Pivot Plate	1
49	Not Available	LABEL, Damage, Static Elect	1
51	Not Available	LABEL, Warning, Power Distribution	1
52	78-8095-9435-7	BLOCK, Stop	1
53	DY-1102-0703-1	SCREW, Cap, Hex Socket, Metric, M4 X 0.7 X 25	2
54	DY-1102-0723-9	SCREW, Cap, Hex Socket, Metric, M5 X 0.8 X 8	4
56	26-1001-0585-2	BUSHING, Nylon,	1
57	Not Available	ADHESIVE	AR
58	26-1003-7115-7	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0, Sems, External Tooth	8
59	26-1003-7116-5	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 8.0, Sems, External Tooth	3
60	26-1003-7119-9	SCREW, Mach, Pan Head, Phil, M4 X 0.7 X 6.0, Sems, External Tooth	25
61	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0, Sems, External Tooth	42
62	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0, Sems, Ext. Tooth	18
63	26-1003-7123-1	SCREW, Mach, Pan Head, Phil, Metric, M5 X 0.8 X 10.0, Sems External Tooth	4
64	26-1003-7487-0	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 20.0, Sems, External Tooth	8
65	26-1003-7492-0	SCREW, Mach, Pan Head, Phil, Metric, M5 X 0.8 X 8.0, Sems, External Tooth	7
66	26-1003-7124-9	SCREW, Mach, Pan Head, Phil, Metric, M5 X 0.8 X 12.0, Sems External Tooth	2
67	Not Available	TIE WRAP, Cable	11
69	Not Available	TIE WRAP, Cable	3
70	26-1007-0054-6	MOUNT, Cable Tie, Adhesive Backed	9
71	26-1007-2397-7	NUT, Mach, Hex, Metric, M4 X 0.7	6
74	26-1008-5460-8	WASHER, Metric, Lock, M6, External Tooth	4
75	78-8094-5948-6	WASHER, Transport	8
76	26-1011-6202-7	SWITCH, Interlock, 16A, 250 VAC (SW802, SW803, SW804)	3
77	Not Available	TIE WRAP	2
80	26-1011-8007-8	SCREW, Shoulder, Hex Socket, 6.0 DIA X 10 M5 X 0.8 TH	1
81	Not Available	CLAMP, Cable	4
82	26-1011-6808-1	WASHER, Metric, Lock, M5, External Tooth	1
83	Not Available	CLAMP, Cable	3
84	Not Available	CLAMP, Cable	2
86	78-8094-5962-7	SPRING, Release	1
87	26-1011-6823-0	NUT, Mach, Metric, M6 X 1.00, Keps	2
88	Not Available	CLAMP, Cable	1
89	78-8094-5865-2	DETENT ASSEMBLY	1
90	26-1011-7108-5	TAPE, Foam	AR
92	78-8005-1420-6	HOLE PLUG,	2

Figure 8-2. Machine Assembly (continued)

Item No.	Part Number	Description	Qty
94	78-8161-8389-7	BEARING, .2510 ID X .3125 OD X .078	3
95	78-8656-4000-3	RING, Retaining, External, E-Ring	8
96	78-8094-5879-3	LEVER, Interlock	2
97	Not Available	SHAFT, Interlock	2
98	78-8094-5616-9	POST, Spring	1
99	Not Available	RETAINER, Spring	1
100	78-8095-9531-3	PROCESSOR STOP ASSEMBLY	1
101	26-1011-7147-3	LATCH, Slam	1
102	78-8094-5926-2	FD LATCH ASSEMBLY (See Figure 8-5)	1
104	Not Available	FD MANUAL ASSEMBLY	1
106	Not Available	LABEL, Zone Locations	1
108	26-1010-2067-0	SHIELD, EMI Suppressor	1
109	Not Available	SHIELD, RFI	2
111	78-8092-4043-1	BRACKET, Switch	1
112	78-8092-4068-8	BRACKET, Lever	1
113	78-8092-4044-9	LEVER, Switch	1
114	78-8092-4041-5	ROD, Prop	1
115	26-1011-7916-1	CLIP, Rod	1

Figure 8-3. Hood Assembly

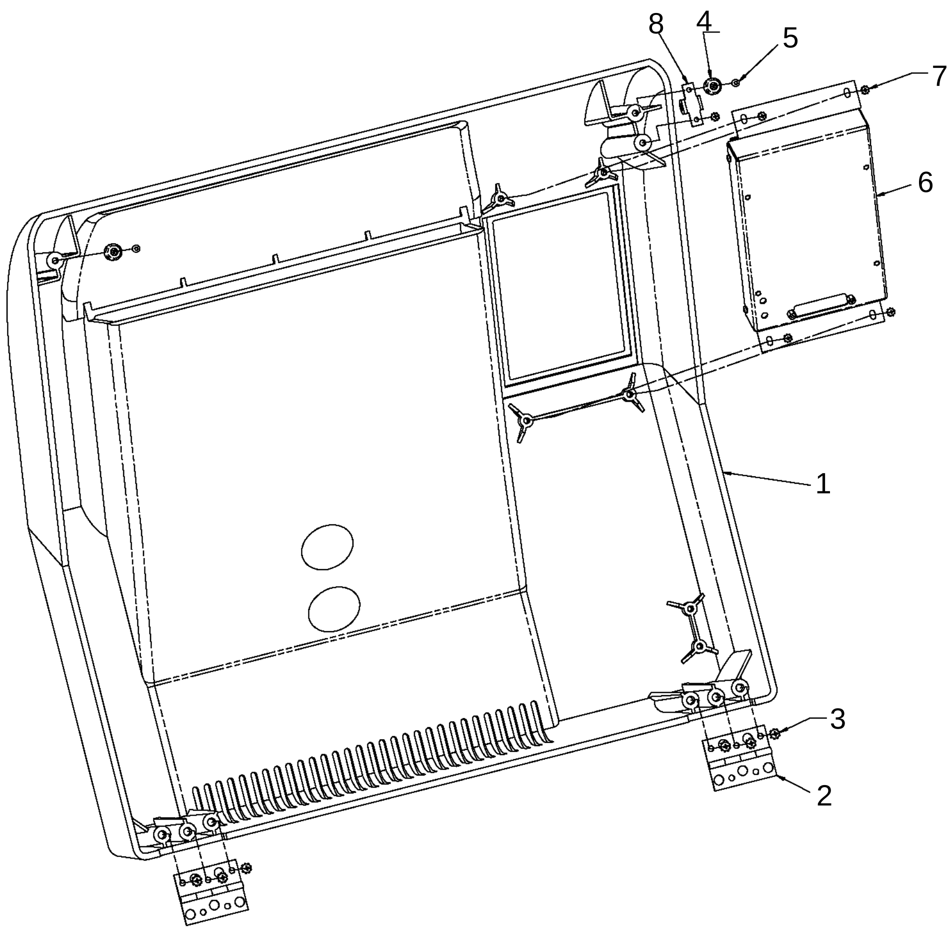


Figure 8-3. Hood Assembly

Item No.	Part Number	Description	Qty
0A	78-8094-5339-8	HOOD ASSEMBLY (Kodak)	1
0B	78-8094-9024-2	HOOD ASSEMBLY (GE)	1
0C	78-8094-9025-9	HOOD ASSEMBLY (OEM except GE)	1
1	Not Available	HOOD	1
2	78-8094-5334-9	HINGE	2
3	26-1003-7492-0	SCREW, Mach, Pan Head, Phil, Metric, M5 X 0.8 X 8.0, Sems, External Tooth	6
4	26-1011-6259-7	MOUNT, Rubber, Vibration,	2
5	DY-1102-0663-7	SCREW, Cap, Hex Socket, Metric, M4 X 0.7 X 10	2
6	78-8094-5452-9	LOCAL PANEL ASSEMBLY	1
7	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0, Sems, External Tooth	5
8	78-8092-4042-3	BRACKET, Pivot	1

Figure 8-4. Front Panel Assembly

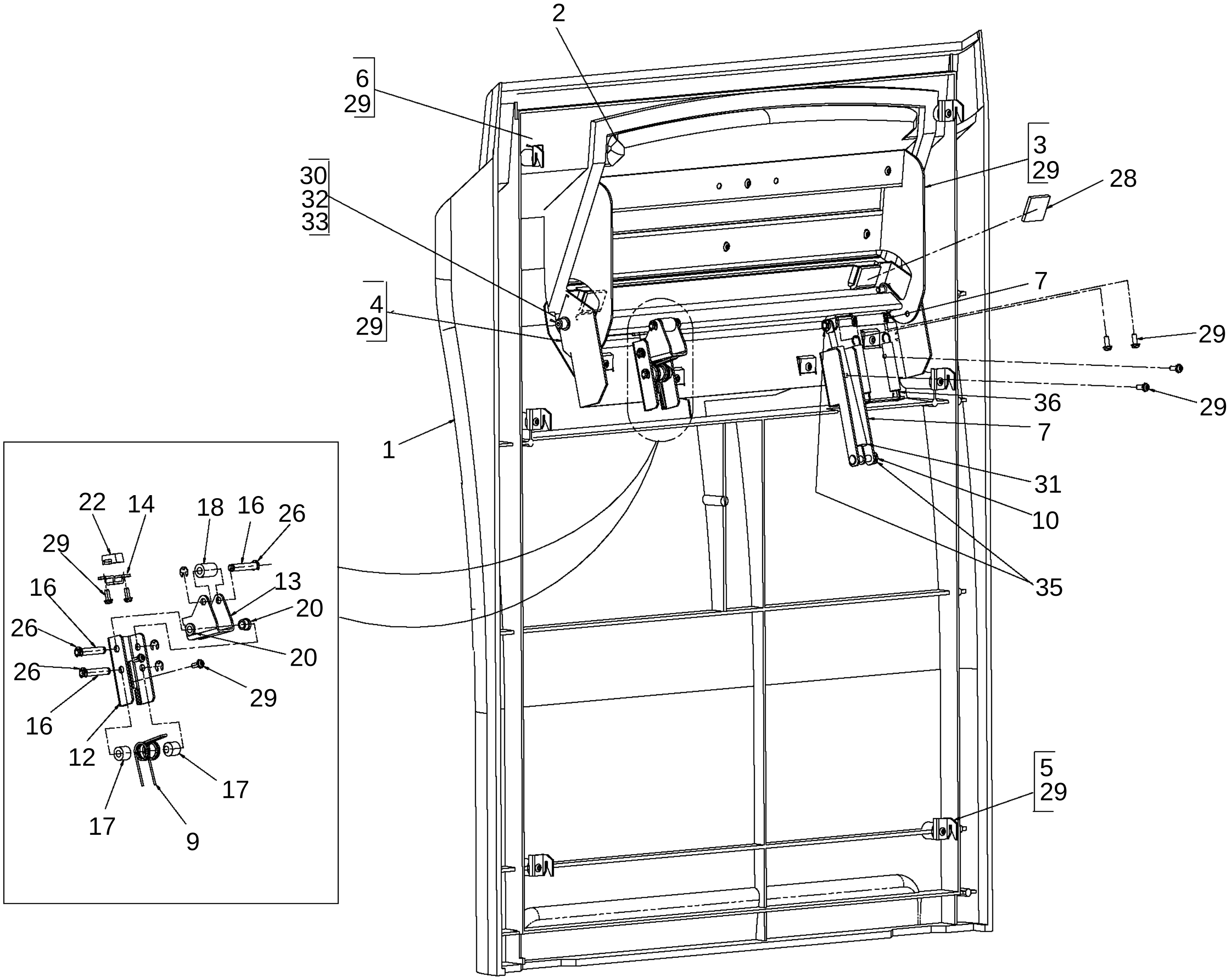


Figure 8-4. Front Panel Assembly

Item No.	Part Number	Description	Qty
0A	78-8094-5713-4	FRONT PANEL ASSEMBLY (Kodak and OEM except GE)	1
0B	78-8094-9031-7	FRONT PANEL ASSEMBLY (GE only)	1
1	Not Available	PANEL, Front	1
2A	78-8092-4074-6	DOOR, Cassette (Kodak and OEM except GE)	1
2B	78-8094-9033-3	DOOR, Cassette (GE only)	1
3	78-8094-5689-6	BRACKET, Door	1
4	78-8094-5690-4	BRACKET, Door Mounting	1
5	78-8094-5439-6	CLIP, Mounting, Right	1
6	78-8094-5440-4	CLIP, Mounting, Left	5
7	78-8092-4097-7	BRACKET, Cylinder	1
8	78-8092-4096-9	BRACKET, Rod End	1
9	78-8094-5777-9	SPRING, Torsion, Rollback	1
10	78-8094-5853-8	PIN, Clevis	1
12	78-8092-4090-2	BRACKET, Spring, DFD	1
13	78-8094-5932-0	BRACKET, Roller, DFD	1
14	78-8094-5933-8	BRACKET, Block, DFD	1
16	78-8094-5946-0	PIN	3
17	78-8094-5950-2	MANDREL, DFD	2
18	78-8094-5951-0	ROLLER, DFD	1
20	78-8094-5954-4	BEARING, DFD	2
22	78-8094-5956-9	BLOCK, DFD	1
26	12-7996-2818-0	RING, Retaining, External, E-Ring	6
28	78-8092-4006-8	PAD, FELT, FD	2
29	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0, Sems, External Tooth	28
30	Not Available	ADHESIVE	AR
31	26-1011-6791-9	CYLINDER, Gas Spring	1
32	26-1011-6849-5	SCREW, Shoulder, .2490 X .3765 W/10-32 THD	2
33	78-8161-3130-0	BEARING, .252 ID X .377 OD X .250	2
35	DY-1150-0028-2	RING, Retaining, External, E-Ring	2
36	26-1011-7198-6	SPRING, External, .438 OD X .046 Wire Dia X 2.50	2
37	78-8094-5904-9	GASKET MATERIAL, Filter Housing (Not Shown)	AR

Figure 8-5. FD Latch Assembly

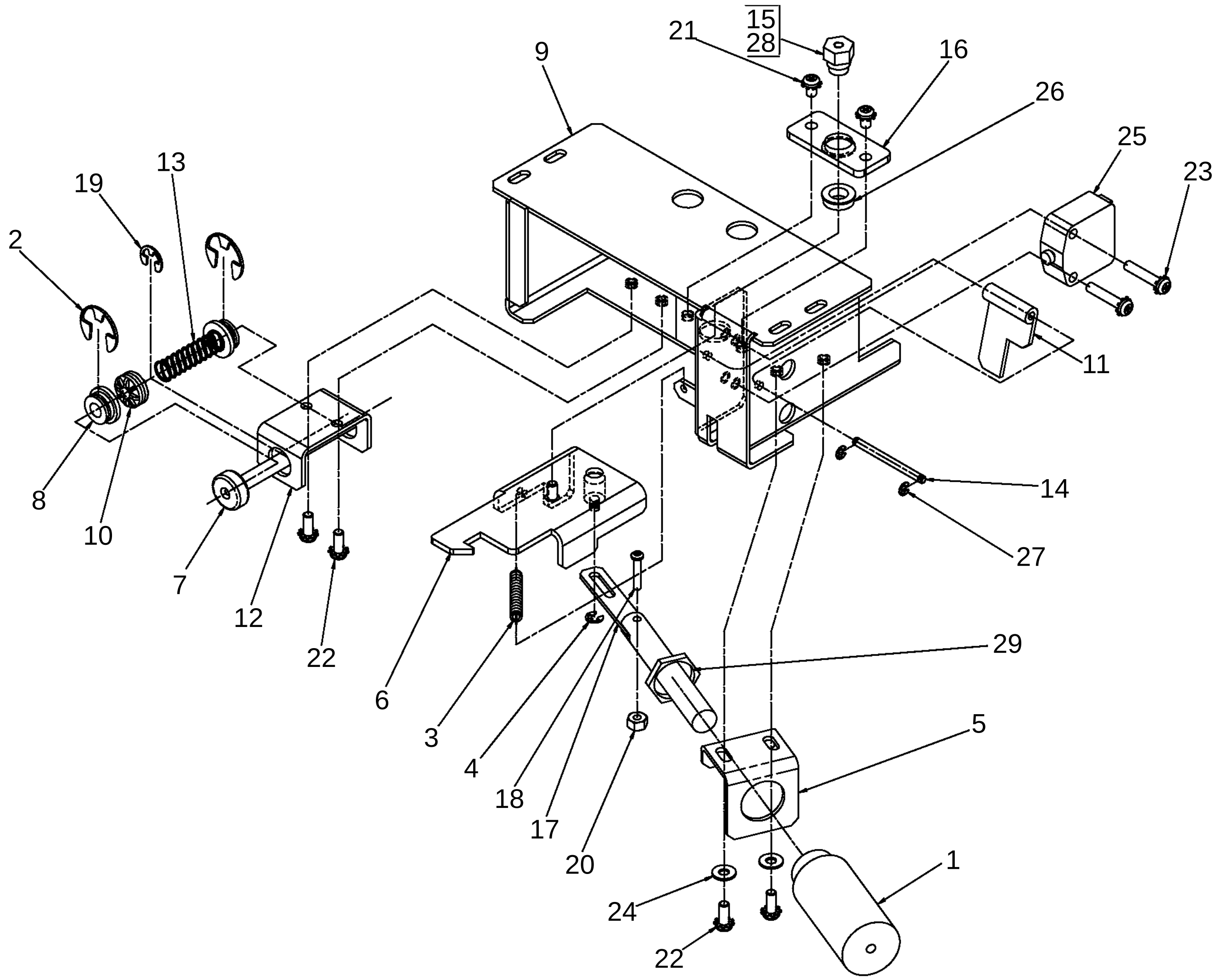


Figure 8-5. FD Latch Assembly

Item No.	Part Number	Description	Qty
0	78-8094-5926-2	FD LATCH ASSEMBLY	
1	78-8094-5138-4	GATE DOOR SOLENOID ASSEMBLY	1
2	78-8656-4012-8	RING, Retaining, External, E-Ring	2
3	78-8032-3235-0	SPRING, External,.188 OD X .018 Wire Dia X 1.125	1
4	78-8656-4004-5	RING, Retaining, External, E-Ring	1
5	78-8094-5911-4	BRACKET, Solenoid, FD	1
6	Not Available	LATCH, FD	1
7	78-8094-5915-5	ROD, S, Pusher, FD	1
8	78-8094-5917-1	BEARING, Pusher, FD	2
9	Not Available	FRAME, FD	1
10	26-1008-9134-5	GROMMET, Ribbed, .563 OD X .219 ID with .063 groove	1
11	Not Available	LEVER, Switch, FD	1
12	Not Available	BRACKET, S, Pusher, FD	1
13	26-1005-6369-6	SPRING, Compression, .360 OD X .029 Wire Dia	1
14	78-8094-5947-8	PIN, Switch, FD	1
15	78-8094-5949-4	BLOCK, Latch, FD	1
16	Not Available	BLOCK, Bearing, FD	1
17	78-8092-4040-7	LINK	1
18	26-1003-7755-0	SCREW, Mach, Pan Head, Phil, Metric, ,M3 X 0.5 X 16, Sems, Internal Tooth	1
19	12-7996-2818-0	RING, Retaining, External	1
20	26-1005-5214-5	NUT, Mach, Hex, Metric, Lock, M3 X .05	1
21	26-1003-7119-9	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 6.0, Sems, External Tooth	2
22	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0, Sems, External Tooth	4
23	26-1003-7487-0	SCREW, Mach, Pan Head, Phil, Metric,M4 X 0.7 X 20.0, Sems, External Tooth	2
24	26-1008-9102-2	WASHER, Metric, Plain, M4	2
25	26-1011-6202-7	SWITCH, Interlock, 16 A 250 VAC	1
26	26-1011-7793-4	BEARING, Ball, .3125 ID X .5000 OD X .1562 W	1
27	78-8656-4000-3	RING, Retaining, External E-Ring	2
28	Not Available	ADHESIVE	AR
29	Not Available	ADHESIVE	AR

Figure 8-6. Filter Housing Assembly

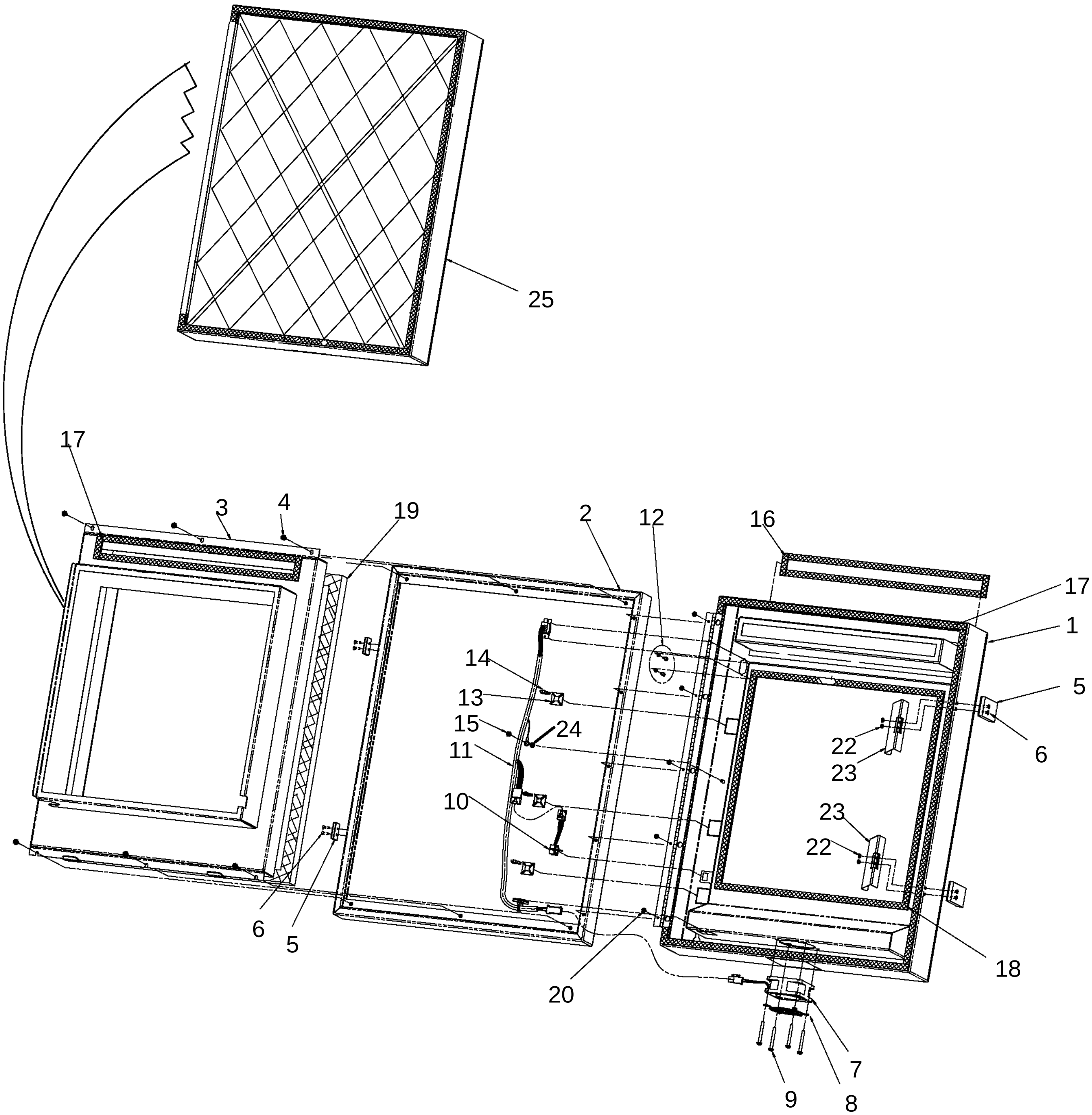


Figure 8-6. Filter Housing Assembly

Item No.	Part Number	Description	Qty
0A	78-8094-5811-6	FILTER HOUSING ASSEMBLY (Kodak and OEM except GE)	1
0B	78-8094-9035-8	FILTER HOUSING ASSEMBLY (GE only)	1
1	Not Available	HOUSING, Filter	1
2A	78-8094-5895-9	DOOR, Filter (Kodak and OEM except GE)	1
2B	78-8094-9039-0	DOOR, Filter (GE only)	1
3	78-8094-5814-0	RETAINER, Filter	1
4	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0,Sems, External Tooth	6
5	26-1004-0699-5	CATCH, Draw	2
6	26-1002-3843-0	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 12.0	8
7	78-8094-5816-5	FAN ASSEMBLY	1
8	26-1011-6787-7	GUARD, Finger, 2.09 X 2.09	1
9	26-1003-8206-3	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 35.0 L, Sems, External Tooth	4
10	78-8094-5130-1	850 SWITCH ASSEMBLY	1
11	78-8094-5513-8	HARNESS ASSEMBLY, 802, Filter	1
12	26-1004-3945-9	FASTENER, Jack Socket Assembly	1
13	Not Available	MOUNT, .750 X .750, Adhesive Backed	4
14	Not Available	TIE WRAP	4
15	26-1007-2397-7	NUT, Mach, Metric, M4 X 0.7,Keps	1
16	26-1011-6812-3	TAPE	AR
17	78-8094-5904-9	GASKET, Filter Housing	AR
18	78-8094-5905-6	GASKET, Filter Cartridge	AR
19	26-1011-6788-5	FILTER, Air,16 X 20 X 1, Metal, FAZ	1
20	26-1003-7778-2	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 5L, External Tooth	5
21	Not Used		
22	26-1008-5590-2	NUT, Mach, Metric, M3 X 0.5, Keps, External Tooth	4
23	78-8092-4036-5	SPRING, Filter	2
24	26-1011-6809-9	WASHER, Metric, Lock, M4	1
25	78-8094-9054-9	FILTER CASSETTE, Processor	1

Figure 8-7. Rollback Assembly, RF Tag

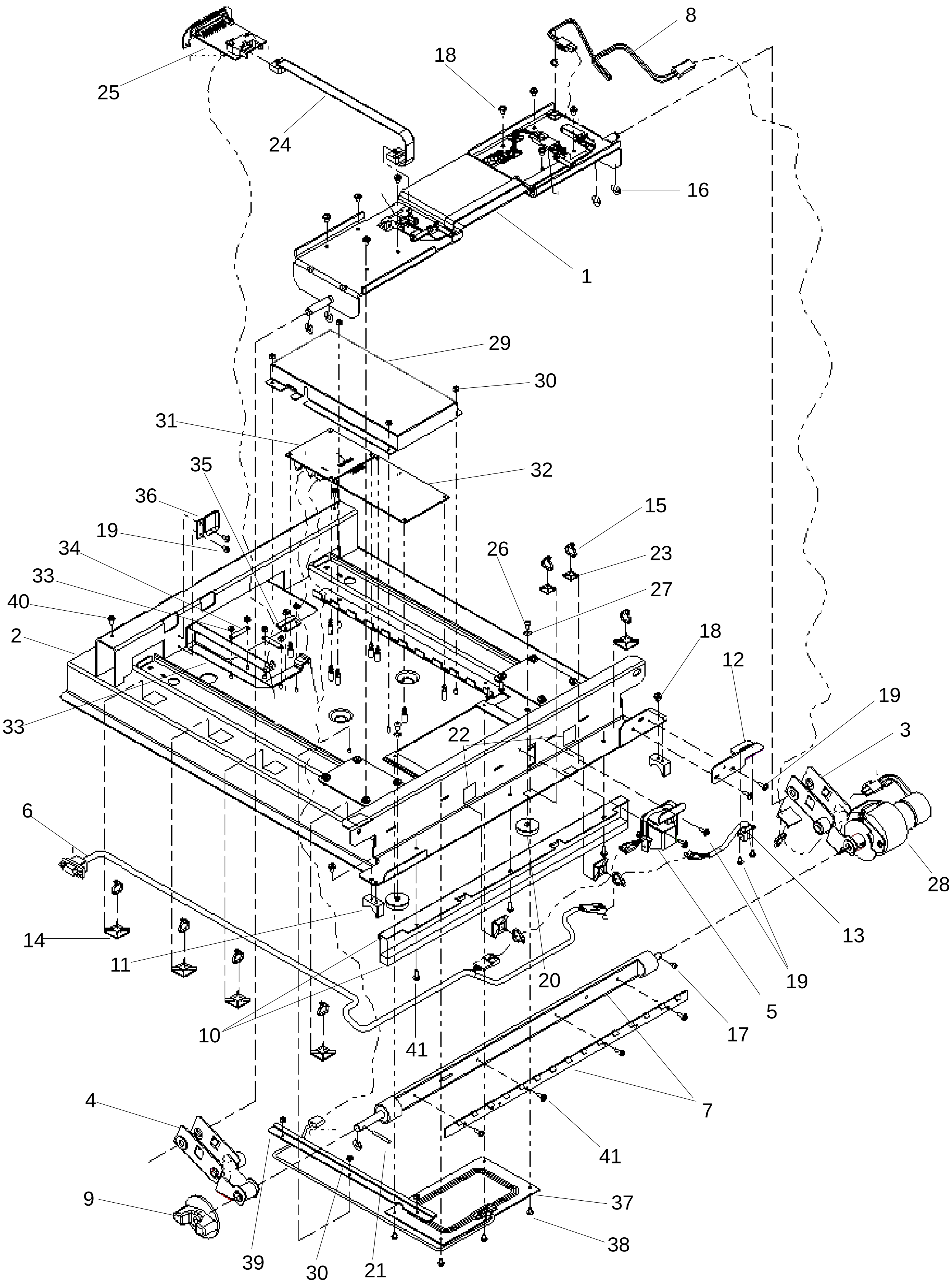


Figure 8-7. Rollback Assembly, RF Tag

Item No.	Part Number	Description	Qty
0	7E2665	ROLLBACK ASSEMBLY	
1	Not Available	ROLLBACK CARRIAGE ASSEMBLY (See Figure 8-8)	1
2	7E2664	TRAY, Rollback	1
3	7E2829	ROLLBACK RIGHT SPRING ASSEMBLY (includes Rollback Motor)	1
4	7E2830	ROLLBACK LEFT SPRING ASSEMBLY	1
5	Not Available	ROLLBACK CARTRIDGE SENSOR ASSEMBLY (See Figure 8-9)	1
6	78-8094-5169-9	HARNESS ASSEMBLY, Rollback Switch, (601)	1
7	7E2827	ROLLBACK SHAFT ASSEMBLY (Includes SHAFT, TEETH and 4 item 41 SCREWS)	1
8	3E5981	CABLE ASSEMBLY, Motor/Sensor	1
9	78-8094-5562-5	HANDLE, Rollback	1
10	3E5986	PAD ASSEMBLY, Rollback (Includes PAD, HOLDER and 3 item 41 SCREWS)	1
11	78-8094-5391-9	NEST, Rollback	2
12	78-8094-5774-6	BRACKET, Home Sensor, Rollback	1
13	78-8094-5129-3	990 SWITCH ASSEMBLY (Rollback Home Sensor SW601)	1
14	Not Available	MOUNT, Cable Tie	8
15	Not Available	TIE WRAP	11
16	78-8656-4005-2	RING, Retaining, External, E-Ring	5
17	26-1011-7052-5	SCREW, Cap, Hex Socket, Metric, M3 X 0.5 X 4 (Installed with LOCTITE)	1
18	26-1003-7119-9	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 6.0,Sems, External Tooth	10
19	26-1003-7115-7	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0,Sems, External Tooth	11
20	78-8094-5034-5	PIN, Locator, Rollback	2
21	12-7999-6069-0	PIN, Dowl, .125 DIA X 1.00	1
22	78-8032-3554-4	BUMPER, (Bulk)	2
23	Not Available	MOUNT, 4-WAY	2
24	7E2650	CABLE, Distribution Board to Carriage	1
25	7E2653	DISTRIBUTION BOARD	1
26	26-1011-8077-1	SCREW, Cap, Hex Socket, Metric, M4 X 0.7 X 6	2
27	26-1011-6809-9	WASHER, Metric, Lock, M4, External Tooth	2
28	78-8094-5692-0	MOTOR, Rollback	1
29	7E2646	COVER, PC Boards	1
30	26–1008–5590–2	NUT. MACH, Keps, Ext T, M3 X 0.5	13
31	7E2831	RF TAG INTERFACE BOARD	1
32	7E2620	RF READER BOARD	1
33	7E2649	CABLE, Distribution Board to RF Interface Board	1
34	7E2654	RETAINING STRAP, Ribbon Cable	2
35	7E2842	CLIP, COAX, Antenna	1
36	7E2839	CLIP, RETAINING, Flat cable	1
37	7E2634	RF TAG ANTENNA	1
38	26–1003–7777–4	SCREW, MACH, Sems, Ext T, M3 X 0.5 X 4.0	4
39	7E2841	RETAINER, Coax antenna	1
40	26–1011–8161–3	SCREW, Mach,Sems, Ext. T, M4 X 0.7 X 8.0	2
41	7E7347	SCREW, Cap, Button Head, Hex, M3 X 0.5 X 6.0 (Included in items 7 and 10)	7

Figure 8-8. Rollback Carriage Assembly

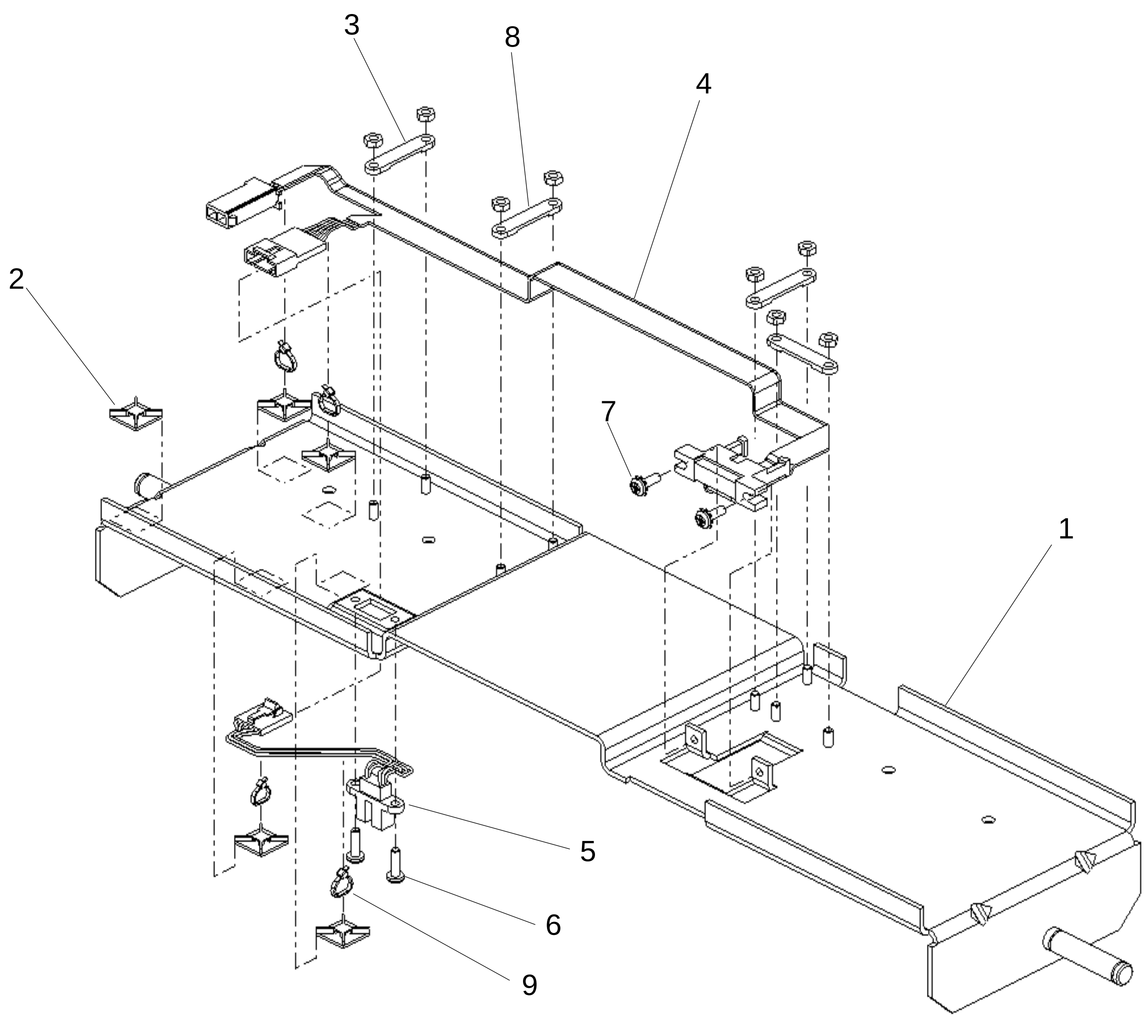


Figure 8-8. Rollback Carriage Assembly

Item No.	Part Number	Description	Qty
0	Not Available	ROLLBACK CARRIAGE ASSEMBLY	
1	Not Available	CARRIAGE, Rollback	1
2	Not Available	MOUNT, 4-WAY	5
3	7E2654	RETAINING STRAP	4
4	7E2652	CABLE ASSEMBLY, Carriage Input to Sensor/Motor	1
5	78-8094-5129-3	990 SWITCH ASSEMBLY (Cartridge Open Sensor SW603)	1
6	26-1003-7116-5	SCREW, MACH, Sems, Ext T. Stl, Pan, Phil, M3 X 0.5 X 10.0	2
7	26-1003-7115-7	SCREW, MACH, Sems, Ext T. Stl, Pan, Phil, M3 X 0.5 X 6.0	2
8	26-1008-5590-2	NUT, MACH, Keps, Ext T, Stl, M3 X 0.5	8
9	Not Available	TIE-WRAP	4

Figure 8-9. Rollback Cartridge Sensor Assembly

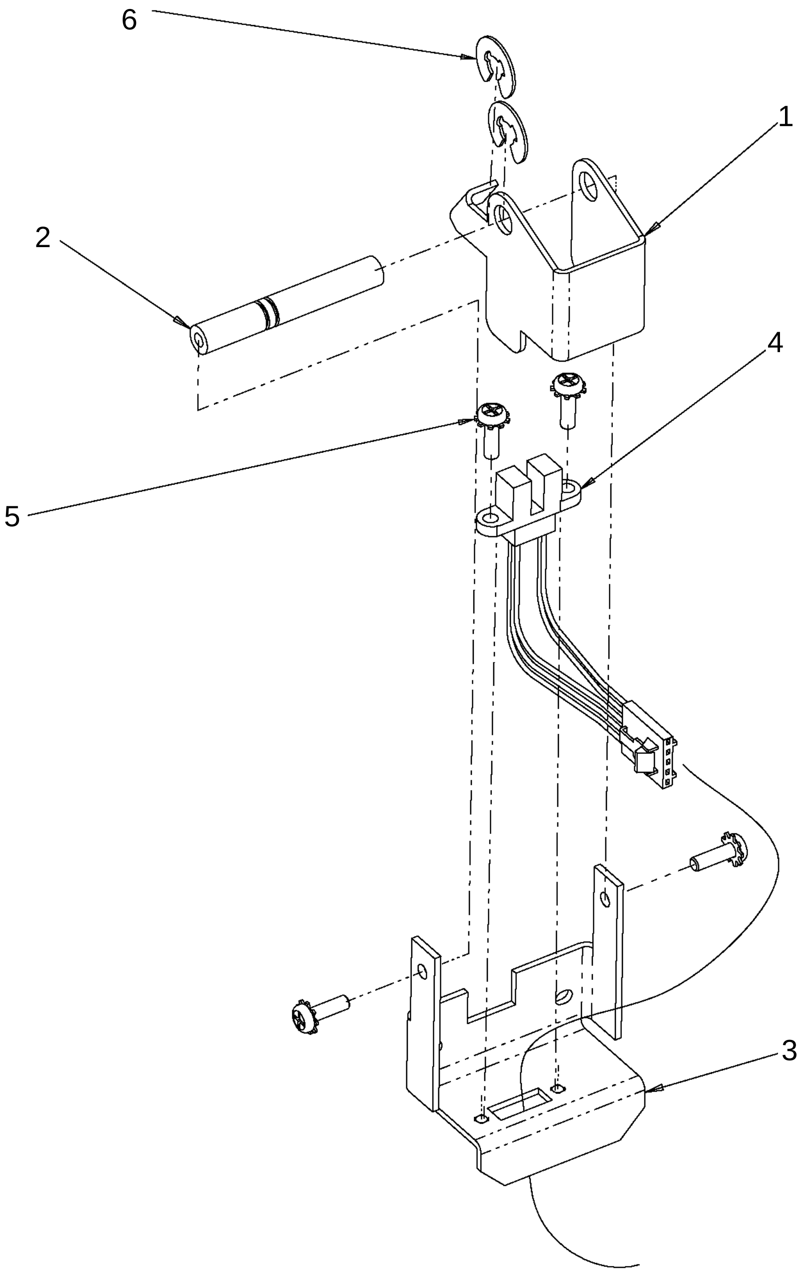


Figure 8-9. Rollback Cartridge Sensor Assembly

Item No.	Part Number	Description	Qty
1	Not Available	VANE, Sensor, Rollback (See Note 1)	1
2	Not Available	PIN, Present, Rollback (See Note 1)	1
3	Not Available	BRACKET, Sensor, Rollback (See Note 1)	1
4	78-8094-5129-3	990 SWITCH ASSEMBLY (Cartridge Present Sensor SW604)	1
5	Not Available	SCREW, Mach, Pan Head, Phil, M3 X 0.5 X 6.0,Sems, Ext T (See Note 1)	4
6	Not Available	RING, Retaining, External, E-Ring (See Note 1)	2

Note 1. Order ROLLBACK ASSEMBLY (7E2665) if item 1,2,3,5, or 6 is needed.

Figure 8-10. Pickup Module Assembly

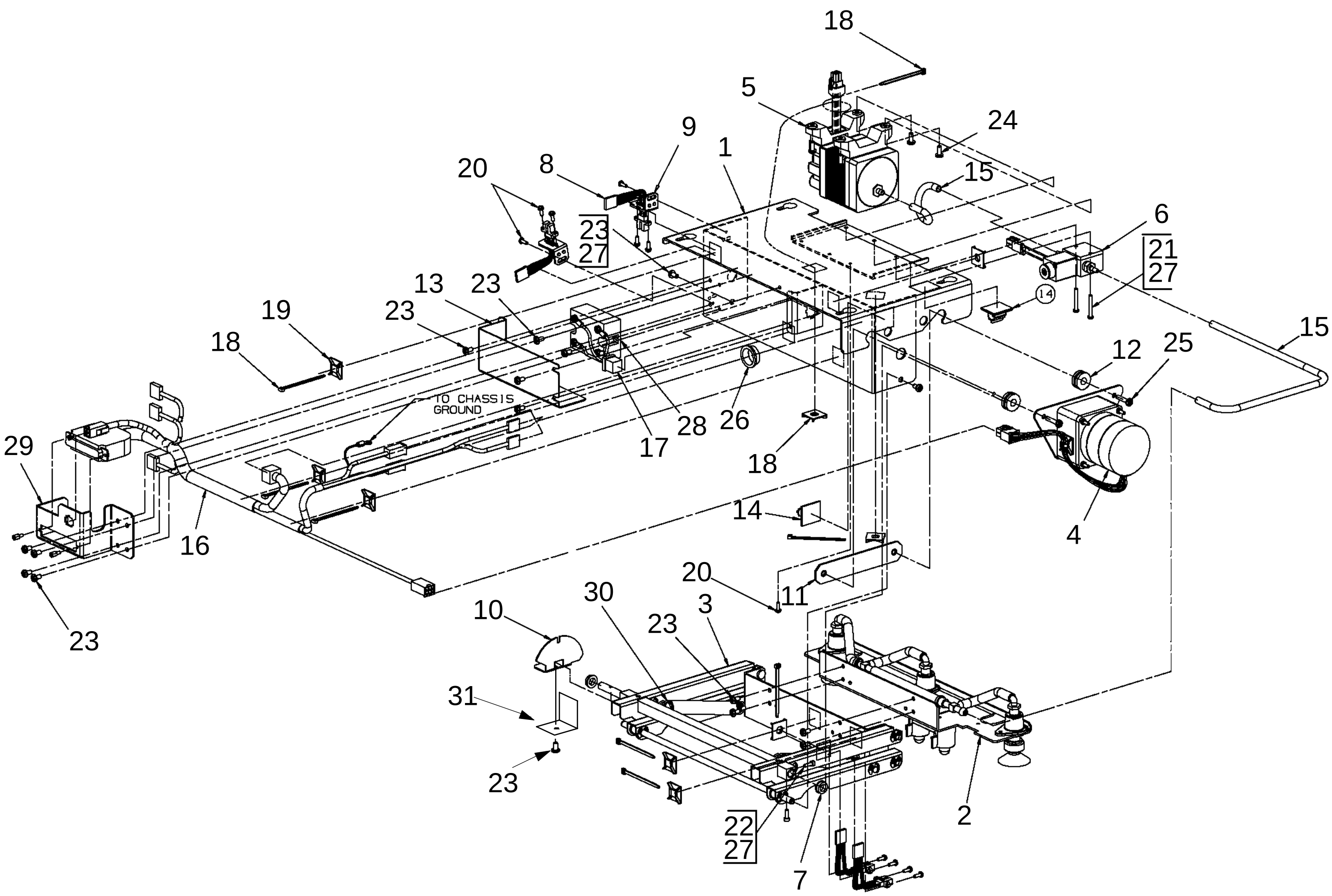


Figure 8-10. Pickup Module Assembly

Item No.	Part Number	Description	Qty
0A	78-8094-5789-4	PICKUP MODULE ASSEMBLY (8700)	1
0B	78-8092-5477-0	PICKUP MODULE ASSEMBLY (8500)	1
1	Not Available	CASING, Pickup	1
2	Not Available	PLATE WRIST ASSEMBLY (See Figure 8-11)	1
3	78-8094-5744-9	VACUUM ARM ASSEMBLY	1
4	78-8094-5709-2	PICKUP MOTOR ASSEMBLY (Ratio 18:1)	1
5	78-8094-5179-8	VACUUM PUMP ASSEMBLY	1
6	78-8094-5819-9	PICKUP VALVE ASSEMBLY	1
7	26-1011-6768-7	BEARING, Ball, .3125 ID X .5000 OD X .1562 W	2
8	78-8094-5129-3	990 SWITCH ASSEMBLY	4
9	78-8094-5079-0	BRACKET, A Sensor, Pickup	2
10	78-8094-5080-8	PLATE, Sensor, Rotation, Pickup	1
11	78-8094-5477-6	NUT, Motor, Pickup	1
12	26-1011-6510-3	GROMMET, .760 OD X .285 ID with .070 Grooves	2
13	78-8094-5583-1	COVER, Relay, Pickup	1
14	Not Available	CLAMP, Nylon	2
15	26-1011-6729-9	TUBING, .125 ID X .250 OD	AR
16	78-8094-5168-1	HARNESS ASSEMBLY, Pickup (500)	1
17	78-8094-5483-4	HARNESS ASSEMBLY, Pickup Vacuum (501)	1
18	Not Available	TIE WRAP	8
19	Not Available	MOUNT, Cable Tie	6
20	26-1003-7115-7	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0, Sems, External Tooth	11
21	26-1002-3982-6	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 25.0, Sems, External Tooth	2
22	DY-1102-0663-7	SCREW, Cap, Hex Socket, Metric, M4 X 0.7 X 10	2
23	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0, Sems, External Tooth	16
24	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0,Sems, External Tooth	4
25	26-1003-7487-0	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 20.0, Sems, External Tooth	2
26	77-8007-4484-7	BUSHING, Snap, Nylon	1
27	Not Available	ADHESIVE	AR
28	78-8094-5749-8	RELAY, Vacuum, Pickup	1
29	78-8094-5929-6	BRACKET, Connector Support	1
30	78-8094-5742-3	SPRING, Extension, Pickup	2
31	78-8092-5510-8	SHIELD, (See Note 1)	1

Note 1. Prior to Serial Numbers 87001800 order 8700 Sensor Shield Kit (78-8092-4184-3).

Figure 8-11. Plate Wrist Assembly

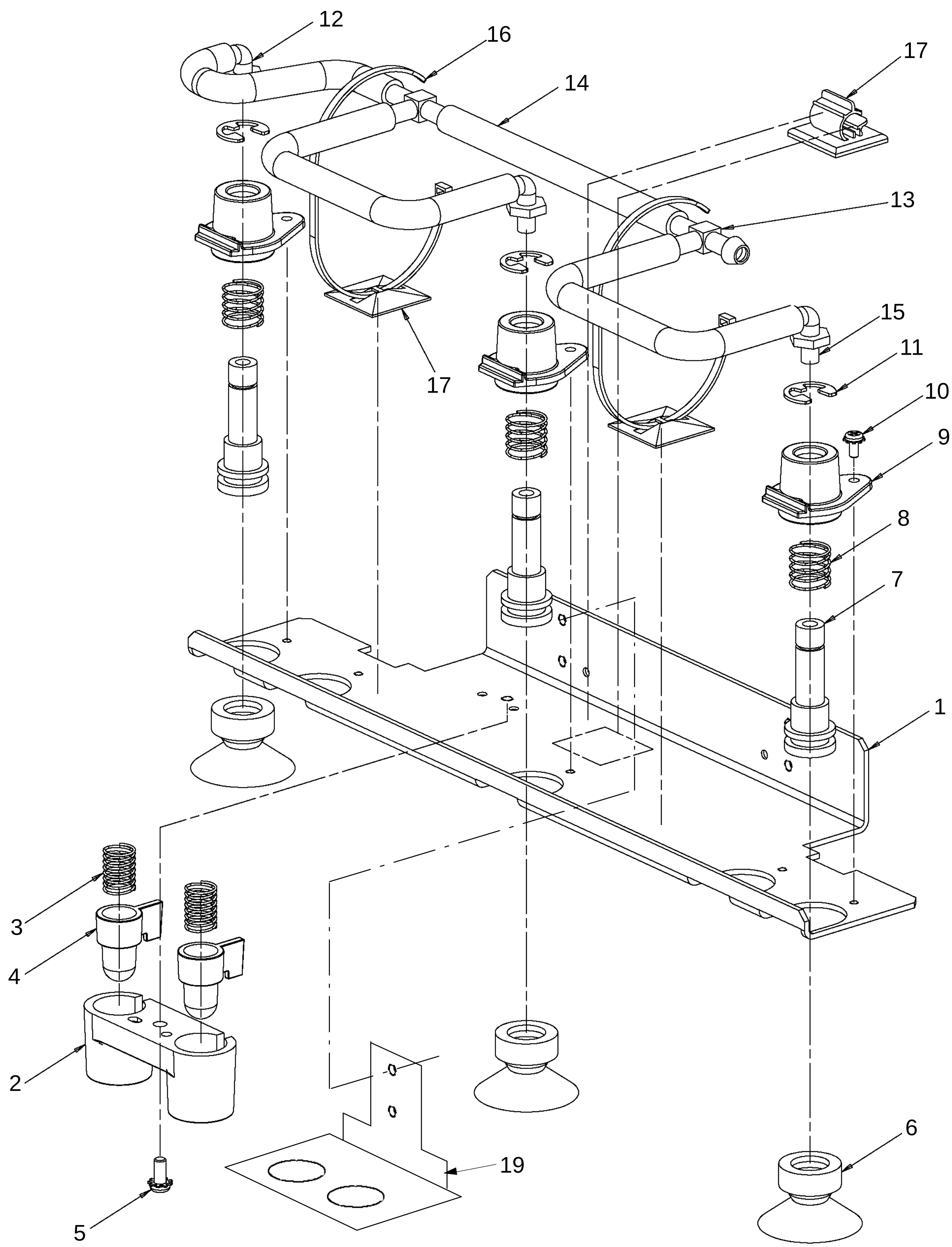


Figure 8-11. Plate Wrist Assembly

Item No.	Part Number	Description	Qty
0	Not Available	PLATE WRIST ASSEMBLY	1
1	Not Available	PLATE, Wrist, Pickup	1
2	78-8094-5087-3	HOLDER, Sensors, Pickup	1
3	78-8094-5741-5	SPRING, Sensor, Pickup	2
4	78-8094-5088-1	BUTTON, Sensor, Pickup	2
5	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0, Sems, External Tooth	1
6	78-8094-5694-6	CUP, Round, Pickup	3
7	78-8094-5607-8	SLIDE, Sucker, Pickup	3
8	78-8094-5614-4	SPRING, Sucker, Pickup	3
9	78-8094-5606-0	HOUSING, Sucker, Pickup	3
10	26-1003-7115-7	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0, Sems, External Tooth	3
11	12-7996-5868-2	RING, Retaining, External, E-Ring	3
12	26-1011-6728-1	FITTING, Elbow, 10-32 UNF Male Thd X 1/8 ID Tubing, 90 DEG, Nylon	3
13	26-1011-6726-5	FITTING, Tee, For 5/32 ID Tubing, Nylon	2
14	26-1011-6729-9	TUBING, Silicone, .125 ID X .250 OD	AR
15	Not Available	ADHESIVE	AR
16	Not Available	TIE WRAP	2
17	Not Available	MOUNT, Cable Tie	2
18	Not Available	CLAMP, Cable	1
19	78-8092-5509-0	SHIELD (See Note 1)	1

Note 1. Prior to Serial Numbers 87001800 order 8700 Sensor Shield Kit (78-8092-4184-3).

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Figure 8-12. Transport Module Assembly (Screen 1 of 4)

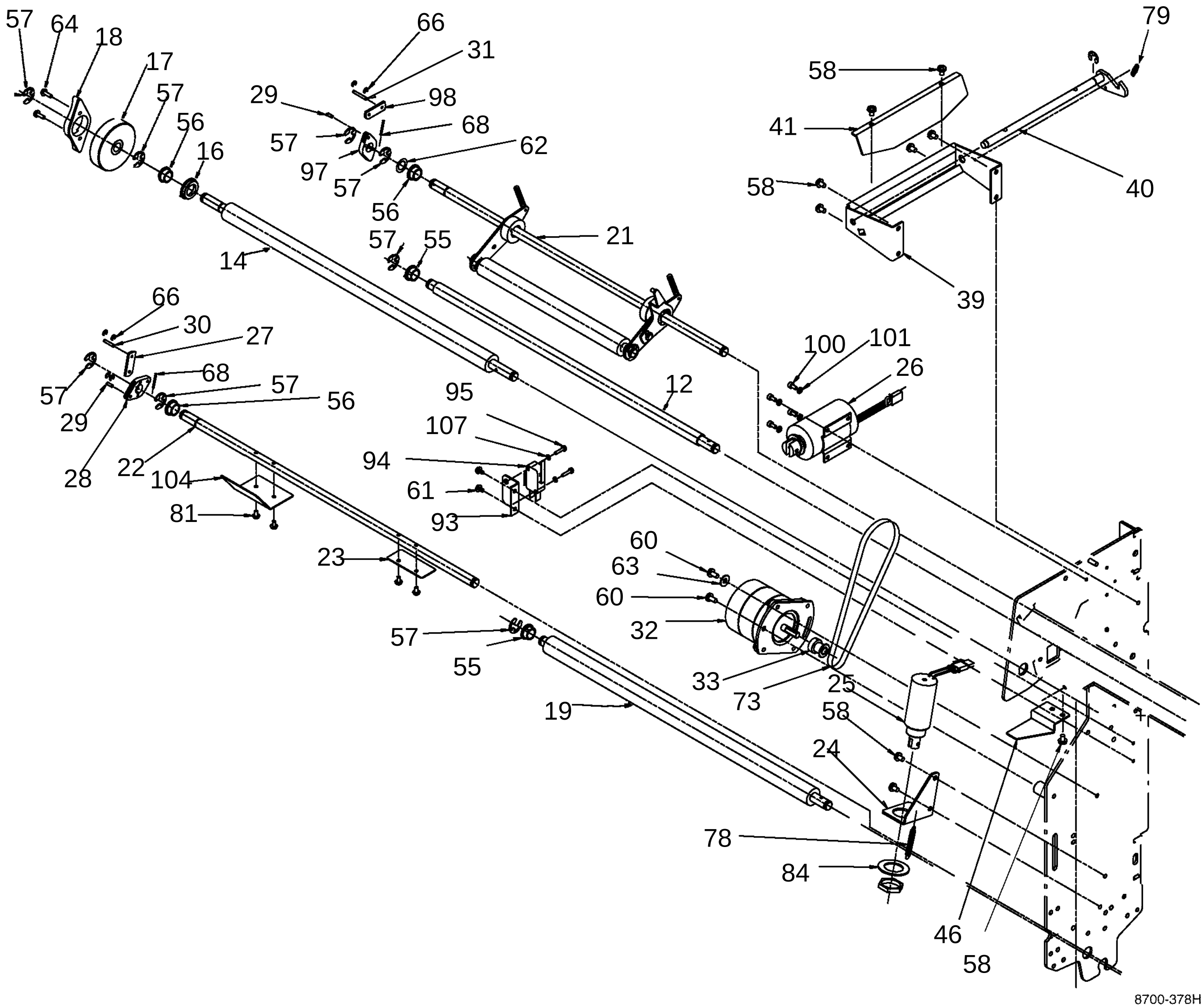


Figure 8-12. Transport Module Assembly (Screen 2 of 4)

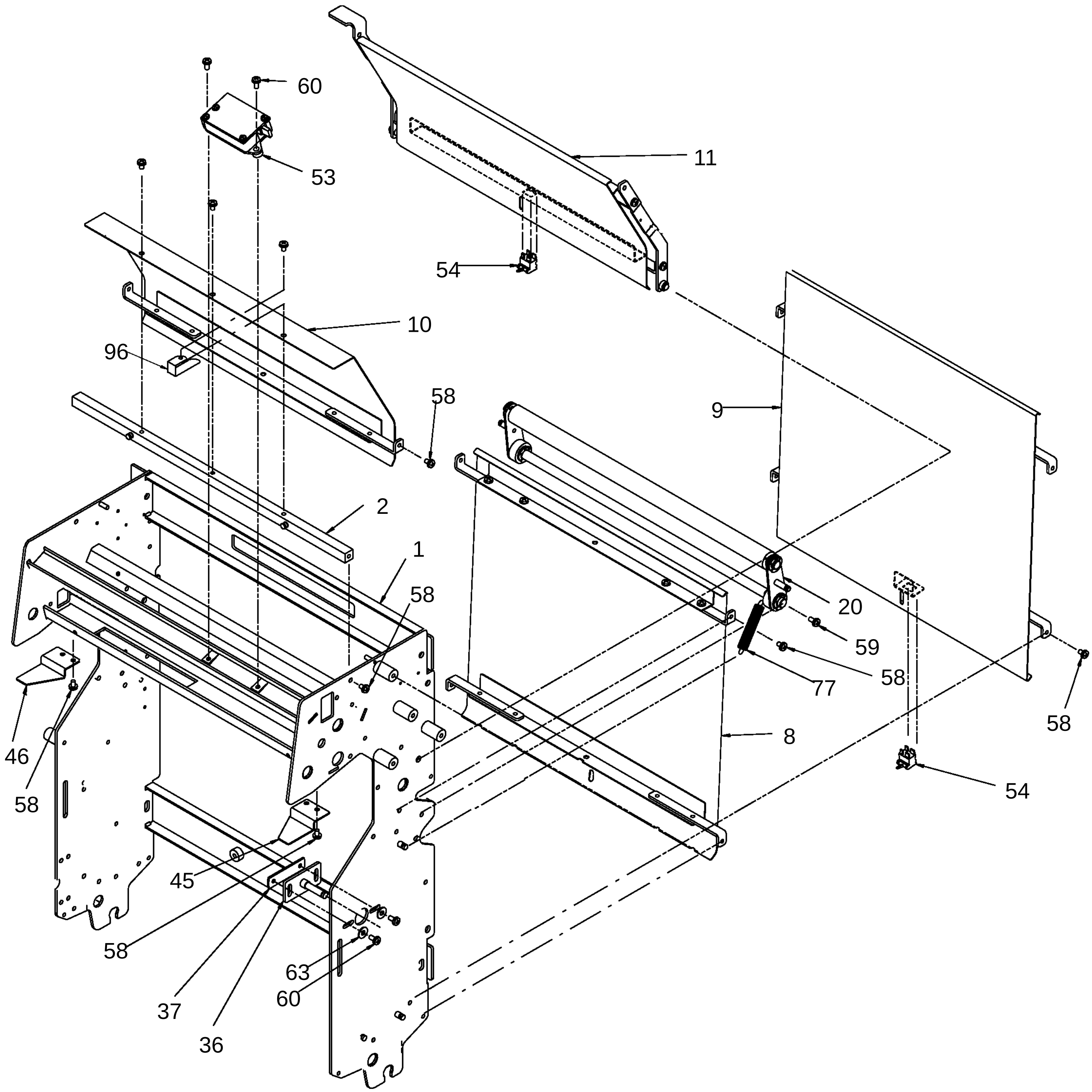


Figure 8-12. Transport Module Assembly (Screen 3 of 4)

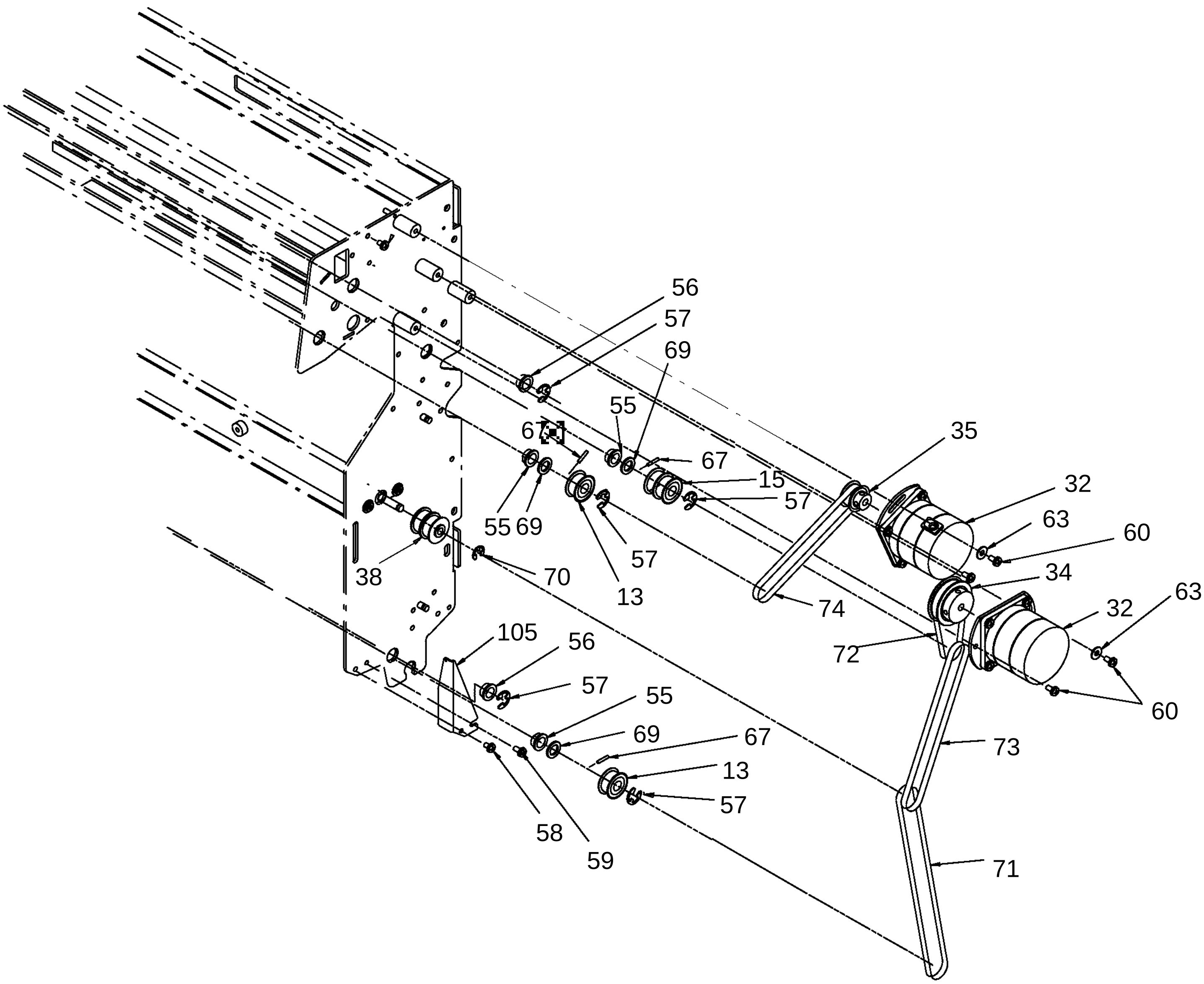
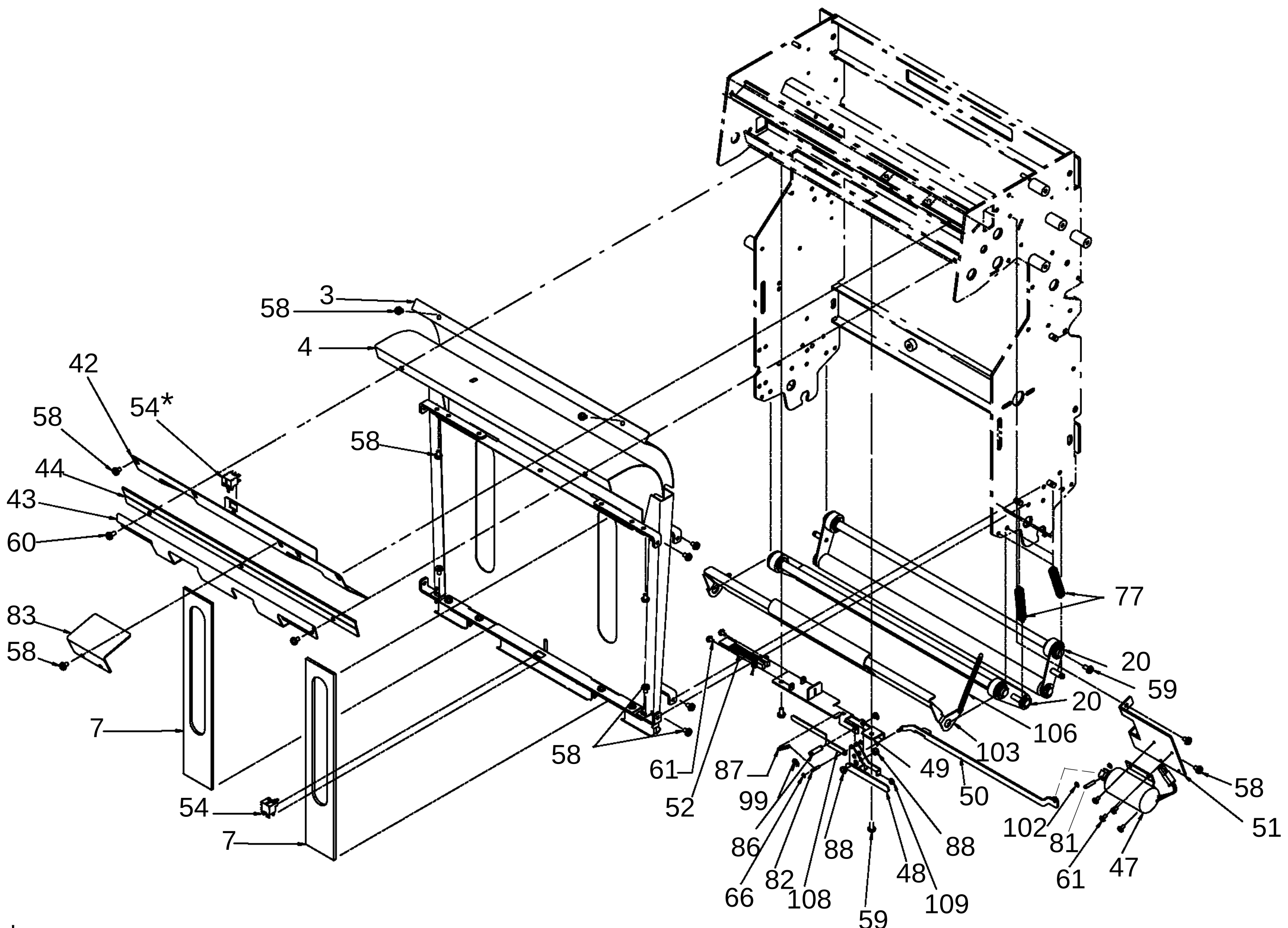


Figure 8-12. Transport Module Assembly (Screen 4 of 4)



* SW405 is only used in early production machines.

Figure 8-12. Transport Module Assembly

Item No.	Part Number	Description	Qty
0A	78-8094-5700-1	TRANSPORT MODULE ASSEMBLY (8700)	1
0B	78-8092-5500-9	TRANSPORT MODULE ASSEMBLY (8500)	1
1	Not Available	FRAME, Transport	1
2	Not Available	BAR, Support Transport	1
3	Not Available	ENTRY GUIDE BACK ASSEMBLY	1
4	Not Available	ENTRY GUIDE FRONT ASSEMBLY	1
5–6		Not Used	
7	78-8094-5455-2	COVER, Slot	2
8	Not Available	EXIT GUIDE FRONT ASSEMBLY	1
9	Not Available	EXIT GUIDE BACK ASSEMBLY	1
10	78-8092-5518-1	TRANSPORT GUIDE FRONT ASSEMBLY	1
11	78-8092-5519-9	TRANSPORT GUIDE BACK ASSEMBLY	1
12	78-8092-5535-5	ROLLER, Entry Drive, Blue	1
13	78-8094-5356-2	PULLEY, Mod, Drive Roller	2
14	78-8092-5534-8	ROLLER, Transport Drive, Blue	1
15	78-8094-5382-8	PULLEY, Mod Transport Roller	1
16	78-8094-5416-4	BUSHING, Plate	1
17	78-8094-5384-4	CLUTCH PULLEY ASSEMBLY	1
18	78-8094-5571-6	HANDLE, Clutch Pulley	1
19	78-8092-5533-0	ROLLER, Platen Drive, Blue	1
20	78-8094-5721-7	ROLL NIP ASSEMBLY, Blue	3
21	78-8094-5723-3	FEED ROLLER ASSEMBLY	1
22	78-8094-5185-5	SHAFT, Gate	1
23	78-8094-5186-3	PLATE, Gate	1
24	78-8094-5195-4	BRACKET, Solenoid Gate	1
25	78-8094-5138-4	GATE DOOR SOLENOID ASSEMBLY	1
26	78-8095-9527-1	TRANSPORT FEED SOLENOID ASSEMBLY	1
27	78-8094-5192-1	LINK, Solenoid	1
28	78-8094-5187-1	ACTUATOR, Solenoid	1
29	78-8094-5189-7	PIN, Solenoid	2
30	78-8094-5191-3	PIN, Solenoid	1
31	78-8094-5961-9	PIN, Solenoid, Feed	1
32	78-8094-5708-4	MOTOR AND PLATE ASSEMBLY	3
33	78-8094-5586-4	PULLEY, Mod, 16T	1
34	78-8095-9501-6	PULLEY, Mod, Transport Motor	1
35	26-1011-6793-5	PULLEY, with Set Screw	1
36	78-8094-5310-9	BRACKET, Takeup	1
37	78-8094-5589-8	PLATE, Nut	1
38	78-8094-5383-6	PULLEY, Mod Idler	1
39	78-8094-5287-9	HANDLE, Latch	1
40	78-8094-5291-1	LATCH, Transport	1

Figure 8-12. Transport Module Assembly (continued)

Item No.	Part Number	Description	Qty
41	78-8094-5289-5	LEVER, Latch	1
42A	78-8094-5282-0	GUIDE, Film Top Entry (8700)	1
42B	78-8092-5455-6	GUIDE, Film Top Entry (8500)	1
43	78-8094-5745-6	DEFLECTOR	1
44	78-8094-5303-4	BRUSH, Static	1
45A	78-8094-5326-5	CORNER, Nip, Right Hand (8700)	1
45B	78-8092-5454-9	CORNER, Nip, Right Hand (8500)	1
46A	78-8094-5327-3	CORNER, Nip, Left Hand (8700)	1
46B	78-8092-5453-1	CORNER, Nip, Left Hand (8500)	1
47	78-8094-5942-9	TONGUE DEPRESSOR SOLENOID ASSEMBLY	1
48	78-8094-5919-7	ARM, Tongue Depressor	1
49	78-8094-5920-5	BRACKET, Tongue Depressor	1
50	78-8094-5975-9	LINK, Tongue Depressor	1
51	78-8094-5963-5	BRACKET, Solenoid	1
52	78-8094-5129-3	990 SWITCH ASSEMBLY	1
53	78-8094-5726-6	MULTIFEED SENSOR ASSEMBLY	1
54	78-8094-5130-1	850 SWITCH ASSEMBLY	3
55	78-8094-5561-7	BEARING, Mod	5
56	78-8161-4221-6	BEARING, .3765 ID X .502 OD X .062	5
57	12-7996-5868-2	RING, Retaining, External, E-Ring	13
58	26-1003-7119-9	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 6.0, Sems, External Tooth	52
59	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0, Sems, External Tooth	7
60	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0, Sems, External Tooth	10
61	26-1003-7115-7	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0, Sems, External Tooth	12
62	26-1011-6711-7	WASHER, Spring, .400 ID X .612 OD X .009 T	1
63	26-1008-9102-2	WASHER, Metric, Plain, M4	5
64	26-1003-7754-3	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 10,Sems, Internal Tooth	2
65	78-8656-4005-2	RING, Retaining, External, E-Ring	1
66	78-8656-3998-9	RING, Retaining, External, E-Ring	10
67	26-1000-2561-3	PIN, Dowl, .094 DIA X .500	3
68	26-1000-0813-0	PIN, Dowl, .062 DIA X .625	2
69	78-8163-0115-0	BEARING, .385 ID X .625 OD X .062	3
70	12-7996-2818-0	RING, Retaining, External, E-Ring	1
71	26-1011-6330-6	BELT, Stock Drive, .0186 P (40 DP) 235 Grooves, .250 W	1
72	26-1011-6326-4	BELT, Stock Drive, .0186 P (40 DP) 98 Grooves, .250 W	1
73	26-1011-6329-8	BELT, Stock Drive, .0186 P (40 DP) 170 Grooves, .250 W	2
74	26-1011-6327-2	BELT, Stock Drive, .0186 P (40 DP) 150 Grooves, .250 W	1
75–76		Not Used	
76	78-8094-5475-0	SPRING, Guide, Left Hand	1
77	12-7994-9492-2	SPRING, External, .312 OD X .037 Wire Dia X 1.75	6
78	26-1011-6375-1	SPRING, External, .125 OD X .014 Wire Dia X 1.125	1

Figure 8-12. Transport Module Assembly (continued)

Item No.	Part Number	Description	Qty
79	78-8005-4385-8	SPRING, External, .188 OD X .026 Wire Dia X .750	1
80	26-1006-0708-9	CLAMP, Cable	2
81	78-8094-5964-3	PIN, Solenoid	1
82	78-8094-5925-4	PIN, Link	1
83	78-8094-5793-6	COVER, CB	1
84	26-1004-0974-2	WASHER, Lock, Internal, 3/4	1
85	Not Available	LABEL, Laser, Danger	1
86	78-8094-5924-7	PIN, Arm	1
87	26-1011-7121-8	SPRING, External,.125 OD X .875 .018 Wire	1
88	78-8000-8621-3	BEARING, .1885 BORE X .2343 OD X .078 W	2
89	78-8094-5167-3	HARNESS ASSEMBLY, Transport, (400)	1
90	Not Available	TIE WRAP	15
91	Not Available	DECAL, Handle	2
92	Not Available	DECAL, Guide Handle	1
93	78-8094-5866-0	MOUNT, Switch	1
94	26-1011-6938-6	SWITCH, SPDT, 10 A 125, 250, 277 VAC .5 A 125 VDC	1
95	96-0000-0166-7	SCREW, Mach, Pan Head, Phil, Metric, M2.5 X 0.45 X 14.0	2
96	78-8092-5409-3	BRACKET, Harness	1
97	78-8094-5959-3	ACTUATOR, Solenoid, Feed	1
98	78-8092-4080-3	LINK, Solenoid, Feed	1
99	78-8656-4001-1	RING, Retaining, External, E-Ring	2
100	78-8010-7213-9	SCREW, Cap, Hex Socket, Metric, M3 X 0.5 X 6.0	4
101	26-1001-0124-0	WASHER, Metric, Lock, A3.2 ID X 6.0 OD X .8, External Tooth	4
102	78-8656-4000-3	RING, Retaining, External, E-Ring	2
103	78-8094-5833-0	BAR, Film Release	1
104	78-8094-5834-8	PLATE, Gate, Extended	1
105	78-8094-5844-7	STOP, Bar Release	1
106	26-1011-7155-6	SPRING, External, .188 OD X .024 Wire Dia X 2.500	1
107	26-1001-6361-2	WASHER, Metric, Lock, A2.7 ID X 5.5 OD X .4, External Tooth	2
108	78-8092-4075-3	FLAG, Tongue	1
109	78-8185-5656-1	O-RING, .15625 ID X .28125 X .0625	1

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Figure 8-13. Exposure Module Assembly

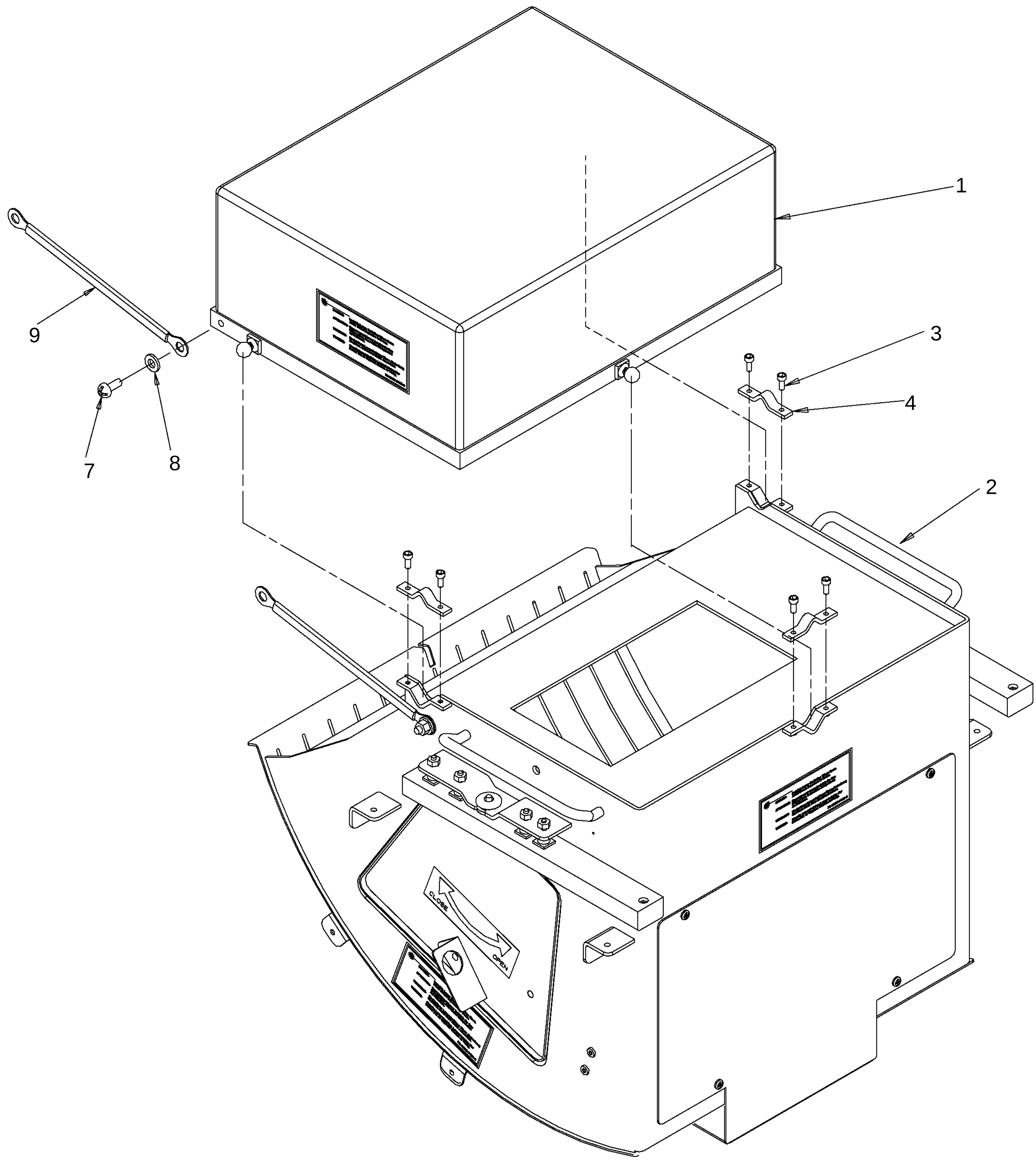

Figure 8-13. Exposure Module Assembly

Item No.	Part Number	Description	Qty
0	Not Available	EXPOSURE MODULE ASSEMBLY	
1	96-0000-3347-0	OPTICS MODULE	1
2	78-8094-5536-9	PLATEN ASSEMBLY (See Figure 8-14)	1
3	26-1007-4493-2	SCREW, Cap, Metric, M4 X 0.7 X 10.0, Hex Socket	6
4	78-8094-5524-5	V-CLAMP, Optics	3
7	26-1003-7500-0	SCREW, Mach, Pan Head, Phil, Metric, M6 X 1.0 X 8.0,Sems, External Tooth	1
8	26-1008-5460-8	WASHER, Metric, Lock, M6.0, External Tooth	1
9	78-8094-5485-9	CABLE ASSEMBLY, 701, Platen Ground	1

Figure 8-14. Platen Assembly

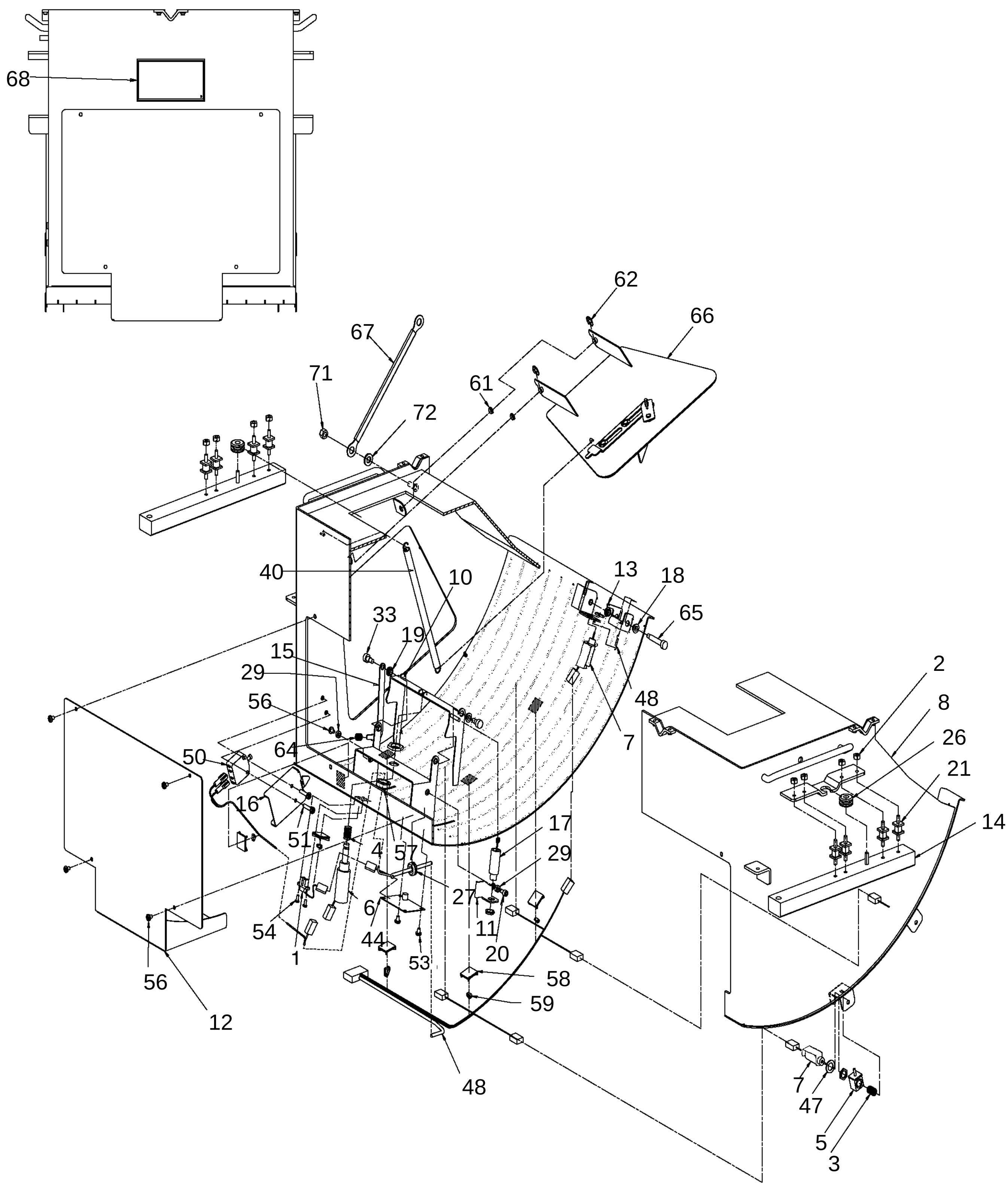

Figure 8-14. Platen Assembly

Item No.	Part Number	Description	Qty
0A	78-8094-5536-9	PLATEN ASSEMBLY (8700)	1
0B	78-8092-5490-3	PLATEN ASSEMBLY (8500)	1
1	78-8094-5129-3	990 SWITCH ASSEMBLY	1
2	26-1011-6389-2	NUT, Mach, Lock, 8-32,	8
3	78-8094-5271-3	SPRING, Alignment Arm	4
4	78-8095-9367-2	SPRING, Kicker	1
5	78-8094-5715-9	PIN, Rolling, Alignment	4
6	78-8094-5136-8	KICKER SOLENOID ASSEMBLY	1
7A	78-8094-5135-0	PLATEN SOLENOID ASSEMBLY (Y701, Y702, Y703, Y704 and Y705) (For Machines prior to S/N 8701048) (Retainer Not Included)	5
7B	78-8092-5400-2	PLATEN SOLENOID ASSEMBLY (Y701, Y702, Y703, Y704 and Y705) (For Machines after S/N 8701048) (Retainer Included)	5
8	Not Available	WELDMENT, Platen	1
10	78-8094-5525-2	ARM, Kicker	1
11	78-8094-5930-4	BRACKET, Airpot	1
12A	78-8094-5527-8	PANEL, Rear (8700)	1
12B	78-8092-5480-4	PANEL, Rear (8500)	1
13	78-8094-5682-1	LEVER, Hold Down	1
14	78-8094-5531-0	BLOCK, Mounting	2
15	78-8094-5888-4	ARMATURE, Film Sensor	1
16	78-8094-5533-6	BRACKET, SWitch, Platen	1
17	26-1011-7057-4	CYLINDER	1
19	26-1011-6199-5	BEARING, Metric, 6.025 ID 7.20 OD X 2 with 11 DIA flange	4
20	DY-1102-0663-7	SCREW, Cap, Metric, M4 X 0.7 X 10, Hex Socket	1
21	26-1011-6195-3	MOUNT, Cylinder	8
26	78-8613-4822-1	GROMMET, Rubber, 5/16 ID X 13/16 OD with 1/8 groove	2
27	78-8613-4823-9	GROMMET, Rubber, .312 ID X .625 OD W/ .437 DIA X .062 with groove	1
29	26-1011-6201-9	SPACER, Nylon, Round, .312 OD X .171 ID X .125, for #8 screw	2
33	26-1011-8159-7	SCREW, Shoulder, Metric, 6.0 DIA X 6 M5 X 0.8 X 6 Thd, Hex Socket	2
40	78-8005-0188-0	SPRING, External., 375 OD X .045	1
44	78-8094-5112-9	PWA, Beam Power Board	1
46	Not Available	HARNESS ASSEMBLY, Platen	1
47	26-1003-3187-0	WASHER, Lock, 3/8, INT Tooth (8700 Only)	4
48	26-1011-6194-6	SPRING, External, 3.00 OD .35 Wire Dia. X 14.0	1
50	26-1011-6202-7	SWITCH, Interlock, 16A 250 VAC (SW703)	1
51	26-1003-7487-0	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 20.0, Sems, External Tooth	2
53	26-1011-6387-6	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10	2
54	26-1003-7118-1	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 12.0, Sems, External Tooth	2
56	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10.0, Sems, External Tooth	
57	77-8007-4484-7	BUSHING, Snap, Nylon	1
58	Not Available	MOUNT, Cable Tie	5

Figure 8-14. Platen Assembly (continued)

Item No.	Part Number	Description	Qty
59	Not Available	TIE WRAP	5
61	26-1011-6517-8	WASHER,Shoulder, Nylon	2
62	12-7996-2818-0	RING, Retaining, External, E-Ring	2
64	78-8094-5720-9	SPRING, Sensor Arm	1
65	26-1011-6562-4	SCREW, Shoulder, Hex Socket, Metric, 6.0 DIA X 30 M5 X 0.8	1
66A	78-8094-5696-1	SIDE ACCESS DOOR ASSEMBLY (8700)	1
66B	78-8092-5481-2	SIDE ACCESS DOOR ASSEMBLY (8500)	1
67	Not Available	CABLE ASSEMBLY, 701, Platen Ground	1
68	Not Available	LABEL, Laser, Danger	2
71	26-1011-6823-0	NUT, Mach, Metric, M6 X 1.00, Keps	1
72	26-1008-5460-8	WASHER, Metric, Lock, M6.0, External Tooth	1

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Figure 8-15. Processor Entrance Assembly

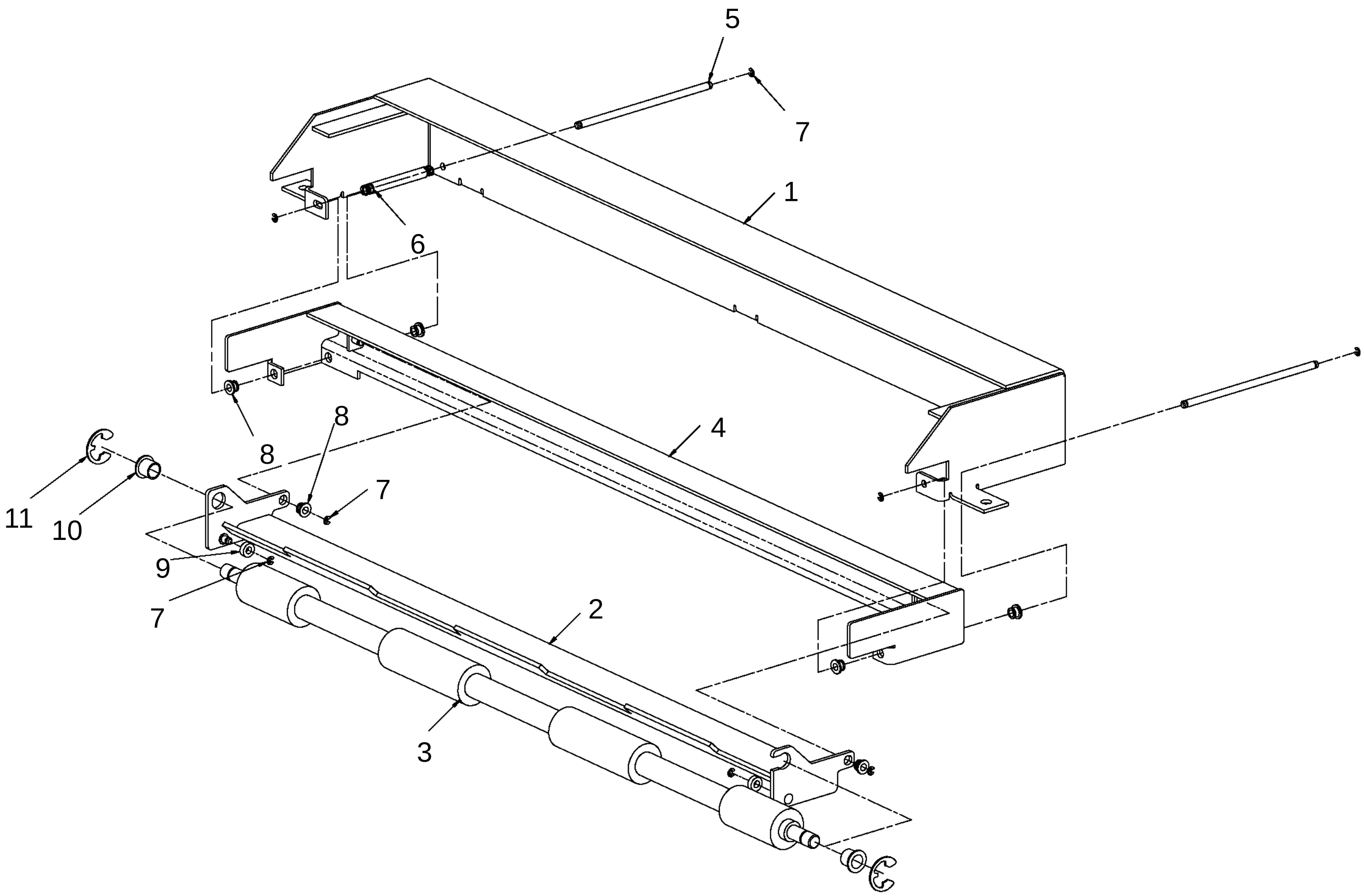


Figure 8-15. Processor Entrance Assembly

Item No.	Part Number	Description	Qty
0	Not Available	PROCESSOR ENTRANCE ASSEMBLY	1
1	78-8094-5434-7	HOUSING, Entrance	1
2	78-8094-5422-2	SHUTTER, Entrance	1
3	78-8092-5560-3	ROLLER, Slotted, NIP, Blue	1
4	78-8094-5647-4	BRACKET, Slide, Processor Entrance	1
5	78-8094-5447-9	SHAFT, Entrance	2
6	26-1011-6814-9	SPRING, Compression, .180 OD X .020 Wire Dia	2
7	78-8656-4000-3	RING, Retaining, External, E-Ring	8
8	78-8001-2446-9	BEARING, .1260 BORE X .1718 OD X .078 W	6
9	26-1011-6815-6	BEARING, BALL, .1250 ID X .2500 OD	2
10	78-8005-7119-8	BEARING, .251 ID X .297 OD X .250,	2
11	12-7996-2818-0	RING, Retaining, External, E-Ring	2

Figure 8-16. Processor Assembly

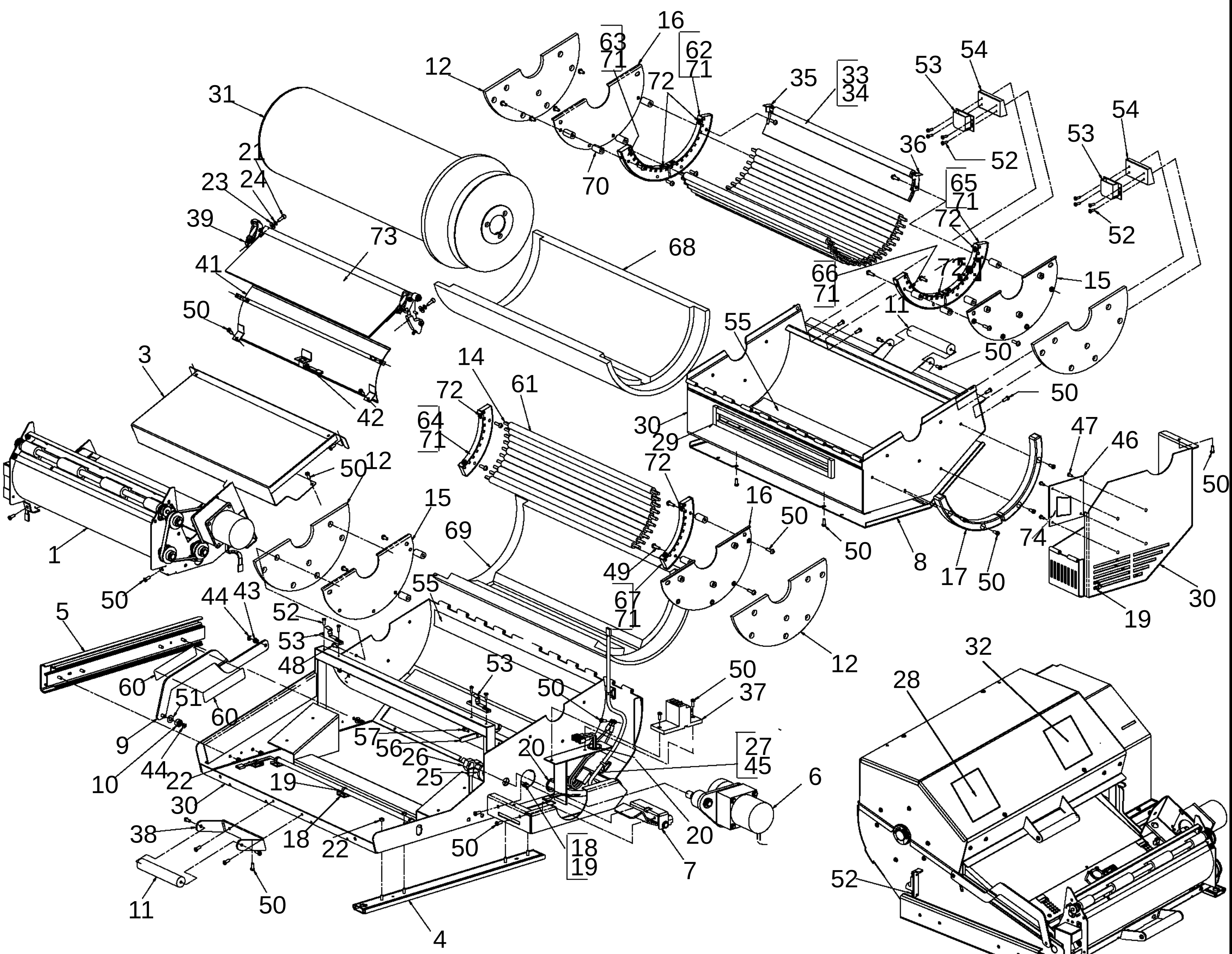


Figure 8-16. Processor Assembly

Item No.	Part Number	Description	Qty
0	78-8095-9400-1	PROCESSOR ASSEMBLY	1
1	78-8094-5660-7	EXIT ASSEMBLY (See Figure 8-20)	1
3	78-8095-9490-2	COOLING ZONE, Perforated	1
4	78-8094-5838-9	SLIDE, Two Member	1
5	78-8094-5839-7	SLIDE, Three Member	1
6	78-8095-9399-5	DRIVE PROCESSOR ASSEMBLY	1
7	78-8095-9441-5	PROCESSOR LOCK ASSEMBLY	1
8	78-8095-9445-6	COVER, Top, Processor	1
9	78-8095-9443-1	ROD, Prop, Processor	1
10	78-8095-9444-9	ROLLER, Guide, Prop Rod	1
11	78-8095-9446-4	HANDLE, Grip, Processor	2
12	78-8094-5650-8	INSULATION, End	4
14	Not Available	LUBRICANT, Oil	AR
15	78-8094-5575-7	PLATE, Right Hand	2
16	78-8094-5576-5	PLATE, Left Hand	2
17	78-8095-9366-4	GUIDE, Shroud, Processor	2
18	Not Available	MOUNT, Cable Tie	7
19	Not Available	TIE WRAP	8
20	26-1003-8126-3	BUSHING, Nylon	2
21	DY-1102-0683-5	SCREW, Cap, Hex Socket, Metric, M4 X 0.7 X 16	2
22	26-1007-2397-7	NUT, Mach, Hex, Metric, M4 X 0.7, Keps	8
23	26-1008-9102-2	WASHER, Metric, Plain, M4	2
24	DY-1142-0683-1	WASHER, Metric, Lock, 4.1 ID X 7.6 OD X 0.9 B4	2
25	26-1009-7376-2	WASHER, Metric, Lock, M12	1
26	26-1008-9207-9	NUT, Mach, Hex, Metric, M12 X 1.75	1
27	26-1011-7766-0	FASTENER, Jack Socket Assembly	1
28	Not Available	LABEL, Hot Surface	2
29	96-0000-1872-9	GASKET	AR
30	Not Available	PROCESSOR FRAME ASSEMBLY (See Figure 8-17)	1
31A	6E7372	PROCESSOR DRUM ASSEMBLY, Domestic (See Figure 8-18)	1
31B	3E5526	PROCESSOR DRUM ASSEMBLY, OUS (See Figure 9-19)	1
32	Not Available	LABEL, Sharp Objects	1
33	96-0000-0939-7	BARRIER, Air	1
34	78-8095-9481-1	ROD, Support, Air Stop	1
35	78-8095-9484-5	SUPPORT, Rod, Left Hand.	1
36	78-8095-9482-9	SUPPORT, Rod, Right Hand	1
37	78-8095-9405-0	PROCESSOR BRUSH ASSEMBLY	1
38	78-8095-9451-4	MOUNT, Pull Handle	1
39	42-0013-9498-2	FILM STRIPPER ASSEMBLY (See NO TAG)	1
41	78-8094-5445-3	GUIDE, FILM, ENTRANCE	1
42	78-8094-5130-1	850 SWITCH ASSEMBLY	1
43	78-8162-1035-1	BEARING, Nylon	1

Figure 8-16. Processor Assembly (continued)

Item No.	Part Number	Description	Qty
44	78-8656-4001-1	RING, Retaining, External, E-Ring	2
45	Not Available	HARNESS ASSEMBLY, Processor, (300)	1
46	78-8094-5104-6	PWA, Processor Communication Board	1
47	26-1003-5768-5	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0	4
48	26-1003-7119-9	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 6.0, Sems, External Tooth	12
49	26-1003-7760-0	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 16, Sems, Internal Tooth	12
50	26-1003-7121-5	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 10, Sems, External Tooth	49
51	26-1003-3672-1	WASHER, Plain, Nylon, .257 ID X .500 OD X .032	1
52	26-1003-7116-5	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 8.0, Sems, External Tooth	14
53	26-1011-7147-3	LATCH, Slam	2
54	78-8095-9454-8	SPACER, Latch, Processor	2
55	70-0060-8362-3	TAPE, 1.00 W X 60 YD X .005	AR
56	78-8094-5808-2	LATCH, Stripper	2
57	26-1011-6784-4	SCREW, Metric, Shoulder, 4 X 3.75 W/M3 X 0.5 THD	2
60	Not Available	LABEL, Processor, Prop Rod	2
61	96-0000-0343-2	ROLLER ASSEMBLY	29
62	96-0000-0309-3	RETAINER	2
63	96-0000-0346-5	MIDDLE RETAINER ASSEMBLY	2
64	96-0000-0347-3	BOTTOM RETAINER ASSEMBLY	2
68	78-8092-4003-5	INSULATION, Top	1
69	96-0000-0943-9	INSULATION, Bottom	1
70	78-8092-4001-9	STANDOFF, Retainer	12
71	78-8094-5910-6	CLIP, Inner	6
72	26-1003-5775-0	SCREW, Mach, Metric, FL,PHIL, 90 Deg Countersunk, M4 X 0.7 X 6.0	12
73	78-8092-4093-6	PLATE, Felt	1
74	26-1011-5699-5	PHOTOINTERRUPTER (DS4) (See Note 1)	1

Note 1. Part includes both lens cap and photointerrupter. Use lens cap only, do not solder in new photointerrupter.

Figure 8-17. Processor Frame Assembly

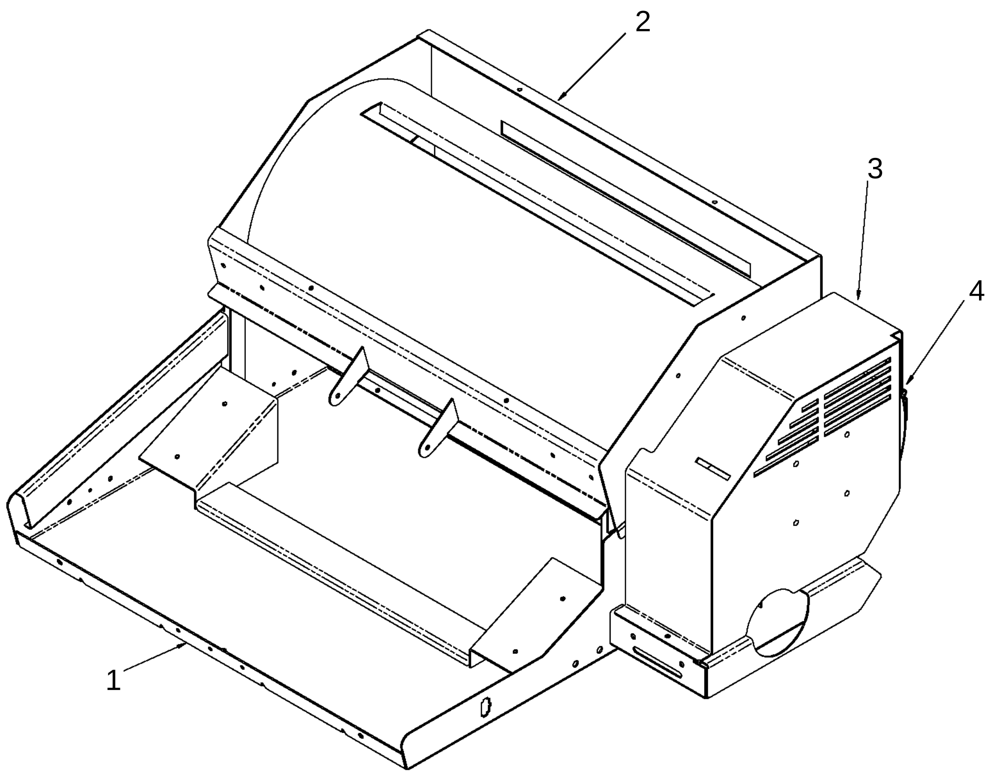


Figure 8-17. Processor Frame Assembly

Item No.	Part Number	Description	Qty
0	Not Available	PROCESSOR FRAME ASSEMBLY	1
1	Not Available	FRAME, Processor	1
2	Not Available	COVER, Processor	1
3	78-8092-4352-6	SHROUD, Processor	1
4	78-8095-9384-7	PIN, Hinge, Processor	1

Figure 8-18. Processor Drum Assembly

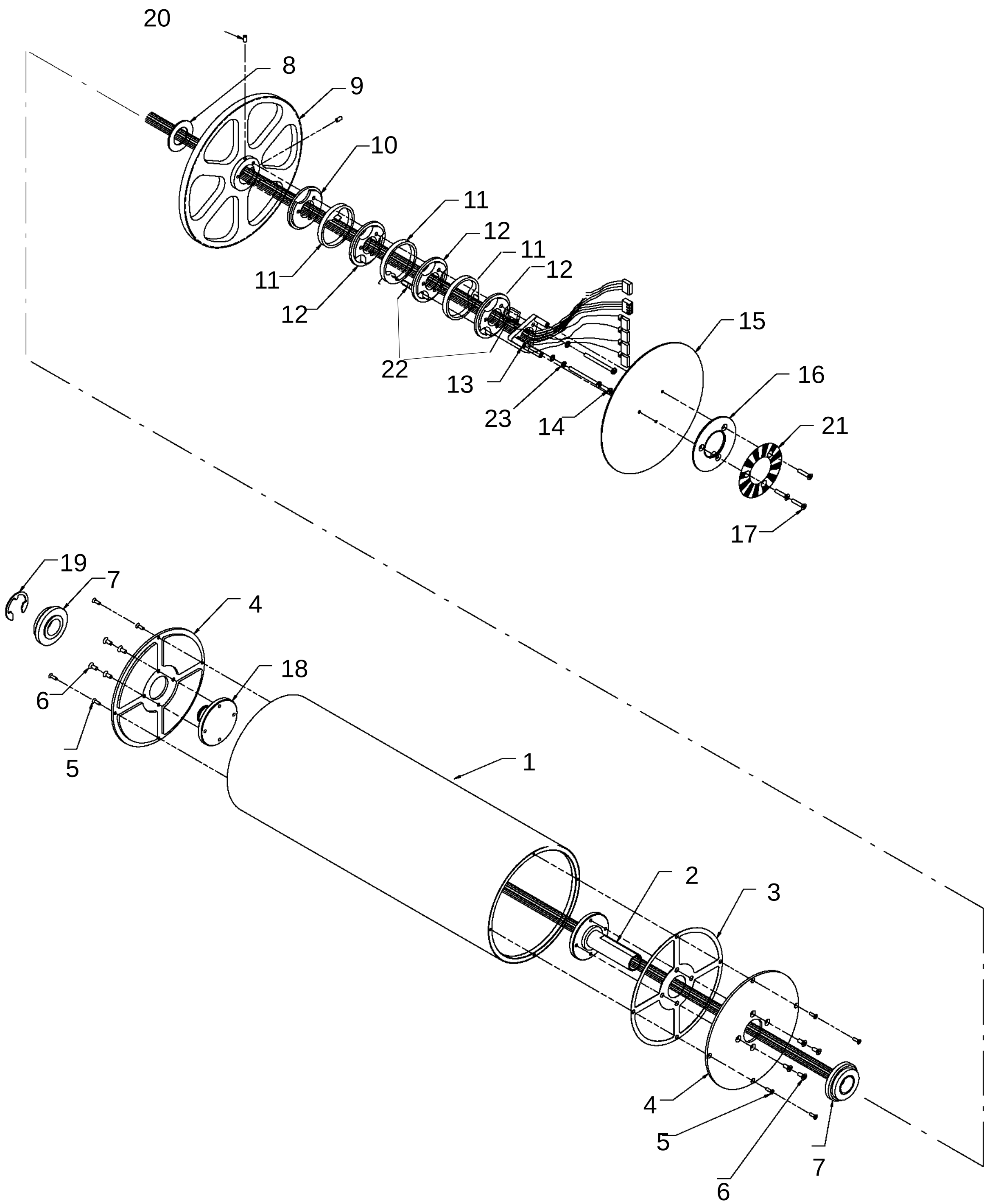


Figure 8-18. Processor Drum Assembly

Item No.	Part Number	Description	Qty
0A	6E7372	PROCESSOR DRUM ASSEMBLY, Domestic	1
0B	3E5526	PROCESSOR DRUM ASSEMBLY, OUS	1
1A	Not Available	PROCESSOR DRUM SUB-ASSEMBLY	1
1B	78-8095-9373-0	FUSE, Modified (Located in Drum/Heater and Coating Assembly)	1
2	Not Available	SHAFT, Electrical	1
3	Not Available	GROUND, Drum	1
4	Not Available	CAP, End, Drum	2
5	26-1009-7248-3	SCREW, Cap, Hex Socket, Metric, M3 X 0.5 X 10	8
6	Not Available	SCREW, Cap, Hex Socket, M4 X 0.7 X 10	8
7	Not Available	BEARING, Housing, Drum	2
8	Not Available	BEARING, 24 ID X 42 OD X 1.5	
9	Not Available	GEAR, Drum, 160 Tooth Modified	1
10	Not Available	SPACER, Ground	1
11	78-8095-9306-0	RING, Slip	3
12	Not Available	SPACER	3
13	Not Available	COLLAR, PC Mount	1
14	Not Available	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 50	3
15A	7E2916	PWA, Rotating Processor Board	1
15B	26-1011-6238-1	FUSE, 1/4 Amp, 250V (located on Rotating Processor Board)	1
16	Not Available	REFLECTOR, Sensor	1
17	Not Available	SCREW,Cap, Hex Socket, Metric, M4 X 0.7 X 20.0	3
18	Not Available	SHAFT, Short, Drum	1
19	Not Available	RING, Retaining, External, E-Ring	1
20	Not Available	SCREW, Set, Hex Socket, Metric, M4 X 0.7 X 8.0, Cup Pt	2
21	78-8095-9339-1	DECAL, Sensor Reflector	1
22	66-0000-0190-0	MOD 24 CABLE KIT, RPB	1
23	26-1011-6641-6	WASHER, Metric, Lock, J4.3 ID X 8.0 OD X .5, Internal Tooth	3

Figure 8-19. Film Stripper Assembly

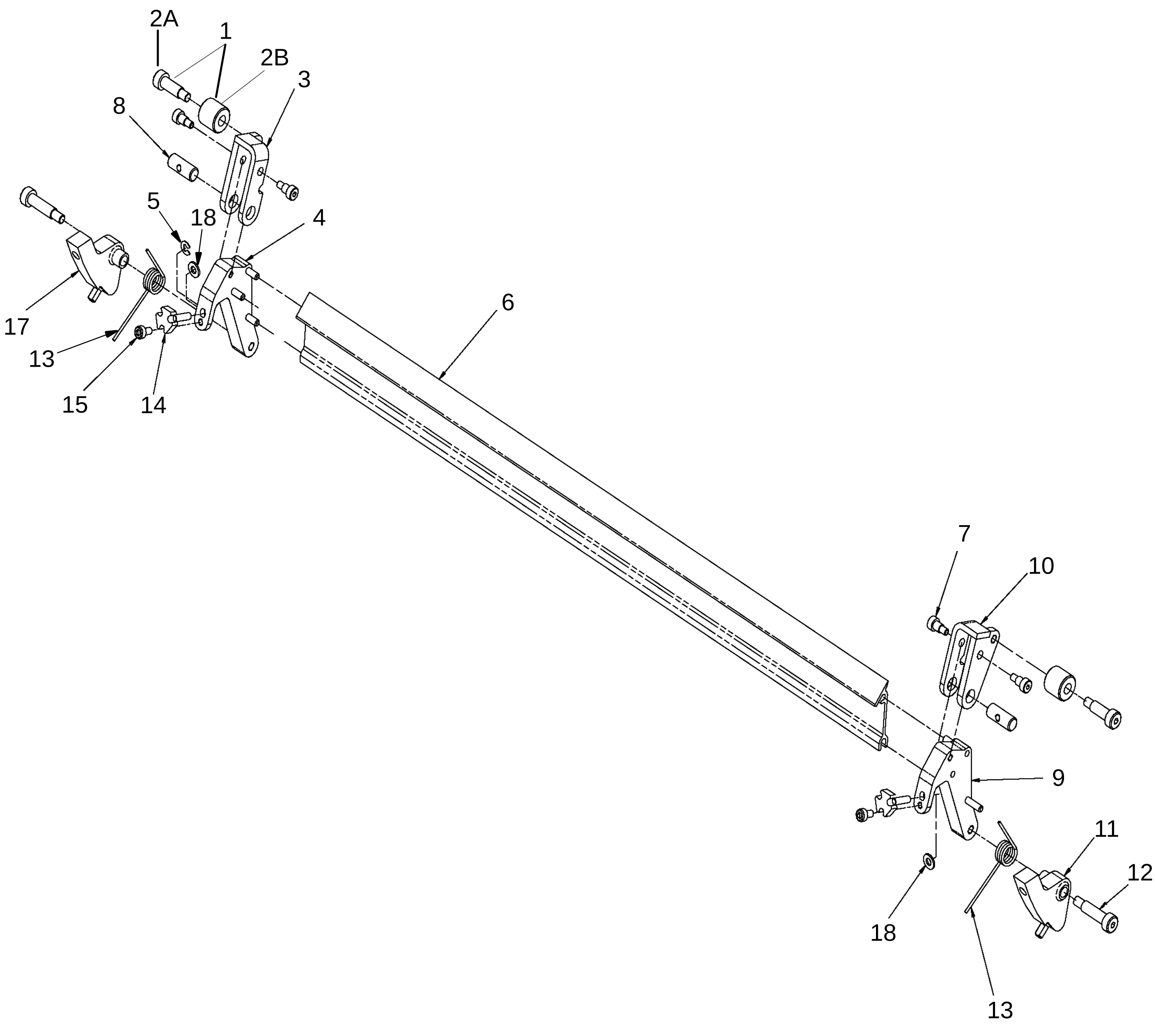


Figure 9-18. Film Stripper Assembly

Item No.	Part Number	Description	Qty
0	42-0013-9498-2	FILM STRIPPER ASSEMBLY	
1	66-0000-0154-6	DRUM ROLLER KIT (Includes items 2A and 2B)	1
2A	Not Available	SCREW, Shoulder	2
2B	Not Available	ROLLER, Adjuster	2
3	74-0500-5366-4	ADJUSTER, Left Hand	1
4	78-8095-9524-8	MOUNT, Left Hand	1
5	78-8003-8593-8	RING, Retaining, External, E–Ring	2
6	78-8092-4078-7	BLADE, Stripper	1
7	26-1011-7845-2	SCREW, Shoulder, Hex Socket, M3	4
8	78-8092-4089-4	PIN, Adjuster	2
9	78-8095-9525-5	MOUNT, Right Hand	1
10	74-0500-5364-9	ADJUSTER, Right Hand	1
11	78-8095-9431-6	BRACKET, Mount, Right Hand	1
12	26-1011-6336-3	SCREW, Shoulder, Hex Socket, M4 x 16	2
13	74-0401-8320-9	TORSION SPRING KIT, Includes left hand (green) and right hand (yellow) springs	1
14	78-8095-9521-4	SCREW, Adjuster	2
15	78-8010-7213-9	SCREW, Cap, Hex Socket, M3 x 6	2
17	78-8095-9393-8	BRACKET, Mount, Left Hand	1
18	70-0701-4523-3	WASHER	2
19	26-1012-1130-3	LUBRICANT, Krytox (Not shown)	AR
20	26-1004-1786-9	ADHESIVE, Loctite 222 (Not shown)	AR

Figure 8-20. Exit Assembly

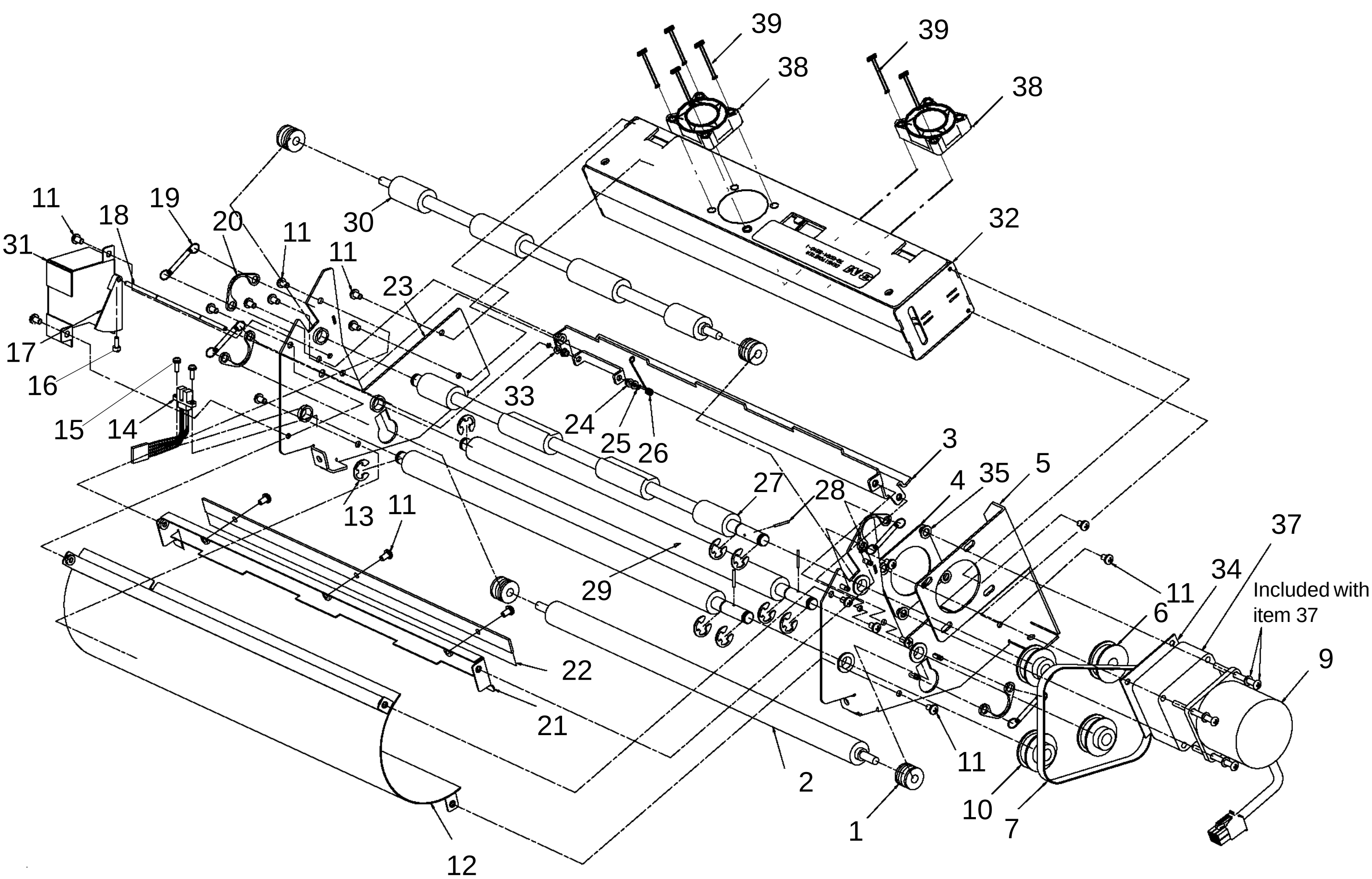


Figure 8-20. Exit Assembly

Item No.	Part Number	Description	Qty
0	78-8094-5660-7	EXIT ASSEMBLY	1
1	78-8094-5463-6	BEARING, Spring	4
2	78-8092-5537-1	ROLLER, NIP, Exit, Blue	1
3	Not Available	TRAY, Film, Exit	1
4	78-8092-4011-8	PLATE, Nut, Exit	1
5	Not Available	BRACKET, Right, Exit	1
6	26-1011-7241-4	PULLEY, with 8-32 Set Screw	1
7	26-1011-6535-0	BELT, Stock Drive, .0186 P (40 DP) 175 Grooves .250 W,	1
9	78-8092-4076-1	MOTOR ASSEMBLY, M303, (Shaft With Spline) (See Note 1)	1
10	78-8092-4010-0	PULLEY, Drive	3
11	26-1003-7119-9	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 6.0, Sems, External Tooth	19
12	Not Available	GUIDE, Film, Exit	1
13	12-7996-5868-2	RING, Retaining, External, E-Ring	9
14	78-8094-5129-3	990 SWITCH ASSEMBLY, SW304	1
15	26-1003-7115-7	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0, Sems, External Tooth	2
16	26-1003-7923-4	SCREW, Cap, Hex Socket, Metric, M2 X 0.4 X 10.0	1
17	78-8094-5619-3	ARM, Film Detector, Exit	1
18	78-8094-5600-3	SHAFT, Film Detector, Exit	1
19	26-1000-6421-6	SPRING, External, .188 OD X .022 Wire Dia X 1.375	4
20	78-8094-5584-9	RETAINER, Roller	4
21	Not Available	BRACKET, Brush	1
22	78-8094-5303-4	BRUSH, Static	1
23	Not Available	BRACKET, Left, Exit	1
24	78-8001-2446-9	BEARING, .1260 Bore X .1718 OD X .078 W	2
25	78-8656-4000-3	RING, Retaining, External, E-Ring	2
26	78-8094-5604-5	SPRING, FILm Detector, Exit	1
27	78-8092-5530-6	ROLLER, Drive, Tray, Blue	1
28	26-1000-2561-3	PIN, Dowl, .094 DIA X .500	3
29	78-8092-5536-3	ROLLER, Drive, Exit, Blue	2
30	78-8092-5560-3	ROLLER, Slotted, NIP, Blue	1
31	Not Available	COVER, Exit	1
32A	78-8094-5540-1	DENSITOMETER ASSEMBLY	1
33	26-1011-6674-7	WASHER, Plain, Nylon, .125 ID X .250 OD X .020	2
34	78-8095-9320-1	BARRIER, Vibration Motor (See Note 1)	1
35	78-8095-9321-9	WASHER, Vibration Motor	4
37	78-8095-9327-6	GEARHEAD, Exit (Ratio 6:1) (See Note 1)	1
38	78-8095-9505-7	FAN ASSEMBLY, Densitometer	2
39	26-1003-6940-9	SCREW, Metric, Mach, M3 X 0.5 X 25, Sems, External Tooth	6

Note 1. If either Motor Assembly (item 9) or Exit Gearhead (item 37) are suspected to be bad, order Items 9, 34 and 37.

Figure 8-21. Power Module Assembly

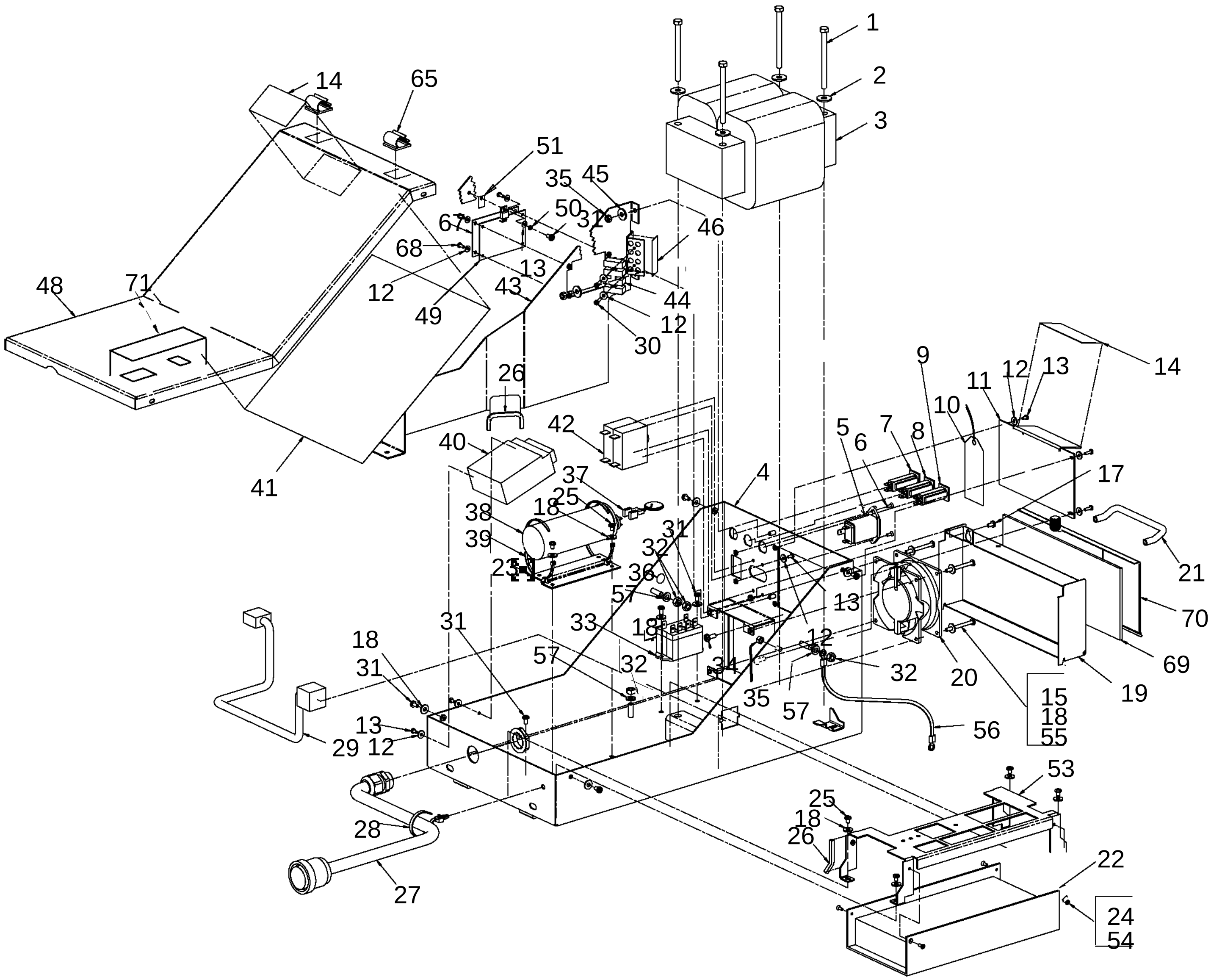


Figure 8-21. Power Module Assembly

Item No.	Part Number	Description	Qty
0A	78-8094-5738-1	POWER MODULE ASSEMBLY (U.S)	1
0B	78-8095-9549-5	POWER MODULE ASSEMBLY (O.U.S.)	1
1	26-1011-6642-4	SCREW, Mach, Hex Head, Metric, M6 X 1.0 X 80	4
2	26-1011-6324-9	WASHER, Plain, 1/4 .500 OD X .031 T, FIBER	4
3	78-8092-4153-8	TRANSFORMER ASSEMBLY (T901)	1
4	Not Available	ENCLOSURE BASE ASSEMBLY	1
5	26-1011-6251-4	FILTER, 10 A 120/150 V 50/60 HZ (LF901)	1
6	26-1011-6645-7	SCREW, Cap, Hex Socket, Metric, M3 X 0.5 X 8.0	2
7	26-1011-6222-5	CIRCUIT BREAKER, 3 A 50 VDC-250 VAC (CB904)	1
8	26-1011-6221-7	CIRCUIT BREAKER, 8 A 50 VDC-250 VAC, (CB903)	1
9	26-1004-3199-3	CIRCUIT BREAKER, 15A @ 32 VDC/250 VAC, (CB902)	1
10	Not Available	TAG, Caution (120-220V, 15/20A)	1
11	78-8095-9392-0	PANEL, Air, Power Module	1
12	26-1008-9104-8	WASHER, Metric, Plain, M3	17
13A	26-1003-7115-7	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 6.0, Sems, External Tooth	11
13B	26-1004-1109-4	SCREW, Mach, Pan head, Phil, Metric, 6-32 X .250, Sems, Internal Tooth	ALT
14	Not Available	LABEL, Warning, Disconnect Power	2
15	26-1011-6640-8	SCREW, Cap, Hex Socket, Metric, M4 X 0.7 X 45	4
17	26-1003-7122-3	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 12.0	1
18	26-1008-9102-2	WASHER, Metric, Plain, M4,	16
19	78-8095-9494-4	HOUSING, Filter, Power Module	1
20	78-8094-5763-9	FAN ASSEMBLY (M901)	1
21	26-1011-7794-2	HANDLE	1
22	78-8094-5718-3	POWER SUPPLY (PS1) (+5, +/-17, +24)	1
23	Not Available	BRACKET, Utility, Power Module	1
24	26-1002-3841-4	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 8.0	4
25	26-1003-7119-9	SCREW, Mach, Pan Head, Phil, M4 X 0.7 X 6.0, Sems, External Tooth	6
26	26-1002-6586-2	GROMMET, Nylon	AR
27	78-8094-5162-4	HARNESS ASSEMBLY, DC Power (901)	1
28	Not Available	TIE WRAP	1
29	78-8092-4175-1	HARNESS ASSEMBLY, AC Power (900)	1
30	26-1003-6937-5	SCREW, Mach, Pan Head, Phil, M3 X 0.5 X 16, Sems, External Tooth	2
31	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, M4 X 0.7 X 8.0, Sems, External Tooth	7
32	26-1011-6644-0	NUT, Mach, Hex, Metric, M6 X 1.0,Keps	4
33	78-8094-5755-5	RELAY, 24 VAC (K901) (Power Switch)	1
34	26-1011-6639-0	SCREW, Mach, Pan Head, Phil, 10-32 X .38, Sems, External Tooth	2
35	26-1011-6643-2	NUT, Mach, Hex, Metric, M5 X 0.8, Keps	3
36	Not Available	LABEL, Earth Ground	1
37	78-8094-5757-1	VARISTOR ASSEMBLY (V901)	1
38	26-1007-4915-4	CAPACITOR, 45 UF 240 VAC (C901)	1
39	Not Available	TIE WRAP	2

Figure 8-21. Power Module Assembly (continued)

Item No.	Part Number	Description	Qty
40	78-8094-5500-5	POWER SUPPLY, -5.2VDC (PS2) (For VIB machines only)	1
41	Not Available	LABEL, Wiring Diagram	1
42A	26-1011-6229-0	CIRCUIT BREAKER, 10 A 277 VAC (CB901) (with M3 X 0.5 mounting threads)	1
42B	26-1011-8003-7	CIRCUIT BREAKER, 10 A 277 VAC (CB901) (with 6-32 mounting threads)	ALT
43	Not Available	BRACKET, Air, Power Module	1
44	26-1007-3192-1	TERMINAL BLOCK (TS901)	1
45	26-1008-9213-7	WASHER, Metric, Plain, M5	2
46	Not Available	LABEL, Voltage Taps	1
48	Not Available	COVER, Power Module	1
49	78-8094-5515-3	PWA, Fan Control Board	1
50	26-1006-9839-3	BUSHING, Strain Relief, Nylon	1
51	26-1011-5429-7	WASHER, Insulator, .006 THK	1
53	78-8095-9432-4	COVER, Power Supply Mounting	1
54	26-1001-8018-6	WASHER, Metric, Lock, 3.2 ID X 6.0 OD X 0.2 Thk, External Tooth	4
55	Not Available	ADHESIVE	AR
56	78-8094-5512-0	CABLE ASSEMBLY, Power Ground (902)	1
57	26-1008-5460-8	WASHER, Metric, Lock, M6.0, External Tooth	3
65	26-1004-0917-1	CLAMP	2
67	78-8095-9496-9	INSULATOR, PWB, Fan Control	1
68	26-1003-7116-5	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 8.0, Sems, External Tooth	4
69	78-8095-9495-1	FILTER, Air, Power Module	1
70	78-8095-9492-8	COVER, Filter, Power Module	1
71	78-8092-5401-0	LABEL, Access Hole Cover	1

Figure 8-22. Electronics Enclosure Assembly, Standalone
(Screen 1 of 2)

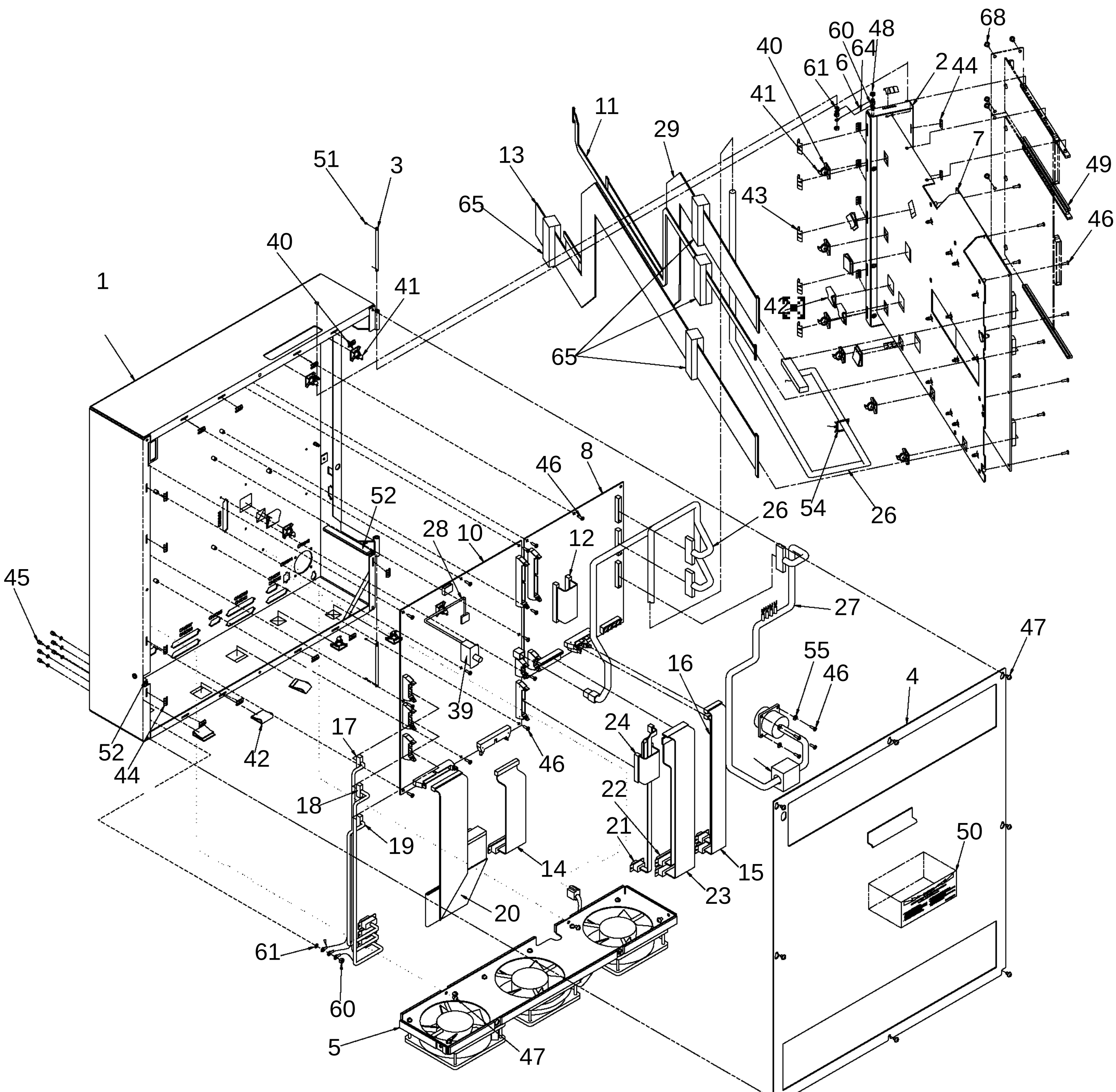


Figure 8-22. Electronics Enclosure Assembly, Standalone (Screen 2 of 2)

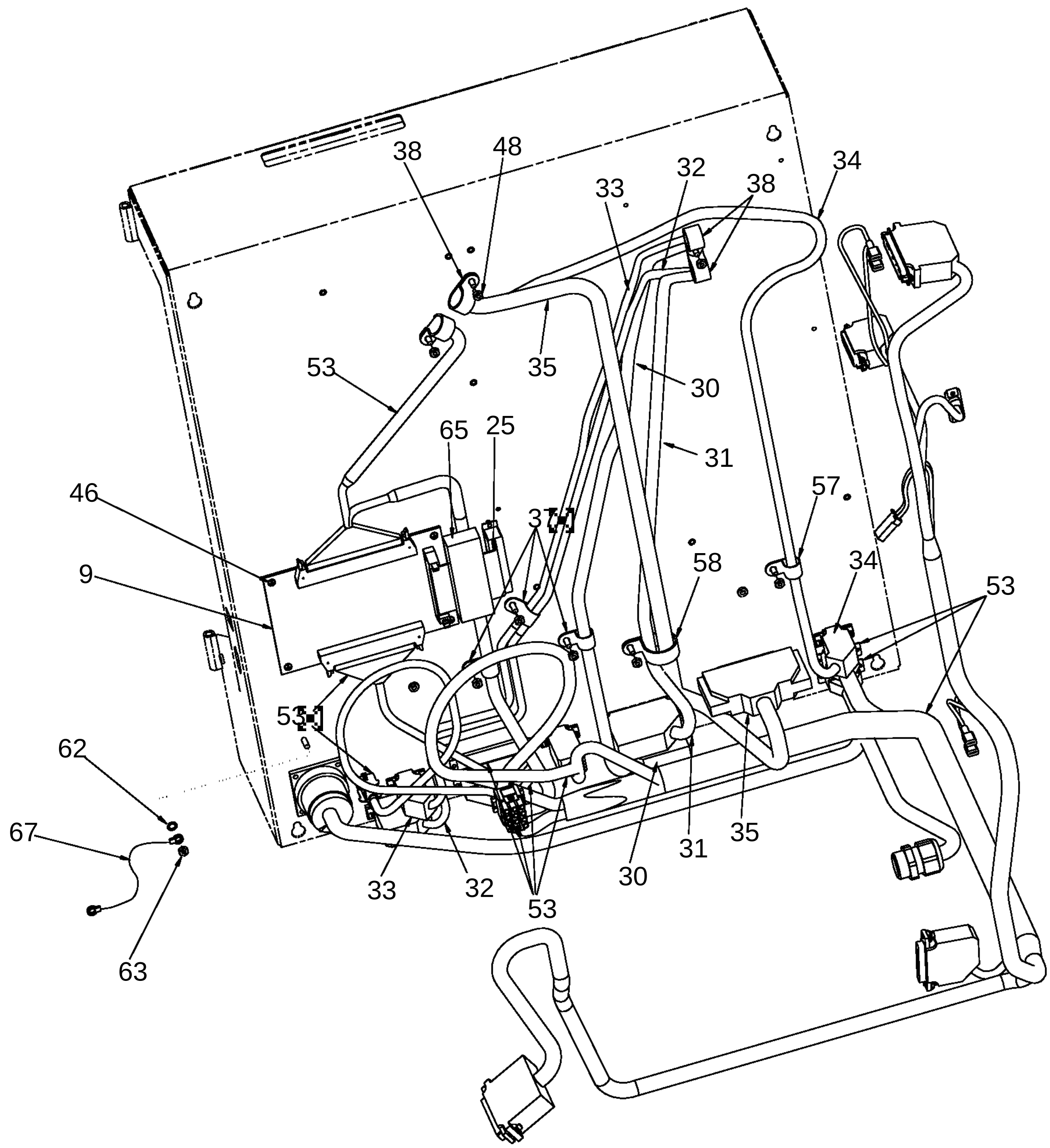


Figure 8-22. Electronics Enclosure Assembly, Standalone

Item No.	Part Number	Description	Qty
0	Not Available	ELECTRONIC ENCLOSURE ASSEMBLY, Standalone	
1	Not Available	ENCLOSURE, Main	1
2	Not Available	PANEL, Inside	1
3	78-8094-5267-1	PIN, Hinge	2
4	78-8094-5268-9	PANEL, Cover	1
5	Not Available	ELECTRONICS FAN ASSEMBLY (See Figure 8-24)	1
6	78-8094-5847-0	CABLE RESTRAINT	1
7	78-8092-4140-5	IMAGE PROCESSOR BOARD, (IPB)	1
8	78-8092-4145-4	MACHINE INTERFACE BOARD, (MIB)	1
9	78-8094-5116-0	POWER DISTRIBUTION BOARD, (PDB)	1
10	78-8092-4146-2	SYSTEM CONTROLLER BOARD, (SCB)	1
11	78-8094-5140-0	CABLE ASSEMBLY, IPB/SCB	1
12	78-8094-5141-8	CABLE ASSEMBLY, MIB/SCB	1
13	78-8094-5142-6	CABLE ASSEMBLY, Internal Optics Data	1
14	78-8094-5144-2	CABLE ASSEMBLY, Internal Optics Control	1
15	78-8094-5146-7	CABLE ASSEMBLY, Internal Optics Power	1
16	78-8094-5148-3	CABLE ASSEMBLY, Internal Optics Atten.	1
17	78-8094-5150-9	CABLE ASSEMBLY, BP/MF	1
18	78-8094-5151-7	CABLE ASSEMBLY, RF Tag	1
19	78-8094-5152-5	CABLE ASSEMBLY, Internal Densitometer	1
20	78-8094-5154-1	CABLE ASSEMBLY, Internal Local Panel	1
21	78-8094-5156-6	CABLE ASSEMBLY, 24 VAC	1
22	78-8094-5157-4	CABLE ASSEMBLY, Solenoids	1
23	78-8094-5158-2	CABLE ASSEMBLY, Motors	1
24	78-8094-5159-0	CABLE ASSEMBLY, Internal PDB/SCB	1
25	78-8094-5160-8	CABLE ASSEMBLY, External PDB/SCB	1
26	Not Available	HARNESS ASSEMBLY, IPB/SCB DC Power	1
27	Not Available	HARNESS ASSEMBLY, MIB DC Power	1
28	78-8094-5164-0	HARNESS ASSEMBLY, Service Switch	1
29	78-8094-5484-2	CABLE ASSEMBLY, IPB/NMB	1
30	78-8094-5143-4	CABLE, MOLDED, External Optics Data, I/O Interconnect	1
31	78-8094-5145-9	CABLE, MOLDED, External Optics Control, I/O Interconnect	1
32	78-8094-5147-5	CABLE, MOLDED, External Optics Power, I/O Interconnect	1
33	78-8094-5149-1	CABLE, MOLDED, External Optics Atten, I/O Interconnect	1
34	78-8094-5153-3	CABLE, MOLDED, External Densitometer, I/O Interconnect	1
35	78-8094-5155-8	CABLE, MOLDED, External Local Panel, I/O Interconnect	1
37	Not Available	CLAMP, Nylon, 1/2”	2
38	Not Available	CLAMP, Nylon	4
39	26-1011-6847-9	SWITCH, Push-pull (RESET), 0.1 A 125 VAC	1
40	Not Available	TIE MOUNT, Adhesive Backed	12
41	Not Available	TIE WRAP	12

Figure 8-22. Electronics Enclosure Assembly, Standalone (continued)

Item No.	Part Number	Description	Qty
42	Not Available	CLAMP	9
43	Not Available	SHIELD	7
44	Not Available	SHIELDING, Electrical	23
45	26-1004-3945-9	FASTENER, 4-40 THD X .5	12
46	26-1002-3977-6	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 8.0	32
47	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0, Sems, External Tooth	12
48	26-1009-7311-9	NUT, Lock, Metric, M4. (with nylon insert)	9
49	Not Available	GUIDE	4
50	Not Available	LABEL, Damage, Static Electricity	
51	78-8016-5859-8	RING, Retaining, External, E-Ring	4
52	26-1011-4695-4	TAPE, Foam, .125 T X .500 W (Bulk)	AR
53	Not Available	HARNESS ASSEMBLY, Module Interconnect	1
54	Not Available	CLAMP, Nylon	1
55	26-1008-9104-8	WASHER, Metric, Plain, M3	4
57	Not Available	CLAMP, Cable, Nylon, 3/8”	1
58	Not Available	CLAMP, Nylon	1
60	26-1007-2397-7	NUT, Mach, Metric, M4 X 0.7, Keps	3
61	26-1011-6809-9	WASHER, Metric, Lock, M4, External Tooth	3
62	26-1011-6808-1	WASHER, Metric, Lock, M5, External Tooth	1
63	26-1011-6643-2	NUT, Metric, Mach, M5 X 0.8, Keps	1
64	78-8092-4164-5	CABLE ASSEMBLY, Panel Ground	1
65	Not Available	SHIELD, Flat Cable Clamp	5
66	26-1011-6671-3	SHIELD, Ferrite	1
67	78-8094-5485-9	CABLE ASSEMBLY, Platen Ground	1
68	26-1003-7121-5	SCREW, M4 X 10	9
69A	78-8092-4054-8	FIBER INTERFACE BOARD, (FIB), (includes faceplate) (See Note 1)	AR
69B	78-8092-4055-5	VIDEO INTERFACE BOARD, (VIB), (includes faceplate) (See Note 1)	AR
69C	78-8092-4053-0	DIGITAL INTERFACE BOARD, (DIB), (includes faceplate) (See Note 1)	AR
70A	78-8092-4081-1	TRANSLATOR DAUGHTER BOARD, Copper, (TDB/C), (includes faceplate) (See Note 1)	AR
70B	78-8092-4083-7	TRANSLATOR DAUGHTER BOARD, Fiber, (TDB/F), (includes faceplate) (See Note 1)	AR
71A	78-8092-4115-7	MEMORY DAUGHTER BOARD, (MDB), 16 MEG, 8-Bit (See Note 1)	AR
71B	78-8092-4116-5	MEMORY DAUGHTER BOARD, (MDB), 32 MEG, 8-Bit (See Note 1)	AR
71C	78-8092-4117-3	MEMORY DAUGHTER BOARD, (MDB), 32 MEG, 12-Bit (See Note 1)	AR
72A	78-8094-5492-5	MODEM BOARD, US (See Note 1)	AR
72B	78-8092-4154-6	MODEM CONNECT BOARD, OUS (See Note 1)	AR
73	78-8092-5434-1	SUPPORT, Ferrite, Video Interface Board (See Note 1)	AR

Note 1. Not shown.

Figure 8-23. Electronics Enclosure Assembly, Dual
(Screen 1 of 2)

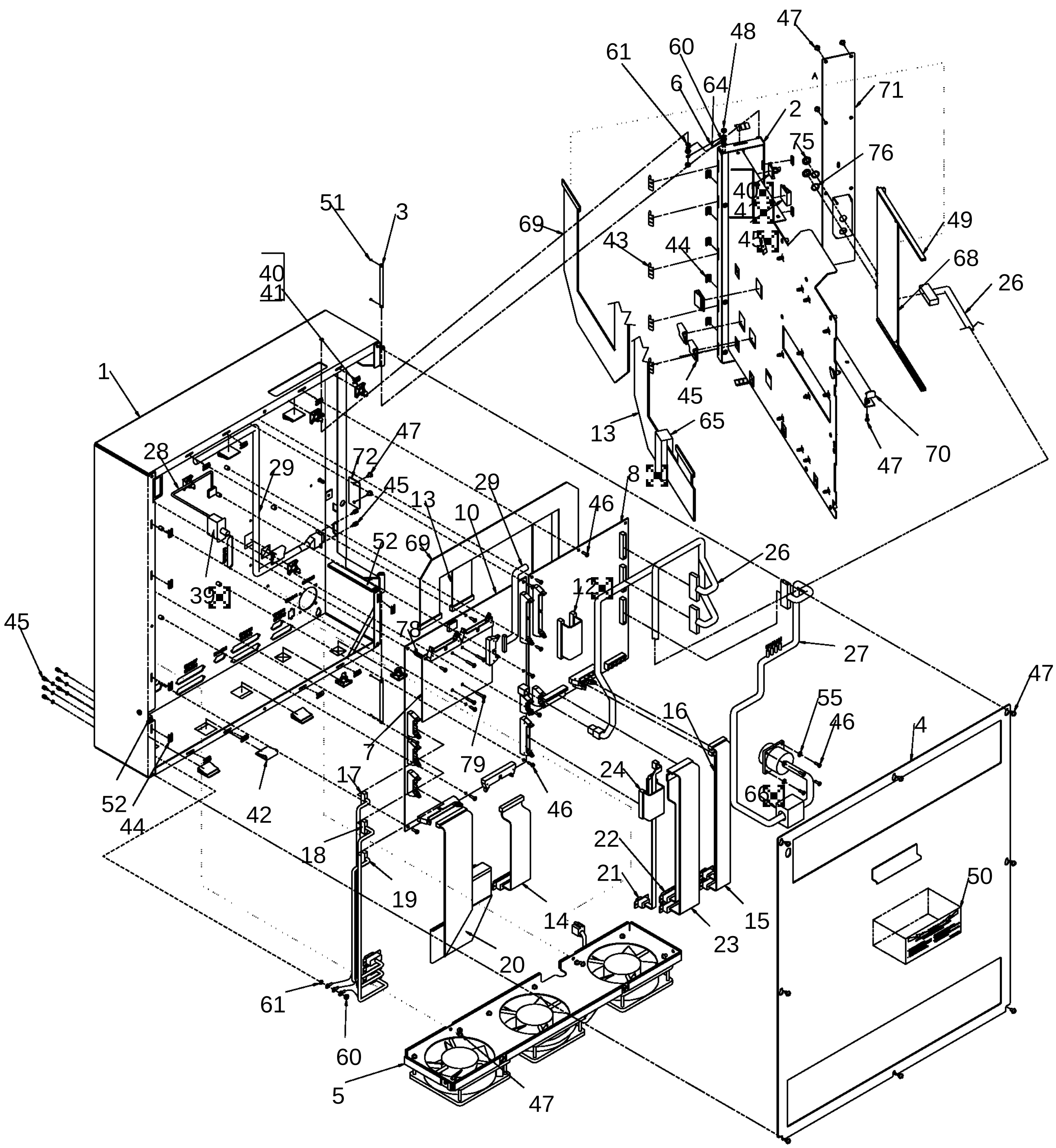


Figure 8-23. Electronics Enclosure Assembly, Dual (Screen 2 of 2)

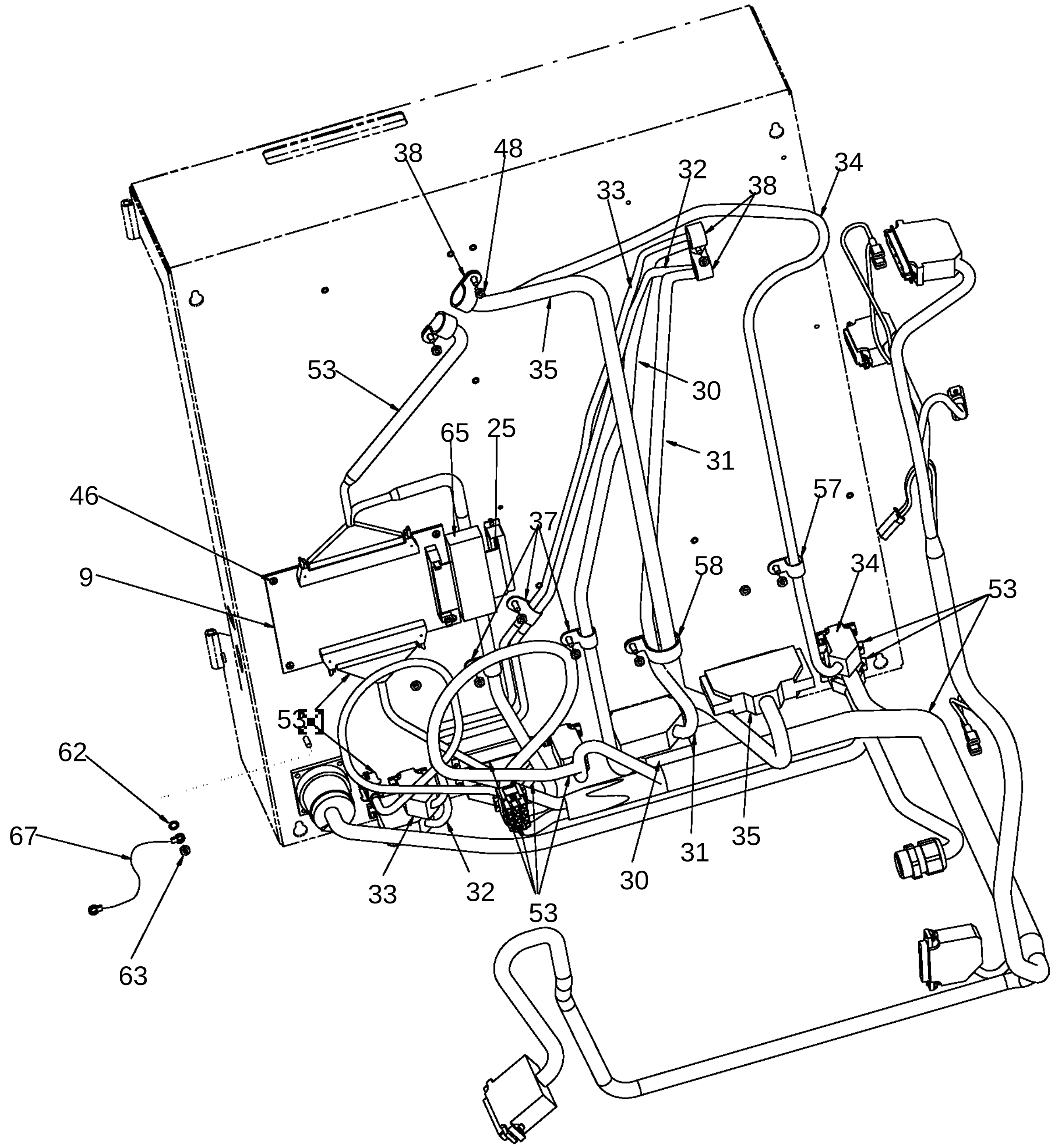


Figure 8-23. Electronics Enclosure Assembly, Dual

Item No.	Part Number	Description	Qty
0	Not Available	ELECTRONIC ENCLOSURE ASSEMBLY, Dual	
1	Not Available	ENCLOSURE, Main	1
2	Not Available	PANEL, Inside	1
3	78-8094-5267-1	PIN, Hinge	2
4	78-8094-5268-9	PANEL, Cover	1
5	Not Available	ELECTRONICS FAN ASSEMBLY (See Figure 8-24)	1
6	78-8094-5847-0	CABLE RESTRAINT	1
7	78-8092-4165-2	HOST INTERFACE BOARD, (HIB)	1
8	78-8092-4145-4	MACHINE INTERFACE BOARD, (MIB)	1
9	78-8094-5116-0	POWER DISTRIBUTION BOARD, (PDB)	1
10	78-8092-4146-2	SYSTEM CONTROLLER BOARD, (SCB)	1
12	78-8094-5141-8	CABLE ASSEMBLY, MIB/SCB	1
13	78-8094-5142-6	CABLE ASSEMBLY, Internal Optics Data	1
14	78-8094-5144-2	CABLE ASSEMBLY, Internal Optics Control	1
15	78-8094-5146-7	CABLE ASSEMBLY, Internal Optics Power	1
16	78-8094-5148-3	CABLE ASSEMBLY, Internal Optics Atten.	1
17	78-8094-5150-9	CABLE ASSEMBLY, BP/MF	1
18	78-8094-5151-7	CABLE ASSEMBLY, RF Tag	1
19	78-8094-5152-5	CABLE ASSEMBLY, Internal Densitometer	1
20	78-8094-5154-1	CABLE ASSEMBLY, Internal Local Panel	1
21	78-8094-5156-6	CABLE ASSEMBLY, 24 VAC	1
22	78-8094-5157-4	CABLE ASSEMBLY, Solenoids	1
23	78-8094-5158-2	CABLE ASSEMBLY, Motors	1
24	78-8094-5159-0	CABLE ASSEMBLY, Internal PDB/SCB	1
25	78-8094-5160-8	CABLE ASSEMBLY, External PDB/SCB	1
26	Not Available	HARNESS ASSEMBLY, IPB/SCB DC Power	1
27	Not Available	HARNESS ASSEMBLY, MIB DC Power	1
28	78-8094-5164-0	HARNESS ASSEMBLY, Service Switch	1
29	78-8094-5994-0	CABLE ASSEMBLY, HIB/MPC	1
30	78-8094-5143-4	CABLE, MOLDED, External Optics Data, I/O Interconnect	1
31	78-8094-5145-9	CABLE, MOLDED, External Optics Control, I/O Interconnect	1
32	78-8094-5147-5	CABLE, MOLDED, External Optics Power, I/O Interconnect	1
33	78-8094-5149-1	CABLE, MOLDED, External Optics Atten, I/O Interconnect	1
34	78-8094-5153-3	CABLE, MOLDED, External Densitometer, I/O Interconnect	1
35	78-8094-5155-8	CABLE, MOLDED, External Local Panel, I/O Interconnect	1
37	Not Available	CLAMP, Cable, Nylon, 1/2”	2
38	Not Available	CLAMP, Nylon	4
39	26-1011-6847-9	SWITCH, Push-pull (RESET), 0.1 A 125 VAC	1
40	Not Available	TIE MOUNT, Adhesive Backed	12
41	Not Available	TIE WRAP	12
42	Not Available	CLAMP	9

Figure 8-23. Electronics Enclosure Assembly, Dual (continued)

Item No.	Part Number	Description	Qty
43	Not Available	SHIELD	7
44	Not Available	SHIELDING, Electrical	23
45	26-1004-3945-9	FASTENER, 4-40 THD X .5	12
46	26-1002-3977-6	SCREW, Mach, Pan Head, Phil, Metric, M3 X 0.5 X 8.0	22
47	26-1003-7120-7	SCREW, Mach, Pan Head, Phil, Metric, M4 X 0.7 X 8.0, Sems, External Tooth	21
48	26-1009-7311-9	NUT, Lock, Metric, M4. (with nylon insert)	9
49	Not Available	GUIDE	4
50	Not Available	LABEL, Damage, Static Electricity	
51	78-8016-5859-8	RING, Retaining, External, E-Ring	4
52	26-1011-4695-4	TAPE, Foam, .125 T X .500 W (Bulk)	AR
53	Not Available	HARNESS ASSEMBLY, Module Interconnect	1
55	26-1008-9104-8	WASHER, Metric, Plain, M3	4
58	Not Available	CLAMP, Nylon	1
60	26-1007-2397-7	NUT, Mach, Metric, M4 X 0.7, Keps	3
61	26-1011-6809-9	WASHER, Metric, Lock, M4, External Tooth	3
62	26-1011-6808-1	WASHER, Metric, Lock, M5, External Tooth	1
63	26-1011-6643-2	NUT, Metric, Mach, M5 X 0.8, Keps	1
64	78-8092-4164-5	CABLE ASSEMBLY, Panel Ground	1
65	Not Available	SHIELD, Flat Cable Clamp	2
66	26-1011-6671-3	SHIELD, Ferrite	1
67	78-8094-5485-9	CABLE ASSEMBLY, Platen Ground	1
68	78-8056-4242-4	PWA, Dual Printer , Remote Interface, Fiber	1
69	78-8094-5992-4	CABLE ASSEMBLY, HIB/Fiber	1
70	78-8092-4030-8	SUPPORT, PCB	1
71	78-8092-9058-0	PLATE, End	1
72	78-8092-4033-2	PLATE, Cover	1
75	26-1011-4075-9	NUT, Hex, 3/8-32 X .089	2
76	26-1002-2148-5	WASHER, Metric, Lock, .377 ID X .507 OD X .022 T, Internal Tooth	2
78	78-8094-9055-6	STANDOFF	1
79	26-1002-5209-2	SCREW, Mach, Pan Head, Phil, Metric, 4-40 X .625	4

Figure 8-24. Electronics Fan Assembly

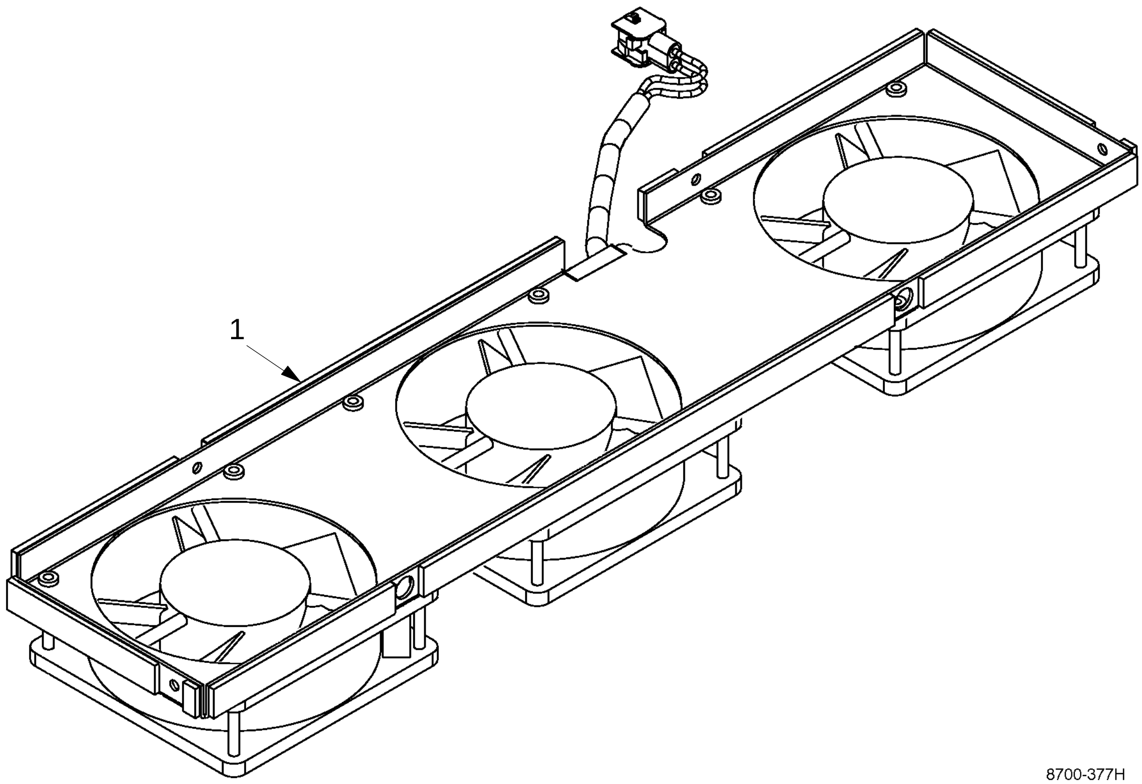
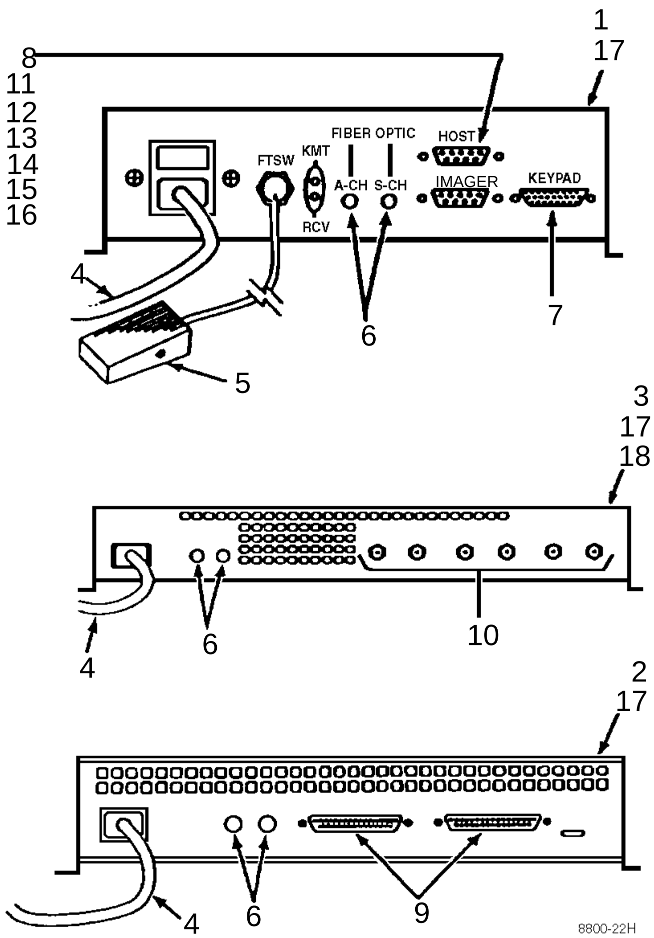


Figure 8-24. Electronics Fan Assembly

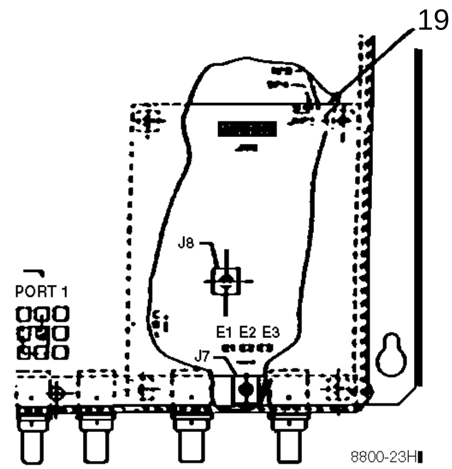
Item No.	Part Number	Description	Qty
1	78-8094-5807-4	. ELECTRONICS FAN ASSEMBLY	1

Figure 8-25. External System Interfaces/Cabling

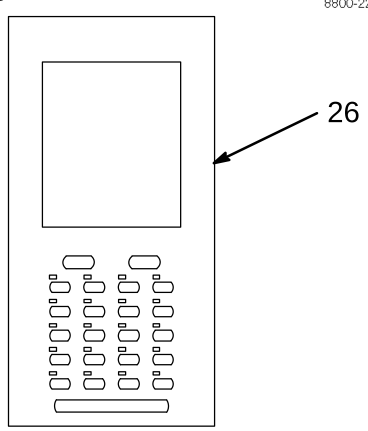


Note

The Keypad Fiber Electronic Interface Box (KFEIB) is not shown.



VEIB with PLL Module Installed



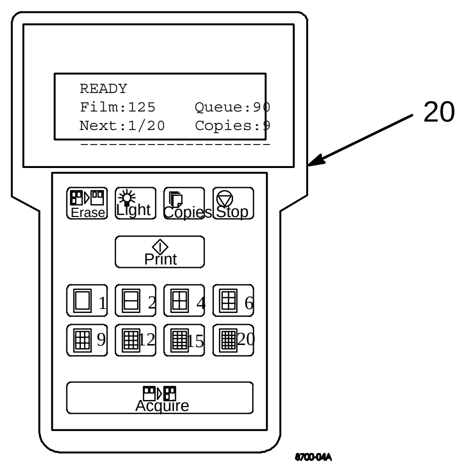


Figure 8-25. External System Interfaces/Cabling

Item No.	Part Number	Description	Qty
1A	78-8077-4135-6	UNIVERSAL KEYPAD ELECT. INTERFACE (UKEIB)	1
1B	78-8077-4397-2	KEYPAD FIBER ELECTRONIC iNTERFACE BOX (Not shown)	1
2	78-8077-4201-6	DIGITAL ELECTRONIC INTERFACE BOX (DEIB)	1
3A	78-8079-0747-8	VIDEO ELECTRONIC INTERFACE BOX (EVEIB), with External Sync.	1
3B	78-8094-8860-0	VIDEO ELECTRONIC INTERFACE BOX (EVEIB), without External Sync.	1
4A	78-8063-3751-1	POWER CORD ASSY (U.L./SCA Rated Only)	1
4B	78-8077-4272-7	POWER CORD ASSY (International)	AR
5	78-8075-2572-6	FOOTSWITCH	AR
6A	78-8075-2605-4	CABLE, Fiber Optic, 3m (10 Ft.) (See Note 2)	AR
6B	78-8063-3684-4	CABLE, Fiber Optic, 10m (33 Ft.) (See Note 2)	AR
6C	78-8063-3685-1	CABLE, Fiber Optic, 30m (98 Ft.) (See Note 2)	AR
6D	78-8063-3686-9	CABLE, Fiber Optic, 60m (198 Ft.) (See Note 2)	AR
6E	78-8063-3687-7	CABLE, Fiber Optic, 100m (330 Ft.) (See Note 2)	AR
6F	78-8075-2606-2	CABLE, Fiber Optic, l50m (495 Ft.) (See Note 2)	AR
6G	78-8075-2607-0	CABLE, Fiber Optic, 200m (660 Ft.) (See Note 2)	AR
6H	78-8075-2608-8	CABLE, Fiber Optic, 250m (825 Ft.) (See Note 2)	AR
6J	78-8063-3688-5	CABLE, Fiber Optic, 300m (1090 Ft.) (See Note 2)	AR
6K	78-8063-3689-3	CABLE, Fiber Optic, 500m (1652 Ft.) (See Note 2)	AR
6L	78-8063-3956-6	CABLE, Fiber Optic, 1000m (3300 Ft.) (See Note 2)	AR
7	78-8077-4097-8	CABLE, Keypad	1
8A	78-8053-4646-3	CABLE, RS232, 15 Ft.	AR
8B	78-8053-4647-1	CABLE, RS232, 25 Ft.	AR
8C	78-8053-4648-9	CABLE, RS232, 50 Ft.	AR
9A	78-8053-4697-6	CABLE, Digital, 3m (10 Ft.) (See Note 2)	AR
9B	78-8053-4134-0	CABLE, Digital, 10m (33 Ft.) (See Note 2)	AR
9C	78-8053-4135-7	CABLE, Digital, 30m (98 Ft.) (See Note 2)	AR
9D	78-8053-4139-9	CABLE, Digital, 60m (197 Ft.) (See Note 2)	AR
10A	78-8053-4695-0	CABLE, Analog, 3m (10 Ft.) (See Note 2)	AR
10B	78-8053-4059-9	CABLE, Analog, 10m (33 Ft.) (See Note 2)	AR
10C	78-8053-4034-2	CABLE, Analog, 30m (98 Ft.) (See Note 2)	AR
10D	78-8053-4033-4	CABLE, Analog, 60m (197 Ft.) (See Note 2)	AR
11	78-8071-8331-0	RS232 to UKEIB Host Contr. Adapt. Cable (25-pin to 9-pin)	AR
12	78-8077-4159-6	RS422 to UKEIB Host Contr. Adapt. Cable (37-pin to 9-pin)	AR
13	26-1007-4918-8	ADAPTOR, RS422 Connector (Male/Male)	AR
14	26-1007-0924-0	ADAPTOR, RS422 Connector (Female/Female)	AR
15	78-8063-4088-7	DDIU to UKEIB Adapt. Cable (37-pin M to 26-pin M)	AR
16A	78-8075-2603-9	CABLE, Genesis (GE), 10m (33 Ft.) (See Note 2)	AR
16B	78-8075-2542-9	CABLE, Genesis (GE), 30m (98 Ft.) (See Note 2)	AR
16C	78-8075-2543-7	CABLE, Genesis (GE), 60m (197 Ft.) (See Note 2)	AR
16D	78-8075-2604-7	CABLE, Genesis (GE), 100m (330 Ft.) (See Note 2)	AR
17	78-8077-4026-7	POWER SUPPLY, EIB	1

Figure 8-25. External System Interfaces/Cabling (continued)

Item No.	Part Number	Description	Qty
18	78-8063-3672-9	FAN, VEIB	1
19	78-8077-4315-4	PLL, 110 MHZ, VEIB	AR
20	78-8092-4173-6	KEYPAD, Compact, 12 Volt	AR
21	78-8094-5482-6	CABLE, Extension, 10m (33 ft.), Compact Keypad (Not shown)	AR
22	78-8094-5481-8	CABLE, Extension, 30m (98 ft.), Compact Keypad (Not shown)	AR
23	78-8094-5480-0	CABLE, Extension, 60m (198 ft.), Comnpact Keypad (Not shown)	AR
24	26-1000-4144-6	RECEPTACLE, Wall Outlet, (Not Shown)	AR
25	26-1011-8096-1	COVER, Wall Outlet, Black, (Not Shown)	AR
26	78-8077-4087-9	KEYPAD, Remote	AR
27	78-8075-2602-1	CABLE, KEIB, 9-pin Copper, 3 m (10 ft.) (Not shown)	AR
28	78-8063-3964-0	CABLE, KEIB, 9-pin Copper, 10 m (33 ft.) (Not shown)	AR
29	78-8063-3965-7	CABLE, KEIB, 9-pin Copper, 30 m (98 ft.) (Not shown)	AR
30	78-8063-3966-5	CABLE, KEIB, 9-pin Copper, 60 m (198 ft.) (Not shown)	AR
31	78-8063-3967-3	CABLE, KEIB, 9-pin Copper, 100 m (330 ft.) (Not shown)	AR

Note 1. The Keypad Fiber Electronic Interface Box (KFEIB) is stocked as a service part per Revision L of this manual.

Note 2. Plenum Rated.

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Section 9 – Diagrams

9-1. Diagrams

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NOTE:

THE FIBER INTERFACE BOARD (FIB) AND THE TRANSLATOR DAUGHTER BOARD/FIBER (TDB/F) SHOWN ABOVE ARE USED IN THE "PLUS" VERSION OF THE M8700. IN THE "STANDARD" VERSION OF THE SYSTEM THEY ARE REPLACED BY THE BOARDS SHOWN ON THE IMS INTERFACE FUNCTIONAL DIAGRAM (SHEET 3):

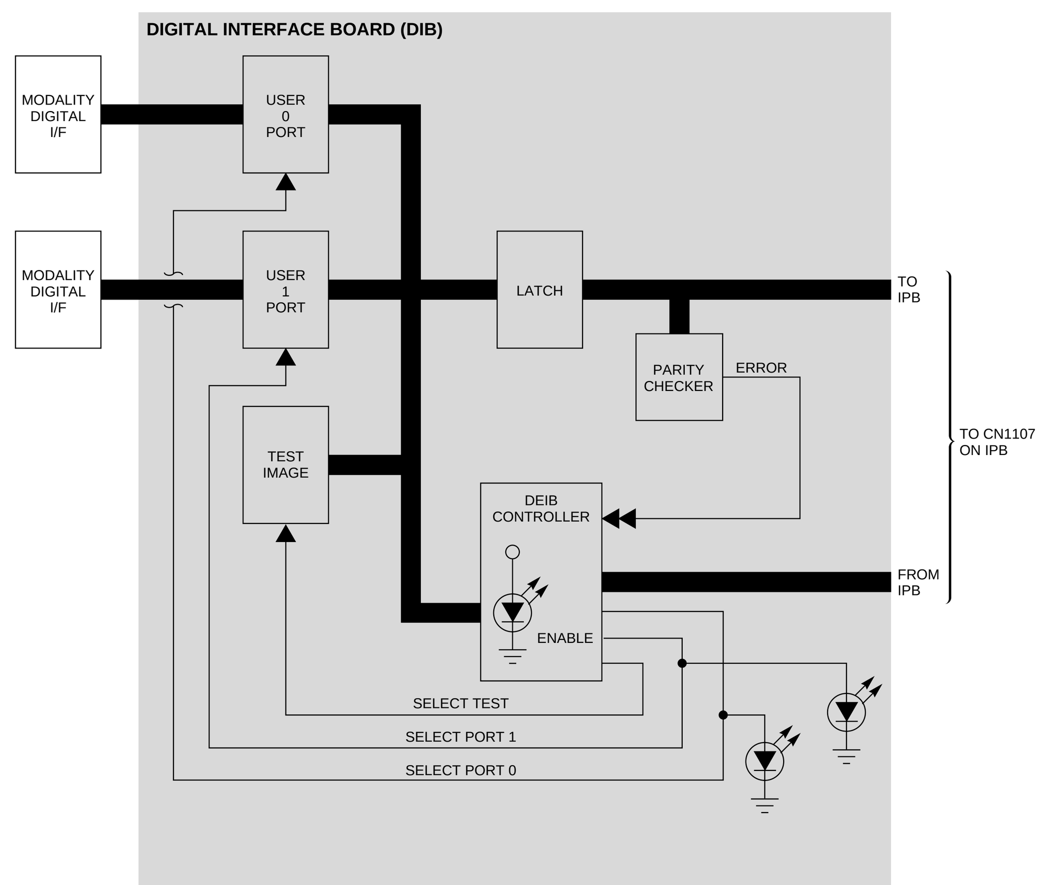
- THE FIB IS REPLACED BY EITHER A DIGITAL INTERFACE BOARD (DIB), A VIDEO INTERFACE BOARD (VIB) OR A SCSI INTERFACE (SIB).
- THE TDB/F IS REPLACED BY A TRANSLATOR DAUGHTER BOARD/COPPER (TDB/C).

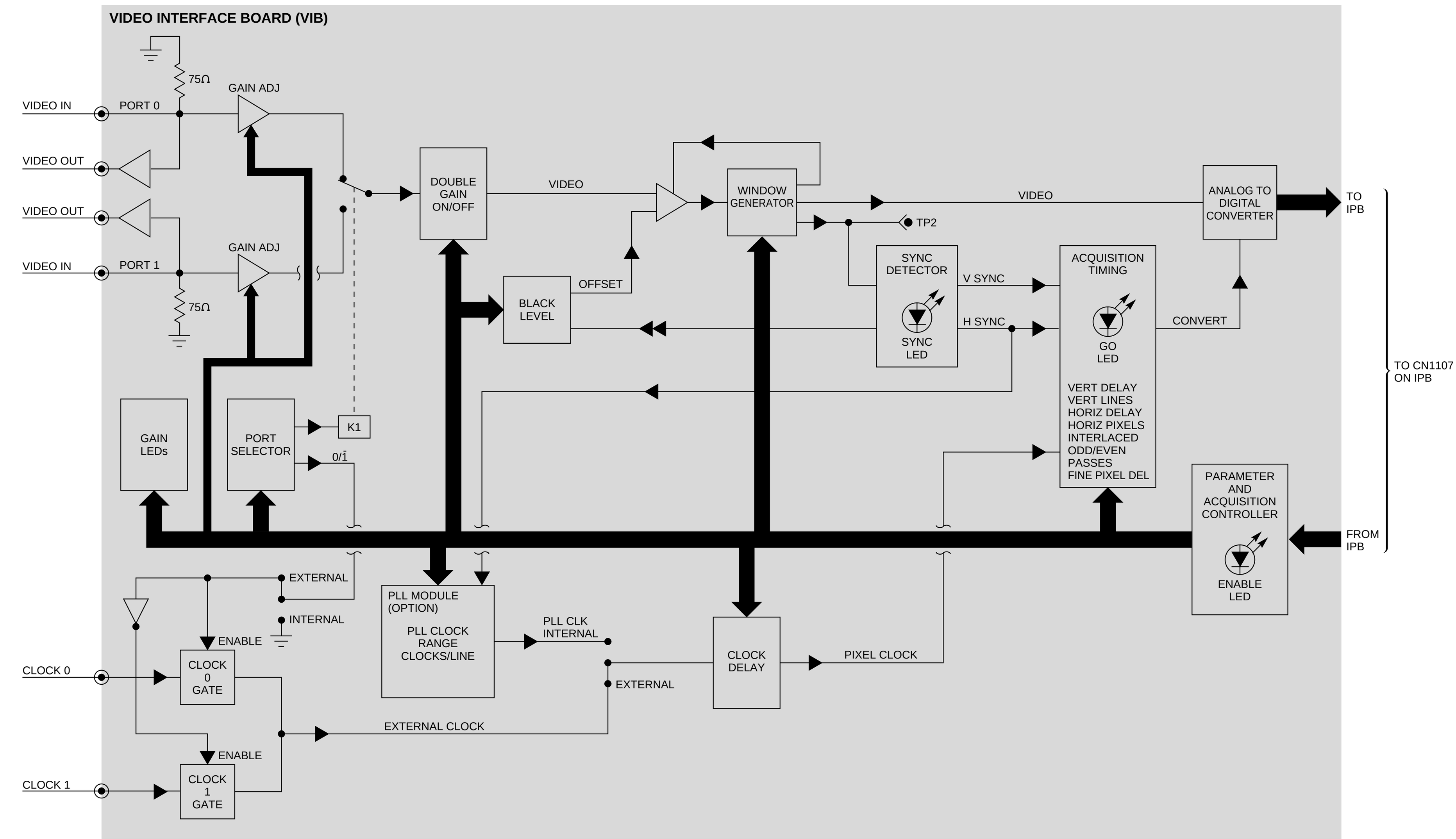
Kodak DryView **8700/8500 LASER IMAGER - IMS Functional Block Diagram (Multi, Dual – Sheet 1)**

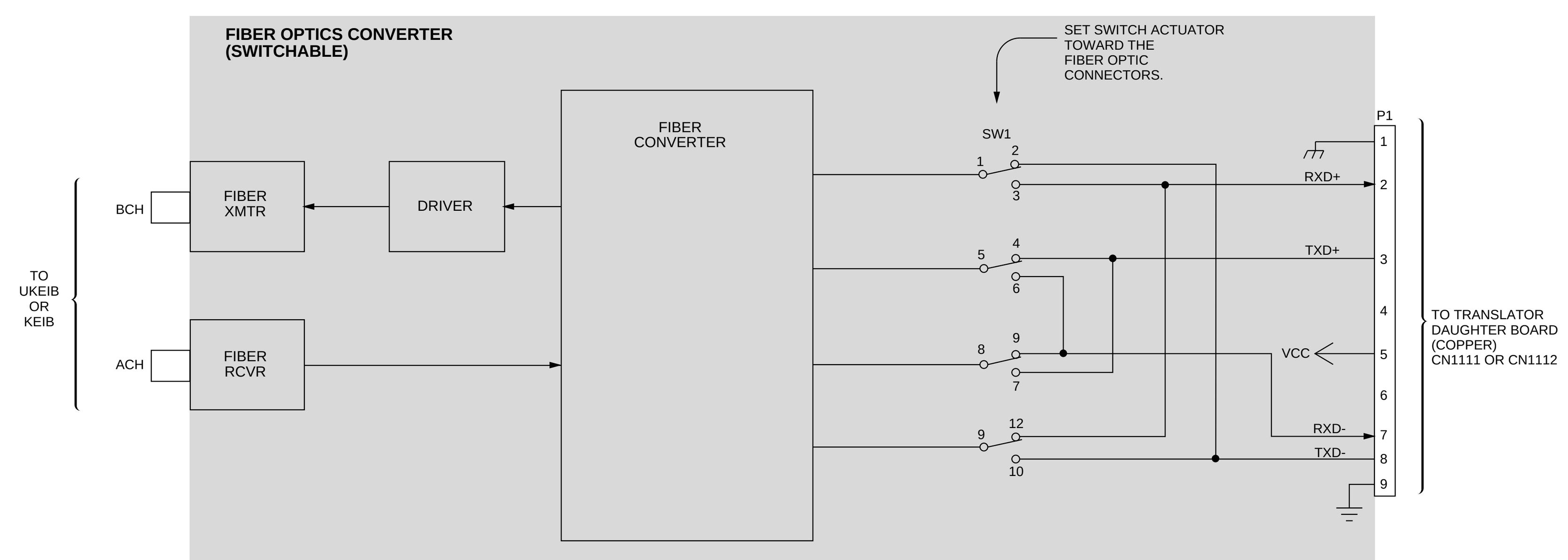
2001 March Rev. L 1202688

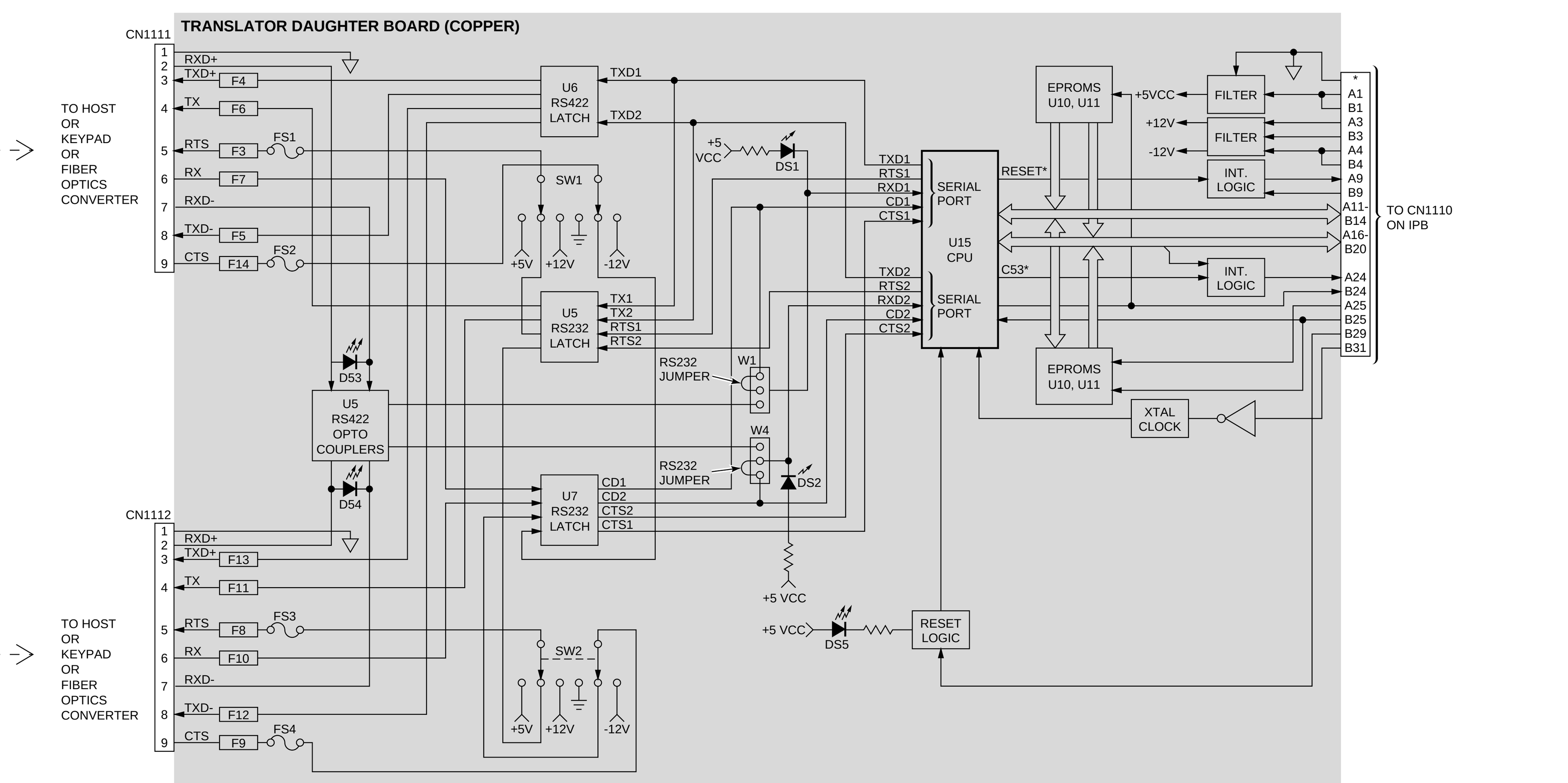
H188_3006EC


ELECTRONIC ENCLOSURE
SYSTEM CONTROL BOARD
USED DUAL PRINTERS ONLY
KEY MATRIX
LOCAL PANEL BOARD
LCD DISPLAY
PANEL BACK-LIGHTING
RF READER BOARD (TRANSCEIVER)
RF TAG INTERFACE BOARD
RF ANTENNA BOARD
RF TAG
NEW DENSITOMETER BOARD
LED BOARD
MIB
SCB
MACHINE INTERFACE BOARD
LOS CONTROL (TO CN702 THRU CN1007 ON SHEET 1)
LOS POWER
LOS ATTEN
SOLENOID TEST POINTS
MOTOR TEST POINTS
MULTI-FEED BOARD
BEAM POWER MONITOR BOARD
POWER MODULE ASSEMBLY
POWER DISTRIBUTION BOARD
PROCESSOR COMMUNICATION BOARD
ROTATING PROCESSOR BOARD (FLICKER BOARD)
THERMAL SWITCH
NEW VERSION DRUM
OLDER VERSION DRUM
White
Black
Red
FILTRATION POWER BOARD
ELEC ENCLO COOLING FANS
DRUM HOME SENSOR
NOTE: AN ASTERISK (*) FOLLOWING A SIGNAL NAME INDICATES THAT THE SIGNAL IS LOW (0V) ACTIVE.









SW1, SW2 SWITCH SETTINGS	CONN. CN1111, CN1112		USAGE
	PIN 5	PIN 9	
LEFT	+5V	GND	UKEIB GENESIS CABLE, KODAK FIBER OPTIC CONVERTER, RS422 HOSTS, COMPACT KEY PAD
CENTER	RTS	CTS	RS232 HANDSHAKING (NOT CURRENTLY USED)
RIGHT	+12V	-12V	SIEMENS EXTERNAL FIBER OPTIC CONVERTER, TOUCH - SCREEN KEYPAD

NOTE:

THE INTERFACE BOARDS SHOWN ON THIS SHEET ARE USED IN "STANDARD" VERSIONS OF THE IMAGER. THEY REPLACE THE BOARDS SHOWN ON THE IMS FUNCTIONAL BLOCK DIAGRAM (SHEET 1) AS FOLLOWS:

- EITHER THE DIGITAL INTERFACE BOARD (DIB), THE VIDEO INTERFACE BOARD (VIB), OR THE SCSI INTERFACE BOARD (SIB) CAN BE USED IN PLACE OF THE FIBER INTERFACE BOARD (FIB).
- THE TRANSLATOR DAUGHTER BOARD/COPPER (TDB/C) REPLACES THE TDB/FIBER.

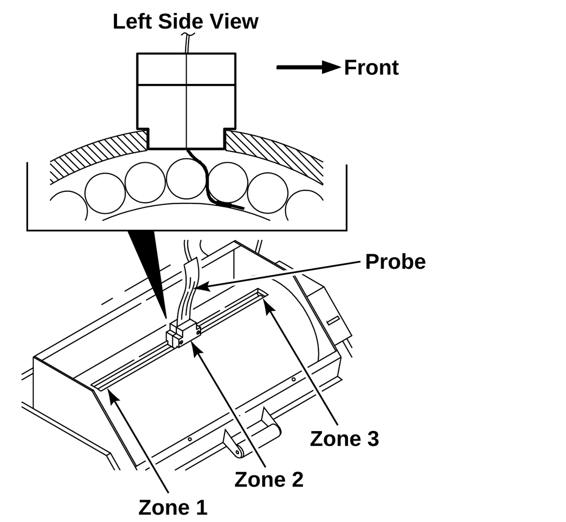
H187_3008EC

Processor Temperature Adjustment

Specification: 122.2 to 122.8 degrees C (252 to 253 degrees F) for all three zones

Special Tools: Temperature Meter with Probe (for measurement)
MPC using MPC for Windows software (for adjustment)

Measurement:



Adjustment: Using the MPC:

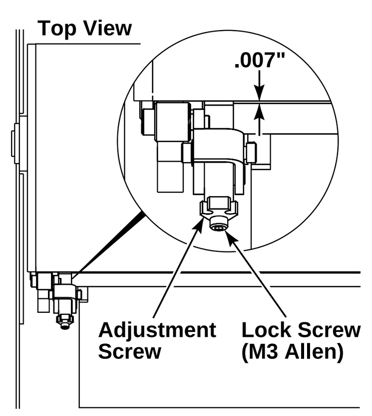
1. Select Processor Subsystem.
2. Select Calib button to display processor calibration window.
3. Adjust temperatures as necessary by clicking on appropriate arrows, or by entering positive or negative values in numeric fields below arrows. (Each click produces about a 0.06 degree C change.)

Processor Drum Stripper Adjustment

Specification: 0.006 to 0.008 inch gap between drum and stripper

Special Tools: 0.007 inch feeler gauge

Measurement:



Adjustment:

1. Remove lockscrews (M3 Allen) at ends of stripper.
2. Turn adjustment screws as required. CCW decreases gap.
3. Position adjustment screws to align closest locking slot for insertion of lockscrews.
4. Replace lockscrews and recheck gap.

Densitometer Calibration

Specification: A/D out (gain) of 1640 ±10
A/D out (offset) of 20 ±2

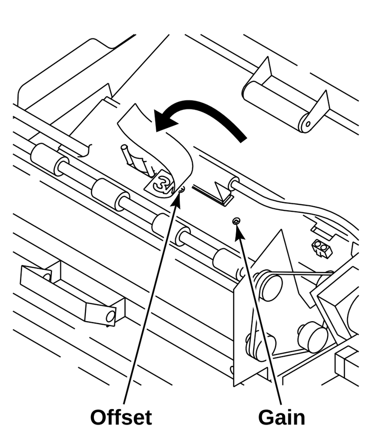
Special Tools: MPC using MPC for Windows software

Measurement: Using the MPC:

1. Open Operations menu and select Diagnostics.
2. Select Processor Subsystem.
3. Select Densi button to display Densitometer Test window.
4. Check values displayed for A/D Out (Gain) and A/D Out (Offset).

Adjustment:

1. Peel back calibration label.
2. Adjust Gain and Offset pots as required.



–5.2 VDC Power Supply (PS902) Adjustment

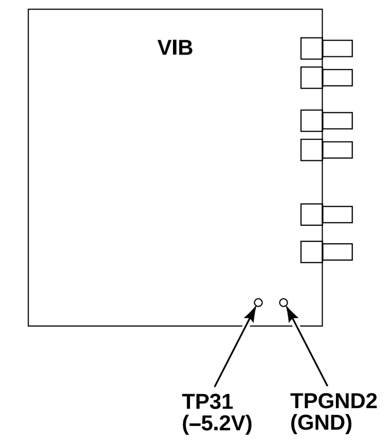
(Used only if system has a VIB.)

Specification: -5.2 ±0.2 VDC

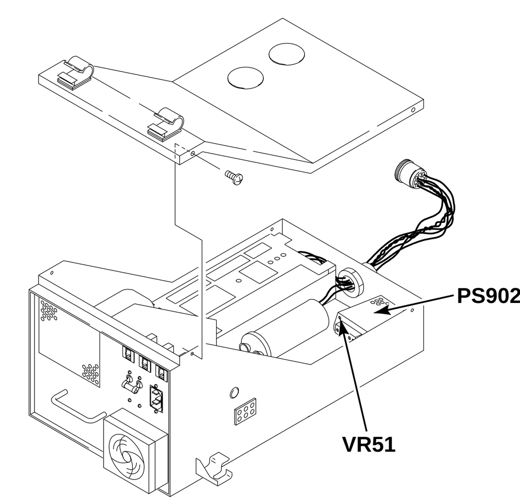
Special Tools: Digital Voltmeter

⚠ WARNING
When the power cord is plugged in, hazardous voltages are present in some areas of the 8700. These voltages can cause severe injury or death.

Measurement:



Adjustment:



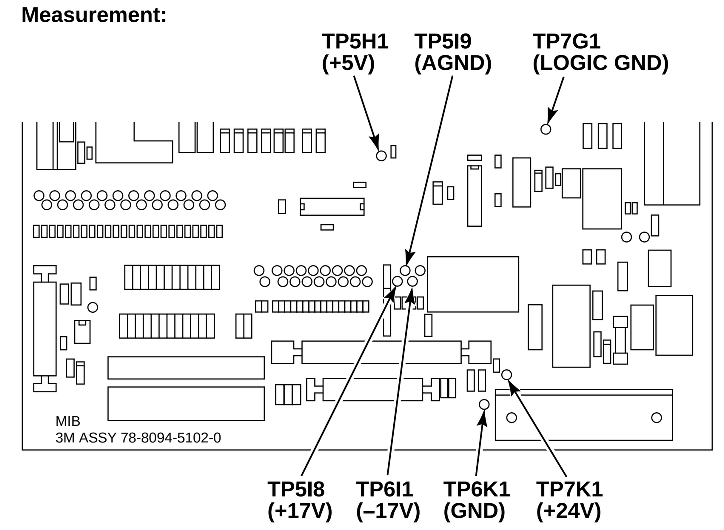
+5, ±17, and +24 VDC Power Supply (PS901) Adjustments

Specification: +5.1 ± 0.1 VDC
+17.3 ±0.3 VDC
-17.3 ±0.3 VDC
+24.2 ±0.4 VDC

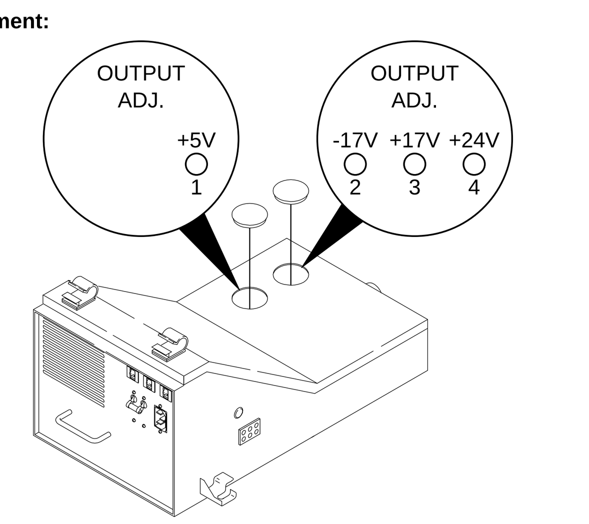
Special Tools: Digital Voltmeter

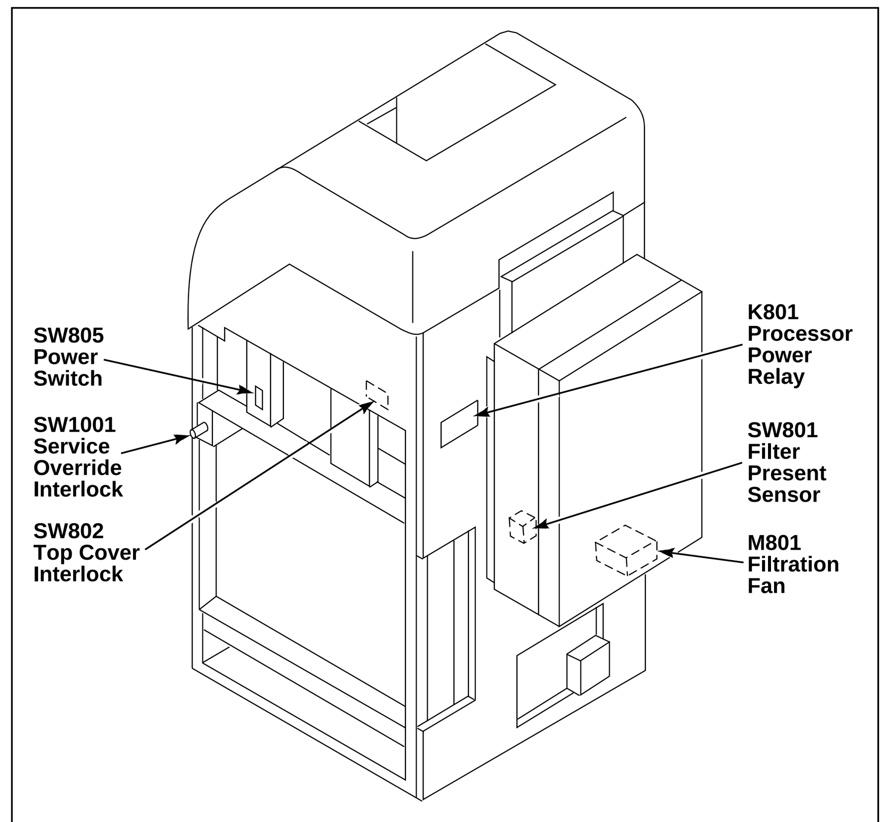
⚠ WARNING
When the power cord is plugged in, hazardous voltages are present in some areas of the 8700. These voltages can cause severe injury or death.

Measurement:

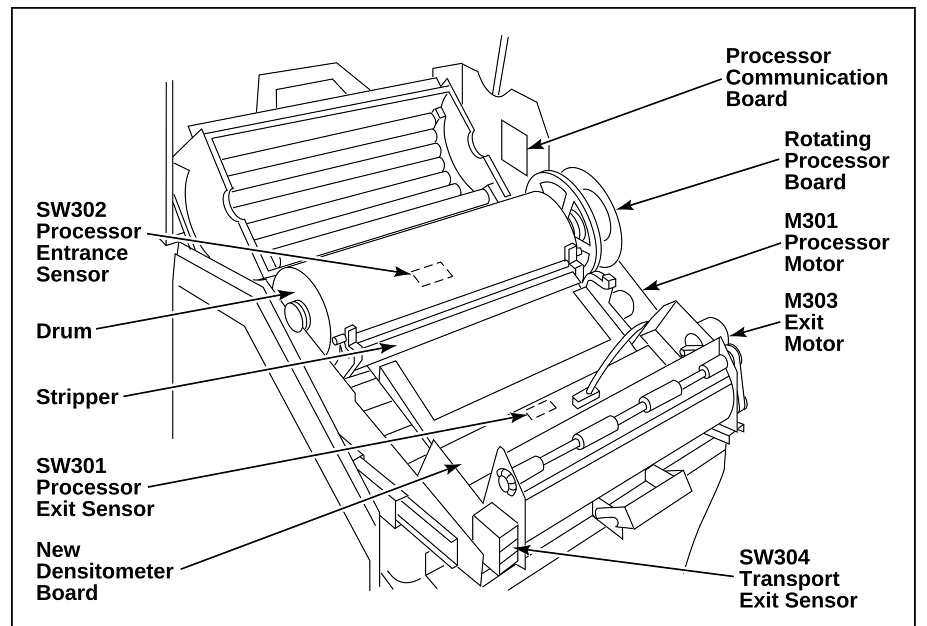


Adjustment:

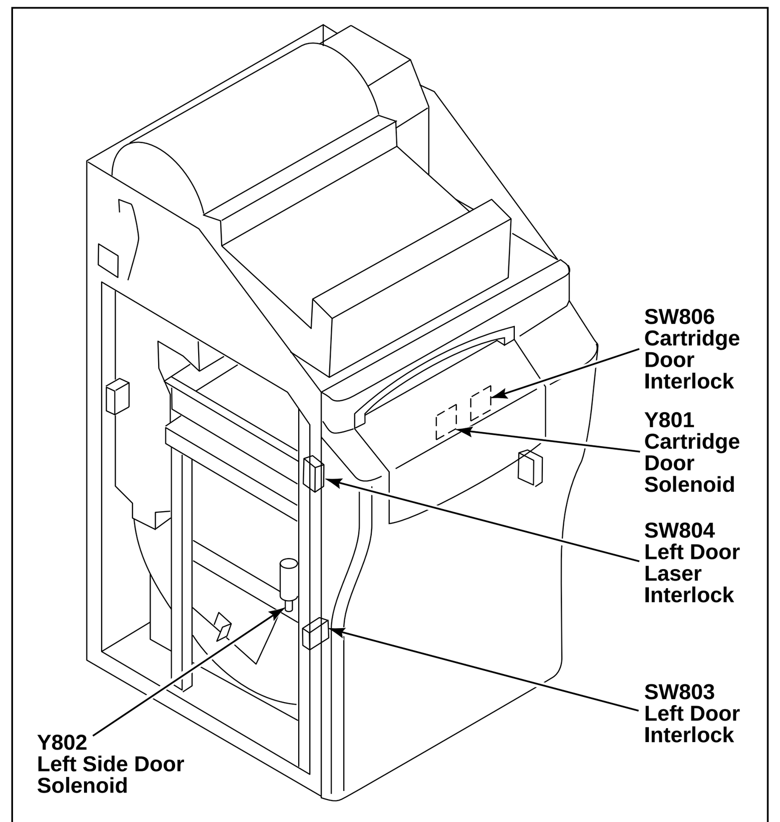




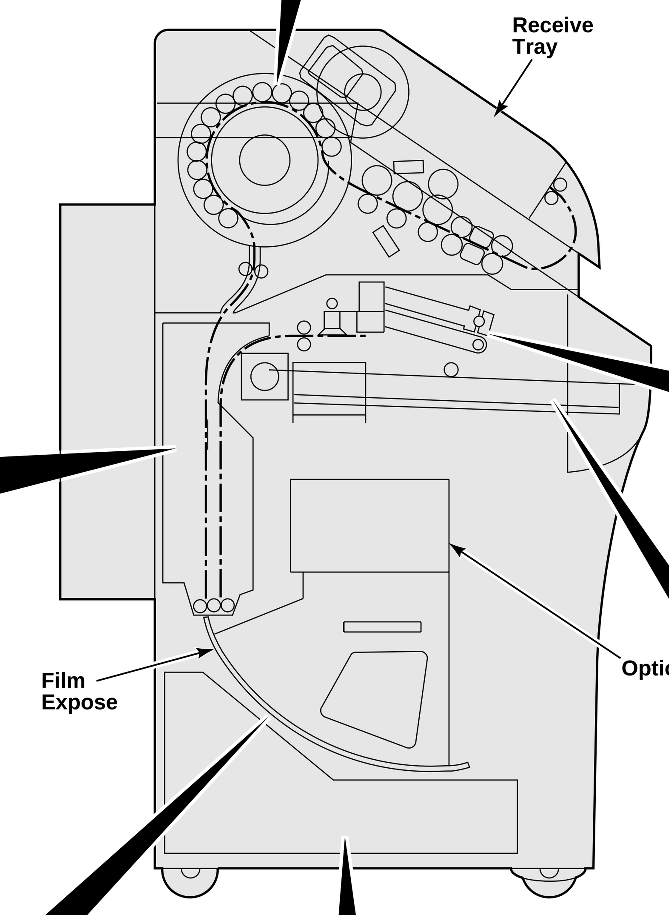
FRAME COMPONENTS

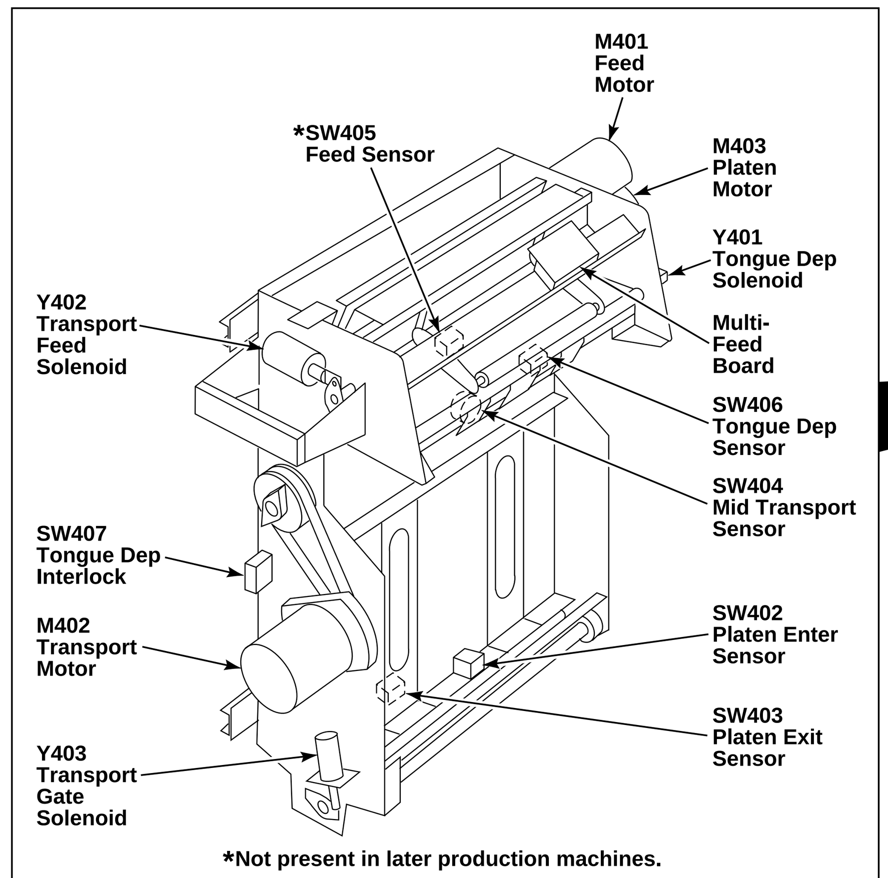


FILM PROCESSOR (300)



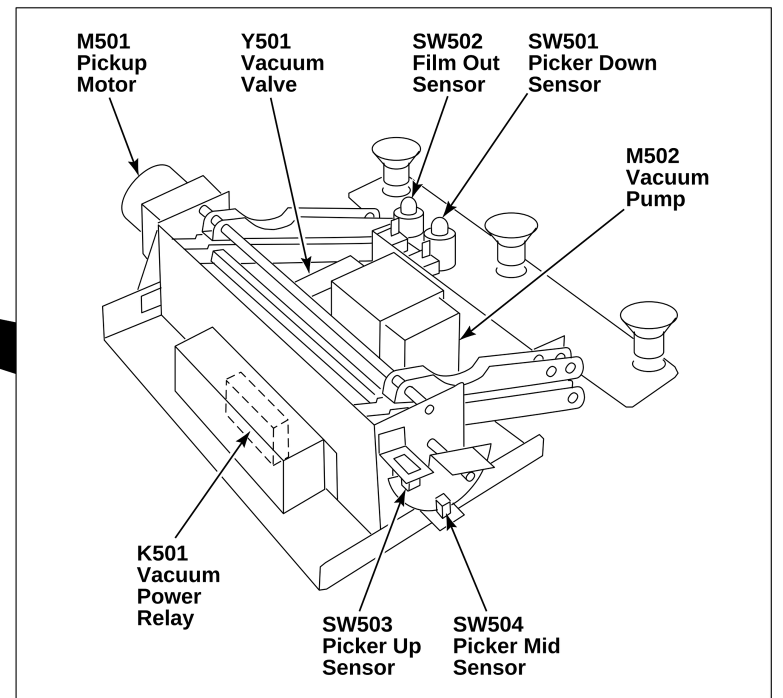
FRAME COMPONENTS



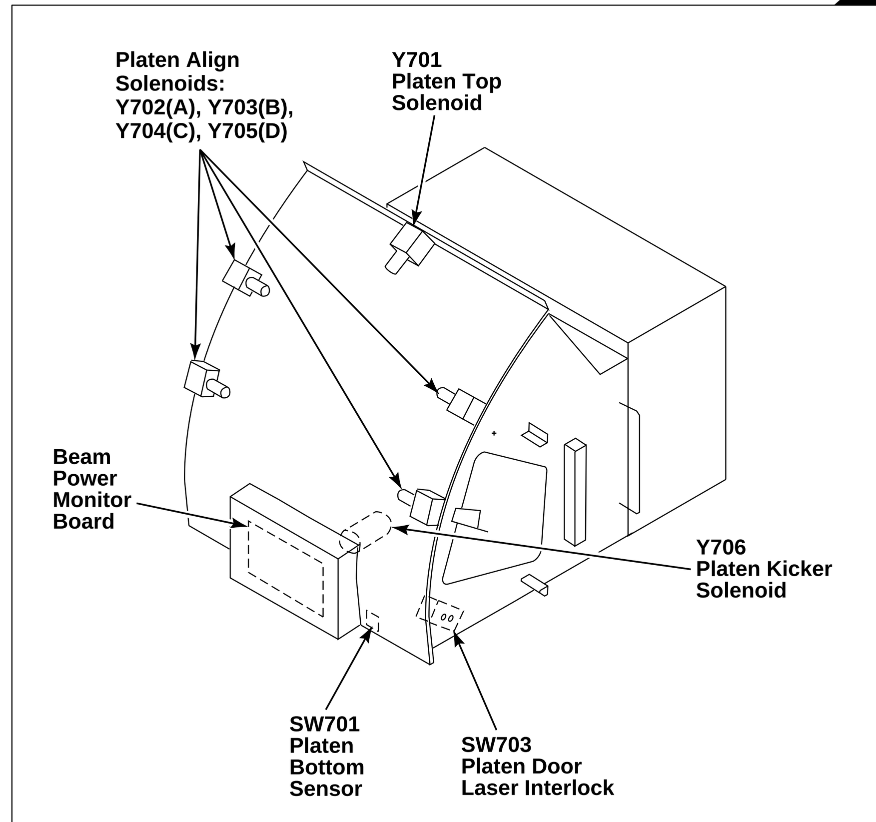


*Not present in later production machines.

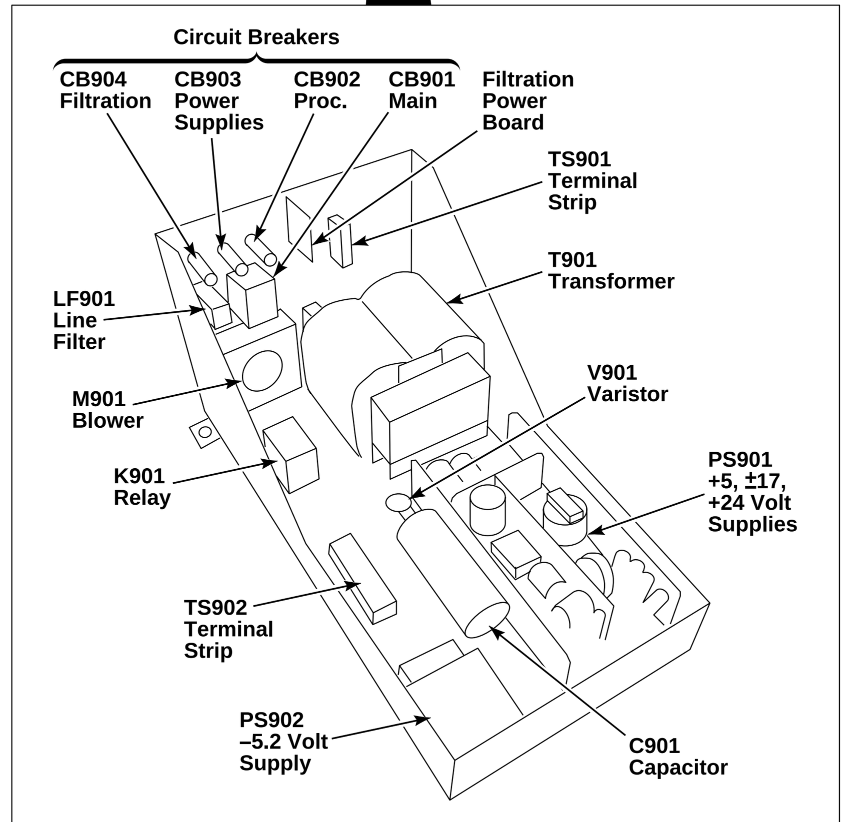
FILM TRANSPORT (400)



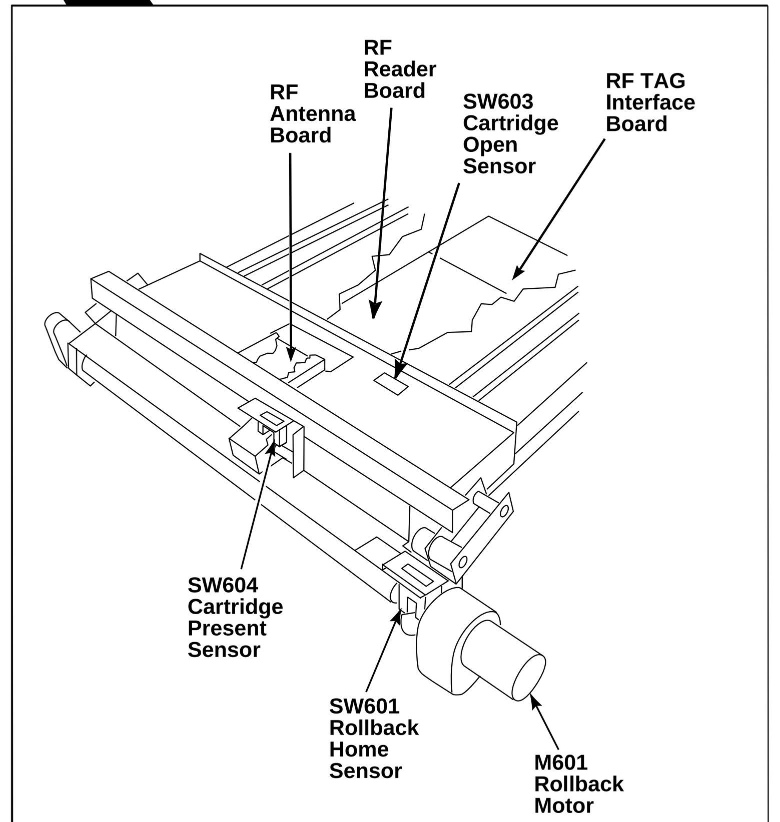
PICKUP ASSEMBLY (500)



PLATEN MODULE (700)



POWER MODULE ASSEMBLY (900)



ROLLBACK ASSEMBLY (600)

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Rochester, NY 14650

HEALTH IMAGING