

**WARNER ELECTRIC POWER SUPPLIES  
TROUBLESHOOTING GUIDELINES**



## POWER SUPPLIES TROUBLE SHOOTING

NOTE: The following steps apply to all of the power supplies except the MCS-800 series. The MCS-800 series are self-contained modules and not intended to be repaired. For trouble-shooting these power supplies check for a proper output and input as recommended in steps 3 and 5.

### GENERAL

1. First make a visual check from the power supply input to the clutch or brake units looking for frayed or broken wires and loose connections. Examine the lead wires or terminals at the clutch or brake. Look for dirt, grease or metal chips that would interfere with a good electrical circuit.

Make a special check at the brushholder when a PC type clutch is involved. The whole trouble may be a loose brushholder, worn brushes, a loose terminal connection caused by steady machine vibration or simply a broken wire.

### FUSE

2. Check the fuse. The fuse is a glass cartridge type and can be checked visually. Make certain that the fuse is of the proper value.

### OUTPUT

3. With a DC voltmeter check the output of the power supply at the clutch and brake (torque control should be set at maximum). A normal reading is 95-105 volts dc. If the output is normal and the unit still does not function check the clutch and brake coils against the nominal readings in the coil data chart.

In checking resistance make sure that the power is off. To be certain disconnect one lead. A shorted coil will indicate a zero resistance and an open coil a reading of infinity. A coil can be shorted from one turn of wire to another internally or from the coil to the shell. In both cases the reading would be zero or less than normal and the fuse should have blown.

A current check is usually not necessary although one can be made by placing an ammeter in series with the clutch or brake coil. Correct readings are listed in the coil data chart.

### VOLTAGE CONTROL

4. Next, check the torque control setting. Often times an operator will change the original setting thinking that this will improve the performance of the machine. The torque control should be set at a voltage level no higher than necessary to achieve satisfactory operation. Since conditions vary from one application to another the setting will have to be determined at machine setup. A good rule to remember is the quicker the start or stop the shorter the life of the clutch or brake. On some applications maximum performance may be desired and necessary. In this case the voltage must be accordingly set at maximum. To determine if a rheostat is working properly measure the resistance with the power off. A smooth variation in resistance should be noted from a minimum of 0 to approximately 1000 ohms. The voltage range is 0 to 90 volts dc.

Assuming that the voltage settings are what they should be and the power supply still does not function the next check is the input to the power supply.

### INPUT

5. Place an ac voltmeter across the ac input connections to the power supply. The ac supply voltage should be within  $\pm 10\%$  of the nominal rating. Example: for a 115 volt ac input the acceptable range is from approximately 105 to 125 volts.

For the power supplies with a transformer the ac voltage must be checked both at the input (transformer primary) and at the output (transformer secondary). The output should be approximately 115 volts ac regardless of whether the input is 230, 460, or 575 volts ac.

If the readings are normal the next check is the switching.

## SWITCHING

6. With a normal input and no output the trouble may be in the switching. The switch connections are shown on each drawing. A voltage or resistance check at these points will show whether the circuit is being closed or not as the switch is actuated.

For the power supplies with a relay, closing the switch should energize the relay coil moving the contacts from one position to another. If the relay does not function check the resistance at the switch connections on the power supply with the power off. If the reading is zero or infinity the relay coil has likely failed and the relay should be replaced. Switch from one position to another (clutch to brake) when making this check.

Another possibility of course is that either the switch contacts or the relay contacts have simply worn out. With a normal input, proper switching and zero output check the rectifier.

## RECTIFIER OR PLUG-IN POWER SUPPLY MODULE

7. When the input to the power supply is normal and the output is zero the faulty component is usually the rectifier. First check the ac voltage at the rectifier input. Next, with a dc voltmeter, take a reading across the output of the rectifier. It is essential that a load (clutch or brake coil) be across the rectifier in order to obtain an accurate reading. Without a load it is possible to have a proper reading only to find that as soon as a load is imposed the output drops off sharply. A voltage output of 95-105 volts dc is normal.

## CAPACITOR

8. The best method for checking a capacitor on the application is by measuring resistance. Disconnect one lead from the capacitor to make certain that another circuit is not actually being measured. A shorted capacitor should indicate a zero reading and the fuse should have blown. An open capacitor should read infinity. An increase in arcing at the switch contacts is common with an open capacitor. A normal capacitor will first show a deflection of the meter needle and then rapidly return to an infinite reading.

## REPLACEMENT PARTS\*

DESCRIPTION	MCS-103	MCS-112 & 115	MCS-113 & 116	MCS-114 & 117	MCS-124
RECTIFIER	736-8010-001	MCS-800	MCS-800	MCS-802-2	Plug-In P.C. Board 8101-004-XXX
TRANSFORMER	—	904-9015-XXX	904-9015-XXX	904-9015-XXX	904-9022-XXX
RELAY	—	—	MCS-804	MCS-802-2	MCS-804
FUSE	458-8001-018 1/2 A, 250V	458-8001-017 1 A, 250V	458-8001-017 1 A, 250V	458-8001-017 1 A, 250V	F1 458-8001-014 1/4 A, 125V, Slo Blo F2 458-8001-018, 1/2 A, 250V.
RHEOSTAT	744-8001-001	744-8001-001	744-8001-001	744-8001-001	744-8001-001
CAPACITOR	249-8032-011	—	—	—	C2, C4 249-8041-001 C3 249-8028-001
RESISTOR	738-8027-002 (R2 & R3)	—	—	—	—
SUPPRESSOR	738-8027-004 (R1)	—	—	—	—

\*The MCS-800, 801 and 802-2 power supplies are self-contained modules and not intended to be repaired. They contain no replacement parts.

**WARNER ELECTRIC**  
BRAKE & CLUTCH DIVISION

