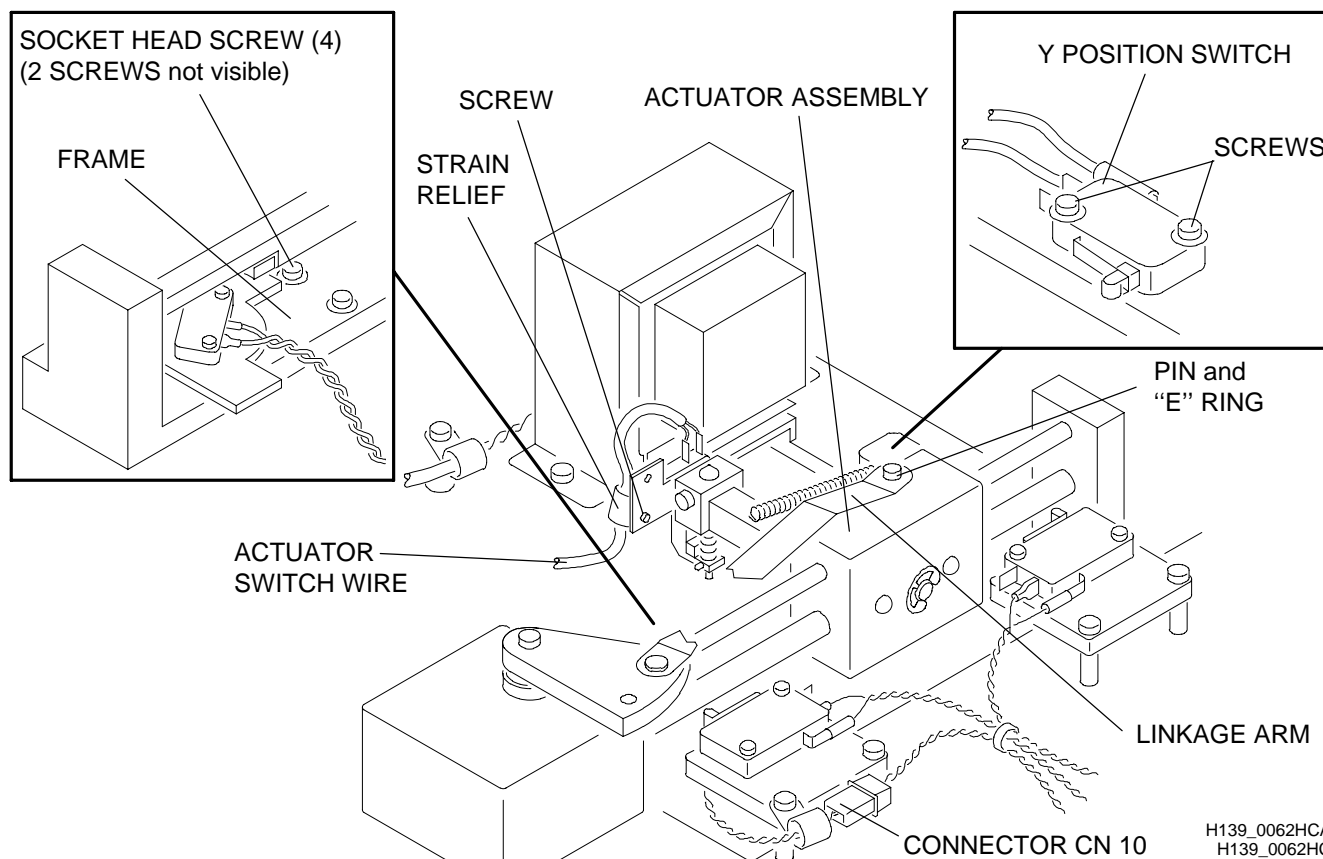


Section 9: Mechanical Replacements

Replacement of the ACTUATOR ASSEMBLY

Figure 9-1 Replacement of the ACTUATOR ASSEMBLY



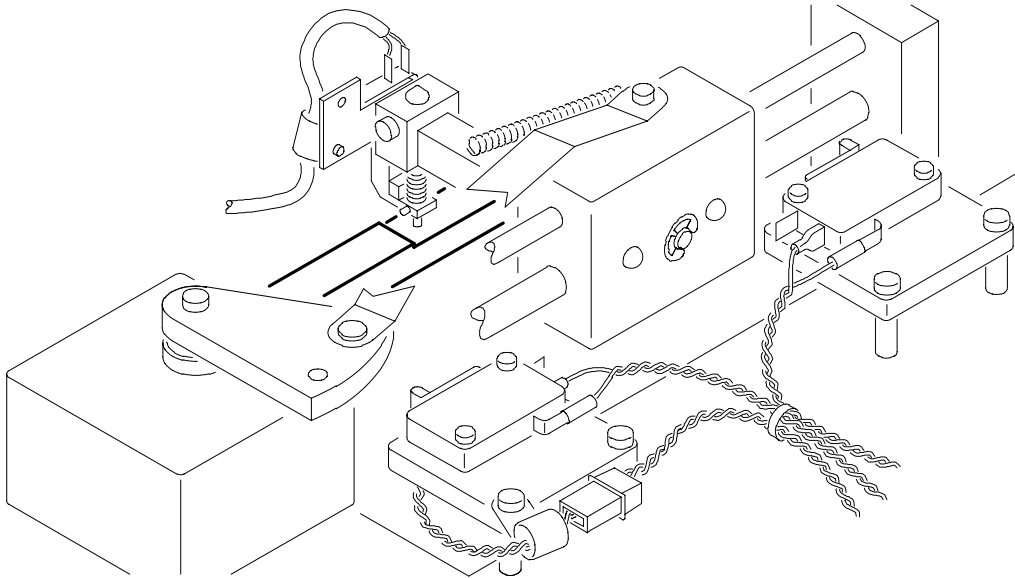
H139_0062HCA
H139_0062HC

- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#).
- [3] To disconnect the LINKAGE ARM, remove the "E" RING and lift the LINKAGE ARM from the PIN.
- [4] Remove the 4 SOCKET HEAD SCREWS holding the ACTUATOR ASSEMBLY to the FRAME.
- [5] Disconnect CONNECTOR CN 10 from the CPU BOARD.
- [6] Remove the 2 SCREWS holding the Y POSITION SWITCH.
- [7] Disconnect CONNECTOR CN 12 from the CPU BOARD.
- [8] Remove 1 SCREW for the STRAIN RELIEF for the ACTUATOR SWITCH WIRE.
- [9] Reverse the procedure to install the new ACTUATOR ASSEMBLY.
- [10] Do the adjustment procedures "Adjusting the ACTUATOR HOME SWITCH SW3" on Page [7-11](#) and "Adjusting the ACTUATOR EXTENDED SWITCH SW4" on Page [7-13](#).
- [11] To complete the assembly of the CAMERA, reverse the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#) and the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the ACTUATOR SWITCH ASSEMBLY

This procedure describes the replacement of the ACTUATOR HOME SWITCH SW3 and the ACTUATOR EXTENDED SWITCH (Window Open) SW4.

Figure 9-2 Replacement of the ACTUATOR SWITCH ASSEMBLY



H139_0049BC

- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#).
- [3] Disconnect CONNECTOR CN 9 from the CPU BOARD.
- [4] Remove the 2 SCREWS holding each SWITCH.



Important

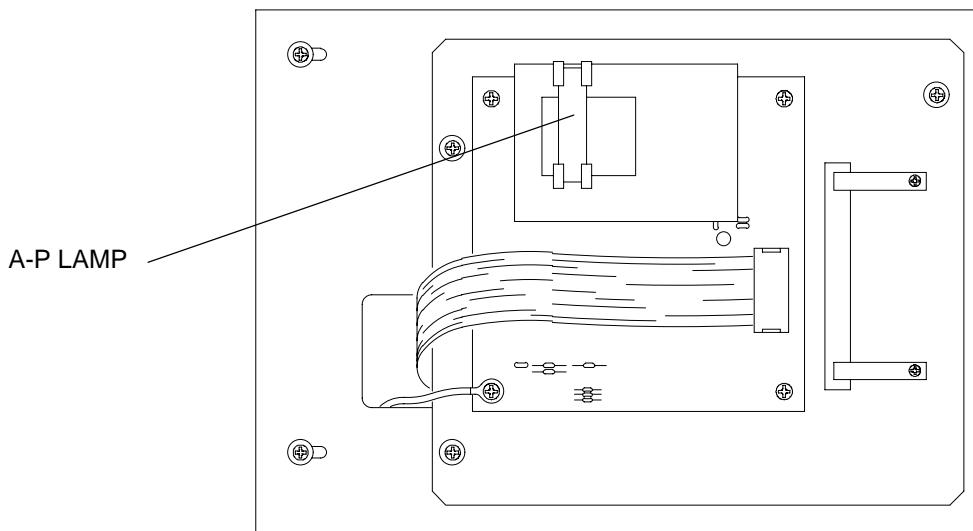
Record the position of the WIRE TIES.

- [5] Cut all WIRE TIES and remove the CONNECTORS and SWITCH ASSEMBLIES.
- [6] Install each new SWITCH with 2 SCREWS.
- [7] Route the WIRE to the CPU BOARD and connect CONNECTOR CN 9 to the CPU BOARD.
- [8] Install the WIRE TIES.
- [9] Do the adjustment procedures "Adjusting the ACTUATOR HOME SWITCH SW3" on Page [7-11](#) and "Adjusting the ACTUATOR EXTENDED SWITCH SW4" on Page [7-13](#).
- [10] To complete the assembly of the CAMERA, reverse the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#) and the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the A-P and P-A LAMPS

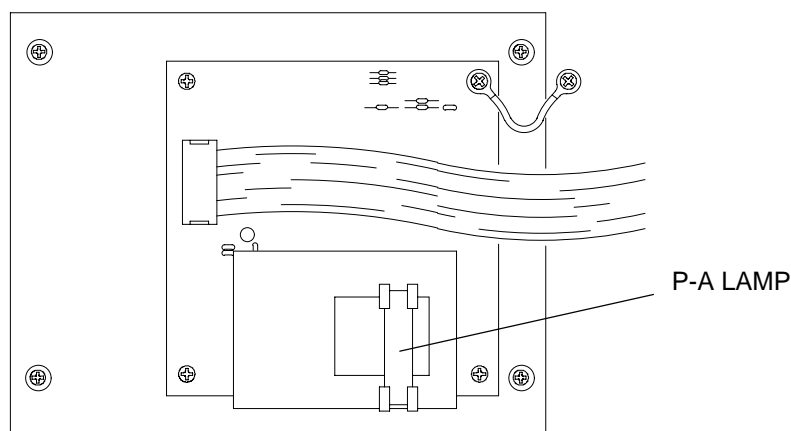
The A-P LAMP is located on the A-P CIRCUIT BOARD. The P-A LAMP is located on the P-A CIRCUIT BOARD. The LAMPS look like FUSES.

Figure 9–3 **Replacement of the A-P LAMP**



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H139_0022BC

Figure 9–4 **Replacement of the P-A LAMP**

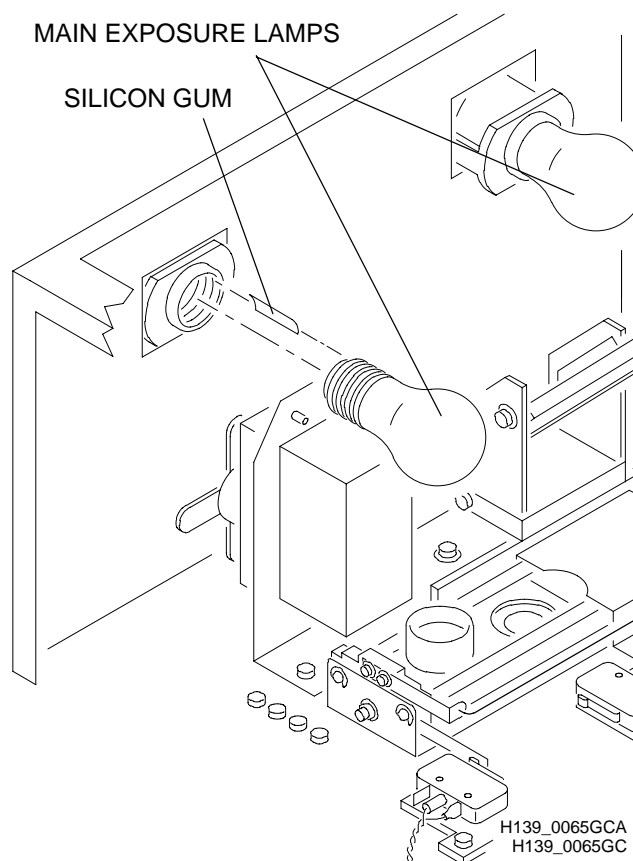


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H139_0024BC

- [1] Do the “COVER Removal Procedure” on Page [6–1](#).
- [2] Use a FUSE REMOVAL TOOL to remove the LAMP, and install a new LAMP.
- [3] To complete the assembly of the CAMERA, reverse the “COVER Removal Procedure” on Page [6–1](#).

Replacement of the MAIN EXPOSURE LAMPS

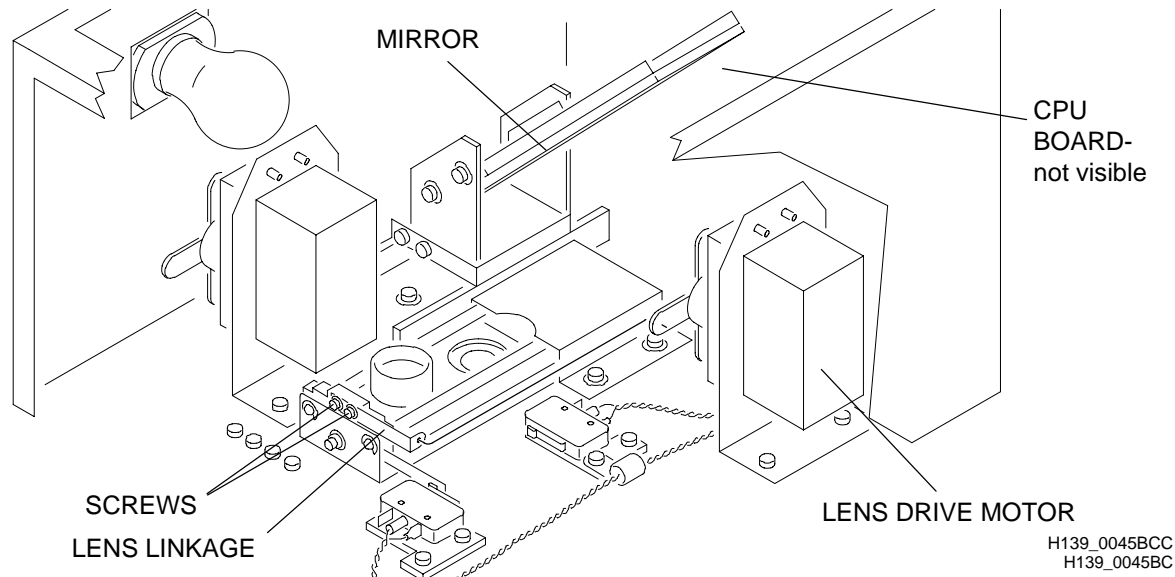
Figure 9-5 Replacement of the MAIN EXPOSURE LAMPS



- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "A-P PLATE Removal Procedure" on Page [7-1](#).
- [3] Remove the defective LAMP.
- [4] Install a new LAMP. Use SILICON GUM.
- [5] To complete the assembly of the CAMERA, reverse the "A-P PLATE Removal Procedure" on Page [7-1](#) and the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the LENS DRIVE MOTOR

Figure 9-6 Removing parts for replacing the LENS DRIVE MOTOR



To remove:

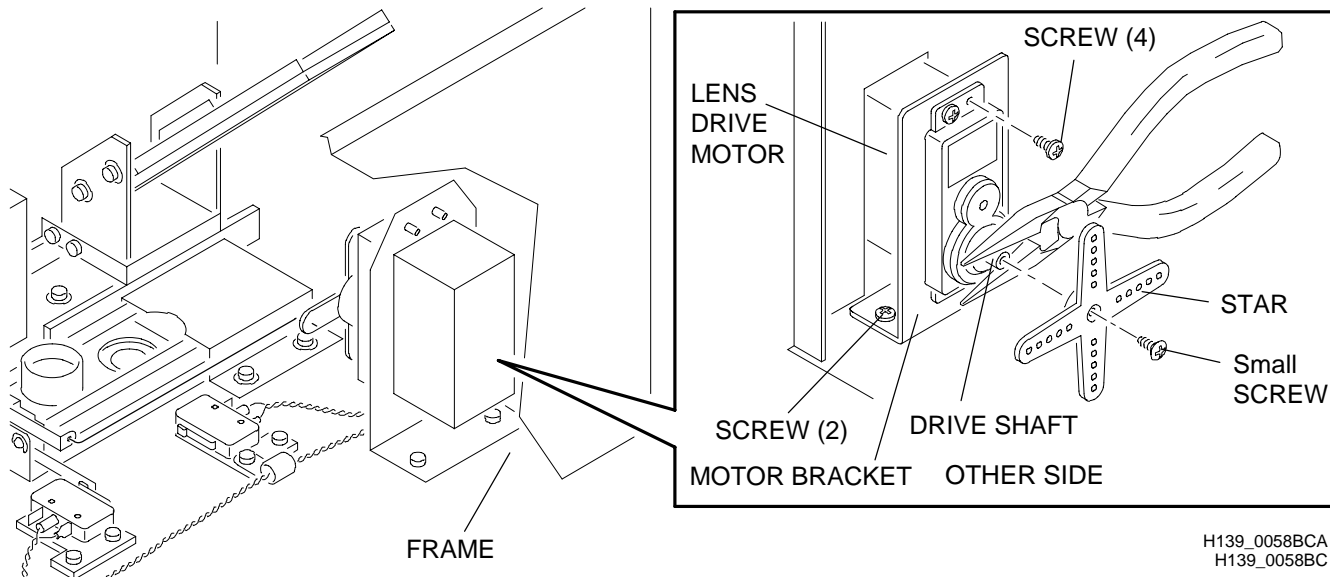
- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#).
- [3] Move the MIRROR all the way away from the MAIN CPU BOARD.
- [4] To obtain access to the LENS DRIVE MOTOR, remove the 4 SCREWS and WASHERS for the FRONT SHIELD COVER and the 4 SCREWS and WASHERS for the BACK SHIELD COVER, and lower the COVERS.

Note

The position of the LENS DRIVE MOTOR is not the same in the MODEL 4, 4L, and 4SL. The graphic shows the position of the LENS DRIVE MOTOR in the MODEL 4.

- [5] Remove the 2 SCREWS to release the LENS LINKAGE.

Figure 9-7 Replacement of the LENS DRIVE MOTOR

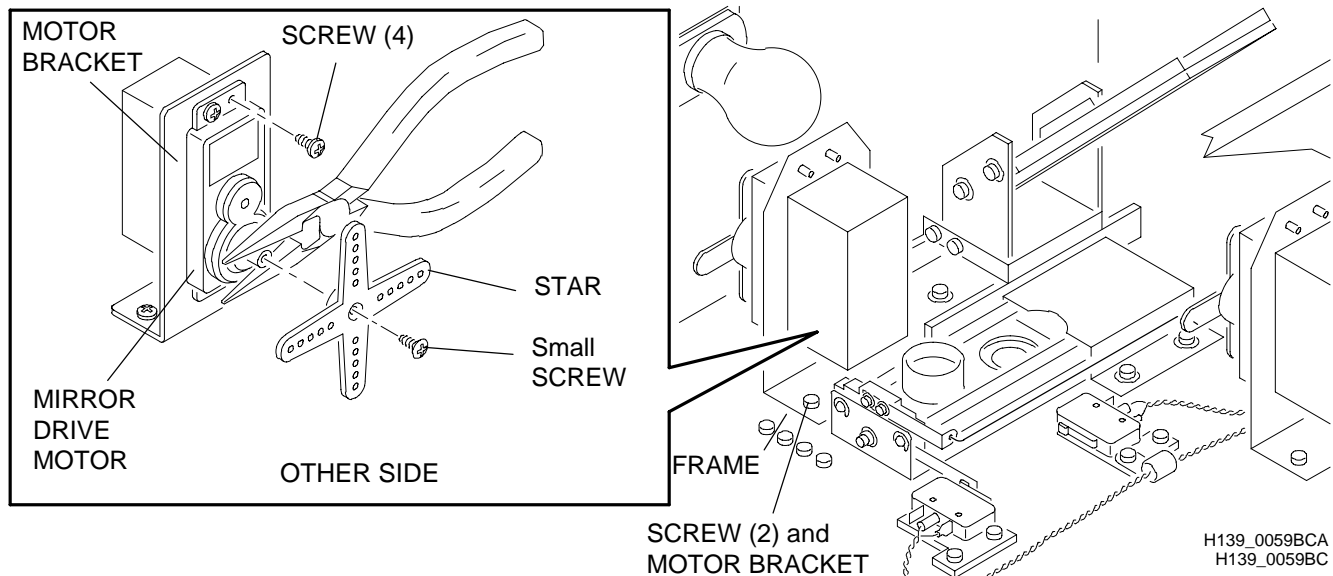


- [6] Remove the 2 SCREWS for the MOTOR BRACKET.
- [7] Disconnect CONNECTOR CN 4 from the CPU BOARD.
- [8] Cut the 2 WIRE TIES.

- [9] Remove the LENS DRIVE MOTOR and the MOTOR BRACKET and the LINKAGE ASSEMBLY.
 - [10] Remove the white plastic STAR by removing the small SCREW. Insert NEEDLENOSE PLIERS between the STAR and the LENS DRIVE MOTOR, and pry the STAR off.
 - [11] Remove the MOTOR BRACKET from the LENS DRIVE MOTOR by removing the 4 SCREWS.
- To install:
- [12] Orient the new LENS DRIVE MOTOR into the MOTOR BRACKET and install the 4 SCREWS.
 - [13] Install the white plastic STAR to the DRIVE SHAFT of the MOTOR.
 - [14] Install the 2 SCREWS for the MOTOR BRACKET to the FRAME.
 - [15] Install the LENS LINKAGE with the 2 SCREWS.
 - [16] Connect CONNECTOR CN 4 to the CPU BOARD.
 - [17] Install the 2 WIRE TIES.
 - [18] Install the 2 COVERS with the 8 SCREWS and WASHERS.
 - [19] To complete the assembly of the CAMERA, reverse the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page 7-2 and the "COVER Removal Procedure" on Page 6-1.

Replacement of the MIRROR DRIVE MOTOR

Figure 9-8 Removing the Star for the MIRROR DRIVE MOTOR



To remove:

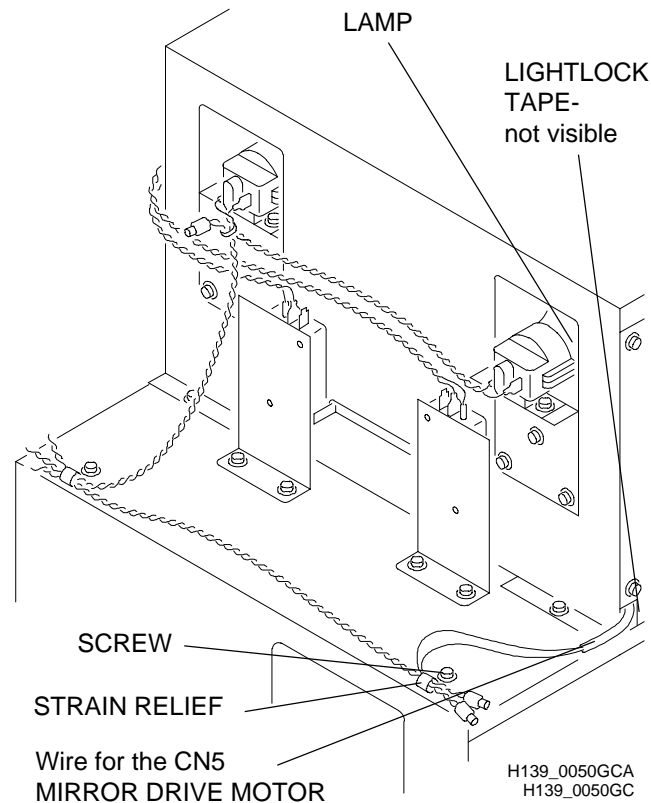
- [1] Do the "COVER Removal Procedure" on Page 6-1.
- [2] Do the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page 7-2.
- [3] Remove the LAMP.

Note

The position of the MIRROR DRIVE MOTOR is not the same in the MODEL 4, 4L, and 4SL. The graphic shows the position of the MIRROR DRIVE MOTOR in the MODEL 4.

- [4] Remove the 2 SCREWS holding the MOTOR BRACKET.
- [5] Remove the white plastic STAR by removing the small SCREW. Insert NEEDLENOSE PLIERS between the STAR and the MIRROR DRIVE MOTOR, and pry the STAR off.
- [6] Remove the MOTOR BRACKET from the existing MIRROR DRIVE MOTOR by removing the 4 SCREWS.

Figure 9-9 Removing the wire for the MIRROR DRIVE MOTOR



- [7] Loosen the SCREW on the STRAIN RELIEF to remove the wire for the CN 5 MIRROR DRIVE MOTOR.
- [8] Disconnect CONNECTOR CN 5.
- [9] Lift the LIGHTLOCK TAPE to route the wire back through the hole, and remove the MIRROR DRIVE MOTOR.

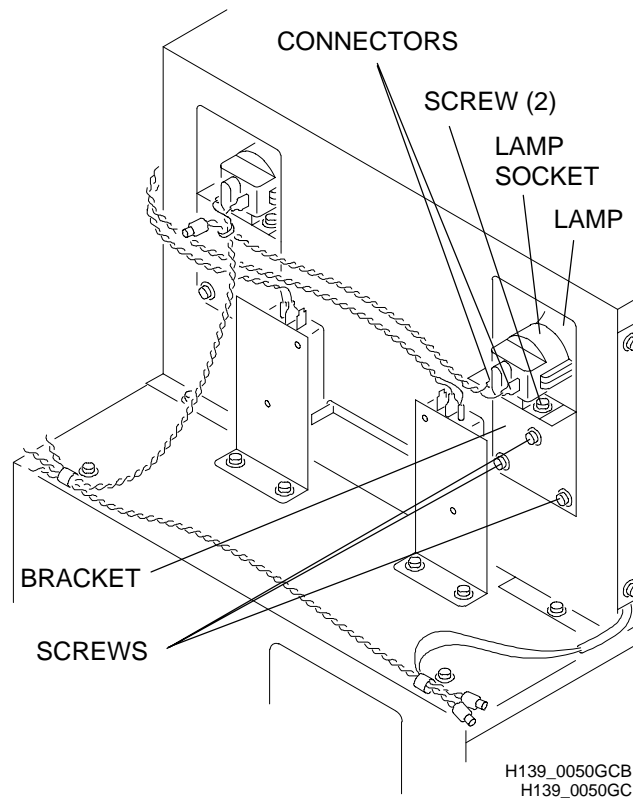
To install:

- [10] Install the new MOTOR into the MOTOR BRACKET and install the 4 SCREWS.
- [11] Install the white plastic STAR to the DRIVE SHAFT of the MOTOR.
- [12] Install the 2 SCREWS for the MOTOR BRACKET to the FRAME.
- [13] Install the LENS LINKAGE with the 2 SCREWS.
- [14] Connect CONNECTOR CN 5.
- [15] Install the LAMP.
- [16] To complete the assembly of the CAMERA, reverse the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#) and the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the MAIN EXPOSURE LAMP SOCKETS

This procedure is for removing either LAMP SOCKET.

Figure 9-10 Replacement of the MAIN EXPOSURE LAMP SOCKETS



- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "A-P PLATE Removal Procedure" on Page [7-1](#).
- [3] Disconnect the 2 CONNECTORS from the LAMP SOCKET.
- [4] Remove the 3 SCREWS for the BRACKET.
- [5] Remove the LAMP.
- [6] Remove the 2 SCREWS holding the LAMP SOCKET to the BRACKET.
- [7] Install the LAMP SOCKET and the 2 SCREWS.
- [8] Install the BRACKET and the 3 SCREWS.
- [9] Install the LAMP.
- [10] Connect the 2 CONNECTORS.
- [11] To complete the assembly of the CAMERA, reverse the "A-P PLATE Removal Procedure" on Page [7-1](#) and the "COVER Removal Procedure" on Page [6-1](#).

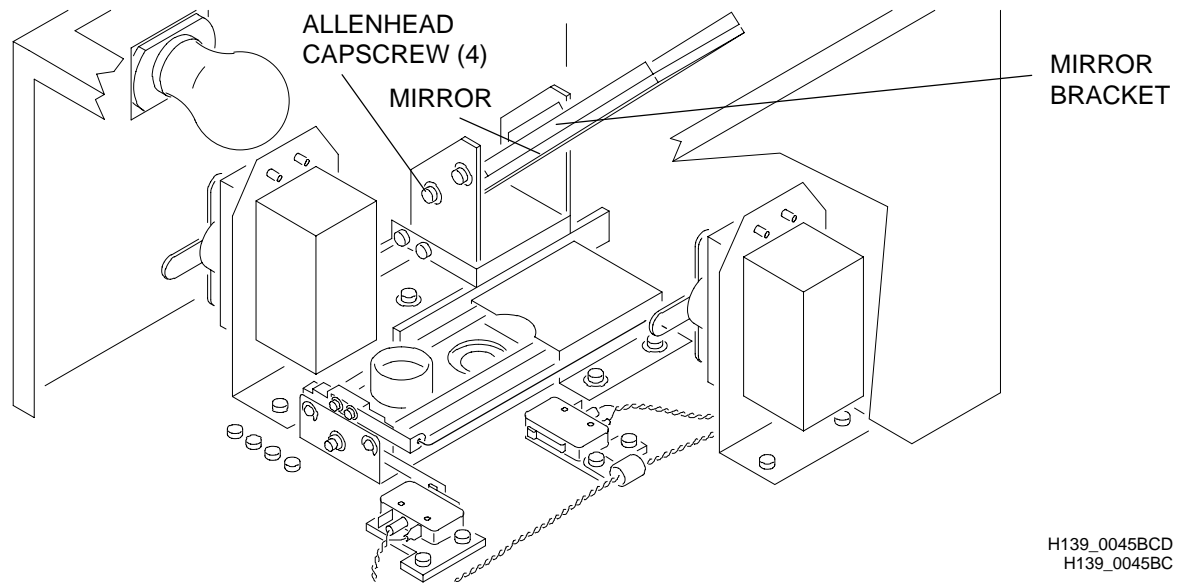
Replacement of the MIRROR ASSEMBLY



Caution

It is recommended that this procedure be used by service center personnel only.

Figure 9-11 Replacement of the MIRROR ASSEMBLY

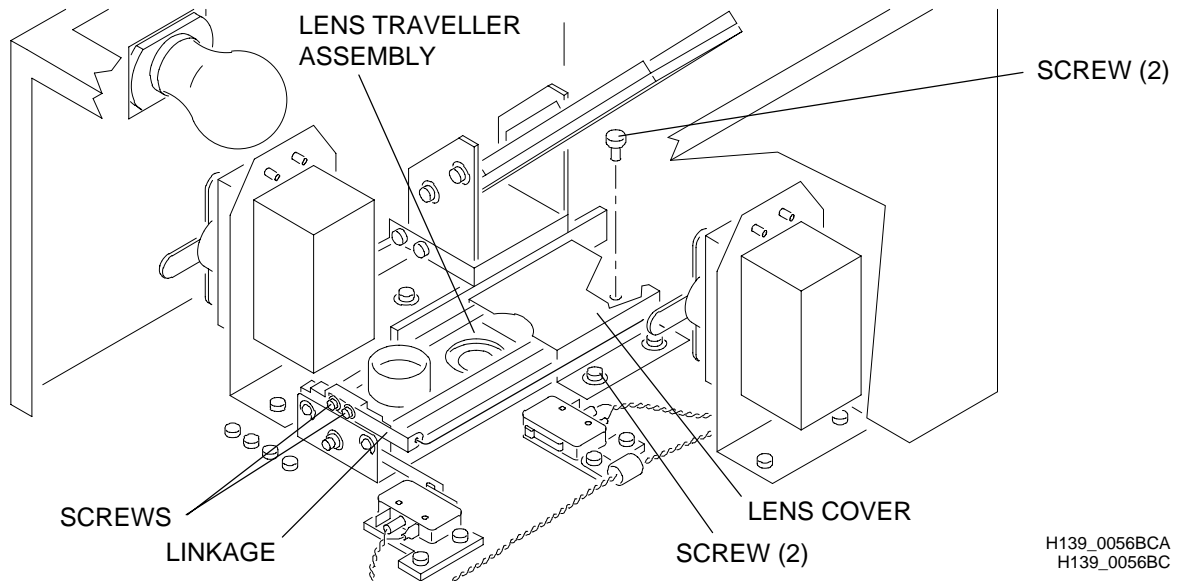


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- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "A-P PLATE Removal Procedure" on Page [7-1](#).
- [3] Remove the MIRROR from the MIRROR BRACKET by removing the 4 ALLENHEAD CAPSCREWS.
- [4] Install the new MIRROR with the 4 ALLENHEAD CAPSCREWS.
- [5] Align the new MIRROR using the "Adjusting the Mirror Tilt" procedure on Page [7-15](#).
- [6] To complete the assembly of the CAMERA, reverse the "A-P PLATE Removal Procedure" on Page [7-1](#) and the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the LENS TRAVELLER ASSEMBLY

Figure 9-12 Replacement of the LENS TRAVELLER ASSEMBLY



To remove:

- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "A-P PLATE Removal Procedure" on Page [7-1](#).
- [3] Remove the 4 SCREWS holding the END COVER.
- [4] Remove the 2 SCREWS for the LINKAGE.
- [5] Remove the 2 SCREWS for the LENS COVER.
- [6] Remove the 2 SCREWS for the LENS TRAVELLER ASSEMBLY by moving the LENS TRAVELLER ASSEMBLY to obtain access to both SCREWS.
- [7] Remove the LENS TRAVELLER ASSEMBLY.
- [8] Remove the FRICTION CLIP holding the white plastic LINKAGE ARM.

To install:

- [9] To install the LENS TRAVELLER ASSEMBLY, reverse the procedure.
- [10] Reverse the "A-P PLATE Removal Procedure" on Page [7-1](#).

Figure 9–13 Checking the LCD DISPLAY

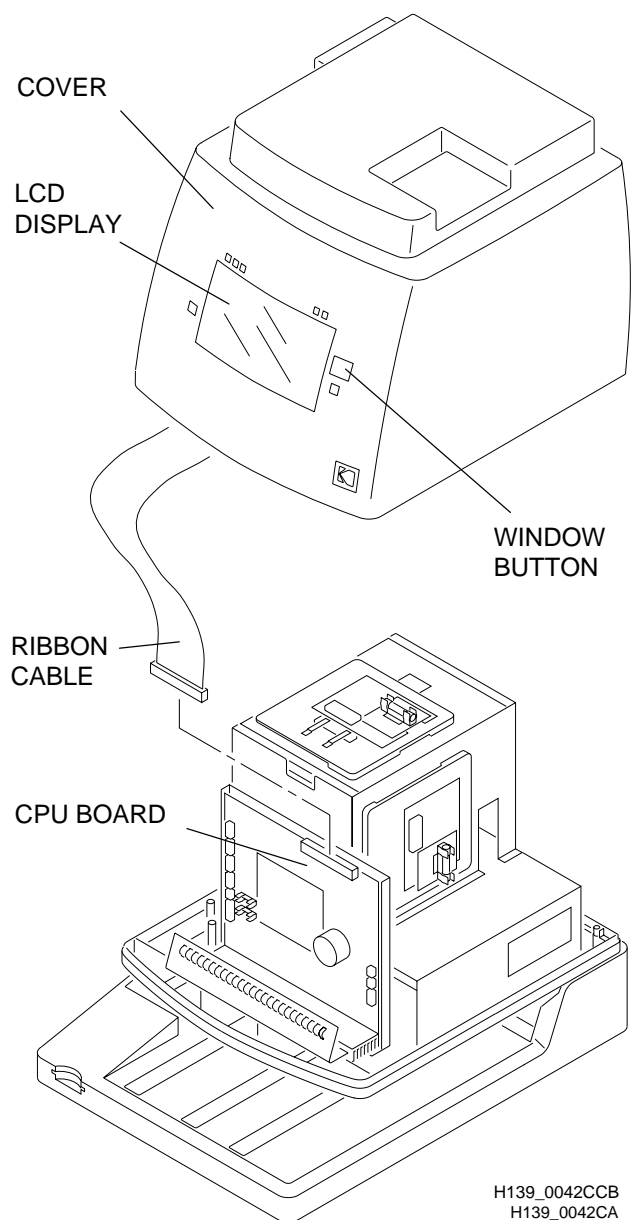
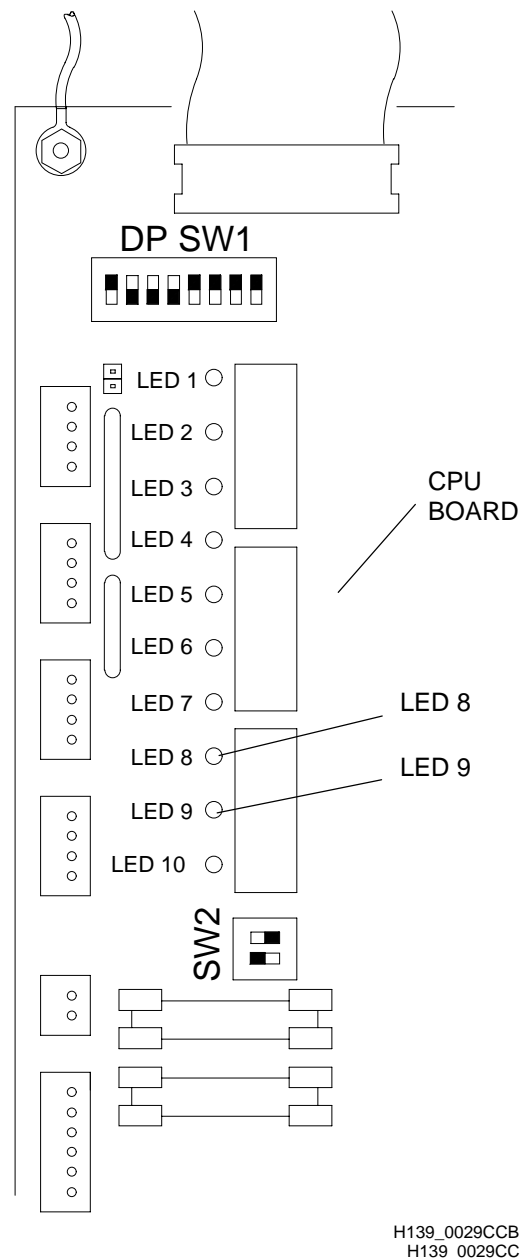


Figure 9–14 Checking the LED's on the CPU BOARD



- [11] Place the COVER next to the ID CAMERA, and connect the RIBBON CABLE CONNECTOR from the COVER to the CPU BOARD.
- [12] Press the WINDOW BUTTON, and check that LED 8 is illuminated on the CPU BOARD and "C-1" is displayed on the LCD DISPLAY, or that LED 9 is illuminated on the CPU BOARD and "C-1N" is displayed on the LCD DISPLAY.
- [13] If error code E6 occurs, do the procedure "Adjusting the C-1 LENS SWITCH SW7 and C-1N LENS SWITCH SW8" on Page [7–9](#).
- [14] To complete the assembly of the CAMERA, reverse the "COVER Removal Procedure" on Page [6–1](#).

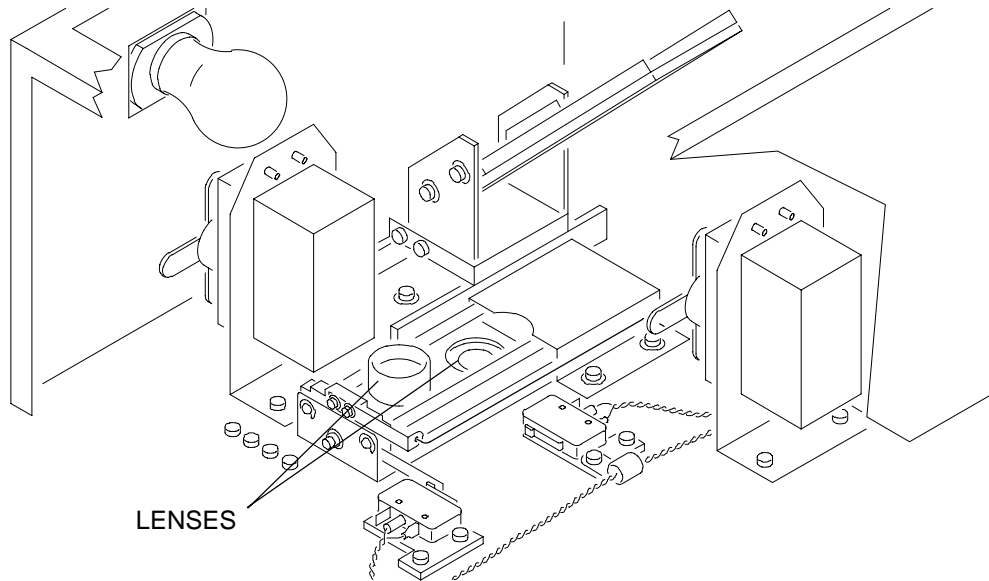
Replacement of the LENSES



Caution

This procedure is used by service center personnel only.

Figure 9-15 Replacement of the LENS



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H139_0045BC

- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "A-P PLATE Removal Procedure" on Page [7-1](#).
- [3] Do the "Replacement of the LENS TRAVELLER ASSEMBLY" procedure on Page [9-10](#).
- [4] Remove the LENS by rotating it counterclockwise.



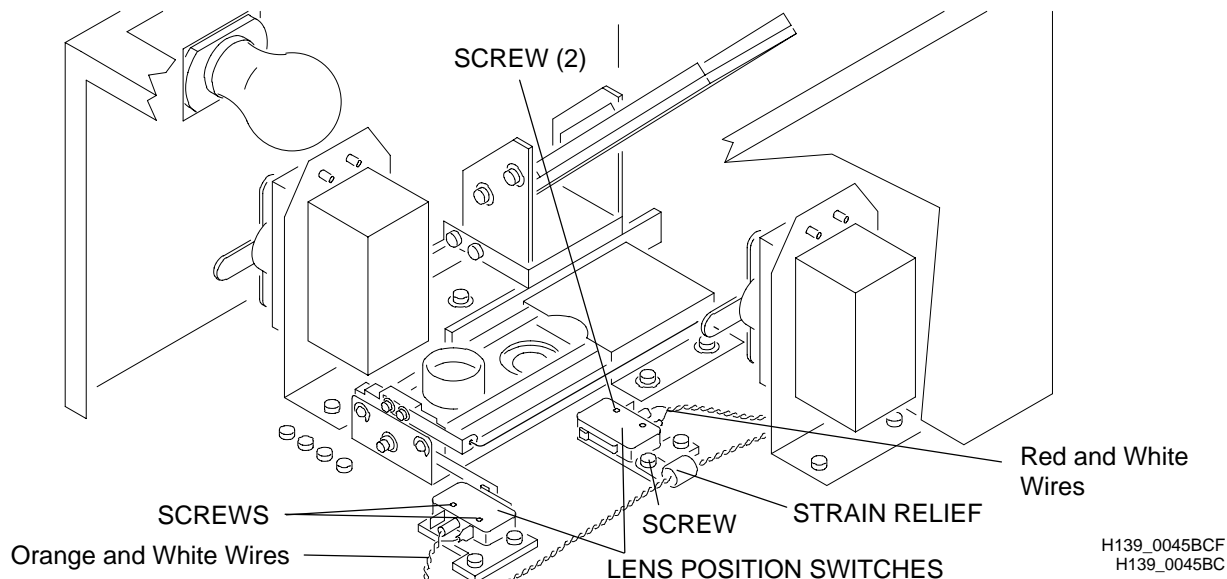
Caution

The LENS held by LOCTITE 242 TL-2390. If necessary, apply ACETONE to release the LENS. Do not allow any ACETONE to touch the surface of the LENS.

- [5] Do the procedure "Adjusting the LENSES" on Page [7-5](#).
- [6] Install the new LENS and apply LOCTITE 242 TL-2390.
- [7] To complete the assembly of the CAMERA, reverse the "Replacement of the LENS TRAVELLER ASSEMBLY" procedure on Page [9-10](#), the "A-P PLATE Removal Procedure" on Page [7-1](#) and the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the LENS POSITION SWITCHES

Figure 9-16 Replacement of the LENS POSITION SWITCHES



- [1] Do the “COVER Removal Procedure” on Page [6-1](#).
- [2] Do the “A-P PLATE Removal Procedure” on Page [7-1](#).
- [3] Do the “Replacement of the LENS TRAVELLER ASSEMBLY” procedure on Page [9-10](#).



Important

You must replace both LENS POSITION SWITCHES even if it is necessary to replace only one LENS POSITION SWITCH.

- [4] Disconnect CONNECTOR CN 11 from the CPU BOARD.
- [5] Remove the SCREW for the STRAIN RELIEF.
- [6] Remove the 2 SCREWS from each LENS POSITION SWITCH.
- [7] Remove the LENS POSITION SWITCHES and the CONNECTOR.
- [8] Install the new LENS POSITION SWITCHES with the 2 SCREWS.

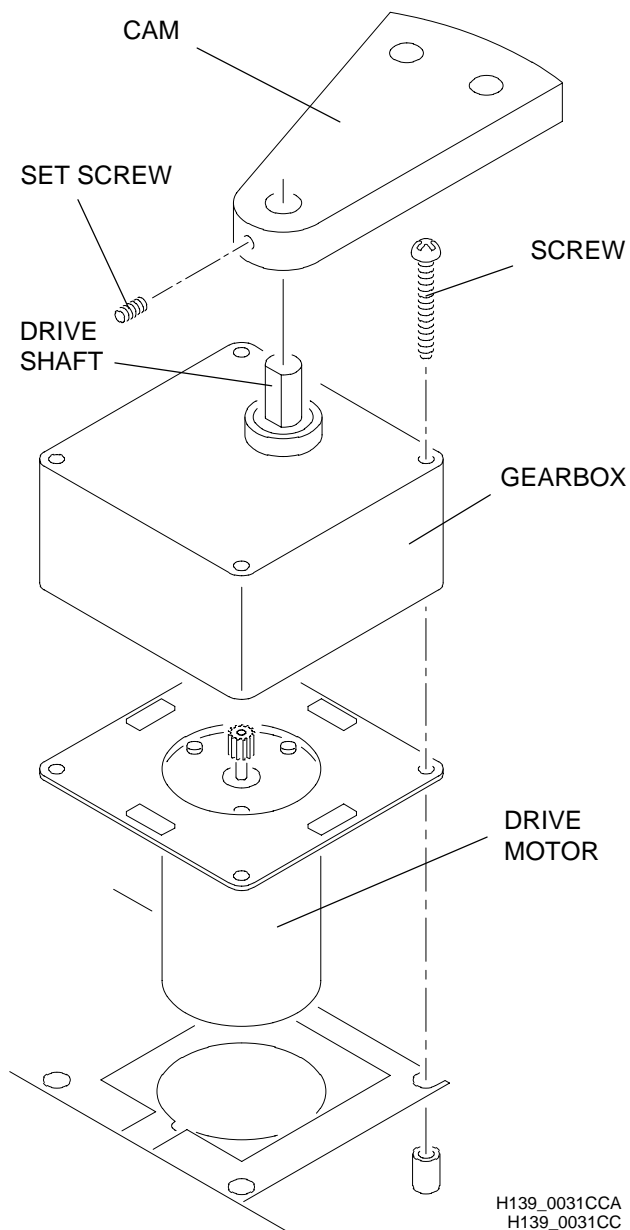


Important

The red and white wires go towards the CPU BOARD. The orange and white wires go away from the CPU BOARD.

- [9] Connect CONNECTOR CN 11 to the CPU BOARD.
- [10] To complete the assembly of the CAMERA, reverse the “Replacement of the LENS TRAVELLER ASSEMBLY” procedure on Page [9-10](#), the “A-P PLATE Removal Procedure” on Page [7-1](#) and the “COVER Removal Procedure” on Page [6-1](#).

Replacement of the DRIVE MOTOR and the GEARBOX



- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#).
- [3] Remove the SET SCREW from the CAM, and lift off the CAM.
- [4] Remove the DRIVE MOTOR and the GEARBOX:
 - (a) Remove the 4 SCREWS
 - (b) Disconnect CONNECTOR CN 6 from the CPU BOARD
 - (c) Lift out the DRIVE MOTOR and the GEARBOX.
- [5] Install the new DRIVE MOTOR and the GEARBOX.



Caution

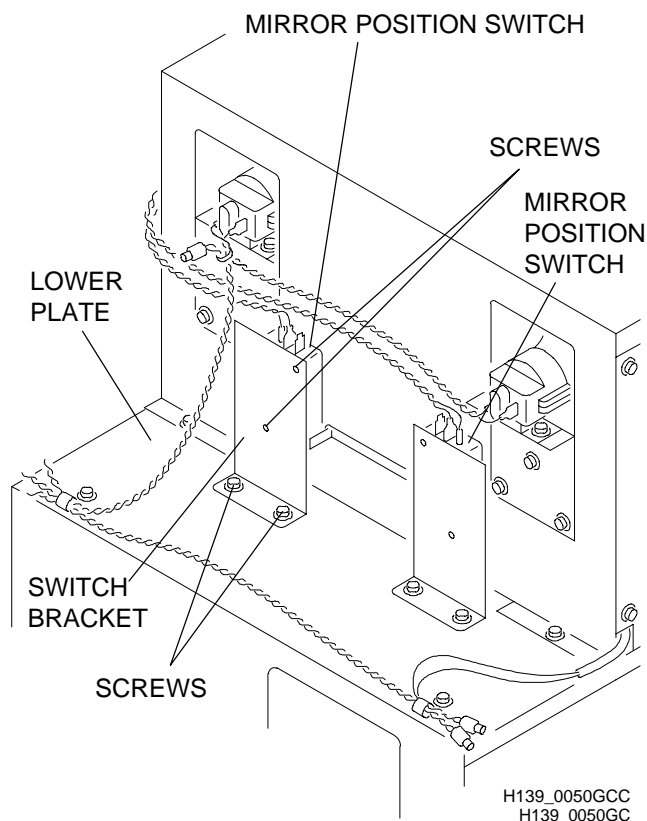
It is possible to install the GEARBOX in the wrong position. Install the GEARBOX with the DRIVE SHAFT closest to the SHUTTLE MECHANISM.

- [6] To complete the assembly of the CAMERA, reverse the procedure and the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#) and the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the MIRROR POSITION SWITCHES

This procedure describes the replacement of the A-P MIRROR SWITCH SW1 and the P-A MIRROR SWITCH SW2. Replace both of the MIRROR SWITCHES at the same time.

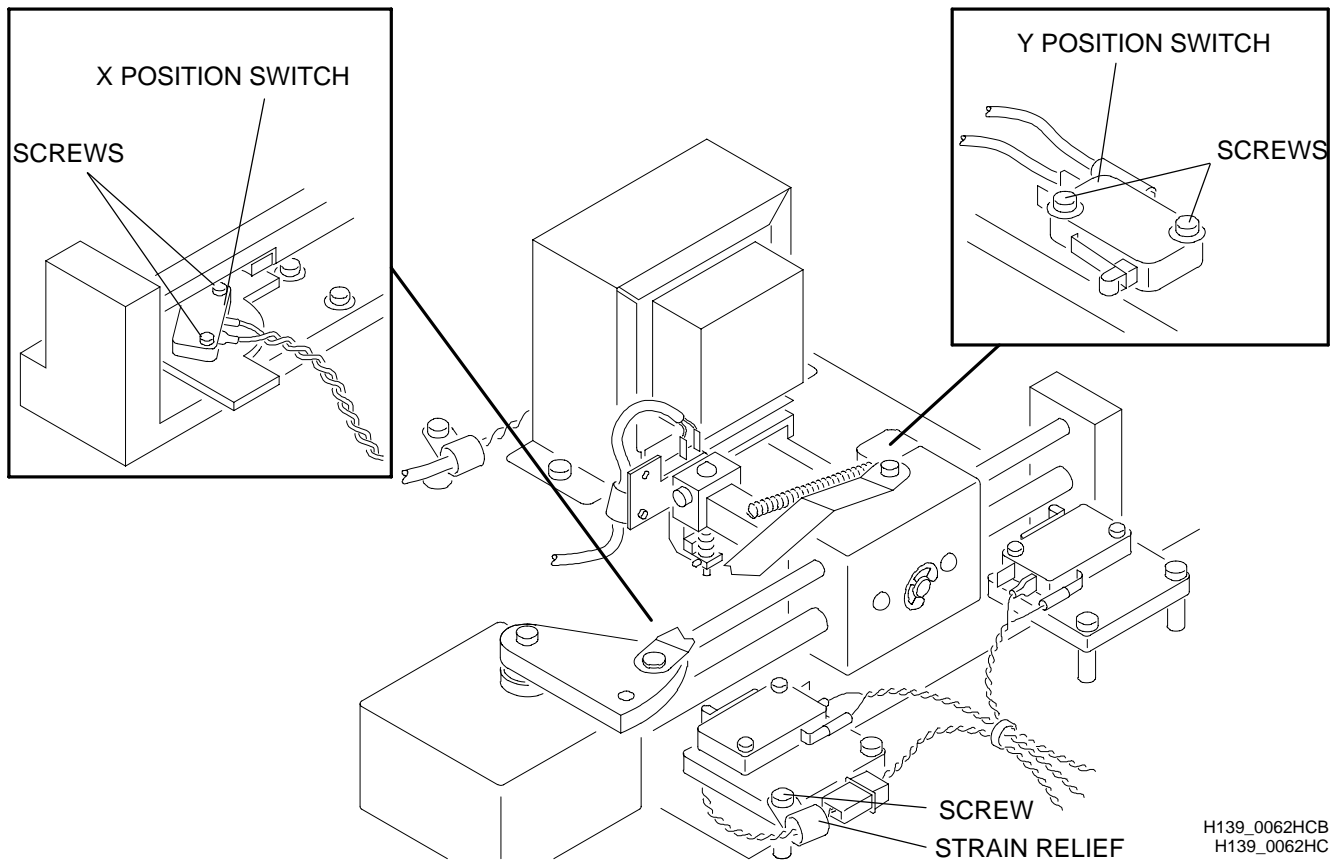
Figure 9-17 Replacement of the MIRROR POSITION SWITCHES



- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Disconnect CONNECTOR CN 8 from the CPU BOARD.
- [3] Remove the 2 SCREWS holding each SWITCH BRACKET to the LOWER PLATE.
- [4] Cut any necessary WIRE TIES.
- [5] Remove the 2 SCREWS holding each MIRROR POSITION SWITCH to each BRACKET.
- [6] Remove the 2 MIRROR POSITION SWITCHES.
- [7] Install each new MIRROR POSITION SWITCH on each BRACKET with the 2 SCREWS.
- [8] Install the SWITCH BRACKETS to the LOWER PLATE with the 2 SCREWS.
- [9] Route and connect CONNECTOR CN 8 to the CPU BOARD.
- [10] Do the procedure "Adjusting the A-P MIRROR SWITCH SW1 and P-A MIRROR SWITCH SW2" on Page [7-7](#).
- [11] Install the WIRE TIES.
- [12] To complete the assembly of the CAMERA, reverse the "COVER Removal Procedure" on Page [6-1](#).

Replacement of the X and Y POSITION SWITCHES

Figure 9-18 Replacement of the X and Y POSITION SWITCHES



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H139_0062HC

- [1] Do the "COVER Removal Procedure" on Page [6-1](#).
- [2] Do the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#).
- [3] Disconnect CONNECTOR CN 10 from the CPU BOARD.
- [4] Remove the SCREW and the STRAIN RELIEF.
- [5] Remove the 2 SCREWS holding each SWITCH.



Important

Record the position of the CONNECTORS and SWITCH ASSEMBLIES.

- [6] Remove the CONNECTORS and SWITCH ASSEMBLIES.
- [7] Install each new SWITCH with 2 SCREWS.
- [8] Route the WIRE to the CPU BOARD and connect CONNECTER CN 10 to the CPU BOARD.
- [9] Install the STRAIN RELIEF with the SCREW.
- [10] To complete the assembly of the CAMERA, reverse the "UPPER HOUSING ASSEMBLY Removal Procedure" on Page [7-2](#) and the "COVER Removal Procedure" on Page [6-1](#).