

CHAPTER 4 - TABLE OF CONTENTS

4.1 OVERVIEW 4-3

4.2 REMOVAL AND REPLACEMENT (R&R) PROCEDURES 4-4

RR-1.1	CPU BD	4-4
RR-1.2	CPU BD Battery	4-8
RR-1.3	Flash Memory Bd	4-10
RR-1.4	CPU Power Interface Bd	4-12
RR-1.5	Gas Spring, Top Right Cover	4-14
RR-1.6	Printer Interface Bd	4-16
RR-1.7	Printer Assy	4-18
RR-1.8	CPU Serial Ribbon Cable	4-20
RR-1.9	Keypad Power Cable	4-22
RR-1.10	Keypad/Display Assy	4-24
RR-1.11	Stepper Driver Boards A & B	4-26
RR-1.12	Stepper Controller Boards A & B	4-28
RR-1.13	Digital I/O Bd	4-29
RR-1.14	Serial I/O Bd	4-30
RR-1.15	Backplane Bd	4-32
RR-2.1	Card Cage Gas Spring Assy	4-34
RR-2.2	Card Cage Fan	4-36
RR-2.3	Load Urge Belts	4-38
RR-2.4	Web Switch Assy	4-40
RR-2.5	Load Urge Belts Slide Assy	4-42
RR-2.6	Tray Ready Switch Assy	4-44
RR-2.7	Tray Entered Switch Assy	4-46

RR-2.8	Bar Code Reader	4-48
RR-2.10	Load Urge Module	4-50
RR-2.11	Load Urge Entry Solenoid	4-52
RR-3.1	Optics Fan	4-54
RR-3.2	Gas Spring, Top Left Cover	4-56
RR-3.4	Backlight Bd	4-58
RR-3.6	Tri-Continent Bottle Holder	4-60
RR-3.7	Dispense Pump Sensor Bd	4-62
RR-3.8	Dispense Pump Assy	4-64
RR-3.9	Dispense Pump Select Bd	4-66
RR-3.10	Exit Switch	4-68
RR-4.2	Dispense Boom Assy	4-70
RR-4.3	Lower Tip Holder	4-72
RR-4.4	Post Tip Holder Assy	4-74
RR-4.5	Dispense Boom Sensor Bd	4-76
RR-4.6	Read A/D Bd	4-78
RR-4.7	Read A/D Sensor Enclosure Assy	4-80
RR-4.8	Tray At Wash Switch	4-82
RR-4.9	Main Transport Assy	4-84
RR-5.2	Wash Actuator Sensor Bd	4-86
RR-5.4	Wash Actuator Assy	4-90
RR-5.5	Wash Gate Solenoid	4-92
RR-5.11	Filter Select Bd	4-94
RR-5.12	Optics Lamp Bracket	4-96
RR-5.13	Optics Lamp	4-98
RR-5.14	Lamp Spring Retainer	4-100

RR-5.15 Lamp Spring	4-102
RR-6.1 Cable Panel Interface Bd	4-104
RR-6.2 Shelf and Bezel Assy Relay	4-106
RR-6.3 Shelf and Bezel Assy	4-108
RR-6.9 Valve Mount Assy	4-110
RR-7.1 Main Power Supply	4-112
RR-7.2 Back Panel Connector (RS-232) Bd	4-114
RR-7.3 Power Supply Fan	4-116

4.1 OVERVIEW

This chapter contains Removal & Replacement (RR) procedures that are indexed by number to the related Parts Lists in Chapter 3. For example, RR-2.5, is the Removal & Replacement procedure for Parts List 2, line item 5.

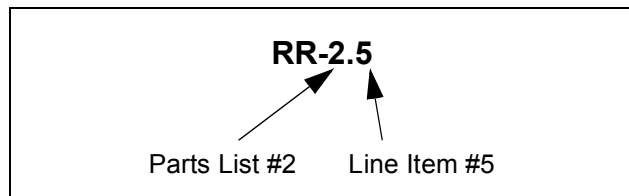


Figure 4-1. R&R Numbering

RR-1.1 CPU BD

Removal

1. Before powering down the instrument, record the following configuration information:
 - a. DMS Port Assignment.
From the screen displaying INSERT TRAY, press:
 - # Special Modes
 - 3 Configure
 - 2 DMS Port Assignment
 - b. DMS Checksum (ON or OFF).
 - (number corresponding to DMS Port Assignment)
 - # EXIT
 - c. Instrument Port Assignments.
 - Instrument Port Assignments
 - # EXIT
 - d. Port Characteristics (repeat for each port).
 - 6 Port Characteristics
 - Select Port
 - 1 Baud Rates
 - # EXIT
 - 2 Parity
 - # EXIT
 - 3 Bits/Character
 - # EXIT
 - 4 Handshaking
 - # EXIT
 - 5 Stop Bits
 - e. Bar Code Length and Type.
 - # EXIT
 - # EXIT
 - After last port, press:
 - # EXIT
 - f. Display Angle
 - 4 Bar Code
 - ENTER
 - # EXIT
2. Perform the following system print outs:
 - a. Print Assay Directories.
 - 2 Assay Tools
 - 3 Assay Directory
 - b. Print PPC™ Protocol.
 - 2 Print Protocol
 - (PPC assay number for protocol to be printed.)
 - c. Print Current PPC/FPC Protocol Assignments.
 - 4 Protocol Select
 - 1 List Current Selections
 - # Exit

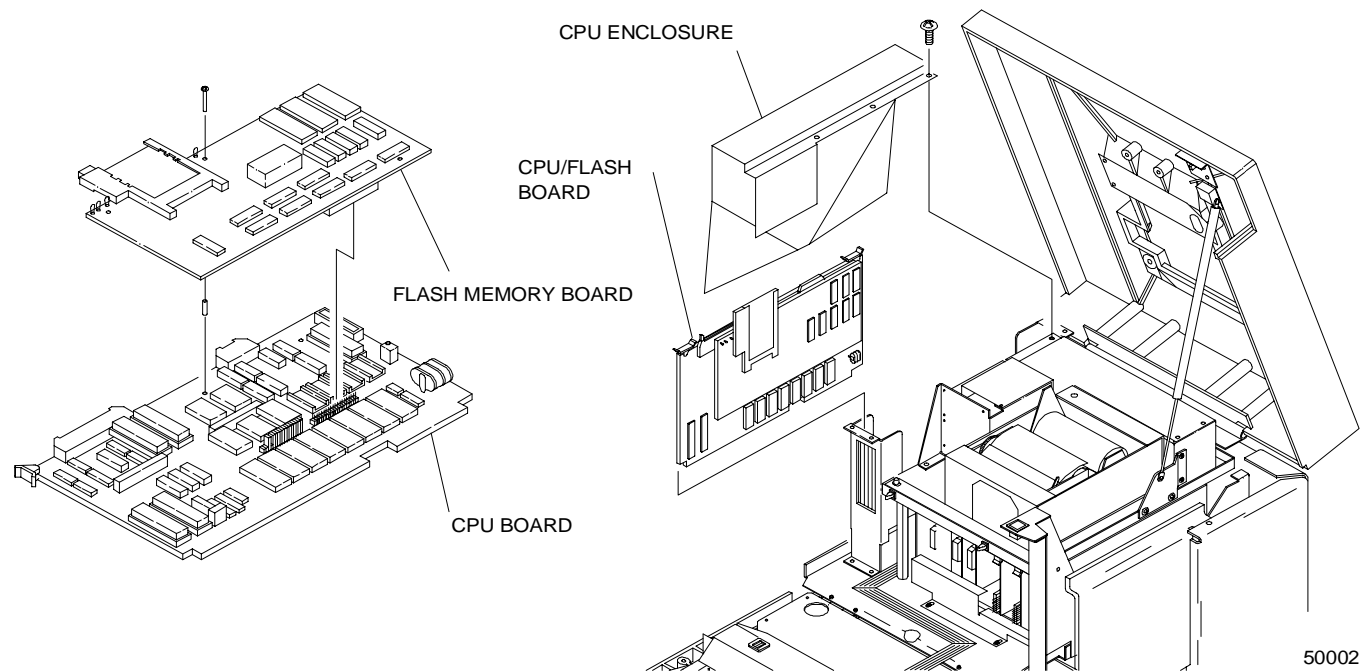


Figure 4-2. CPU Bd Removal



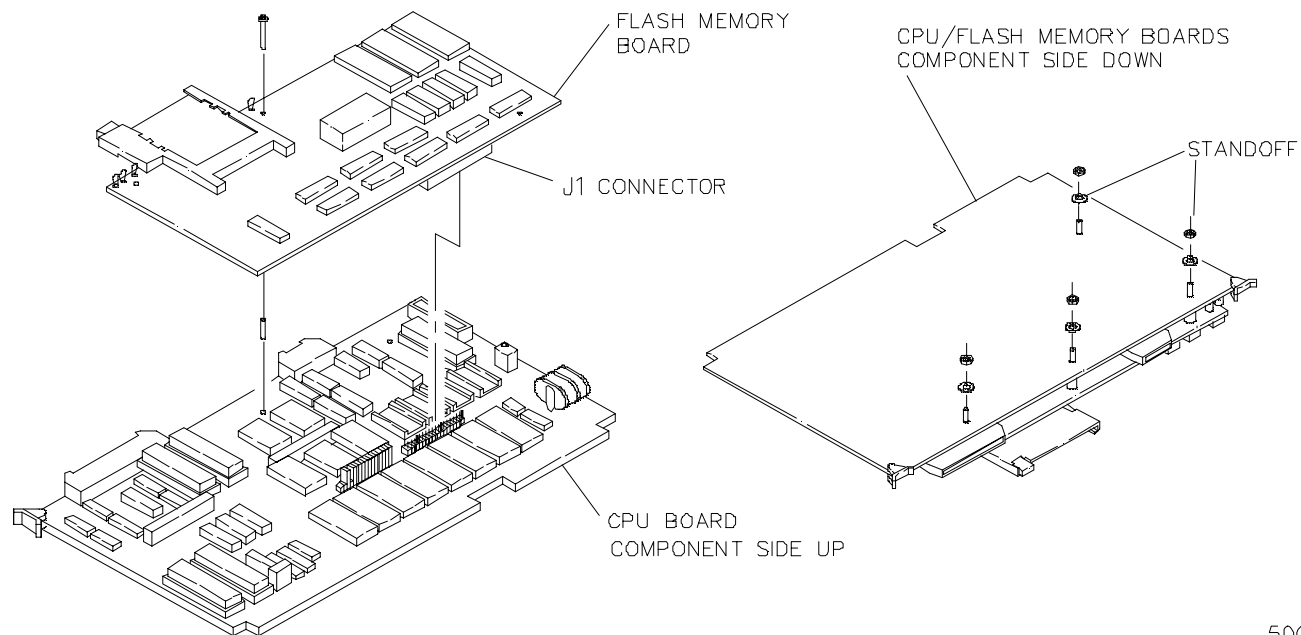
- d. If customer used the Quality Control Database (QC), print the QC directory.
 - 1 Database
 - 1 QC
 - 1 QC Directory
 - 2 Print QC
 - (PPC assay number for QC data to be printed.)
3. Turn power OFF. Disconnect power cord.
4. Remove CPU Bd Cover. (See **Figure 4-2.**)
 - a. Raise Top Right Cover.
 - b. Lower Keypad/Display Assy.
 - c. Remove three screws.
 - d. Lift cover to remove.
5. Remove J2 (10-pin connector) on Bit Bus Cable from top edge of CPU Bd.
6. Remove J1 (40-pin connector) on Serial Cable from top edge of CPU Bd.
7. Press ejectors to disengage board. Remove board from slot.
8. Separate Flash Memory Bd from CPU Bd (**Figure 4-3.**).
 - a. Place board component side down on grounded anti-static work mat.
 - b. Remove mounting hardware from four places.
 - c. With components side up, lift up on Flash Memory Bd at point of J1 connector.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Verify parameters are reset to original configuration.
2. Perform Total Call.




50003

Figure 4-3. Separation of CPU Bd from Flash Memory Bd

RR-1.2 CPU BD BATTERY

Removal

- 
1. Remove CPU Bd (**RR-1.1**)
 2. Use soldering iron to remove faulty CPU Bd Battery (**Figure 4-4**).
Discard battery.

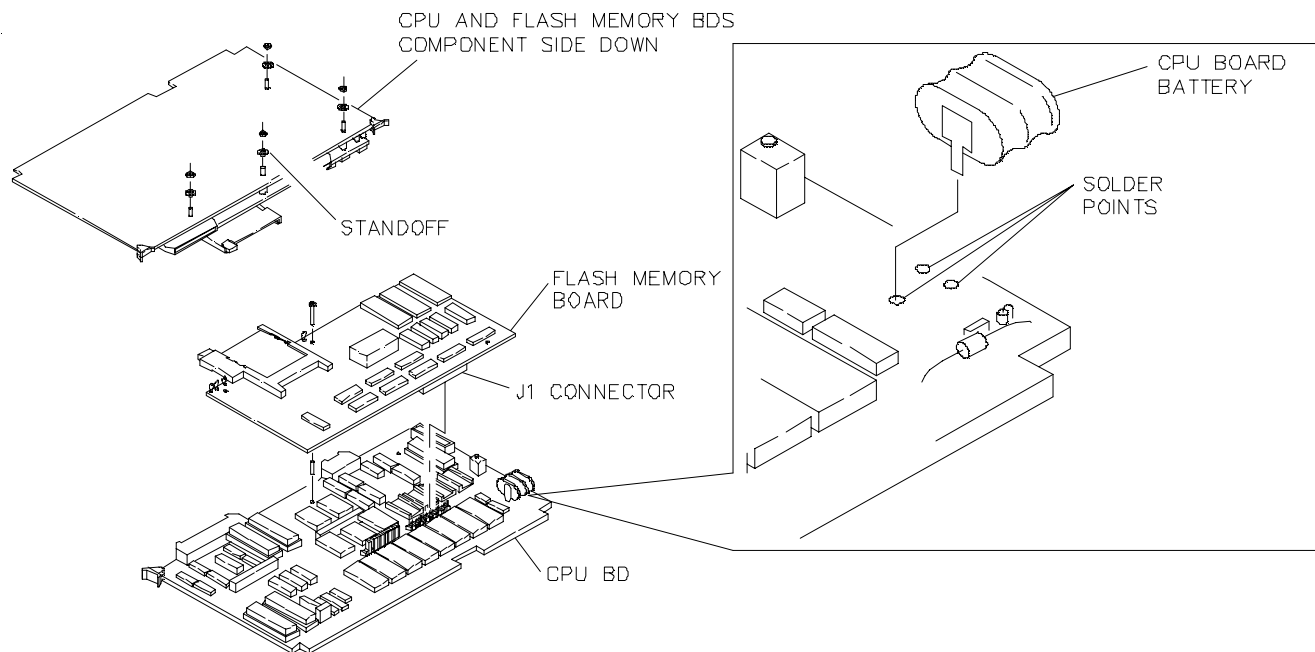
NOTE: Note orientation of battery for proper installation.

Replacement

1. Replace by repeating removal steps in reverse order.
2. Battery can be installed in one position only.

Verification

1. Verify parameters are reset to original configuration.
2. Perform Total Call.



50004

Figure 4-4. CPU Bd Battery

RR-1.3 FLASH MEMORY BD

Removal

1. Remove Flash Memory Bd (**RR-1.1**).

Replacement

1. Replace by repeating removal steps in reverse order.
2. Redownload software.

Verification

1. Verify parameters are reset to original configuration.
2. Perform Flash Memory Verification procedure (**VP-49**).
3. Perform Total Call.



RR-1.4 CPU POWER INTERFACE BD

Removal

1. Remove CPU Bd (**RR-1.1**).
2. Remove rear vented cover (**Figure 4-5**).
 - a. Loosen two screws at top.
 - b. Remove two screws at bottom.
3. Tilt back Card Cage Assy.
 - a. Raise top right cover.
 - b. Lower Keypad/Display Assy.
 - c. Remove two black thumbscrews securing card cage base-plate to mounting posts.
 - d. Replace thumbscrews temporarily in adjacent holes.
 - e. Return Keypad/Display Assy to original position.
 - f. Lower top right cover.
4. Raise top left cover.
5. Remove card cage pivot rod hardware (**Figure 4-5**).
 - a. Remove retaining pins.
 - b. Remove net washers.
6. Lower Card Cage Assy to rest on two hex mounting posts.

7. Remove the CPU Bd Bracket Assy from the back of the instrument (**Figure 4-5**).
 - a. Slide pivot rod from right to left until it clears bracket assy.
 - b. Disconnect two wires from CPU Power Interface Bd to TB2 on power Supply Bd (**Figure 4-5**).
 - (1) Disconnect +5V wire (red) at TB2-8.
 - (2) Disconnect GND wire (black) at TB2-6.
 - c. Disconnect cable at J11 on Power Interface Bd.
 - d. Remove mounting hardware from four places.
8. Remove board with mounting hardware from two places on bracket assembly (**Figure 4-5**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Verify parameters are reset to original configuration.
2. Perform Total Call.

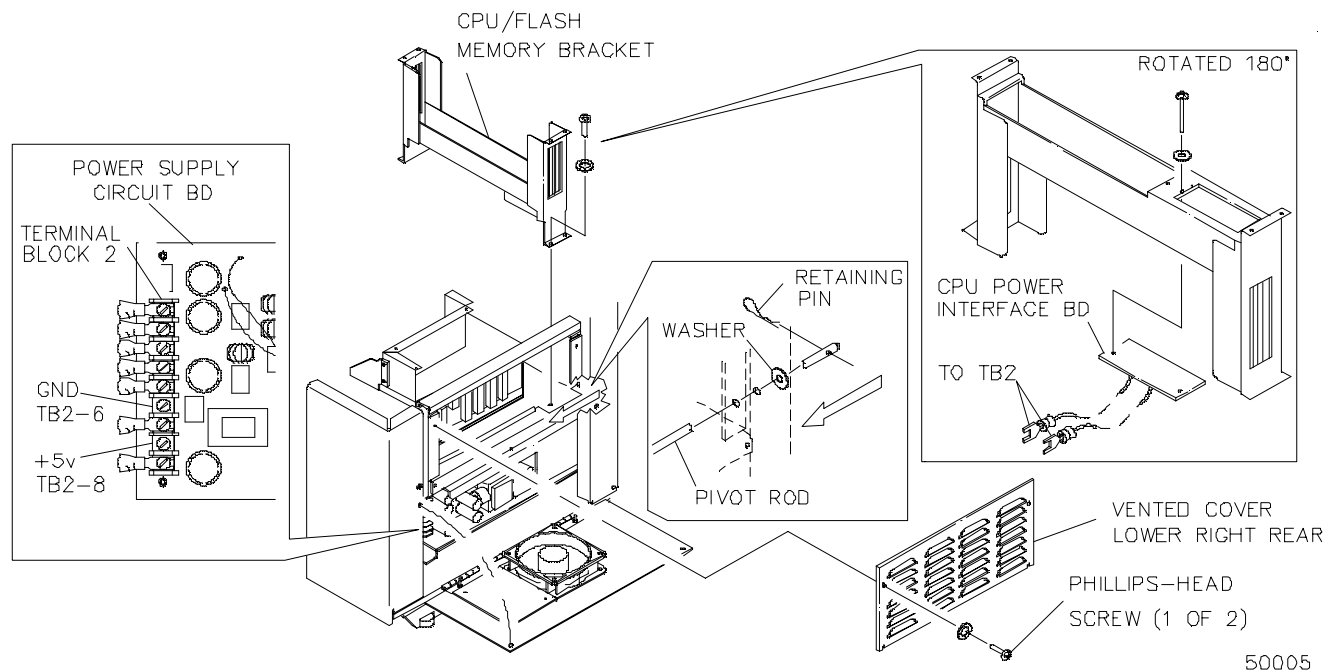


Figure 4-5. CPU Power Interface Bd

RR-1.5 GAS SPRING, TOP RIGHT COVER**Removal**

1. Turn Power OFF. Disconnect power cord.
2. Remove retaining key and pin at top of gas spring while holding up cover (**Figure 4-6**).
3. Lay cover back.
4. Remove remaining hardware at bottom of spring.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

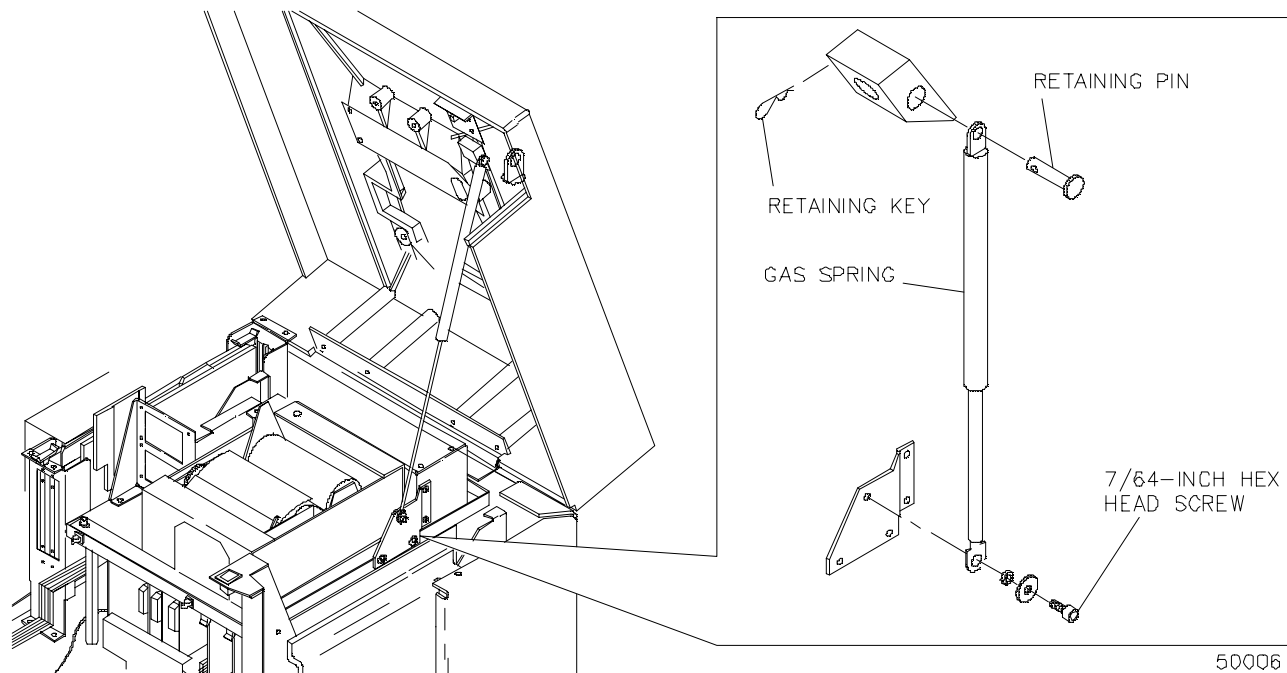


Figure 4-6. Gas Spring, Top Right Cover

RR-1.6 PRINTER INTERFACE BD

Removal



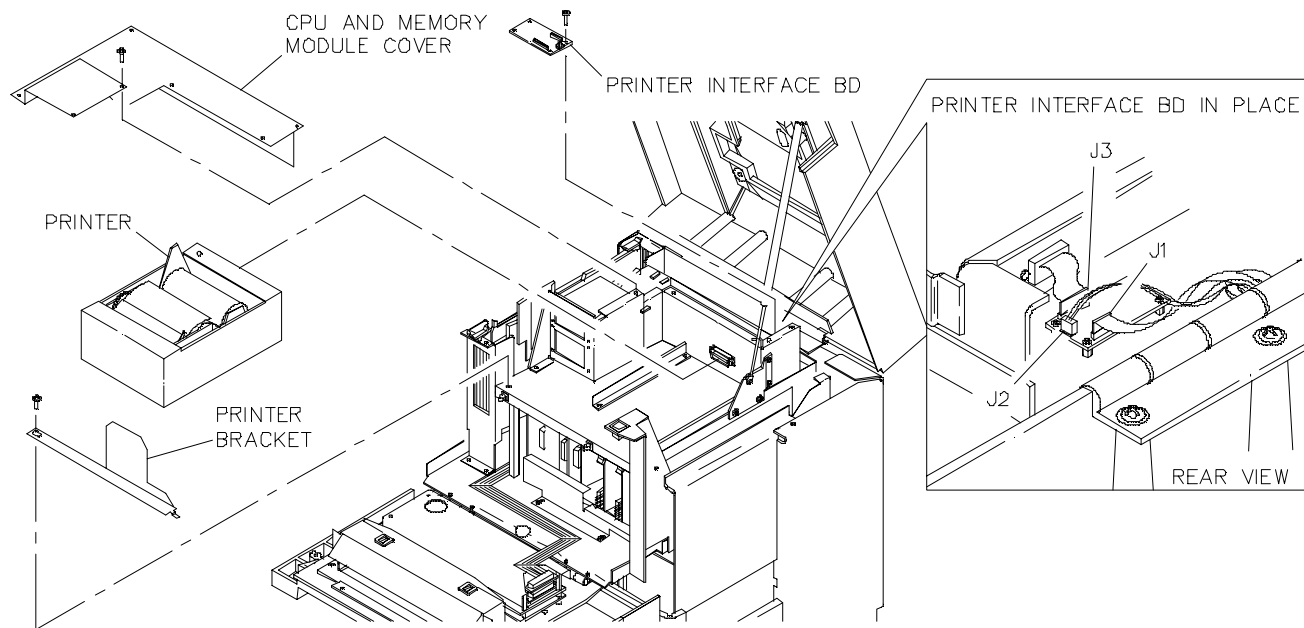
1. Turn power OFF. Disconnect power cord.
2. Raise top right cover.
3. Lower Keypad/Display Assy.
4. Disconnect Top Right Cover Gas Spring (**RR-1.5**).
5. Remove Printer Assy (**RR-1.7**).
6. Remove board covers with mounting hardware from seven places (**Figure 4-7**).
7. Remove Printer Interface Bd cables (**Figure 4-7**).
 - a. J3 to Printer Port.
 - b. J2 to Power Interface Harness.
 - c. J1 to J501 on Backplane Bd.
8. Remove board mounting hardware from four places.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Printer Tests (**VP-10**).
2. Perform Total Call.



50007

Figure 4-7. Printer Interface Bd

RR-1.7 PRINTER ASSY

Removal

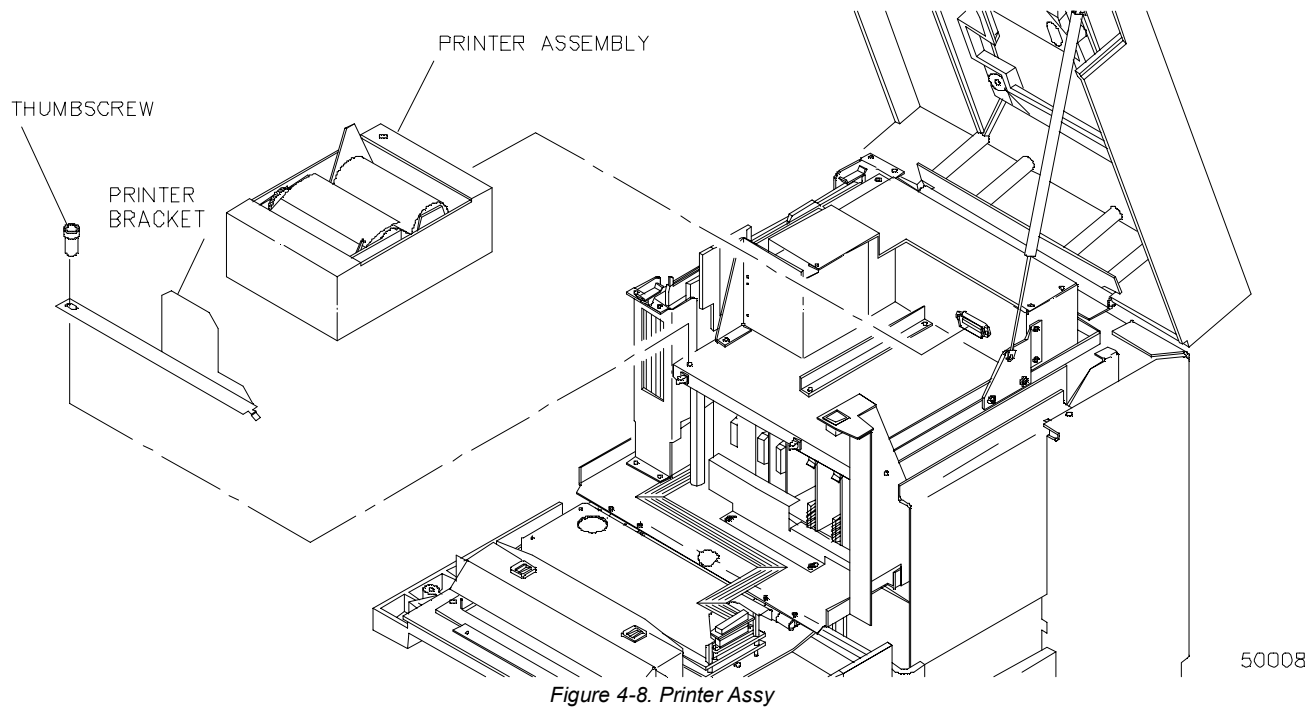
1. Turn power OFF. Disconnect power cord.
2. Raise top right cover.
3. Lower Keypad/Display Assy.
4. Slide Printer Assy forward out of position (**Figure 4-8**).
 - a. Remove thumbscrew securing bracket to Card Cage Assy.
 - b. Remove Printer Bracket.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Printer Tests (**VP-10**).
2. Perform Total Call.



RR-1.8 CPU SERIAL RIBBON CABLE

Removal

1. Turn power OFF. Disconnect power cord.
2. Raise top right cover.
3. Lower Keypad/Display Assy.
4. Disconnect CPU Serial Ribbon Cable (**Figure 4-9**).
 - a. Remove connection at J4 on Keypad/Display Assy.
 - b. Remove connection at J1 on CPU Bd.
 - c. Remove connection at J702 on Cable Panel Interface Bd.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Printer Tests (**VP-10**).
2. Perform Total Call.

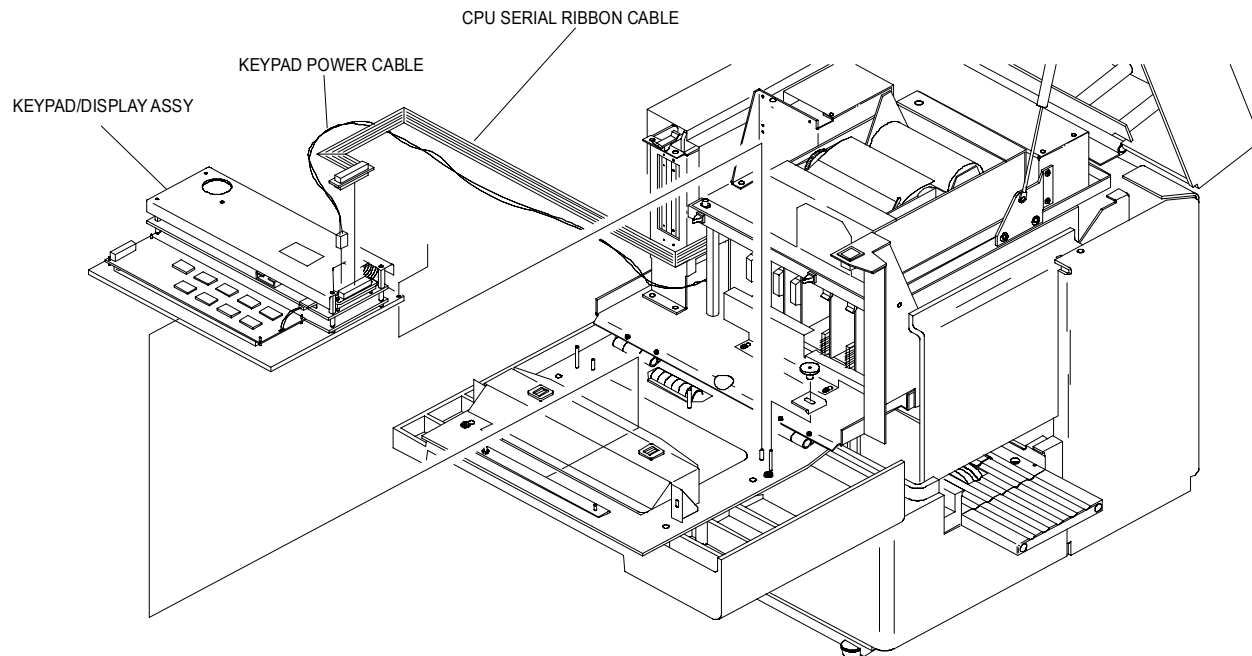


Figure 4-9. CPU Serial Ribbon Cable

RR-1.9 KEYPAD POWER CABLE

Removal

1. Turn power OFF. Disconnect power cord.
2. Raise top right cover.
3. Lower Keypad/Display Assy.
4. Disconnect Keypad Power Cable (**Figure 4-10**).
 - a. Remove connection at J5 on Keypad/Display Assy.
 - b. Remove connection at J9 on Power Interface Bd.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Console Tests (**VP-8**).
2. Perform Total Call.

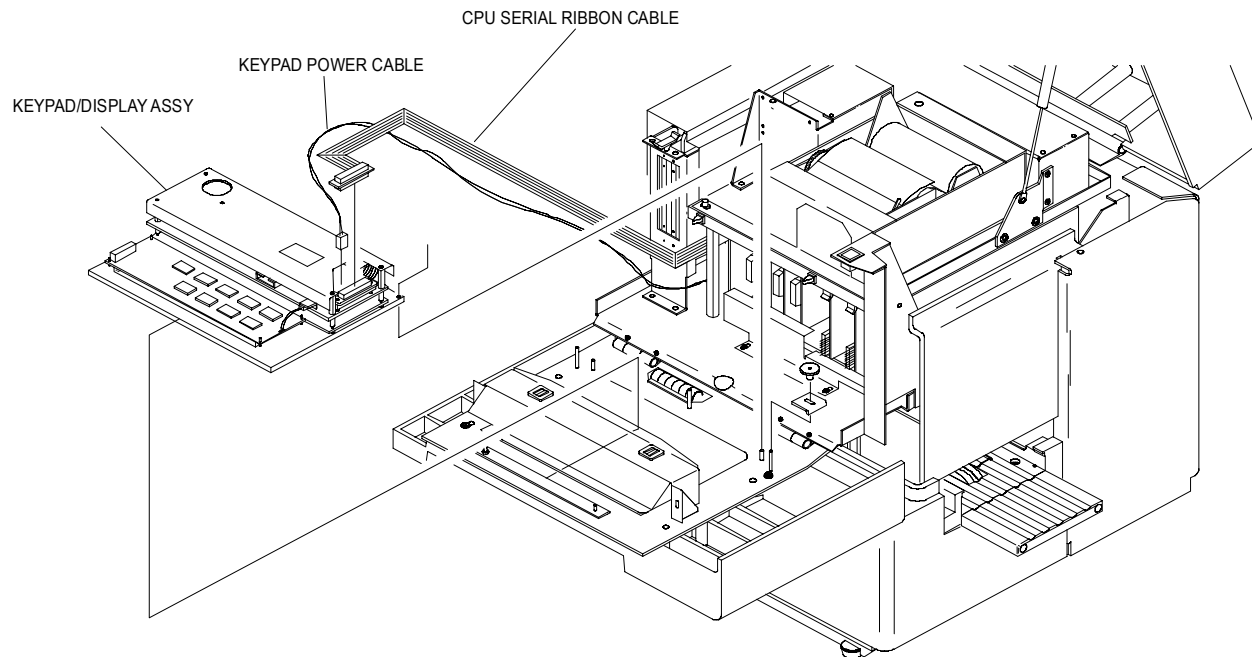


Figure 4-10. Keypad Power Cable

RR-1.10 KEYPAD/DISPLAY ASSY**Removal**

1. Turn power OFF. Disconnect power cord.
2. Raise top right cover.
3. Lower Keypad/Display Assy.
4. Remove three thumbscrews and clamps (**Figure 4-11**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Console Test (**VP-8**).
2. Perform Total Call.

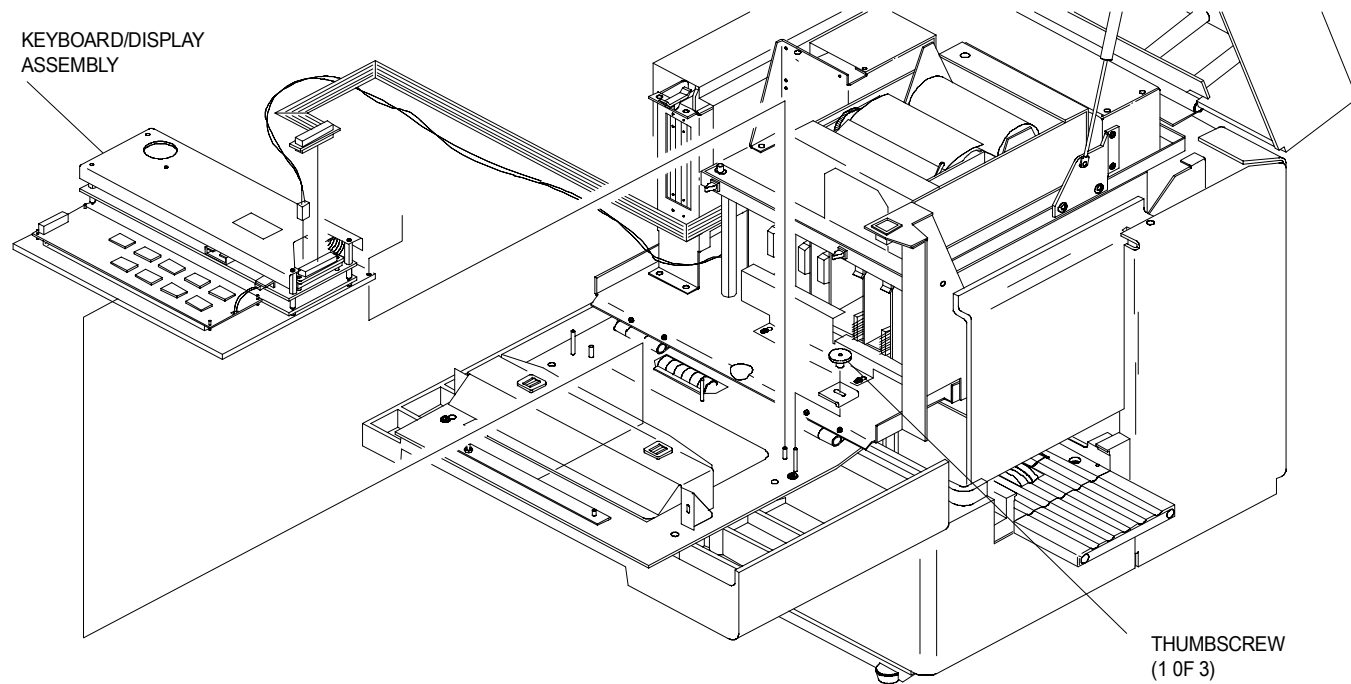


Figure 4-11. Keypad/Display Assy

RR-1.11 STEPPER DRIVER BOARDS A & B

Removal



1. Turn power OFF. Disconnect power cord.
2. Raise top right cover.
3. Lower Keypad/Display Assy.
4. Remove two screws on Card Cage Assy Bracket (**Figure 4-12**).
5. Disconnect the cable at connector J1 to remove Stepper Driver Bd A. Disconnect the cable at connector J2 to remove Stepper Driver Bd B.

NOTE: Stepper Driver Bd A is in slot #6. Stepper Driver Bd B is in slot #5. The boards are identical.

6. Press ejectors to disengage either of the boards. Remove board from slot. (See **Figure 4-12**.)

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

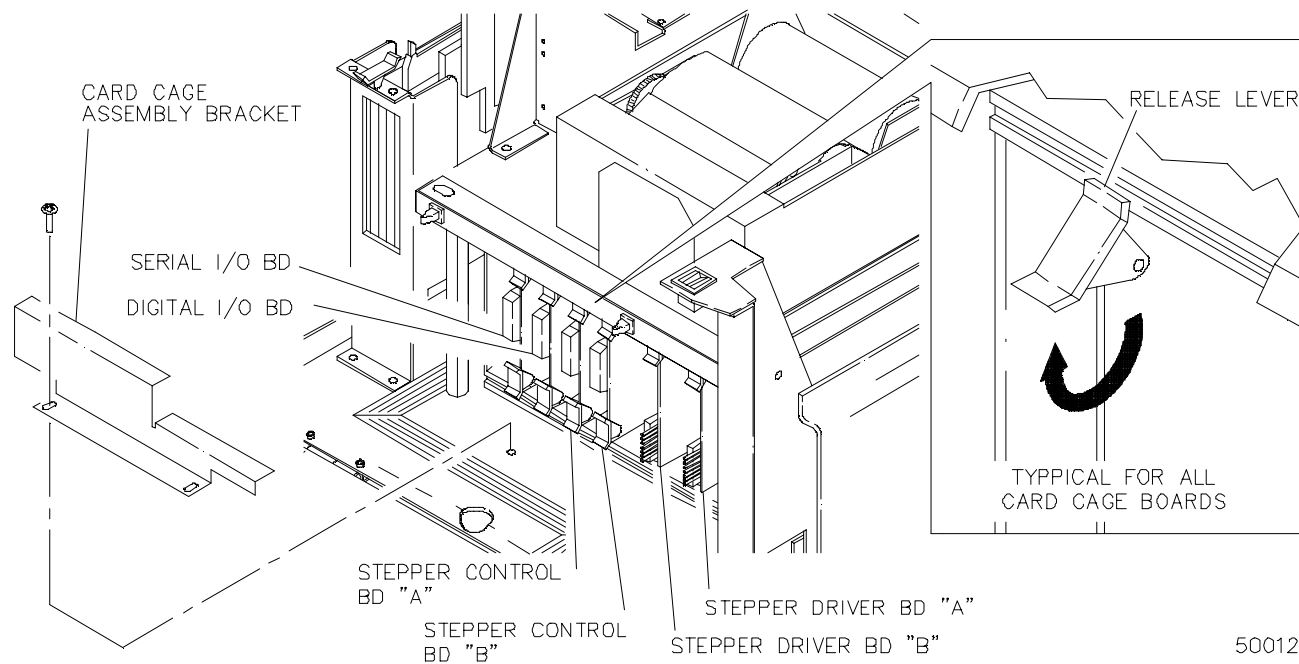


Figure 4-12. Card Cage Bds

RR-1.12 STEPPER CONTROLLER BOARDS A & B**Removal**

1. Turn power OFF. Disconnect power cord.
2. Raise top right cover.
3. Lower Keypad/Display Assy.
4. Remove two screws on Card Cage Assy Bracket.
(See **Figure 4-12.**)
5. Press ejectors to disengage either of the boards. Remove board from slot. (See **Figure 4-12.**)

NOTE: Stepper Controller Bd A (with jumper at B) is in slot #3. Stepper Controller Bd B (with jumper at C) is in slot #4.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

RR-1.13 DIGITAL I/O BD

See **RR-1.12 Stepper Controller BOARDS A & B**.

Digital I/O Bd is in slot #2.

RR-1.14 SERIAL I/O BD

See **RR-1.12 Stepper Controller BOARDS A & B**.

Serial I/O Bd is in slot #1.



RR-1.15 BACKPLANE BD

Removal

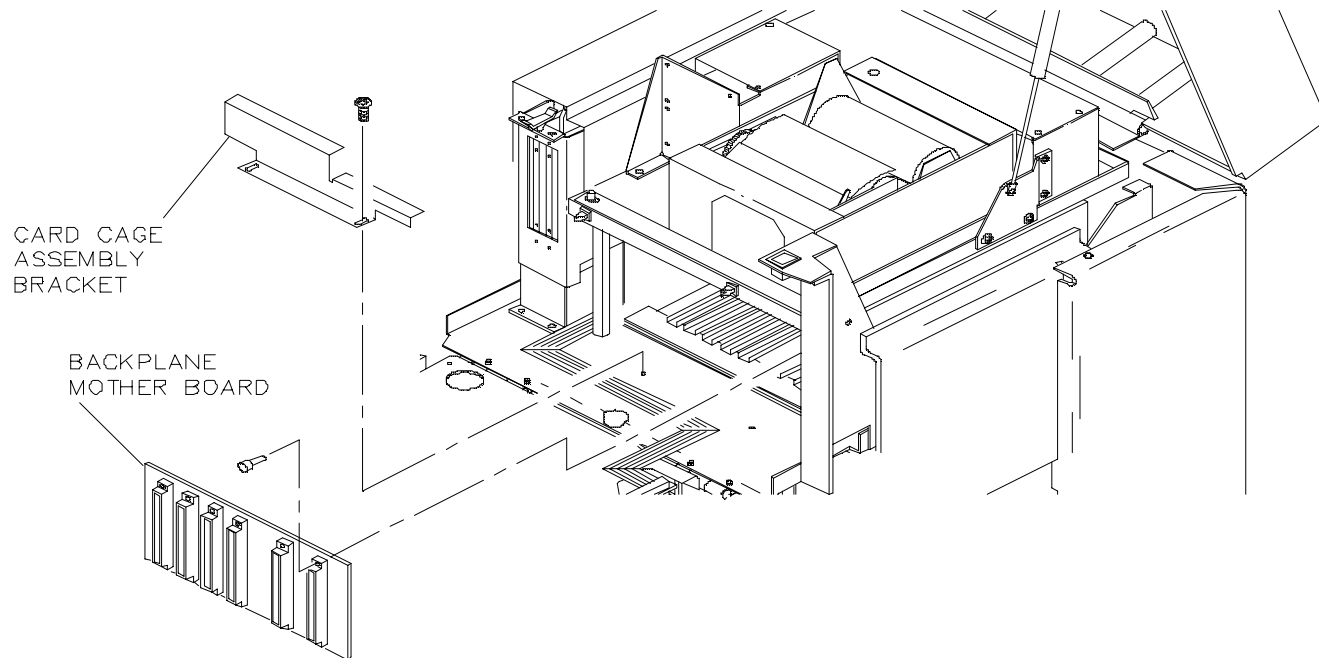
1. Turn power OFF. Disconnect power cord.
2. Remove right rear vented cover (**Figure 4-5**).
3. Disconnect cables to Cable Panel Interface Bd.
 - a. J101
 - b. J201
 - c. J301
 - d. J401
 - e. J501
 - f. J601
 - g. J202
 - h. J102
4. Disconnect cable at J107 to CPU Bd.
5. Disconnect cable at J700 to Power Interface Bd.
6. Raise top right cover.
7. Remove Card Cage Assy Bracket mounting hardware from two places (**Figure 4-12**).
8. Remove J1 and J2 connectors from Stepper Driver Bds A and B.
9. Remove boards from backplane.
10. Remove mounting hardware from twelve places.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification


1. Perform Total Call.



50013

Figure 4-13. Backplane Bd

RR-2.1 CARD CAGE GAS SPRING ASSY**Removal**

- 
1. Turn power OFF. Disconnect power cord.
 2. Tilt back the Card Cage Assy (**RR-1.4**, Step 5).
 3. Remove mounting hardware at bottom of Gas Spring Assy while supporting Card Cage Assy in raised position (**Figure 4-14**).
 4. Remove mounting hardware at top of Gas Spring Assy.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

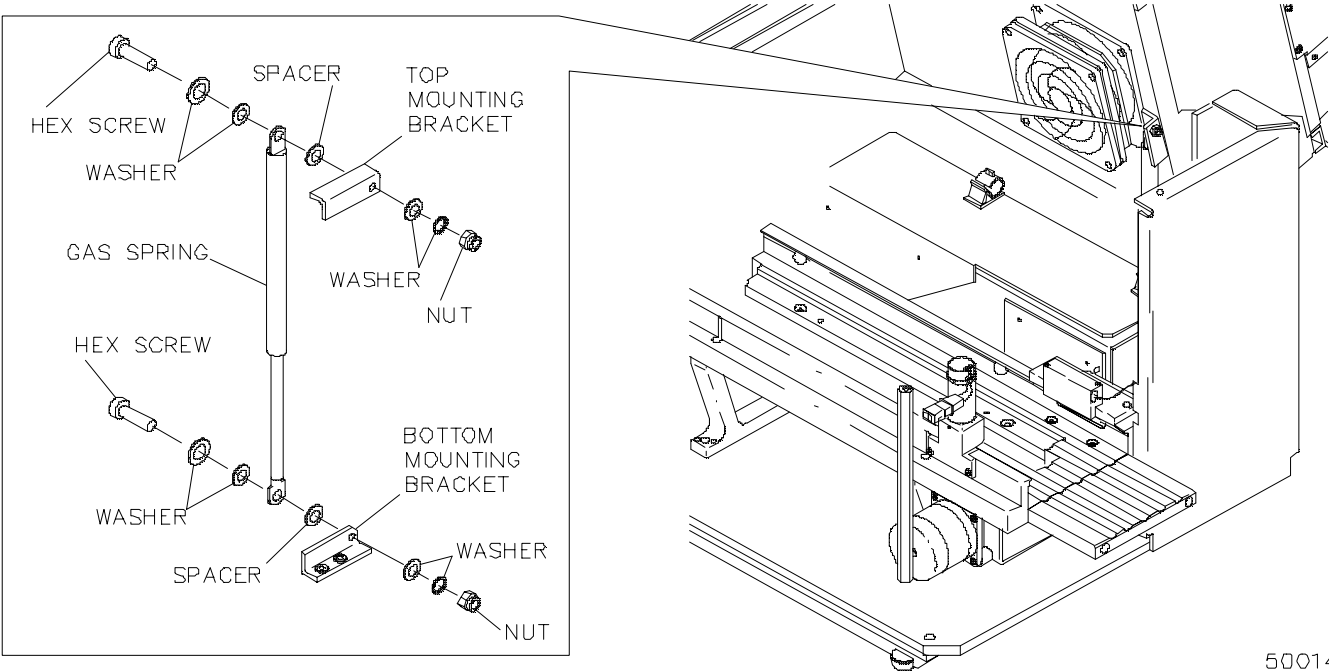


Figure 4-14. Card Cage Gas Spring Assy

RR-2.2 CARD CAGE FAN**Removal**

1. Turn power OFF. Disconnect power cord.
2. Tilt back the Card Cage Assy (**RR-1.4**, Step 4).
3. Disconnect cable from fan (**Figure 4-15**).
4. Remove Fan Filter Assy.
5. Remove fan cover mounting hardware from four places.
6. Remove card cage boards (**RR-1.11**).
7. Remove fan mounting hardware from four places.

**Replacement**

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

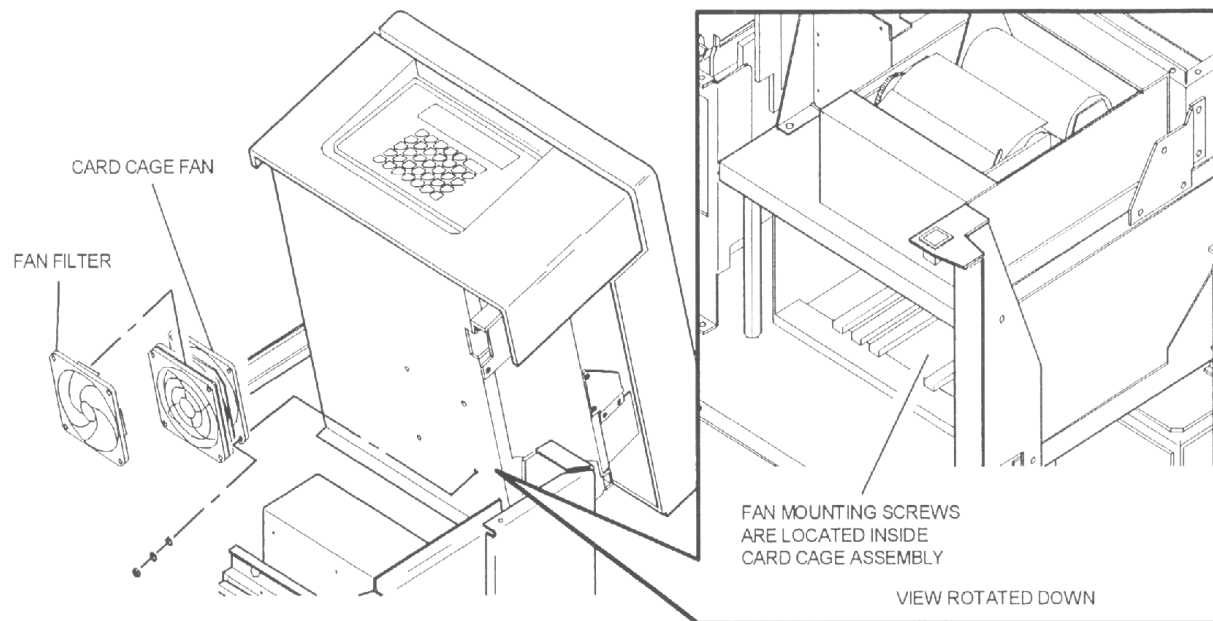


Figure 4-15. Card Cage Fan

RR-2.3 LOAD URGE BELTS

Removal

1. Remove Load Urge Belt Slide Assy (**RR-2.5**).
2. Remove two orange Load Urge Belts from Belt Slide Assy (**Figure 4-16**).

Replacement

1. Replace by repeating removal steps in reverse order.

NOTE: Install second of two belts so the seam is not directly across from the first belt seam.

Verification

1. Perform Total Call.



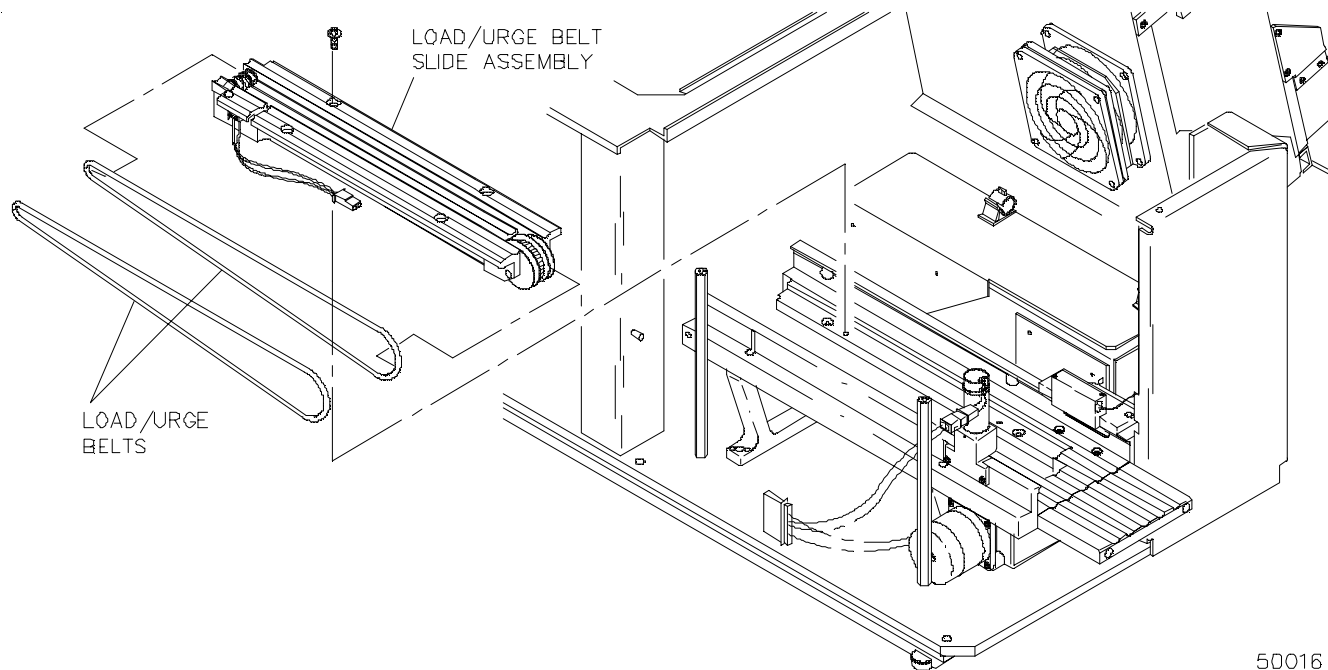


Figure 4-16. Load Urge Belts

RR-2.4 WEB SWITCH ASSY

Removal

1. Remove Load Urge Belt Slide Assy (**RR-2.5**).
2. Disconnect white 2-pin connector (**Figure 4-17**).
3. Remove mounting hardware from two places.

Replacement

1. Replace by repeating the removal steps in reverse order.

Verification

1. Perform Web Switch Verification Procedure (**VP-17**).
2. Perform Total Call.



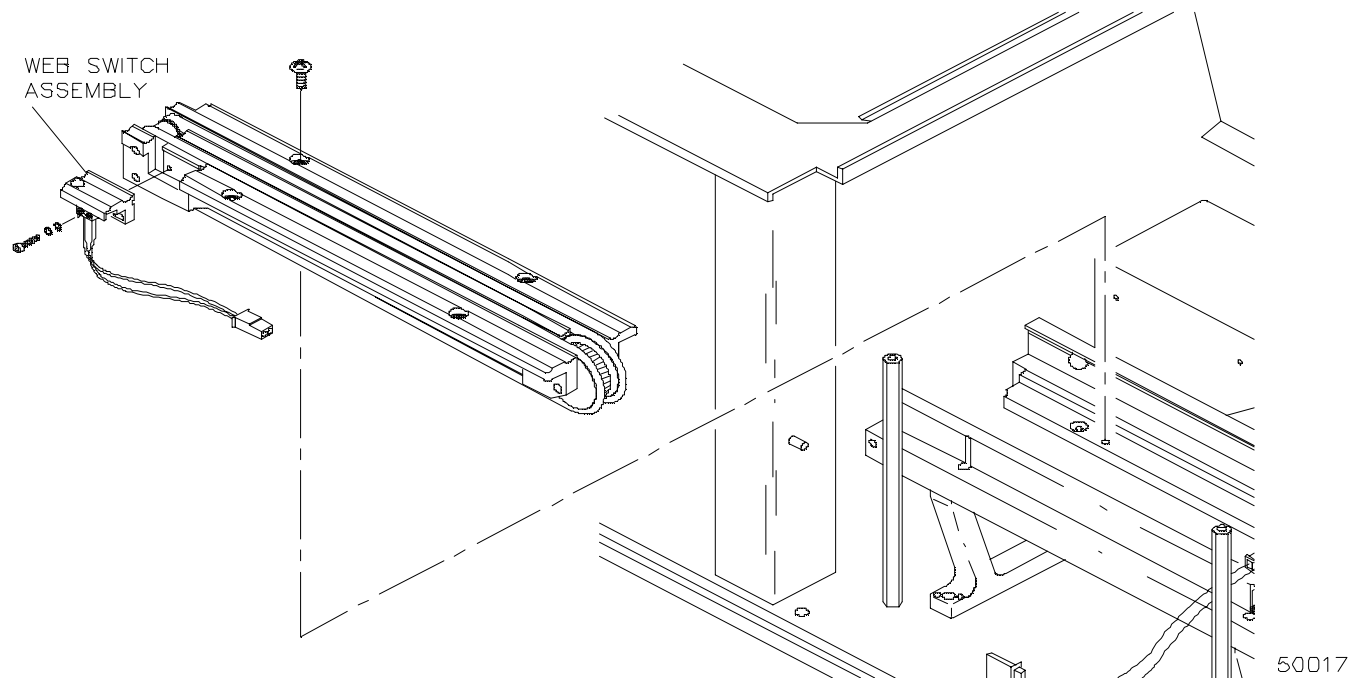



Figure 4-17. Web Switch Assy

RR-2.5 LOAD URGE BELTS SLIDE ASSY**Removal**

- 
1. Turn Power OFF. Disconnect power cord.
 2. Tilt back Card Cage Assy (**RR-1.4**, Step 5).
 3. Remove lower right front cover.
 4. Disconnect white cable connector under Load Urge Belt Slide Assy (**Figure 4-18**).
 5. Remove hardware from four places.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

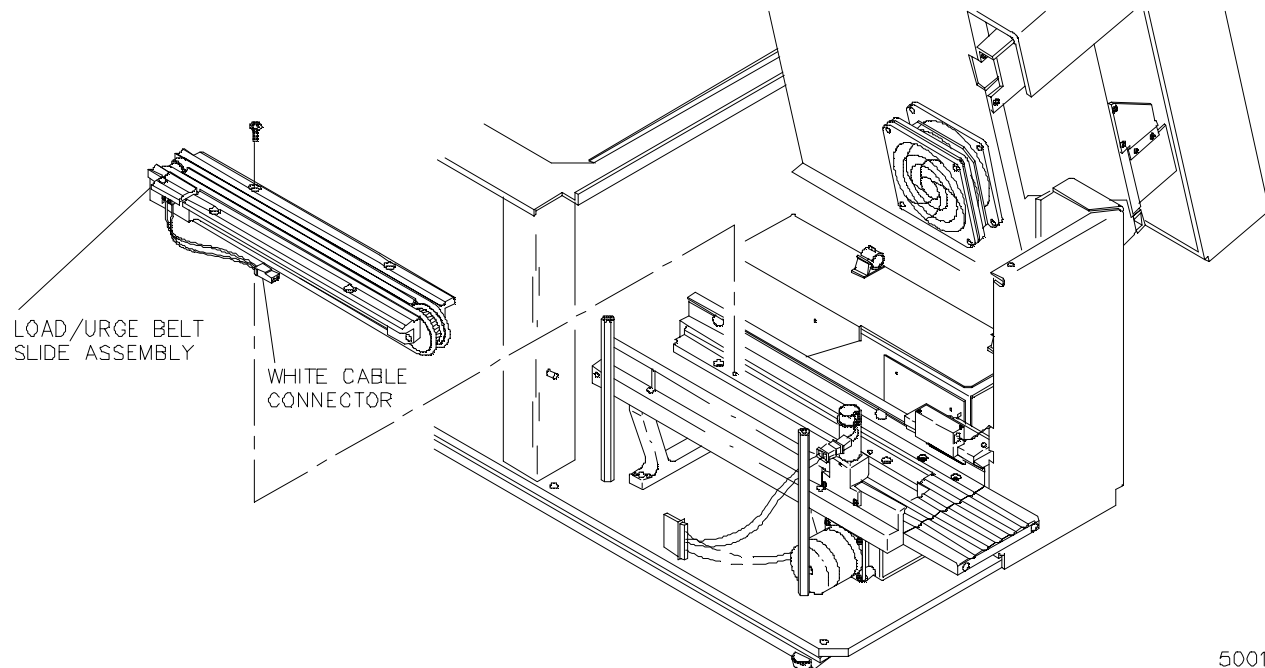



Figure 4-18. Load Urge Belt Slide Assy

RR-2.6 TRAY READY SWITCH ASSY

Removal

- 
1. Turn power OFF. Disconnect power cord.
 2. Tilt back card Cage Assy (**RR-1.4**, Step 4).
 3. Remove Tray Ready Switch mounting hardware from two places (**Figure 4-19**).
 4. Disconnect two wires.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

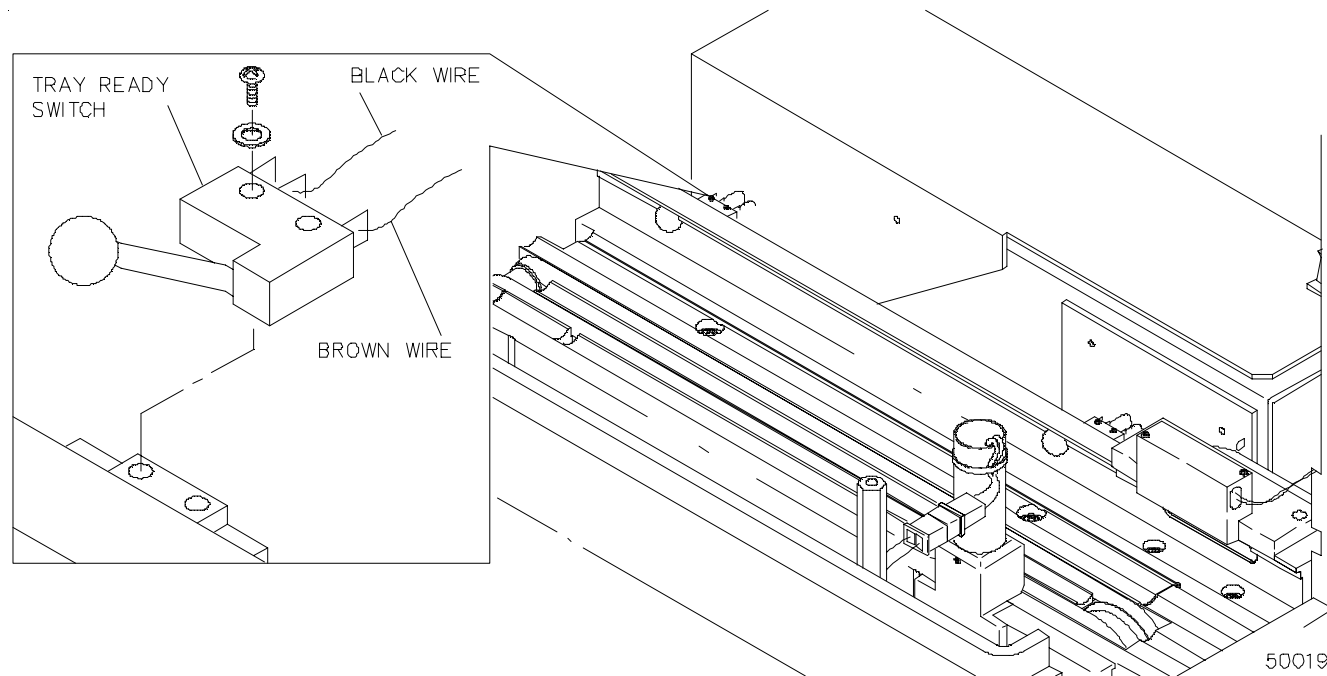



Figure 4-19. Tray Ready Switch Assy

RR-2.7 TRAY ENTERED SWITCH ASSY

Removal

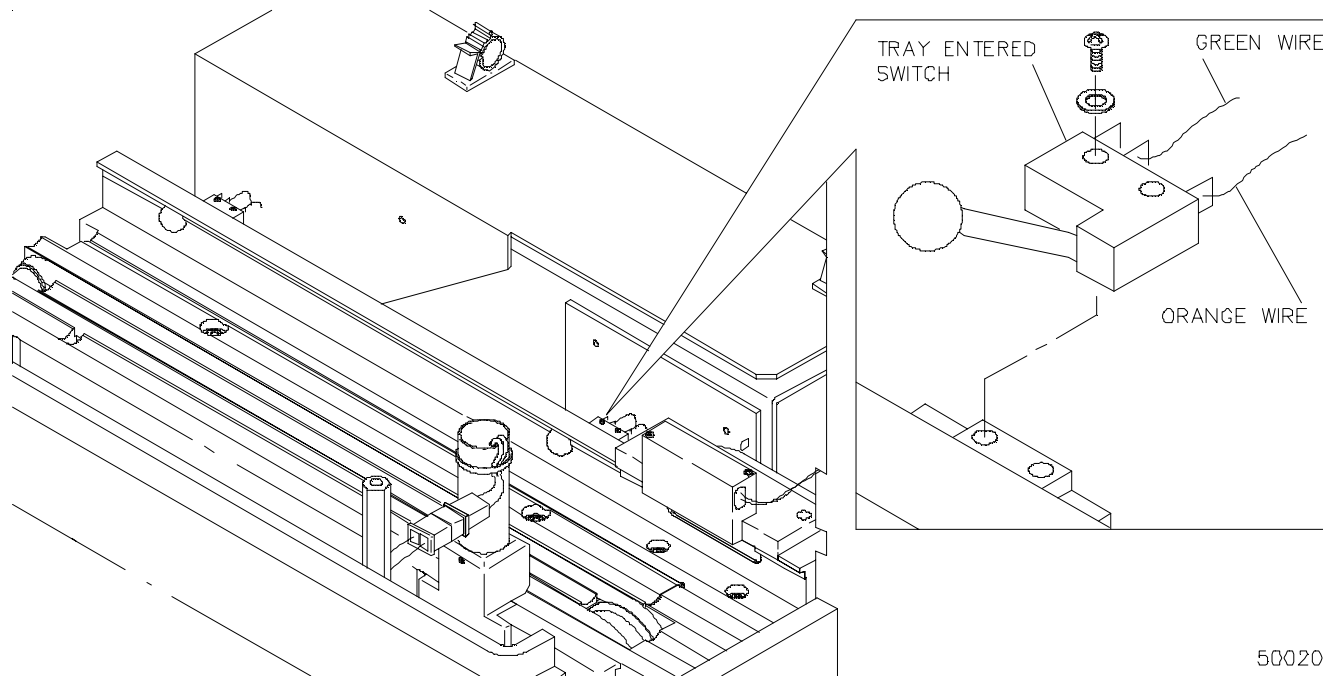
- 
1. Turn power OFF. Disconnect power cord.
 2. Tilt back Card Cage Assy (**RR-1.4**, Step 4).
 3. Remove Tray Entered Switch mounting hardware from two places (**Figure 4-20**).
 4. Disconnect two wires.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.



50020

Figure 4-20. Tray Entered Switch Assy

RR-2.8 BAR CODE READER

Removal



1. Turn power OFF. Disconnect power cord.
2. Tilt back Card Cage Assy (**RR-1.4**, Step 4).
3. Remove lower right front cover.
4. Remove right side panel.
5. Remove Bar Code Reader Assy mounting hardware from two places (**Figure 4-21**).
6. Unplug Bar Code Reader Cable at Cable Panel Interface Bd J700.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Bar Code Reader Verification Procedure (**VP-18**).
2. Perform Total Call.

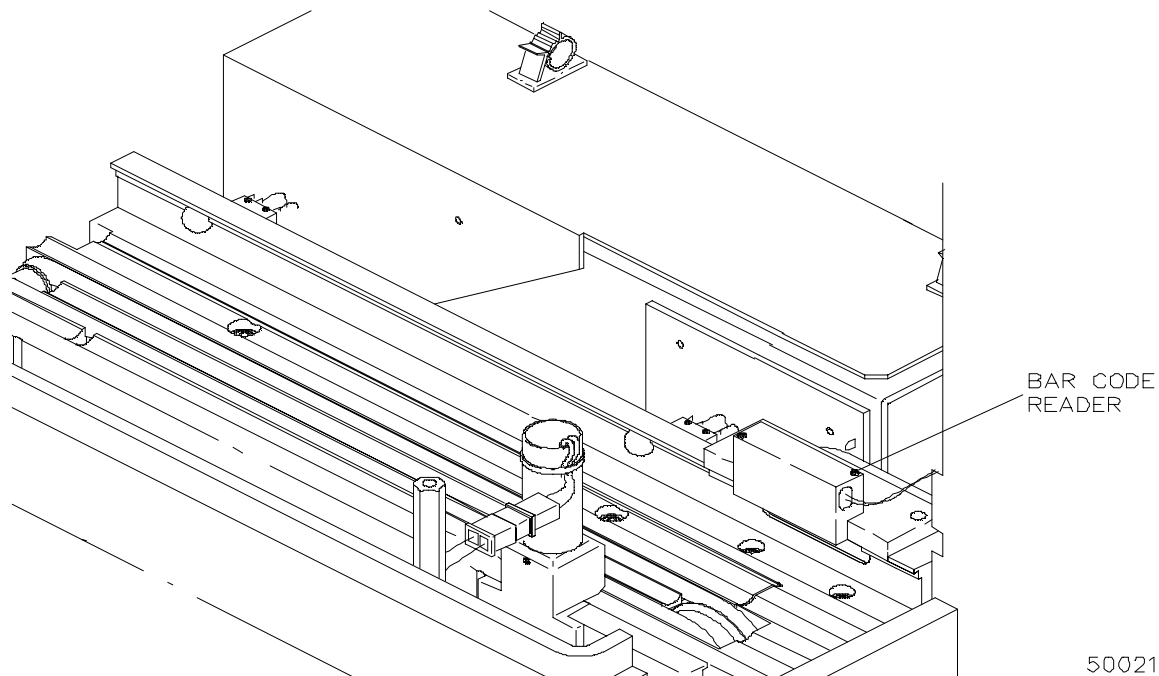



Figure 4-21. Bar Code Reader

RR-2.10 LOAD URGE MODULE**Removal**

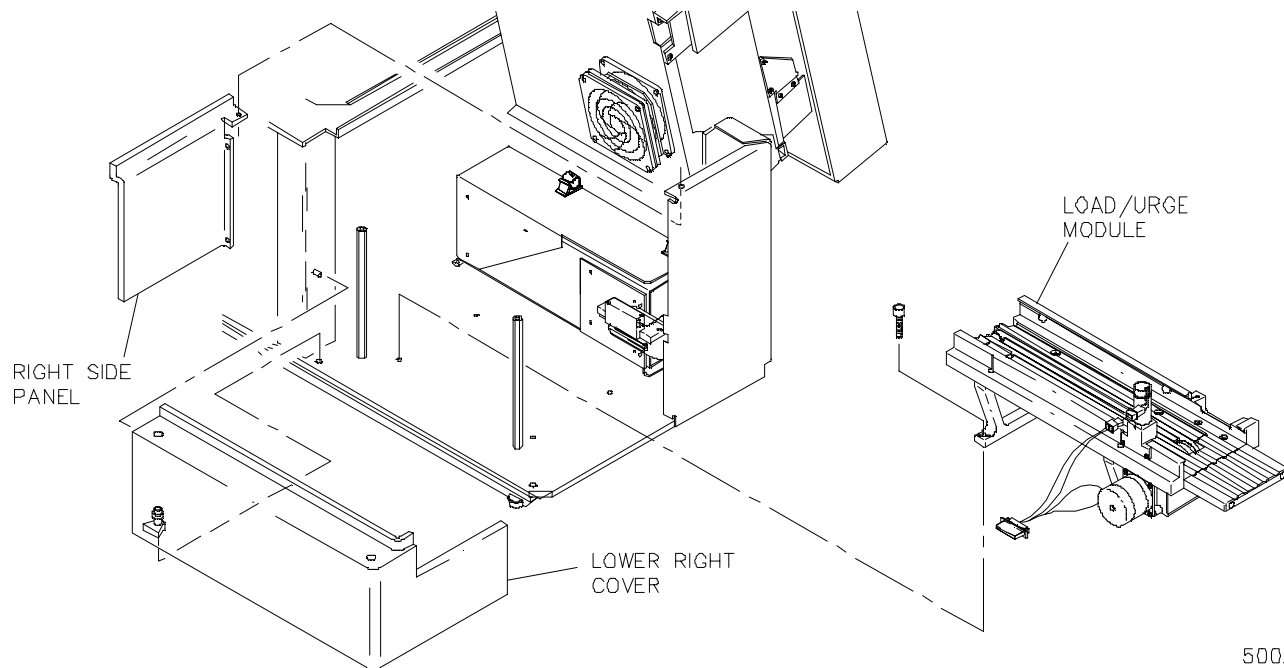
- 
1. Remove Bar Code Reader (**RR-2.8**).
 2. Remove the Load Urge Module mounting hardware from four places (**Figure 4-22**).
 3. Disconnect cable.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform the following Verification Procedures:
 - a. Load to Main Transport Drive Alignment (**VP-15**).
 - b. Web Switch (**VP-17**).
 - c. Bar Code Reader (**VP-18**).
2. Verify Tray Entered Switch Actuator can be fully depressed with tray in place.
3. Verify LED # 203 illuminates and display shows "Tray Entered Switch ON" when switch is depressed.
4. Verify Tray Ready Switch Actuator can be fully depressed with tray in place.
5. Verify LED # 100 illuminates and display shows "Tray Ready Switch ON" when switch is depressed.
6. Perform Total Call.



50022

Figure 4-22. Load Urge Module

RR-2.11 LOAD URGE ENTRY SOLENOID

Removal



1. Turn power OFF. Disconnect power cord.
2. Tilt back Card Cage Assy (**RR-1.4**, Step 4).
3. Remove lower right front cover.
4. Remove card cage mounting post.
5. Disconnect solenoid cable (**Figure 4-23**).
6. Remove solenoid mounting hardware from two places.

Replacement

1. Replace by repeating removal steps in reverse order.

CAUTION:

Secure wiring to solenoid with cable tie to prevent cutting.

Verification

1. Perform Bar Code Reader Test (**VP-18**).
2. Perform Total Call.

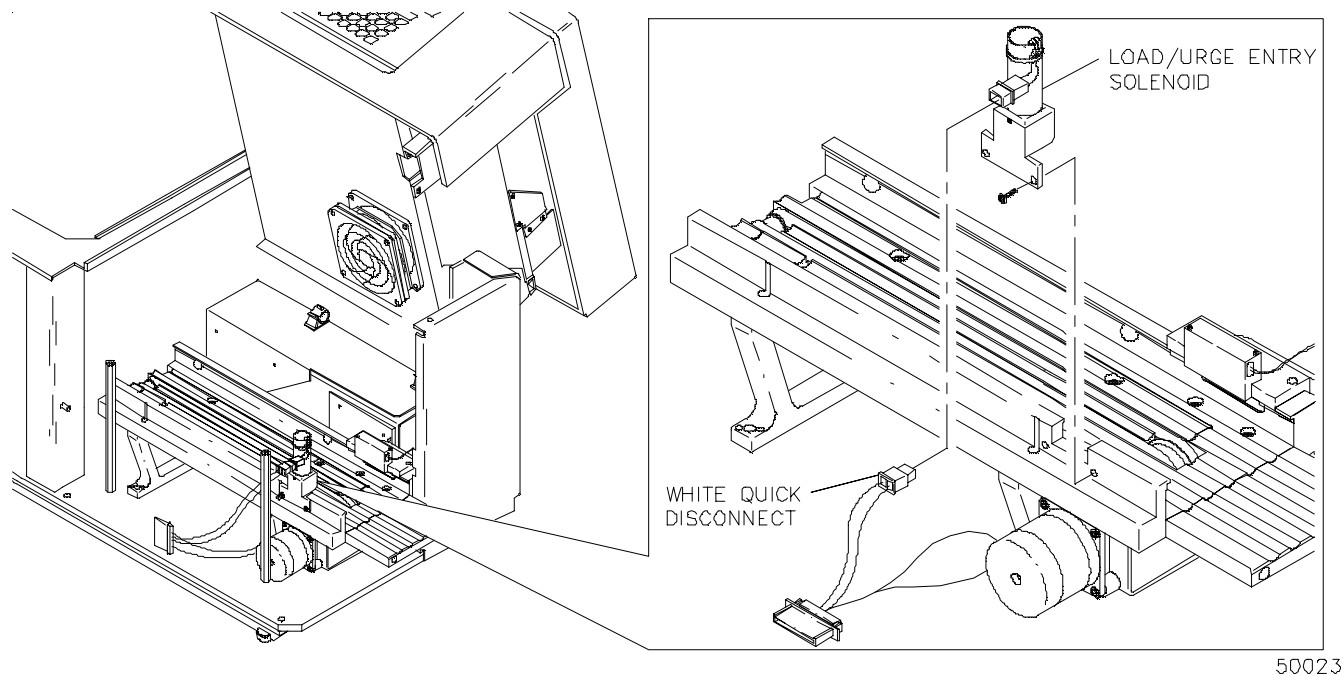


Figure 4-23. Load Urge Entry Solenoid

RR-3.1 OPTICS FAN

Verification

Removal

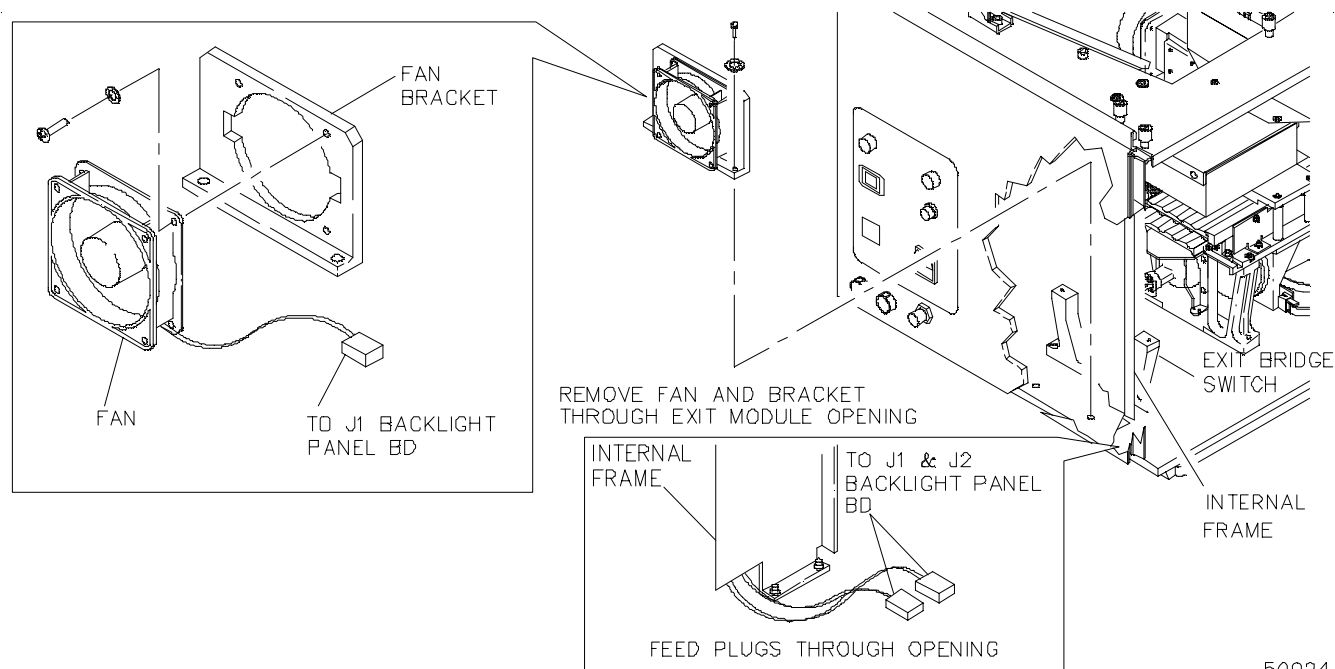
1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Remove left front cover.
 - a. Remove metal shield with mounting hardware from two places.
 - b. Remove left front cover hardware from two places.
 - c. Slide cover from right to left to remove.
 - d. Disconnect three cables on Backlight Bd.
5. Remove Exit Shroud mounting hardware from two places.
6. Remove Exit Bridge Switch Assy mounting hardware from two places. Note position for reinstallation (**Figure 4-24**).
7. Remove Exit Bridge Assy through exit.
8. Remove Optics Fan mounting bracket hardware from two places.
9. Unplug fan power cable at J1 on Backlight Bd.
10. Remove Optics Fan and bracket through Exit Shroud opening.
11. Remove Optics Fan hardware from four places.

1. Perform the following Verification Procedures:
 - a. Exit Shroud (**VP-28**).
 - b. Exit Switch (Metal Actuator) (**VP-29**).
 - c. Exit Switch (Plastic Actuator) (**VP-30**).
2. Perform Total Call.

Replacement

1. Replace by repeating removal steps in reverse order.





50024.

Figure 4-24. Optics Fan

RR-3.2 GAS SPRING, TOP LEFT COVER

Removal

1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove retaining key and pin at bottom of gas spring while holding up the cover (**Figure 4-25**).
4. Remove retaining key and pin at top of gas spring.
5. Remove the gas spring.

Replacement

1. Replace by repeating the removal steps in reverse order.

Verification

1. Perform Total Call.

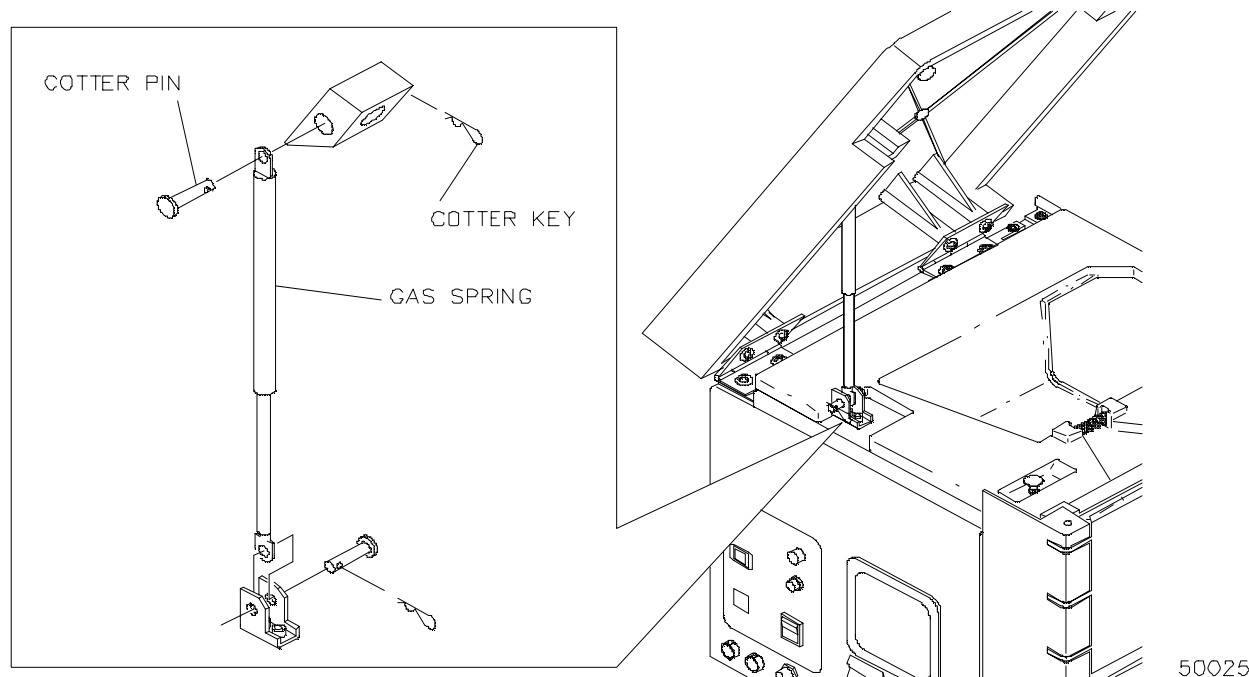


Figure 4-25. Gas Spring, Top Left Cover

RR-3.4 BACKLIGHT BD

Removal



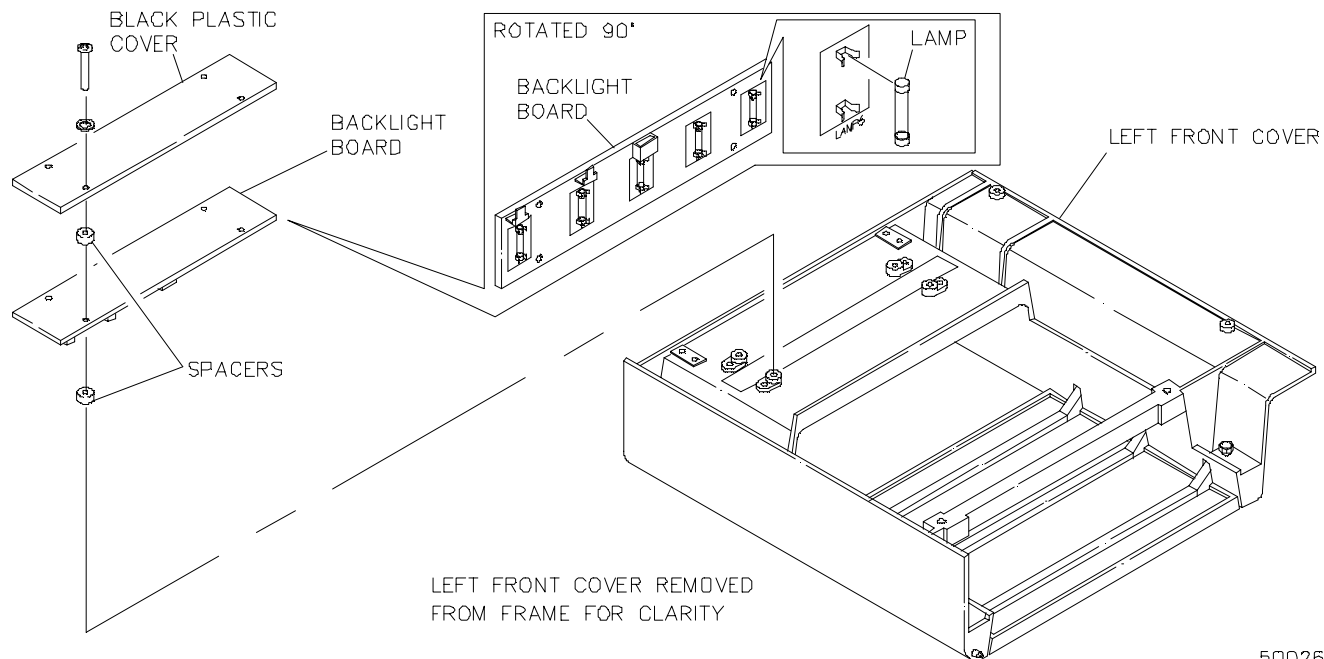
1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Open door covering Dispense Bottle Pump Assy.
5. Remove left front cover.
 - a. Remove metal shield with mounting hardware from two places.
 - b. Remove left front cover hardware from two places.
 - c. Slide cover from right to left to remove.
 - d. Disconnect three cables on Backlight Bd.
6. Remove Backlight Bd mounting hardware from four places (**Figure 4-26**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Dispense Pump/Pipettor Bottle Alignment Verification Procedure (**VP-26**).
2. Perform Total Call.




50026

Figure 4-26. Backlight Bd

RR-3.6 TRI-CONTINENT BOTTLE HOLDER

Removal

- 
1. Turn Power OFF. Disconnect power cord.
 2. Raise top left cover.
 3. Remove drip tray.
 4. Open door covering Dispense Bottle Pump Assy.
 5. Remove Tri-Continent Bottle Holder mounting hardware from two places (**Figure 4-27**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Dispense Pump/Pipettor Bottle Alignment Verification Procedure (**VP-26**).
2. Perform Total Call.

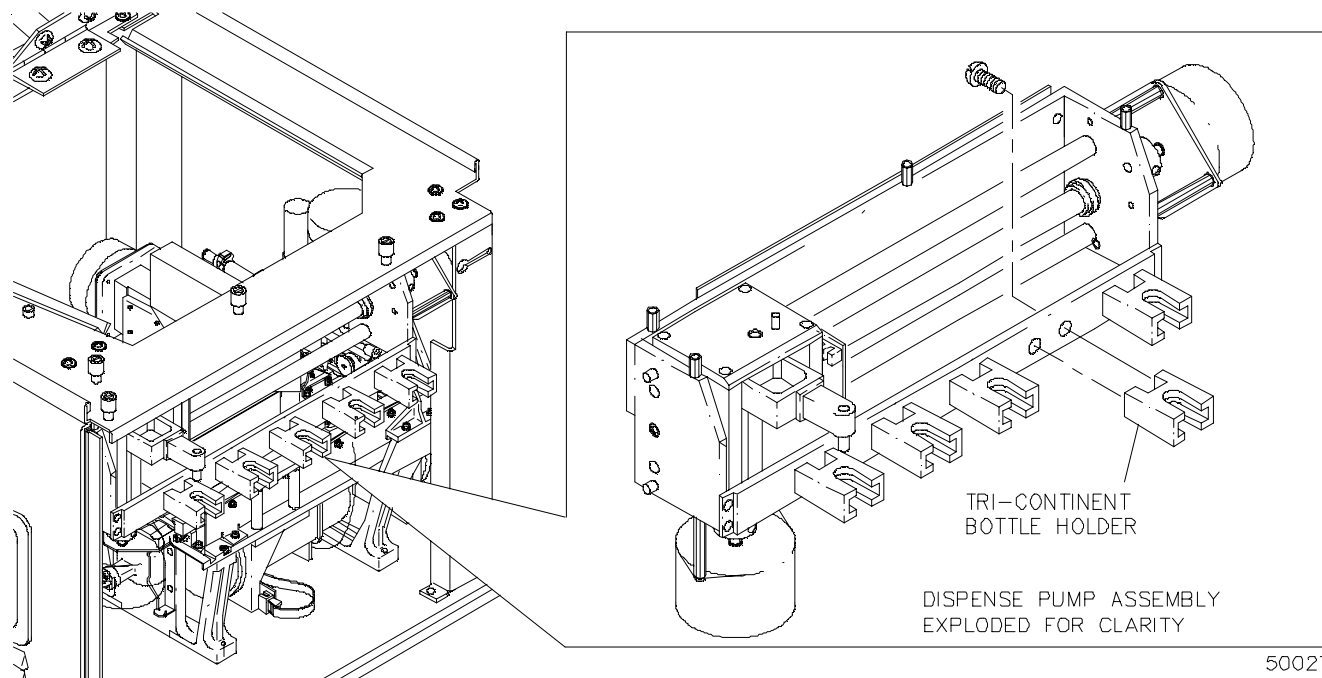


Figure 4-27. Tri-Continent Bottle Holder

RR-3.7 DISPENSE PUMP SENSOR BD

Removal



1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Open door covering Dispense Bottle Pump Assy.
5. Remove metal shield mounting hardware from two places.
6. Remove Sensor Bd mounting hardware from two places
(**Figure 4-28**).
7. Disconnect ribbon cable at J2.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Dispense Pump/Pipettor Bottle Alignment Verification Procedure (**VP-26**).
2. Verify flag will travel through two “opto-sensors” on Dispense Pump Sensor Bd by manually moving Dispense Pump up and down.
3. Perform Total Call.

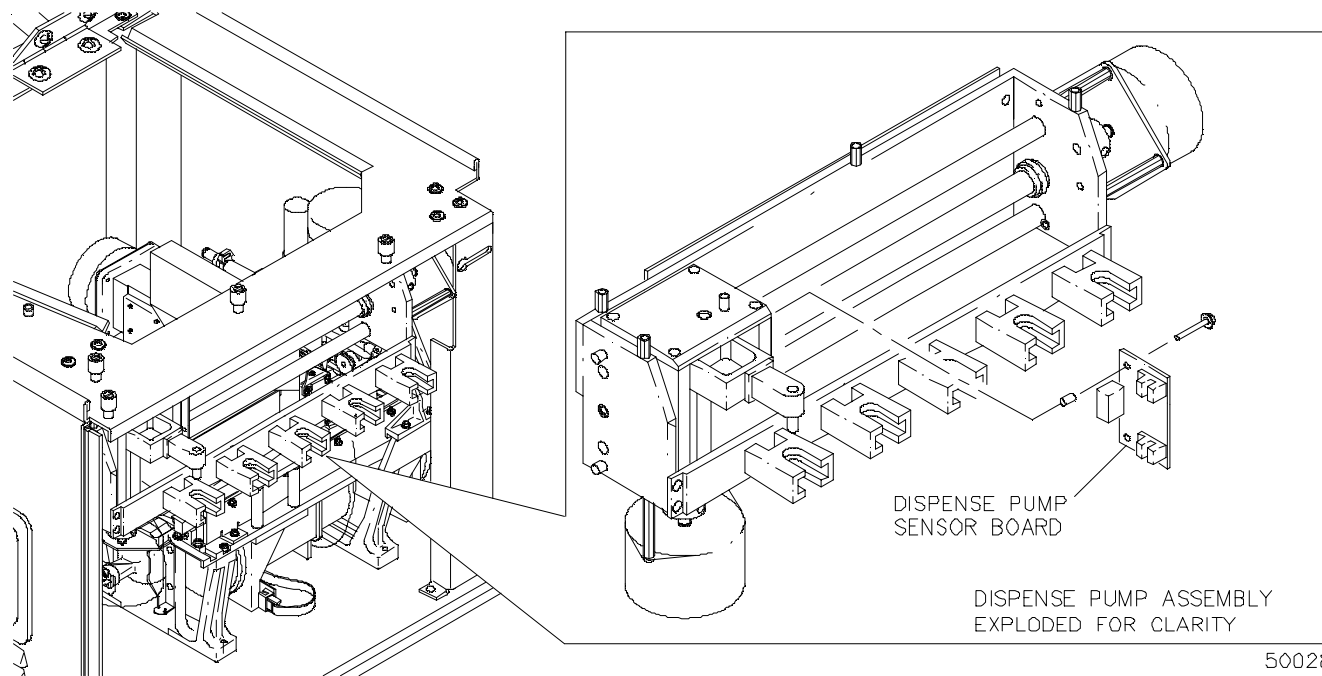


Figure 4-28. Dispense Pump Sensor Bd

RR-3.8 DISPENSE PUMP ASSY

Removal



1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Open door covering Dispense Bottle Pump Assy.
5. Remove left front cover.
 - a. Remove metal shield with mounting hardware from two places.
 - b. Remove left front cover hardware from two places.
 - c. Slide cover from right to left to remove.
 - d. Disconnect three cables on Backlight Bd.
6. Disconnect cables mounted on frame above Exit Switch cover.
7. Disconnect cables at Dispense Pump Select Bd.
8. Remove assy mounting hardware from four places (**Figure 4-29**).

NOTE: Note position of spacers for reinstallation.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Dispense Pump/Pipettor Bottle Alignment Verification Procedure (**VP-26**).
2. Perform Total Call.

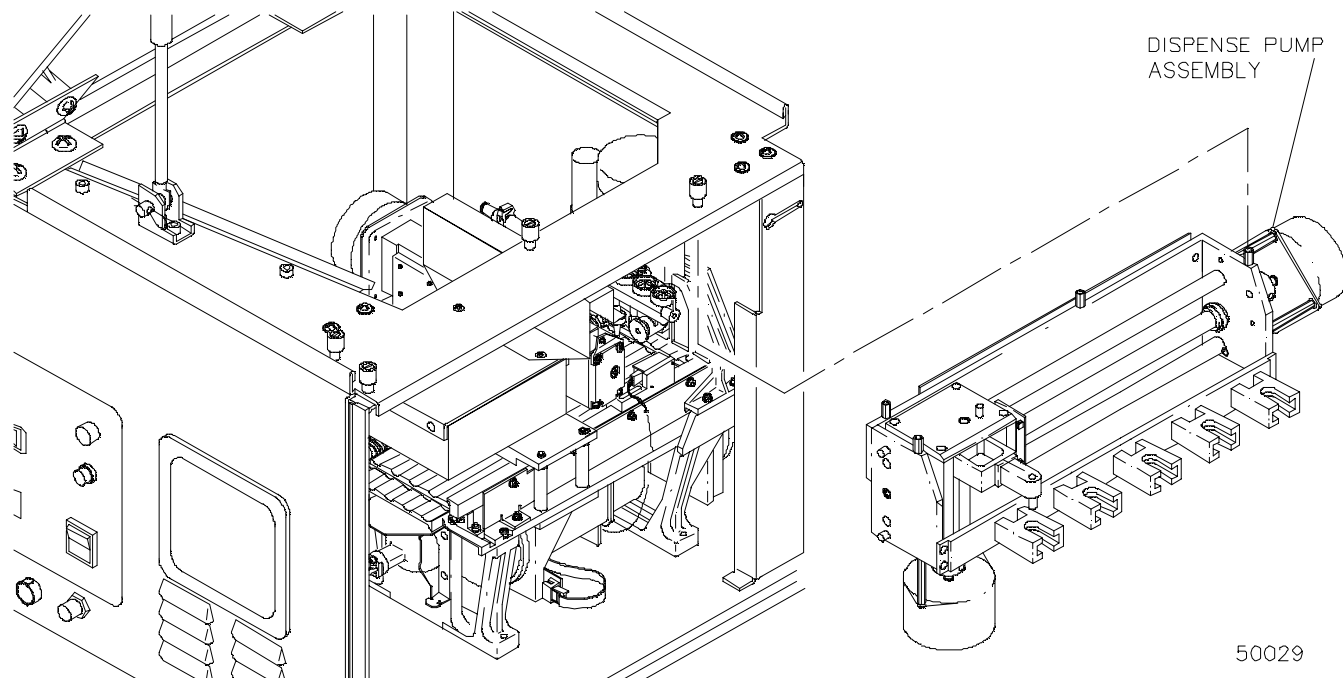


Figure 4-29. Dispense Pump Assy

RR-3.9 DISPENSE PUMP SELECT BD**Removal**

1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Disconnect two cables at J1 and J2.
5. Remove Dispense Pump Select Bd mounting hardware from three places (**Figure 4-30**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Dispense Pump/Pipettor Bottle Alignment Verification Procedure (**VP-26**).
2. Perform Total Call.

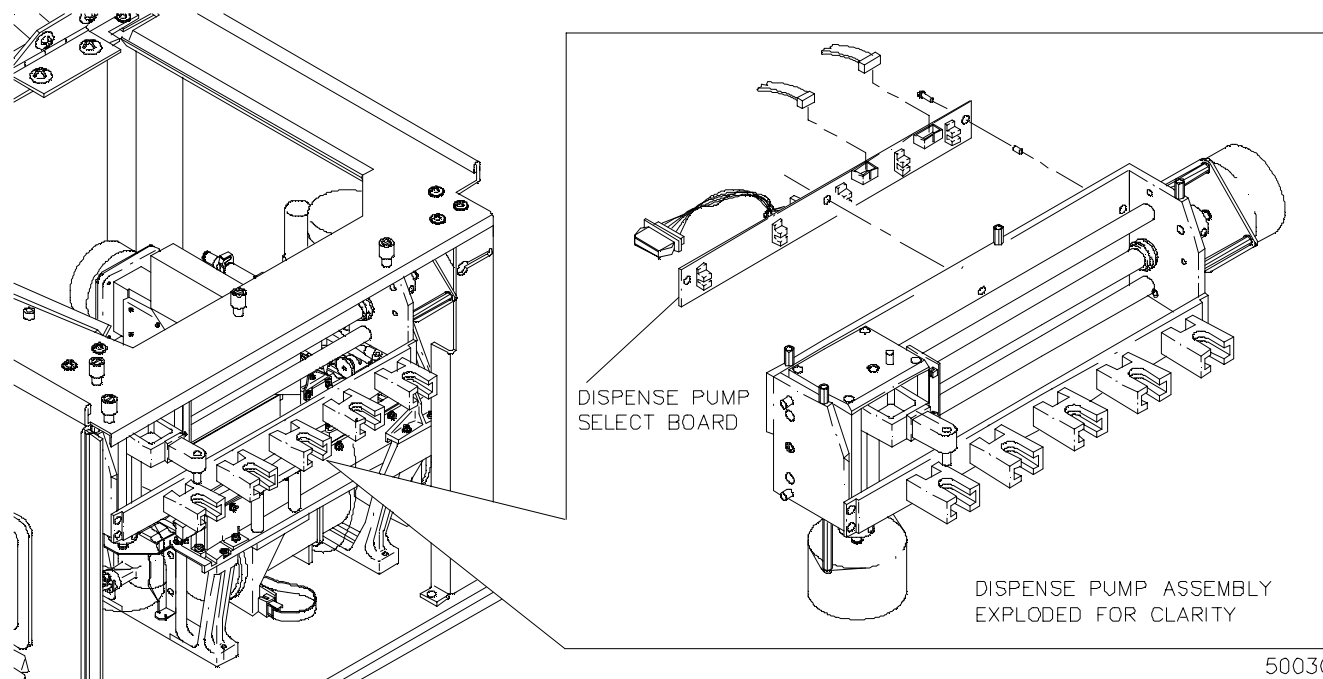


Figure 4-30. Exploded View Dispense Pump Assy

RR-3.10 EXIT SWITCH

Removal



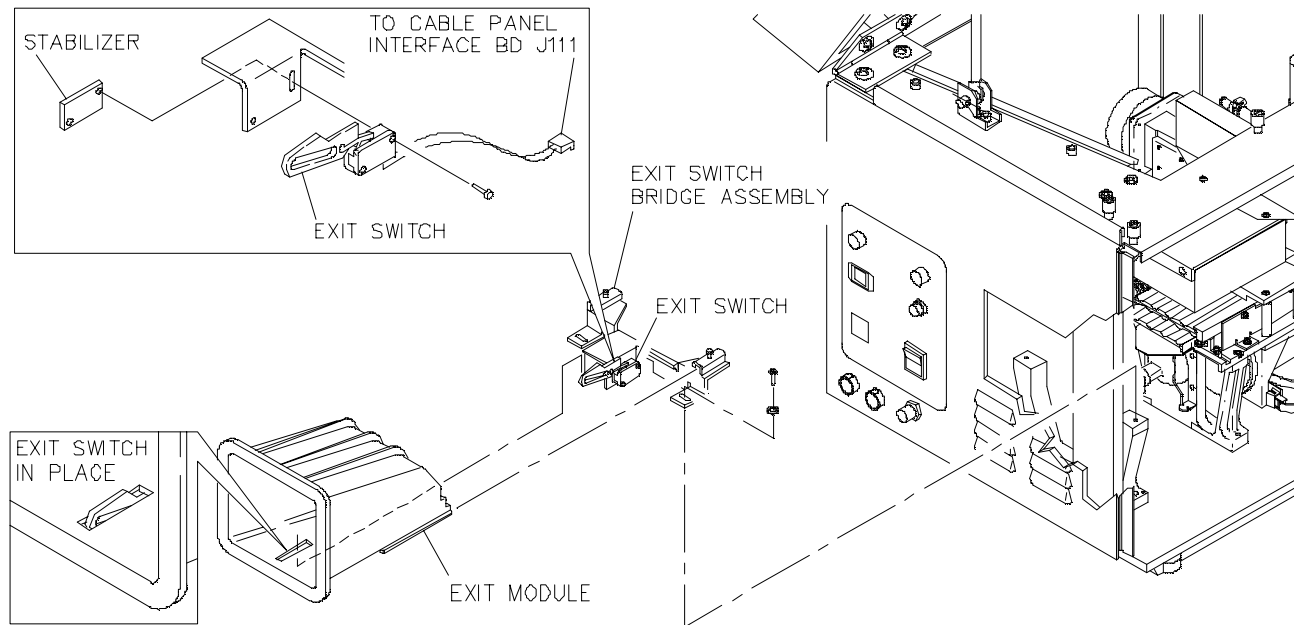
1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Remove Exit Housing mounting hardware from two places.
5. Disconnect cable at J111 on Cable Panel Interface Bd.
6. Remove Exit Switch Bridge Assy with mounting hardware from two places. Note position for reinstallation.
7. Remove Exit Switch mounting hardware from two places
(**Figure 4-31**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform the following Verification Procedures:
 - a. Exit Shroud (**VP-28**).
 - b. Exit Switch (Metal Actuator), (**VP-29**).
 - c. Exit Switch (Plastic Actuator), (**VP-30**).
2. Perform Total Call.



50031

Figure 4-31. Exit Switch

RR-4.2 DISPENSE BOOM ASSY**Removal**

1. Turn power OFF. Disconnect power cord.
2. Remove Dispense Boom Sensor Bd (**RR-4.5**).
3. Remove Dispense Drip Cup (**Figure 4-32**).
4. Remove Dispense Boom Motor Cable at J202 on Cable Interface Bd.
5. Manually Move Tip Boom Dispenser toward the front of the instrument to allow access to mounting hardware. Remove mounting hardware from two places.
6. Remove assembly from back of unit.

**Replacement**

1. Replace by repeating removal steps in reverse order.
2. Replace cable ties as necessary.

Verification

1. Perform the following Verification Procedures:
 - a. Sensor Bd.
 - b. Sensor Bd/Dispense Bd Position (**VP-25**).
2. Perform Total Call.

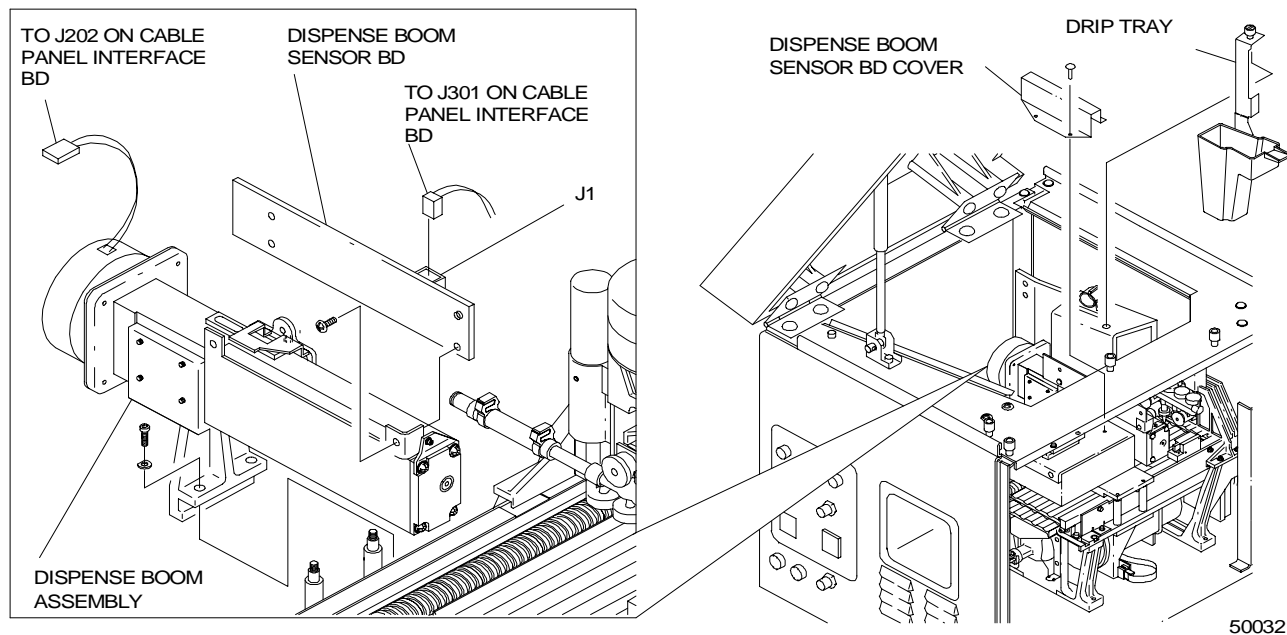


Figure 4-32. Dispense Boom Assy

RR-4.3 LOWER TIP HOLDER**Removal**

1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Remove Dispense Boom Sensor Bd Cover.
5. Remove the Lower Tip Holder mounting hardware from three places (**Figure 4-33**).

NOTE: Retain spring on back of Lower Tip Holder.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Sensor Bd Dispense Boom Position Verification Procedure (**VP-25**).
2. Perform Total Call.

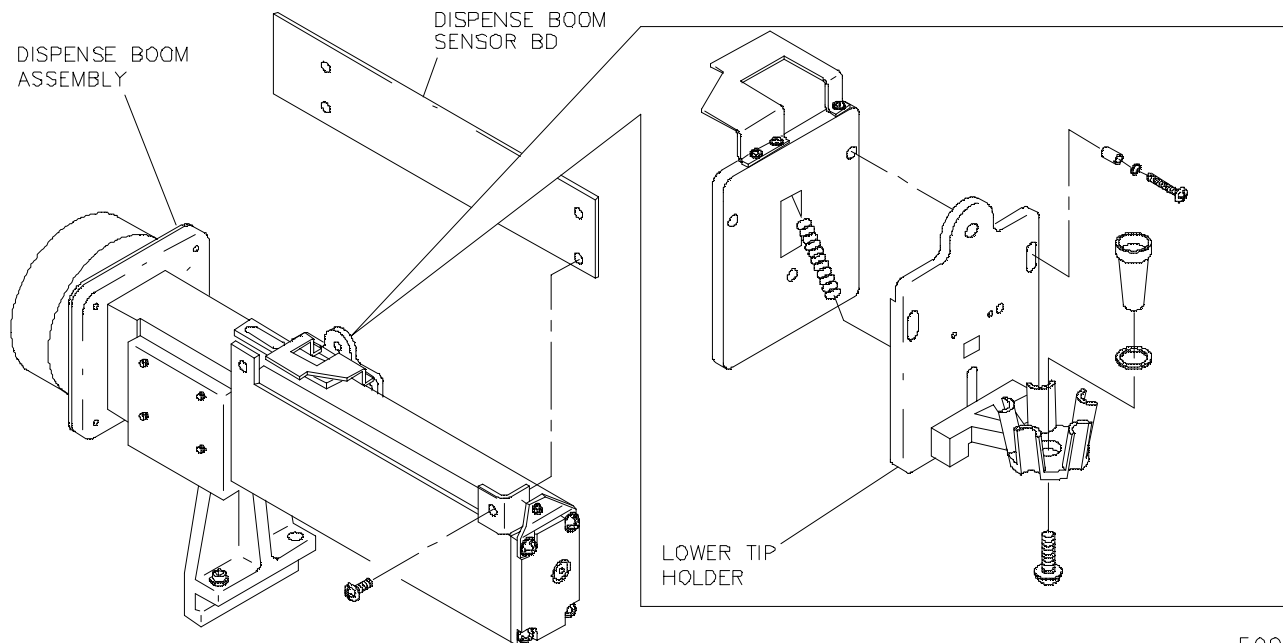



Figure 4-33. Lower Tip Holder

RR-4.4 POST TIP HOLDER ASSY**Removal**

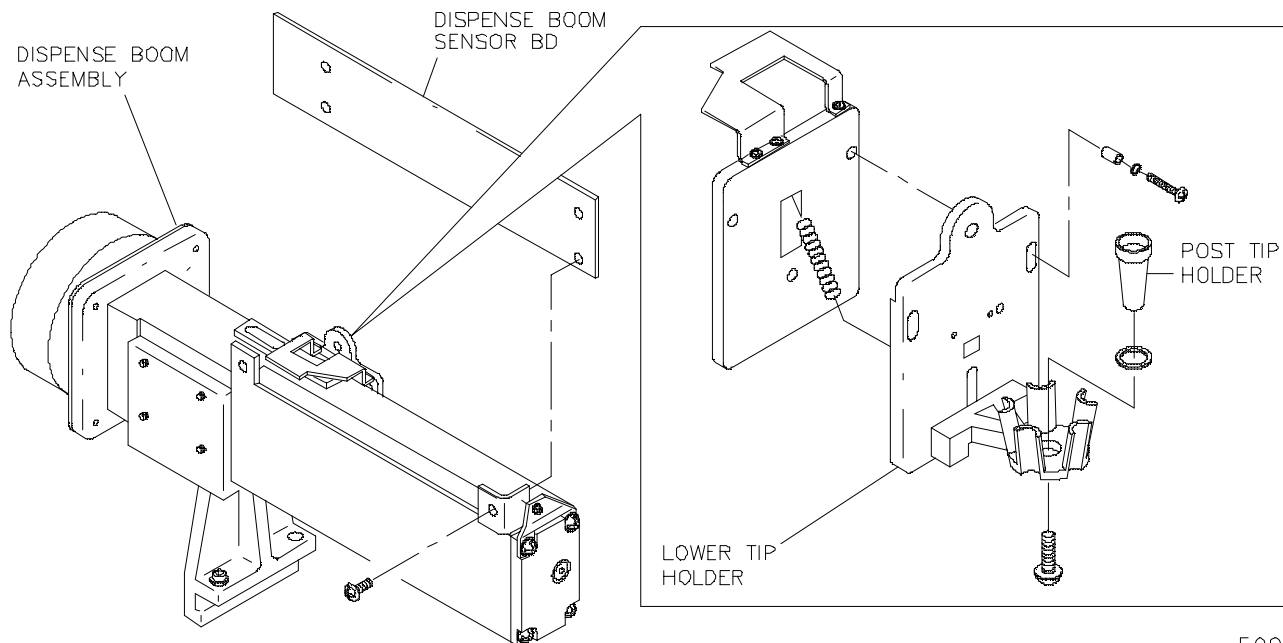
- 
1. Turn power OFF. Disconnect power cord.
 2. Raise top left cover.
 3. Remove drip tray.
 4. Remove holder mounting hardware from one place (**Figure 4-34**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Sensor Bd Dispense Boom Position Verification Procedure (**VP-25**).
2. Perform Total Call.



50034

Figure 4-34. Post Tip Holder Assy

RR-4.5 DISPENSE BOOM SENSOR BD**Removal**

1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Remove Dispense Boom Sensor Bd Cover (**Figure 4-35**).
5. Disconnect ribbon cable at J1 on Dispense Boom Sensor Bd.
6. Remove board mounting hardware from two places (**Figure 4-35**).

**Replacement**

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Sensor Bd Dispense Boom Position Verification Procedure (**VP-25**).
2. Perform Total Call.

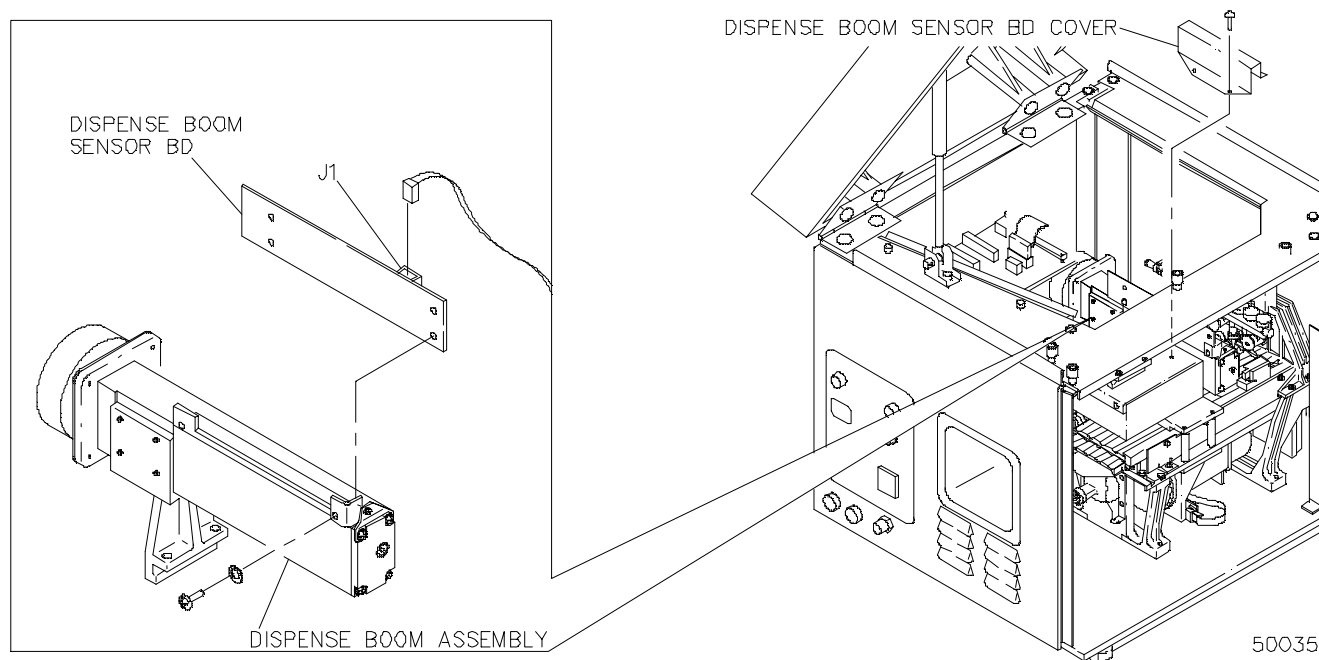



Figure 4-35. Dispense Boom Sensor Bd

RR-4.6 READ A/D BD**Removal**

- 
1. Turn power OFF. Disconnect power cord.
 2. Raise top left cover.
 3. Remove drip tray.
 4. Remove Dispense Boom Sensor Bd Cover (**Figure 4-36**).
 5. Remove the Read A/D Sensor Enclosure with mounting hardware from two places. (Refer to **RR-4.7**.)
 6. Disconnect cable at J1 on Read A/D Bd.
 7. Remove Read A/D Bd mounting hardware from four places.

CAUTION:

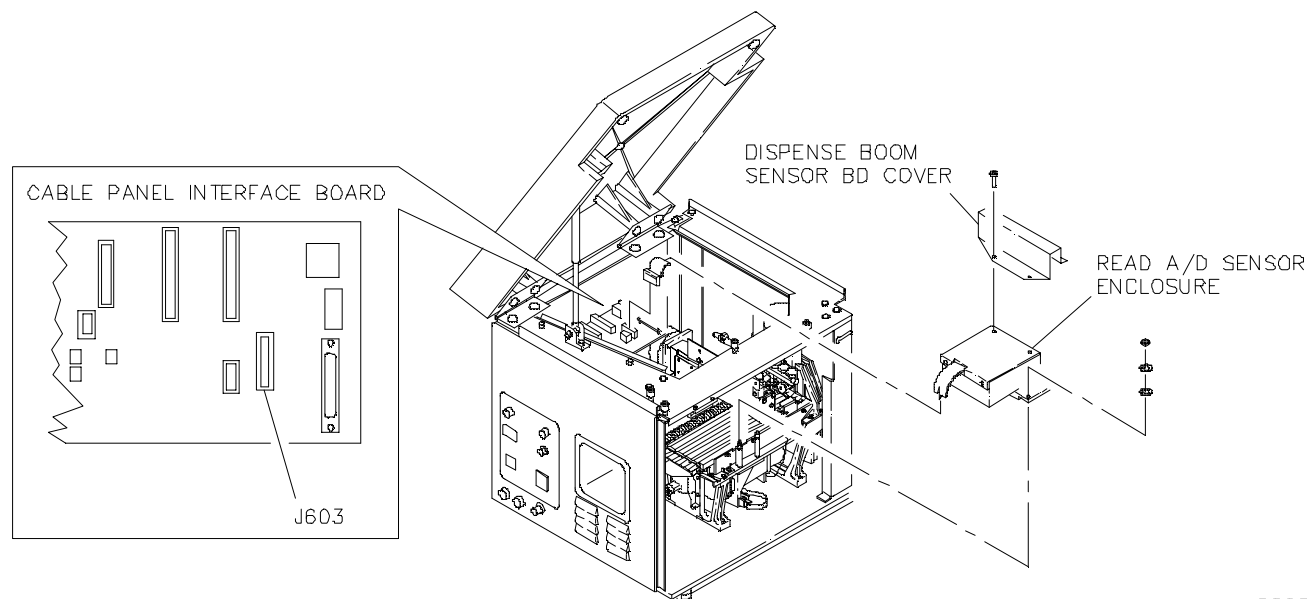
Do not damage optical sensors mounted on Read A/D Bd.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform the following Verification Procedures:
 - a. Calibration (**VP-56**).
 - b. Read System Tests (**VP-7**).
 - c. Linearity (**VP-40**).
 - d. Drift (**VP-41**).
 - e. Repeatability (**VP-42**).
2. Perform Total Call.



50036

Figure 4-36. Read A/D Bd

RR-4.7 READ A/D SENSOR ENCLOSURE ASSY**Removal**

1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Remove Dispense Boom Sensor Bd Cover (**Figure 4-36**).
5. Disconnect cable at J603 on Cable Panel Interface Bd (**Figure 4-37**).
6. Remove the Read A/D Sensor Enclosure Assy with mounting hardware from four places (**Figure 4-37**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform the following Verification Procedures:
 - a. Calibration (**VP-56**).
 - b. Read System Tests (**VP-7**).
 - c. Linearity (**VP-40**).
 - d. Drift (**VP-41**).
 - e. Repeatability (**VP-42**).
2. Perform Total Call.

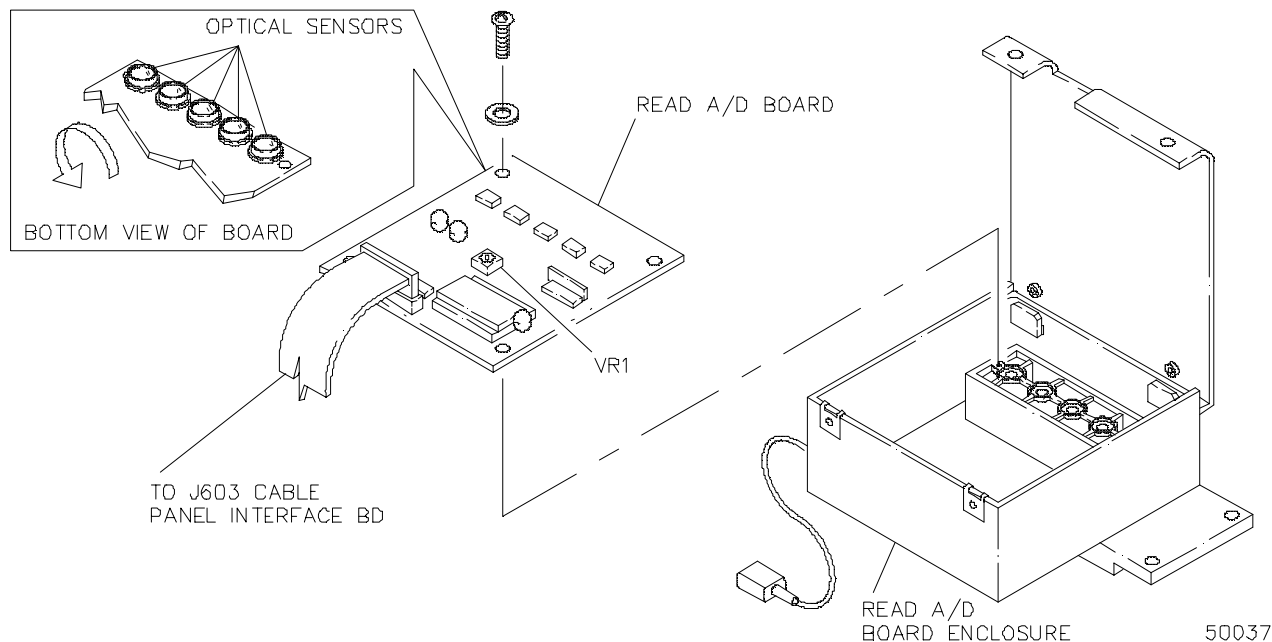


Figure 4-37. Read A/D Sensor Enclosure

RR-4.8 TRAY AT WASH SWITCH**Removal**

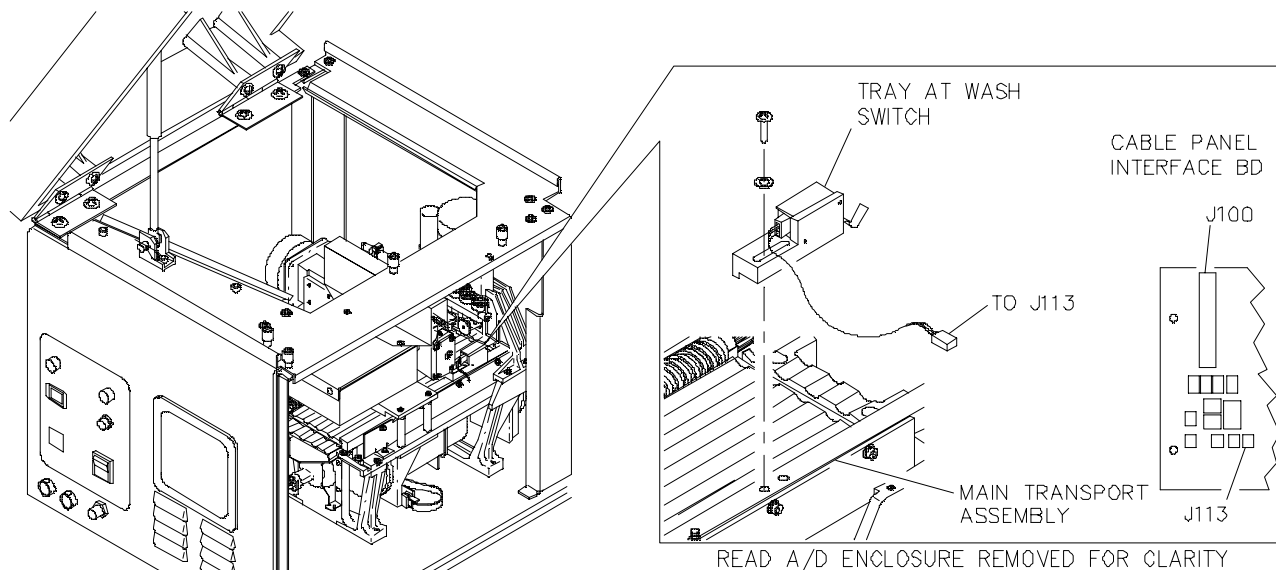
1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Disconnect cable at J113 on Cable Panel Interface Bd.
5. Remove tray with mounting hardware from two places (**Figure 4-38**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Wash Switch Verification Procedure (**VP-22**).
2. Perform Total Call.



50038

Figure 4-38. Tray at Wash Switch

RR-4.9 MAIN TRANSPORT ASSY

Removal

1. Turn power OFF. Disconnect power cord.
2. Remove Dispense Pump Assy (**RR-3.8**).
3. Remove Exit Housing (**RR-3.10**).
4. Remove Dispense Boom Assy (**RR-4.2**).
5. Remove AD Sensor Enclosure (**RR-4.7**).
6. Remove Wash Manifold.
 - a. Disconnect air and water tubes.
 - b. Disconnect waste outlet.
 - c. Remove mounting hardware from two places.
7. Disconnect 3 cables at Cable Panel Interface Bd:
 - a. J104 to Main Transport Assy Motor.
 - b. J103 to Wash Motor.
 - c. J102 to Filter Motor.
8. Remove connector at Wash Gate Solenoid.
9. Disconnect cable at Filter Select/Filter Home Bd.
10. Disconnect cables at Transport Home Sensor.
11. Disconnect cables at Wash Home Sensor.
12. Disconnect cable at Wash Switch.
13. Disconnect cable at Lamp.
14. Disconnect grounding wire.
15. Remove assy mounting hardware from four places (**Figure 4-39**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform the following Verification Procedures:
 - a. Top and Side Rail Alignment (**VP-20**).
 - b. Dispense Boom Actuator to Main Transport (**VP-23**).
 - c. Wash Actuator to Main Transport (**VP-24**).
 - d. Transport Auger Position (**VP-19**).
 - e. Load to Main Transport Drive Alignment (**VP-15**).
 - f. Web Switch (**VP-17**).
 - g. Wash Switch (**VP-22**).
 - h. Sensor Flag (**VP-27**).
 - i. Sensor Bd Dispense Boom Position (**VP-25**).
2. Perform Total Call.

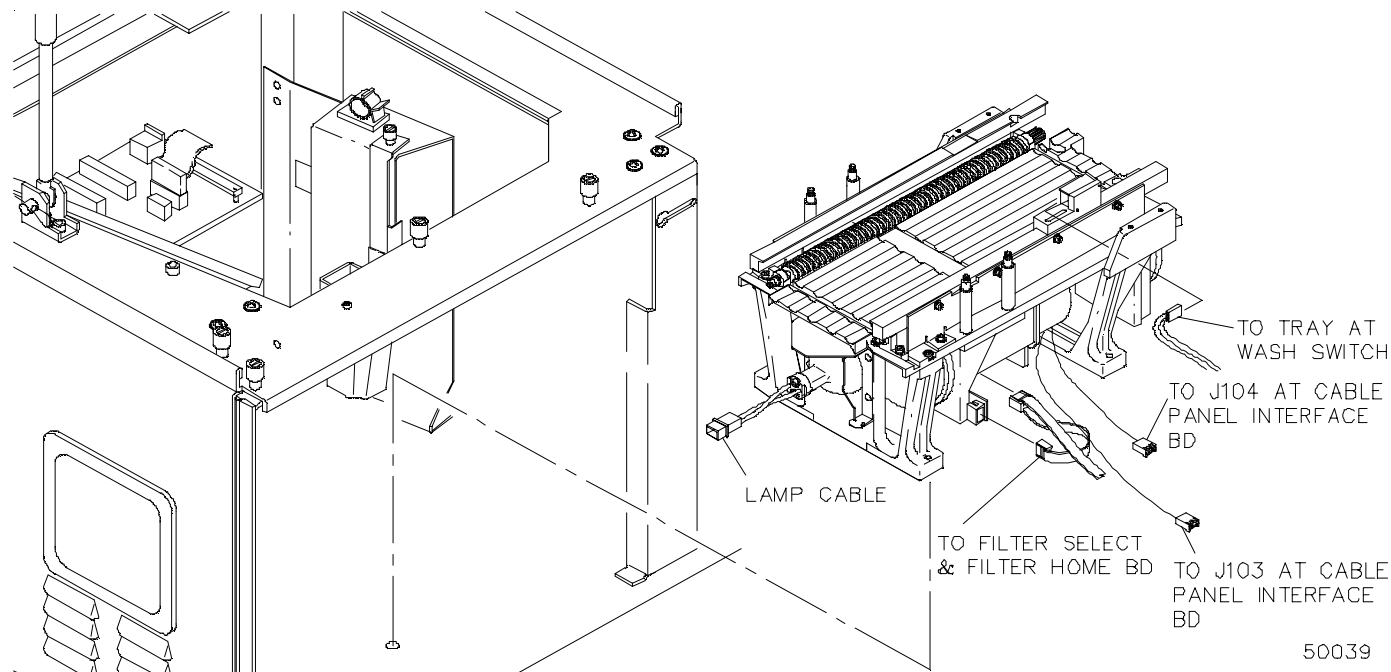



Figure 4-39. Main Transport Assy

RR-5.2 WASH ACTUATOR SENSOR BD**Removal**

- 
1. □ Turn power OFF. Disconnect power cord.
 2. □ Tilt back Card Cage Assy (**RR-1.4**, Step 5).
 3. □ Disconnect cable to J103 at Cable Panel Interface Bd.
 4. □ Remove board with mounting hardware from two places (**Figure 4-40**).

Replacement

1. □ Replace by repeating removal steps in reverse order.

Verification

1. □ Perform Sensor Flag - Wash Actuator Verification Procedure (**VP-27**).
2. □ Perform Total Call.

CE Mark Configuration

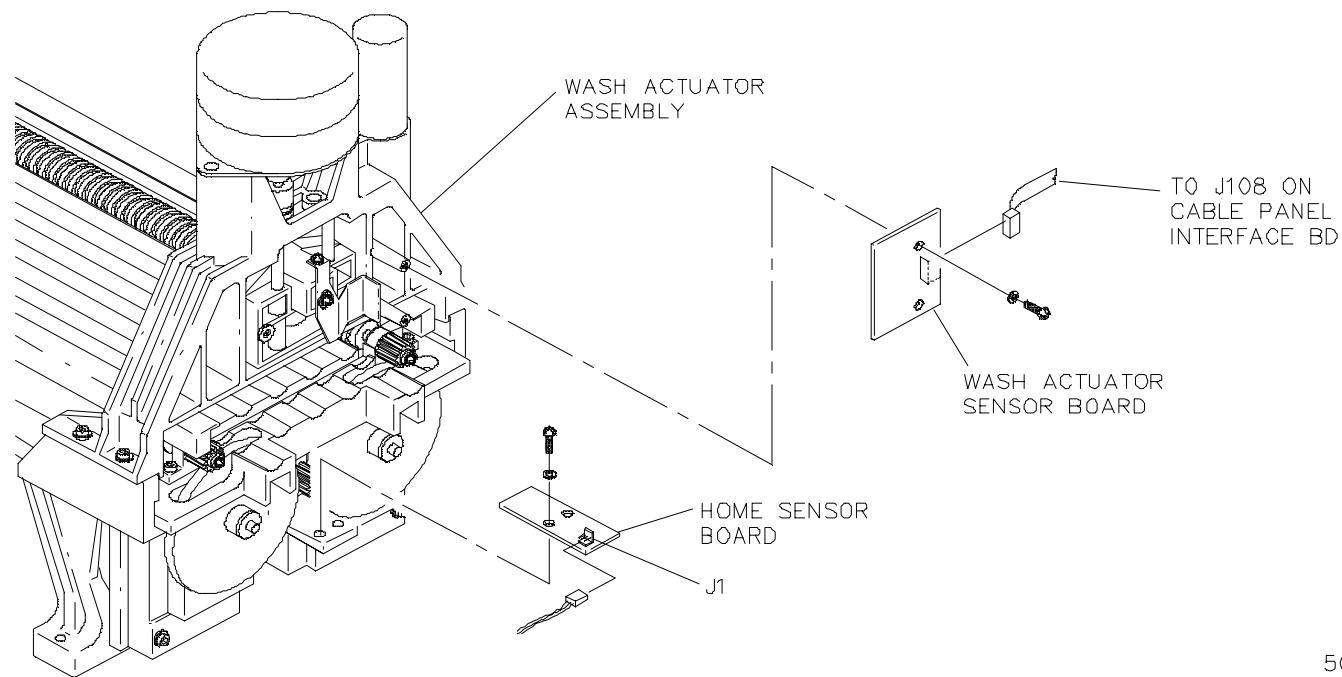
Figure 4-41 shows the CE Mark Configuration LN 6203-86. (Reference **TSB 50-034A**.) Use the following for Removal and Replacement. Verification Is identical for both configurations.

Removal (CE Mark)

1. □ Turn power OFF. Disconnect power cord.
2. □ Tilt back Card Cage Assy (**RR-1.4**, Step 5).
3. □ Disconnect cable to J108 at Cable Panel Interface Bd.
4. □ Remove Wash Actuator Assembly Guard by removing two screws.
5. □ Remove board with mounting hardware from two places.

Replacement

1. □ Replace by repeating removal steps in reverse order.



50040

Figure 4-40. Wash Actuator Sensor Bd Assy (Non-CE Mark Configuration)

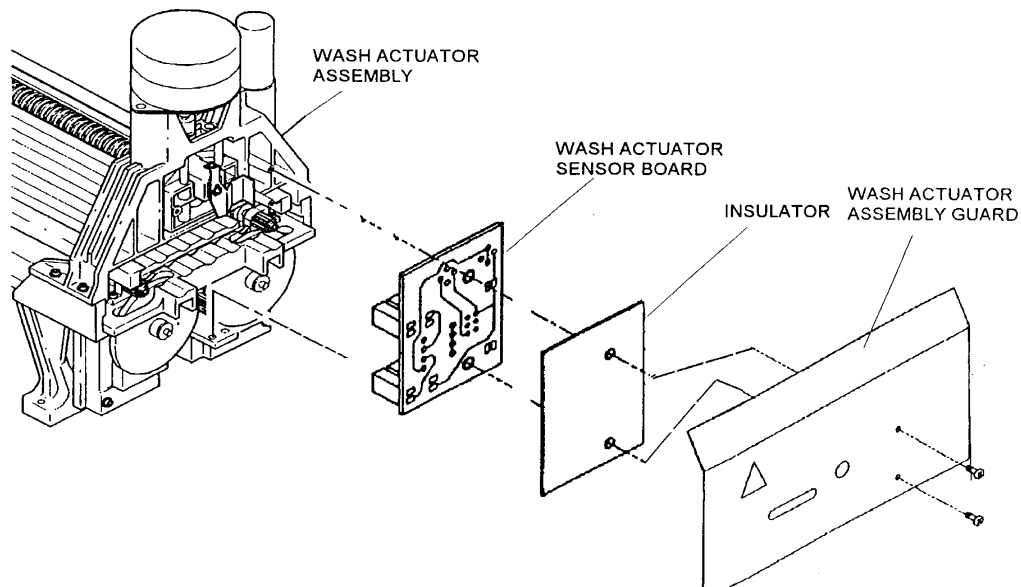



Figure 4-41. Wash Actuator Sensor Bd Assy (CE-Mark Configuration)



RR-5.4 WASH ACTUATOR ASSY

Removal

- 
1. Turn power OFF. Disconnect power cord.
 2. Tilt back Card Cage Assy (**RR-1.4**, Step 5).
 3. Raise top left cover.
 4. Remove drip tray.
 5. Remove Wash Manifold.
 - a. Disconnect air and water tubes.
 - b. Disconnect waste outlet.
 - c. Remove mounting hardware from two places.
 6. Disconnect Wash Actuator Motor cable at J103 on Cable Panel Interface Bd.
 7. Disconnect Wash Gate Solenoid (**Figure 4-42**).
 8. Remove cable from Wash Actuator Sensor Bd.
 9. Remove Wash Actuator Assy mounting hardware from four places (**Figure 4-40**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Wash-Actuator Assy~to-Main Transport Drive Verification Procedure (**VP-24**).
2. Perform Total Call.

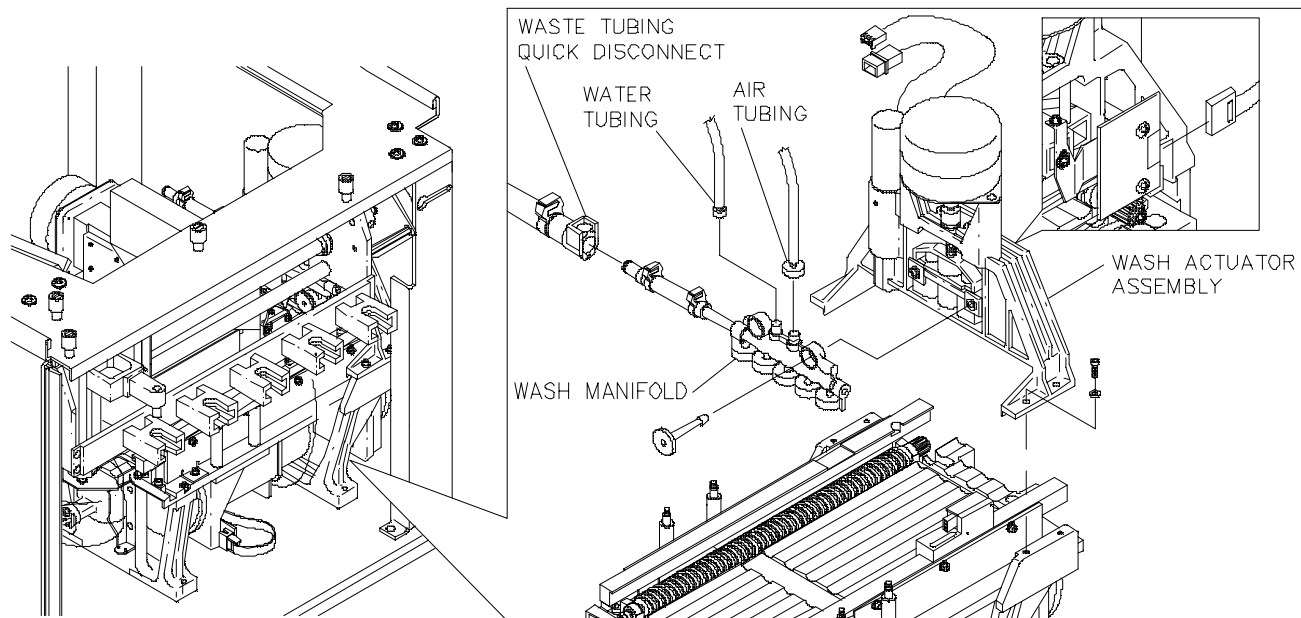
CE Mark Configuration

Referring back to **Figure 4-41** that shows the CE Mark Configuration LN 6208-86 (reference **TSB50-034**) use the following for Removal and Replacement. Verification is identical for both configurations.

1. Turn power OFF. Disconnect power cord.
2. Tilt back Card Cage Assy (**RR-1.4**, Step 5).
3. Raise top left cover.
4. Remove drip tray.
5. Remove Wash Manifold.
 - a. Disconnect air and water tubes.
 - b. Disconnect waste outlet.
 - c. Remove mounting hardware from two places.
6. Disconnect Wash Actuator Motor cable at J103 on Cable Panel Interface Bd.
7. Disconnect Wash Gate Solenoid (**Figure 4-41**).
8. Remove cable from Wash Actuator Sensor Bd.
9. Remove Wash Actuator Assy mounting hardware from four places.
10. Remove Wash Actuator Assembly Guard. (Refer to **Figure 4-41**.)

Replacement

1. Replace by repeating removal steps in reverse order.



50041

Figure 4-42. Wash Actuator Assy

RR-5.5 WASH GATE SOLENOID**Removal**

1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Loosen set screw.
5. Unscrew solenoid to remove (**Figure 4-43**).

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform manual wash with 60-well and 20-well trays.
2. Perform Total Call.

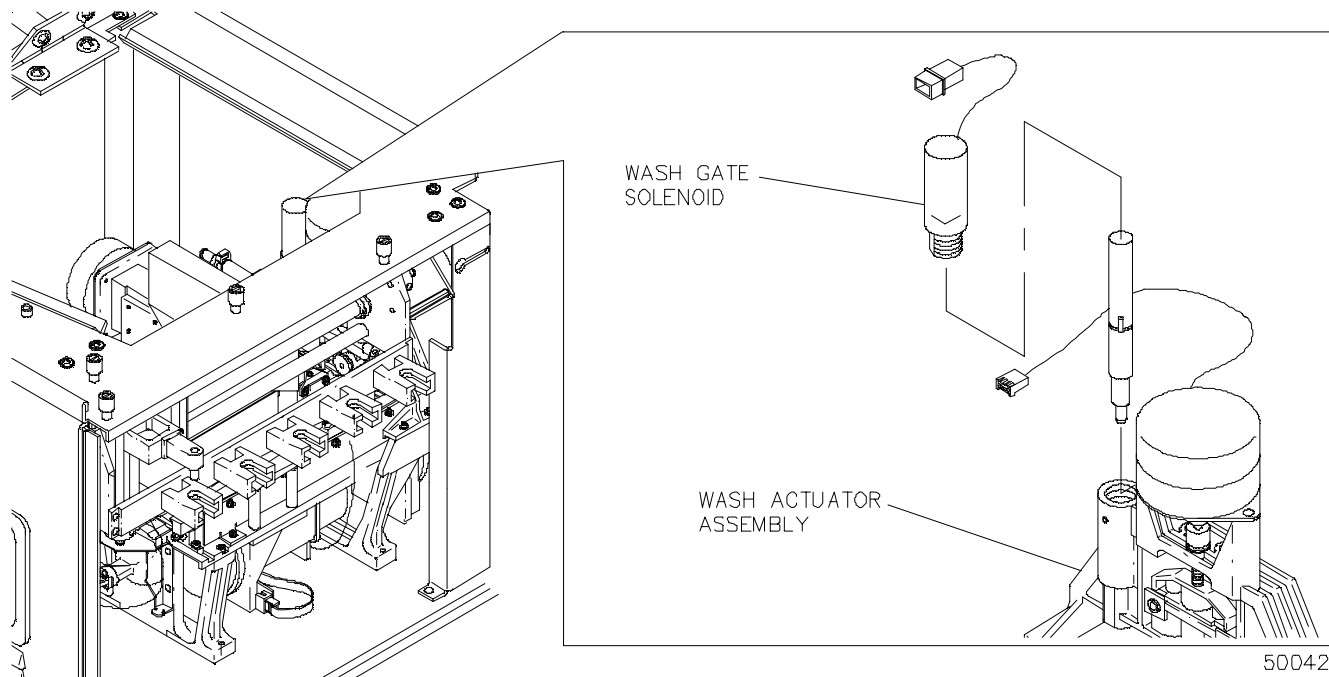


Figure 4-43. Wash Gate Solenoid

RR-5.11 FILTER SELECT BD

Removal



1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Open door covering Dispense Bottle Pump Assy.
5. Remove left front cover.
 - a. Remove two screws securing metal shield on top of dispense bottle holders.
 - b. Remove left front cover hardware from two places.
 - c. Slide cover from right to left to remove.
6. Remove board mounting hardware from two places (**Figure 4-44**).

NOTE: Use right angle screwdriver. If necessary, remove Main Transport Assy (**RR-4.9**).

7. Disconnect cable to Home Sensor Bd and to J401 on Cable Panel Interface Bd.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform following Verification Procedures:
 - a. Read System Tests (**VP-7**).
 - b. Linearity Test (**VP-40**).
2. Perform Total Call.

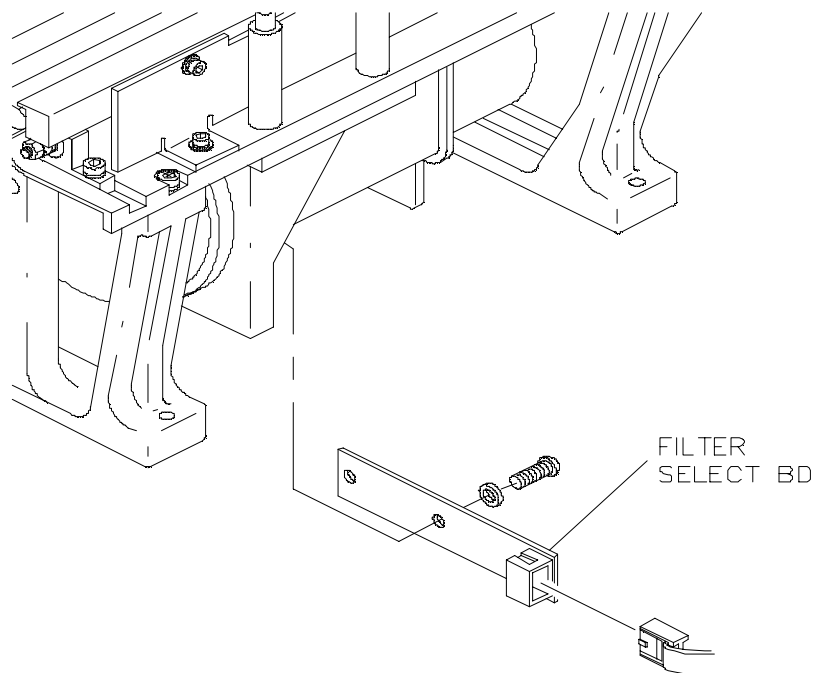




Figure 4-44. Filter Select Bd

50043

RR-5.12 OPTICS LAMP BRACKET

Verification

Removal

- 
- 
1. Turn power OFF. Disconnect power cord.
 2. Raise top left cover.
 3. Remove drip tray.
 4. Open door covering Dispense Bottle Pump Assy.
 5. Remove left front cover.
 - a. Remove metal shield with mounting hardware from two places.
 - b. Remove left front cover hardware from two places.
 - c. Slide Cover from right to left to remove.
 - d. Disconnect three cables on Backlight Bd.
 6. Remove Optics Lamp from Lamp Retainer (**Figure 4-45**).

WARNING

Do not remove lamp when hot. Remove lamp using a dry, soft cloth.

7. Remove lamp bracket mounting hardware from four places.

Replacement

1. Replace by repeating removal steps In reverse order.

1. Perform following Verification Procedures:
 - a. Read System Tests (**VP-7**).
 - b. Linearity Test (**VP-40**).
 - c. Drift (**VP-41**).
 - d. Repeatability (**VP-42**).
2. Perform Total Call.

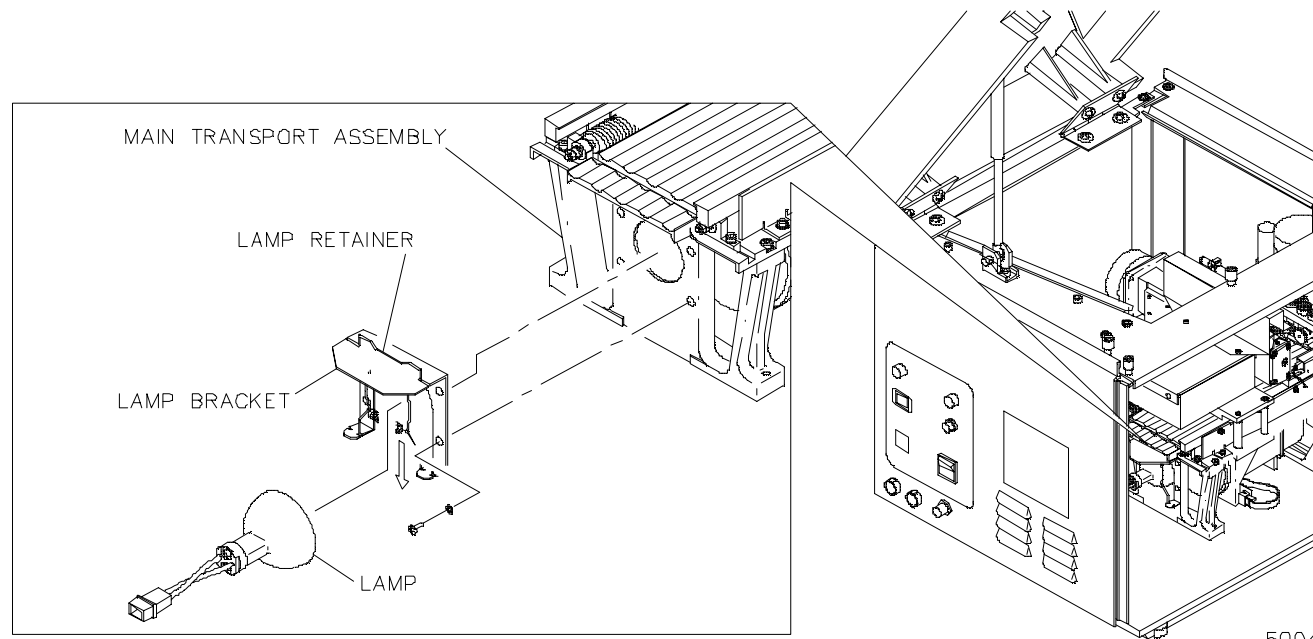




Figure 4-45. Optics Lamp Bracket

RR-5.13 OPTICS LAMP

Removal

- 
- 
1. Turn power OFF. Disconnect power cord.
 2. Raise top left cover.
 3. Remove drip tray.
 4. Remove Exit Shroud.

CAUTION:

Do not damage Exit Switch when removing shroud.

5. Disconnect cable from lamp (**Figure 4-46**).
6. Remove lamp from Lamp Retainer.

WARNING:

Do not remove when hot. Remove lamp using a dry, soft cloth.

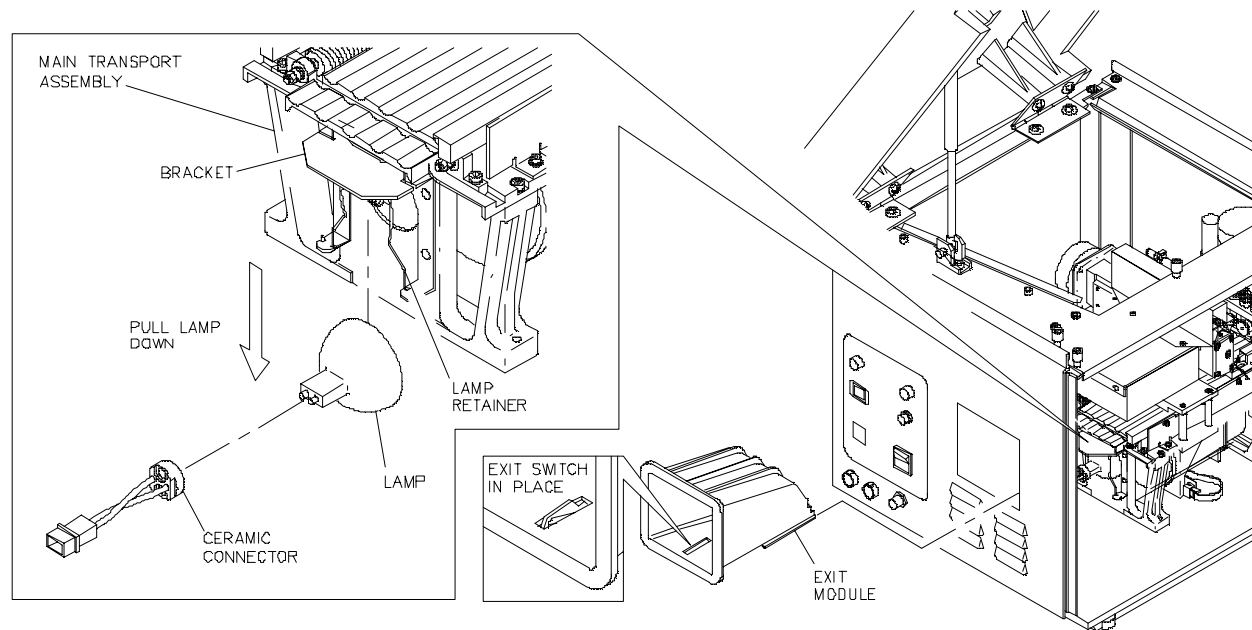
7. Disconnect ceramic connector from base of lamp.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform following Verification Procedures:
 - a. Calibration (**VP-56**).
 - b. Read System Tests (**VP-7**).
 - c. Linearity Test (**VP-40**).
 - d. Drift Test (**VP-41**).
 - e. Repeatability Test (**VP-42**).
2. Perform Total Call.





50045

Figure 4-46. Optics Lamp

RR-5.14 LAMP SPRING RETAINER

Removal

- 
- 
1. Turn power OFF. Disconnect power cord.
 2. Raise top left cover.
 3. Remove drip tray.
 4. Open door covering Dispense Bottle Pump Assy.
 5. Remove left front cover.
 - a. Remove metal shield with mounting hardware from two places.
 - b. Remove left front cover hardware from two places.
 - c. Slide cover from right to left to remove.
 - d. Disconnect three cables on Backlight Bd.
 6. Remove Optics Lamp from Lamp Retainer.

WARNING:

Do not remove when hot. Remove lamp using a dry, soft cloth.

7. Disengage one side of lamp retainer (**Figure 4-47**).
8. Remove spring from same side of retainer.
9. Disengage other side of retainer and remove spring.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

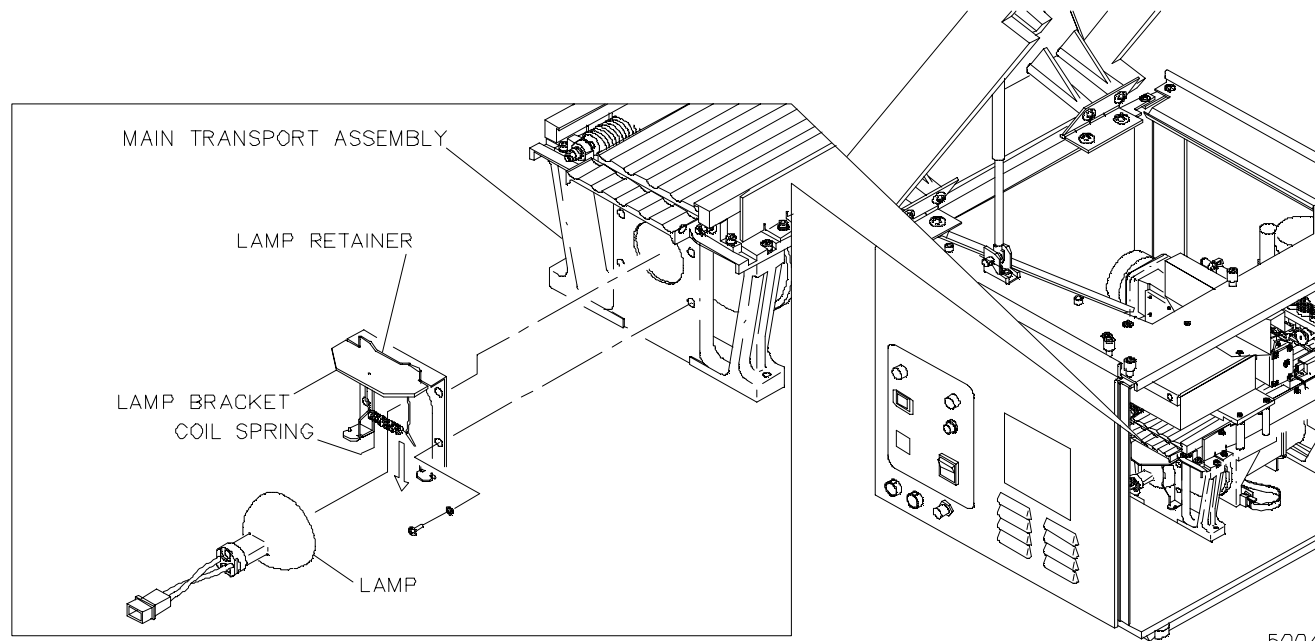


Figure 4-47. Lamp Spring Retainer

RR-5.15 LAMP SPRING

See **RR-5.14 Lamp Spring Retainer**.



RR-6.1 CABLE PANEL INTERFACE BD

Removal

1. Turn power OFF. Disconnect power cord.
2. Raise top left cover.
3. Remove drip tray.
4. Disconnect cables from Cable Panel Interface Bd (**Figure 4-48**).

NOTE: Mark cables and make sketches of connections.

- a. J100, J200, J300, J400, J500, J600 to Backplane Bd.
- b. J702 to J1 on CPU Bd.
- c. J603 to Read A/D Bd.
- d. Round Bar Code Reader Cable to Bar Code Reader.
- e. J701 to Power Supply Interface Bd.
- f. J602 to Power Supply Interface Bd.
- g. J401 to Filter Select Bd.
- h. J302 to Dispense Pump Select Bd.
- i. J301 to Dispense Boom Sensor Bd.
- j. J104 to Main Transport Auger Motor.
- k. J102 to Filter Wheel Motor.
- l. J103 to Wash Actuator Motor.
- m. J202 to Dispense Boom Motor.
- n. J108 to 1 Wash Limit Sensor Bd.
- o. J404 to Waste Pressure Switch.
- p. J403 to Air Pressure Switch.
- q. J206 to Air Solenoid.
- r. J207 to Water Solenoid.

- s. J405 to white Molex™ connector (purple and white with purple stripe).
- t. J213 to Load/Urges Module wiring harness.
- u. J2t 2 to Bar Code Reader Switch.
- v. J204 to frame mounted connector near Dispense Pump Assy.
- w. J201 to frame mounted connector near Dispense Pump Assy.
- x. J101 to quick disconnect under Load/Urges Module.
- y. J113 to Auger Home Bd.
- z. J112 to wiring harness under Load Urge Module.
- aa. J111 to Dispense Pump Selector Bd.
- ab. J107 to Wash Solenoid.
- ac. J106 to wiring harness under Load/Urges Module (two white wires and one orange with black stripe).
- ad. J109 to wiring harness under Load/Urges Module (solid blue wire and white wire with blue stripe).
- ae. J105 to J1 Transport Home Sensor Bd.
- af. Remove Cable Panel Interface Bd with mounting hardware from six places.

NOTE : Black ground wire is attached to mounting hardware at one of the six places.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

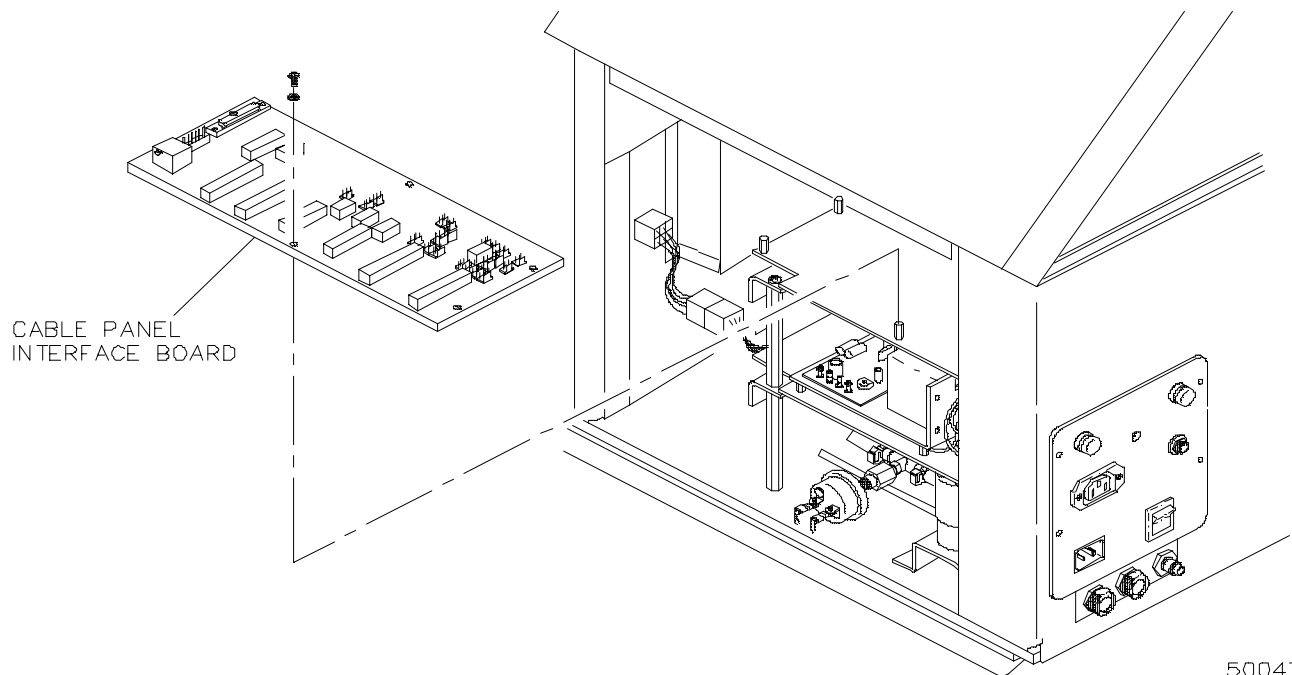


Figure 4-48. Cable Panel Interface Bd

RR-6.2 SHELF AND BEZEL ASSY RELAY**Removal**

1. Turn power OFF. Disconnect power cord.
 2. Remove Shelf and Bezel Assy (**RR-7.2**).
 3. Remove four relay wires (**Figure 4-49**).
- NOTE:** Mark wires and make sketches of connections.
4. Remove relay with mounting hardware from two places.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Measure Input and Output Voltages at Shell and Bezel Assy Relay Verification Procedure (**VP-36**).
2. Perform Total Call.

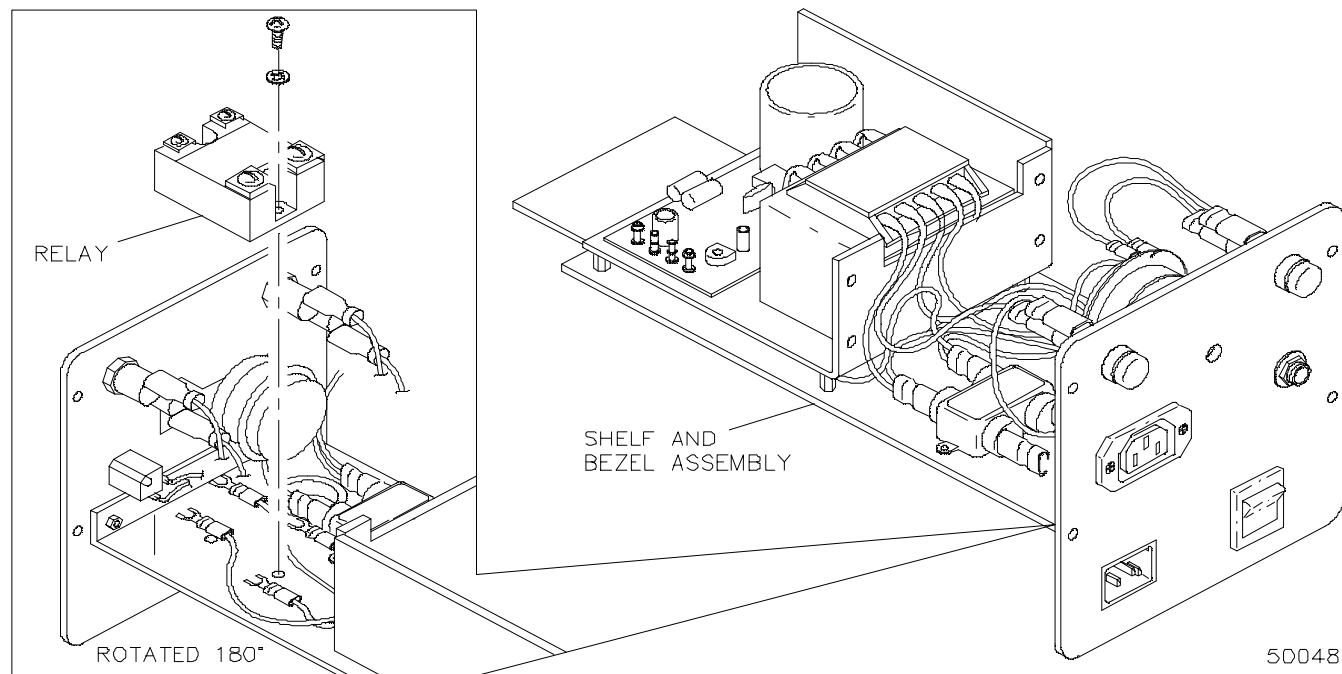


Figure 4-49. Shelf and Bezel Assy Relay

RR-6.3 SHELF AND BEZEL ASSY

Removal

1. □ Turn power OFF. Disconnect power cord.
2. □ Remove left rear cover.
3. □ Disconnect two cables.
4. □ Remove mounting hardware from four places (**Figure 4-50**).

Replacement

1. □ Replace by repeating removal steps in reverse order.

Verification

1. □ Perform Lamp Power Supply Verification Procedure (**VP-35**).
2. □ Perform Total Call.

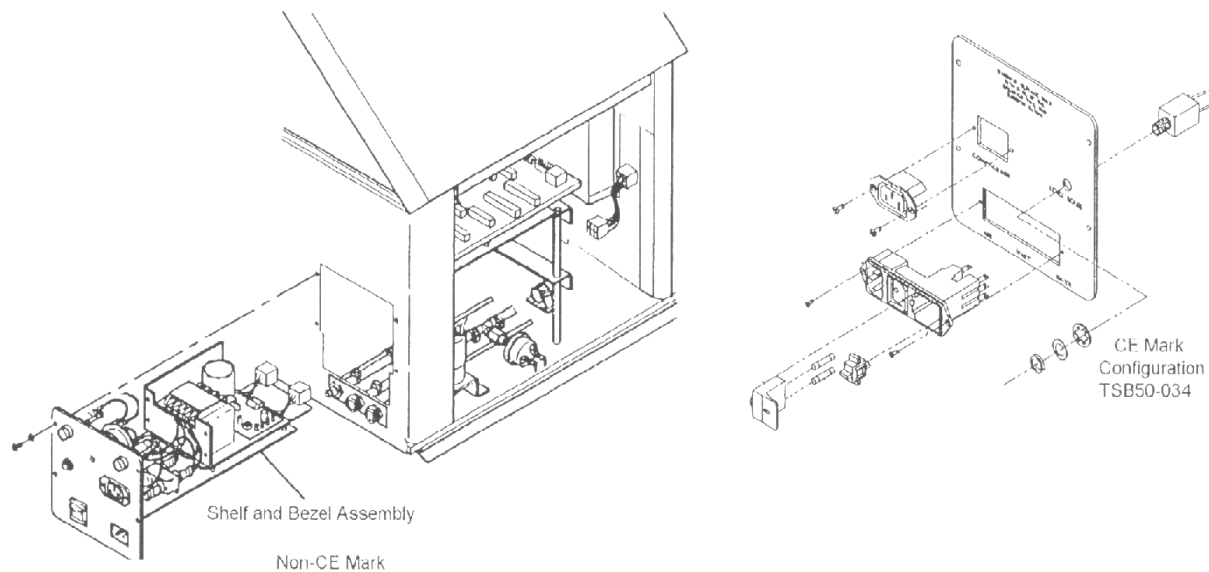



Figure 4-50. Shelf and Bezel Assy

RR-6.9 VALVE MOUNT ASSY

Removal

- 
1. □ Turn power OFF. Disconnect power cord.
 2. □ Bleed pressure from water canister. Lift pressure ring.
 3. □ Disconnect water, air, and waste lines from Valve Mount Assy (Figure 4-51).
 4. □ Disconnect power cord to compressor.
 5. □ Remove assy mounting hardware from two places.
 6. □ Remove left rear cover.
 7. □ Raise top left cover.
 8. □ Remove drip tray.
 9. □ Remove Wash Manifold.
 - a. □ Disconnect air and water tubes.
 - b. □ Disconnect waste outlet.
 - c. □ Remove mounting hardware from two places.

Replacement

1. □ Replace by repeating removal steps in reverse order.

Verification

1. □ Perform Solenoid Test Diagnostic.
2. □ Perform Wash Volume Verification Procedure (VP-43).
3. □ Perform Total Call.

CE MARK

Figure 4-51 shows both the Non-CE Mark and the CE Mark Valve Mount Assemblies. The Valve Mount Assembly on the CE Mark Configuration LN 6208-86 (reference **TSB50-034A**) is shown with the Valve Mount Assembly Guard and the Compressor Control Pressure Switch. Use the following procedure for Removal and Replacement. Verification is Identical for both instruments.

Removal

1. □ Turn power OFF. Disconnect power cord.
2. □ Bleed pressure from water canister. Lift pressure ring.
3. □ Disconnect water, air, and waste lines from Valve Mounting Assy (Figure 4-51).
4. □ Disconnect power cord to compressor.
5. □ Remove assembly mounting hardware from two places.
6. □ Remove left rear cover.
7. □ Raise top left cover.
8. □ Remove drip tray.
9. □ Remove Wash Manifold.
 - a. □ Disconnect air and water tubes.
 - b. □ Disconnect waste outlet.
 - c. □ Remove mounting hardware from two places.

Replacement

1. □ Replace by repeating removal steps in reverse order.

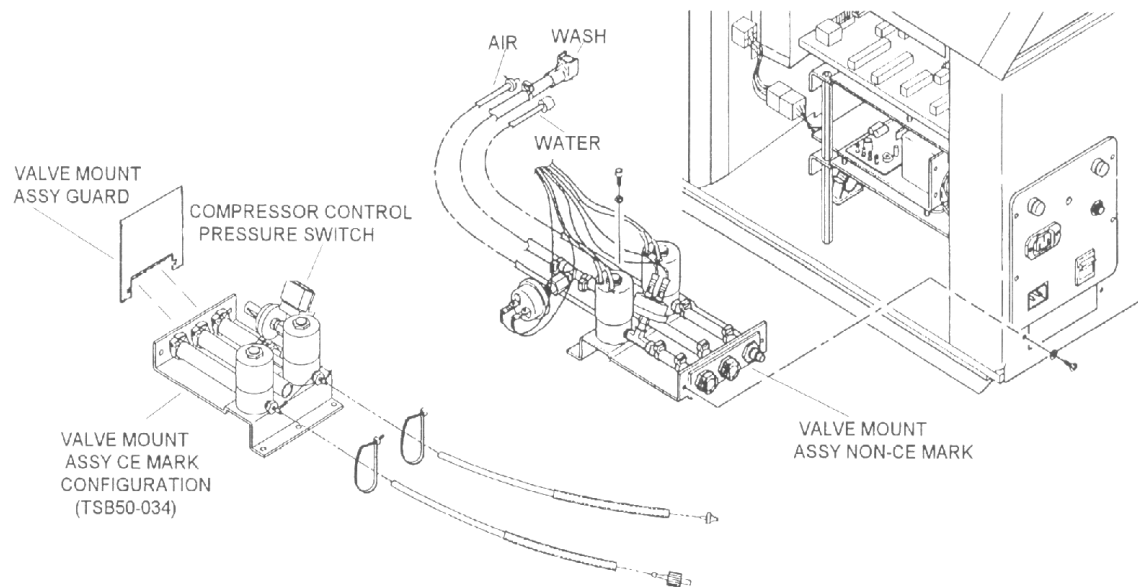



Figure 4-51. Valve Mount Assembly

RR-7.1 MAIN POWER SUPPLY

Removal

- 
1. □ Turn power OFF. Disconnect power cord.
 2. □ Raise Card Cage Assy (RR-1.4, Step 5).
 3. □ Lower Back Panel Assy (Figure 4-52).
 4. □ Disconnect cable on divider wall.
 5. □ Loosen, but do not remove, assy mounting hardware near divider wall (Figure 4-52).
 6. □ Remove mounting hardware at other end of assy.
 7. □ From front right side, remove cables.
 - a. □ Remove Bar Code Reader Cable from Cable Panel Interface Bd (Figure 4-48).
 - b. □ Remove cable from J1 to J602 on Cable Panel Interface Bd.
 - c. □ Remove cabling from Power Supply Interface Bd.
 - (1) □ J3 cable to white connector under dispense boom motor.
 - (2) □ Fan connectors.
 - (3) □ J9 (Spare)
 - (4) □ J8 (Printer).
 - (5) □ J12 (Stepper Drive).
 - (6) □ J11 (CPU)
 - (7) □ J10 (Bit Bus power).
 - (8) □ J7 (LED)
 - (9) □ +5V wire (Red) on TB2-8.
 - (10) □ GND wire (Black) on TB2-6.
 8. □ Slide assy to the left to remove.

Replacement

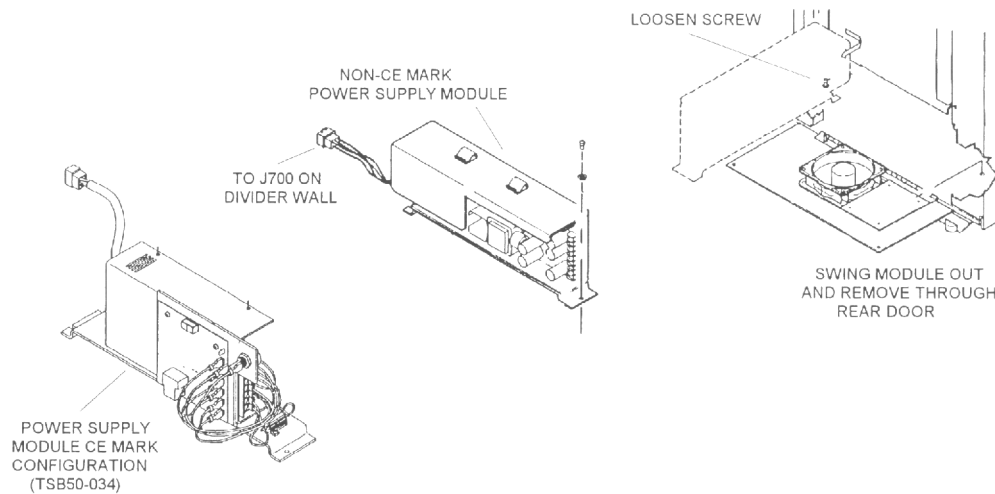
1. □ Replace by repeating removal steps in reverse order.

Verification

1. □ Perform Power Supply Check (VP-1).
2. □ Perform Total Call.

CE Mark

Figure 4-52 also shows the Main Power Supply for the CE Mark Configuration LN 6208-86 (reference TSB50-034A). The R&R and Verification Procedures are identical.

*Figure 4-52. Main Power Supply*

RR-7.2 BACK PANEL CONNECTOR (RS-232) BD**Removal**

1. Turn power OFF. Disconnect power cord.
2. Lower Back Panel Assy.
3. Disconnect cable from Back Panel Connector Bd (**Figure 4-53**).
4. Remove connector mounting hardware from eight places.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Communications - Loop Back Test (**VP-14**).
2. Perform Total Call.

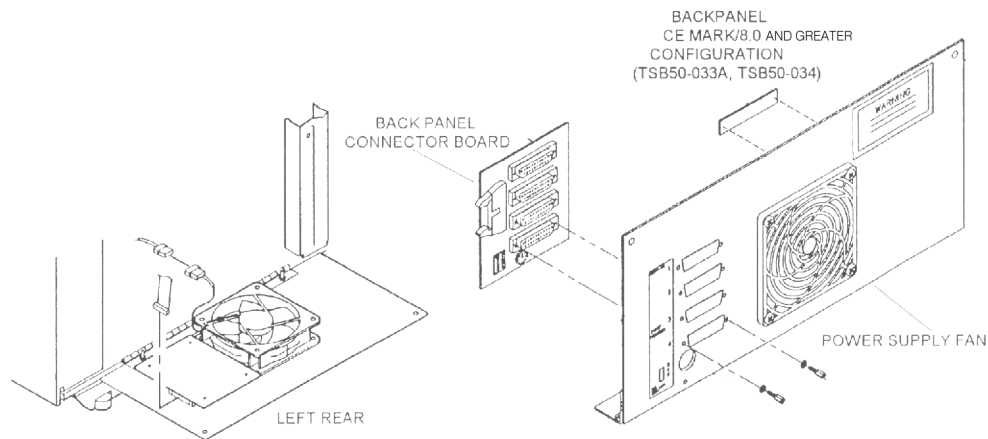


Figure 4-53. Back Panel Connector (RS-232) Bd

RR-7.3 POWER SUPPLY FAN

Removal

1. Turn power OFF. Disconnect power cord.
2. Lower Back Panel Assy.
3. Disconnect fan cable (**Figure 4-54**).
4. Remove mounting hardware from four places.

Replacement

1. Replace by repeating removal steps in reverse order.

Verification

1. Perform Total Call.

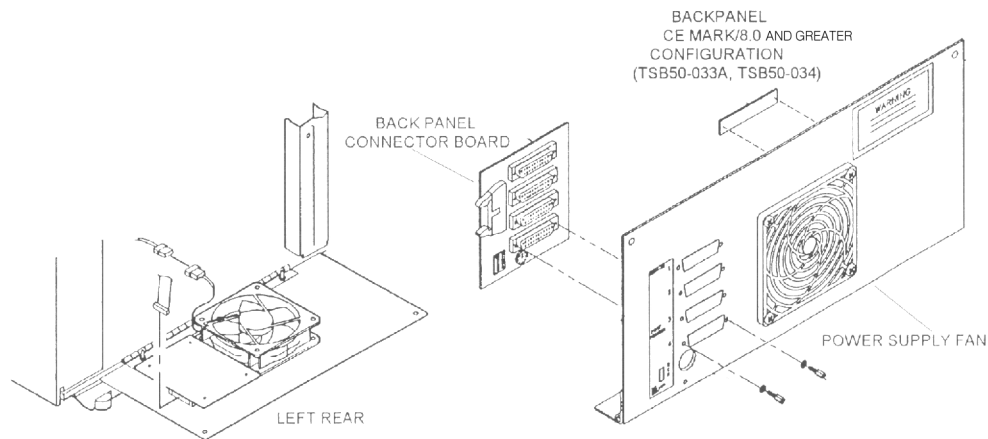


Figure 4-54. Power Supply Fan

