



9060 Power Supply 80102-2XX No. 2 Electric Motor "bF" Faults

After multiple repair evaluations the cause of "bF" ,Boot Faults, has been determined for which this service instruction includes steps that can be taken to resolve this issue.

Repeated boot faults during painting indicate a voltage surge has reached the pc board, which can eventually cause damage to the circuitry.

Boot Faults, displayed as "bF" are caused due to:

- Before painting, *without* HV ON indicates the control unit has been powered up and the gun switch was turned on before the control unit reached 'ready state', indicated by 000 on the μ A display.
- During painting, *with* HV ON typically indicates arcing inside the cascade or inside the #2 gun. (Correcting this problem will prevent failure of the 80116-28 pc board and prevent downtime.)

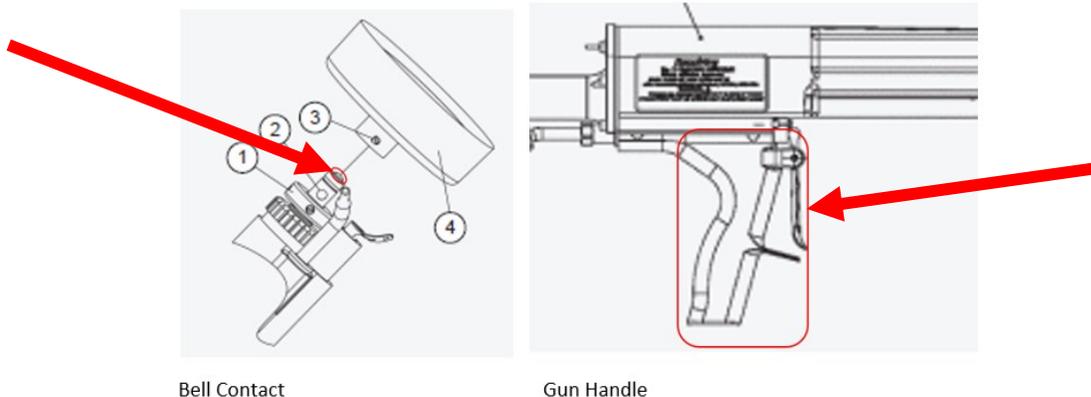
Corrective Action Steps

1. Arcing Inside of Gun Shaft

Arcing from the spring to the resistor, or from the spring to the motor (ground) inside the #2 gun shaft can occur. To insure good connections that prevent arcing, measure the shaft connection to the handle resistance with a Mega ohm meter or Ransburg Tri-meter, 76634-00, as follows:

- a. Disconnect power to the control unit.
- b. Remove the bell cup (item #4) by loosening the screw (item #3). As shown below connect a Mega ohm meter to the bell contact and the gun handle.
- c. The reading must be 9 – 11 Giga ohms.

NOTE: A Ransburg Tri-meter, 76634-00, can also be used, but will not read correctly unless there are secure connections on both ends (i.e. the probes cannot be held by hand to make the connection). Attach alligator clips to both the bell connection and the gun handle. After connection, wait until the reading is stable. If a stable reading cannot be obtained, a Mega ohm meter must be used.



If the reading is higher than 11 Giga ohms, the resistor may be damaged or the spring may not be making contact. Point the gun up and unscrew the shaft nut. Remove the spring and resistor while being careful to not drop the resistor out from the center of the shaft.

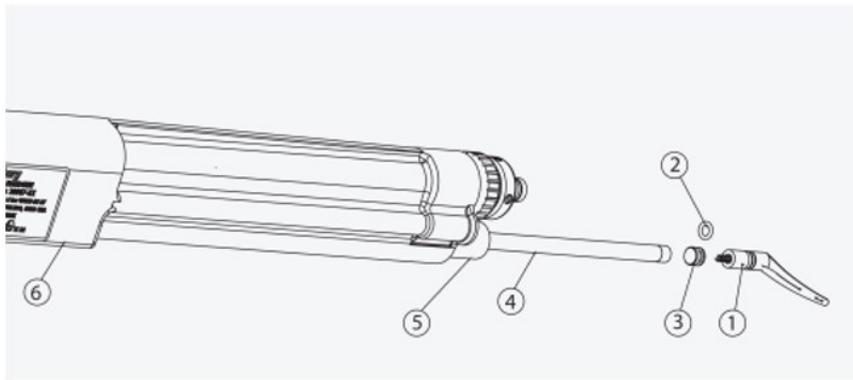
The resistor must be replaced if it is missing any coating as this indicates arcing. Next, measure the resistor as it must read between 9 – 11 Giga ohms.

If the resistor measures correctly and is not damaged then the spring is not making contact. The spring should be at least 1.5”(38mm) long to ensure contact with the resistor and the motor. The spring may need to be pulled out longer to compensate for any compression.

Insert the resistor and the spring. If the spring is captured in the shaft, push it in until the end is 0.75” (19mm) in from the end of the shaft. Then push and pull the shaft back and forth. If you can feel the resistor move, push the spring in 1/8” (3.2mm) farther and repeat the resistance test.

2. Incorrect Assembly Order

Incorrect assembly order of the resistor (item #3) and seal (item #4) can cause the seal to push away from the resistor (due to captured air), creating a small air gap which prevents connection from the resistor to the seal. To confirm correct order assembly follow these steps:



- a. To measure the resistor first disconnect the high voltage cable from the control unit.
- b. Using a Mega ohm meter or Ransburg Tri-meter, 76634-00, set on “GΩ” scale, measure from the wire of the brush to the center of the high voltage cable (control unit end). The value should be 500 Mega ohms to 560 Mega ohms (0.50 to 0.56 Giga ohms on Ransburg Tri-meter, 76634-00).

If the reading is higher than the value specified, either the resistor is damaged, or the resistor seal is not in contact with the resistor.

To correct the assembly of the resistor and seal remove the handle and place a small amount of LSCH0009-00 dielectric grease into the front of resistor housing. Apply a heavy coat to the O.D. of the resistor with dielectric grease and insert into the resistor housing, until approximately 1/2” (12.7mm) is sticking out the end of the tube.

Install a 7554-06 O-ring on the 3959-00 contact and set onto the resistor with the hole down. While applying pressure against the 3959-00 contact, push resistor into tube.

Secure the resistor in place with a 7747-16C screw and a 7486-06 washer using a long slot screwdriver.

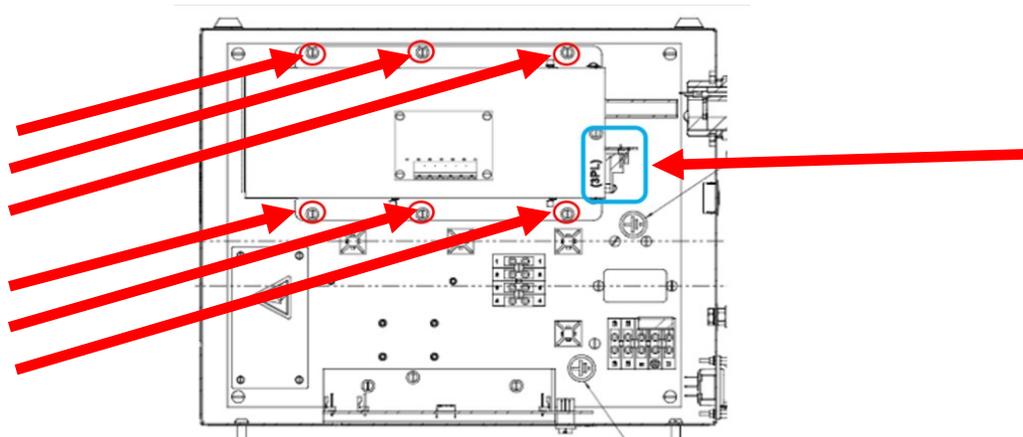
3. Cascade Causing Arcing

If the cascade is part number 79350-03 and serial number older than 2246XXXX, replace the cascade with 79350-03R.

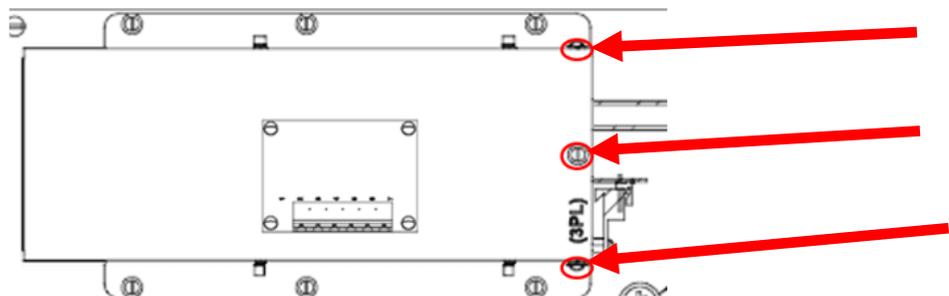
In this case replace the cascade as follows:

- Unplug the 3PL connector (shown in blue below) on the side of the cascade.
- If a relay board is present on the cascade bracket, unplug the connector.
- Remove the six screws, flat washers, and lock washers shown.

If the cascade is a -03R, typically the gun resistor connections are the problem, and the cascade will not need replaced.



- Unscrew and remove the three screws, flat washers, and lock washers from the cascade bracket. Note the high voltage tube is left of center with the cascade bracket installed.



- Re-assemble the new cascade in the bracket and install the screws, flat washers, and lock washers. Notice the cascade must be installed with the high voltage tube offset from center, to align with the High Voltage output port of the control unit.
- Re-install the cascade and bracket assembly in the control unit. If the top three screws had only been loosened, a magnet can be used to pull the washers away from the back panel before sliding the cascade bracket under the washers.
- Plug in the cascade and make sure all the cascade pins are covered with the connector.
- Plug in the relay board (if present).

Test the unit for proper kV output using a HV probe. The output must be 92-100 kV.

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