

MAXPRO200 ***I/O Replacement***

Field Service Bulletin

807790 – Revision 0 – April 2013

Hypertherm[®]

Hypertherm, Inc.

Etna Road, P.O. Box 5010

Hanover, NH 03755 USA

603-643-3441 Tel (Main Office)

603-643-5352 Fax (All Departments)

info@hypertherm.com (Main Office Email)

800-643-9878 Tel (Technical Service)

technical.service@hypertherm.com (Technical Service Email)

800-737-2978 Tel (Customer Service)

customer.service@hypertherm.com (Customer Service Email)

866-643-7711 Tel (Return Materials Authorization)

877-371-2876 Fax (Return Materials Authorization)

return.materials@hypertherm.com (RMA email)

Hypertherm Plasmatechnik GmbH

Technologiepark Hanau

Rodenbacher Chaussee 6

D-63457 Hanau-Wolfgang, Deutschland

49 6181 58 2100 Tel

49 6181 58 2134 Fax

49 6181 58 2123 (Technical Service)

Hypertherm (S) Pte Ltd.

82 Genting Lane

Media Centre

Annexe Block #A01-01

Singapore 349567, Republic of Singapore

65 6841 2489 Tel

65 6841 2490 Fax

65 6841 2489 (Technical Service)

Hypertherm (Shanghai) Trading Co., Ltd.

Unit 301, South Building

495 ShangZhong Road

Shanghai, 200231

PR China

86-21-60740003 Tel

86-21-60740393 Fax

Hypertherm Europe B.V.

Vaartveld 9

4704 SE

Roosendaal, Nederland

31 165 596907 Tel

31 165 596901 Fax

31 165 596908 Tel (Marketing)

31 165 596900 Tel (Technical Service)

00 800 4973 7843 Tel (Technical Service)

Hypertherm Japan Ltd.

Level 9, Edobori Center Building

2-1-1 Edobori, Nishi-ku

Osaka 550-0002 Japan

81 6 6225 1183 Tel

81 6 6225 1184 Fax

Hypertherm Brasil Ltda.

Rua Bras Cubas, 231 – Jardim Maia

Guarulhos, SP - Brasil

CEP 07115-030

55 11 2409 2636 Tel

55 11 2408 0462 Fax

Hypertherm México, S.A. de C.V.

Avenida Toluca No. 444, Anexo 1,

Colonia Olivar de los Padres

Delegación Álvaro Obregón

México, D.F. C.P. 01780

52 55 5681 8109 Tel

52 55 5683 2127 Fax

Hypertherm Korea Branch



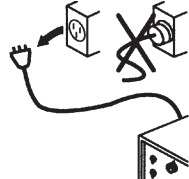
#3904 Centum Leaders Mark B/D,

1514 Woo-dong, Haeundae-gu, Busan

Korea, 612-889

82 51 747 0358 Tel

82 51 701 0358 Fax

		<p>DANGER!</p> <p>ELECTRIC SHOCK CAN KILL</p>
		<p>Disconnect electrical power before performing any maintenance.</p> <p>All work requiring removal of the power supply cover must be performed by a qualified technician.</p> <p>See the <i>Safety</i> section of the system's manual for more safety precautions.</p>

Introduction

This Field Service Bulletin explains how to replace the I/O PCB assembly or the I/O panel assembly in the MAXPRO200.

Kit contents

I/O PCB replacement - 428040

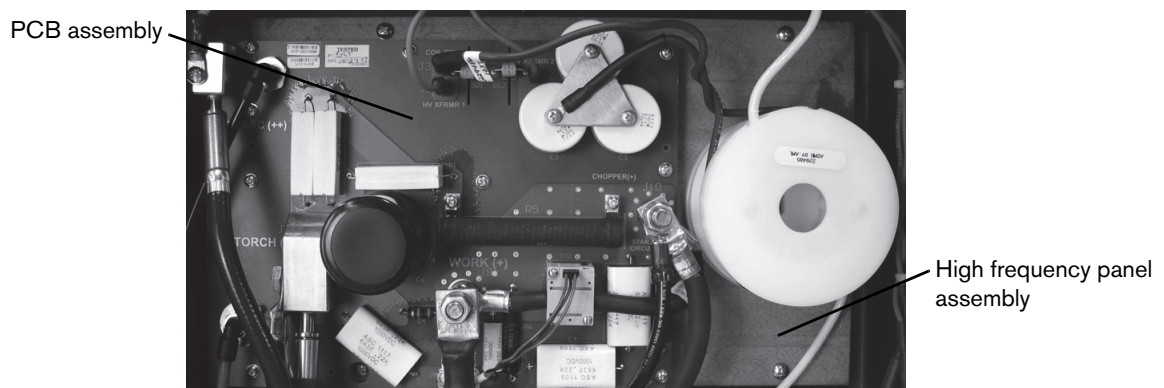
Part number	Description	Quantity
229552	I/O PCB assembly	1

I/O assembly replacement - 428041

Part number	Description	Quantity
229497	High frequency panel assembly (includes I/O PCB assembly 229552)	1

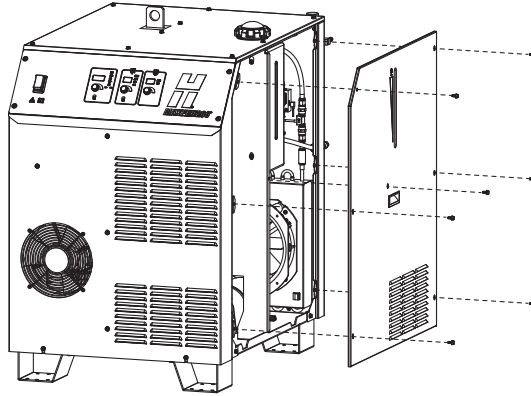
Required tools and materials

- 9/16 inch wrench
- 3/8 inch wrench
- Number 2 Phillips head screw driver
- T-20 Torx driver



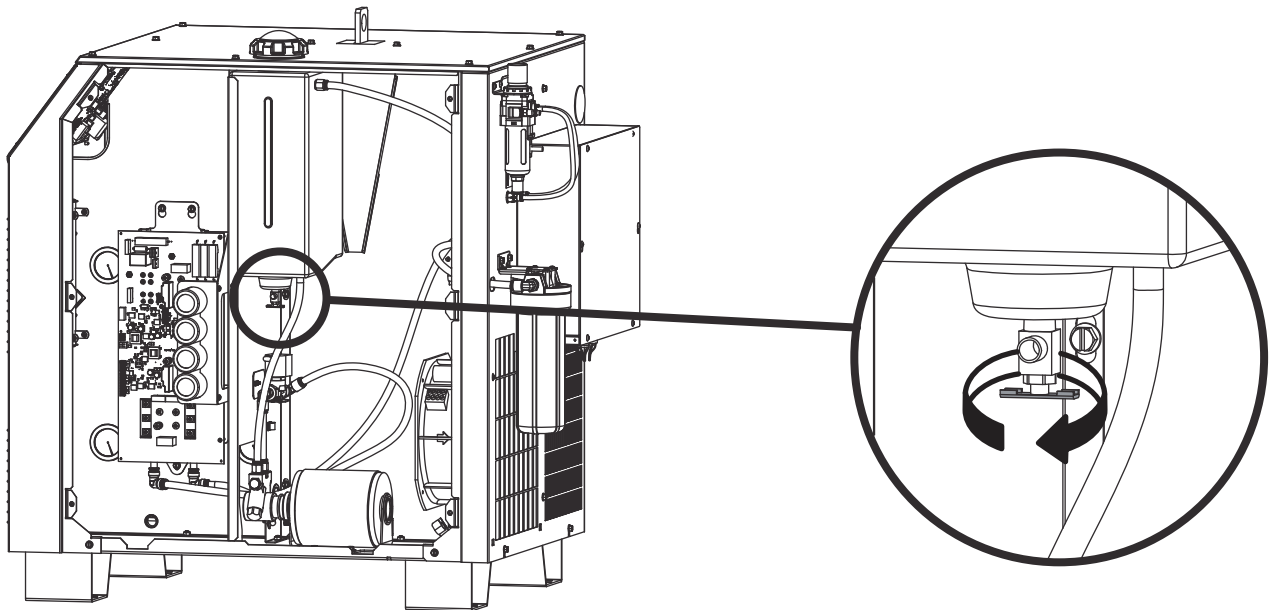
Remove right-side panel

1. Turn OFF power to the system. Disconnect line power by turning OFF the main disconnect switch. Make sure the switch on the power supply operator panel is in the OFF position.
2. Turn OFF all supply gases.
3. Use a 3/8 inch wrench to remove the side panel screws.



Drain the coolant system

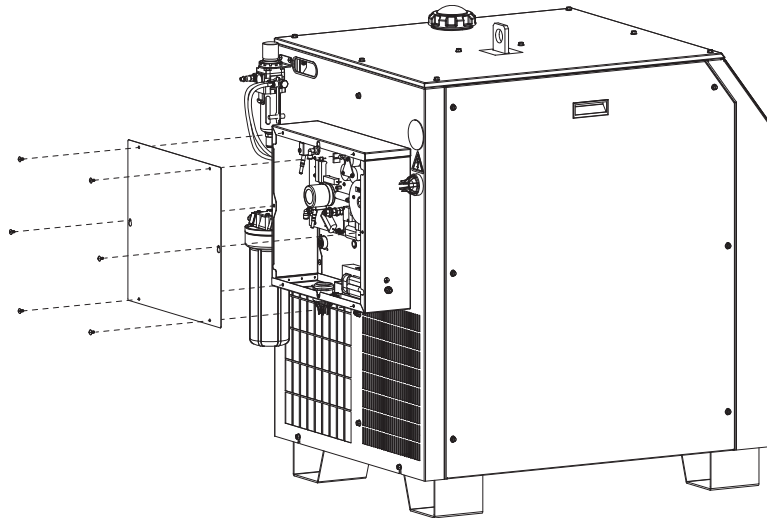
Locate the coolant drain valve and use a 20 liter (5 gallon) container to catch the coolant. Coolant will flow as soon as the drain is opened. Close the drain valve when the coolant stops flowing.



Note: If the coolant does not contain any dirt or particulates, you can reserve it for refilling the coolant system. If you fill the system with new coolant, dispose of used coolant according to local and national codes.

Remove the ignition enclosure panel

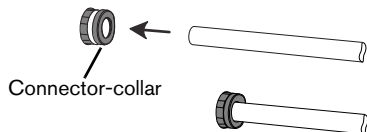
1. Turn OFF power to the system.
2. Disconnect line power by turning OFF the main disconnect switch.
3. Using a T-20 Torx driver, remove the ignition enclosure panel screws (6).



Push-to-Connect fittings

The gas and coolant hose connections use push-to-connect fittings.

- To make a connection, push the hose fitting into the connector until it stops.



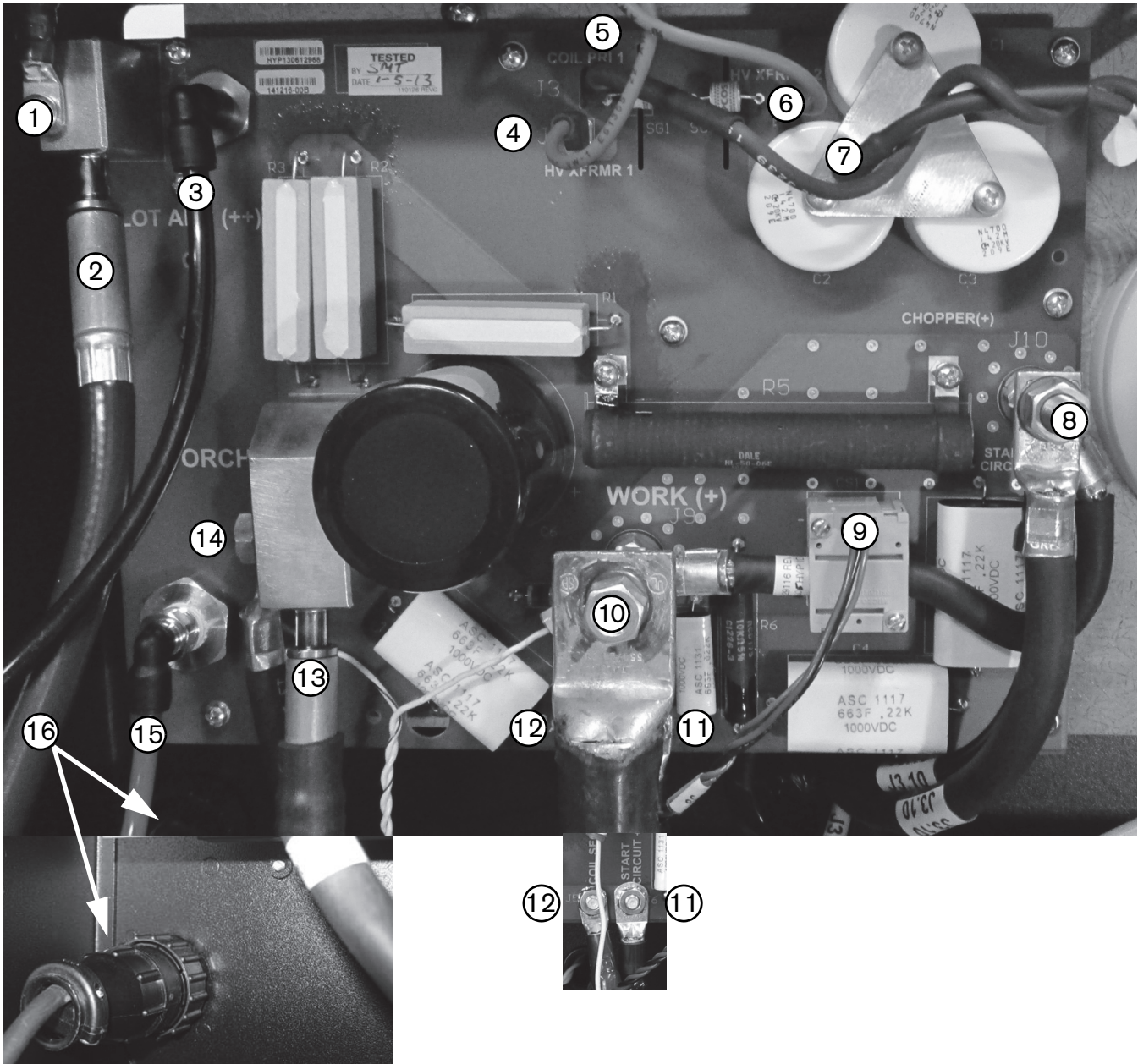
- To disconnect a fitting, push the connector-collar toward the fitting, hold the collar in place and pull the hose away from the fitting.



Remove the connections to the I/O PCB assembly

Note: Using the following photograph, disconnect the wires and cables from the I/O PCB assembly. Each cable and connection is identified in the table on the next page.

1. Remove the torch lead connections labeled 2, 3, 13, 15, and 16. Use a 20 liter (5 gallon) container to catch any coolant remaining in the torch leads.
2. Remove all the remaining connections from the I/O PCB assembly.

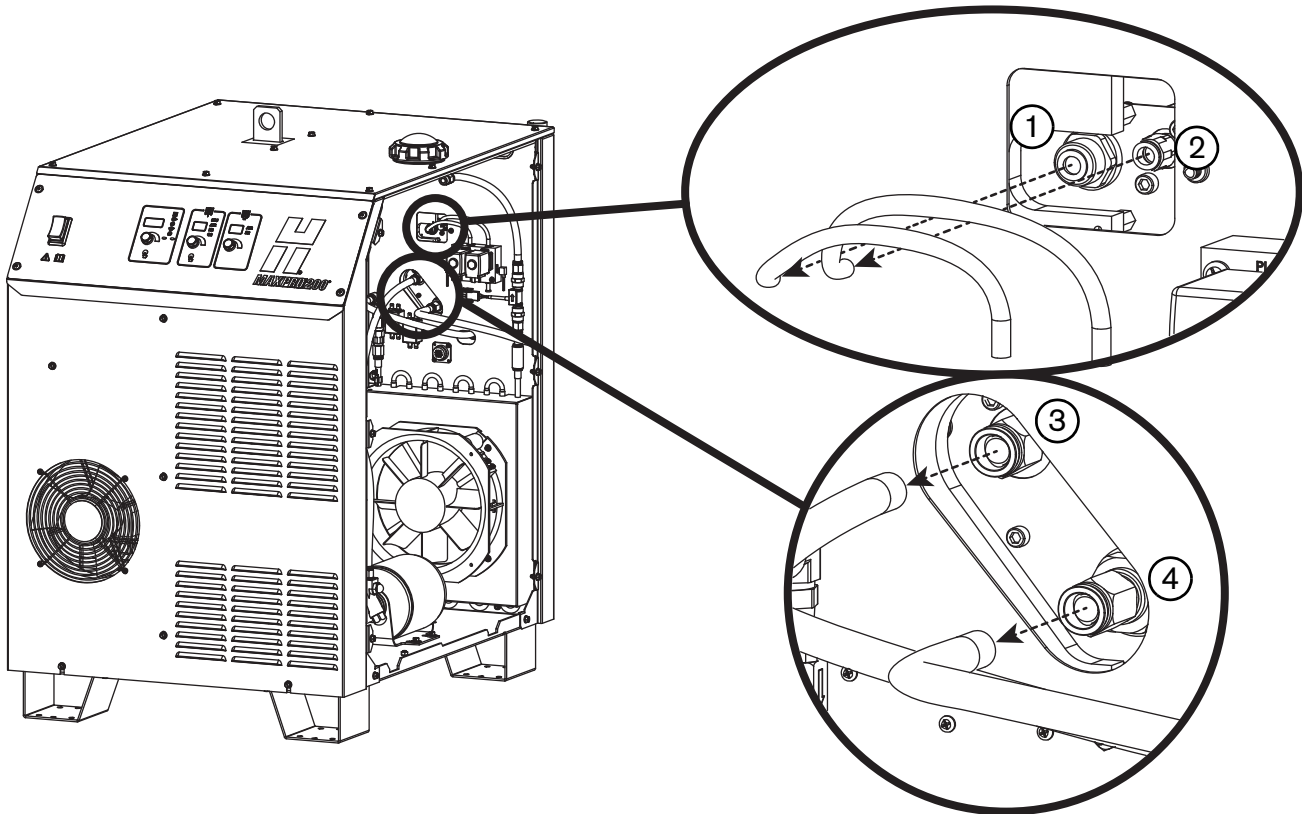


Number	Connection ID	label/description
1	J4	Pilot Arc Nozzle / 8AWG, white wire from white air core transformer.
2	PILOT ARC (++)	Braided blue hose from the torch lead.
3	Plasma gas hose (no ID on the board)	Black tubing from the torch lead.
4	J1/ HV XFRMR 1	22AWG, 10kV, white wire with 6.3 mm (0.25 inch) push-on connector from HFHV (high frequency, high voltage) transformer.
5	J3/ COIL PRI 1	14AWG, 15kV, black wire with push-on connector from white air core transformer.
6	J2/ HV XFRMR 2	22AWG, 10kV, white wire with 6.3 mm (0.25 inch) push-on connector from HFHV transformer.
7	C2	14AWG, 15kV, black wire with ring terminal from white air core transformer.
8	J10	There are 3 connections on the 3/8 inch-16 threaded bolt: 1) J3.10 – 2AWG black wire from chopper WORK J2.9. 2) J3.10 – 6AWG black wire from R36 pilot arc resistor. 3) 4AWG black wire from WORK (+) through CS1.
9	CS1	J8 (3 twisted red, black, and blue wires).
10	J9 / WORK (+)	Work lead.
11	J6 / START CIRCUIT ++	J3.6 – 6AWG black wire with ring terminal from the chopper J2.7.
12	J5 / COIL SEC IN	8AWG white wire with ring connector from white air core transformer.
13	TORCH (-) / J7	Black coolant hose (supply to the torch lead).
14	J7 / TORCH (-)	J3.7 – 2AWG black wire from the inductors.
15	Coolant return (no ID on the board)	Red coolant hose (return from the torch lead).
16	No ID on the board	Torch connector – torch solenoid valve, torch type, and torch identification.

Remove the connections inside the power supply

Remove the four hoses shown below. Some coolant may drip from the hoses when disconnected. Make sure not to swap the coolant lines when reinstalling.

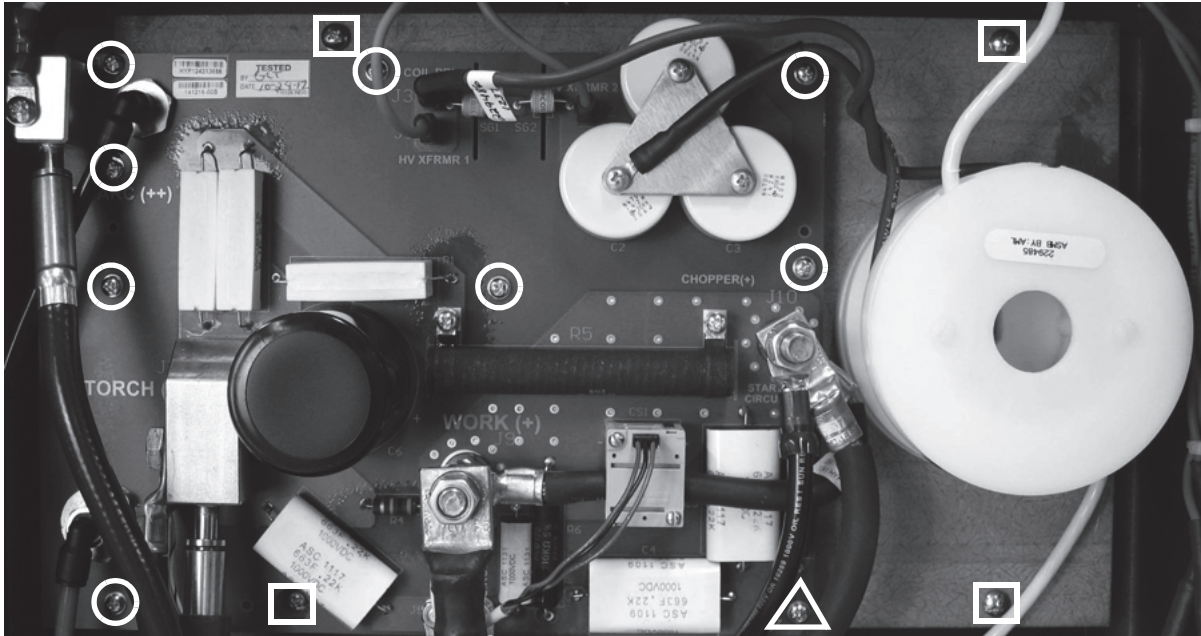
Note: see "Push-to-Connect fittings" on page 3 for more information on the connections.



Number	Description
1	Black 1/4 inch OD hose from the plasma output of the gas manifold
2	Blue hose from the shield valve output of the gas manifold
3	Coolant hose from the outlet of the cold plate
4	Coolant hose from the inlet to the filter

Remove the I/O PCB or the panel assembly

- For kit 428040, remove the screws (9) that secure the I/O PCB assembly. See the white circles and white triangle in the photograph below. Keep the screws for use when installing the new I/O PCB assembly.
- For kit 428041, remove the screws (4) that secure the High frequency panel assembly and the grounding screw at the bottom right corner of the I/O PCB assembly (white triangle). See the white squares and white triangle in the photograph below. Keep the screws for use when installing the new I/O panel assembly.



Install the new I/O PCB assembly or high frequency panel assembly

1. To install a new I/O PCB assembly, align the PCB with the mounting holes (9) and use the screws you removed earlier to secure the PCB in place.
2. To install a new high frequency panel assembly, align the panel with the mounting holes (4) and use the screws you removed earlier to secure the panel in place.
3. Tighten the screws indicated by circles and the triangle to 0.8 to 1.0 Nm (7-10 inch-lbs). Tighten screws indicated by squares to 2.5 to 3.0 Nm (23-27 inch-lbs).
4. Reconnect all wires, cables, and hoses to the I/O PCB assembly. Use the photograph and table on the previous pages as a guide to identifying the cables and connectors. Use the table below for torque specifications.
5. Reconnect the four hoses inside the power supply. See “Remove the connections inside the power supply” on page 6 for more details.

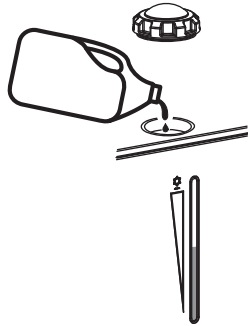
Number on photo	Label on cable	Notes
1	No label	3 to 4 Nm (25 to 35 inch-lbs) labeled J4 on the PCB
7	No label	0.8 to 1.0 Nm (7 to 10 inch-lbs) labeled C2 on the PCB
8	J3.10	11 to 12 Nm (100 to 110 inch-lbs) labeled J10 on the PCB
10	No label	11 to 12 Nm (100 to 110 inch-lbs) labeled WORK (+) on the PCB
11	J3.6	3 to 4 Nm (25 to 35 inch-lbs) labeled START CIRCUIT ++ on the PCB
12	No label	3 to 4 Nm (25 to 35 inch-lbs) labeled COIL SEC IN on the PCB
14	J3.7	11 to 12 Nm (100 to 110 inch-lbs) labeled TORCH (-) on the PCB

6. Replace the right-side panel.
7. Reconnect the line power by turning ON the main disconnect switch. proceed to “Fill the power supply with coolant” on page 9.

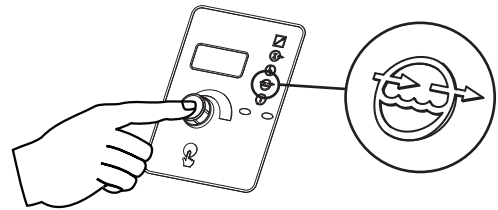
Fill the power supply with coolant

The system will take 14.2 liters to 17.0 liters (3.75 to 4.5 gallons) of coolant depending on the length of the torch leads.

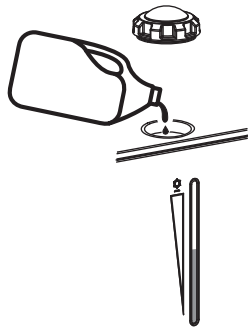
1. Add coolant to the power supply until the tank is full.



2. Turn ON the power supply, then press and release the amps selector knob as many times as needed until the flow symbol is selected. The flow rate will be shown in the three digit display. There is a 45 second delay before the system will report a low coolant flow error. If the flow rate has not reached 0.5 gallons per minute (gpm) the system will turn off the pump.



3. If the system displays an error, turn OFF the power to the system and add coolant to the tank until it is full again. Repeat steps 2 and 3 until no error is displayed.



4. Add coolant to the power supply until the tank is full and replace the filler cap.

