

1.0 Description

These service instructions provide information on removing and replacing the filter board of a MS, MSH, MS-PAE or MS-AE Series inverter/charger.

- PN: FB-MS/12V, FB-MS/24V, FB-MS4048, FB-MSH, FB-MSAE/MSPAЕ

Note: This document is part of a series of Service Instructions to help qualified personnel replace components that have failed or have been damaged.

2.0 Installation Preparation

Before removing or replacing the filter board, read this entire document carefully and follow all instructions.

2.1 Safety Precautions

Follow all electrical safety precautions and the ESD prevention guidelines below, and in the *Electrical Safety Precautions and Electrostatic Discharge Prevention, Service Instructions: 64-1000*.



Warning: Hazardous voltages are present within the inverter when power is applied. Do not remove the inverter's top cover without first turning off and disconnecting all AC and DC power to the inverter. Always replace the top cover before reconnecting power.



Warning: The capacitors inside the inverter store electric energy even after all AC and DC power is removed. After disconnecting all AC and DC power to the inverter, wait 5 minutes for the energy in the capacitors to dissipate before working on the unit.



Caution: Observe all ESD safety precautions when working with the filter boards, and within the inverter. Failure to follow ESD safety precautions could result in damage to internal components and the inverter.

2.2 Included Materials

Before dismantling the inverter, inspect the new filter board to ensure there is no obvious physical damage. Look at the Model ID label on the new filter board (see Figure 1) and verify that the model number on this label corresponds to the model number of the inverter that is being repaired. Contact Sensata Technologies if any item appears to be damaged, missing or incorrect.

Note: All removed items must be returned if repair is for warranty consideration. Save the packing material and shipping container to use when returning the removed items.

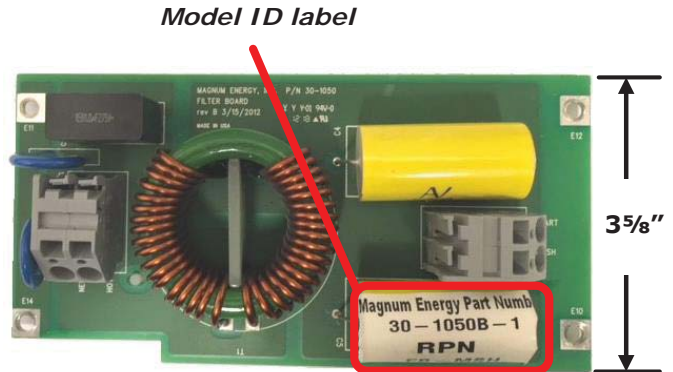


Figure 1, Filter Board (MSH models)

2.3 Required Tools and Equipment

You need the following equipment to remove and replace the filter board:

- T15 Torx head screwdriver – for #6-32 screws
- T25 Torx head screwdriver (≥6" shaft) – for #10-32 screws (top cover)
- Small slot head screwdriver – MSH models only (≤ 3/16" or 4.8mm wide)

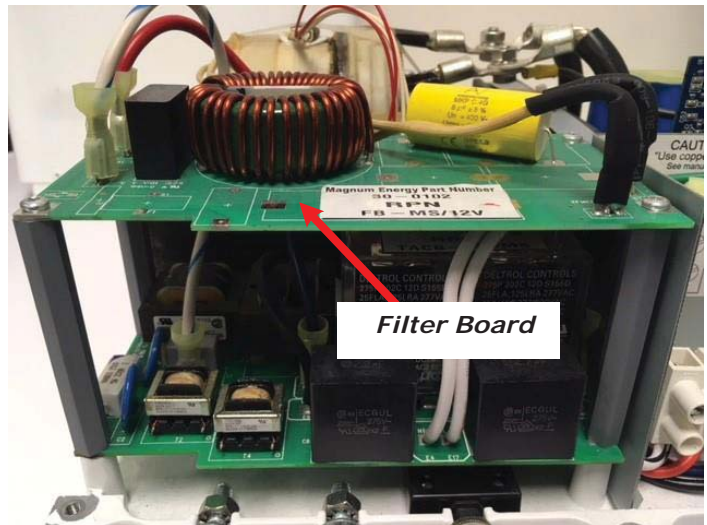


Figure 2, Locating the Filter Board

Filter Board Removal & Replacement

3.0 Removing and Replacing a Filter Board

Follow the procedures below to remove and replace a filter board on a Magnum inverter/charger.

3.1 Removing the Filter Board

1. Remove the inverter's top cover and review the internal components.

Note: For a MS, MS-PAE, or MS-AE Series inverter, refer to *Service Instructions: 64-1001 – Top Cover Removal and Replacement with Internal Component Identification*.

For a MSH Series inverter, refer to *Service Instructions: 64-1007 – MSH Series Top Cover Removal and Replacement with Internal Component Identification*.

2. Locate the filter board (Figure 2).
3. *MSH Models* – Using the slot head screwdriver, remove the four wires from the filter board's two spring terminals (refer to Figure 3).

IMPORTANT: Mark the two wires (*Start, Finish*) that run from the filter board to the transformer before disconnecting them. They must be reconnected exactly as they were before they were disconnected.

Note: Take care when removing the wires from the spring terminals. Do not loosen/detach them at their connection point on the AC board or at the transformer.

MS Models – Disconnect the eight quick disconnect terminals on the filter board—four from the transformer, four from the AC board. Carefully grasp the connectors and pull up to remove (Figure 4).

IMPORTANT: Mark all eight wires before disconnecting each from the filter board to ensure they are correctly reconnected during the replacement procedure.

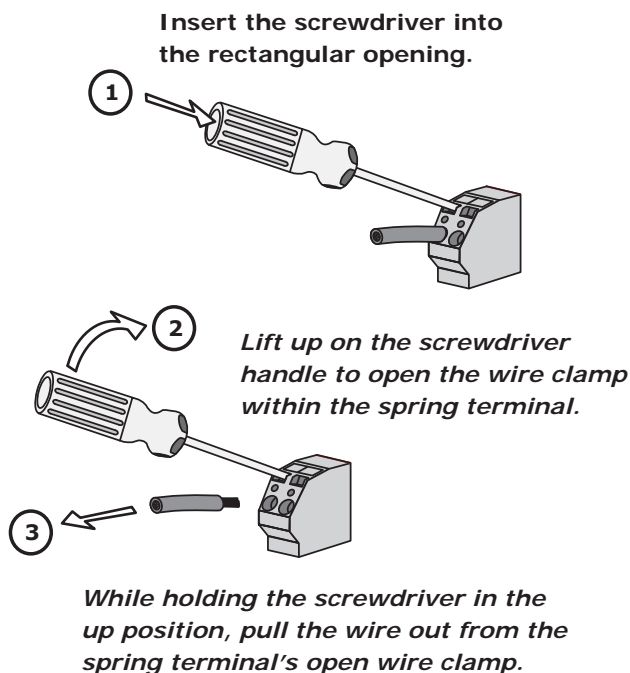


Figure 3, Spring Terminals (MSH models)

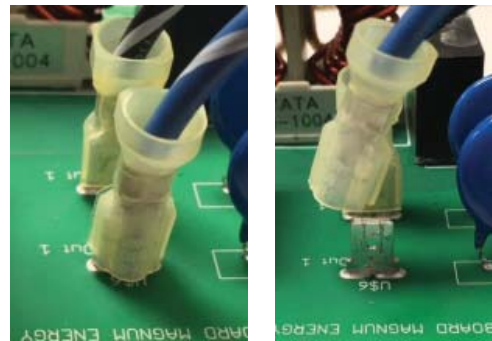


Figure 4, Quick Disconnect Terminals (MS models)

4. Remove the four 3½" #6-32 screws (T15 head) that secure the filter board to the inverter base (screws run through the four support posts).
5. Using ESD precautions, remove the filter board. If it is for warranty consideration, place the filter board component-side up on a grounded, static-free surface until it can be placed in an antistatic bag to be returned; otherwise, it can be discarded.

3.2 Replacing the Filter Board

1. Align the new filter board over the support posts.

Note: If working on an inverter model with a daughter board, make sure the top edge of the daughter board is positioned into the plastic board slot on the bottom of the filter board before securing.

2. Insert and tighten the four 3½" #6-32 screws (T15 head) securing the filter board to the inverter's base (through the four support posts).
3. *MSH Models* – Use the slot head screwdriver to open the wire clamps inside the spring terminals, and then insert and secure the four wires you removed in Step 3 of Section 3.1.

IMPORTANT: Ensure that the two wires from the transformer are correctly routed to the proper spring terminal slot (i.e., *Start, Finish* labels on board). The red and white wires from the AC board must be connected to the spring terminal slots labeled *HOT* and *NEUT*, respectively.

MS Models – Reconnect the eight quick disconnect terminals on the filter board—four from the transformer, four from the AC board. Carefully grasp and push down to reconnect.

IMPORTANT: Make sure all wires are correctly and securely reconnected to the appropriate contacts on the filter board.

4. Carefully pull on each wire to ensure that it is securely connected.
5. Replace the inverter's top cover, and then secure it per the *Top Cover Removal and Replacement* service instructions for your inverter model.