



Subject: 8900 Series Troubleshooting Guide

1. Purpose

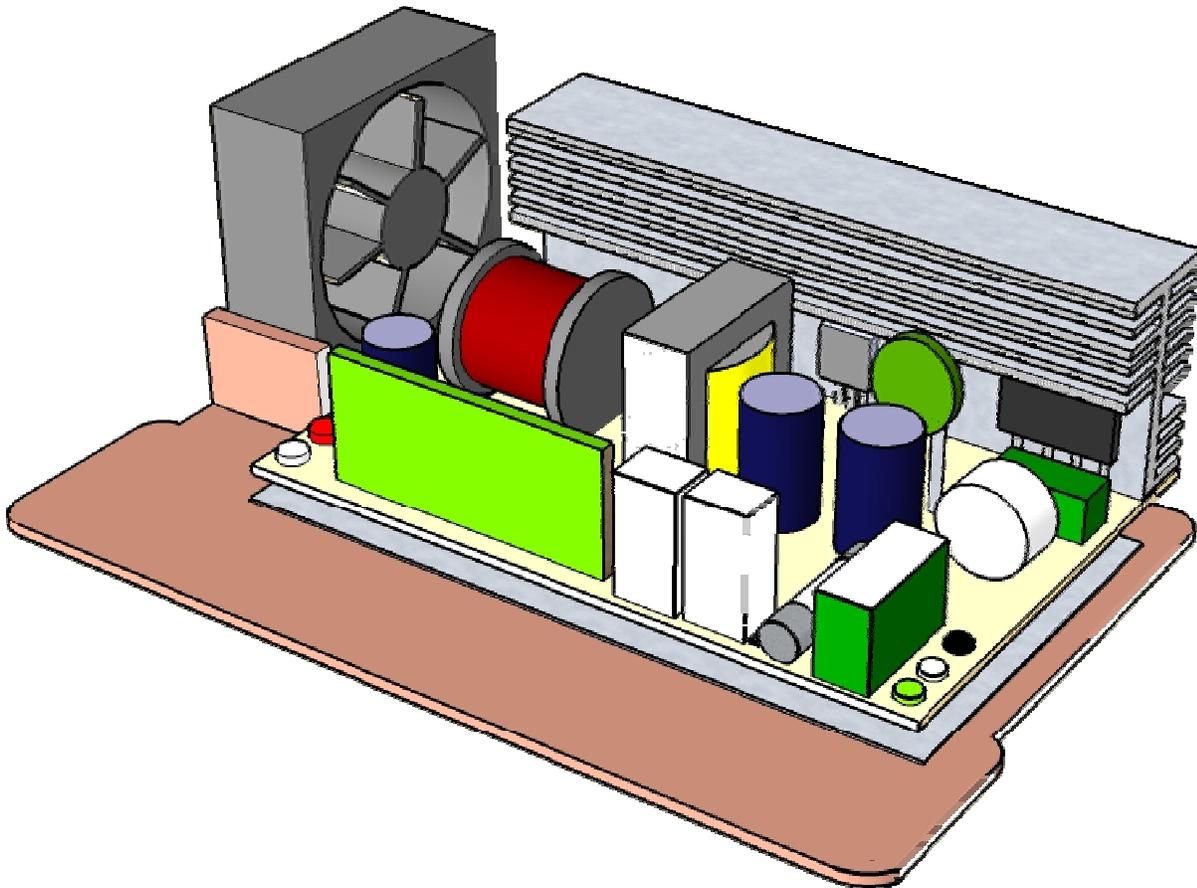
- 1.1. Help OEM's, Dealers, and customers to troubleshoot WFCO 8900 Series MBA units

2. Requirements

- 2.1. WF-89xxMBA (Main Board Assembly)
- 2.2. Digital Multimeter

3. Summary

- 3.1. Checking the FET's (Field Emitting Transistors)
- 3.2. Checking the Bridge Rectifier
- 3.3. Checking the onboard leaded Fuse
- 3.4. Checking the MOV (Metal Oxide Veristor)
- 3.5. Checking the DC Voltage Output



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Date:



4. Checking the FET's (Field Emitting Transistor)

- 4.1. Flip the 8900 MBA (main board assembly) upside down, heat sink towards front
- 4.2. With these instructions FET1, and FET 2 (Q1 or Q2) can be checked
- 4.3. Set the Multimeter to “**Diode Test**”, or continuity (short = beep sound = bad)
- 4.4. Place “**Negative – Black**” Multimeter probe on the FET “**Number 1**” pin
 - 4.4.1. Place “**Positive – Red**” Multimeter probe on the FET “**Number 2**” pin, and the reading should be reading greater than 1.0 (> 1.0 or open)
 - 4.4.2. Place “**Positive – Red**” Multimeter probe on the FET “**Number 3**” pin, and the reading should be reading approximately 0.5 (~ 0.5 +/- 0.2)
- 4.5. Place “**Negative – Black**” Multimeter probe on the FET “**Number 2**” pin
 - 4.5.1. Place “**Positive – Red**” Multimeter probe on the FET “**Number 3**” pin, and the reading should be reading approximately 0.5 (~ 0.5 +/- 0.2)
- 4.6. If both readings are OK, FET component is good.

Black	Red	Passing reading (Diode Test)	Passing reading (continuity)
Pin 1	Pin 2	> 1.0	No beep (no shorts), open
Pin 1	Pin 3	~ 0.5 (+/- 0.2)	No beep (no shorts), open
Pin 2	Pin 3	~ 0.5 (+/- 0.2)	No beep (no shorts), open

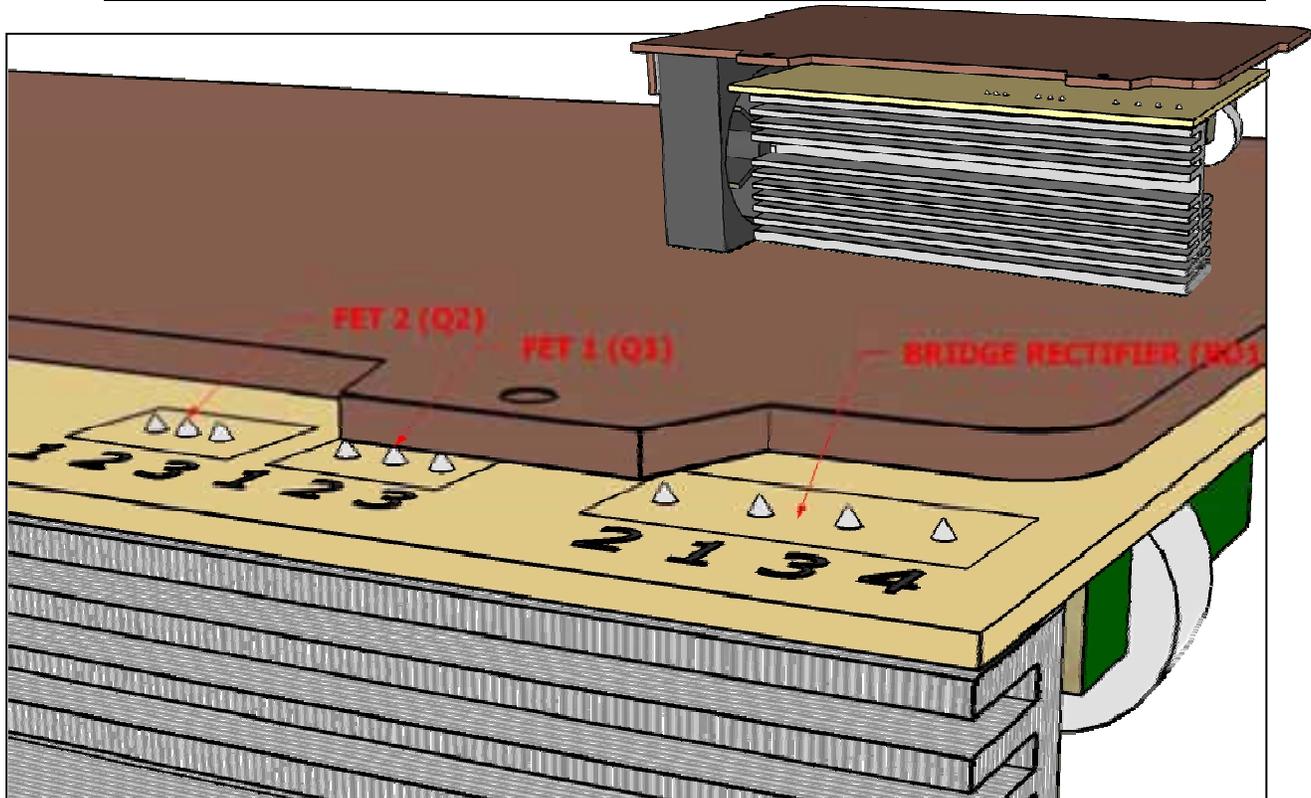


Figure. 1

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5. Checking the Bridge Rectifier

- 5.1. If needed flip the 8900 MBA (main board assembly) upside down, heat sink towards front
- 5.2. With these instructions Bridge Rectifier (BD1) can be checked
- 5.3. Set the Multimeter to “**Diode Test**” or continuity (short = beep sound = bad)
- 5.4. Place “**Negative – Black**” Multimeter probe on the Bridge Rectifier “**Number 2**” pin
 - 5.4.1. Place “**Positive – Red**” Multimeter probe on the Bridge Rectifier “**Number 1**” pin, and the reading should be approximately 0.5 (~ 0.5 +/- 0.2)
 - 5.4.2. Place “**Positive – Red**” Multimeter probe on the Bridge Rectifier “**Number 3**” pin, and the reading should be approximately 0.5 (~ 0.5 +/- 0.2)
- 5.5. Place “**Negative – Black**” Multimeter probe on the Bridge Rectifier “**Number 1**” pin
 - 5.5.1. Place “**Positive – Red**” Multimeter probe on the Bridge Rectifier “**Number 4**” pin, and the reading should be approximately 0.5 (~ 0.5 +/- 0.2)
- 5.6. Place “**Negative – Black**” Multimeter probe on the Bridge Rectifier “**Number 3**” pin
 - 5.6.1. Place “**Positive – Red**” Multimeter probe on the Bridge Rectifier “**Number 4**” pin, and the reading should be approximately 0.5 (~ 0.5 +/- 0.2)
- 5.7. If all readings are OK, Bridge Rectifier component is good.

Black	Red	Reading (Diode Test)
Pin 2	Pin 1	0.5 (~ 0.5 +/- 0.2)
Pin 2	Pin 3	0.5 (~ 0.5 +/- 0.2)
Pin 1	Pin 4	0.5 (~ 0.5 +/- 0.2)
Pin 3	Pin 4	0.5 (~ 0.5 +/- 0.2)

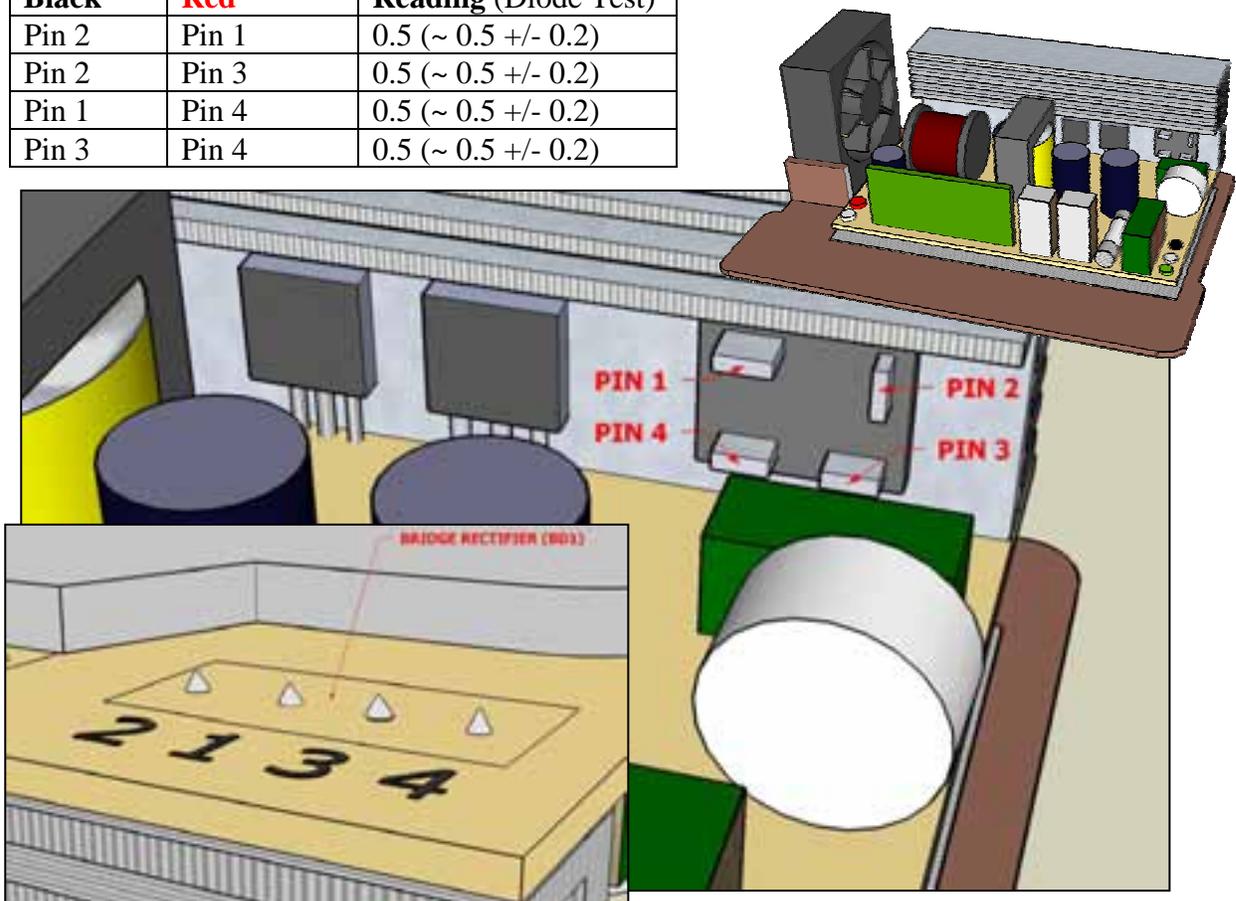


Figure. 2

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6. Checking the onboard leaded Fuse

- 6.1. Position the 8900 MBA (main board assembly) so that heat sink is to the back
- 6.2. With these instructions leaded onboard Fuse (F1) can be checked
- 6.3. Set the Multimeter to “**Diode Test**”
- 6.4. Place “**Negative – Black**” Multimeter probe on one side of the FUSE
- 6.5. Place “**Positive – Red**” Multimeter probe on the other side of the FUSE, and the reading should be approximately “**0.0**” or short (some Multimeter will beep)
- 6.6. If the reading is OK, Fuse component is good.

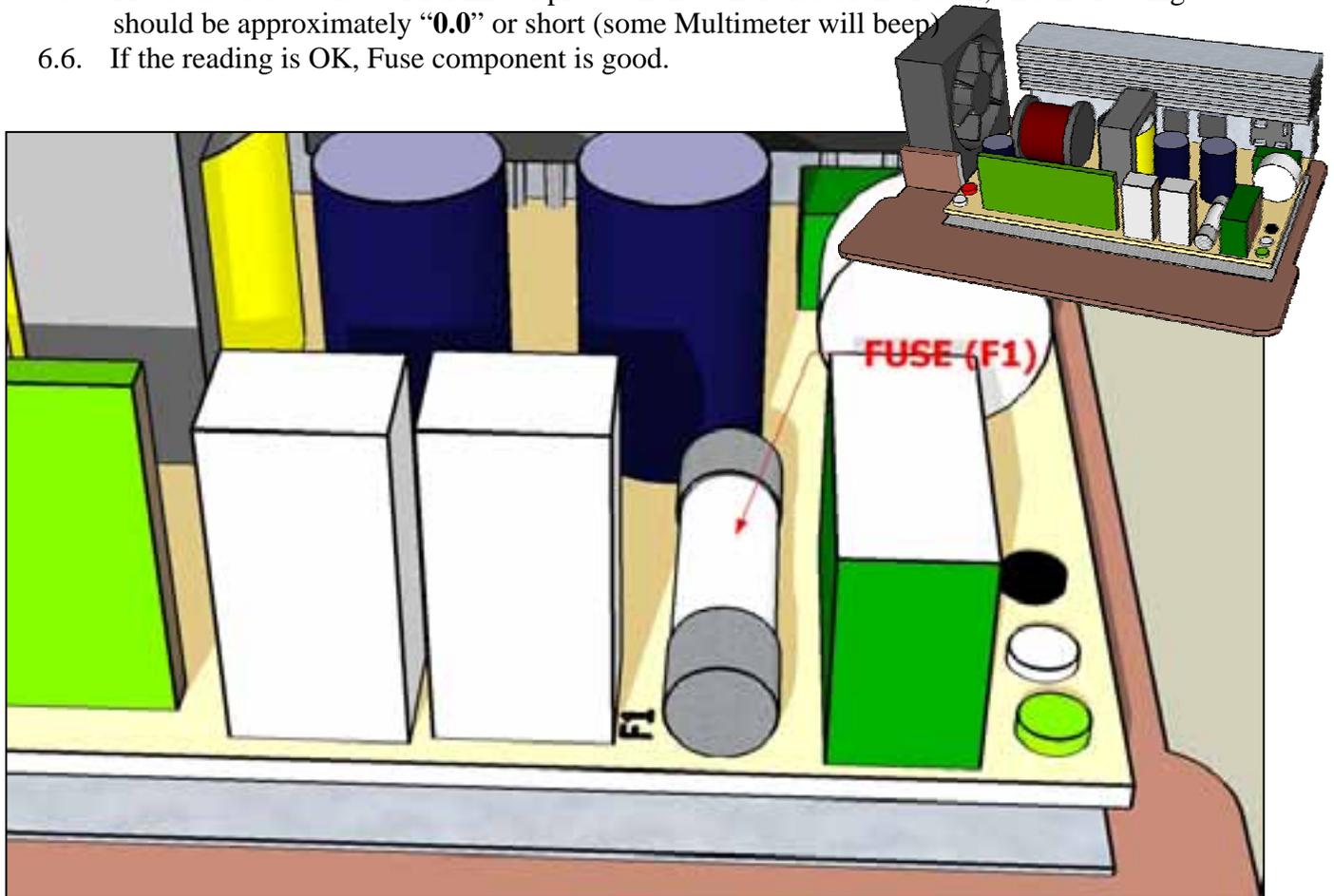


Figure. 3

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7. Checking the MOV (Metal Oxide Veristor)

- 7.1. Position the 8900 MBA (main board assembly) so that heat sink is to the back
- 7.2. With these instructions leaded MOV (N1) can be checked
- 7.3. Set the Multimeter to “**Diode Test**”
- 7.4. Place “**Negative – Black**” Multimeter probe on one side of the MOV lead
- 7.5. Place “**Positive – Red**” Multimeter probe on the other side of the MOV lead, and the reading should be approximately “**0.0**” or short (some Multimeter will beep)
- 7.6. If the reading is OK, Fuse component is good.

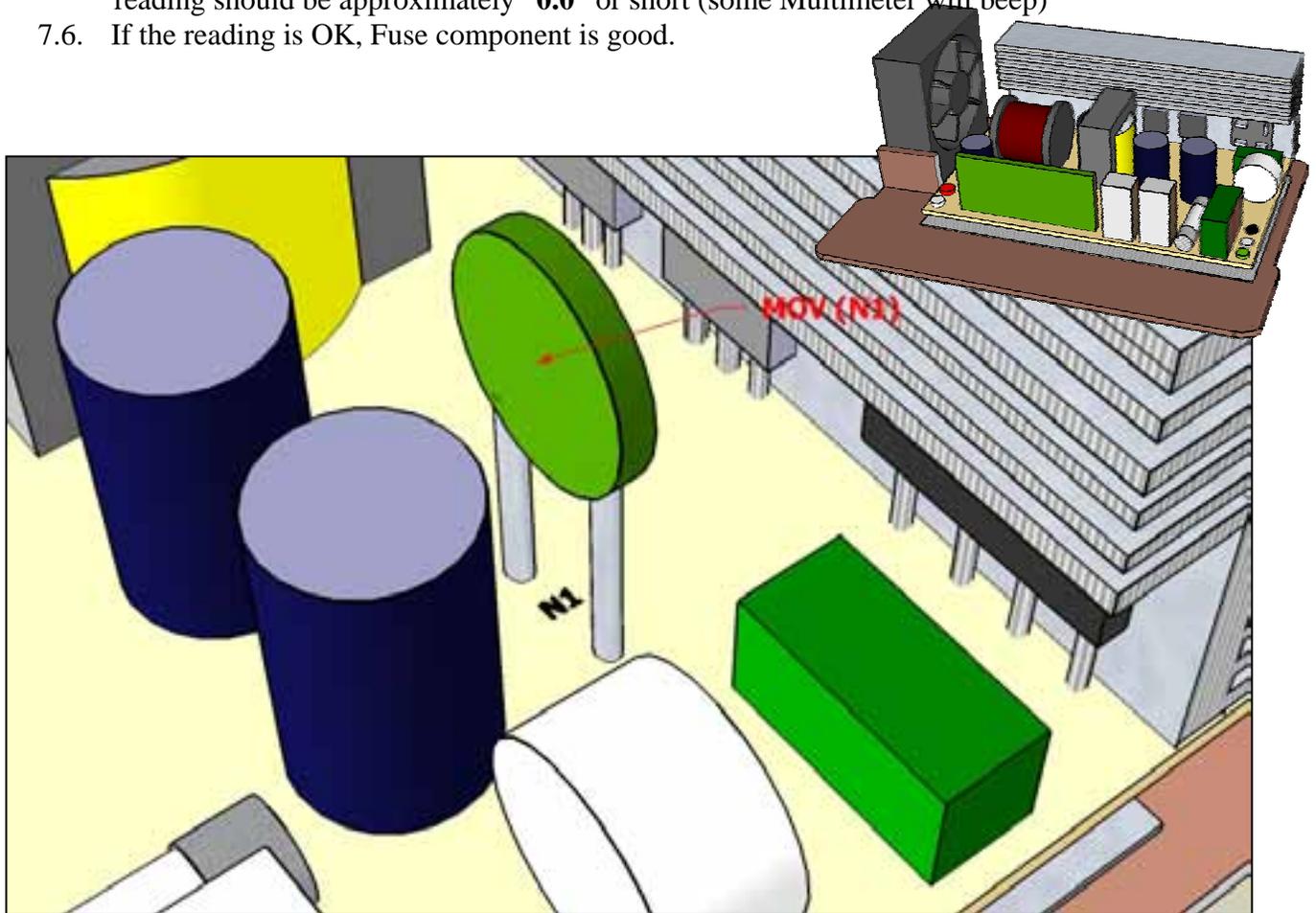


Figure. 4

Revision changes:		Changed by:	Date:
0.	First issue		
1.			
2.			

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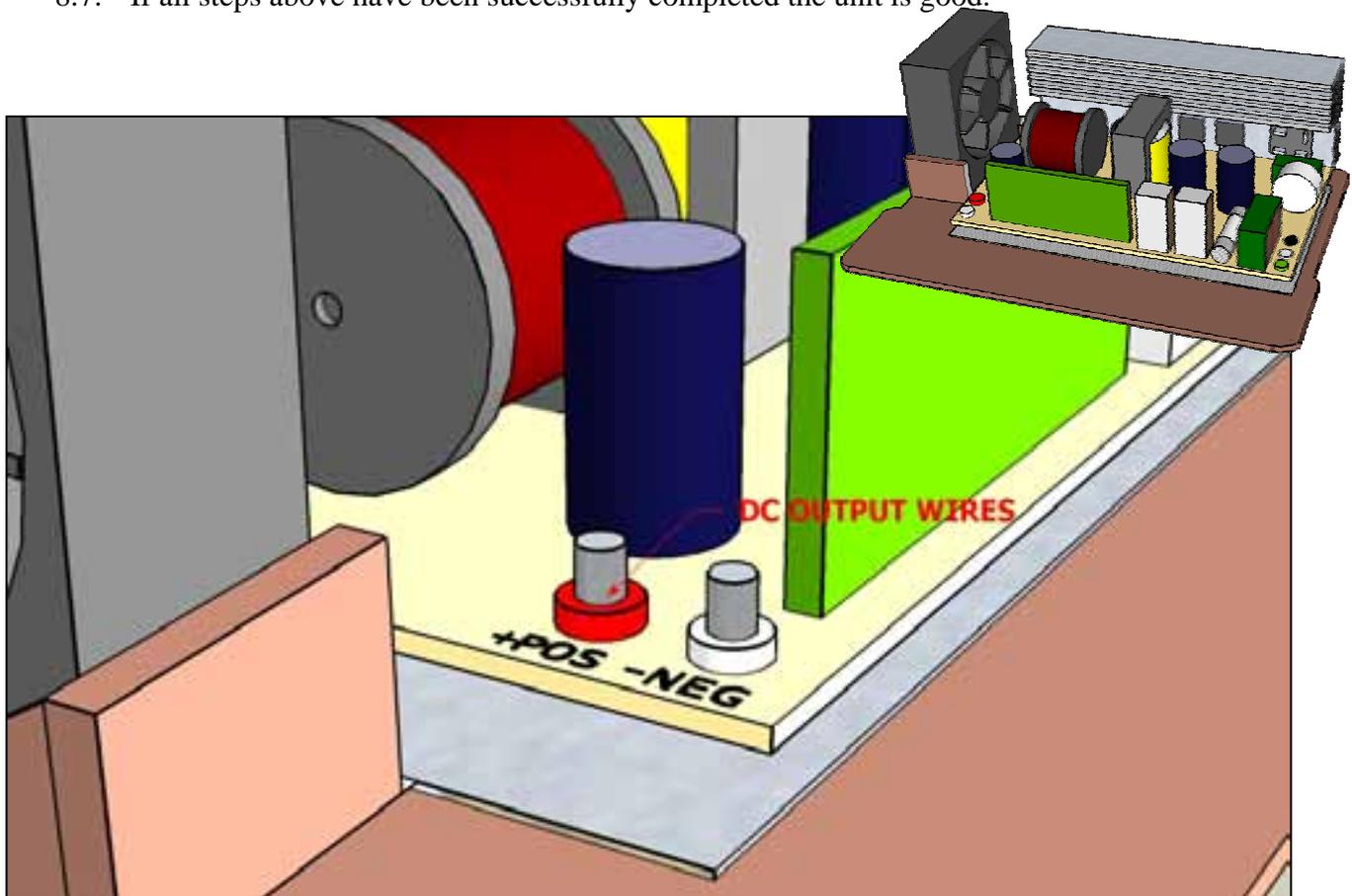


Subject: 8900 Series Troubleshooting Guide

8. Checking the DC Voltage Output

NOTE: We recommend that safety glasses should to be used while checking the open PCB while plugged in to AC source.

- 8.1. With these instructions DC output voltage can be checked
- 8.2. Let the MBA unit rest on the heat sink, and components facing away, while performing DC output test
- 8.3. Apply **110 Vac** to the converter input (make sure ground is properly connected)
- 8.4. Set the Multimeter to “**Volts DC**”
- 8.5. Place “**Negative – Black**” Multimeter probe on the end of “**White Output Wire**”
- 8.6. Place “**Positive – Red**” Multimeter probe on the end of “**Red Output Wire**”, and the reading should be approximately “**13.6 Vdc +/- 0.2**”
 (14.4 Vdc +/- 0.2 if the unit is in the Bulk charge mode)
- 8.7. If all steps above have been successfully completed the unit is good.



Revision changes:		Changed by:	Date:
0.	First issue		
1.	Added use of continuity testing to check components, and safety precautions	S.B.	10/14/07
2.			

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