Manual

WF-8900MBA Series

WF-8935MBA | WF-8945MBA | WF-8955MBA | WF-8965MBA | WF-8975MBA

(The Power Center model number is located on the front panel label next to the breakers)

THE **HEARTBEAT** OF TODAY'S RVS

THE POWER PROS™

WFCO

EXPERT PRODUCT SUPPORT

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⚠WARNING

RISK OF ELECTRICAL SHOCK

Disconnect or isolate all power supplies before making electrical connections. More than one disconnection or isolation may be required to completely de-energize equipment. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

NOTICE

All wiring must conform to local, national, and regional codes and regulations. Use copper conductors only for all wire connections. Do not exceed the electrical ratings for the WF-8900MBA Series Main Board Assembly or the equipment connected to it. Failure to follow these precautions may cause equipment failure and/or electrical shock which could result in severe personal injury or death.

⚠CAUTION

INSTALLATION AND SERVICING

This product should be installed and serviced by a certified or licensed electrician familiar with applicable safety codes and installation requirements. Failure to observe this precaution could result in electrical shock or bodily injury. Consult your servicing dealer before attempting any work on this product.

⚠WARNING

SPARK HAZZARD

This unit employs components that can produce arcs or sparks. To prevent fire or explosion, do not install in compartments containing batteries or flammable materials (LP gas). This product is NOT ignition protected.

⚠CAUTION

DO NOT OBSTRUCT VENTILLATION

When installing the WF-8900MBA Series Main Board Assembly, DO NOT cover or obstruct the ventilation openings of the WF-8900 Power Center enclosure. Failure to provide adequate ventilation may result in overheating and possible fire.

GENERAL INFORMATION
WF-8900MBA Series Main Board Assembly Safety Features

Automatic Cooling Fan

The cooling fan in the WF-8900 Series Power Center is incremental and is controlled by the current drawn out of the converter to the applied load. The on-board microprocessor increases fan speed as the total load increases and decreases fan speed as the load decreases. Unlike traditional temperature-controlled fans, the load-controlled fan provides better component cooling by avoiding temperature spikes which can lead to premature component failure.

Over-Temperature Protection

If the internal temperature of the converter exceeds a critical point, it will shut down. This protects the unit from excessive heat that may damage sensitive components. The unit will restart once the temperature inside has dropped.

Electronic Current Limiting

In the event that the output current exceeds the maximum rating for the WF-8900 Series Power Center converter, the output current will remain constant but the output voltage will begin to drop. If this occurs, the unit will recover once loads are reduced.

Short-Circuit Protection

Should a short circuit occur in the RV, the WF-8900 Series Power Center converter will drop the voltage output to zero volts. If the short-circuit condition is removed and no other fault conditions are detected, the converter will resume normal operation. However, short-circuit conditions are **dangerous**, and an RV will require inspection by a qualified service technician.

CIRCUIT PROTECTION
WF-8900MBA Series Main Board Assembly Fuses and Breakers

Reverse Battery Protection

The WF-8900MBA Series Main Board Assembly will charge the 12-volt House battery if installed. A battery DOES NOT have to be installed for WF-8900MBA Series Main Board Assembly to oper-ate. When a battery is installed, two reverse polarity fuses protect the MBA circuitry. The fuses are located along the left-center edge of the DC fuse board below the VCC+ lug. Refer to Figure 1 below. This feature prevents permanent damage to the MBA from a battery connected into the circuit backwards. In addition to protecting the MBA, the reverse polarity fuses are the main connection between the MBA and the DC fuse board.

The fuse values and quantity vary depending on which WF-8900MBA Series Main Board Assembly you have. Refer to the table below.

- WF-8935MBA – 35A (1)
- WF-8945MBA – 30A (2)
- WF-8955MBA – 40A (2)
- WF-8965MBA – 20A (4)
- WF-8975MBA – 20A (4)

The circuit fuses and the Reverse Battery Protection fuses should be replaced with ATC or ATO automotive type fuses such as:

- Littelfuse type 257
- Bussmann type ATC

DC Fuse Board

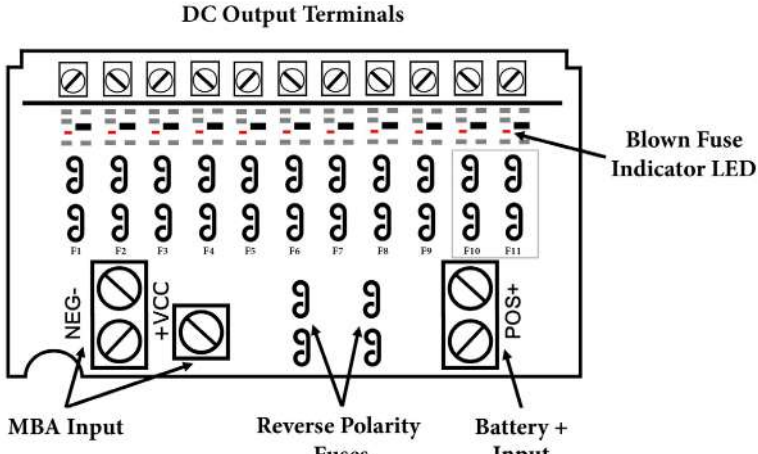

Figure 1

OPERATIONAL FEATURES
Converter Operation Modes

Three-Stage Smart Charging

In order to maximize battery life, it is best to charge batteries slowly, keep them topped off with a trickle-charge when the RV is not being used. The 3-Stage "smart" charger continuously measures the battery voltage output and regulates the amount of charge using three modes of operation; Absorption, Bulk and Float modes.

All WFCO power converters are automatic three-stage switching power supplies. The converter senses which mode it needs to be in by checking the RV system voltage.

The converter normally provides a constant target output voltage of 13.6 volts (nominal) to power all the branch circuits. However, it is current limited, and if the output (load) current reaches its maximum, the output voltage will drop as necessary to hold the converter's maxi-mum output current level (the amperage rating) without exceeding it.

If the output current reaches its maximum (normally caused by a discharged battery), this will cause the converter to go into Bulk Mode, which means the target output voltage will change to 14.4 volts and a timer will start. Although the converter is outputting 14.4 volts, you will not be able to read that on a voltmeter due to the voltage-current relationship.

From the paragraph above, as load current increases, output voltage decreases. The actual out-put voltage will not rise until the load current is reduced, which happens naturally as the battery charges or if 12-volt appliances are turned off.

Bulk Mode will be maintained until the current draw drops to approximately five Amps, or until the timer reaches four hours (whichever happens first). Then the target output voltage is changed back to 13.6 volts for Absorption Mode. Lights that are powered from the output may change brightness slightly at that time.

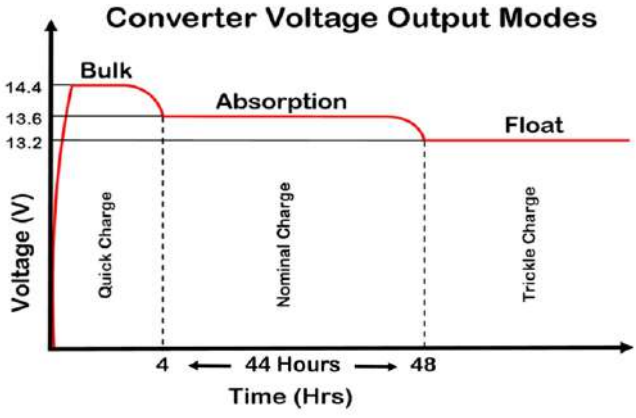

Figure 2

NOTE: for a detailed explanation of the charging modes, please refer to our publication Theory of Operation, document #AD-TD-0001-0.

TROUBLESHOOTING INSTRUCTIONS

Troubleshooting the WF-8900MBA Series Main Board Assembly

Refer to the Troubleshooting Guide for the WF-8900MBA Series Main Board Assembly (Figure 3) below.

Converter Output Voltage

Before checking the WF-8900MBA Series Main Board Assembly output voltage, disconnect the battery cables at the battery. Make sure the converter is plugged into an AC source (105-130 Volts). Check the converter output voltage at the battery with a voltmeter. Place the meter probes on the disconnected battery cables; place the **Positive** (red) meter probe on the **+ Positive** red battery wire and place the **Negative** (black) meter probe on the **- Negative** black wire on the battery cable. Be sure you have good connections at the cables. If the voltage reads 13.6 VDC (+/- 0.2) with no load, the converter is functioning properly.

If the converter output voltage at the battery reads 0.0 VDC, or if the battery is not charging, check for an open inline fuse in the battery wire circuit. One may have been installed by the RV manufacturer. Also check for loose wiring connections.

Reverse Polarity Fuses

If there is no DC output coming from the WF-8900MBA Series Main Board Assembly converter section, first check the reverse polarity fuses on the fuse board. Then, visually inspect the fuses for any breaks in the fuse element. If no breaks are found, use a continuity tester to check for continuity. If the reverse polarity fuses are blown, it means the RV battery was accidentally connected in reverse, either at the battery or at the converter. Investigate the connections and reconnect the cables properly. Replace the fuse with the same type and amperage rating as the original.

IMPORTANT: These fuses protect the converter from damage in the event that the RV battery is accidentally connected in reverse. A reversed battery connection, even if for only a second, will cause these fuses to blow.

If the above checks have been made but the converter output still reads 0.0 VDC, the converter is not functioning properly.

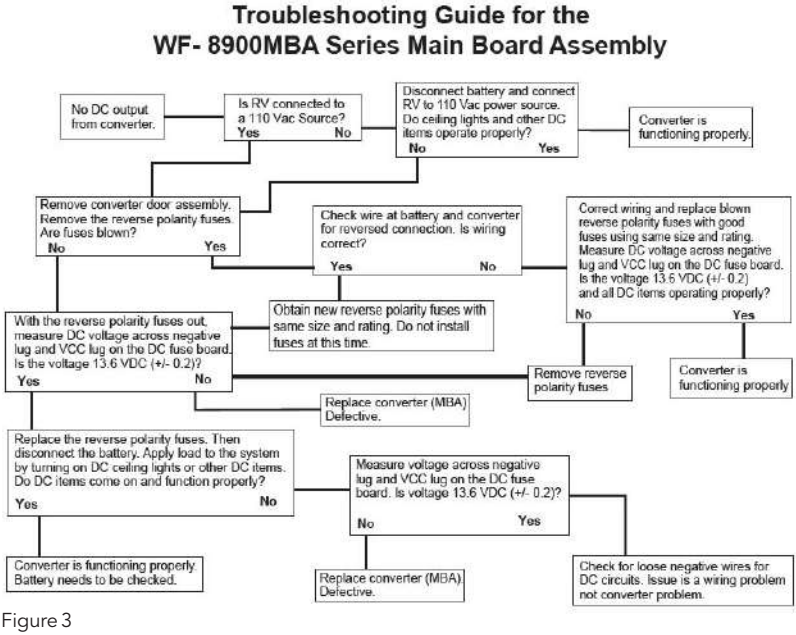

Figure 3

Should it be determined that the WF-8900MBA Series Main Board Assembly needs to be replaced, removal of the Main Board Assembly Is a simple process.

Replacing the Converter Section (MBA)

⚠WARNING

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Make sure no AC power is coming into the RV from either the Shore Power cord or an on-board generator. Remove and set aside the Reverse Polarity Fuses located on the fuse board to disconnect the converter section from the rest of the RV's DC power.

Perform the following steps:

1. Remove the door assembly by loosening the two screws located in the upper left and right corners. The screws are captive and will not fall out. Pull forward and outward on the door assembly to clear the case.
2. In the upper left portion of the fuse board, loosen the **NEG-** lug (White wire) and the **VCC+** lug (Red wire). Do not back the lug screws all the way out.
3. Locate the tab at the bottom of the fuse board holding the board in place. Gently depress the tab allowing the fuse board to be pulled forward.
4. With the fuse board pulled slightly away from its mounting, pull the Red and White wires out of the lugs.
5. In the AC section of the enclosure, locate the Black wire coming up from the converter in the lower section. As an extra precaution, **MAKE SURE THE CONVERTER BREAKER IS IN THE OFF POSITION**. Remove the wire from the breaker. NOTE: this wire has a metal pin terminal on the end inserted into the breaker. Remove and position out of the way any wire connected to the pigtail.
6. Locate and remove the converter's Green Ground wire attached to the AC Ground bar on the left side of the compartment. In a similar fashion, locate and remove the converter's White Neutral wire attached to the AC Neutral bar at the top of the compartment.
7. In the converter compartment, remove the two screws at the front of the MBA holding it in place. Slide the MBA forward routing the wires through the slots in the case until the MBA clears the enclosure.

If the MBA is being returned under a warranty claim, follow the packaging instructions in your warranty claim packet.

When installing a replacement MBA, reverse the order of steps 1-7.

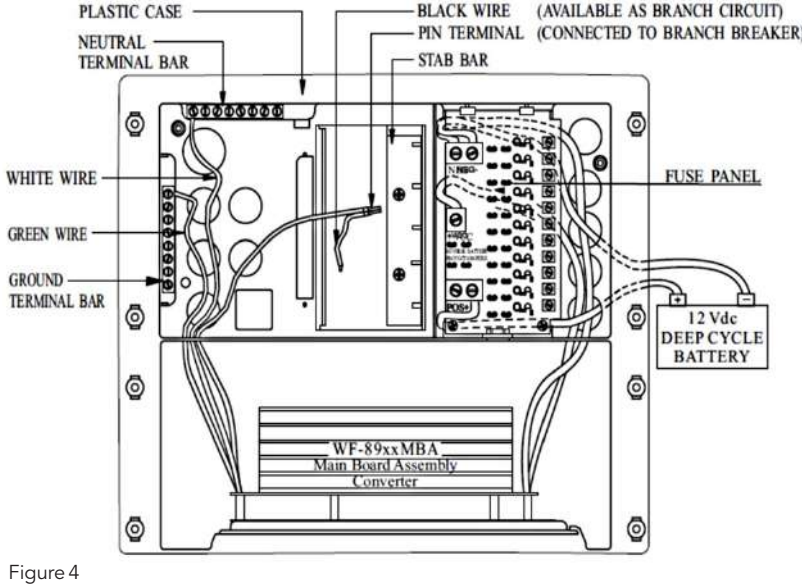

Figure 4

GENERAL COMPLIANCE INFORMATION
Agency Listings

UL

The WF-8900MBA Series Main Board Assemblies are UL-Listed, and cUL-Listed (Canadian).

FCC Compliance Class B

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

INSTALLATION INSTRUCTIONS
Installing the WF-8900MBA Series Main Board Assembly

Mounting the Converter Section (MBA)

Refer to Replacing the Converter Section (MBA) on page 8 for complete removal and installation instructions.

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WF-8900 Main Board Assembly Specification					
Model No.	**WF-8935-MBA**	**WF-8945-MBA**	**WF-8955-MBA**	**WF-8965-MBA**	**WF-8975-MBA**
Converter Input Power:					
Voltage:	105-130VAC				
Frequency:	60Hz				
Max. Input Current @105VAC	7A	9A	11A	13A	15A
Max Power	600 watt	770 watt	940 watt	1110 watt	1280 watt
Converter Output Power					
Continuous Power:	475 watt	610 watt	750 watt	880 watt	1020 watt
Rated DC Cutput Voltage	13.6V				
Rated DC Current	35A	45A	55A	65A	75A
Charging Control	Automatically controlled by microprocessor				
Charging Modes	3-stage Intelligent charge				
Intelligent Charge Mode	Absorption, Bulk and Float (Storage)				
Battery Adaptability	LA/AGM				
Absorption Charge Voltage	13.6V				
Bulk Charge Voltage: (4 Hrs)	14 .4V				
Float Charge Voltage	13.2V				
Regulation	±1% accuracy against input or load changes				
Cooling Fan	Two speed according to the DC load amperage				
VA Efficiency:	> 80% (under 70% of load condition)				
Protection:					
Overload	Current-limiting & shut down; auto recovery upon return to normal load				
Short-Circuit	Shut down & auto recovery upon return to normal				
Over-Temperature	Shut down & auto recovery upon return to normal				
Battery Reverse Polarity	Protected by fuse; same rated fuse replacement required				
Mechanical:					
Dimension: W x H x D	7.1 " W x 3.9" Hx 9.6" D / 181 mm W x 99 mm H x243 mm D			7.8" W x 4.5" H x 10.8" D / 198 mm W x 113 mm H x 273 mm D	
Weight:	2.5 lbs. / 1.14 kg	3.46 lbs. / 1.57 kg		5.26 lbs. / 2.39 kg	
Environmental:	20 ~ 90% Non-condensing				
Agency:	UL458 and FCC Class B compliant				

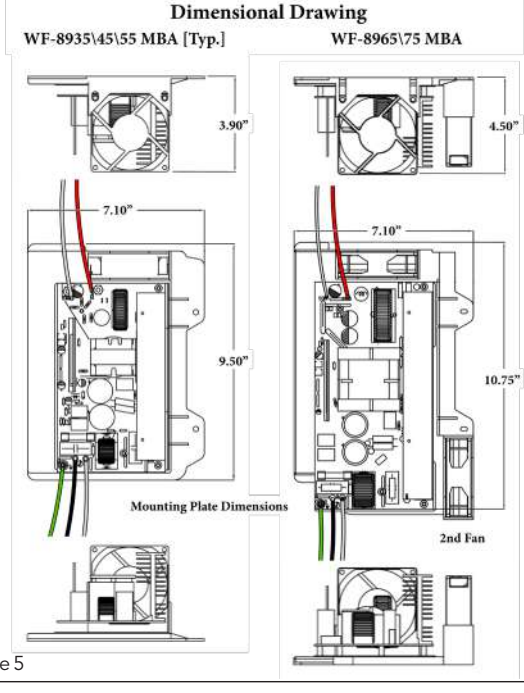

Figure 5