Magnus VLF

MCU to APL Upgrade

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Revision History

Revision	Date	Author	Comments
1	08 Nov 2006	A.Blignaut	First draft
2	06 Mar 2007	A.Blignaut	Procedure added for E-stop switch relocation. Vacuum hose rerouting procedure updated.
3	10 Apr 2007	A.Blignaut	Some small changes from Przemek L.
4	27 Apr 2007	A.Blignaut	Added canbus terminator info
5	06 Feb 2008	A.Blignaut	Made some changes and additions resulting from recent feedback from Vince B.
6	26 Mar 2008	A.Blignaut	Added procedure for relocating the safety switches. Other minor edits. Also added installation instructions for the APL to GMCE cable.

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1. OVERVIEW

This document describes the procedures needed to upgrade a Magnus VLF MCU device to a Magnus VLF with Automatic Pallet Loader (APL). To allow for side access when removing and installing the fetcher track, perform the Magnus upgrades before assembling the APL.

The lists below show which procedures must be done depending on the configuration of the Magnus VLF device.

Left eject configurations:

- Replace the fetcher and fetcher track
- Relocate the engine manifold to the rear
- Relocate the safety switch bracket
- Reroute the drum vacuum hose to the home side
- Replace the home and away side interface panels

Right eject configurations:

- Replace the fetcher and fetcher track
- Relocate the safety switch bracket
- Reroute the chiller hose to the away side (TH3 only)
- Replace the away side interface panel

2. PARTS/TOOLS

Determine which kits are needed according to the eject orientation of the device and the type of thermal head installed.

Right eject devices	• Fetcher upgrade kit Air supply tubing and fittings(T & Y-fittings, elbow) Fetcher Fetcher track Interface panel • Chiller hose kit (TH3 only) Power cable extension Data cable extension Interface panel • Interface panel kit Interface panel Ground wire Canbus terminator (220-00477A)
Left eject devices	• Fetcher upgrade kit • Engine manifold/regulator kit • Drum vacuum hose kit • Interface panel kit

Tools:

Drill

Drill bit 3.3 mm

M4 x 0.7 tap

MCU slip sheet bin jacks

Automatic center punch

3. REFERENCE DOCUMENTS

Safety Switch Relocation document – 518-02279A

4. UPGRADE PROCEDURES

Before starting with the upgrade, it is a good idea to do a NVS backup of all parameters.

4.1 Replacing the fetcher and fetcher track

The fetcher and fetcher track must be replaced for use with the APL. This procedure assumes that the front hood is raised, the device power is turned to **OFF,** and the compressed air supply is turned to **OFF**. The procedure is written for a right eject device, but will be similar for a left eject device where the fetcher motor will be on the home side.

4.1.1 Removing the old fetcher

On the home side of the device:

1. Remove the slip sheet removal SSR unit, the SSR bin, and the front and back SSR access doors from the device.
2. Remove the SSR access panel sensor. On a left eject device, the panel sensor can only be removed later on.

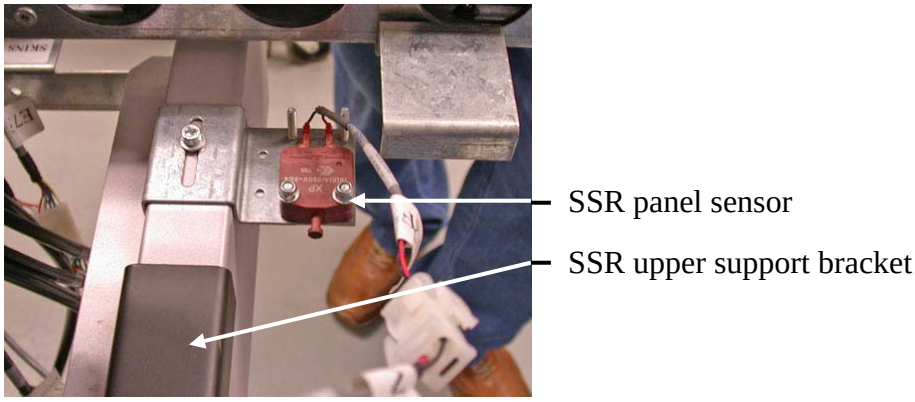


Figure 1: Removing SSR components

3. Remove the upper black SSR support bracket (black U-channel).
4. Remove the lower SSR bracket (black U-channel).
5. Remove the shoulder panel—disconnect the E-stop switch cable.
6. Disconnect the two sensor cables located on the fetcher track.
7. Disconnect the SSR User Interface cable—this cable will not be connected again.
8. Disconnect the three fetcher cables that come from the fetcher's flexible track (E73, E74, and E75).

9. Cut the cable ties that secure the fetcher's tubes and cables from the flexible track to the lower MAB.



Figure 2: Removing fetcher tubes and cables

On the away side of the device:

10. Remove the bridge table (loosen eight screws).
    Upgrading the fetcher can be done without removing the bridge table, but the access is better with the table removed.

11. Remove the fetcher motor cover (one screw).

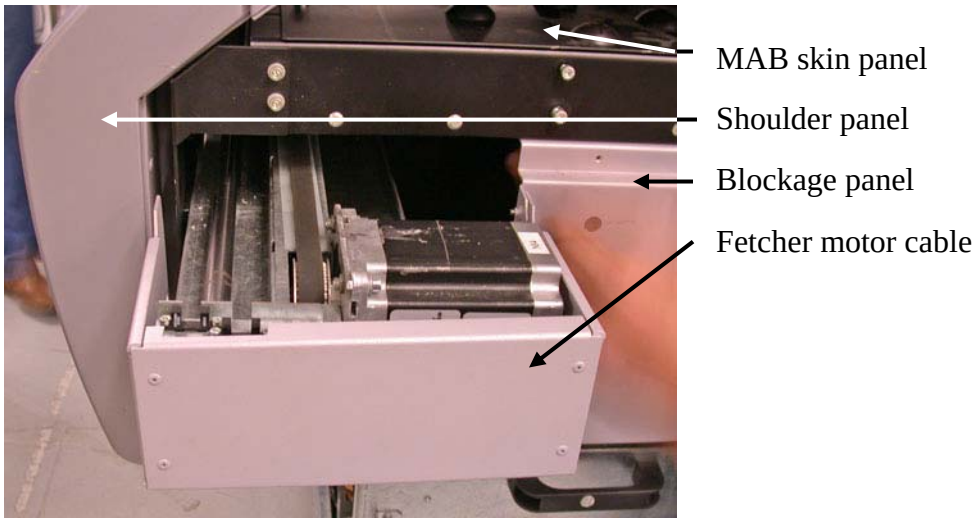


Figure 3: Removing away side components

12. Remove the shoulder panel (two front screws) — remember to disconnect the E-stop cable connector when lifting the shoulder panel off.

13. Remove the two black MAB skin panels.

14. Remove the blockage panel P55.

15. Remove the black bridge support bracket C21 (eight screws). Take care not to loose the spacer bracket where C21 mounts to the fetcher track.

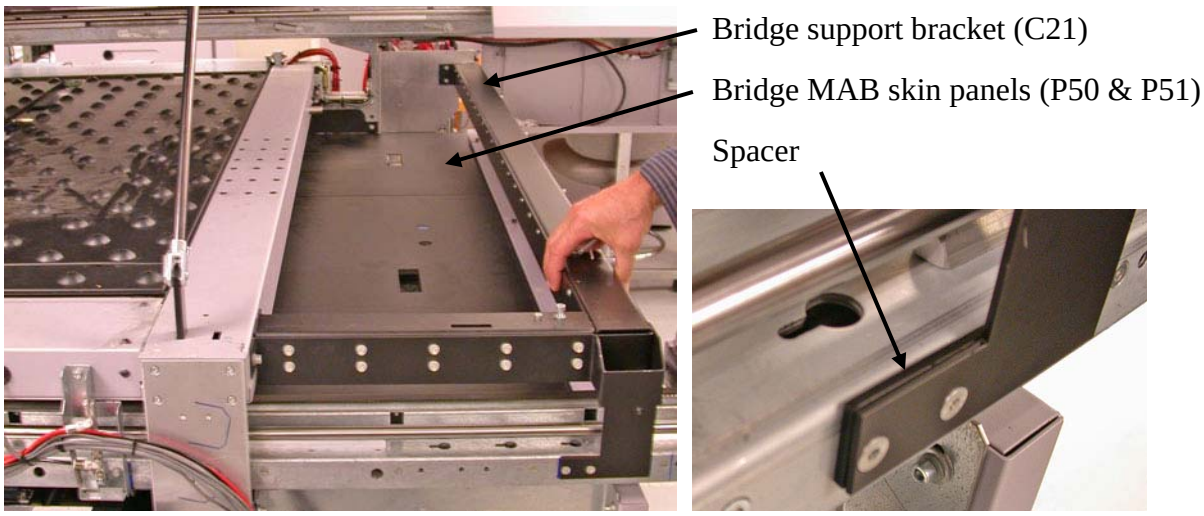


Figure 4: Removing the bridge support bracket

16. Remove the bridge panel P49.
17. Remove the screw that secures the fetcher motor ground strap (E17) to the underside of the fetcher track.
18. Remove the fetcher:

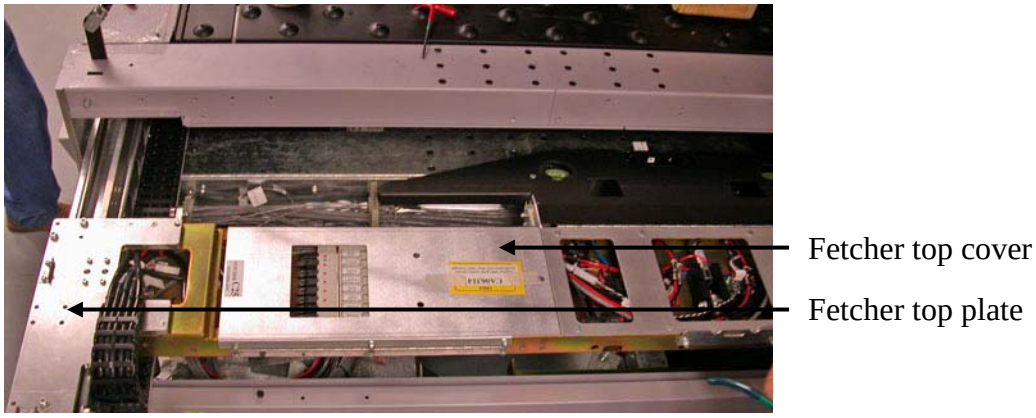


Figure 5: Removing the fetcher

a. Disconnect the fetcher top plate from the fetcher (six screws).
b. Open the fetcher top cover to access the fetcher tubes and cables.
c. Disconnect the manifold interface cable and cable clamp. Disconnect the other two connectors located under the top plate.
d. Disconnect the two tubes from the flexible track.
e. Remove the fetcher top cover and install it on the new fetcher.

f. With the aid of a helper, remove the fetcher from the device.

On the front of the device:

19. Remove the front chin panel (two screws on either side). If the location of the chin panel brackets is not marked on the MAB support brackets, mark them before removing the chin panel.

20. Cut all cable ties loose that secure the wiring harness to the front of the fetcher track.

21. Disconnect the pullout table lock assembly tubes. If the cylinder fittings are not marked for red and black, mark them before disconnecting the tubes.

22. Remove the two pull-out table lock assemblies C65 (home side shown).

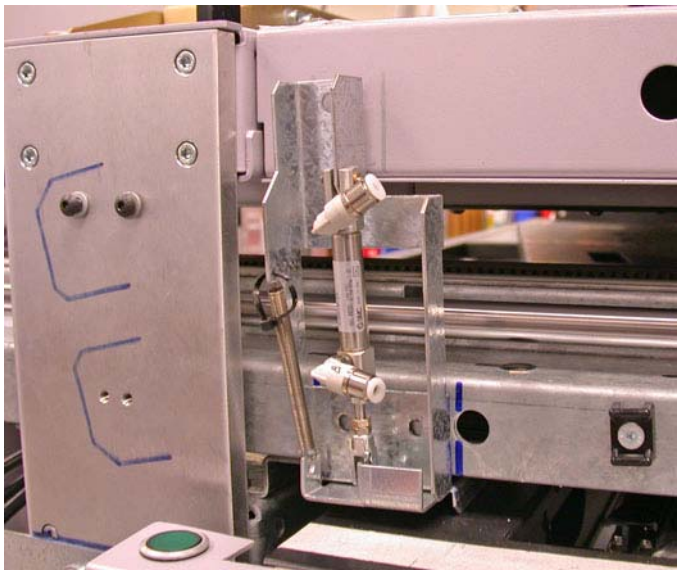


Figure 6: Removing the pull-out table lock assemblies

23. Disconnect cables E20 and E19 on the away side front.

24. Remove the screws on the underside of the fetcher track that secure the fetcher track to the MAB via brackets (two screws per side). The fetcher track will now be loose from the device.

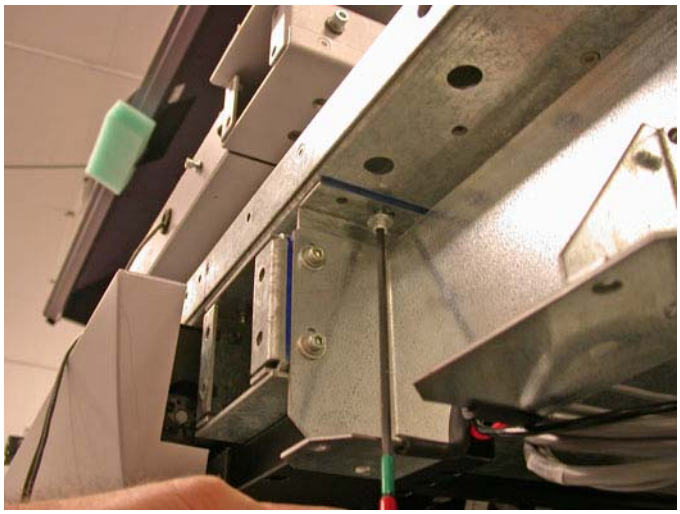


Figure 7: Removing the fetcher track screws

25. Check that all cables or tubes have been disconnected from the fetcher track and remove the fetcher track out the side of the device (usually the side where the APL will be assembled after the upgrade).

4.1.2 Installing the new fetcher

1. From the side of the device, install the new fetcher track with the motor on the away side (right eject devices). If you insert the fetcher with the motor side first, take care not to damage the fetcher away sensors—alternatively you can remove them to avoid damaging them. Secure the track with the screws removed earlier (two screws on the away side and two on the home side). See Figure 7.

Note: On the mounting bracket, use the two holes closest to the device to secure the fetcher track and push the track towards the device when tightening the screws.

2. Install the new fetcher C52. Put the front side of the fetcher in under the fetcher top plate first and then put the rear side of the fetcher in place.

3. Attach the top plate to the fetcher (six screws). See Figure 5.

4. Connect the manifold interface cable and secure the cable with the cable clamp. The connecter does not have clips to hold it in place and must be held by the clamp.

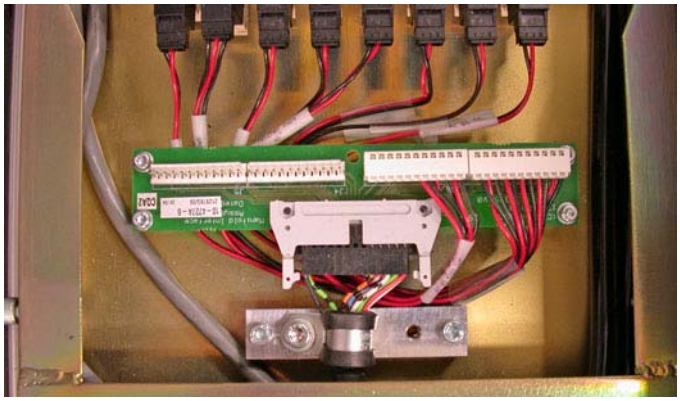


Figure 8: Connecting the manifold interface cable

5. Connect the other two cables and the two tubes to the fetcher (under the top plate). The two black tubes are interchangeable and can be connected to either fitting on the fetcher.

6. Connect the fetcher motor cable and the two sensor cables. Insert and tighten the motor cable ground screw on the underside of the fetcher track.

7. Make sure that the rollers on the end of the fetcher are adjusted all the way down. Roll the fetcher to the home side of the device and check that the movement is smooth and unrestricted. The gap between the lowest point of the underside of the fetcher and the table should be approximately 5 mm (0.2 in.).

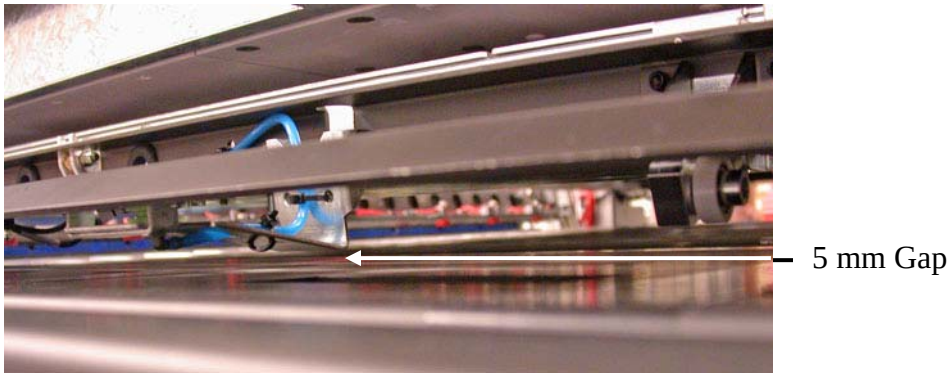


Figure 9: Checking the fetcher to table gap

8. Install the pull-out table lock assemblies C65:

   a. The long pin on the assembly must be pointing to the middle of the device or towards each other as shown in the photo.



Figure 10: Pull-out table lock assemblies

   b. Bend the brackets closed so that the angle is a little less than 90° before installing them.

   c. Tighten the top screw first, then push the bottom of the bracket in and upwards while tightening the two lower screws. This will ensure that the bracket is flush with the bottom of the fetcher track to avoid interference with the fetcher.

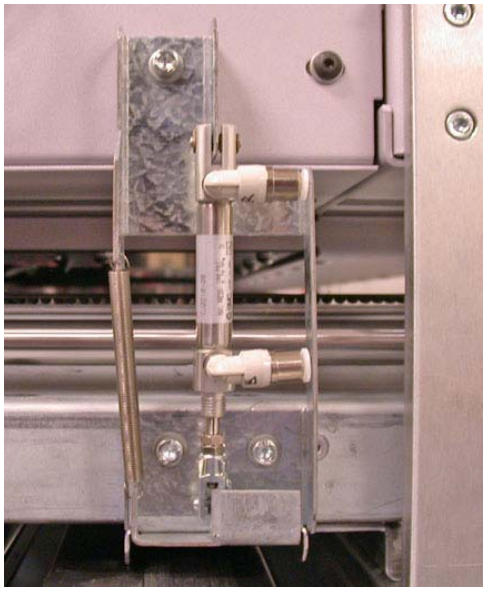


Figure 11: Installing the away side pull-out table lock assembly

9. If they are not already installed, attach the cable tie holders to the front of the fetcher track at approximately 457 mm (18 in.) intervals—use the existing holes in the fetcher track.

10. Starting at the away side, secure the fetcher harness to the front of the fetcher track:

    a. Connect the red and black tubes to the two pullout table lock actuators.

    b. Use cable ties to secure the harness. Make sure there is enough slack at the MAB support brackets so that the harness can pass through between the chin panels mounting points. Also, at the away side table lock assembly, secure the harness to the same hole as the top of the spring.

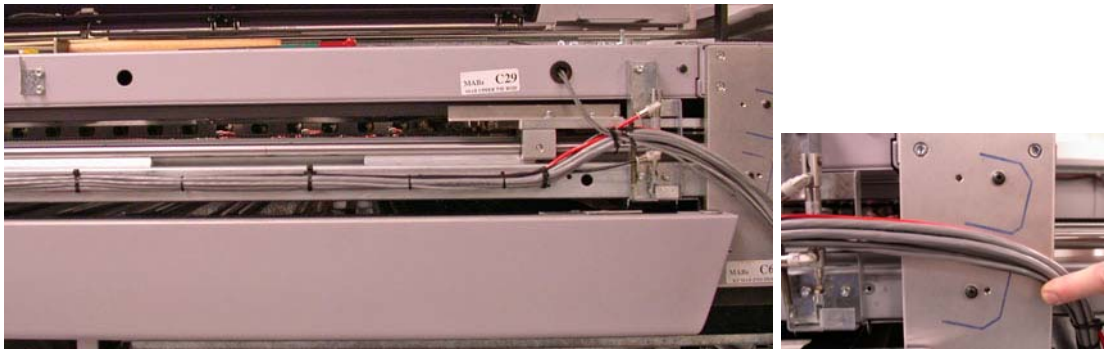


Figure 12: Securing the cable harness

    c. Check that the table lock tubes are not pinched or under stress.

On the home side of the device:

11. On the fetcher track, connect the two sensors cables and three fetcher cables.

12. Secure the two fetcher tubes and three cables from the flexible track to the lower MAB with cable ties.



Figure 13: Securing the home side fetcher tubes and cables

13. Connect the two tubes to the Y-fitting from the device.

14. Install the fetcher track cover.

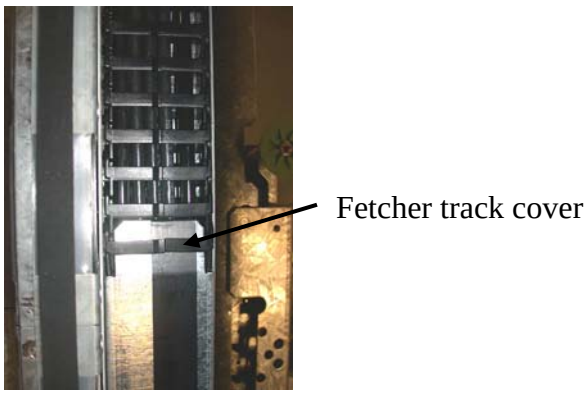


Figure 14: Fetcher track cover

15. Install the fetcher sensor bracket on the APL side of the fetcher track.

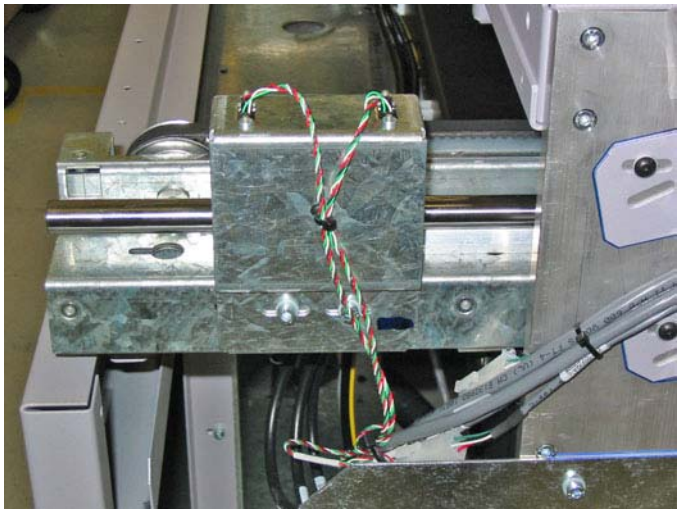


Figure 15: Fetcher home sensor bracket

16. Connect the home sensor (the sensor closest to the APL).The fetcher safe home sensor is not used on APL devices. The sensor cables are coiled together with the fetcher cables inside the device near the rear of the power box. Route the cables under the front chin panel.

17. Adjust the position of the sensor bracket so that when the fetcher trips the home sensor, it is 2 to 3 mm away from the APL shutter. This is the fetcher home position.

On the away side of the device:

18. Install the bridge support bracket:
    a. Install the bracket but only finger tighten the screws until all the screws are in place. See Figure 4.
    b. Insert the spacer between the fetcher track and the bridge support bracket and finger tighten the screws. See Figure 4.
    c. Tighten all the screws that secure the bridge support bracket.
19. Install the two MAB skin panels P50 and P51 (black panels). See Figure 3.
20. Install the front blockage panel P55 (gray panel). See Figure 3.
21. Install the fetcher motor cover P54. See Figure 3.
22. Check that all cables and tubes are connected before proceeding.
23. Install the bridge panel P49. See Figure 4.
24. With the aid of two helpers, install the bridge:
    a. With the bridge table up, two people must place the holes on the bridge mounting bracket over and down onto the screws on the device. The third person must tighten the lower screws to hold the bridge in place.
    b. Lower the bridge table and tighten the upper screws.
    c. Connect the bridge cables E36 and E37.

Elsewhere on the device:

25. Install the front chin panel—the panel slides down from the top over the hooks on the fetcher track. Make sure that the fetcher harness is between the chin panel mountings. Secure the chin panel with two screws on either side.

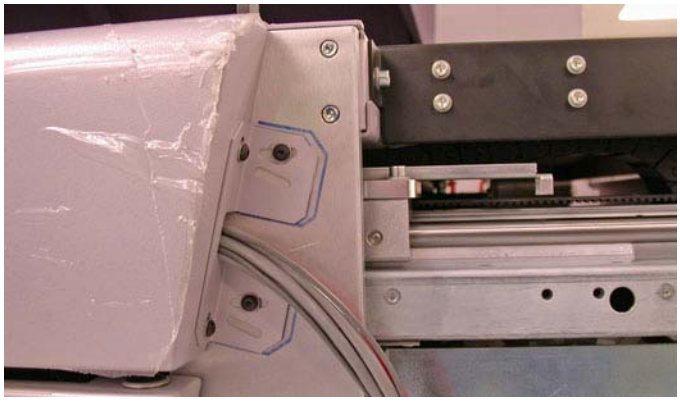


Figure 16: Installing the front chin panel

26. Install the away side shoulder panel and connect the E-stop cable at the rear of the device. The shoulder panel is held in place with two screws on the front underside of the panel.

27. Remove the SSR supporting bracket from the home side shoulder panel.

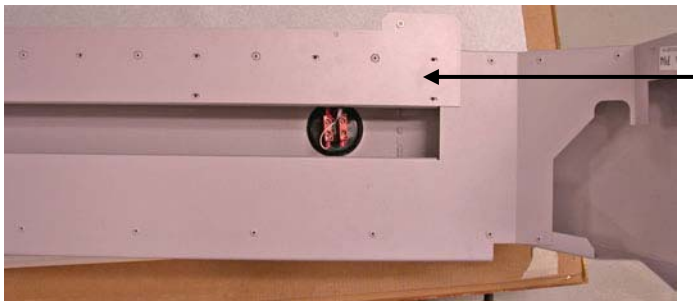


Figure 17: Removing the SSR supporting bracket

28. Install the home side shoulder panel and connect the E-stop cable at the rear.

4.2 Removing and relocating the rear E-stop switches

This upgrade is for left eject devices only. The purpose of this procedure is to remove the away side E-stop switch (ES7) on the rear engine casting and to relocate the home side E-stop switch (ES6) to accommodate the relocation of the manifold assembly in the next section.

This procedure assumes that ES6 is on the right (home side) and ES7 is on the left, but on some devices they may be reversed. The switch on the left must be removed to accommodate the new manifold mounting position.

1. Open the rear hood and remove the rear panels and the right side panels.
   The two existing rear panels will be replaced by a single full length panel #518-02290A, the rear right side corner panel is replaced with panel #500-00420C, and the front right side panel is replaced with panel #500-00376B.
2. Remove and discard the rear center bracket. The screws from this bracket will be used later to hold the manifold template in place.
3. Remove the two E-stop switch brackets (ES6 and ES7) from the engine casting at the rear of the device.

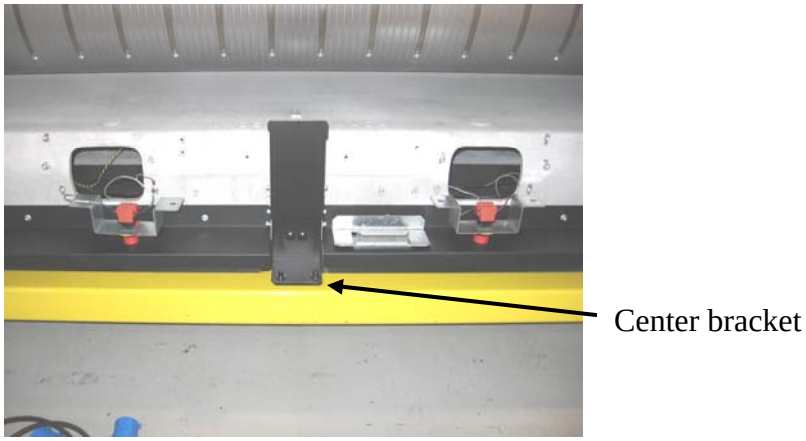


Figure 18: Removing the E-stop switch brackets

4. At ES7:

   Disconnect cable (220-00331B) from ES7 (on older devices, this may be a version A cable).

   Disconnect cable 220-00325A from ES7 and remove ES7 completely.

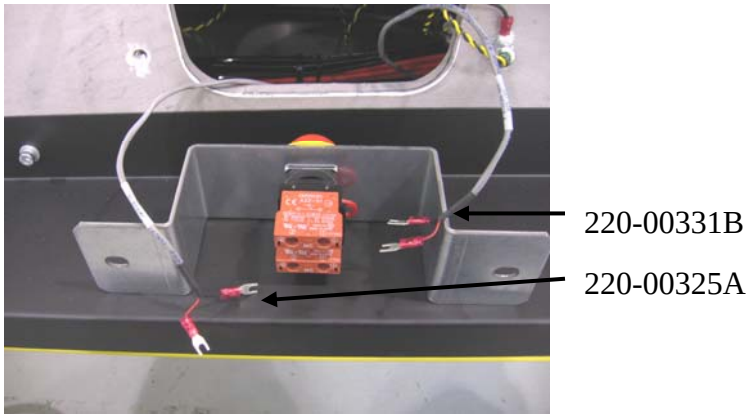


Figure 19: Removing ES7

5. Route cable 220-00325A through the engine casting to ES6. If the cable is not long enough, you may need to cut some cable ties or reroute the cable to allow it reach ES6.

6. At ES6:

   Disconnect cable 220-00331B from ES6 and remove the cable completely (this cable was between ES6 and ES7).

   Connect cable 220-00325A to ES6 where cable 220-00331B was removed. Connect the red wire and the black wire on the same sides as the opposing cable.

   Do not disconnect cable 220-01337A from ES6 (this may be a version B cable on newer devices).

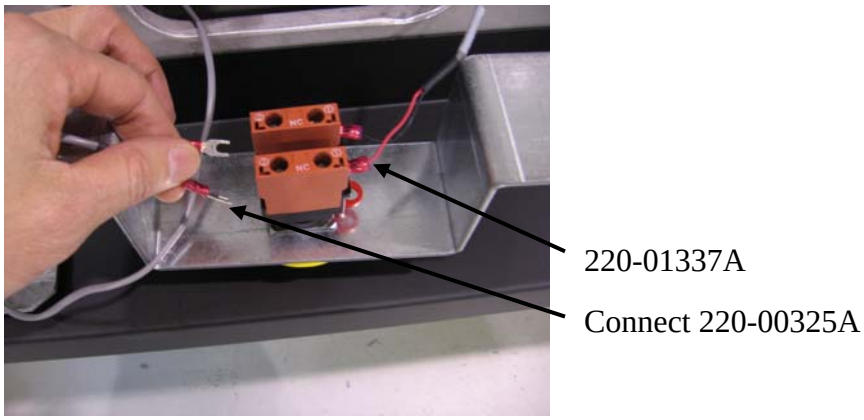


Figure 20: Connecting ES6

7. Remove ES6 from its existing mounting bracket and mount it on the new bracket (252-12738A) supplied in the upgrade kit. Do not install the new bracket onto the engine casting yet.

8. If cable 220-01337A is not long enough to reach the new location (see Figure 24), then it must be replaced. To replace the cable, disconnect it from ES6 and disconnect it at the connector located on the home side of the ejector harness beam under the hood. Cut the cable ties securing this cable to the cable harness and remove the cable completely.

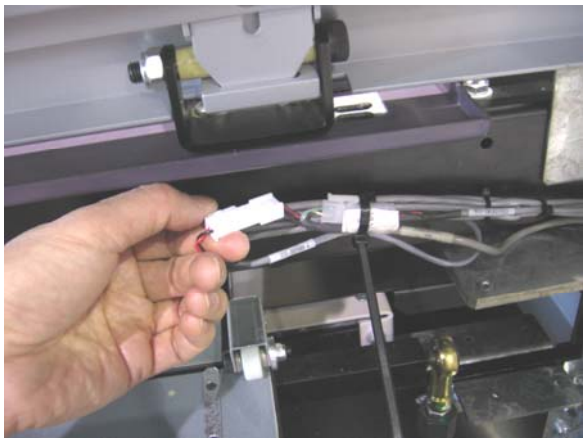


Figure 21: Replacing cable 220-01337A

9. Route the version B cable from the home side of the ejector harness beam to ES6, and connect the connectors. Use cable ties to secure the cable neatly and away from any moving parts.

4.3 Relocating the engine manifold

Left eject Magnus VLF devices that will be upgraded with an Automatic Pallet Loader (APL) must have the engine manifold relocated to the rear of the device. The relocation will give field service engineers access to the manifold after the APL has been installed.

4.3.1 Mounting the new manifold bracket

Before starting this procedure, check that the device is off and that the compressed air supply to the device is closed.

Note: For devices MT 258 and before, use the template to mark, drill, and tap holes for the new manifold bracket. Devices MT259 and later will already have the holes needed to mount the new manifold bracket.

For devices MT258 and before:

1. Use the center bracket's screws and holes to hold the template (690-01110A) in place. You may also need to remove some screws to tuck the template in behind the sheet metal parts.



Figure 22: Manifold mounting template

2. Use an automatic center punch to mark the holes for the bracket.
3. Remove the template and drill the holes with a 3 mm drill bit and then a 6.8 mm drill bit.
4. Tap the holes with a M8 tap.
5. Mount the two new manifold brackets (252-12743B) to the engine casting. Also mount the new center bracket in place of the old one.



Figure 23: Manifold mounting brackets

6. Mount the top of the new manifold on the new brackets and the bottom of the new manifold to the new holes in the engine casting.

7. Mount the E-stop switch ES6 between the large port in the engine casting and the manifold assembly.

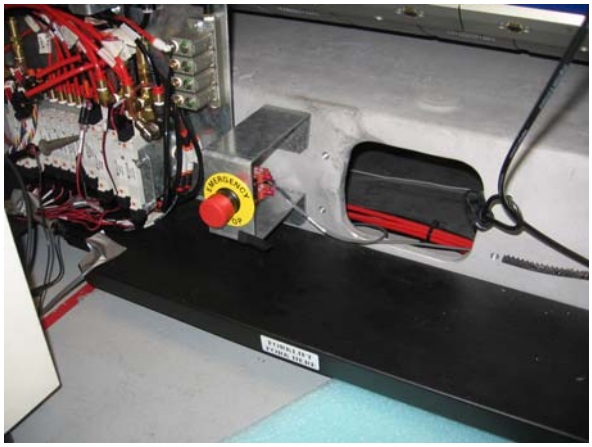


Figure 24: Mounting ES6

4.3.2 Removing the existing manifold and bracket

1. Remove the side panels to get access to the engine manifold.
2. Disconnect the drum vacuum hose from the inside of the interface panel and move it out of the way. The hose will be completely removed later on.
3. Remove the existing manifold bracket screws so the manifold assembly is loose. This will give you better access to the manifold cables and tubes.

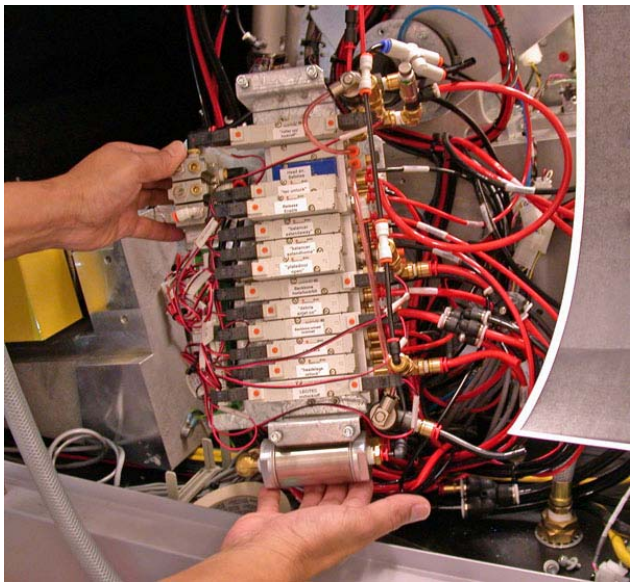


Figure 25: Loosening the old manifold

4. Use masking tape or printed labels to label all the tubes on the manifold. Alternatively, remove and reroute the tubes one at a time.

Note: It is extremely important not to get the manifold tubes mixed up or incorrectly connected. This may cause serious damage to the Magnus VLF device when it is operated.

Tip: On the old manifold, where multiple tubes are connected into a single tube, extend only the single tube to the new manifold location.

5. Disconnect the manifold interface cables and completely remove the old manifold.

6. Reroute the tubes through the engine casting to the rear of the device where the new manifold assembly has been mounted.

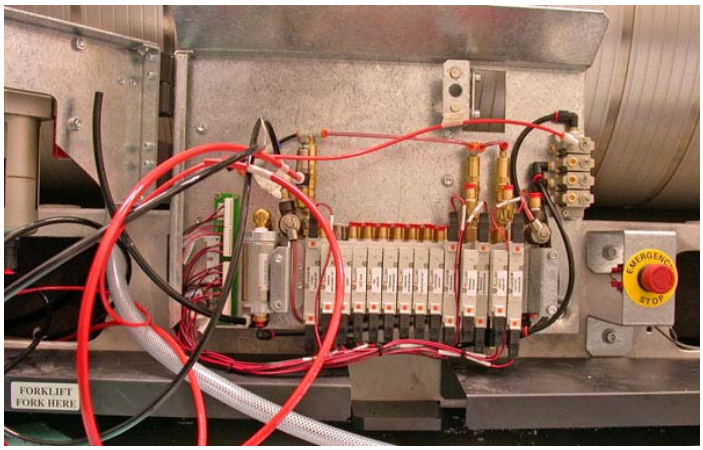


Figure 26: Connecting the manifold tubes

7. Swing open the filter/regulator door and connect the tubes in the correct places according to the labels you added earlier on. Double check the tube locations.

Tip: The TH2 tube connection on the new manifold is located on the far right of the manifold assembly and will be blocked with a plug.

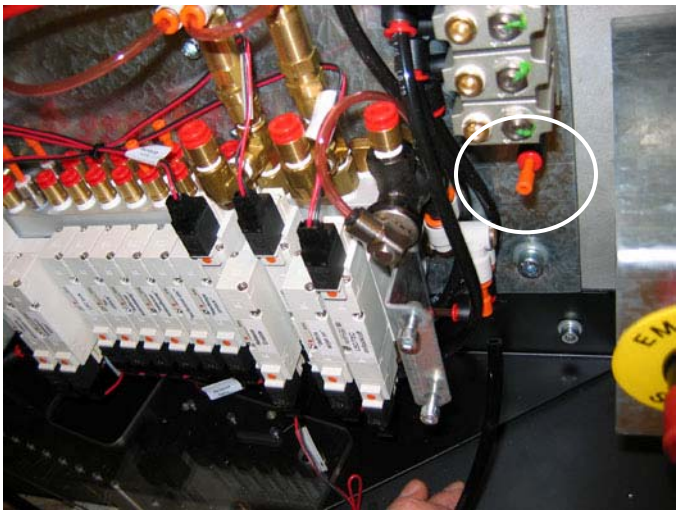


Figure 27: TH2 tube connection

Tip: When connecting the main air supply hose (the clear reinforced hose), first disconnect it from the manifold so that it can rotate while connecting the other end

to the main air supply. Reconnect the hose at the manifold with plumbers tape and tighten the connection.

Tip: On the old manifold there is a ¼ in. tube on the end of the manifold connected to a simple tee (left photo). On the new manifold you have to remove a plug from a 4-way double swivel fitting and connect it there (right photo).

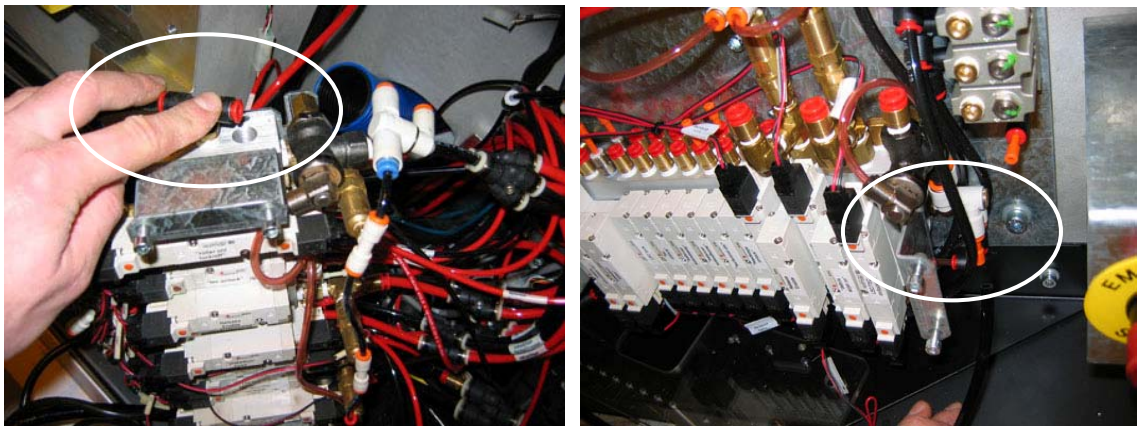


Figure 28: Relocating the ¼ in. tube

8. Use cable ties to secure the tubes neatly and away from any moving parts or panels.

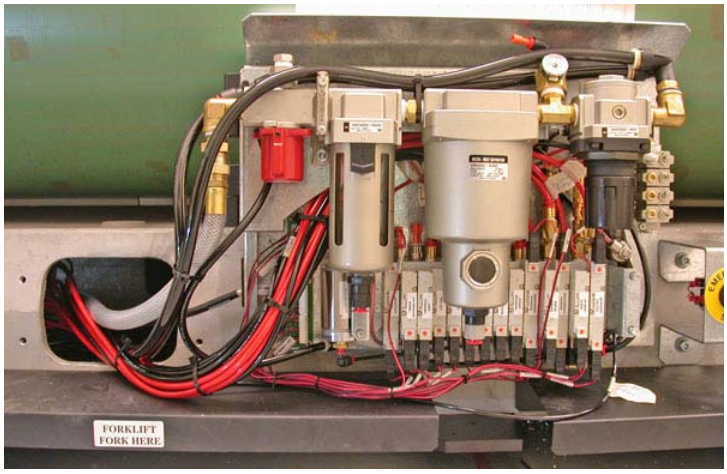


Figure 29: Rear manifold installed

9. Connect the new manifold cable (10-5140B) to the GMCE board and route it to the new manifold at the rear of the device. Connect the cable to the manifold interface board.

10. Use extension cable 220-02173A to extend the **release enable** solenoid cable from the old manifold location to the new one.
Note: If there is no **release enable** cable on the old manifold, then FCO 06631 must be installed (enabling the safety release mechanism for the backbone and tilt arm).

11. Turn the compressed air to the device on. Listen and check for any air leaks or abnormal device operation.

12. Install all panels removed from the device and close the rear hood.

4.4 Relocating the safety switches

On the APL side of the Magnus VLF, you must relocate the safety switch bracket and two switches (SSW5 and SSW6) from behind the frame to the front of the frame. You must also remove a metal tab on the APL side of the Magnus VLF by simply breaking the tab off. See also upgrade document 518-02279A for both of these procedures.

1. Remove the safety switch bracket—four nuts and bolts.

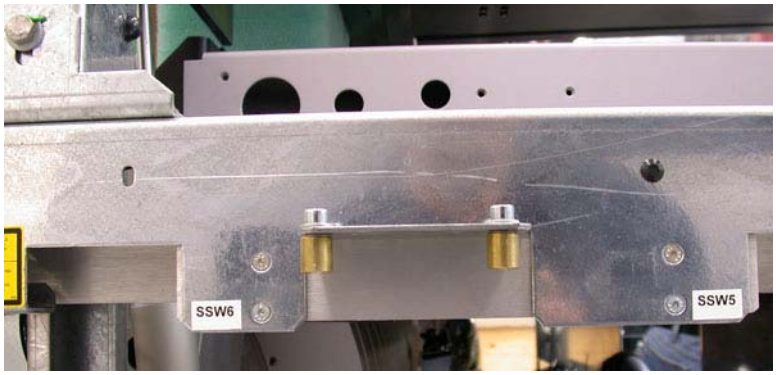


Figure 30: Relocating the safety switches

2. Remove the two safety switches from the bracket. Cut any cable ties that secure the switch cables to the bracket.
3. Free the cable from the bracket grommet by cutting the bracket and grommet. Take care not to cut or damage the switch cables.

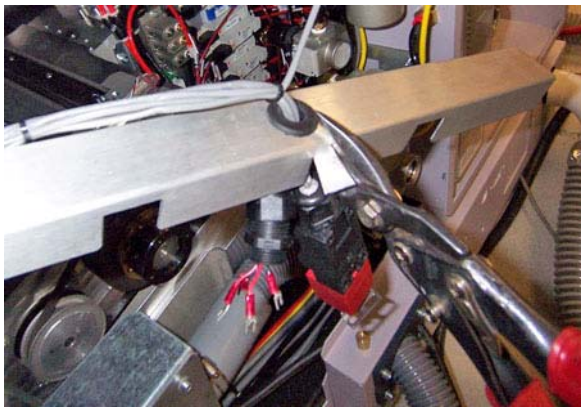


Figure 31: Cutting the old safety switch bracket

4. Cut a gap into the new grommet and insert it into the new switch bracket.

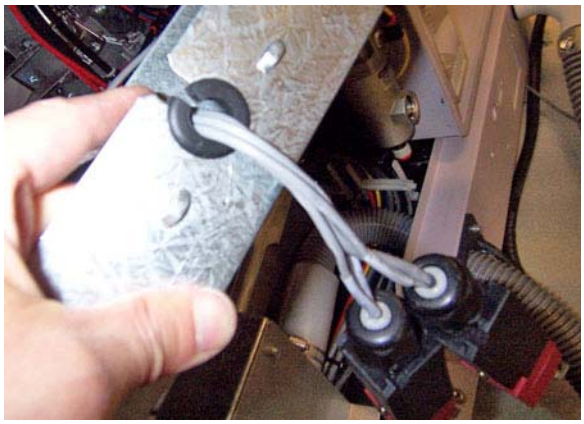


Figure 32: Installing the new grommet

5. Insert the switch cables into the new bracket grommet as shown in the previous photo.
6. Install the bracket on the outside of the frame:
   a) Put the new bracket's studs through the existing holes that were for the old bracket.
   b) Secure the bracket with four nuts.

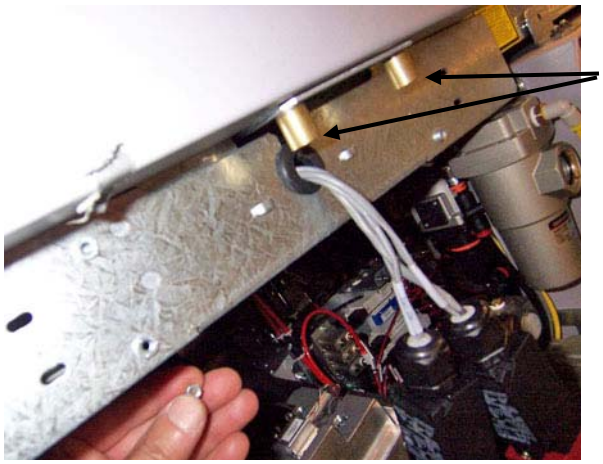


Figure 33: Installing the new bracket

7. Unscrew and remove the two brass spacers.
8. Mount the two safety switches onto the new bracket. Secure the cables to the bracket with cable ties.

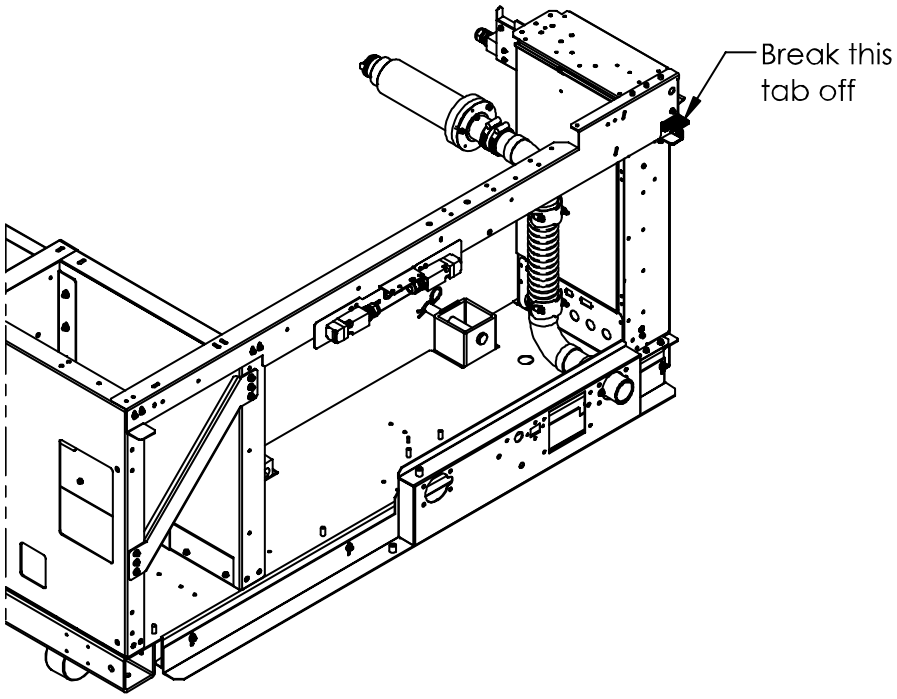


Figure 34: Safety switch bracket and switches installed

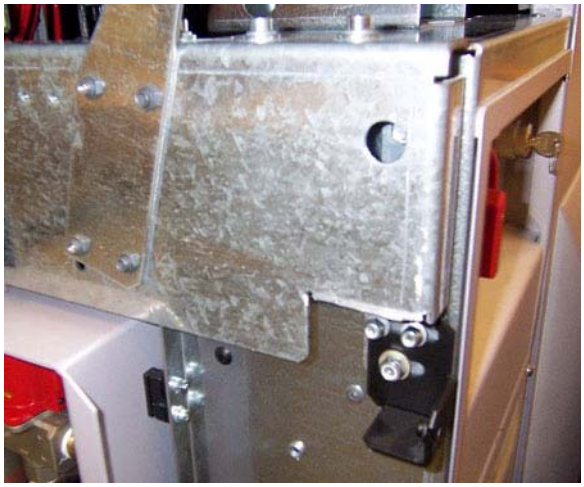
9. Use cable ties to secure the cables neatly behind the new bracket.

Remove the metal tab shown below

10. Use a crescent wrench or pliers to bend the tab up and down until the tab breaks off.



11. Use a file to smooth any sharp or protruding edges.



4.5 Replacing the interface panels

For left eject and right eject devices, both the home and away side interface panels must be replaced. The interface panels are located on the sides of the device at the lower rear.

4.5.1 Right eject devices

Replacing the home side interface panel

The existing home side interface panel accommodates the MCU compressed air and cable connections. For devices with a TH3, this panel also allows the chiller hoses and power cable to pass through it.

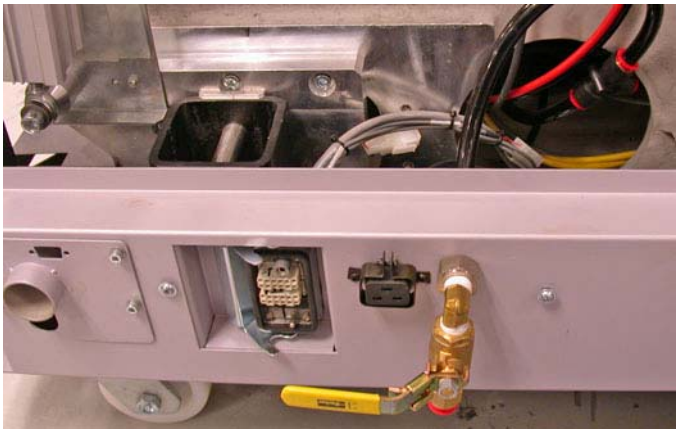


Figure 35: Old right eject home side interface panel

The new home side interface panel only accommodates the APL power cable, the APL to GMCE cable, and the CANbus cable.



Figure 36: New right eject home side interface panel

To replace the home side panel:

1. Remove the securing screws that hold the panel in place.
2. Disconnect the compressed air tube (that connects to the back of the shutoff valve) from the air fitting from the device.
3. Install a blanking plug in the fitting—this air connection will no longer be used.

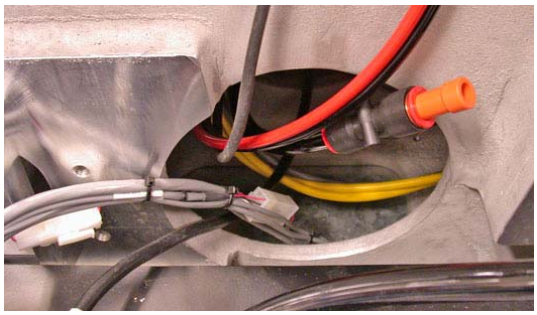


Figure 37: Blocking the air tube from the device

4. Remove the connector block from the interface panel and disassemble the connector block so that the two connectors are free. Only one of these connectors will be connected to the APL—the other connector will not be used.



Figure 38: Disassembling the connector block

5. Use a cable tie to secure the unused connector against the cable harness—the connector that will be used only has one pin not installed.

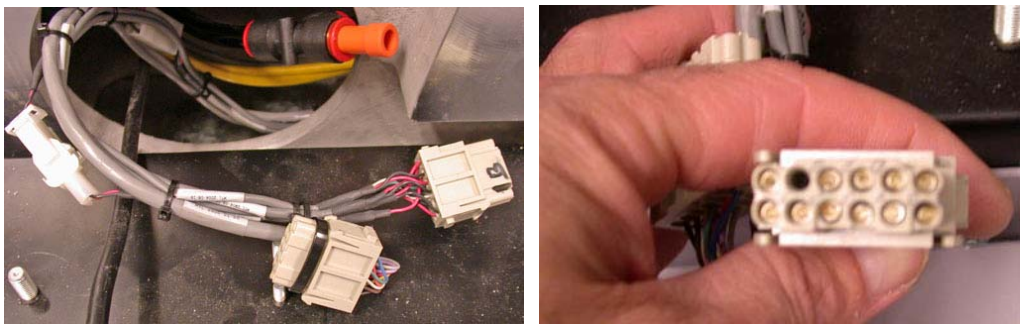


Figure 39: Securing the unused connector

6. To provide strain relief for the connector after it has been connected to the APL, use cable ties to secure both sides of the plug somewhere to the frame.

Note: A CANbus terminator (220-00477A) is supplied in one of the upgrade kits. To ensure that the terminator does not get lost, secure it close to the connector where it will not interfere with any moving parts. If the APL must be disconnected from the Magnus VLF for any reason, then the terminator must be plugged into the connector.

7. Remove the power cable connector from the old panel by removing the securing bracket. The panel should be free now and can be discarded.

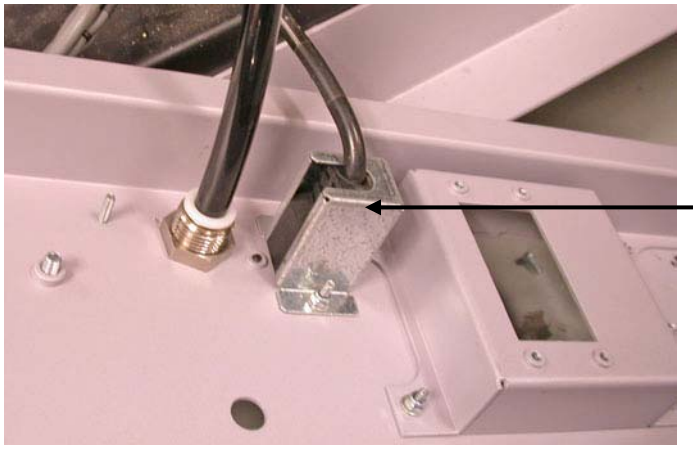


Figure 40: Removing the power cable

8. Remove the power cable bracket from the new panel and install the power cable connector and bracket to the back of the new panel.

9. Install the APL ground wire onto the stud shown below on the device. Scrape away the paint around the stud so that the ground lug makes good connections with the device ground.

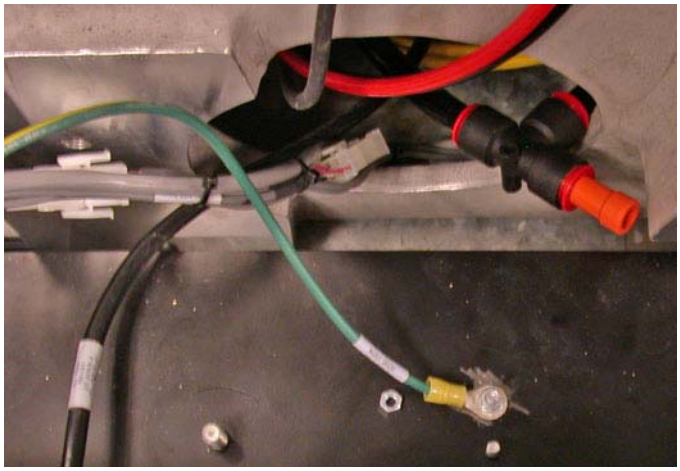


Figure 41: APL ground wire

Tip: When tightening the nut, make sure the ground lug is 90° to the edge of the device so that it does not interfere with the APL alignment jig later on.

10. Do not install the interface panel yet. It can only be installed once the APL and the device have been aligned.

The large hole in the new interface panel will be used to feed and connect the cables between the APL and the device (ground wire, APL to GMCE cable, CANbus cable).

Note: After the APL is installed, route the APL to GMCE cable (220-01801A) through the interface panel and through the engine casting to the GMCE board in the Magnus power box. Connect the cable to J40 on the GMCE board.

Replacing the away side interface panel

The existing away side interface panel only accommodates the drum vacuum hose.



Figure 42: Existing right eject away side interface panel

The new away side interface panel remains unchanged for devices with TH2, but must be replaced for devices with TH3 to accommodate the chiller hose and power cable.

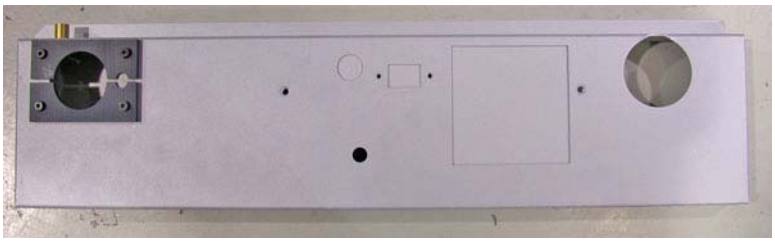


Figure 43: New right eject away side interface panel with chiller

4.5.2 Left eject devices

Replacing the home side interface panel

The existing home side interface panel is either blank, or it accommodates the chiller hose and chiller power cable for devices with TH3.



Figure 44: Existing left eject home side interface panel

The new home side interface panel accommodates the drum vacuum hose only for devices with TH2, or the drum vacuum hose, chiller hose, and chiller power cable for devices with TH3.



Figure 45: New left eject home side interface panel for TH2

11. Remove the side panel located above the interface panel.
12. Remove the existing interface panel.
13. Relocate the drum vacuum hose—see Rerouting the drum vacuum hose.
14. Install the new interface panel 500-04575A for TH2.5 **or** 500-04576A for TH3. The drum vacuum hose connects to the back of the new panel.
15. If the device has a TH3, clamp the chiller hose and power cable in place where the blanking plate is shown in Figure 45.
16. Install any side panels that were removed for this procedure.

Replacing the away side interface panel

The existing away side interface panel accommodates the drum vacuum hose, the MCU compressed air valve, and the MCU cables.



Figure 46: Existing left eject away side interface panel

The new away side interface panel accommodates the APL power cable, the APL to GMCE cable, and the CANbus cable.

To replace the away side panel:

1. Remove the securing screws that hold the panel in place.
2. Disconnect the compressed air tube (that connects to the back of the shutoff valve) from the air fitting from the device.
3. Install a blanking plug in the fitting—this air connection will no longer be used.

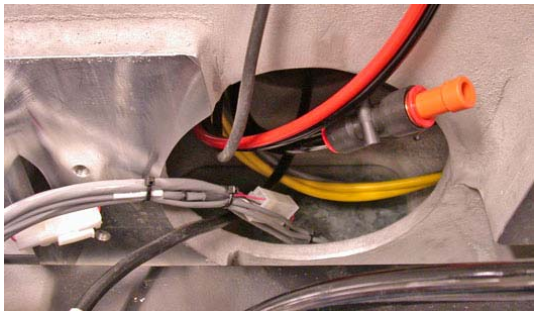


Figure 47: Blocking the air tube from the device

4. Remove the connector block from the interface panel and disassemble the connector block so that the two connectors are free. Only one of these connectors will be connected to the APL—the other connector will not be used.



Figure 48: Disassembling the connector block

5. Use a cable tie to secure the unused connector against the cable harness—the connector that will be used only has one pin not installed.

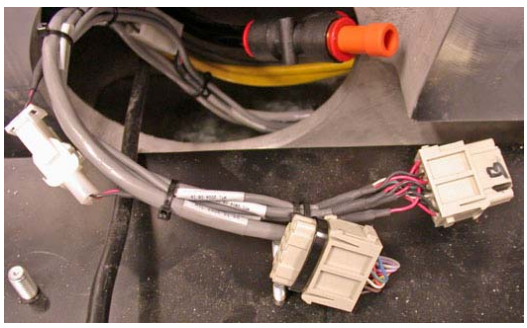




Figure 49: Securing the unused connector

6. To provide strain relief for the connector after it has been connected to the APL, drill two 3.3 mm holes in the device frame and tap the holes with a M4 tap. Secure two cable tie mounts to the holes (one mount for each gender of the connector).

Note: A CANbus terminator (220-00477A) is supplied in one of the upgrade kits. To ensure that the terminator does not get lost, secure it close to the connector where it will not interfere with any moving parts. If the APL must be disconnected from the Magnus VLF for any reason, then the terminator must be plugged into the connector.

7. Remove the power cable connector from the old panel by removing the securing bracket. The panel should be free now and can be discarded.

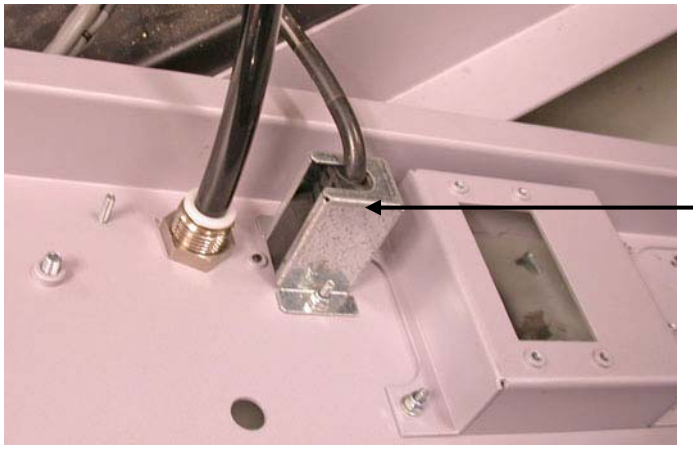


Figure 50: Removing the power cable

8. Remove the power cable bracket from the new panel and install the power cable connector and bracket to the back of the new panel.

9. Install the APL ground wire onto the stud shown below on the device. Scrape away the paint around the stud so that the ground lug makes good connections with the device ground.

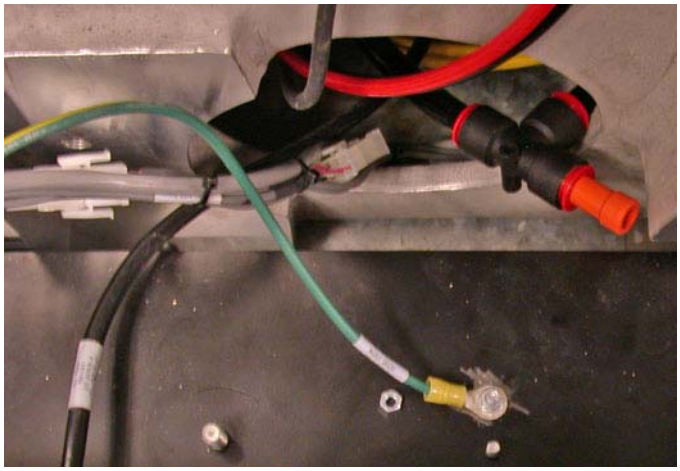


Figure 51: APL ground wire

Tip: When tightening the nut, make sure the ground lug is 90° to the edge of the device so that it does not interfere with the APL alignment jig later on.

10. Do not install the interface panel yet. It can only be installed once the APL and the device have been aligned.

The large hole in the new interface panel will be used to feed and connect the CANbus cable, the APL to GMCE cable, and the ground wire between the APL and the device.

Note: After the APL is installed, route the APL to GMCE cable (220-01801A) through the interface panel to the GMCE board in the Magnus power box. Connect the cable to J40 on the GMCE board.

4.6 Rerouting the chiller hoses and cables

This is only required on right eject configurations with TH3. The position of the chiller must be moved from the home side of the Magnus VLF device to the away side. To accomplish this, the chiller hoses and cables must be rerouted to the away side and a new interface panel must be installed to accommodate the hoses and cables.

11. If the device is not already off, then turn the power switch to the OFF position and shut off the compressed air to the device.
12. Disconnect the chiller hoses and power cable on the rear of the chiller. Move the chiller to the away side of the device—it will be located under the eject bridge by the drum vacuum unit.
13. Remove the home side rear panel to get access to the chiller hose sensor block.
14. Disconnect the filter from the chiller hose.
15. Disconnect the chiller sensor cable.
16. Loosen the chiller hose clamps that secure the hoses to the sensor block.

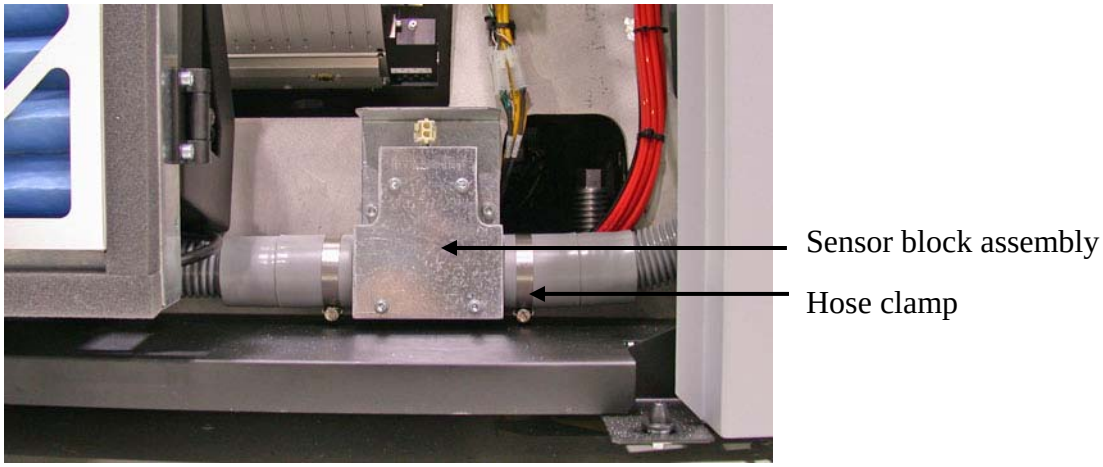


Figure 52: Old chiller hose sensor block location

17. Remove the chiller sensor block assembly from the device engine casting.
18. Separate and remove the two halves of the sensor block from the chiller hoses.

19. Remove the pressure sensor from the chiller hose and put the brass plug provided in the kit in its place (to prevent fluid leaks).
    Removal of the sensor is to make it easier to feed the hoses through the device to the other side. It may also help to remove the remaining clamp on the short section of the gray hose so that it does not get hung up on cables while feeding it through the cable duct.



Figure 53: Chiller hose pressure sensor

20. Remove the side panel from the device and pull the hose assembly out of the engine casting.

21. Disconnect the chiller power cable from the device and connect the new longer power cable in its place.

22. Remove the unload table and load table panels to get access to the thermal head area. Remove the laser panels.

23. Remove the away side device panels.

24. Reroute the chiller hoses, the longer power cable, and the sensor cable into the cable duct towards the away side of the device. The hose must make a U-turn into the cable duct towards the away side.
    On devices with small drums you can just lay the hoses and cable into the cable tray through the gap shown below. On devices with large drums, use a 2.5 m (96 in.) rod or long wooden dowel to pull the hoses and cable through underneath the sheet metal into the cable duct.

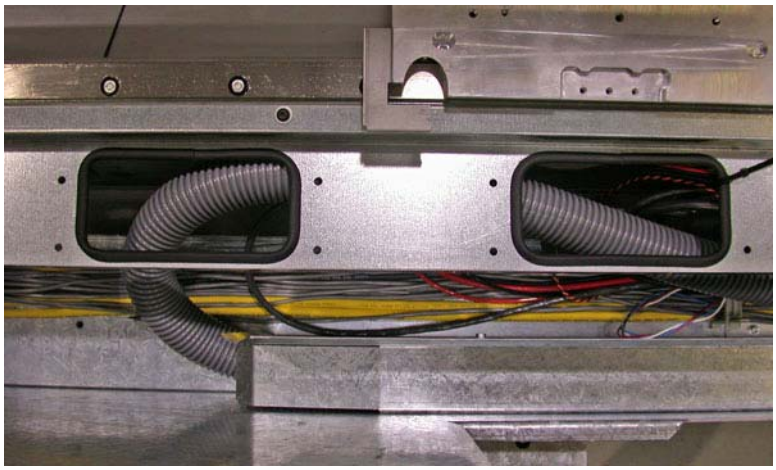


Figure 54: Rerouting the chiller hoses

25. Remove the brass plug from the chiller hose and install the pressure sensor again.
26. Assemble the two halves of the chiller sensor block onto the chiller hoses again. Don't forget to feed the hose clamps onto the gray hose first. Tighten the clamps.
27. Mount the chiller sensor block onto the device frame as shown below.

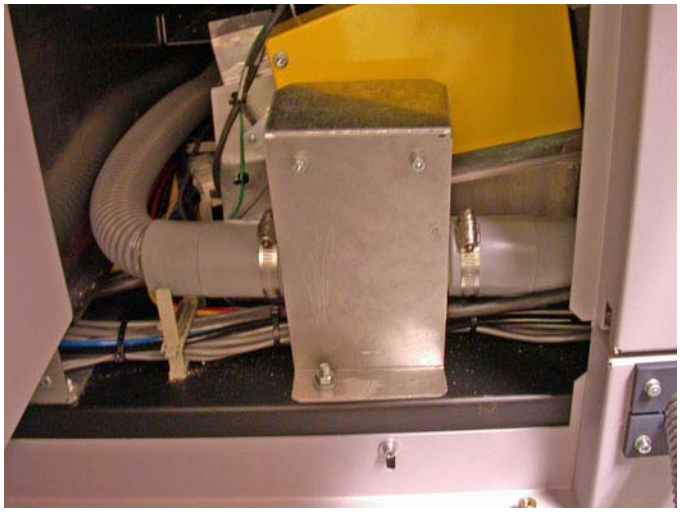


Figure 55: New sensor block location

28. Connect the chiller sensor cable to the sensor block assembly.
29. Remove the existing interface panel.
30. Replace the interface panel with a new one that includes ports for the chiller hose and power cable and the drum vacuum hose.

31. Route the chiller hose and power cable through the interface panel and secure them in place (left side).



Figure 56: New interface panel

32. If you removed the clamp from the shorter section of gray hose, install the clamp now.
33. Connect the chiller hose filter to the hose.
34. Connect the chiller hoses and power cable to the rear of the chiller.
35. Install all panels and doors removed for this procedure.

4.7 Rerouting the drum vacuum hose

Currently the hose for the drum vacuum unit exits the Magnus VLF device on the away side. If the drum vacuum unit is located on the home side (left eject devices), the hose is run externally around the rear of the device. This procedure is to reroute the drum vacuum hose internally for left eject devices.



Figure 57: Existing external drum vacuum hose

1. Remove the side panels on the home and away sides of the device.
2. On the away side, disconnect the drum vacuum hose from the interface panel. The interface panel will be replaced with a new one—see the section on **Replacing the away side interface panel**. Remove the hose bulkhead with spacers—they will be used on the other side of the frame.
3. Remove the section of hose between the drum and the interface panel.

4. Install the two elbow fittings and short section of hose onto the drum's vacuum hose fitting.



Figure 58: Installing the drum vacuum hose elbow fittings

5. Route a length of hose through the engine casting to the home side of the device. On the away side, clamp the hose to the lower elbow fitting you just installed.

6. Two M6 holes must be made in the home side of the device frame for the vacuum hose fitting. Mark the location of the holes as shown below and use an automatic center punch to punch the hole locations.
The holes are 466 mm and 516 mm from the frame end and 15 mm from the frame top.

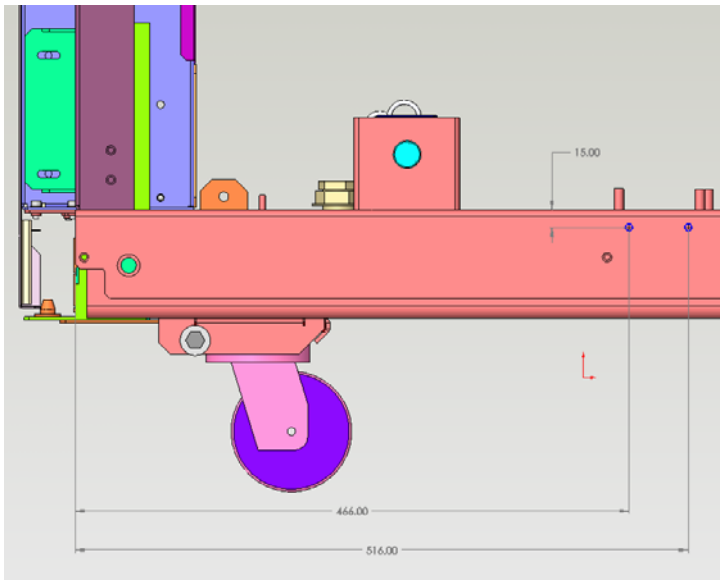


Figure 59: Marking holes for the vacuum hose fitting

7. Drill 5 mm holes through both the panel mount flange and the side beam (the panel mount flange alone is not thick enough). Tap the holes with a M6 tap.

8. Attach the hose bulkhead to the frame with M6 screws.

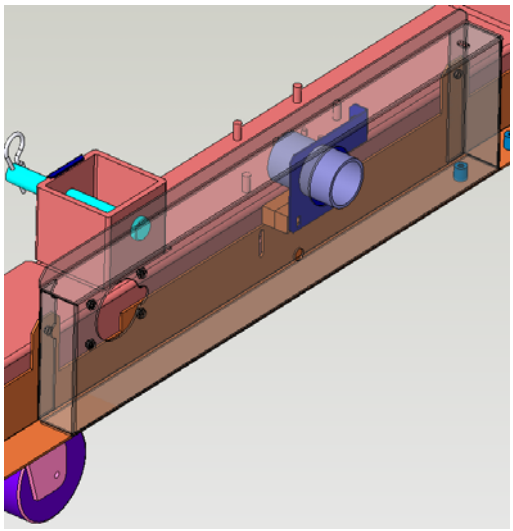


Figure 60: Attaching the vacuum hose fitting

9. On the home side, clamp the interface panel fitting to the hose. Remove the existing interface panel—see the section on Replacing the home side interface panel.

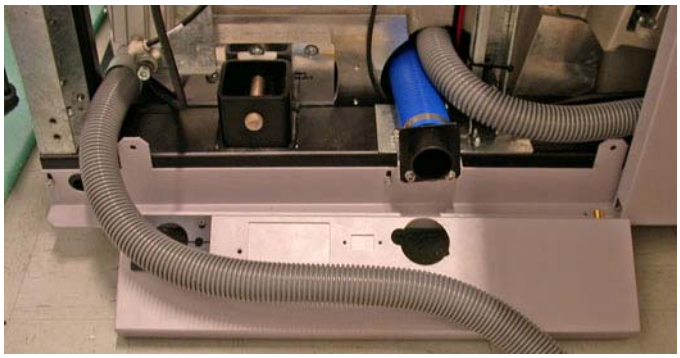


Figure 61: Installing the hoses on the home side

10. Route the chiller hose and cable through the left side port in the new interface panel.

11. Attach the drum vacuum hose fitting to the right side port in the new interface panel.