

Powermax800® and Powermax900® Contactor Replacement

Field Service Bulletin

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Hypertherm®

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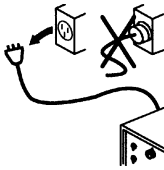
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Introduction

		WARNING! ELECTRIC SHOCK CAN KILL
		Disconnect electrical power before performing any maintenance. All work requiring removal of the power supply cover must be performed by a qualified technician. See the <i>Safety and Compliance Manual</i> (80669C) for more safety precautions.

Purpose

This Field Service Bulletin describes the necessary steps to replace the contactor in Powermax800 and Powermax900 power supplies.

Tools

- Assorted Phillips® and TORX® screwdrivers
- 3 mm (1/8 inch) hex wrench
- 10 mm (3/8 inch) nut driver
- Needlenose pliers
- Electric drill with 5 mm (3/16 inch) drill bit
- Wire stripping pliers (Powermax800 only)
- Hand crimping pliers (Powermax800 only)

128405 Kit contents

Part number	Description	Quantity
229617	Dust box and contactor assembly	1
004814	Copper strap: contactor	2
075485	Machine screw, 10-32 x 3/8-inch, pan head	4
074023	Ring terminal	2

Note: The 2 copper straps (004814) are not required for the 400 V CE contactor replacement. Discard the straps if you are replacing the contactor on a 400 V CE power supply.

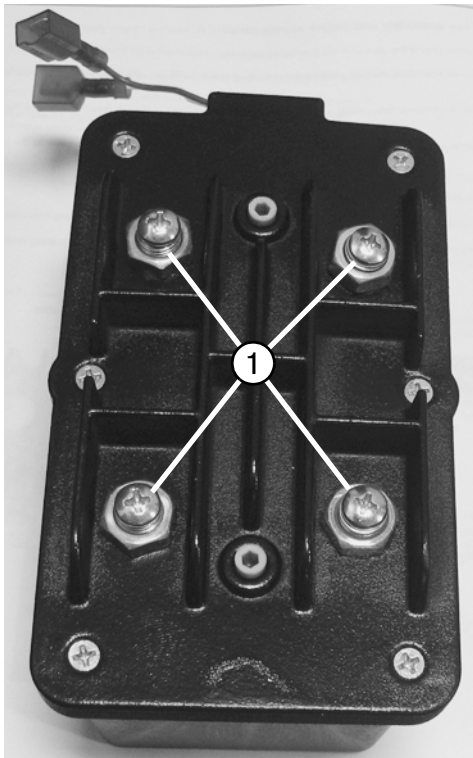
Note: The 2 ring terminals (074023) are needed only for Powermax800 power supplies. Discard the ring terminals if you are replacing the contactor on a Powermax900.

Replace the contactor

Prepare the new contactor

1. Remove the 4 screws (075485) ① from the front of the contactor dust cover. Set the screws aside – do not discard them.
2. Remove the 2 screws ② from the back of the contactor dust cover. Discard these screws.

Figure 1



Keep these 4 screws



Discard these 2 screws

Remove the power supply cover and fan assembly

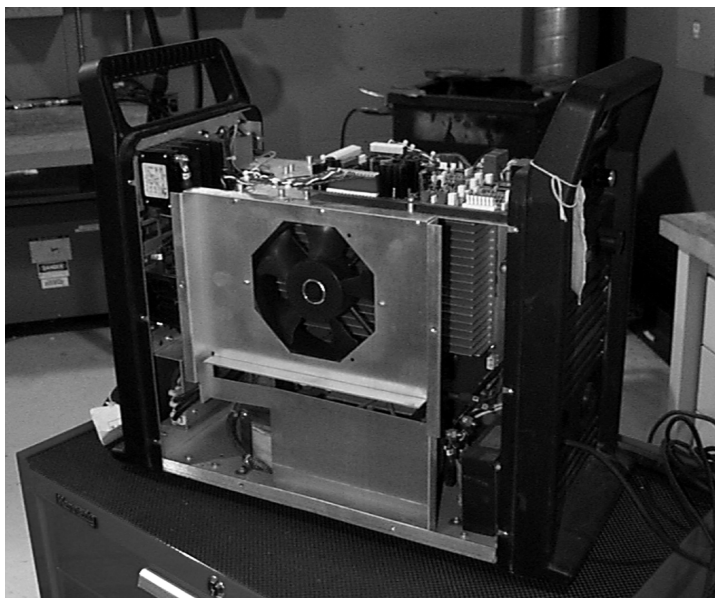
1. Remove the screws from the sides and top of the power supply cover.
 - ❑ **Powermax800:** 22 screws
 - ❑ **Powermax900:** 18 screws

Figure 2



2. Lift the cover off the power supply.

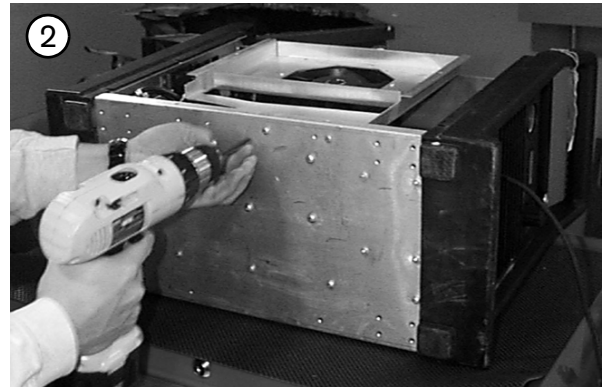
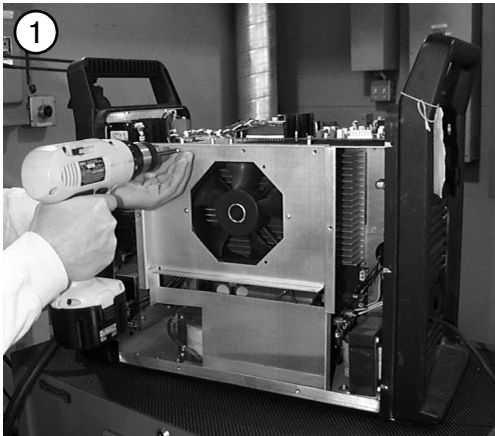
Figure 3



Contactor Replacement

3. Remove the screws from the upper portion of the fan assembly, and set them aside. ①
 - ❑ **Powermax800: 3 screws**
 - ❑ **Powermax900: 2 screws**
4. Gently set the power supply on its side, with the fan side facing up. Remove the screws from the lower portion of the fan assembly, and set them aside. ②
 - ❑ **Powermax800: 3 screws**
 - ❑ **Powermax900: 2 screws**

Figure 4



5. Set the power supply upright to its original position. Remove the 2 wires from the fan, and remove the fan assembly from the power supply.

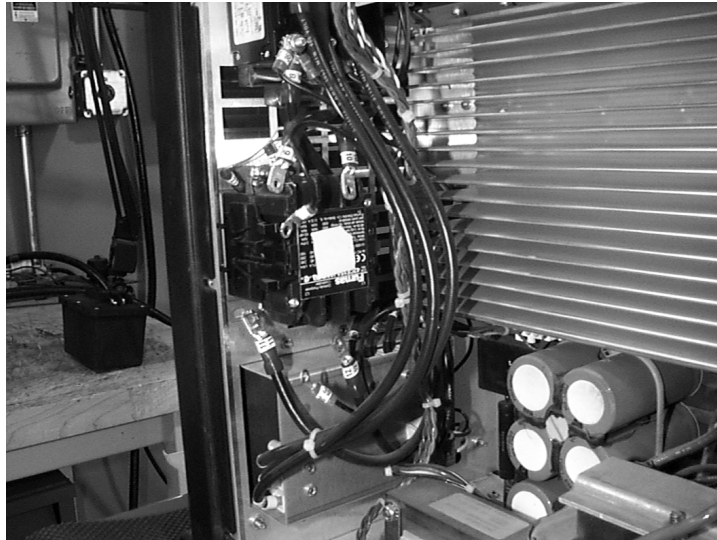
Figure 5



Remove and install the contactor (CSA 208 V/240 V/480 V and 200 V/230 V/400 V power supplies)

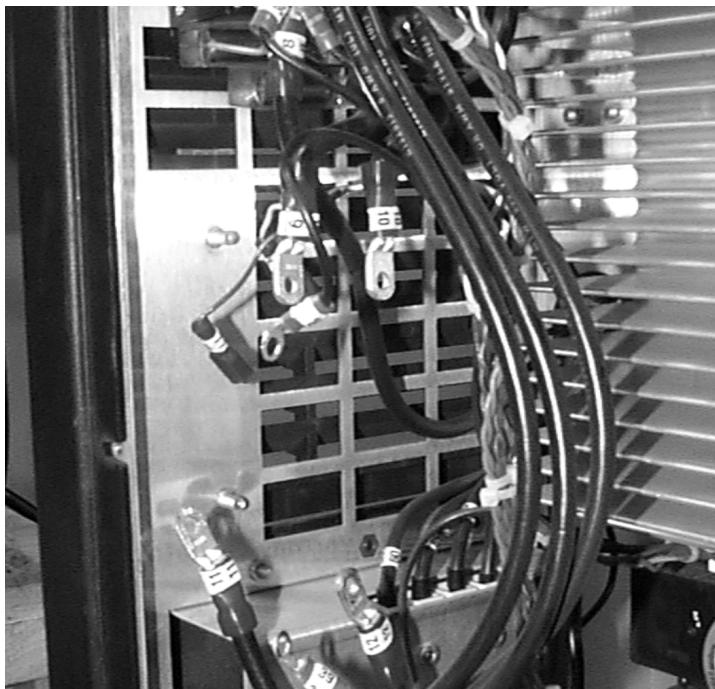
1. Disconnect all wires from the contactor.

Figure 6



2. **Powermax800 only:** Use a 10 mm (3/8 inch) nut driver to remove the 2 nuts that secure the contactor to the chassis.
3. Remove the contactor from the power supply.

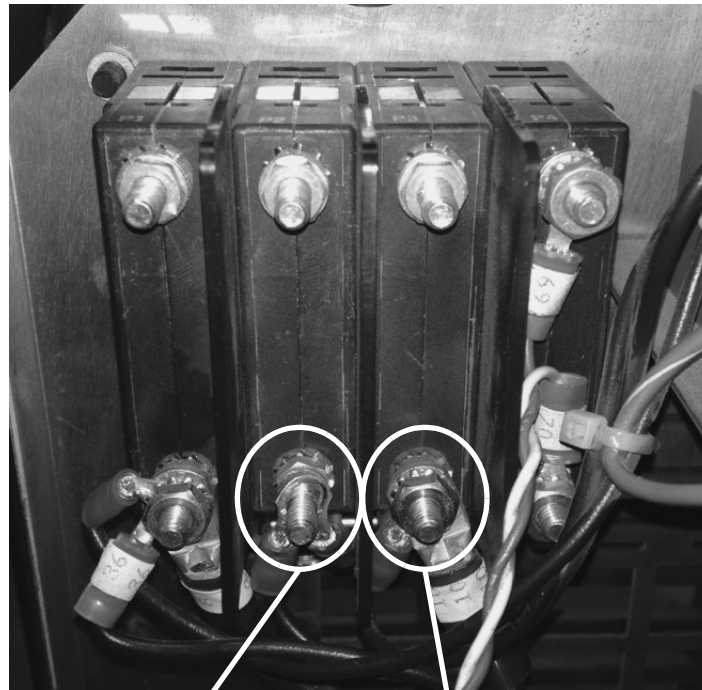
Figure 7



Contactor Replacement

4. Completely remove wire 9 and wire 10 from their circuit breaker connection points. (See *Figure 8*.) These wires are not used with the new contactor.
5. Disconnect wire 37 and the unlabeled black wires. The unlabeled black wires will be reattached to the circuit breaker, but wire 37 will be reattached to the new contactor.

Figure 8



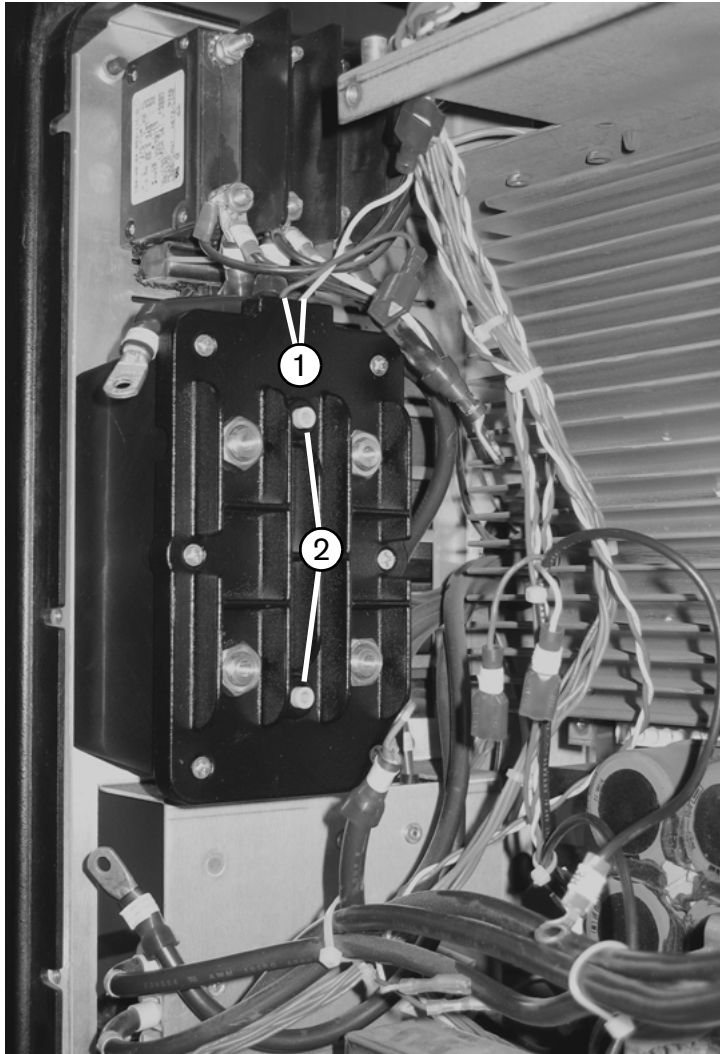
Wire 9,
Wire 37,
Unlabeled black wire

Wire 10,
Unlabeled black wire

6. Position the new contactor with the red-and-white wire pair ① at the upper end.
7. Using a 3 mm (1/8 inch) hex wrench in the 2 nylon spacers ② in the new contactor, secure the contactor to the 2 mounting studs on the power supply chassis. Tighten the studs with a torque setting of 8.1 kg·cm (7 inch-pounds).
Do not overtighten.

Note: Hold the nylon spacers in place as you position the contactor in order to properly align them with the mounting studs. If you have trouble aligning the nylon spacers with the mounting studs, use the hex wrench to slightly reposition the spacers, as needed. However, be careful not to strip the hex molding in the nylon spacers.

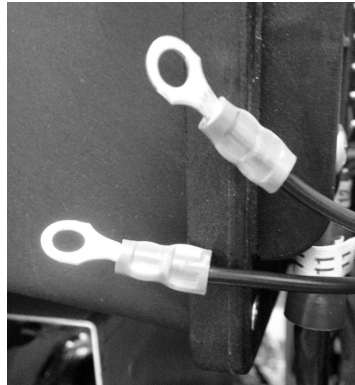
Figure 9



Contactor Replacement

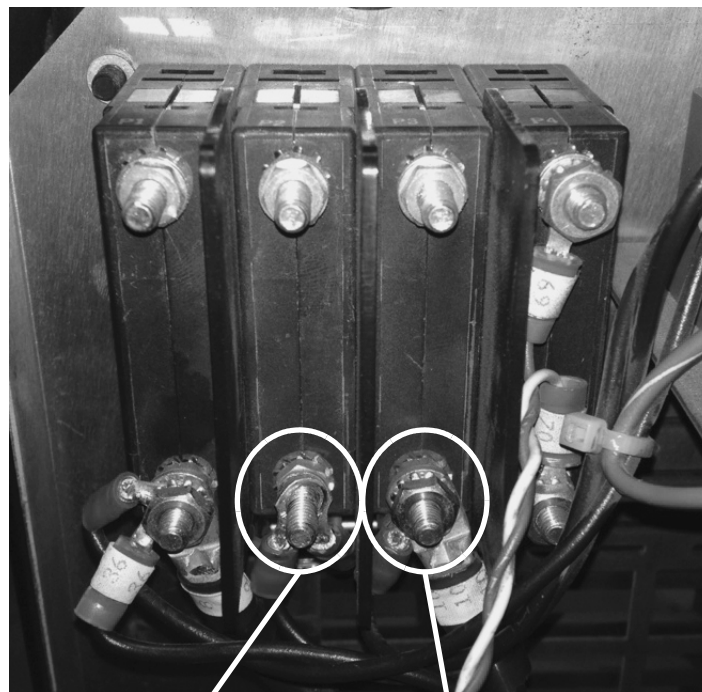
8. **Powermax800 only:** Replace the terminals on wire 38 and wire 39, as follows:
- Cut off the Faston® terminal from the end of wire 38 and wire 39.
 - Using a pair of wire stripping pliers, strip 10 mm (3/8 inch) off the end of wire 38 and wire 39.
 - Attach a ring terminal, contained in the kit (074023), to the end of wire 38. Use a pair of hand crimping pliers to secure the terminal to the end of the wire. Repeat for wire 39.

Figure 10



9. Attach the 2 copper straps (004814) to the contactor, as shown in *Figure 12*. Attach the other end of the copper straps and the two unlabeled black wires to the circuit breaker points shown in *Figure 11*. Lay the wire terminals on top of the copper straps.

Figure 11

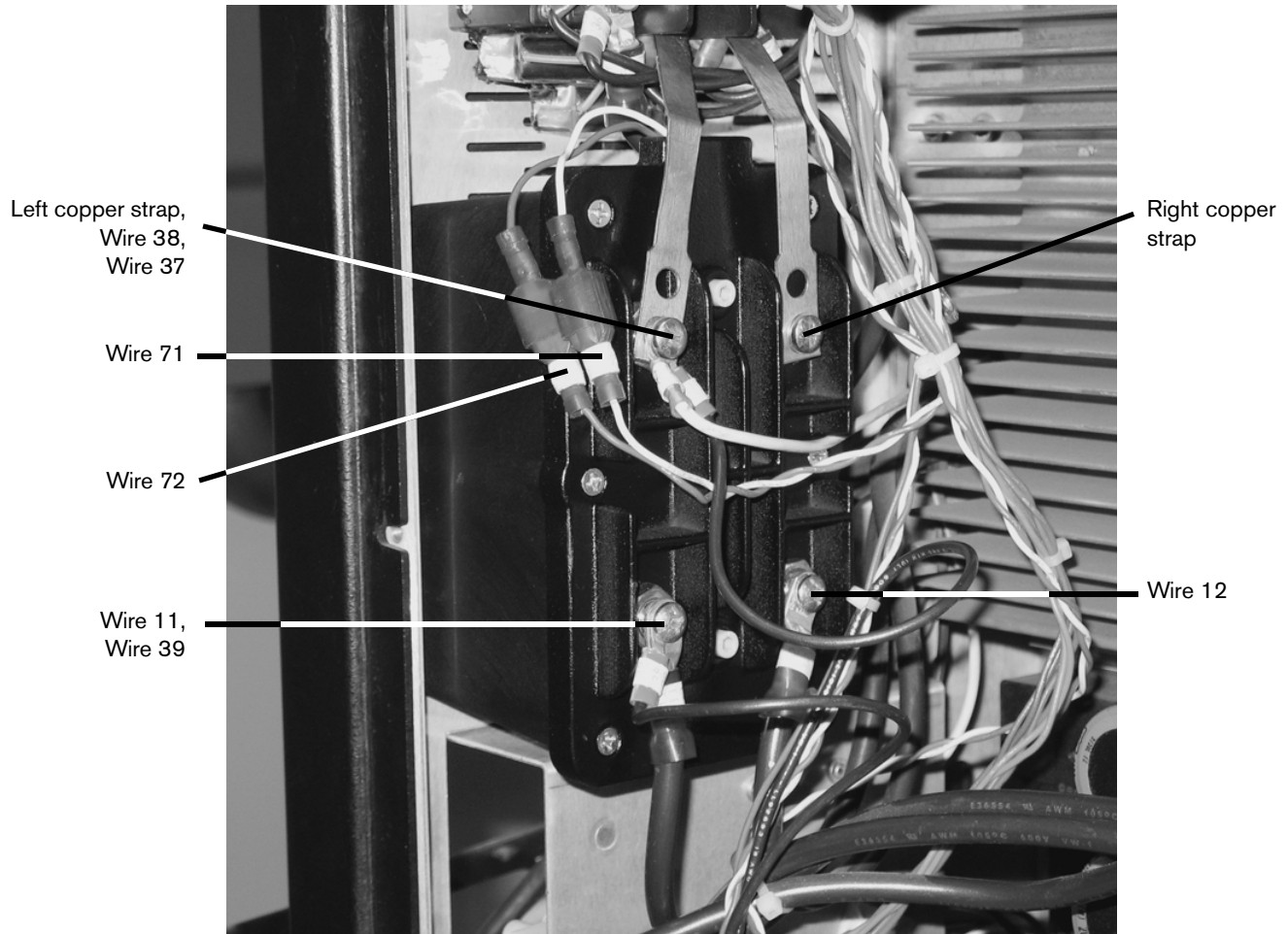


Left copper strap,
Unlabeled black wire

Right copper strap,
Unlabeled black wire

10. Use the 4 screws (075485) removed from the contactor in *step 1* on page 4 to connect the terminals and straps to the contactor. Connect power supply wire 37 and wire 38 to the left strap.
11. Connect power supply wire 11 and wire 39 to the bottom left of the contactor.
12. Connect power supply wire 12 to the bottom right of the contactor.
13. Connect wire 71 and wire 72 to the red-and-white wire pair from the contactor. Connect red wire to red wire, and white wire to white wire.

Figure 12

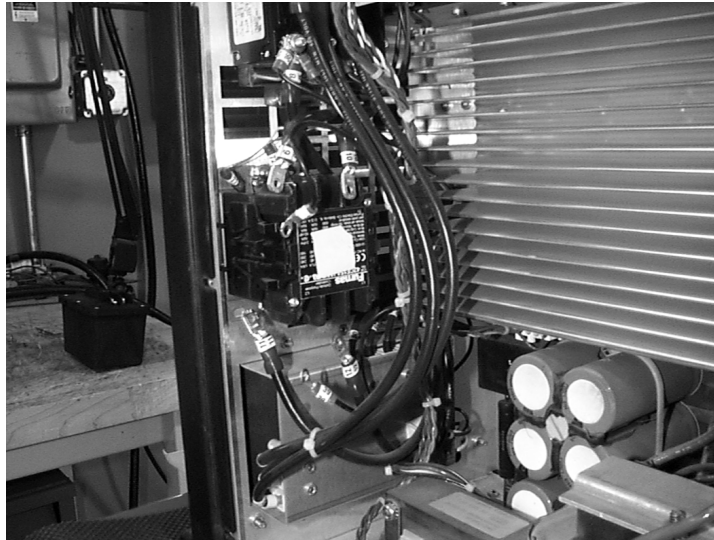


Remove and install the contactor (400 V CE power supplies)

1. Disconnect all wires from the contactor.

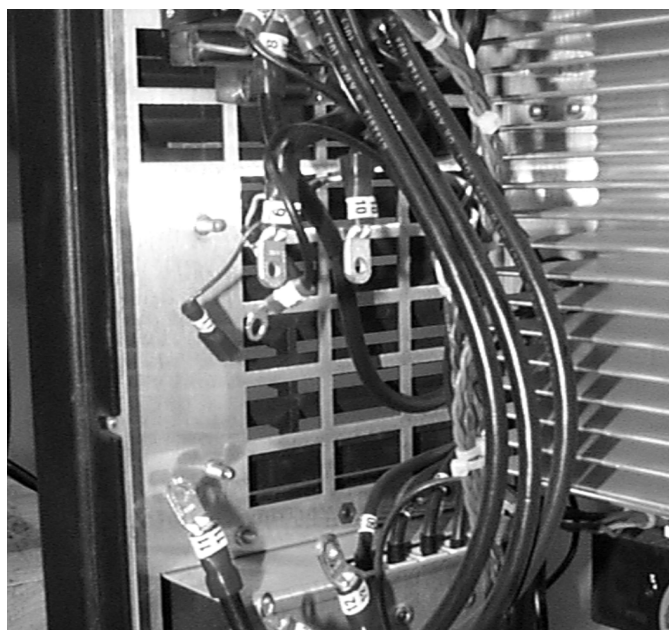
Note: The following photos show the CSA 208 V/240 V/480 V or 200 V/230 V/400 V contactor, but the procedure is the same for all configurations.

Figure 13



2. **Powermax800 only:** Use a 10 mm (3/8 inch) nut driver to remove the 2 nuts that secure the contactor to the chassis.
3. Remove the contactor from the power supply.

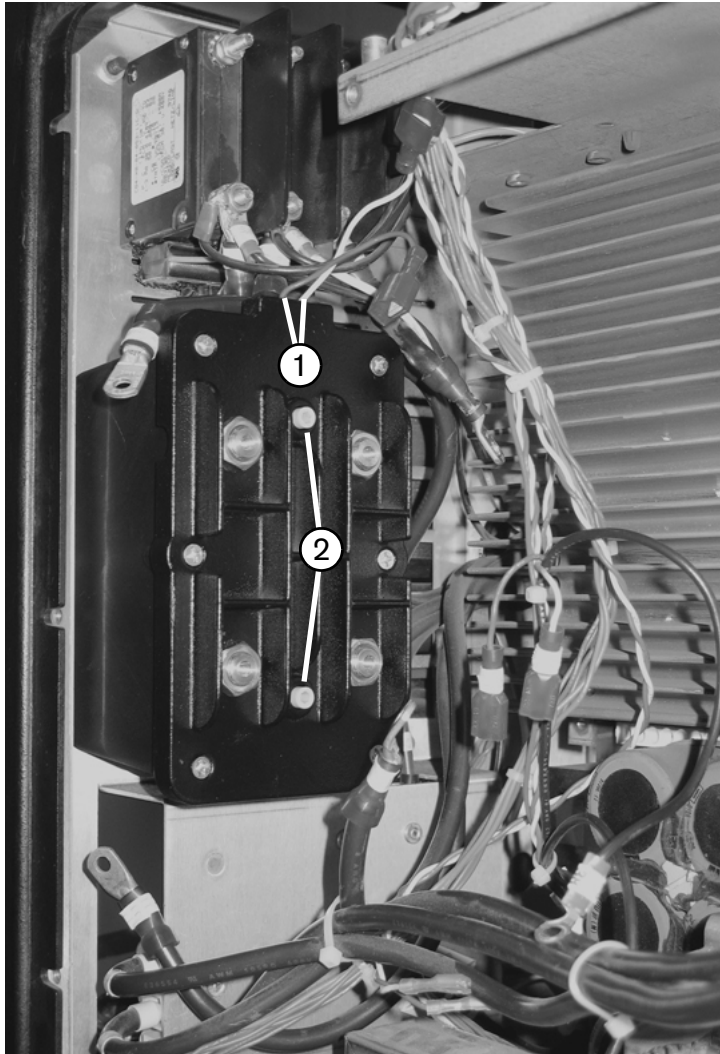
Figure 14



4. Position the new contactor with the red-and-white wire pair ① at the upper end.
5. Using a 3 mm (1/8 inch) hex wrench in the 2 nylon spacers ② in the new contactor, secure the contactor to the 2 mounting studs on the power supply chassis. Tighten the studs with a torque setting of 8.1 kg·cm (7 inch-pounds).
Do not overtighten.

Note: Hold the nylon spacers in place as you position the contactor in order to properly align them with the mounting studs. If you have trouble aligning the nylon spacers with the mounting studs, use the hex wrench to slightly reposition the spacers, as needed. However, be careful not to strip the hex molding in the nylon spacers.

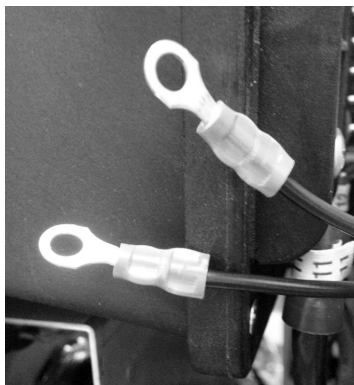
Figure 15



Contactor Replacement

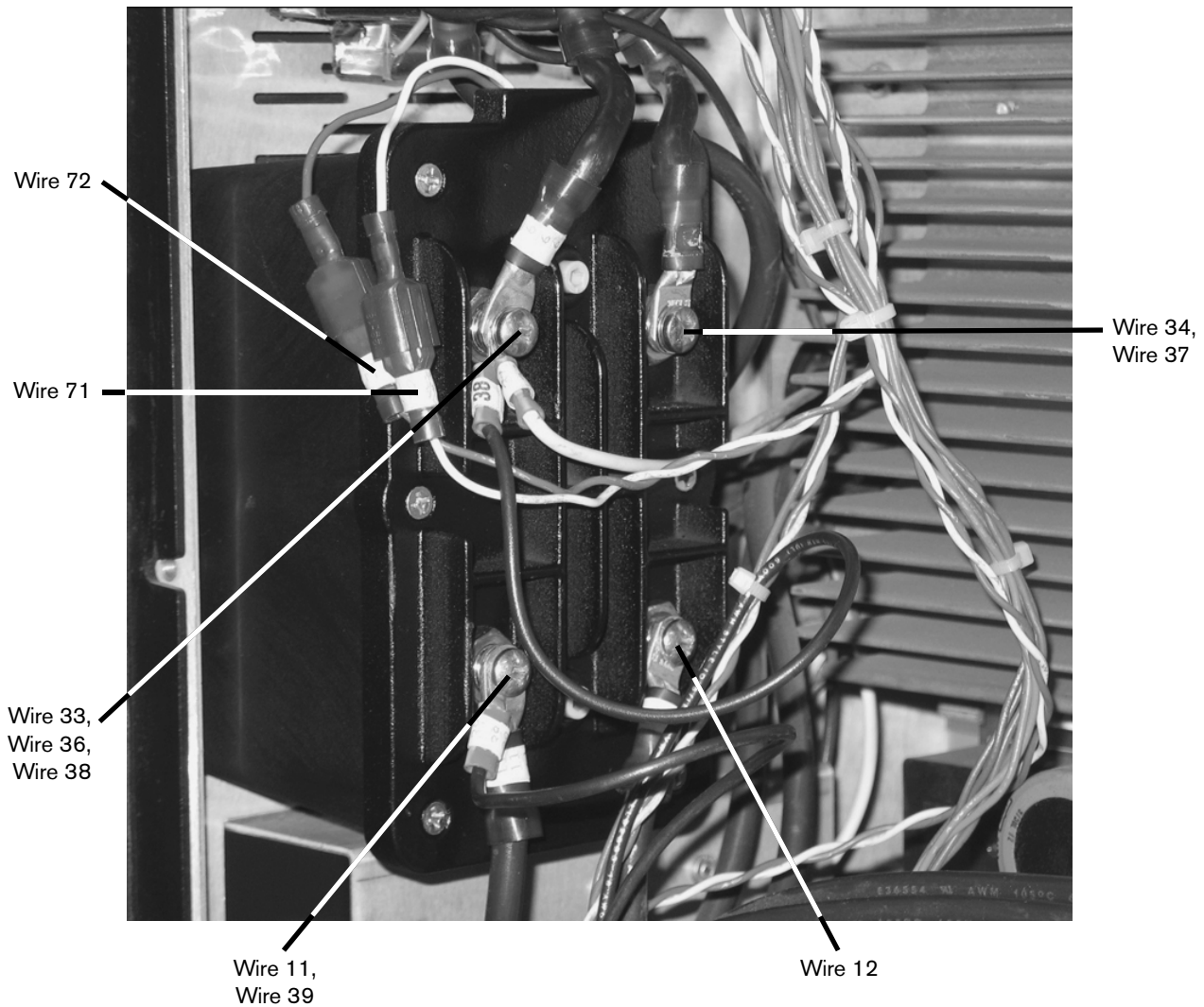
- 6. Powermax800 only:** Replace the terminals on wire 38 and wire 39, as follows:
- Cut off the Faston® terminal from the end of wire 38 and wire 39.
 - Using a pair of wire stripping pliers, strip 10 mm (3/8 inch) off the end of wire 38 and wire 39.
 - Attach a ring terminal, contained in the kit (074023), to the end of wire 38. Use a pair of hand crimping pliers to secure the terminal to the end of the wire. Repeat for wire 39.

Figure 16



7. Connect power supply wire 11 and wire 39 to the bottom left of the contactor.
8. Connect power supply wire 12 to the bottom right of the contactor.
9. Connect power supply wire 33, wire 36, and wire 38 to the upper left of the contactor.
10. Connect power supply wire 34 and wire 37 to the upper right of the contactor.
11. Connect wire 71 and wire 72 to the red-and-white wire pair from the contactor. Connect red wire to red wire, and white wire to white wire.

Figure 17



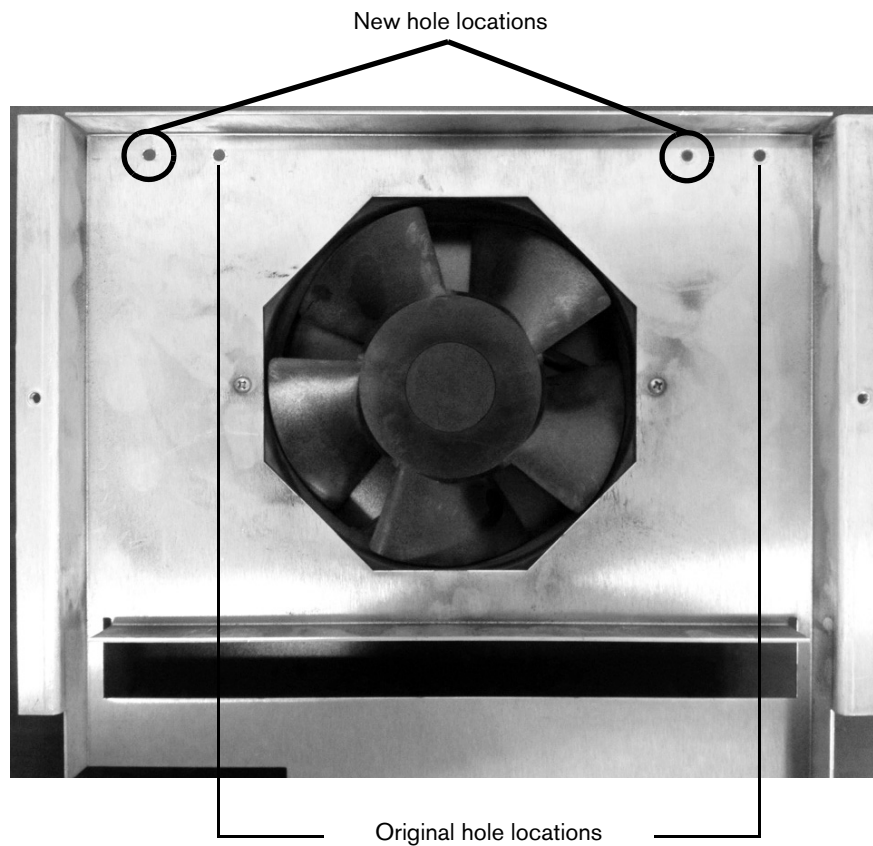
Reinstall the fan assembly and power supply cover

Drill new holes for the fan assembly

To accommodate the new contactor, the fan assembly must move 29 mm (1-1/8 inches) to the right when reinstalled.

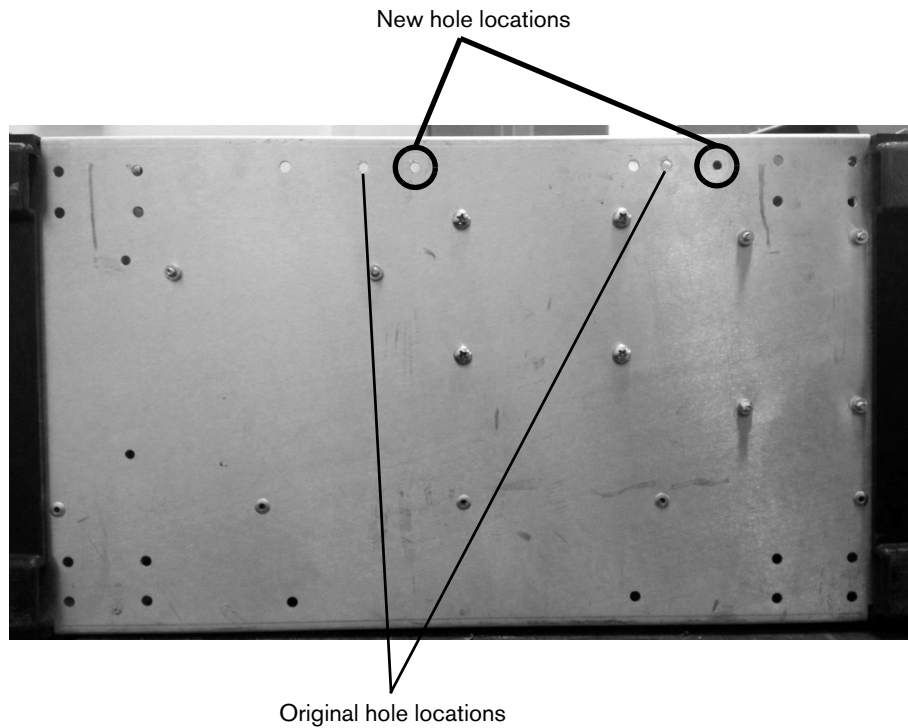
1. Using an electric drill and a 5 mm (3/16 inch) drill bit, drill holes in the upper portion of the fan assembly that are 29 mm (1-1/8 inches) directly to the **left** of the original hole locations of the screws you removed in *step 3* on page 6. See *Figure 18*.
 - ❑ **Powermax800:** Drill 3 holes in the upper portion of the fan assembly.
 - ❑ **Powermax900:** Drill 2 holes in the upper portion of the fan assembly.

Figure 18 – New holes drilled in PMX900 fan assembly



2. Gently set the power supply on its side, with the fan side facing up. Using an electric drill and a 5 mm (3/16 inch) drill bit, drill holes in the chassis that are 29 mm (1-1/8 inches) directly to the **right** of the original hole locations of the screws you removed in *step 4* on page 6. See *Figure 19*.
 - ❑ **Powermax800:** Drill 3 holes in the chassis (bottom of the power supply).
 - ❑ **Powermax900:** Drill 2 holes in the chassis (bottom of the power supply).

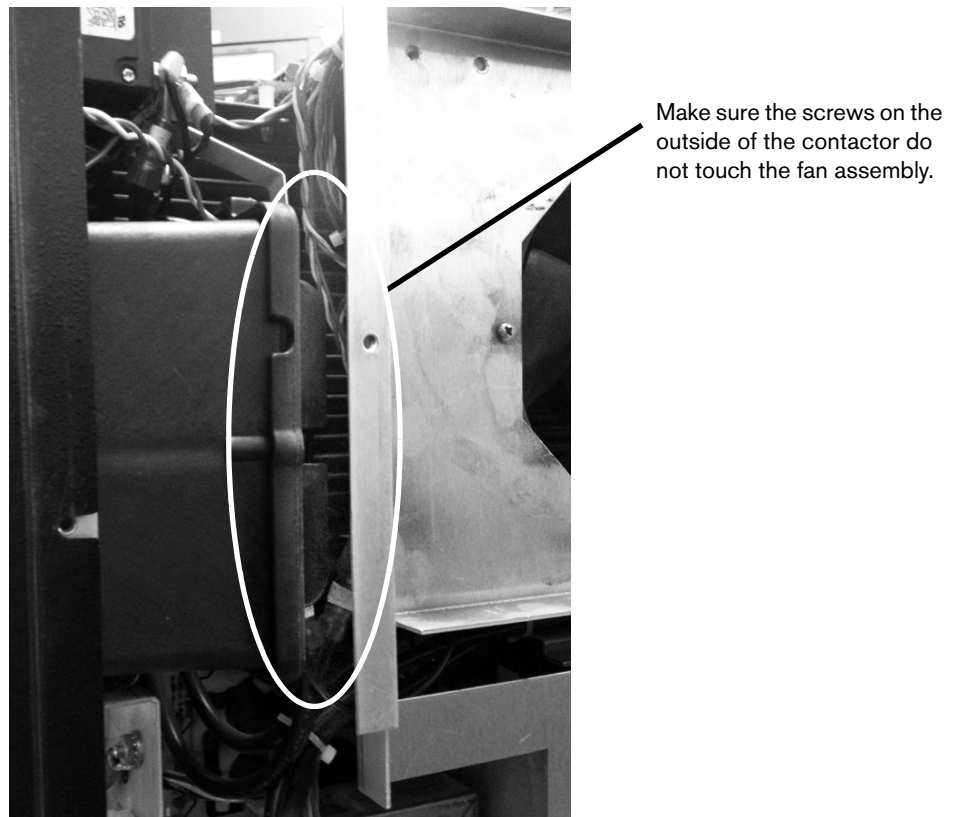
Figure 19 – New holes drilled in PMX900 chassis



Put the fan assembly and power supply cover back in place

1. Verify that all wires around the contactor are connected securely.
2. Verify that all wires around the contactor will be out of the way of the fan assembly and power supply cover as you reinstall them.
3. Reattach the fan assembly to the chassis using the holes you drilled above. The fan must be attached 29 mm (1-1/8 inches) to the **right** of its original position in the power supply. Reattach the 2 wire terminals to the fan. See *Figure 4* and *Figure 5* on page 6.
4. Verify that there is approximately 25 mm (1 inch) of space between the new contactor and the fan assembly, as shown in *Figure 20*.

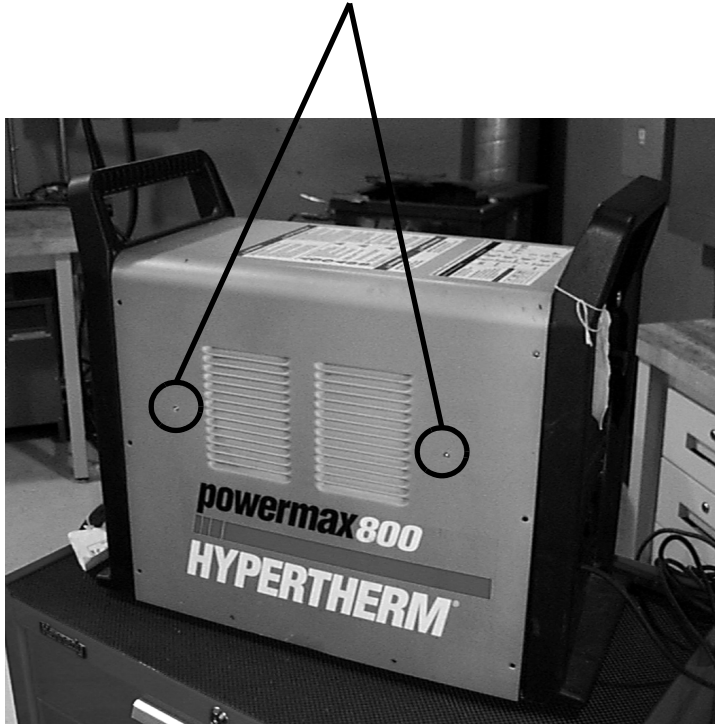
Figure 20



5. Slide the power supply cover over the power supply, and reinstall the screws that secure the cover to the power supply. You will have 2 screws left over that previously attached to the fan assembly but that are no longer needed because the fan assembly moved (see *Figure 21*).
- ❑ **Powermax800:** 20 screws
 - ❑ **Powermax900:** 16 screws

Figure 21

Do not reinstall these 2 screws when you reinstall the cover



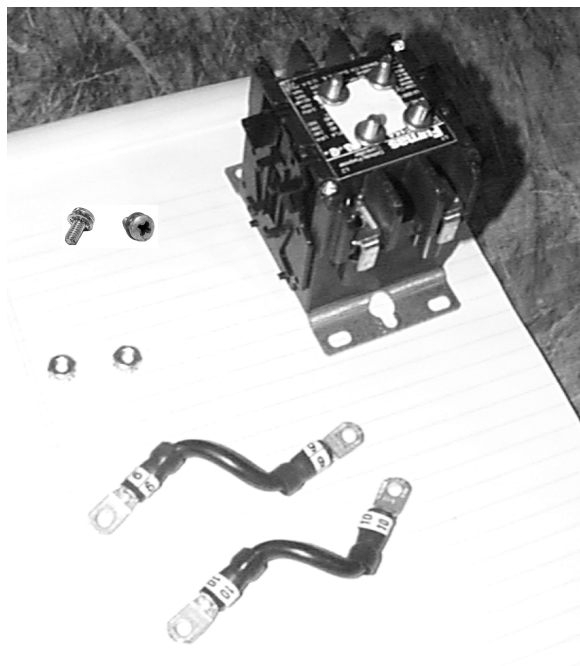
Installation of the contactor is complete. Refer to the Operator Manual for your system for operating instructions.

If you experience any problems with this installation or with the general operation of your plasma cutting system, contact your repair center, distributor, or the closest Hypertherm office listed at the front of this bulletin.

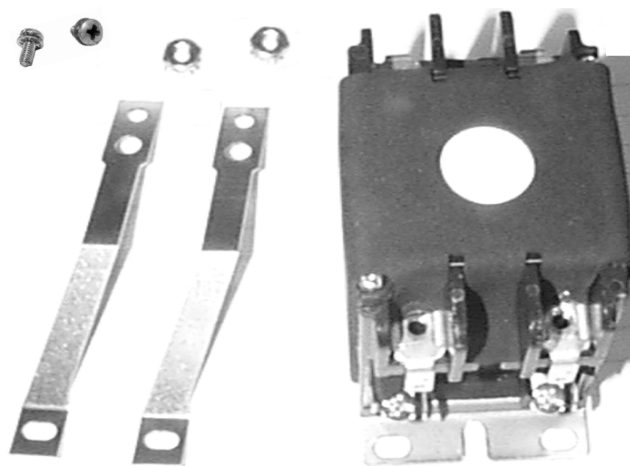
Contactor Replacement

Leftover parts

208 V/240 V/480 V or 200 V/230 V/400 V
CSA power supplies



400 V CE power supplies



Powermax900 power supplies

