Magnus VLF

MDRC and Plate Funnel Cable Upgrade

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Revision History

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1. OVERVIEW

This electrical upgrade procedure is to install the necessary cables to support the *Magnus* VLF Debris Removal Cabinet (MDRC) and the Plate Funnel upgrades. Because the cables are common to both, you cannot install only the MDRC or plate funnel cables individually.

2. PARTS/TOOLS

- Common cables: 10-9068B, 10-9085B
- Plate funnel cables: 220-00141B, 220-00363B, 10-4982A
- MDRC cables: 220-01514A, 220-01515A (part of heat exhaust assembly)

3. REFERENCE DOCUMENTS

- MDRC Upgrade – 719-00723A
- Electrical schematics – 705-00006D

4. SAFETY

Turn the power to the *Magnus* VLF device to **OFF** and unplug the device from the wall outlet. Put a lock on the main power switch. Contact the building maintenance electrician or building maintenance personnel to ensure that the SAFETY LOCK OUT procedures at the customer site are followed. Remove all exterior panels including those beside the slip sheet cart. Turn the switch on the power box cover off, and remove the cover.

5. CABLE UPGRADE PROCEDURES

5.1 Common Cable Upgrades

The following procedures are common to both the MDRC and plate funnel upgrades:

1. Disconnect the following cables in the power box:

   cable 10-9068A from J37 of Power Distribution Board (PDB) 0

   cable 10-9085A from J8 of LIONEL 0 board

   cable 220-00141A from J2 of LIONEL 0 board

2. Tuck the cables disconnected above neatly under the cable harness. Make sure the cables are out of site and away from live connections inside the power box.

3. On the Away side of the device, there is a cable harness on the bottom that runs from the middle to the back of the device near the engine manifold. Near the middle, the harness goes through a bulkhead and takes a 90 degree turn to go through a second bulkhead towards the back of the power box. Remove the cable harness fasteners on one side. The cable harness fasteners are beige colored straps that are fastened on both sides. To

remove only one side, simply push in on the clip and pull up. The strap easily slides up to allow more cables to be added to the harness.

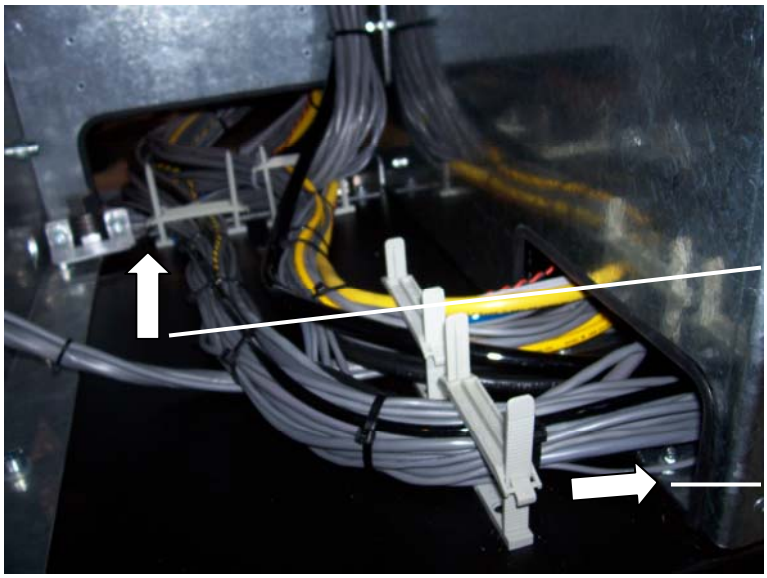


Figure 1: Away side bulkhead with cable harness straps

4. Lay out the following cables on the floor behind the device:
   10-9068B, 10-9085B, and 220-00141B.

5. Route these cables into the harness that runs from the back of the device to the power box. Keep the ends of the cables that go to the power box together. They will have destinations marked on them for PDB 0 or LIONEL 0.
   When these cables get routed into the power box, leave a large length of cable in the shape of an 'S'. These should match the cable harness that is already there. This allows for movement of the power box in case the *Magnus* VLF is ever shipped to another site. Simply follow the route of other cables into the power box.

6. From the front of the power box, route the cables to the right hand side and connect cable 10-9068B to J37 of PDB 0. Connect cable 10-9085B to J8 of LIONEL 0.

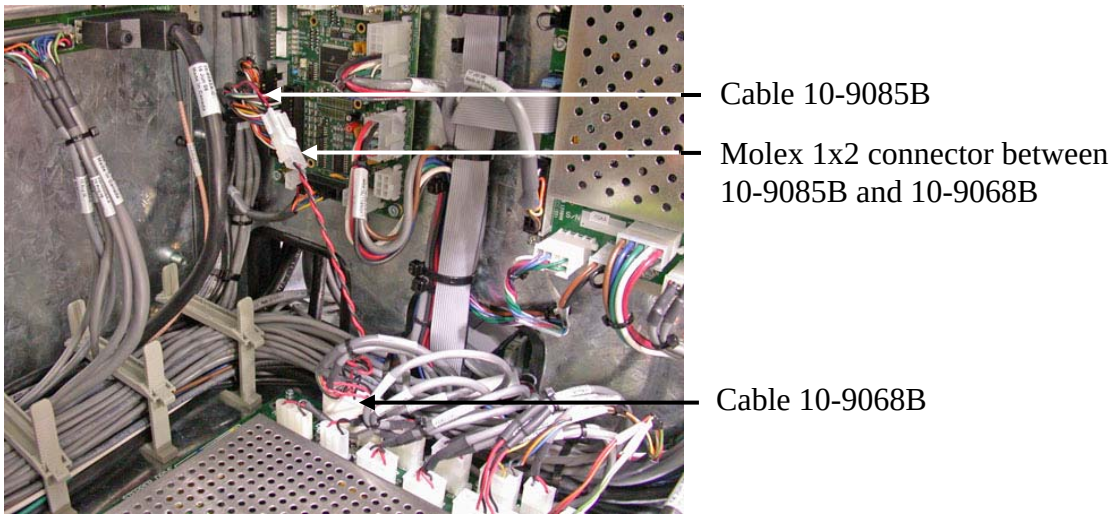


Figure 2: PDB 0 and LIONEL 0 connections

7. Connect the small Molex Mini-Fit 1x2 receptacle on cable 10-9085B to the small Molex 1x2 Mini-Fit plug on cable 10-9068B. See Figure 2.

8. Connect cable 220-00141B to J2 of LIONEL 0.

9. Secure all the cables that go from the power box to the 'S' shaped harness and around the corner to the first bulkhead. There is now a cable harness that continues on toward the back of the device and another that goes under the flex track toward the Home side of the device.

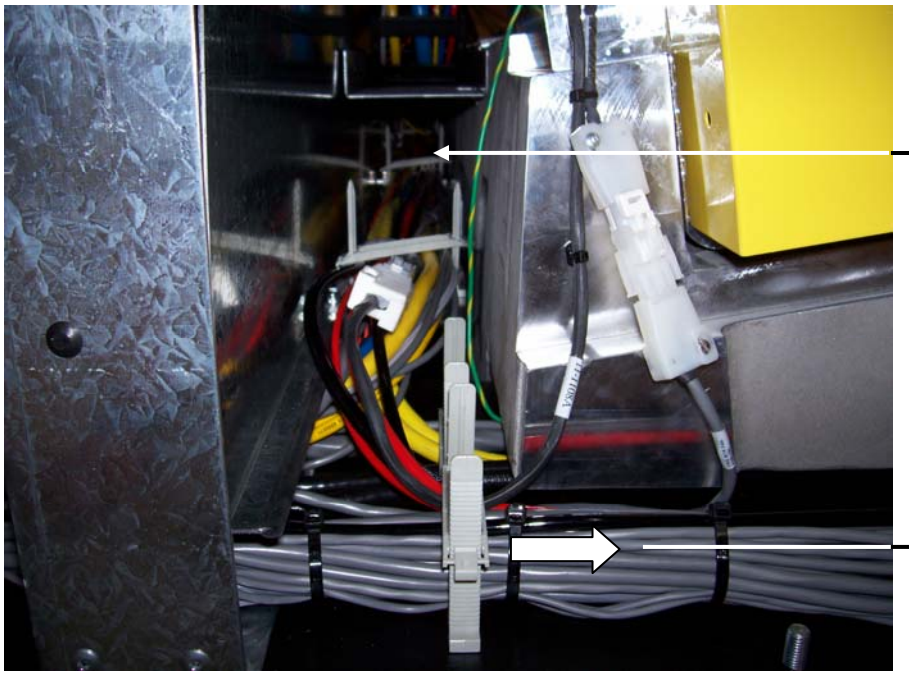


Figure 3: Cable routing

10. Route the three sections of cable 10-9085B marked TEC_LOCK/UNL, LEC_LOCK/UNL, and PLATE FUNNEL SNS with the cable harness that stays on the Away side and runs toward the back of the device near the engine manifold.

11. Route the two sections of cable 10-9068B marked DM/FAN-DB and PEB(J1) with the cable harness that stays on the Away side and goes into the cable harness that runs toward the back of the device toward the engine manifold and Power Entry Box (PEB).

12. If the plate funnel upgrade is not being done at this time, route cable 220-00141B along the cable track on the Away side and up behind the manifold to the bulkhead and connect it to cable 220-00363A.

13. If the plate funnel upgrade is being done, connect cable 220-00141B to cable 220-00363B. See Section 4.2 of this procedure.

14. Route the other two sections of cable 10-9085B marked DR SENSORS and CHILLER FLOW SW along the cable harness that runs under the carriage flex track.

15. Route the section of cable 10-9068B marked K1 ENG RELAY along the cable harness that runs under the carriage flex track. See Figure 4.

16. Continue to route the cables under the flex track to the Home side of the device. This process is difficult and requires moving all the cables together to prevent duplication of effort. Follow these steps for the easiest method:

    a. Remove the head access panel (centre shroud panel) behind the power box that provides access to the middle of the carriage flex track. There are rectangular access holes in the sheet metal support for the flex track to gain access to the cable harness below.

    b. Push an electrician's fish tape or tape measure (at least ½ inch wide) under the flex track through the cable tray from the Home side to the Away side. It is best to tape up the end of the tape measure with electricians tape so that the hook does not get snagged on any other cables or cable ties.

    c. Remove the tape from step b and tape both cables to the end of the fish tape or tape measure and pull the cables along until they come out at the Home side. It may be necessary to guide the cables along the cable tray as they are being pulled through to prevent the connectors from getting snagged on other cables or cable mounts.

    d. Tug the cables individually to ensure they are straight and do not tangle with other cables in the tray.

17. On the Away side of the device, from the back side of the PEB, disconnect the section of cable 10-9068A marked PEB(J1) with a MOLEX 1x4 Mate-n-Lock connector. Connect the same section of cable 10-9068B in its place. See Figure 5.

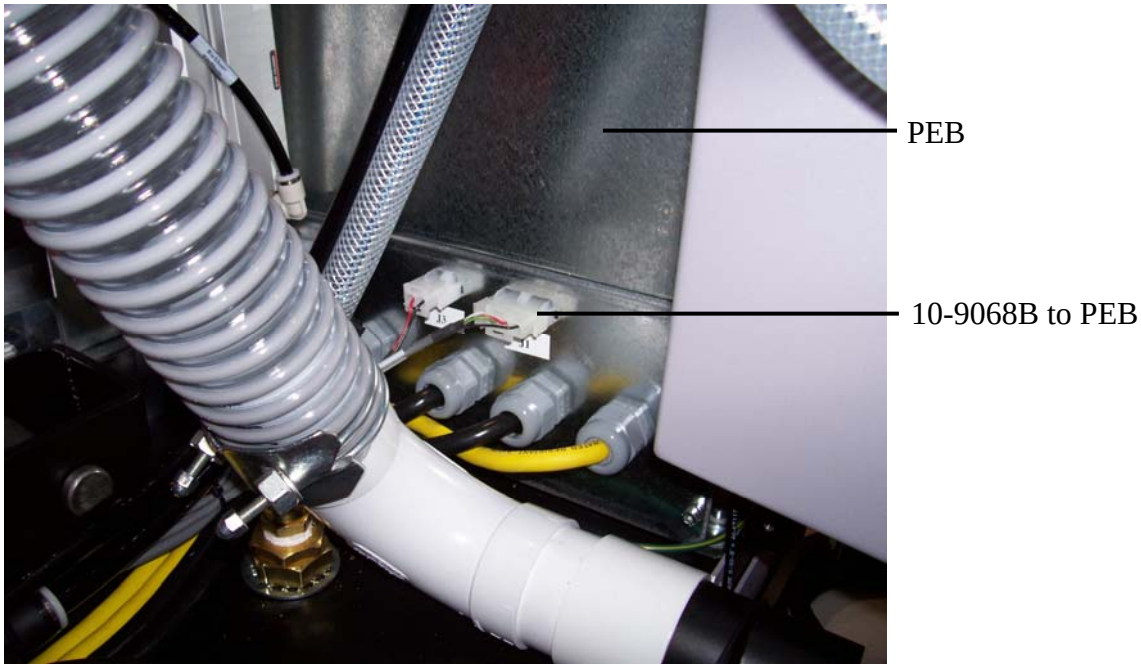


Figure 4: Power Entry Box (PEB) connections

18. From the cooling fan under the main drum motor, disconnect the section of cable 10-9068A marked DM/FAN-DB. Replace it with the same section of cable 10-9068B. See Figure 5.

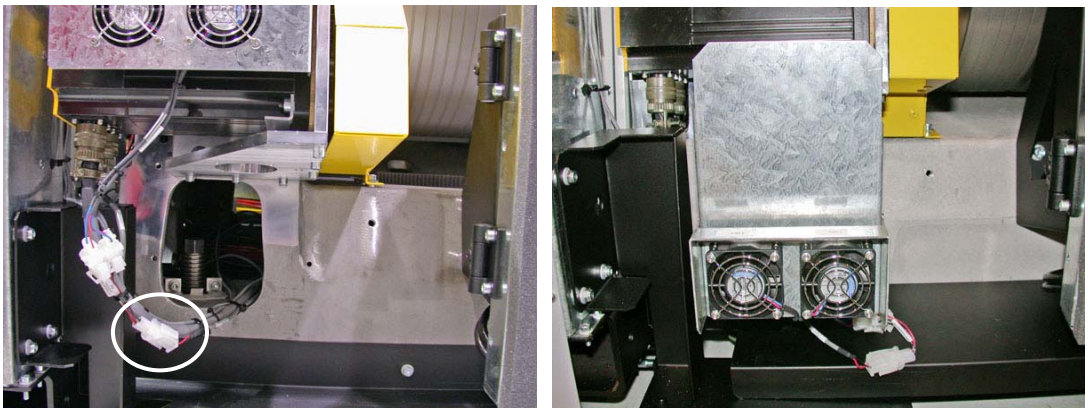


Figure 5: Left photo—drum motor cooling FAN-DB – 10-9068B.
Right photo—DM cooling fans on 63 x 83 engines.

Note: For 63 in. x 83 in. engines, the cooling fan assembly is larger and is located much lower. The same cables are used in both configurations.

19. Locate the two connectors on cable 10-9085A marked TEC_LOCK/UNL and LEC_LOCK/UNL under or near the main engine manifold on the Away side. Disconnect the two connectors and tuck them away in a safe location. Replace the two connectors with the same connectors from cable 10-9085B for the TEC and LEC backbone sensors.

20. Run the section of cable labeled PLATE FUNNEL SNS on cable 10-9085B up to the plate funnel sensor. – see Section 4.2.

21. If the plate funnel upgrade has not yet been installed, route the cable as if the upgrade was installed and tuck the cable ends away from moving parts. Secure the unused cables with cable ties.

22. Return to the Home side of the device where the cables that were routed earlier are protruding from under the flex track. Disconnect the panel mount connector marked DR SENSORS on cable 10-9085A from the internal debris removal bulkhead. To remove the connector, press the ears on the connector together and push it backwards and out.

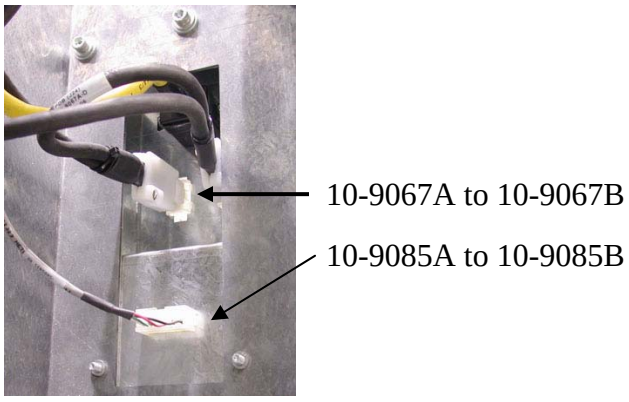


Figure 6: Debris removal bulkhead

23. Route cable 10-9085B marked DR SENSORS and insert it into the empty mounting hole where the version A connector was removed.

24. Disconnect the section of cable 10-9085A marked CHILLER FLOW SW from cable 220-00411A that goes to the chiller. Route the section of cable 10-9085B marked CHILLER FLOW SW and connect it to cable 220-00411A.

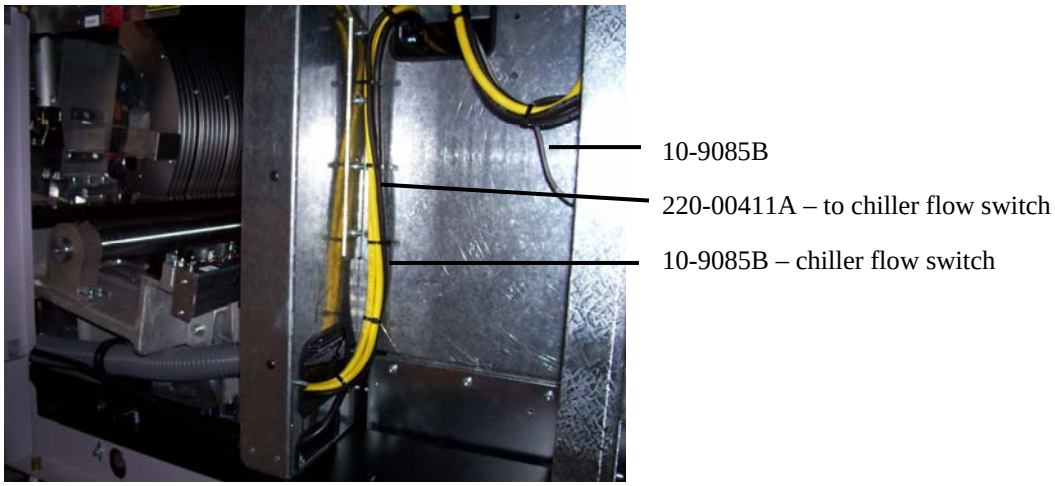


Figure 7: Chiller flow switch cables

25. The connector for the TH3 chiller switch on cable 220-00411A is in the side or under the frame and may be hard to find. The TH3 flow switch is located at the Home back side of the device and is mounted directly into the coolant hose.

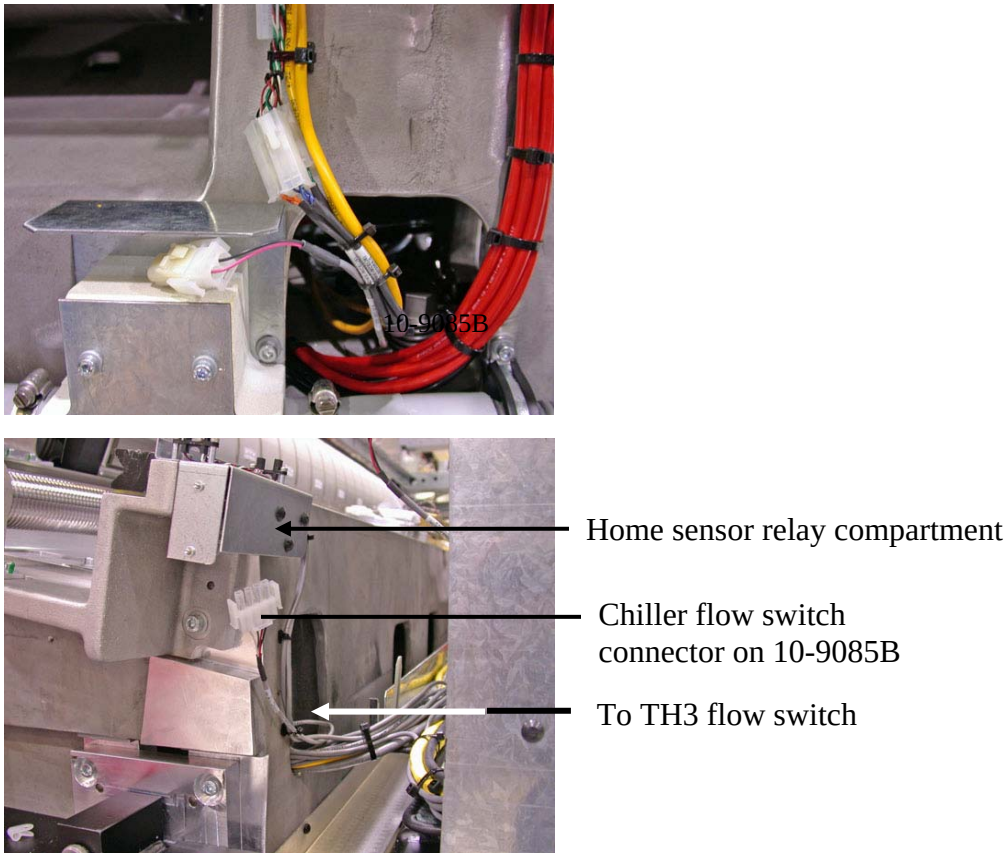


Figure 8: Top photo—TH3 flow switch. Bottom photo—connection for the flow switch is made to 10-9085B

Note: For devices with TH2.x, route the cables as follows: On devices with internal chillers, route the flow switch connector on cable 10-9085B through to the area behind the internal MDRC bulkhead (see Figure 6) and connect it to cable 220-00411A. Since the internal chiller is in the left garage of the device, cable 220-00411A is in the front of the device.

Note: For devices with heat exchangers, the flow switch is not used and hence the flow switch connector on 10-9085B can be tied down and left open.

26. Locate the carriage Home sensor relay compartment (see Figure 8). This sensor is under the carriage track on the Home side protected by a piece of sheet metal. Remove the terminals on cable 10-9068A marked 7 & 8 on the K1 ENG RELAY end of the cable. Secure the old cable neatly out of the way and attach the same terminals of cable 10-9068B to the relay.

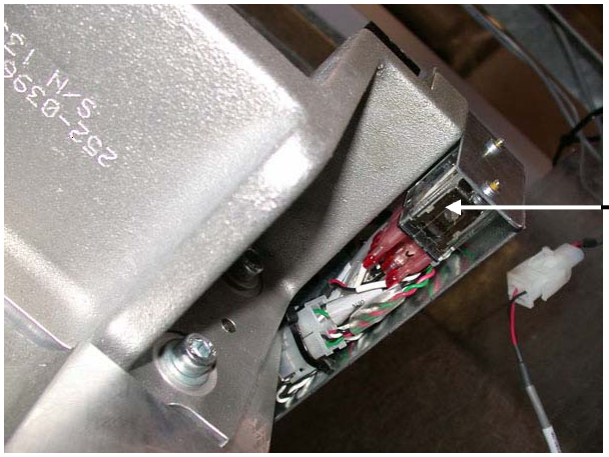


Figure 9: K1 ENG RELAY

27. Secure all cable harnesses and ensure that none are in the path of moving parts.

5.2 Plate Funnel Upgrades

Follow this procedure if the Funnel Upgrade is being installed, or if both the Funnel and MDRC Upgrades are being installed together.

1. Disconnect cable 220-00363A from cable 220-00141A. From the rear of the device, cut the cable ties off the cable harness that runs along the engine bulkhead and remove cable 220-00363A from the harness—discard cable 220-00363A.
   Leave cable 220-00141A in the harness, but secure it from any moving parts and neatly out of sight.



Figure 10: Main Upper Rear Bulkhead

2. Install cable 220-00363B into the cable harness on the rear upper bulkhead. Connect the cable to status light cable 220-00413A that is near the middle of the bulkhead just under the hood.

3. On the engine manifold, remove the plate from the spare location and install the plate funnel solenoid.

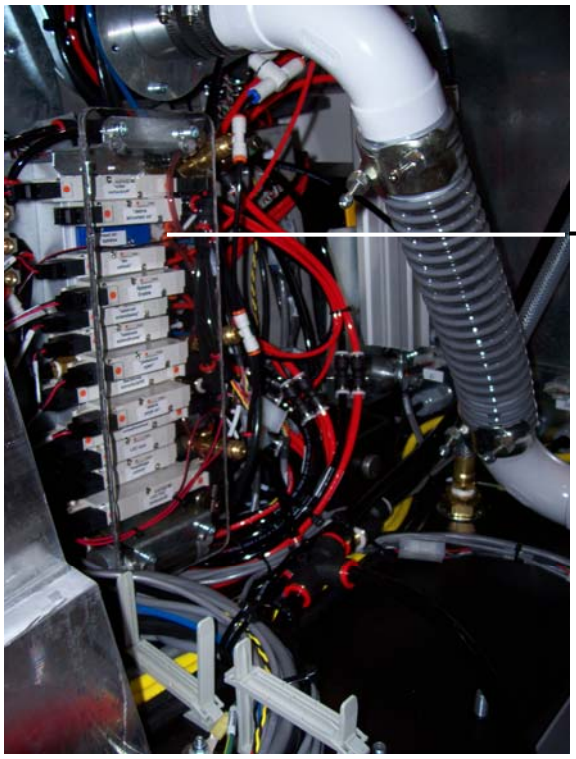


Figure 11: Engine manifold

4. Connect the section of plate funnel cable 220-00363B labeled **plate funnel on** to the solenoid.
5. Connect the Mini-Fit 2x4 connector of cable 220-00363B to cable 220-00141B.
6. Connect the end of cable 10-9085B marked PLATE FUNNEL SNS (installed in the previous section) to sensor 10-4982A that is mounted on the plate funnel.
   This section of cable is high flex so it can move with the LEC back bone assembly to where the plate funnel is installed. See Figure 12.

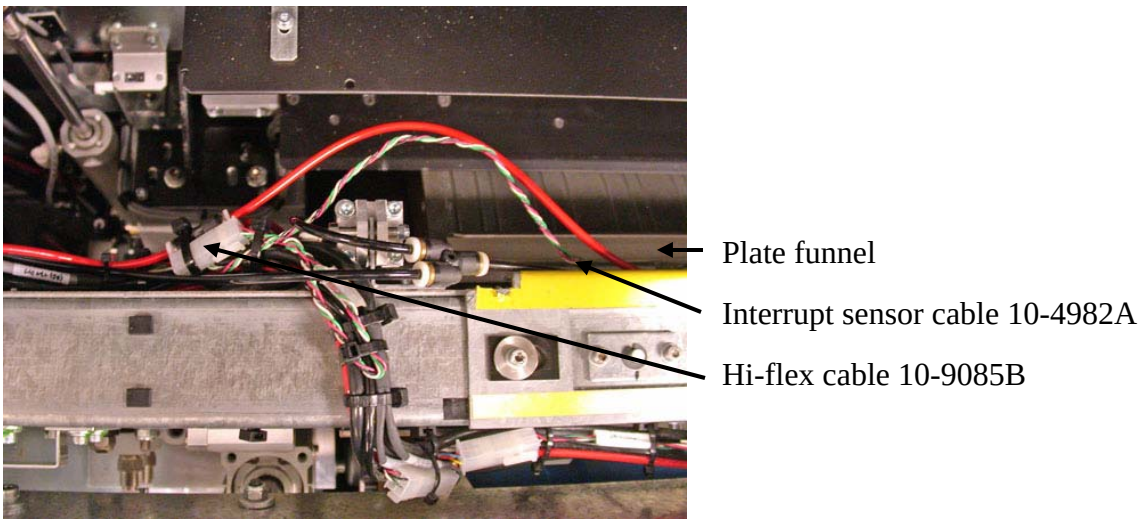


Figure 12: Plate funnel sensor connections

7. Secure all the cables with cable ties and ensure they are well away from all moving parts.

5.3 MDRC Upgrades

Follow this procedure if the MDRC upgrade is being installed.

1. Install the power box cover.
2. Install all exterior panels.
3. Plug the MDRC cabinet cables into the newly installed receptacles in the bulkhead, using cables 220-01514A and 220-01515A. The cables are already attached to the bottom side of the shroud which houses the heat exhaust assembly.

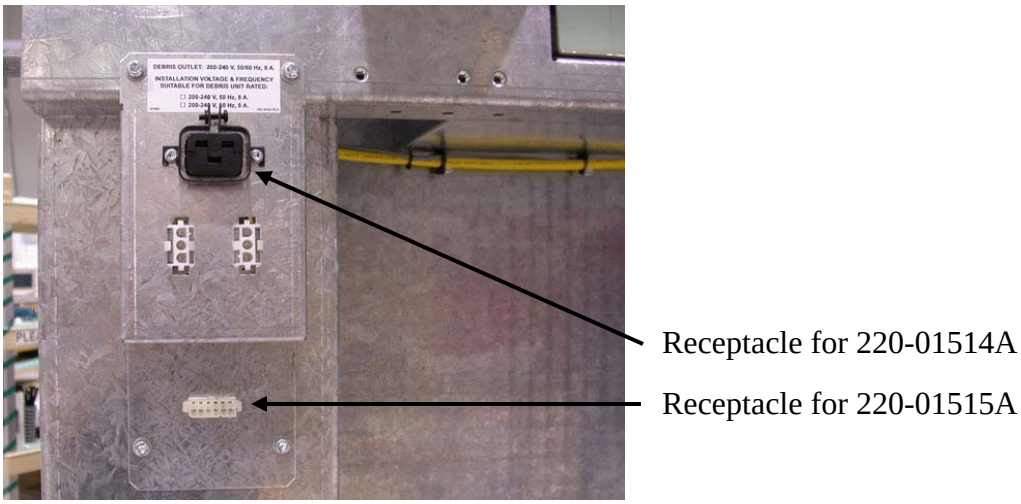


Figure 13: MDRC cables

4. Plug the other end of these cables into the MDRC cabinet. Make sure the cables are looped and strain relieved using the cable mount and cable ties.

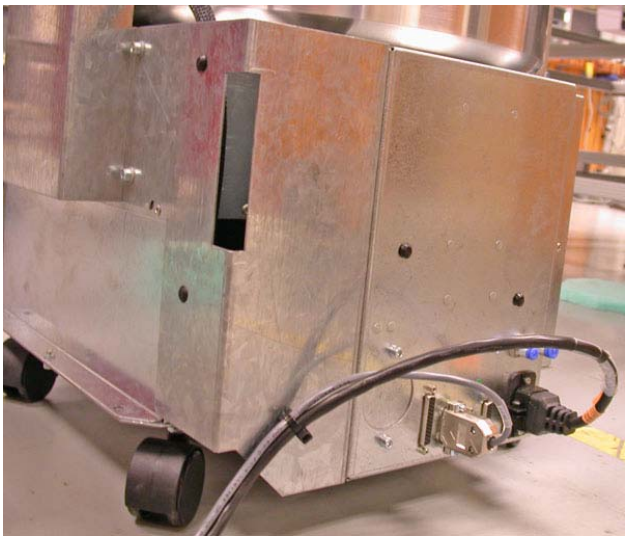


Figure 14: MDRC cable connections

5. Turn the power to the device to **ON**.