

Magnus VLF MCU

MCU Flush Plate Loading Upgrade

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Revision History

Revision	Date	Author	Comments
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PARTS/TOOLS REQUIRED

- Upgrade kit – Creo part number 518-01020A (includes most of the tools needed).
- Electric variable speed drill
- Oil for thread tapping
- Loctite® 242 and 609
- Scissors or similar to cut pneumatic tubing
- 8 mm socket or nut driver (open ended or adjustable wrench will work)
- Two pallet jacks or similar lifts
- Blocks for holding panels off of the ground
- Hammer
- Vacuum Cleaner
- Long pry bar (this may be needed for minor realignment of the MCU)
- Safety Glasses (for drilling operations)

2. ADDITIONAL DOCUMENTS REQUIRED

Multi-Cassette Unit Setup Procedure For Flush Plate Loading MCUs - Creo part number 719-00357B.

3. PREPARATION

The MCU Flush Plate Loading (FPL) upgrade will take two service engineers three days to complete. Alternatively, the upgrade can be done by two people in two 12 hour days. The MCU must be offline for the majority of the procedure, but new firmware will soon be available that allows the Magnus VLF device to be run in ContinuousLoad (CL) mode while the upgrade is being performed. Contact Micle Zisman for details on the availability and application of this option.

In order to save time, one person can go to the site one day early and rework the cassettes (only drilling and tapping, not adding new features). The customer can continue to operate using three cassettes while one is removed and reworked.

4. UPGRADE PROCEDURE

4.1 Preparing the device

1. With the aid of a helper (or three helpers), remove the cassettes from the MCU.
2. Stack the cassettes on a sturdy table, upside down with the front edge exposed for rework. Place foam or cardboard blocks between cassettes so that the v-guides do not transfer the cassette weight to the next cassette.
3. Move the cart to the fully out position.
4. Raise the slip sheet bin to take the weight of the SSR—it is not necessary to remove the SSR.
5. Remove the screws holding the cobra bracket to the plenum (see picture). Note the alignment between the PEM nuts in the plenum and the cobra bracket holes.

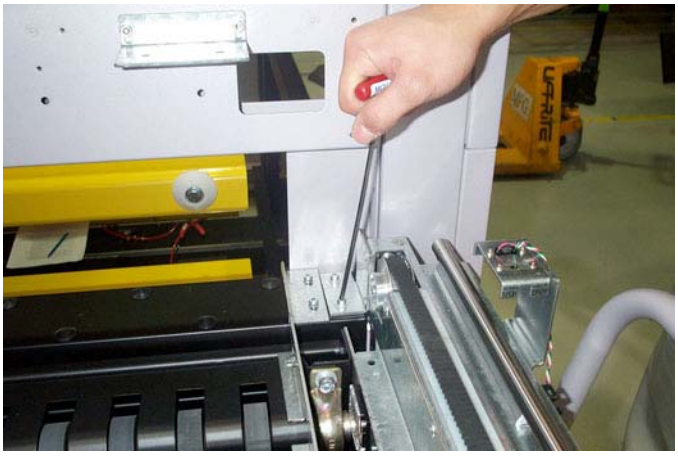


Figure 1: Disconnecting the cobra bracket

6. Turn the power to the MCU off and disconnect the power source.
7. Turn the air to the MCU off and disconnect the air source.
8. Remove the front portion of the roof. The most convenient place to put the front roof panel is on the rear roof panel. Use cardboard or foam blocks to protect the rear roof panel from scratching.

4.2 Upgrading the cassettes

The cassette upgrade must be carried out on all four MCU cassettes.

4.2.1 Drilling the holes

1. Check to see if the new cassette pin (252-02072B) fits into the hole in the front of the cassette. If the pin does not fit, use a 5/8 in. drill bit to drill out the pin receptor hole on the underside of the cassette near the edge. If the hole was a ½ in. hole, you may need to add to the chamfer on the cassette pin.

Note: Do not drill through the top sheet on the cassette.

2. Place the jig (690-00483A) over the cassette pin hole—use the cassette pin to hold the jig in place.



Figure 2: Attaching the cassette jig

3. Use the PEM nuts as guides to locate and drill the four 4.2 mm holes on top.

Note: Do not drill through the top sheet on the cassette.

4. Use the jig to locate the hole in the front, remove the cassette pin and drill the hole through.

5. Use the M5 tap to tap all five 4.2 mm holes to M5. Use oil on the tap and be careful not to go to fast or to go too deep in the four bottom holes. Tap through on the front hole.

6. Clean all of the debris and oil from the cassettes and work area.

4.2.2 Adding FPL components to the cassettes

1. Place the cassette pin (252-02072B) in each cassette and secure it in place with the set screw (52-4376). Apply Loctite 242 to the set screw threads. Ensure that the flange on the cassette pin sits flush on the cassette bottom. If it does not, you must either trim the bottom of the cassette pin or add to the chamfer on the bottom of the cassette pin.

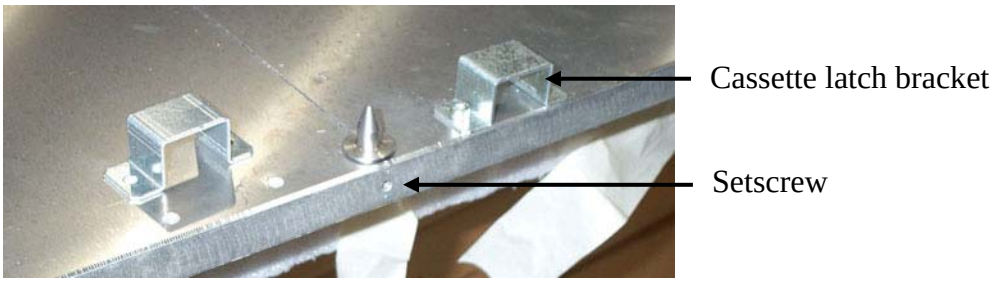


Figure 3: Installing the cassette latch brackets

2. Attach two cassette latch brackets (252-08338A) to the bottom of each cassette. Use the provided M5 Bellville washers and M5x12 screws. Apply Loctite 242 to the screws.

The cassettes upgrade is complete. Wait until the rest of the FPL upgrade is complete before installing the cassettes into the MCU.

4.3 Removing components

Several components and assemblies need to be removed from the MCU. Most of these parts are not re-used, but we recommend that you save all old parts until the upgrade is working satisfactorily. Save any sensors, actuators, or other parts that are in good shape as they may be useful as spares for sites without a FPL MCU.

1. Remove blocking panel from the docking frame.

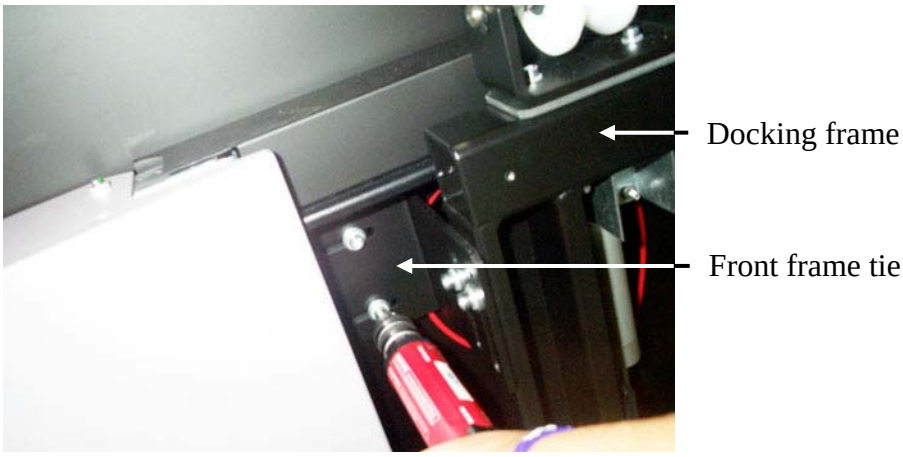


Figure 4: Removing the docking frame

2. Disconnect cable 220-00438A from the locking pin switches. These branches of this cable will unused—coil them and use cable ties to secure them out of the way.
3. Disconnect the cylinders on the cart and docking frame.
4. Remove the screws from the cart to frame ties.
5. Remove the cart and docking frame from the MCU.
6. Remove the shutter guides attached to the front panel at either end of the shutter.

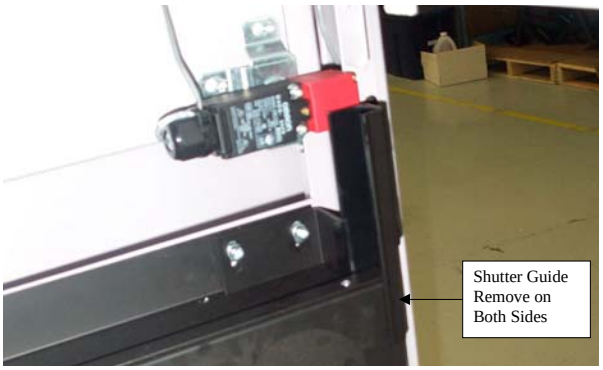


Figure 5: Removing the shutter guides

7. Disconnect cable 220-00441A from the shutter closed Omron switch. This cable is no longer used and can be secured out of the way with cable ties.
8. Disconnect the pneumatic tubes from the shutter cylinder.

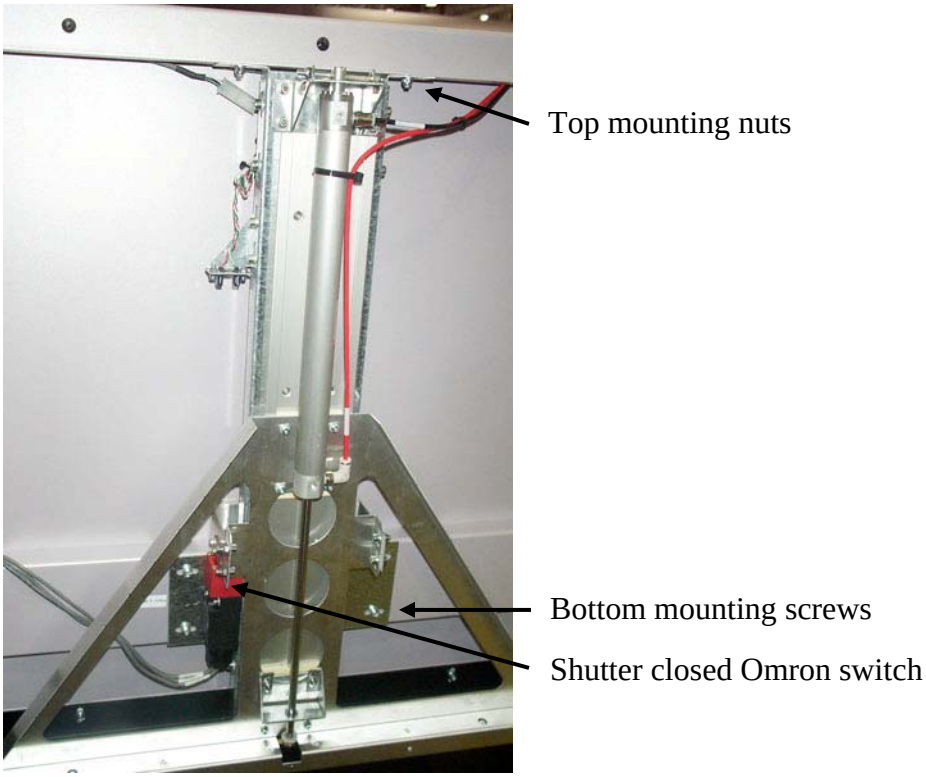


Figure 6: Disconnecting the shutter assembly

9. Remove two mounting nuts at the top and the four mounting screws at the bottom and remove the shutter assembly.

10. Remove the shutter lip and shutter seat.



Figure 7: Removing the shutter lip and shutter seat

11. Remove screws from the left and right floor panels (large galvanized panels), and drop the panels to the floor. Leave the panels there for now, they will be removed after the front frame is removed.

12. Remove all the screws to remove the cassette guide. The cassette guide on the plenum side has three stainless screws and two socket head screws near the end of the plenum. The cassette guide on the service access side has three stainless screws and three button head screws, accessible only when the service access door is open.





Figure 8: Removing screws from cassette guide

13. Disconnect the cassette out sensor. This sensor is on the plenum side and is mounted higher than the cassette on cart sensor.

14. Remove all of the sensor brackets, but leave the sensors in place (replacement sensors are included in the kit, but should not be needed).

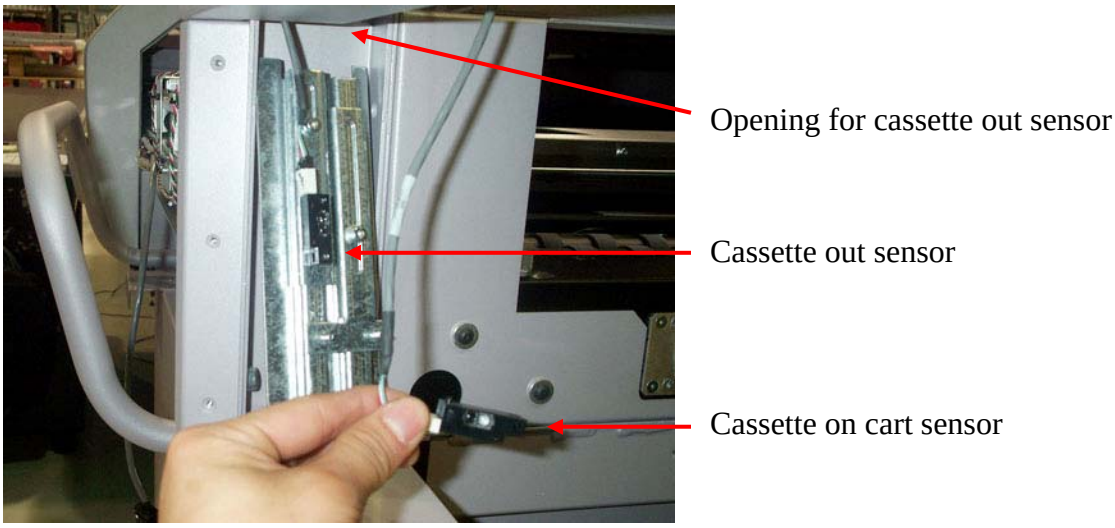


Figure 9: Removing the sensor brackets

15. Feed the cable for the cassette out sensor back through the opening in the panel. The cassette out is mounted in a new location, on the plenum (described later in this procedure).

16. Remove the keyed Omron switch at the front end of the service access door. Use the screws to re-attach the nut plate to the sensor. Secure the sensor out of the way.



Figure 10: Removing the keyed Omron switch

17. Remove all of the brackets associated with this switch.

4.4 Replacing the MCU front frame

Replacing the MCU front frame has the highest potential for problems. Be careful when replacing this frame and make every effort to secure the panels in place so they do not move during this process. Note the relative position of the holes in the cobra bracket and the PEM nuts in the plenum. After replacing the front frame, make sure the holes in the cobra bracket align with the PEM nuts in the plenum. If they do not align, use a pry bar under the MCU frame near the front foot to realign the MCU.

4.4.1 Removing the old front frame

1. Place a pallet jack under both front corners of the side panel assemblies and raise the pallet jack to take the weight of the panels—do not lift the panels. Check that the contact points between the panel and the pallet jack are solid (this contact point may be a screw head which is acceptable).



Figure 11: Lifting the front of the side panels

2. Place blocks under the panel assemblies near the pallet jacks as a safety measure so that if the pallet jack drops the panels will be supported.
3. Try to secure the side panel assemblies in place. If they move it may be difficult to re-align the panels.
4. Remove the six M8 screws, three on each side of the frame, holding the front frame to the panels.
5. Remove the eight M6 screws, four on each side of the frame, holding the front frame to the MCU mainframe.



Figure 12: Removing the front frame

6. Remove the front frame from the MCU by first pulling the frame further inside the MCU and either lifting it out through the roof or twisting it and pulling it out the front. The front frame may be tight—use a pry bar or a third pallet jack to make it easier to remove.

7. Slide the old floor panels out the front of the MCU.

4.4.2 Installing the new front frame

1. Insert the new floor panels and leave them sitting on the floor—do not attach them yet.

2. Insert the new front frame inside the MCU and place it in position. The top piece of angle iron is oriented opposite to the same piece in the old design. Be careful not to bump or move the panel assembly out of position.

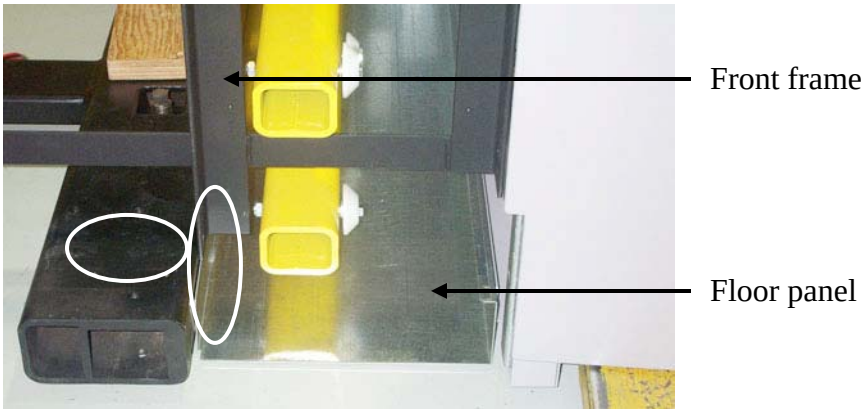


Figure 13: Installing the new floor panels and front frame

3. Attach the front frame to the MCU mainframe using the eight M6 screws provided with the new front frame. Due to poor manufacturing tolerances, some of these holes may not

line up. It is critical that at least one of each group of two screws (as circled in Figure 13) is secured. It may be necessary to increase the diameter of the holes in the front frame.

4. Attach the front frame to the side panel assemblies using the six new M8 screws and washers provided with the new front frame. All of these screws must be used.

5. Remove the blocks and pallet jacks from under the side panel assemblies and watch for any movement in the panels. If the panels move you may need to re-align the panels.

4.5 Reworking existing components

The required jigs are included in the tool kit.

4.5.1 Reworking the front panel

1. Use the front panel drill jig (690-00484A) to locate the six holes in the front panel.

2. Begin by attaching the jig to the left end of the stiffening beam on the inside of the front panel. Two of the holes on the front face of the jig line up with two Pem nuts on the beam. Use these Pem nuts and the provided screw to position the jig. See Figure 14 – left picture.

3. Move the jig to the center of the stiffener beam on the inside of the front panel. Use the provided screws and the four Pem nuts to locate the jig. See Figure 14 – center picture.

4. Use the transfer punch to mark the centers of the left and right Pem nuts on the top face of the jig.

5. Move the jig to the right end of the stiffener beam on the inside of the front panel. Locate the jig with two of the provided screws and the matching Pem nuts on the stiffener beam. See Figure 14 – right picture.

6. Use the transfer punch to mark the centers of the right and the center Pem nuts on the top face of the jig.

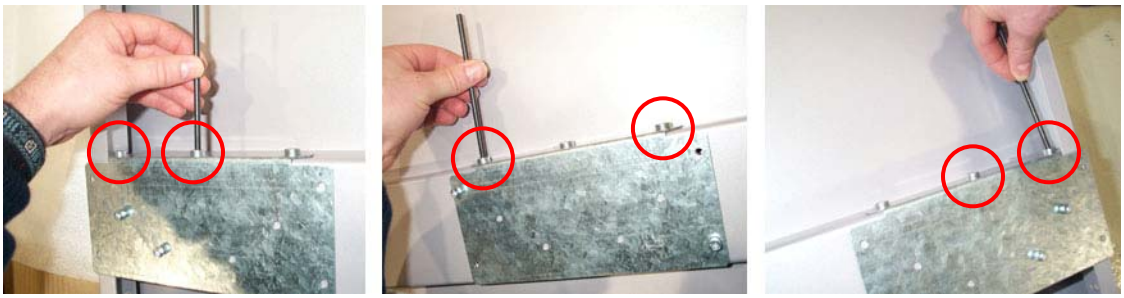


Figure 14: Marking the front panel holes with the jig

7. Remove the jig from the front panel.

8. Use a 7.5 mm drill bit to drill the six marked holes.

9. Using the rivnut application tool, insert M5 rivnuts into each hole.

4.5.2 Reworking the plenum panel

1. Attach the plenum drill jig (690-00485A) with the edges aligned as shown by the red dotted lines below. This jig has an orientation for left eject MCUs and one for right eject MCUs—make sure the jig is oriented correctly.

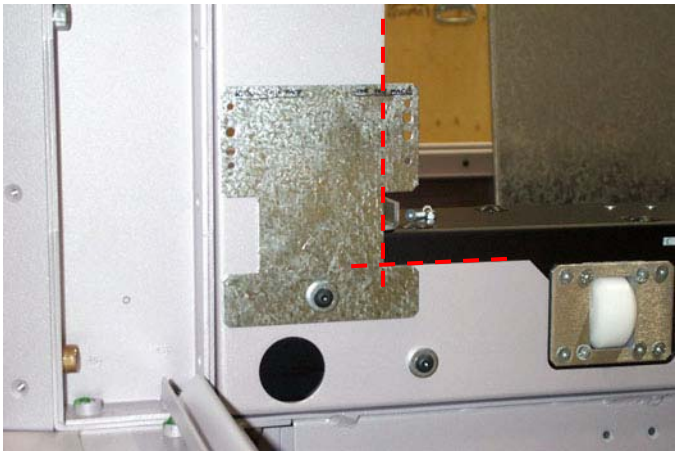


Figure 15: Plenum drill jig

2. Drill the two 3.1 mm holes (top and bottom).
3. Drill the two 4.2 mm holes (middle two holes).
4. Remove the drill jig and enlarge the 4.2 mm holes using a 7.5 mm drill bit.
5. Use the files from the tool kit to remove the material between the 7.5 mm holes. Remove all of the material and de-burr the edges.



Figure 16: Reworked plenum panel for cassette out sensor

6. Use the countersink tool to countersink the 3.1 mm holes on the inside of the plenum panel (inside the MCU). Only make the countersinks big enough for M3 flat head screws.
7. Drill a 13 mm (½ in.) hole in the panel as shown in Figure 17 (left picture). The cable for the cassette out sensor will pass through this hole.
8. Use the files to de-burr all sharp edges and insert a grommet into this hole.

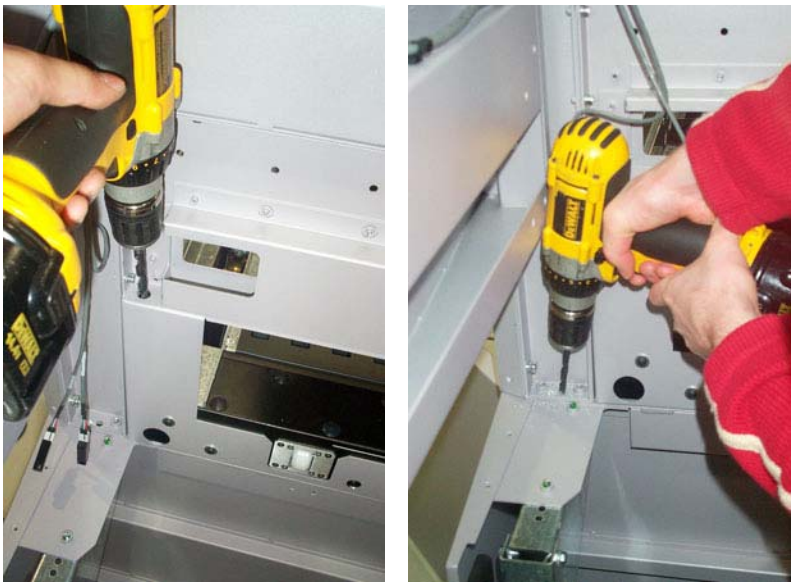


Figure 17: Plenum panel cable holes

4.5.3 Reworking the MCU body

1. Drill a 6.5 mm (¼ in.) hole between the upper and lower side panels as shown in Figure 17 (right picture). De-burr the hole edges with a file. The cable running from the shutter to the cart home sensor will pass through this hole.

4.6 Installing new components

4.6.1 Installing the shutter

1. Attach the shutter to the front panel using the two central rivet nuts and two PEM studs on the top of the panel.

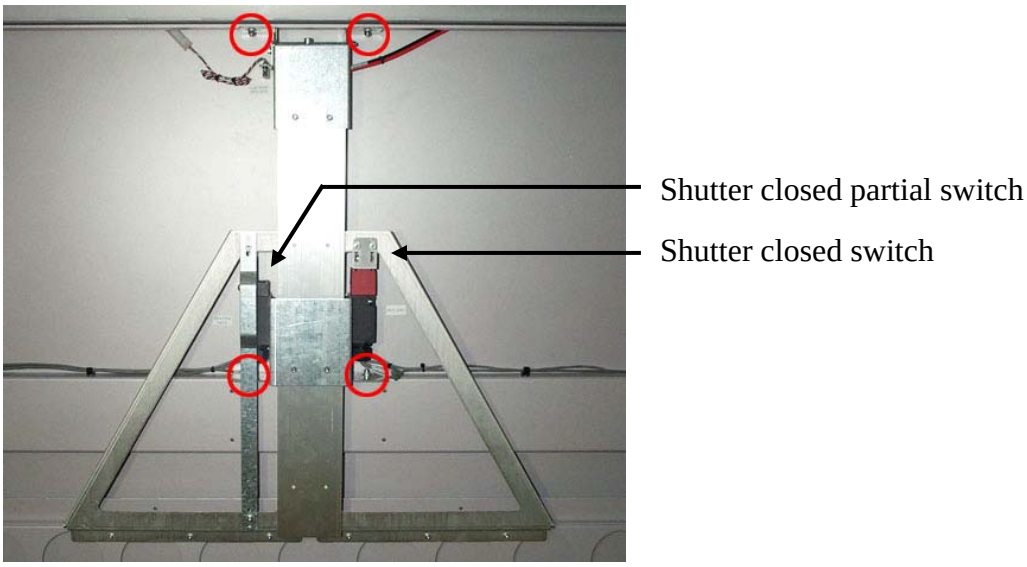


Figure 18: Installing the shutter

2. Connect cable 220-00296A to terminals 21 and 22 of the shutter closed Omron switch.
3. Connect cable 220-00313A to terminals 11 and 12 of the shutter closed Omron switch.
4. Connect cable 220-00441B to terminals 11 and 12 of the shutter closed Omron switch (together with cable 220-00313A).

Note: If you need to extend the length of these cables, trace them back towards the power box where some slack is present, cut the cable ties, and pull the cables through to the shutter assembly.

5. Connect cable 220-00441B to terminals 11 and 12 of the shutter closed partial Omron switch. Route cable 220-00441B as shown in Figure 19.



Figure 19: Shutter cables

6. Connect cable 220-01100A to terminals 13 and 14 of the shutter closed partial Omron switch (red wire to terminal 13 and black wire to terminal 14). Route this cable along the main cable path to the MCU power box to the GENINE 3 board
7. Unplug cable 220-00296A from J5 of GENINE 3. Insert the two pins from cable 220-01100A into pins 30 and 31 of the connector unplugged from J5.

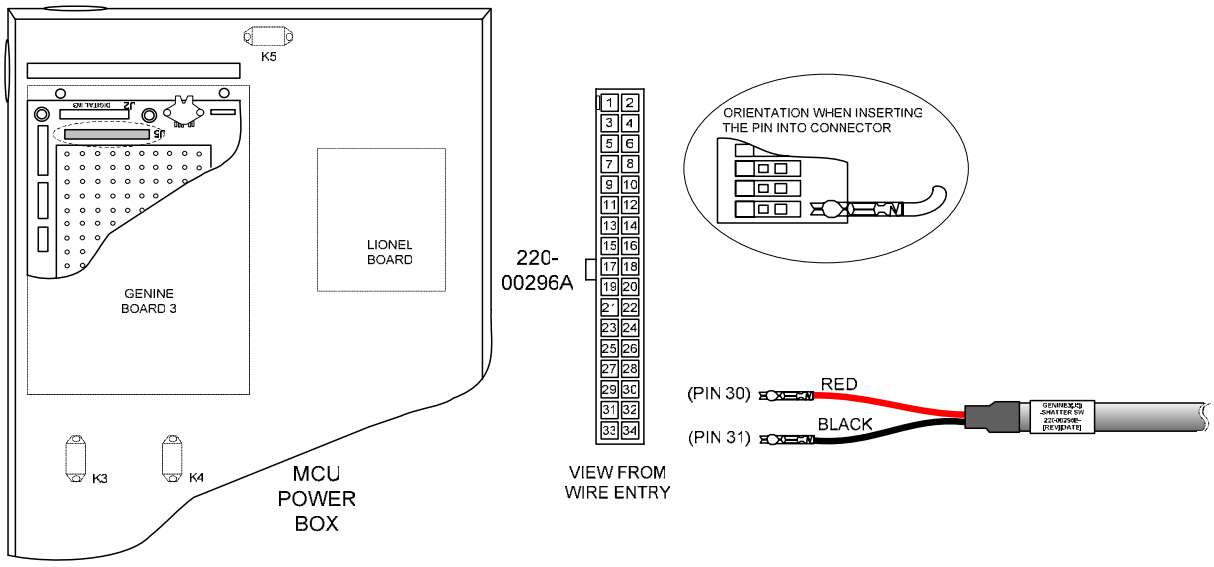


Figure 20: Cable 220-01100A connection

8. Use cable ties to secure cable 220-01100A to the cable bundle containing cable 220-00296A near to the connector at J5.
9. Plug the connector back into J5 on the GENINE 3 board.
10. Connect the pneumatic tubes to the shutter cylinder—black on top, red on bottom. Check that the tubes and cables do not interfere with the motion of the shutter.
11. Raise the shutter and hold it up with cable ties.

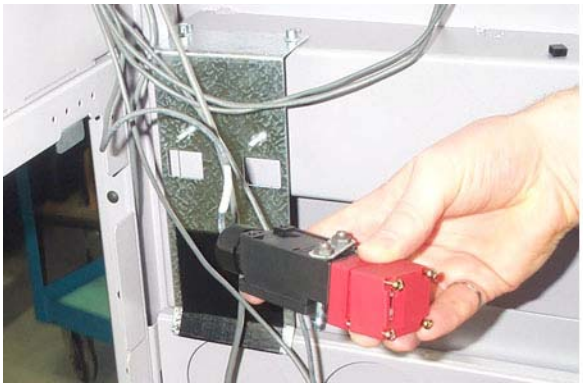
4.6.2 Installing the shutter guides and access door sensor

1. Attach the shutter guides to both sides of the front panel using the other rivet nuts added to the front panel.
2. Reorient the head of the access door switch.



Figure 21: Reorienting the access door switch

3. Add the access door sensor bracket and the sensor to the shutter guide on the service access door side.



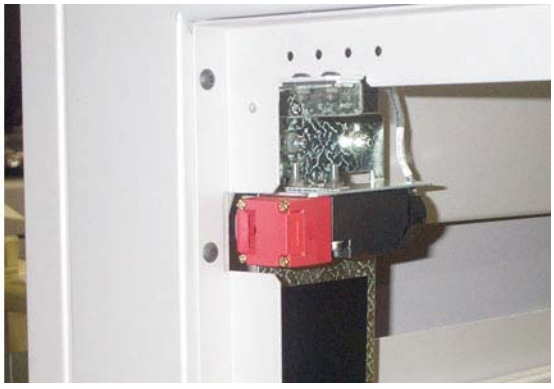
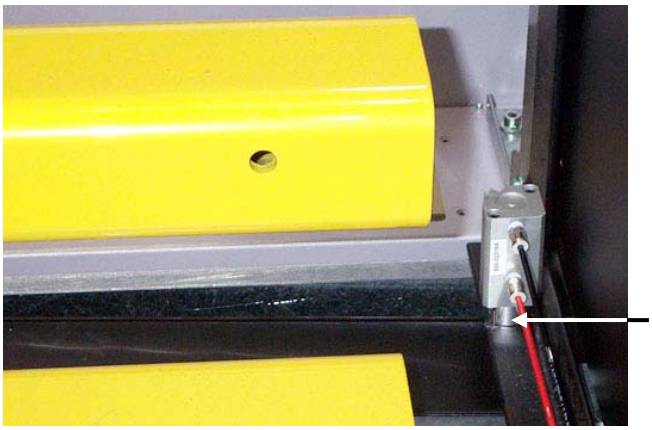


Figure 22: Installing the access door switch

4. Adjust the bracket and sensors as necessary to allow the shutter to move and the service access door sensor to engage properly with the key.

4.6.3 Installing the cart lock cylinders

1. Place the cart lock cylinder spacers over the end of the two lock cylinders.
2. Fit the lock cylinders in the holes in the MCU front frame and use M4x80 mm screws to secure the cylinders—orient the cylinders with the fittings pointed to the left.



3. Attach the pneumatic tubes to the lock cylinders.

4.6.4 Installing the floor panels

Fasten the new floor panels using three M6 screws and washers and one M5 screw and washer from the kit. Use the floor adaptor bracket to support the rear of the floor panels.

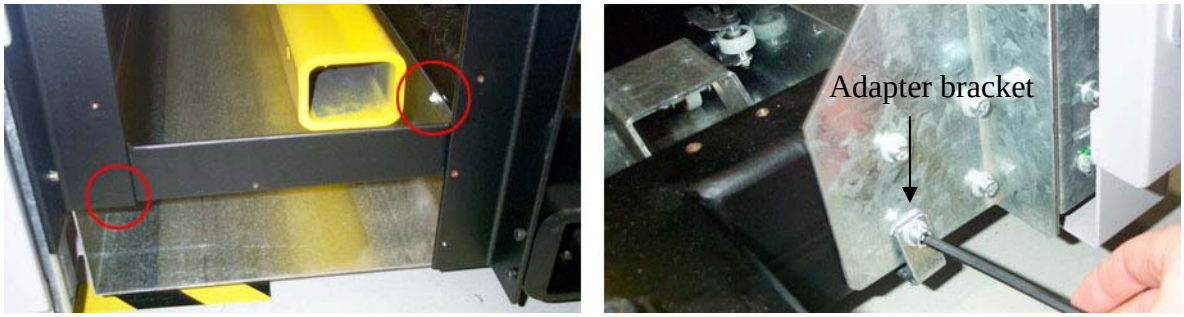


Figure 23: Installing the floor panels

4.6.5 Inserting the cart into the MCU

1. Roll the cart in place in front of the MCU.
2. Place the front rollers of the MCU on the floor panels and roll the cart part-way inside the MCU.

4.6.6 Installing the cart alignment and sensing kit

1. Mount the left and right hand cart alignment and sensing kits. The kits are oriented with the alignment rollers on the bottom and the rocker switches on top.

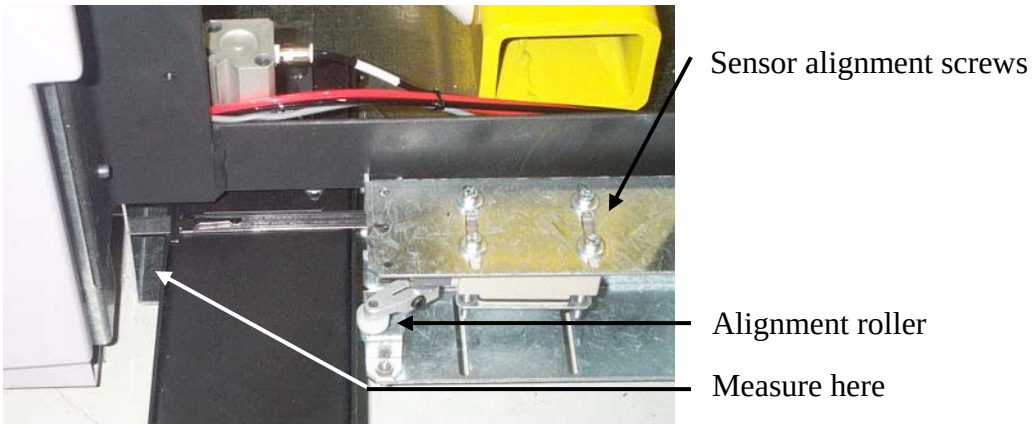


Figure 24: Home (left) alignment and sensing bracket

2. Attach the brackets to the MCU front frame. Do not over tighten these screws—the brackets should be allowed to slide to the left and right.
3. Connect cable 220-00314B to the 4-pin Minifit connector of 220-00441B at the back corner of the shutter.
4. Route cable 220-00314B through the drilled hole at the edge of the shutter to the cart home switch at the foot of the MCU.



Figure 25: Cable 220-00314B routing

5. Connect cable 220-00314B to terminals 11 and 12 of the cart home switch. Remove cable 220-00314A.
6. Transfer cable 220-00438A fork terminals from the old cart home switch to the new cart home switch—terminals 13 and 14.
7. Transfer cable 220-00438A fork terminals from the old cart park switch to the new cart park switch—terminals 11 and 12.

8. Use the cable ties to secure the cables. Ensure they are out of the way of all moving parts, for example, the shutter and the cassettes.

9. With the cart pushed in as far as possible but still having access, measure the distance between the cart legs (see Figure 24). Adjust the cart to be equal on both sides.

10. Adjust the bracket to take up the entire gap between the cart leg and the nylon roller. The roller should not spin freely. Note the orientations of the home and park switch actuator arms.

11. Roll the cart in and out for as much as the stroke as possible and repeat steps 9 and 10 one more time.

12. Use the long screws at the end of the bracket to push the alignment bracket into the cart frame. Adjust the left and right brackets to make sure the cart is centered. Use the nuts to lock these screws and bracket in place.

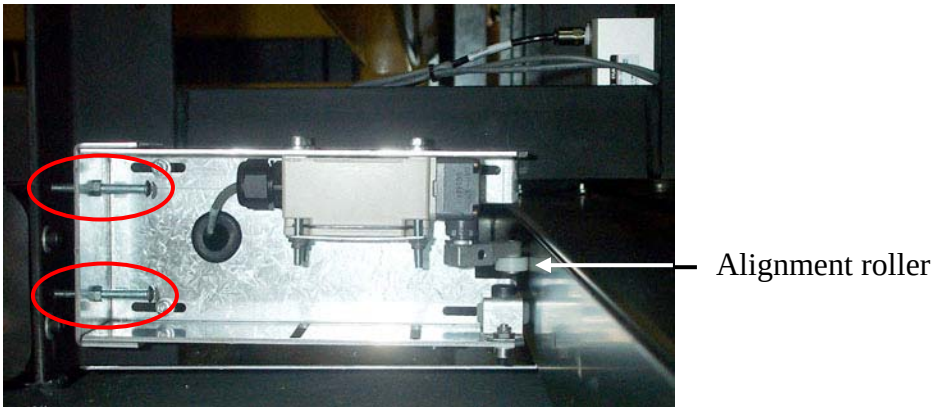


Figure 26: Park (right) alignment and sensing bracket

4.6.7 Installing the cassette guides and sensors

1. Feed the cassette out sensor through the grommet in the reworked hole in the plenum panel.

2. Attach the sensor to the plenum panel. Ensure the reflective sensor is not masked by the hole edges.



Figure 27: Cassette out sensor

3. Connect the right hand side (RH) and left hand side (LH) cassette on cart sensors.



Figure 28: Cassette on cart sensors and guide assemblies.

4. Install the cassette guide plate assemblies on both sides.

4.6.8 Installing the cassette support rollers

Note: If FCO CA06391 has not already been installed, then this is a good opportunity to do it. See the FCOs page for details.

1. Attach the cassette support rollers to the MCU front using screws from the kit. Align the face of the angle roller with the angle rollers on the MCU forks (the screws will be tight; so some fiddling may be required).



Figure 29: Installing and aligning the cassette support rollers

4.6.9 Installing the shutter seat and cassette latch actuator

1. Place the cassette seat on the MCU front frame and install the outer most screws.
2. Install the cassette latch actuator assembly—set the slots to the mid-point.



Figure 30: Cassette latch actuator assembly

When the shutter is closed, it must not block either of the cassette on cart sensors—the sensor must look into the gap between the front and back shutter panels. If necessary you can add shims or washers to the shutter seat to fix this.

4.6.10 Connecting the cart lock cylinder tubes

1. Connect pneumatic tubes from the manifold to the Y-connectors attached to the cart lock cylinder tubes. Trim the manifold tube lengths as needed.

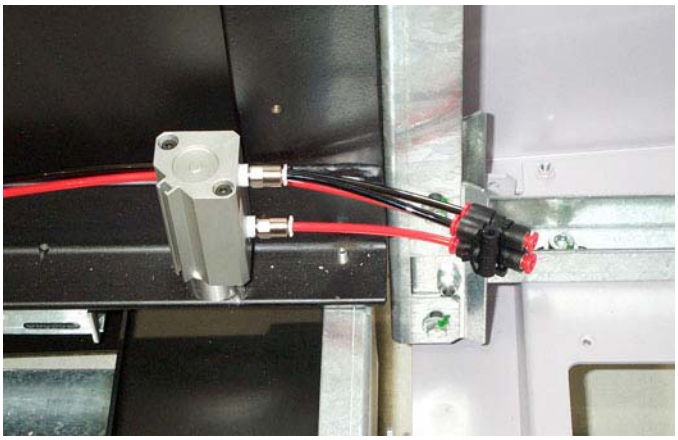


Figure 31: Cart lock cylinder tubes

4.7 Final checks

Before turning on the MCU power, check all the new components for interferences (like the cable ties holding the shutter open) and resolve them. Check all old components for interferences (like the SSR unit raised on the SSR bin) and resolve them.

If the imaging device is operating in CL mode, it must be returned to MCU mode and the customer must stop using the device until the upgrade is complete.

4.7.1 Turning on the power

1. Turn the power and air to the MCU on.
2. Enable the FPL MCU in firmware. Type:

   `>>hwconfig` . Note this value and add it to the number next to the new MCU cart

   `>>set mhauto hardwareconfig <total value>`

4.7.2 Aligning the cart

1. Refer to the document *Multi-Cassette Unit Setup Procedure For Flush Plate Loading MCUs* to adjust the height of the cart, to set the cart rolling alignment, and to set the cassette latch (Creo part number 719-00357B).
2. Set the position of the strike blocks to the middle position of the slots on the bracket.

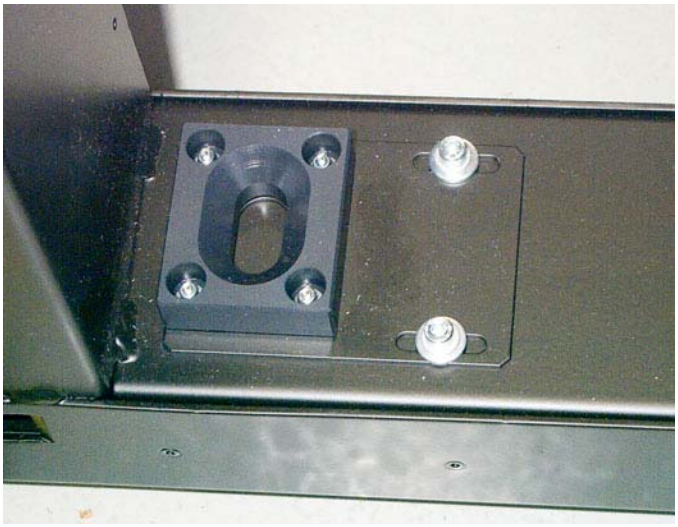


Figure 32: Aligning the cassette strike blocks

3. Lock the cart in the home and park position and adjust the strike blocks as necessary. Type `>>cassette cartpin down` .
4. Push the cart to the home position. The shutter seat on the cart should line up with the shutter seat on the frame. If the cart moves too far into the MCU, extend the damper. If it does not move far enough into the MCU, retract the damper. Be sure to lock the damper in place with the locking nut.

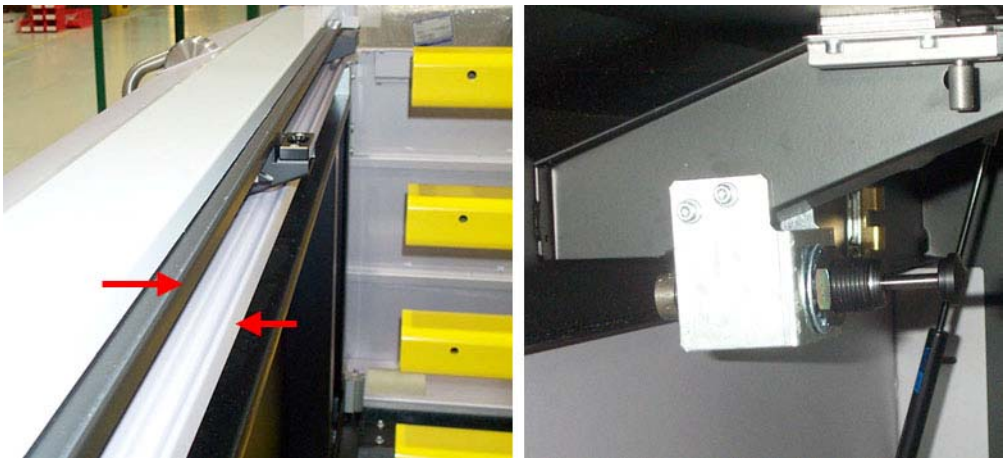


Figure 33: Aligning the shutter seats

5. Check the position of the cassette latch bolts. With the cart pushed fully in, they should be pushed back out of the way of the cassette without preventing the cassette from moving fully in. Adjust the cassette latch actuator brackets as necessary.

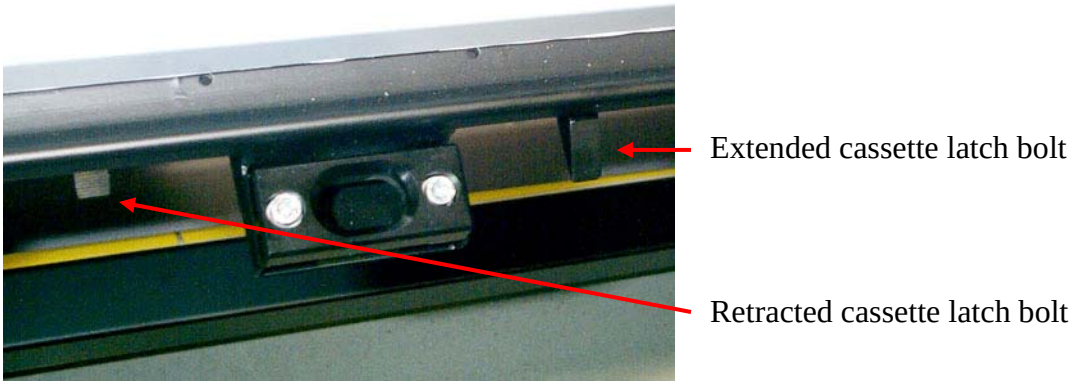


Figure 34: Adjusting the cassette latch bolt position

4.7.3 Aligning the cassette ejector

1. Adjust the height of the cassette lock-eject mechanism so that the top of the ejector is 11-12 mm above the bracket holding it to the MCU.

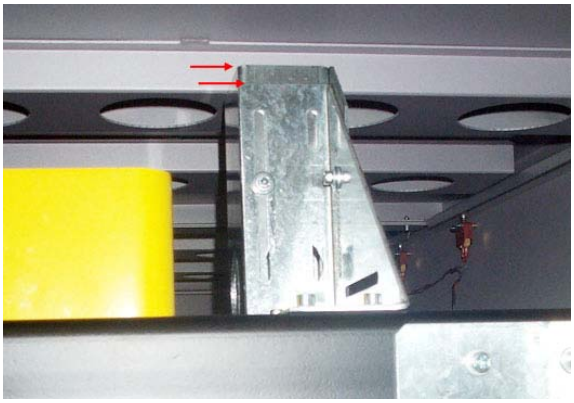


Figure 35: Aligning the cassette lock-eject mechanism

2. Move the forks to the unload position using one of two ways:

   Use the manual jog buttons to drive the forks so that the cassette rollers and the cassette support roller line up.

   Type `>>cassette move unload <up|down|dn>` (if this times out, repeat the command).

3. Move the cart to the park position. Type:

   ```
   >>cassette cartpin up
   >>cassette door open
   ```

4. Pull the cart out. Type:

   ```
   >>cassette door close
   >>cassette cartpin down
   >>cassette door open
   ```

5. Disable the cassette lock with a T-handle hex key by holding the latches back and inserting the T-handle through the hole in the frame.

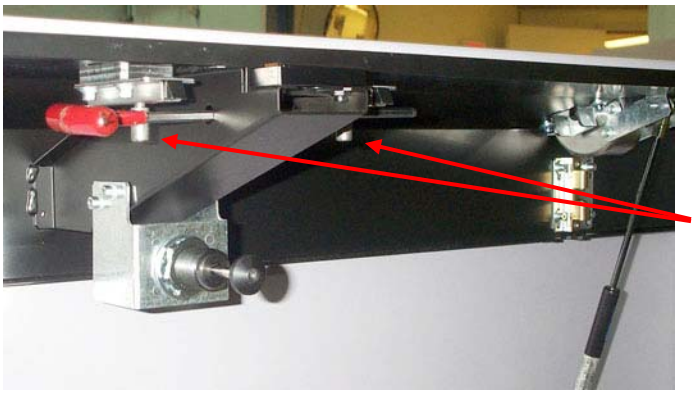


Figure 36: Disabling the cassette latch actuator

6. With the aid of a helper (or three helpers), place a cassette on the cart. The cassette pin must fit into the cassette pin receptor and the v-guides on the bottom of the cassette must fit into the cassette rollers.

7. To push the cart in, type:

   ```
   >>cassette door close
   >>cassette cartpin up
   >>cassette door open
   ```

8. Push the cassette into the MCU by moving the cart to the home position.

9. To lock the cassette, type:

```
>>cassette door close
>>cassette cartpin down
```

10. Adjust the ejector bracket to the mid point of the roller.

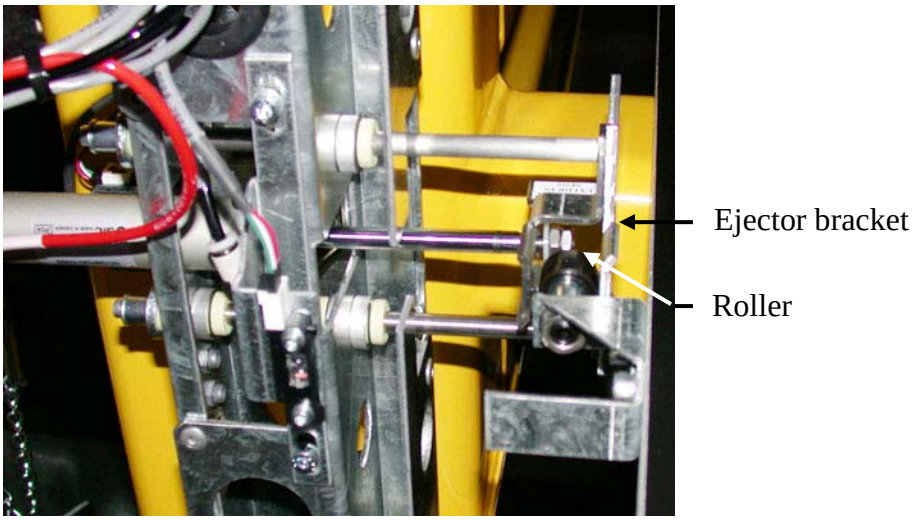


Figure 37: Ejector bracket

11. Add spacers and washers to the ejector rods to reduce the cassette eject distance so that the cassette does not hit the door. Apply Loctite 609 when reinstalling the ejector rod screws—use flat-head screws only. To eject or lock the cassette lock/eject mechanism, either use the solenoid on the MCU manifold, or type:

```
>>cassette casseject
>>cassette casslock
```

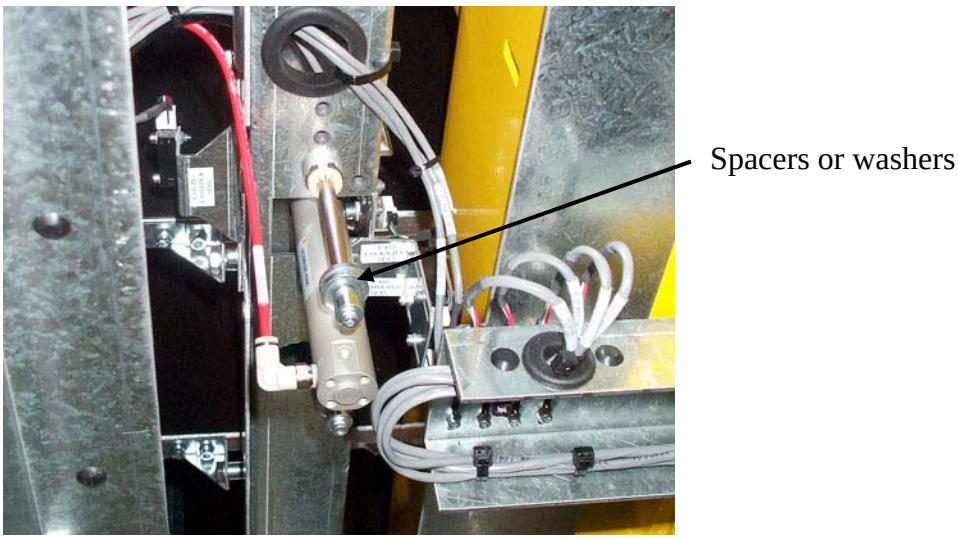


Figure 38: Adjusting the ejector rod length

12. To pull the cassette and cart out to the fully out position, type:

```
>>cassette cartpin up
>>cassette door open
```

13. Pull the cart fully out. To lock the cart, type:

```
>>cassette door close
>>cassette cartpin down
```

4.7.4 Adjusting and checking the sensors

1. Check the cart park and cart home sensors. Type:

```
>>cassette cartpin up
>>cassette door open
```

2. Move the cart to the park position.

3. Type `>>scan mcu_s` . The sensors should read as follows:

   MCU_SensorCartPark **1 -** if not, make sure the switch is adjusted and the wiring is correct.

   MCU_SensorCartHome **0 -** if not make sure the cart alignment and sensing bracket is adjusted correctly. The nylon alignment roller must be in contact with the cart leg. The actuator roller arm on the home switch must be pointed towards the operator.

4. Move the cart to the home position.

5. Type `>>scan mcu_s` . The sensor should read as follows:

   MCU_SensorCartPark **0 -** if not make sure the cart alignment and sensing bracket is adjusted correctly. The nylon alignment roller must be in contact with the cart leg. The actuator roller arm on the park switch must be pointed away from the operator.

   MCU_SensorCartHome **1 -** if not make sure the switch is adjusted and the wiring is correct.

6. Check the shutter sensors. The shutter has three positions: closed, closed partial, and open. With the cart in the fully out position, check the cassette door open sensor. Adjust the sensor so that there is no contact between the sensor and the cassette door mechanism. Type:

```
>>cassette door open
>>scan mcu_s
```

   The door should move up and the following sensors should read as indicated:

   MCU_SensorCassetteDoorOpen **1 -** if it does not adjust the position of the sensor.

MCU_SensorCassetteDoorClosed **0 -** if it does not check the wiring to the sensor.

MCU_SensorCassetteDoorClosedPartial **0 -** if it does not check the wiring and the adjustment.

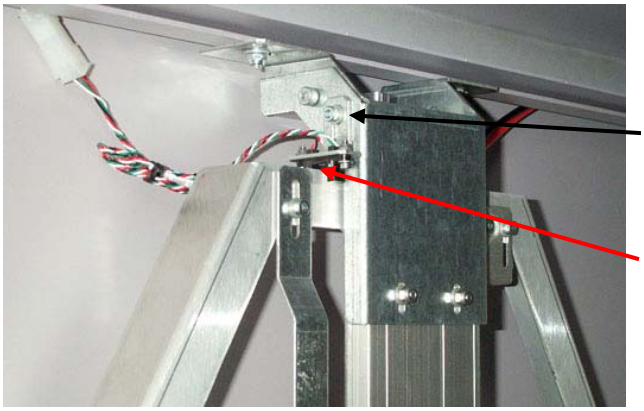


Figure 39: Cassette door open sensor

7. Type `>>safety` . The safety loop should be off. If it is not, adjust the cassette door closed and cassette door closed partial sensors and check the wiring to the sensors.

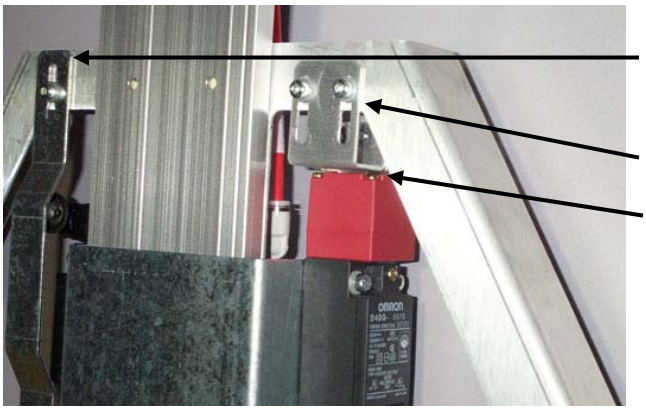


Figure 40: Cassette door closed and partial closed sensor

8. Check the cassette door closed sensor, type:

```
>>cassette door close

>>scan mcu_s
```

The door should close and the following sensors should read as indicated:

MCU_SensorCassetteDoorOpen **0 -** if not check the wiring and make sure the sensor works.

MCU_SensorCassetteDoorClosed **1 -** if it does not check the wiring to the sensor.

MCU_SensorCassetteDoorClosedPartial **1 -** if it does not check the wiring and the adjustment.

9. Type `>>safety` . The safety loop should be on.

10. Check the cassette door partial close sensor, type `>>cassette door open` .

11. Move the cart to the home position. Type:

```
>>cassette door close

>>cassette cartpin down

>>scan mcu_s
```

The door should close down to the cart and the sensors should read:

MCU_SensorCassetteDoorOpen **0** - if not check the wiring and make sure the sensor works.

MCU_SensorCassetteDoorClosed **0** - if it does not check the wiring to the sensor.

MCU_SensorCassetteDoorClosedPartial **1** - if it does not check the wiring and the adjustment.

12. Type `>>safety` - the safety loop should be on.

13. Set and check the cassette on cart sensors. With nothing blocking the cassette on cart sensors type `>>scan mcu_s` .

14. Check that the following sensors read as indicated:

MCU_SensorCassetteLockedCart1 **0** - if not, check that the sensor is wired correct and working.

MCU_SensorCassetteLockedCart2 **0** - if not, check that the sensor is wired correct and working.

15. Place a straight edge on the cassette support and raise the flag on each side. Adjust the cassette on cart sensors so the sensor is just blocked by the flag.

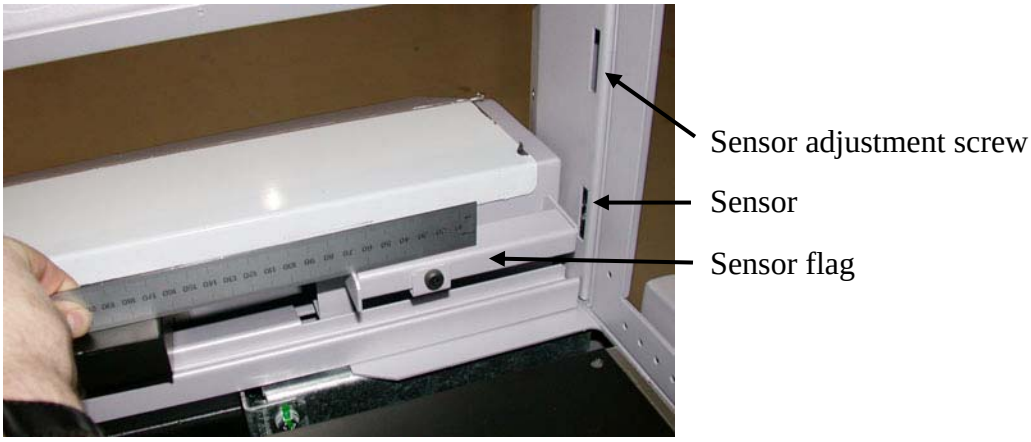


Figure 41: Adjusting the cassette on cart sensors

16. With a cassette on the cart, type:

```
>>cassette cartpin up
>>cassette door open
```

17. Move the cart to the home position and type:

```
>>cassette door close
>>cassette cartpin down
>>cassette door open
>>scan mcu_s
```

18. Check that the following sensors read as indicated:

MCU_SensorCassetteLockedCart1 **1** - if this = 0 adjust the cassette on cart sensor 1 (it is the one on the right hand side of the MCU) until it reads 1.

MCU_SensorCassetteLockedCart2 **1** - if this = 0 adjust the cassette on cart sensor 1 (it is the one on the left hand side of the MCU) until it reads 1.

19. Check the cassette out sensor. Block the sensor and type `>>scan mcu_s`

MCU_SensorCassetteOut should read 1 - if not check that the sensor is connected and working properly.

4.7.5 Installing the front guard panel

Note: This panel must be installed—the device is not safe with out it in place.

1. Place the guard panel in place and insert the eight screws provided in the kit.



Figure 42: Installing the guard panel and alignment covers

2. Lower the guard panel so that it sits on the floor and tighten the screws.
3. Adjust the cassette alignment assembly covers so that they clear the cassette legs by approximately two millimeters.