

## Passive Mobile Maintainability Upgrade

The original Passive Mobile was a modified upper cabinet of a fixed site FMU. Maintainability was difficult as several components had to be removed to gain access to other components. To improve maintainability, a Passive Mobile maintainability upgrade was developed.

The maintainability upgrade is a one-time change. The upgrade requires removal of some existing parts, and the installation of parts included in an LRU (Line Replaceable Unit consisting of Mainboard, Satellite I/O Control Board, Backplate Assembly, PMPIO Power Management Board) replacement.

To determine if the upgrade is needed, locate the installed position of the Manual Mode Board which contains the MANUAL SWITCHES, PWM dip switches, and a 7.5- and 15-amp fuse. If the board is installed on the cabinet sidewall over the Connector Panel Assembly as in Figure 1, it has not been upgraded. If it is installed on standoffs over the Satellite I/O Control Board as in Figure 2, the upgrade is not required. A Generation 2 Passive Mobile configuration was fielded in 2014. The Generation 2 included the maintainability upgrade as well as other improvements. This upgrade does not fully upgrade a Passive Mobile to the Generation 2 configuration. The upgrade is performed utilizing the following parts from a 941G0211 kit:

Part #	Description	Amount
110841	Wshr, Lock, Ext Tooth, #8	4
155071	Nut, Hex, Slflkg, Pl, #8-32	4
185507	Ground Strap Assy, Enclosure	1
195448	Ribbon Cable Assy, 20 Pin, 12 In, Gen 2	1
198935	Scr, Pnh, XRCSS, #8-32 X 0.38	1
217018	Standoff, Hex, M-F, 6-32 X 1.50	2
249807	Standoff, Hex, M-F, AL, #4-40 X 0.88	3
252611	Scr, Pnh, XRCSS, SS, Ext Sems, #4-40 X 1/4	4
252638	Scr, Pnh, XRCSS, SS, Ext Sems, #6-32 X 1/4	29
252654	Scr, Pnh, XRCSS, SS, Ext Sems, #6-32 X 3/8	2
261876	Ribbon Cable Assy, 26 Pin, 14 In	1
261884	Ribbon Cable Assy, 10 Pin, 9.5 In	2
261900	Heater Pad Assy, 12VDC, 60W	2
261924	Standoff, Hex, M-F, AL, #4-40 X 0.25	3
941B0102B	PCB, FMU 2500, Sat I/O Board	1
941B0106A	Clamp, PCB, Flash	1
941B0222F	Bd, FMU, CPU/Flash	1
941C0103A	Harness, DC Power, FMU 2500	1
941G0205A	Plate, Mounting, Passive Mobile, Gen 2	1
941G0214	Label, Fuse Warning, Passive Mobile	1
941G0220C	Board, Pwr Mgmt I/O, DC Pump Handle Option	1
941G0221	Board, Manual Mode, Passive Mobile	1

941G0223	Fuse Guard, Manual Mode Board	1
941G0307B	Cable Assy, Dual Heat Pad, Pass Mob, Gen 2	1

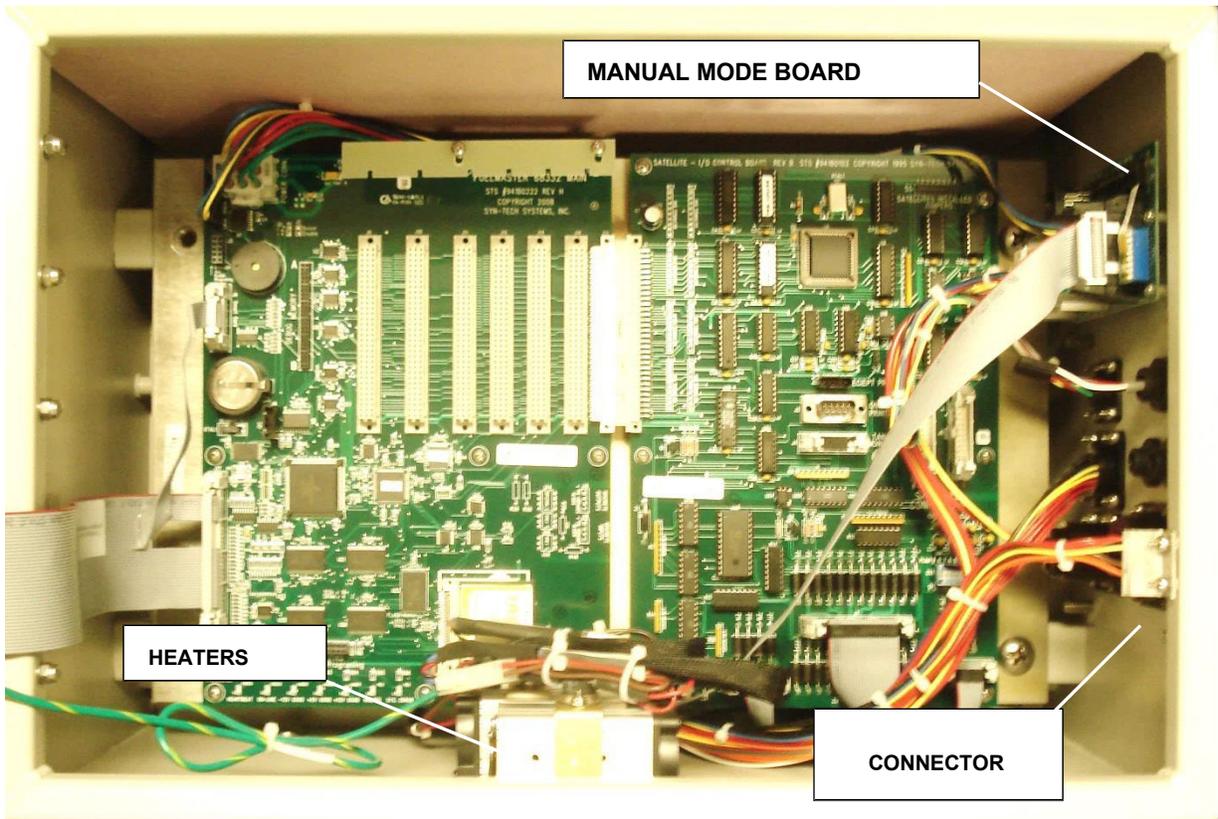


Figure 1. Passive Mobile Before Upgrade

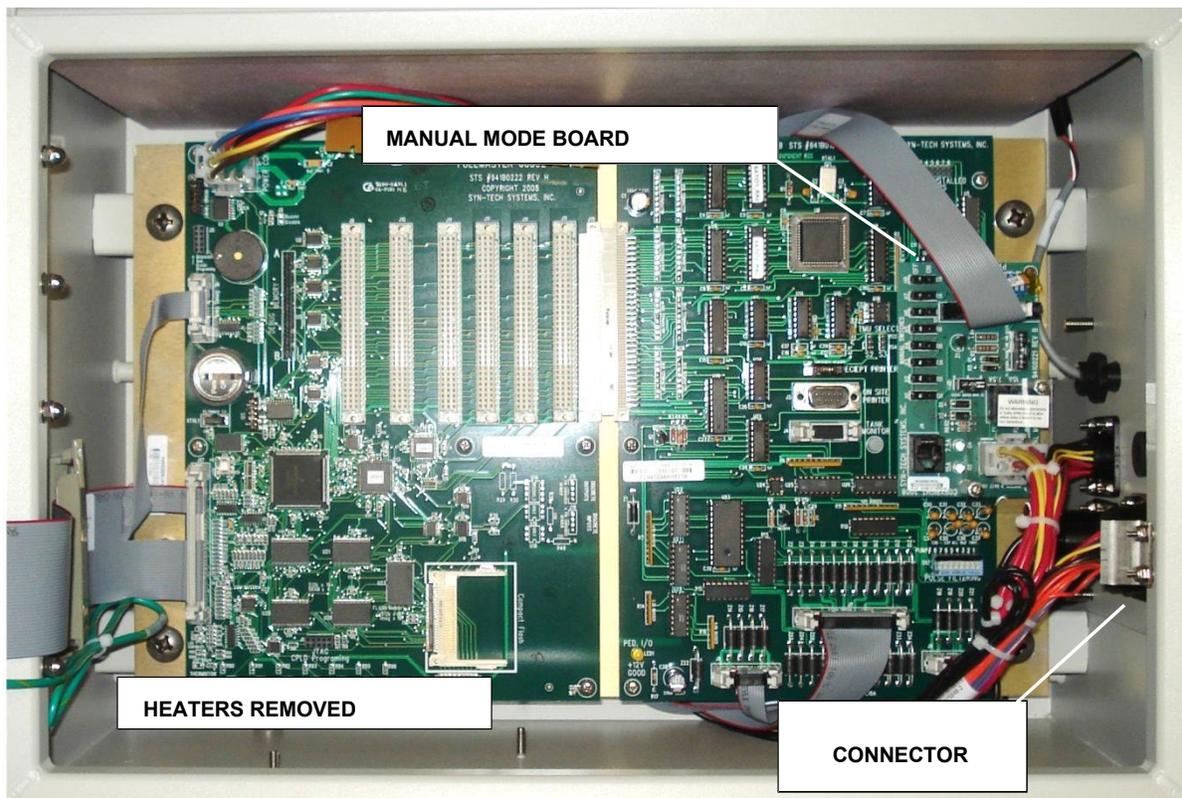


Figure 2. Passive Mobile After Upgrade (Heater Pads Attached to Backplate)

## Remove Specified Original Parts

Some of the original Passive Mobile parts must be removed. This conversion will take an hour or longer, and the truck will not be usable until the upgrade is complete.

1. With power applied, verify all transactions are downloaded, and a copy of the current hose/FMU configuration is stored in the FuelMaster software program.
2. Remove power. There is both switched and unswitched power to the passive mobile. Switching off the ignition switch will not remove all power. Turn off the truck ignition switch, and disconnect the power cable from the POWER connector in the lower right corner of the Connector Panel outside the Passive Mobile cabinet.
3. Unlock and open the Passive Mobile door.
4. Remove the Compact Flash card from the Passive Mobile mainboard (it will be reinstalled in the new LRU).
5. Check the positions of the eight PWM switches on the Manual Mode Board. These positions must be duplicated on the new Manual Mode Board.
6. Remove the two Heater Brackets and Heater Assemblies:
  - a. Each Heater Bracket is secured with two locknuts on studs protruding from the base of the passive mobile cabinet. Use an 11/32-inch socket, nut driver, or open-end wrench to remove the locknuts and Heater Brackets. The Heater Brackets have cable connections to the back of the LRU (Line Replaceable Unit), and cannot be completely removed at this time.
  - b. Unplug the Heater Assemblies from the cable attached to the Heater Brackets, and remove the Heater Assemblies.
7. There is a ground wire extending between the LRU backplate and the cabinet door. Use an 11/32-inch socket, nut driver, or open-end wrench to remove the nut and washer, and disconnect the ground wire from the cabinet door.
8. Disconnect the 941F0206 ribbon cable from J4 and J17 on the left side of the Mainboard.
9. Disconnect the 941G0302 cable from the J3 SERIAL PORT in the upper left corner of the Mainboard, and the Manual Mode Board J2 connector. The J2 connection has a latch that must be released before disconnecting.
10. Disconnect the 195448-ribbon cable, the 941G0306 multi-colored wire harness, and the 941G0308 cable from the Manual Mode Board. The 941G0306 and the 941G0308 cables have security latches on the connectors that must be depressed when disconnecting the cables.
11. Remove the four #4 Philips head screws securing the Manual Mode Board to the cabinet, and remove the Manual Mode Board.
12. If applicable, disconnect the two leads of the 941G0303 wire harness from the RECEIPT PRINTER and ON-SITE PRINTER connectors on the Satellite I/O Control Board.
13. Make note of their locations, and disconnect the connecting cables from all circuit boards in the Mainboard expansion slots.

14. Loosen the two screws and raise the Board Retainer, then remove the circuit boards from the Mainboard expansion slots. Save the boards. They will be reinstalled during re-assembly.
15. Disconnect the two ground wires from the ground lug in the bottom of the Passive Mobile cabinet.
16. Support the LRU and remove the four large Philips head screws at each corner of the LRU.

**CAUTION** Be cautious when removing the LRU. Some cables are connected to the back of the LRU and cannot be disconnected until the LRU is clear of the Passive Mobile cabinet.

17. Carefully move the LRU out, and in front of the Passive Mobile cabinet. The LRU will be easier to remove if the left side is moved out first.
18. Disconnect the 941G0300 wire harness from J6 on the PMPIO Board.
19. Disconnect the two ends of the 941G0305 wire harness from J12 (RED) and J13 (ORANGE) of the PMPIO Board.
20. Disconnect the 941G0307 wire harness from J11 on the PMPIO Board.
21. Depress the connector latches and disconnect the 941G0308 wire harness from J10 on the PMPIO Board.

**NOTE** The two black wire harnesses described in step 21 may not be present if pump handle detection is not being used with the Passive Mobile.

22. If applicable, depress the connector latch and disconnect the two black wire harnesses labeled PUMP HANDLE 1-4 TO J7 and PUMP HANDLE 5-8 TO J8 from receptacles J7 and J8.
23. The LRU is disconnected and may be removed.
24. After the new parts are removed from the shipping container, re-pack the removed LRU and Manual Mode Board in the shipping container. Hold these parts until the new parts are installed and operational, then return ship to Syntech Systems with the provided RMA and return shipping label.
25. It is recommended the studs which secured the Heater Brackets be removed to simplify removal of the LRU, and remove the potential for personnel injury. The studs are self-clinching (pressed in). They can be loosened by grasping with a pair of pliers and moving side to side until they loosen. When loosened they can be pushed out through the bottom of the Passive Mobile cabinet. Use a silicon sealer (RTV) to fill in the holes created with removal of the studs.

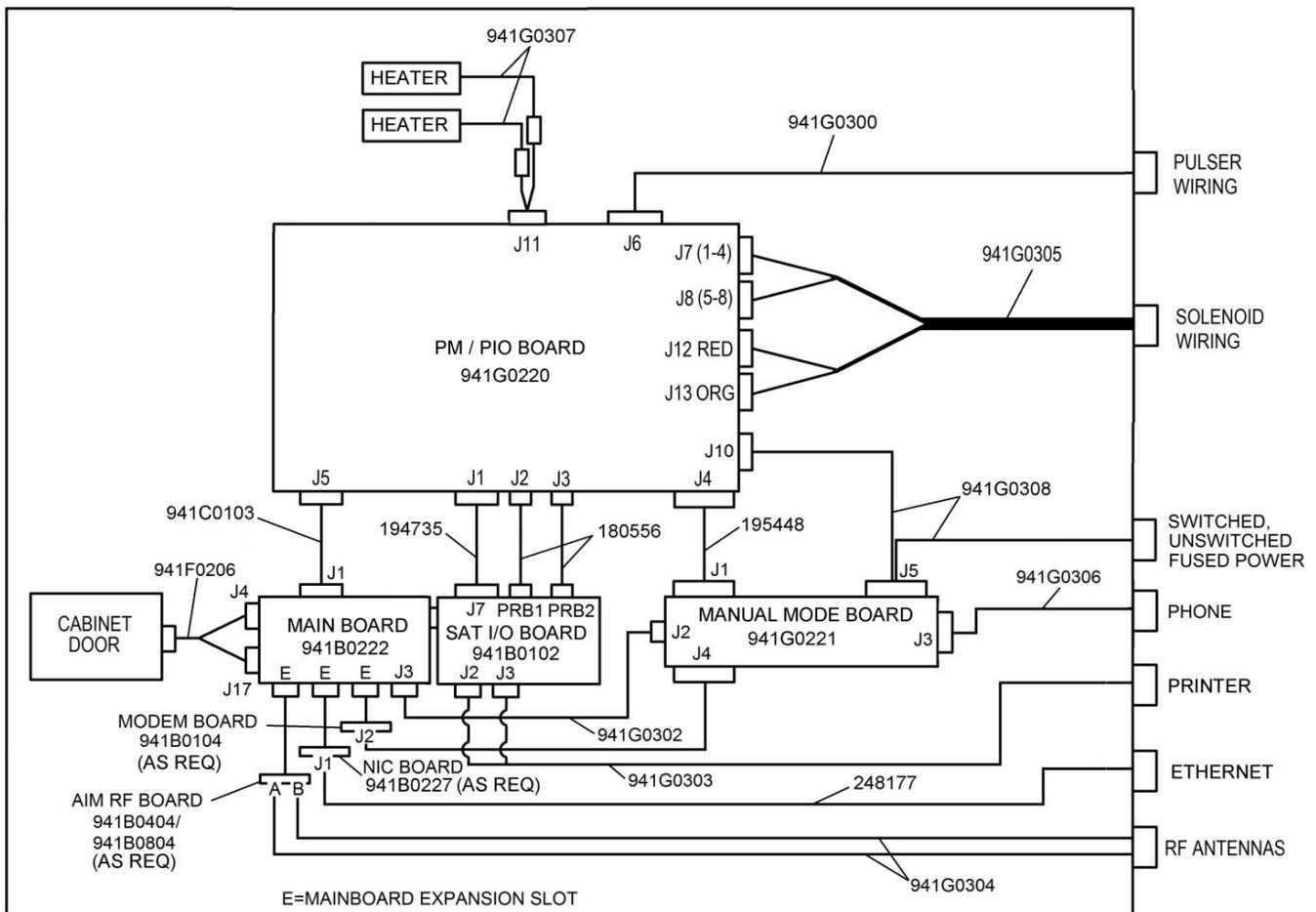


Figure 3. Cable Connections for Upgrade Configuration

## Install the Upgrade Parts

The LRU supplied with the upgrade parts has all necessary cables pre-installed. Other cables are dependent upon the options purchased with the original Passive Mobile. Reference Figure 3 for connection points of all cables.

1. Position the new LRU up to the Passive Mobile cabinet for cable connections to the PMPIO Board.

**NOTE** The two black wire harnesses described in step 2 may not be present if pump handle detection is not being used with the Passive Mobile.

2. If applicable, connect the two black wire harnesses labeled PUMP HANDLE 1-4 TO J7 and PUMP HANDLE 5- 8 TO J8 to receptacles J7 and J8. Press the connectors onto the receptacles until the latches latch.
3. There are two 6-pin connectors on the 941G0308 wire harness. Press the connector from the long end of the cable onto J10 on the PMPIO Board until the two latches latch.
4. Connect the two ends of the 941G0305 wire harness to J12 (RED) and J13 (ORANGE) on the PMPIO Board. The end having the red wires connects to J12 (RED), and the end having the orange wires connects to J13 (ORANGE). Push the connectors until the latches latch.

5. Align the keyway and connect the 941G0300 wire harness to J6 on the PMPIO Board.
6. The new LRU is ready to be installed in the Passive Mobile cabinet. Starting first with the right side of the LRU, carefully position the LRU in the Passive Mobile cabinet for installation. The cables connected to the back of the LRU should all be routed under the LRU from the back to the front.
7. Support the LRU and install the four large Philips head screws at each corner of the LRU.
8. Connect the two ground wires from 941G0308 (one from the J10 connector end, and one from the Connector Panel end) to the ground lug in the bottom of the Passive Mobile cabinet.
9. If applicable, connect the two leads of the 941G0303 cable to the J2 RECEIPT PRINTER and J3 ON SITE PRINTER connectors on the Satellite I/O Control Board.
10. Make the following cable connections to the Manual Mode Board:
  - a. Connect the 941G0302 cable from J3 SERIAL PORT in the upper left corner of the Mainboard to J2. The J2 connection has a latch that must be engaged when connecting.
  - b. Connect the 195448-ribbon cable to J1.
  - c. Connect and latch the 941G0306 multi-colored wire harness to J3.
  - d. Connect and latch the 941G0308 cable to J5.
11. Reset the PWM switches on the new Manual Mode Board to the positions set on the previous Manual Mode Board.
12. Connect the ground wire from the left side of the Backplate Assembly to the cabinet door stud with a nut and lock washer. Use an 11/32-inch socket, nut driver, or open-end wrench to tighten the nut.
13. Raise the Board Retainer and reinstall the circuit boards in the Mainboard expansion slots. After the boards are reinstalled, lower the Board Retainer and tighten the attach screws.
14. Reconnect the cables to the replaced circuit boards in the Mainboard expansion slots.
15. Reconnect the two ends of the large 941F0206 ribbon cable to J4 and J17 on the new Mainboard.
16. If applicable, connect the two leads of the 941G0303 wire harness to the RECEIPT PRINTER and ON-SITE PRINTER connectors on the Satellite I/O Control Board.
17. Install the compact flash card removed from the old Mainboard into the Compact Flash card slot of the new Mainboard. The new LRU should initialize with the same firmware as used with the removed LRU.
18. Remove the plastic insulator strip installed between the new Mainboard battery and battery contact.
19. Close and lock the Passive Mobile door.

20. With the truck ignition switch off, reconnect the power cable to the POWER connector in the lower right corner of the Connector Panel.
21. Start the truck and monitor the Passive Mobile display. The Passive Mobile should initialize with the same firmware as used with the removed LRU.
22. Upload the hose/FMU configuration and authorization list from the FuelMaster software program.
23. Perform test transactions on all controlled hose positions. Record the date, time, quantity, and product.
24. Query the Passive Mobile with the FuelMaster software. Verify the date, time, quantity, and product for each test transaction matches.

**TIP**

If any questions arise, contact Syntech Systems, Inc.'s Customer Satisfaction Center (CSC) at 1-800-888-9136, ext. 2, or email [support@myfuelmaster.com](mailto:support@myfuelmaster.com).

## Change Log

<b>Date</b>	<b>Description</b>
8/20/2014	Original
11/10/2020	Reformatted/rebranded