

XPR[®]

Main Contactor and Inrush Contactor Installation Procedures

Field Service Bulletin

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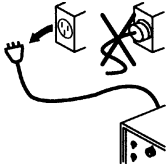
Introduction

WARNING



ELECTRIC SHOCK CAN KILL

Disconnect electric power before doing installation or maintenance. You can get a serious electric shock if electric power is not disconnected. Electric shock can seriously injure or kill you.



All work that requires removal of the plasma power supply outer cover or panels must be done by a qualified technician.

Refer to the *Safety and Compliance Manual (80669C)* for more safety information.

Purpose

This Field Service Bulletin (FSB) describes how to install the following components:

- The main contactor for XPR170 and XPR300 cutting systems
- The inrush contactor for XPR300 cutting systems

Tools and materials needed

- 10 mm, hexagonal socket wrench or nut driver
- #2 Phillips screwdriver
- 4 mm Allen wrench
- 3 mm flat jewelry screwdriver

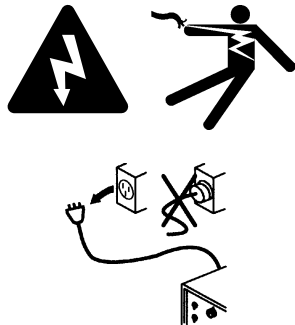
Main Contactor Kit 429060 contents – for XPR170 and XPR300 (380 – 600 V)

Part number	Description	Quantity
003294	Main contactor	1
075600	Cap nuts	2
104962	Mounting bracket	1
075882	Mounting screw	1
141507	Contactor PCB (preinstalled on the main contactor)	1

Inrush Contactor Kit 229697 contents – for XPR300 only (all voltages)

Part number	Description	Quantity
003297	Inrush contactor	1
003298	Relay, 24 VDC coil	1
104968	Mounting bracket	1
075525	Mounting screws, M4 X 12 mm	2
075567	Mounting screws, M6 X 16 mm	2

WARNING



ELECTRIC SHOCK CAN KILL

Disconnect electric power before doing installation or maintenance.

The line-disconnect switch must **REMAIN** in the OFF position until all of the installation or maintenance steps are complete.

Refer to the *Safety and Compliance Manual (80669C)* for more safety information.

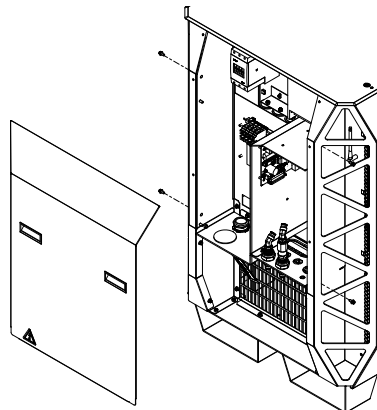
Remove power and the rear panel from the plasma power supply

1. Remove electric power from the cutting system.
2. Use a 10 mm, hexagonal socket wrench or nut driver to remove the rear panel (*Figure 1*) to get access to the control side of the plasma power supply.



Keep all nuts and screws that you remove.

Figure 1



Install the main contactor – for XPR170 and XPR300

How to install a Siemens® main contactor

Figure 2



1. Get a photograph of the main contactor in the plasma power supply with all of the wires connected to it. Refer to this photograph when you connect the wires to the new contactor.
2. Remove all of the wires from T3, T2, T1, L3, L2, and L1.
3. Remove the wires from A1 and A2.
4. Disconnect J6.
5. Use a 10 mm, hexagonal-socket wrench to remove the nut and screw that attach the main contactor to the sheet metal. New hardware comes with the contactor kit.
6. Remove the old main contactor.
7. If the new main contactor has a PLC mode switch, make sure that the switch is set to ON. *Figure 3 on page 6 shows an example.*

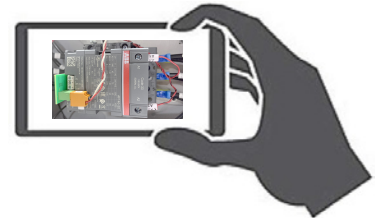
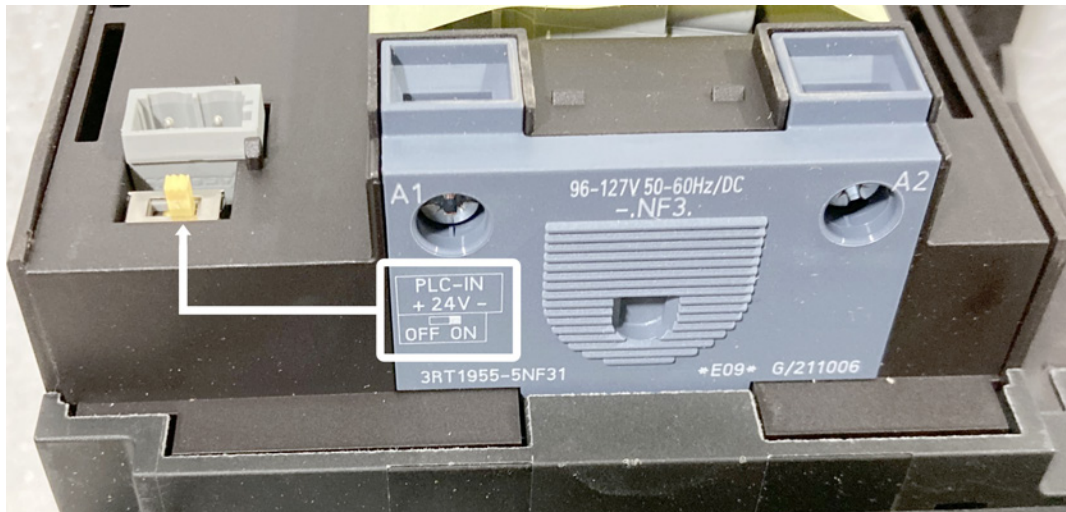


Figure 3



8. Use a 10 mm, hexagonal-socket wrench to install the nut on the upper left corner and the screw on the lower right corner of the new main contactor. Tighten the nut and screw to 9 N·m (80 in·lb).
9. Connect J6.

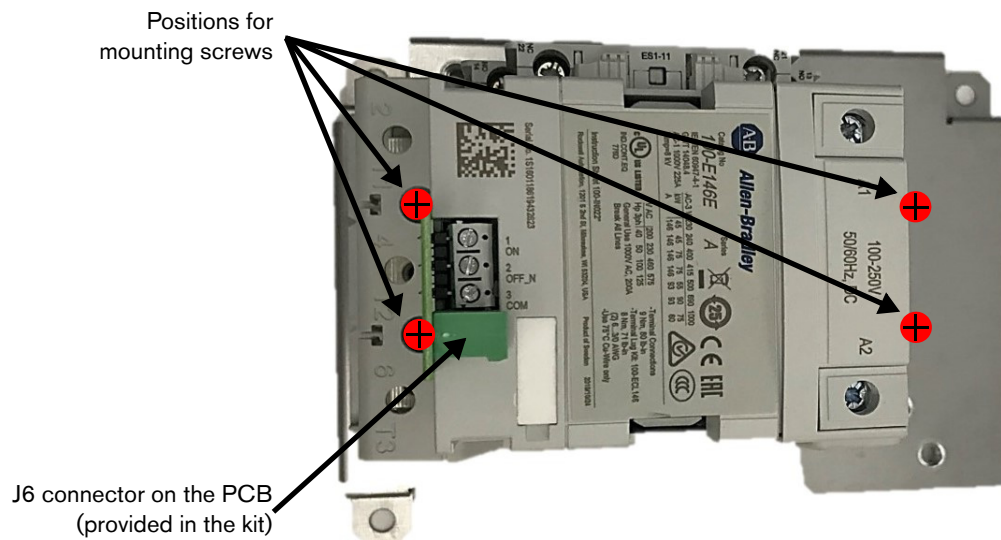
NOTICE

The A1 and A2 wires can have different wire colors and different terminal locations on different contactors. Make sure that the A1 and A2 wires connect to the correct terminals on the contactor.

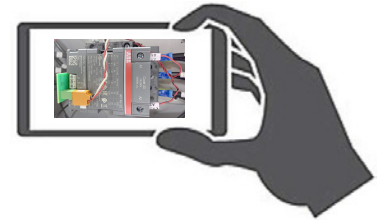
10. Install A1 and A2. **Make sure that the A1 wire goes to the A1 terminal and the A2 wire goes to the A2 terminal.** Tighten the screws to 1 N·m (10 in·lb).
11. Use 2 wrenches to install the L1, L2, and L3 wires on the left and right side of the new main contactor, as follows:
 - Connect the wires to the same positions on the new contactor as on the old contactor. Refer to the photograph from *step 1* on page 5.
 - The labels on the wires can be different than the labels on the contactor. Use the color and the length of each wire as a guide to help you connect the wire to the correct position.
 - Tighten to 13 N·m (115 in·lb).
12. Make sure that the wires labeled L1, L2, and L3 on the right side of the new main contactor align with the wires labeled L1, L2, and L3 on the left side of the new main contactor.
13. Install the rear panel.

How to install an Allen-Bradley® or ABB® main contactor

Figure 4



1. Get a photograph of the main contactor in the plasma power supply with all of the wires connected to it. Refer to this photograph when you connect the wires to the new contactor.
2. Remove all of the wires from T3, T2, T1, L3, L2, and L1.
3. Remove the wires from A1 and A2.
4. Disconnect J6.
5. Use a 10 mm, hexagonal-socket wrench to remove the nut and screw that attach the main contactor to the sheet metal. New hardware comes with the contactor kit.
6. Remove the old main contactor.
7. Put the new main contactor (003294) in a horizontal position into the provided mounting bracket (104962).



Only older XPR cutting systems, those without a mounting bracket already installed, need the provided mounting bracket.

8. Make sure that the new main contactor is in the correct, horizontal position within the mounting bracket, as shown in *Figure 4*.
9. Use the 4 provided Phillips mounting screws to attach the new main contactor to the provided mounting bracket (*Figure 4*). The mounting screws are inside the box with the new main contactor. Tighten the screws to 1.5 N·m (15 in·lb).

Main Contactor and Inrush Contactor Installation Procedures

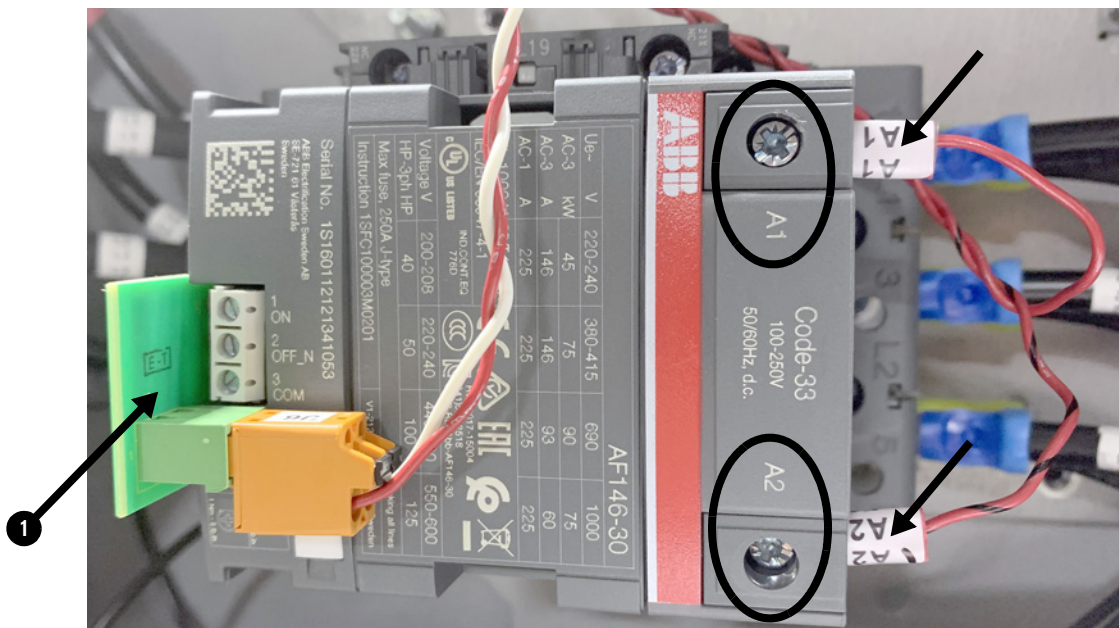
10. Use a 10 mm, hexagonal-socket wrench to install the new main contactor in the plasma power supply, as follows:
 - Install the nuts on the upper left corner and the upper right corner of the mounting bracket.
 - Install the screw on the lower left corner of the mounting bracket.
 - Tighten the nuts and the screw to 9 N·m (80 in·lb).
11. Make sure that the contactor PCB (141507) ❶ is installed in the terminal block, as shown in *Figure 5*. Use a small, flat screwdriver to tighten the 3 terminal block screws onto the 3 PCB pins.
12. Connect J6 into the PCB connector.

NOTICE

The A1 and A2 wires can have different wire colors and different terminal locations on different contactors. Make sure that the A1 and A2 wires connect to the correct terminals on the contactor.

13. Install A1 and A2. Make sure that the A1 wire goes to the A1 terminal and the A2 wire goes to the A2 terminal, as shown in *Figure 5*. Tighten the screws to 1 N·m (10 in·lb).

Figure 5

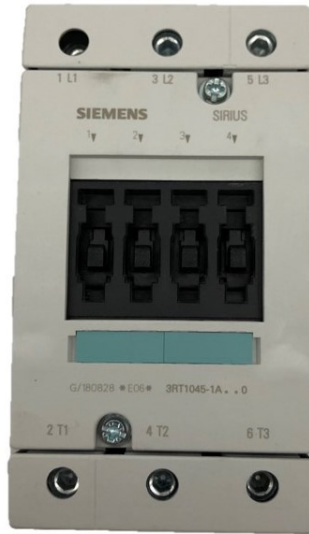



- 14.** Use a long, 5 mm hex wrench and the hardware that comes with the contactor kit to install the L1, L2, and L3 wires on the left and right sides of the new main contactor, as follows:
 - Connect the wires to the same position on the new contactor as on the old contactor. Refer to the photograph from *step 1* on page 7.
 - The labels on the wires can be different than the labels on the contactor. Use the color and the length of each wire as a guide to help you connect the wire to the correct position.
 - Tighten to 9 N·m (80 in·lb).
- 15.** Make sure that the wires labeled L1, L2, and L3 on the right side of the new main contactor align with the wires labeled L1, L2, and L3 on the left side of the new main contactor.
- 16.** Install the rear panel.

Install the inrush contactor – for XPR300 only

How to install a Siemens inrush contactor

Figure 6



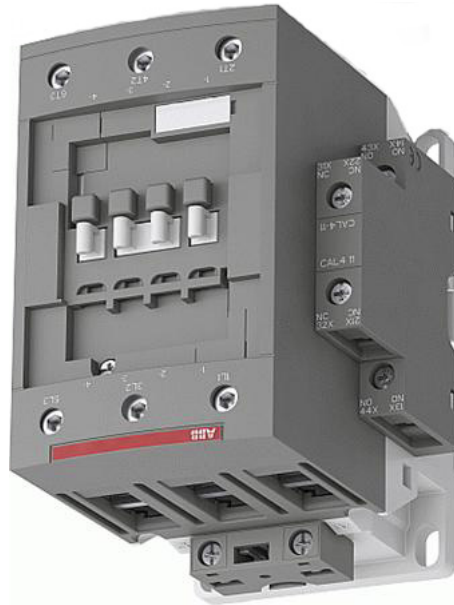
1. Get a photograph of the inrush contactor and the main contactor in the plasma power supply with all of the wires connected to them. Refer to this photograph when you reconnect the wires to the contactors.
2. Loosen the wire screws  and remove the wires from T3, T2, T1, L3, L2, L1, B1+, B2-, L1, and N.
3. Remove the 2 mounting screws and remove the old inrush contactor. Keep the old mounting screws to use again.
4. Use the mounting screws to install the new inrush contactor. Tighten to 2.8 N·m (25 in·lb).
5. Install L1, B1+, B2-, and N on top of the new inrush contactor. Tighten the screws to 1 N·m (10 in·lb).
6. Install L1, L2, and L3 on the top and bottom of the new inrush contactor. Tighten the screws to 5 N·m (50 in·lb).
7. Make sure that the wires labeled L1, L2, and L3 on the top of the new inrush contactor align with the wires labeled L1, L2, and L3 on the bottom of the new inrush contactor.




- 8.** Make sure that all of the wires connect to the correct terminals on the inrush contactor and on the main contactor. The labels on the wires can be different than the labels on the contactors. Use the color and the length of each wire as a guide to help you connect each wire to the correct position. Refer to the following:
 - The photograph from *step 1* on page 10
 - The *Wiring diagram for XPR300 input supply voltages* on page 15
- 9.** Install the rear panel.

How to install an ABB® inrush contactor

Figure 7

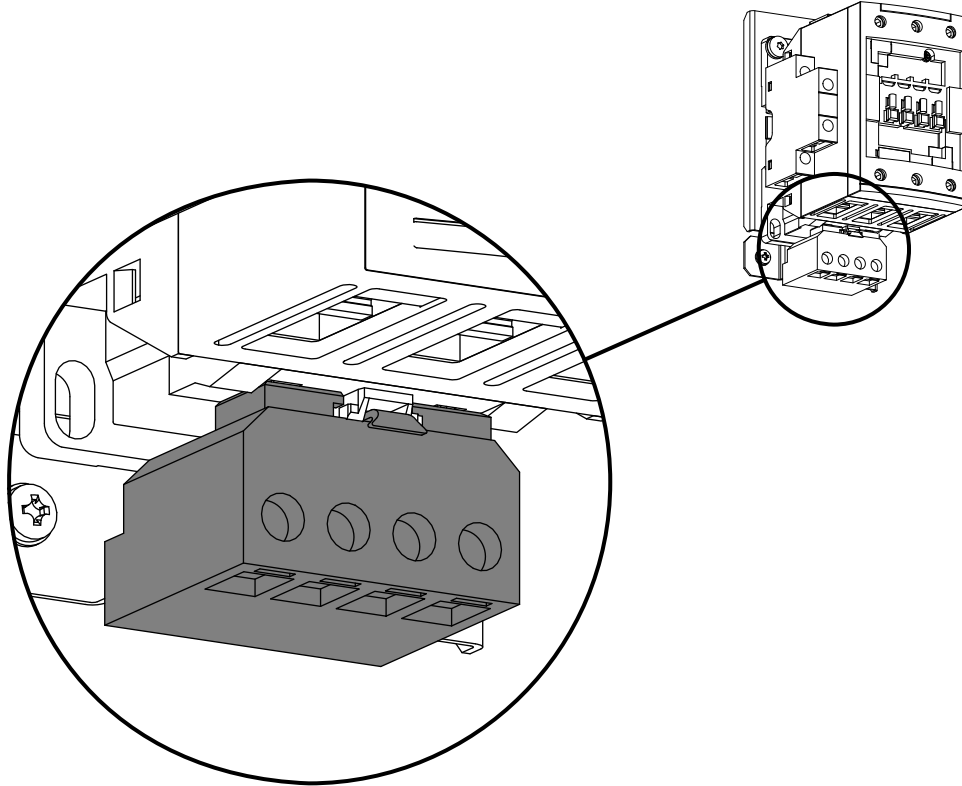


1. Get a photograph of the inrush contactor and the main contactor in the plasma power supply with all of the wires connected to them. Refer to this photograph when you reconnect the wires to the contactors.
2. Loosen the wire screws  and remove the wires from T3, T2, T1, L3, L2, and L1. Also remove additional wires, if necessary:
 - If replacing a Siemens inrush contactor, also remove wires B1+, B2-, L1, and N.
 - If replacing an Allen-Bradley or ABB inrush contactor, also remove wires E1+, E2-, A0, and A2.
3. Remove the 2 mounting screws and remove the old inrush contactor.
4. Use the provided mounting screws (075525, 075567) to install the new inrush contactor (003297) with attached mounting bracket (104968) (*Figure 7*) in the plasma power supply. Tighten to 2.8 N·m (25 in·lb).
5. Make sure that the contactor position and installation is correct, as shown in *Figure 7*.



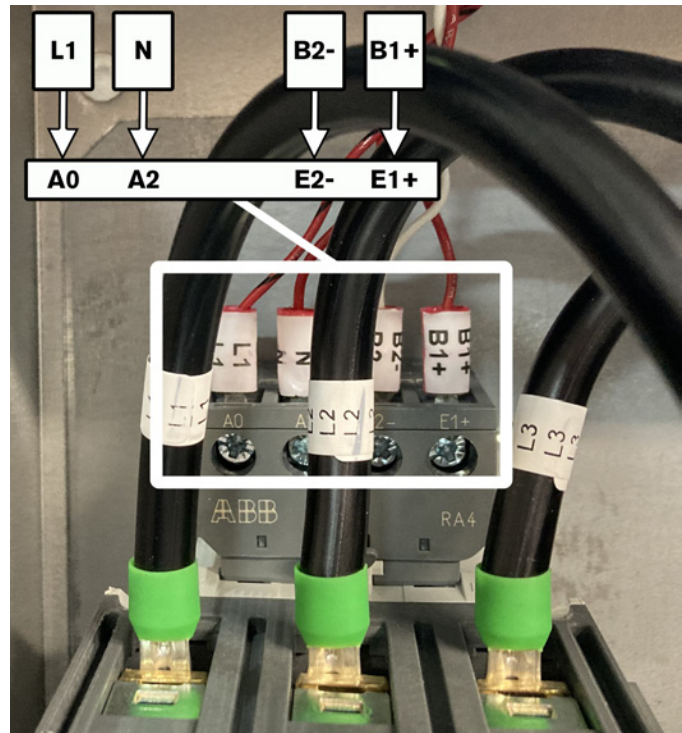
6. Install the contactor relay (003298) into the mounting rails at the end of the new inrush contactor, as shown in *Figure 8*. Slide the relay down until the bottom is flush with the bottom of the new inrush contactor and the locking tab snaps into position.

Figure 8

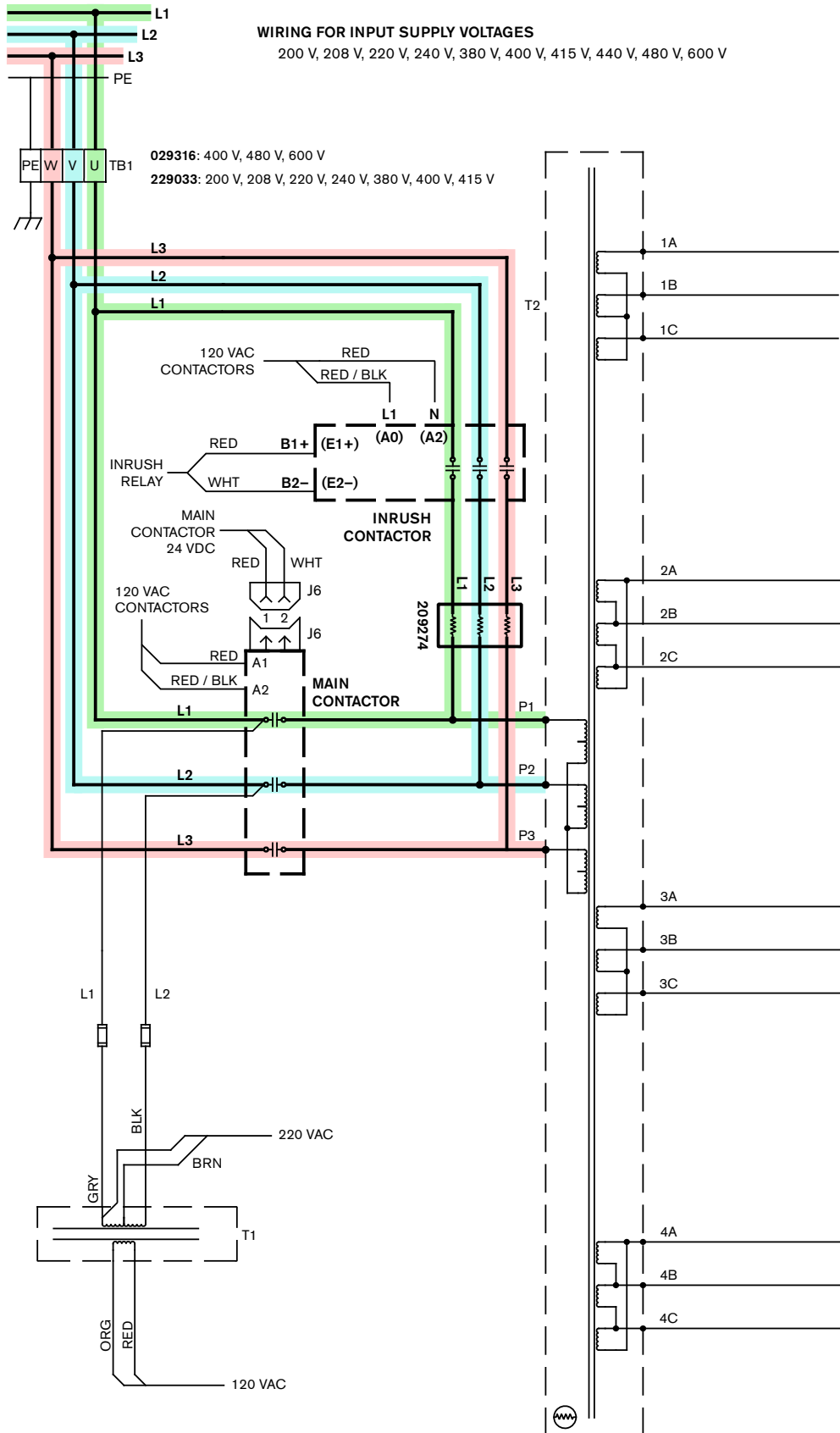


Main Contactor and Inrush Contactor Installation Procedures

7. Install wires L1, N, B2-, and B1+ on the top of the new inrush contactor, into A0, A2, E2-, and E1+. Tighten the screws to 0.5 N·m (5 in·lb).
8. Install wires L1, L2, and L3 on the top and bottom of the new inrush contactor. Tighten the screws to 5 N·m (50 in·lb).
9. Make sure that the wires labeled L1, L2, and L3 on the top of the new inrush contactor align with the wires labeled L1, L2, and L3 on the bottom of the new inrush contactor.
10. Make sure that all of the wires connect to the correct terminals on the inrush contactor and on the main contactor. The labels on the wires can be different than the labels on the contactors. Use the color and the length of each wire as a guide to help you connect each wire to the correct position. Refer to the following:
 - The photograph from *step 1* on page 12
 - The *Wiring diagram for XPR300 input supply voltages* on page 15
11. Install the rear panel.



Wiring diagram for XPR300 input supply voltages



Main Contactor and Inrush Contactor Installation Procedures



The wire colors in this diagram help to show the correct wire routing. The wire colors and labels in the plasma power supply can be different.



For complete wiring diagrams of the plasma power supply, refer to the *XPR170 Instruction Manual* (810060) or the *XPR300 Instruction Manual* (809480). Technical documentation is available at www.hypertherm.com/docs.