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Hydraulic Technology Worldwide

Repair Parts Sheet

ZU4 Heat Exchanger Accessory Kit (115 and 230 VAC Fan Motors)

L2752 Rev. B 08/08

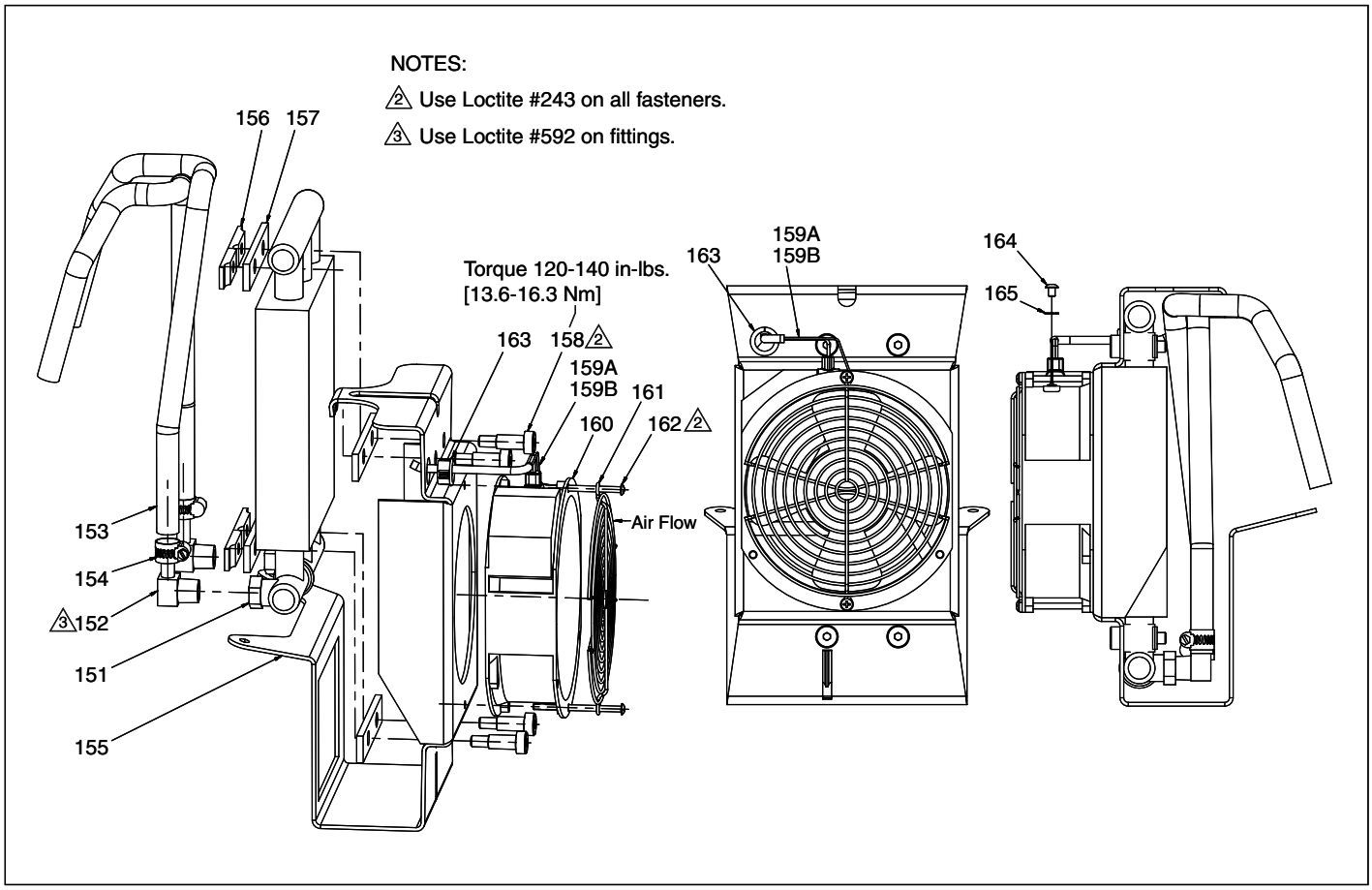
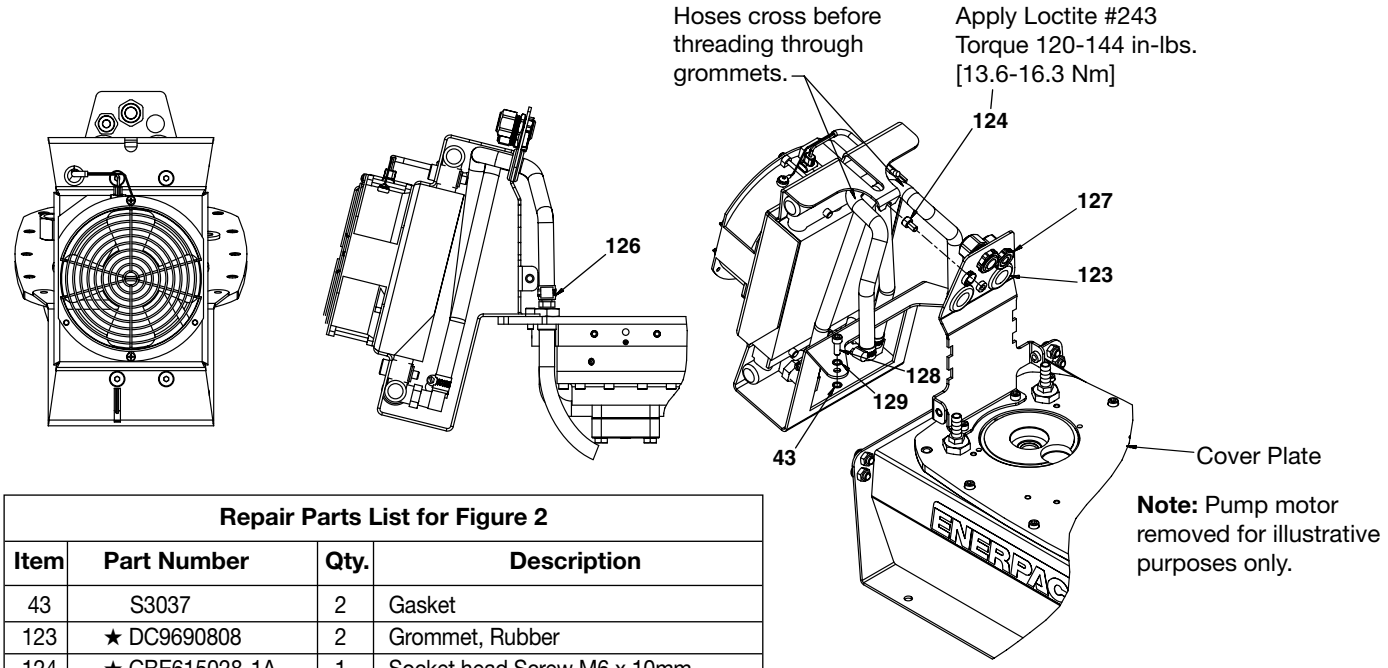


Figure 1, Heat Exchanger

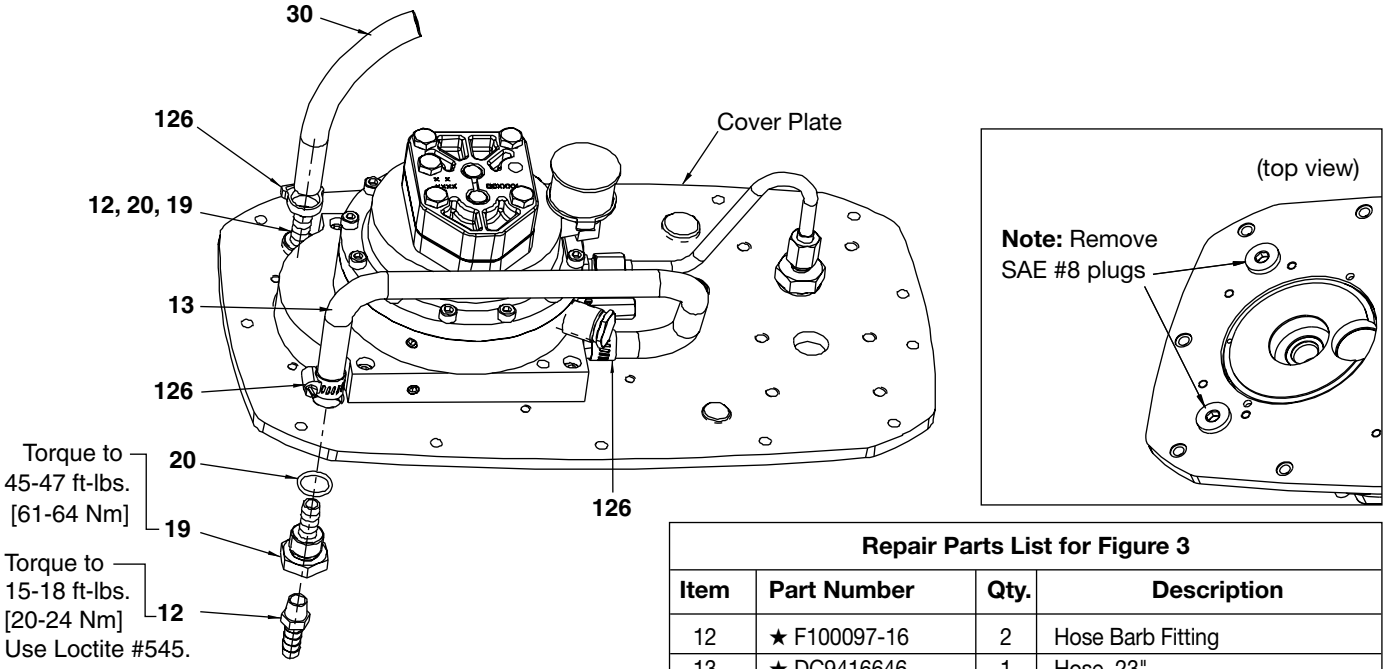
Repair Parts List for Figure 1							
Item	**Part Number**	**Qty.**	**Description**	**Item**	**Part Number**	**Qty.**	**Description**
151	★ DC9546471	1	Heat Exchanger Coil	159B	★▲ DC8346960	1	Cable Assy (PT & BTW Only)
152	★ PA2029097	2	Hose Barb Elbow	160	★▲ DC8276470	1	115V Fan, ZU4
153	★ DC9417646	2	Hose, 19"		★▲ DC8277470	1	230V Fan, ZU4
154	★ DC9639299	2	Hose Clamp, Steel	161	★▲ DC3227689	1	Fan Guard
155	★ DC9545471	1	Bracket	162	★▲ DC9575628	2	Bolt #8-32 x 2.50
156	★ DC9555471	2	Bracket	163	★ DC8295039	1	Bushing, Split
157	★ DC9554037	4	Gasket	164	★▲ B2502028X	1	Screw, Hex
158	★ DC9576242	4	Shoulder Bolt, M8 x 20	165	★▲ DA15066	1	Lockwasher, M5
159A	★▲ DC8278960	1	Cable Assy (Standard & LCD)				

★ Items included as part of Repair Kit ZHE-U115 and ZHE-U230.
▲ Items included in fan kits DC8276470SR (115V) and DC8277470SR (230V).



Repair Parts List for Figure 2			
Item	**Part Number**	**Qty.**	**Description**
43	S3037	2	Gasket
123	★ DC9690808	2	Grommet, Rubber
124	★ CBE615028-1A	1	Socket head Screw M6 x 10mm
126	★ DC9639299	2	Hose Clamp, 3/8 - 7/8
127	★ DC9537021	1	Locking Nut, 16mm
128	★ CBE621028-1A	2	SHCS, M6 x 20 ZINC
129	★ S3037	2	Gasket
★ Items included as part of Repair Kit ZHE-U115 and ZHE-U230.			

Figure 2, Heat Exchanger Mounting Arrangement



Repair Parts List for Figure 3			
Item	**Part Number**	**Qty.**	**Description**
12	★ F100097-16	2	Hose Barb Fitting
13	★ DC9416646	1	Hose, 23"
19	★ DC9273097	2	Fitting
20	★ B1908503	2	O-Ring
30	★ DC9418646	1	Hose, 5"
126	★ DC9526299	3	Hose Clamp
★ Items included as part of Repair Kit ZHE-U115 and ZHE-U230.			

Figure 3, Hose Connections and Fittings

INSTALLATION INSTRUCTIONS
ZU4 115V and 230V HEAT EXCHANGERS

WARNING: Disconnect power from pump before beginning the following procedure. Be sure hydraulic pressure is zero (0) PSI/BAR.

CAUTION: Standard safety procedures are to be followed during disassembly and reassembly to minimize any possibility of injury.

Install the heat exchanger as described in the following steps. Refer to figures 1, 2 and 3 for item numbers in parenthesis (. . .). Refer to other figures as indicated.

1. Using a 5 mm (3/16") Allen wrench, remove the nine screws and washers securing the shroud halves to the cover plate and to each other.

   Note: Pump models with shroud-mounted LCD (liquid crystal display) and/or shroud-mounted on-off button: A ribbon cable or electrical wiring (varies depending on model) must be disconnected from the circuit board located on one of the shroud halves. This circuit board is referred to as the "control board" on LCD equipped pumps and as the "standard board" on pumps equipped with a shroud-mounted on-off button and no LCD. Refer to steps 2, 3 and 4 as applicable for your pump model. Also see Figure 4.
2. All pumps equipped with LCD:
   a. Remove the shroud half that does not contain the LCD.
   b. At the shroud half that contains the LCD, gently pull away the ribbon cable connector from the socket on the shroud-mounted control board.
   c. Remove the remaining shroud half from the pump.
3. Standard pumps with shroud-mounted on-off button and no LCD:
   a. Remove the shroud half that does not contain the on-off button.
   b. At the other shroud half, use a small flat screwdriver to remove the four power wires from the terminals on the shroud-mounted standard board. Tag all wires for reference during reassembly.
   c. Remove the remaining shroud half from the pump.
4. Post tensioning (PT) and classic bolting (BTW) pumps only: Remove both shroud halves from the pump. On these pump models, no cables or wires must be disconnected before removing the shroud halves.
5. Remove the 13 screws and gaskets securing the cover plate to the reservoir using a 5 mm (3/16") Allen wrench. **Note:** The motor and valve will remain installed to the pump cover plate.
6. Lift the cover plate up and remove it from the reservoir. The gasket may hold the cover plate firmly to the reservoir. Gentle prying with a flat head screwdriver may be required to separate the cover plate.

   Important: Inspect the cover plate gasket (not shown) and replace if damaged.
7. Remove the two SAE #8 plugs from the cover plate. See Figure 3.
8. Install the O-rings (item 20), fittings (item 19), and hose barbs (item 12) into the ports from which the SAE #8 plugs were removed. See Figure 3.
9. Remove the 8" by-pass hose from the pump element.

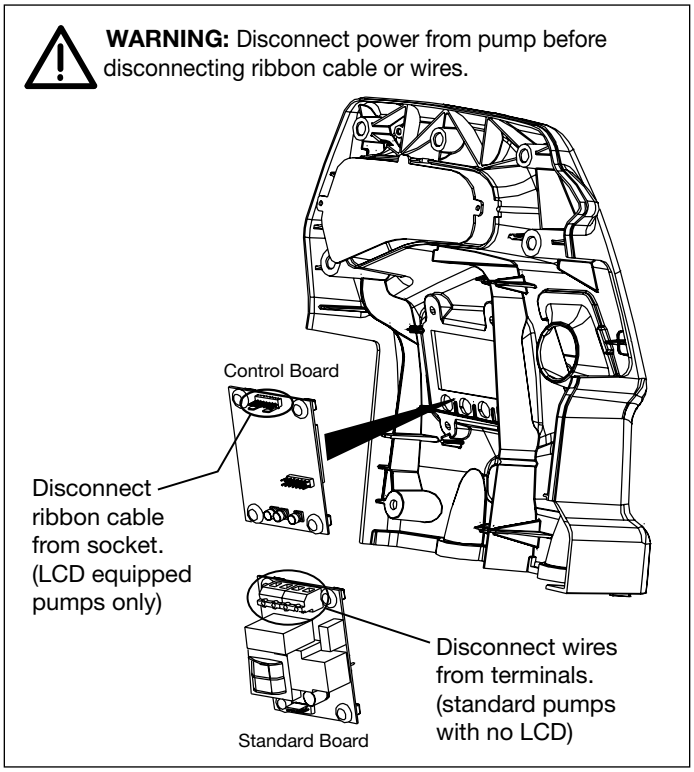


Figure 4, Disconnecting Electrical Wires and Cables (all pumps except PT and BTW models)

10. Install the 23" hose (item 13) from the pump element to the fitting (item 19) using two hose clamps (item 126) as shown in Figure 3.
11. Install the 5" hose (item 30) to the remaining fitting (item 19) using one hose clamp (item 126) as shown in Figure 3. This is the return hose.
12. Reinstall the cover plate to the reservoir using only 11 of the 13 screws and gaskets. Torque to 50-60 inch lbs. [5.6-6.8 Nm]. Do not reinstall the two back corner screws at this time (item 128). They will be used later to mount the heat exchanger bracket to the cover plate.
13. Check that the fan cable is plugged into the fan, and that the ground wire is connected to the fan housing. See Figure 5.

    Note: If the heat exchanger is to be installed on a ZU4 post tensioning (PT) or classic bolting (BTW) pump, the pre-installed fan cable must be replaced with a different cable designed for these pump models. Refer to the "Fan Cable Replacement" section later in this document.

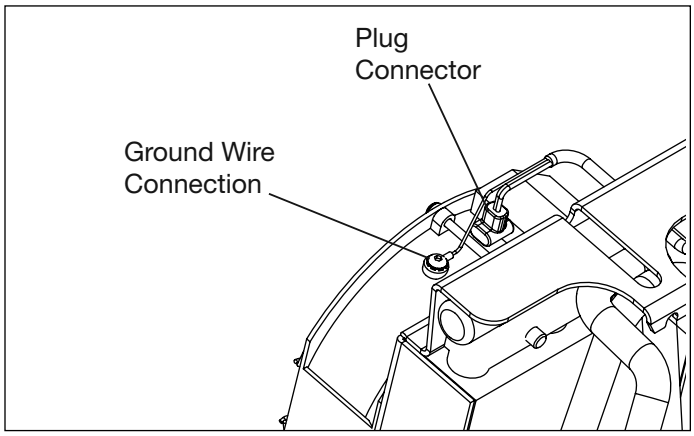


Figure 5, Fan Connections (typical)

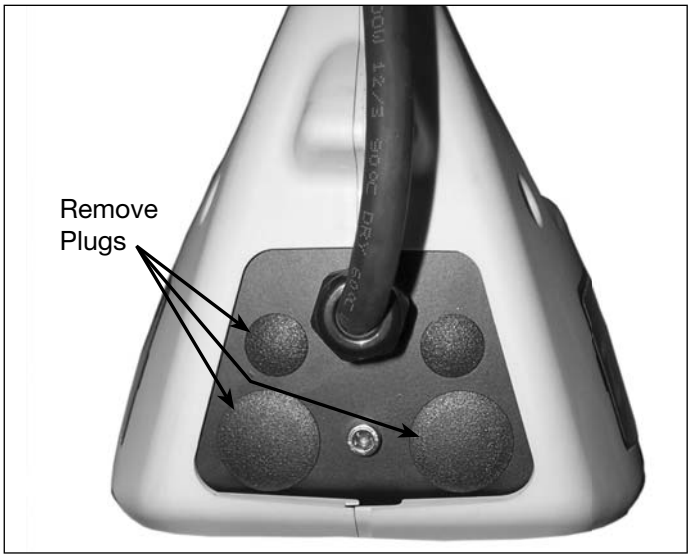


Figure 6, Plug Removal - Back Bracket

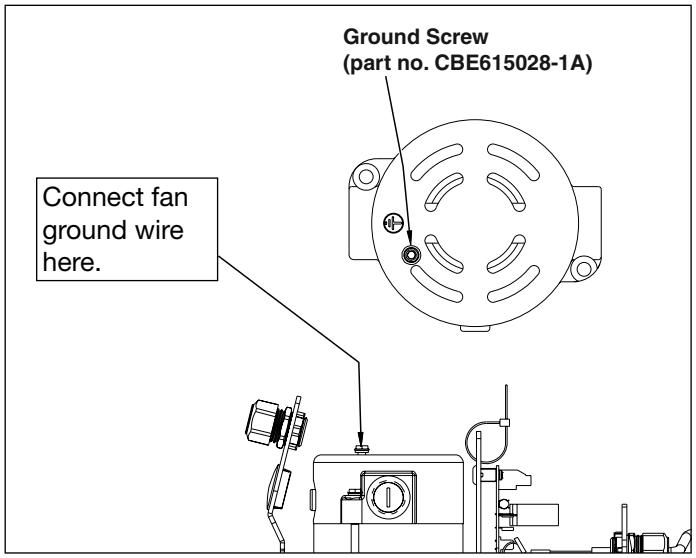


Figure 7, Ground Wire Connection to Pump Motor

14. Remove three plugs from the pump back bracket in the locations shown. See Figure 6.
15. Slide a rubber grommet (item 123) on each hose. Cross the two hoses and insert the hose ends into the back bracket.
16. While keeping the rubber grommets close to the top, route the hoses down, slide a hose clamp (item 126) on each hose and press the hoses onto the hose barbs (item 12). Tighten the hose clamps.
17. Slide the rubber grommets (item 123) up and insert them into the holes in the back bracket.
18. Install the heat exchanger on the pump. The heat exchanger is secured by the two back corner cover plate screws (item 128), four gaskets (items 43, 129) and one top screw (item 124). Torque the two cover plate screws (item 128) to 50-60 inch lbs. [5.6-6.8 Nm]. Apply Loctite 243 to threads and torque top screw (item 124) to 120-144 inch lbs. [13.6-16.3 Nm].
19. Route the fan cable through the hole in the back bracket. The cord bushing comes assembled on the cord. Using the locknut (item 127), fasten the cord bushing to the back bracket. **Note:** The locknut is made of plastic. To prevent damage, be careful that it is not overtightened.
20. Route the fan cable over the top of the pump motor.
21. Make fan electrical connections for your pump model as described in steps 22 through 24:

WARNING: Disconnect power from pump before making electrical connections.

22. All pumps equipped with LCD:
    a. Connect the fan ground wire to the pump motor casing. See Figure 7.

    Note: In steps 22b and 22c, the fan is connected to the same terminals as the pump motor (parallel connection).

    b. Connect the fan wire with the spade connector to the upper right-hand terminal of the solid state relay (SSR). See Figure 8.
    c. Connect the fan wire with the pin connector to the left-hand motor power terminal on the power board. See Figure 9.
    d. Re-connect the ribbon cable from the control board to the power board. See Figure 4.
23. Standard pumps with shroud-mounted on-off button and no LCD:
    a. Connect the fan ground wire to the pump motor casing. See Figure 7.

    Note: In steps 23b and 23c, the fan is connected to the same terminals as the pump motor (parallel connection).

    b. Connect the fan wire with the spade connector to the upper right-hand terminal of the solid state relay (SSR). See Figure 8.
    c. Connect the fan wire with the pin connector to the right-hand motor power terminal on the standard board. See Figure 10.
    d. Reconnect the remaining electrical wires to the terminals.
24. Post tensioning (PT) and classic bolting (BTW) pumps only:
    a. Connect the fan ground wire to the pump motor casing. See Figure 7.
    b. Connect the fan wires to terminals T2 and T5 on the contactor. Polarity does not matter. See Figure 11.
25. Reinstall the shroud halves to the cover plate. Secure with screws and washers using a 5 mm (3/16") Allen wrench.
26. Test the pump for proper operation. Make the following operational checks:
    - Check that fan starts when pump motor is started.
    - Check that fan stops when pump motor is stopped.
    - Check for oil leaks. Repair any leaks immediately.

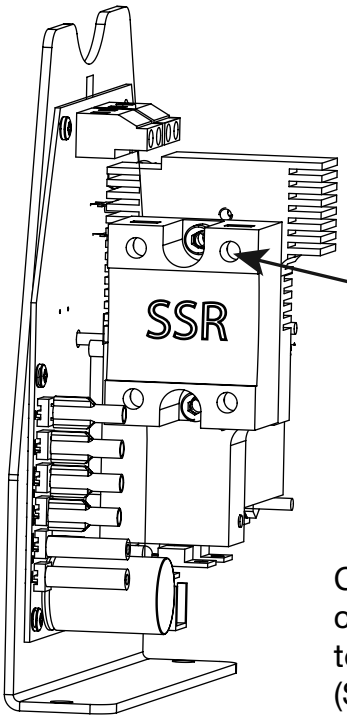
Fan Cable Replacement (ZU4 Post Tensioning and Classic Bolting Pumps only)

A standard fan cable is pre-installed in all 115 and 230V heat exchanger assemblies shipped from the factory. The spade and pin connectors on this cable are intended for use with most ZU4 pumps.

However, on the ZU4 post tensioning (PT) and classic bolting (BTW) pumps, a special PT-BTW fan cable with push-on connectors is used in place of the standard fan cable.

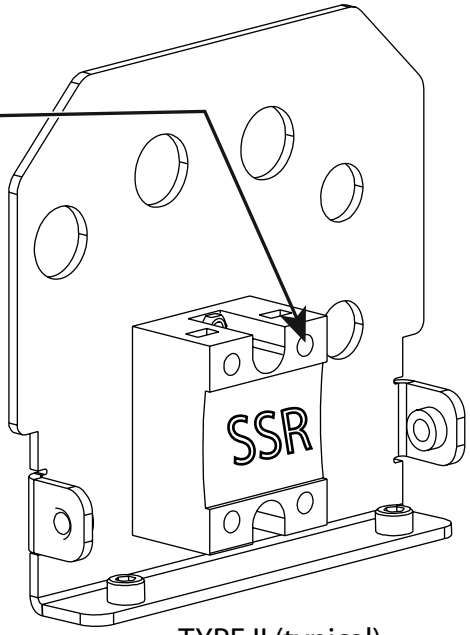
If necessary, replace the standard fan cable with the special PT-BTW fan cable as described in the following steps. Refer to Figure 1 for numbered callouts in parenthesis (. . .).

1. Unplug the existing fan cable from the fan.
2. Remove screw (item 164) starwasher (item 165) and ground wire from the fan housing.
3. Unplug the existing fan cable (item 159A) from the fan and remove it from the fan bracket.
4. Secure the ground wire of the new fan cable (item 159B) with starwasher (item 165) and screw (item 164).
5. Plug the connector of the new fan cable into the socket on the fan.
6. Place the new fan cable through the bushing (item 163) in the fan bracket.



TYPE I (typical)

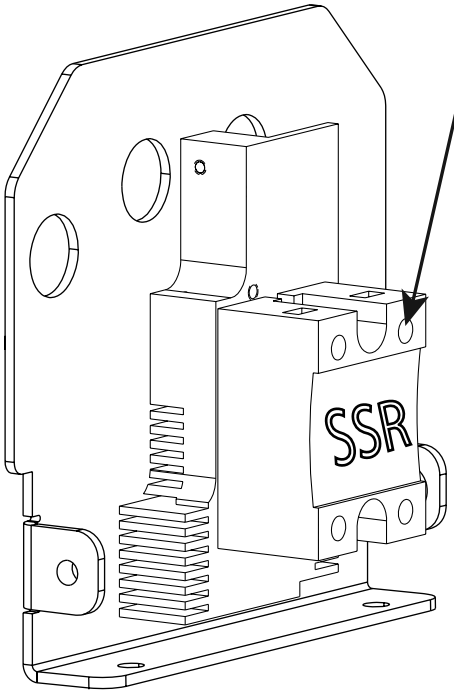
Connect fan wire with spade connector to upper right-hand terminal of solid state relay (SSR).



TYPE II (typical)

WARNING: Disconnect power before making electrical connections.

Note: Solid state relay (SSR) will be located on pump front bracket or middle bracket, depending on pump model and configuration.



TYPE III (typical)

Figure 8, Connection to SSR - 115V and 230V Fans (all pump models except PT and BTW)

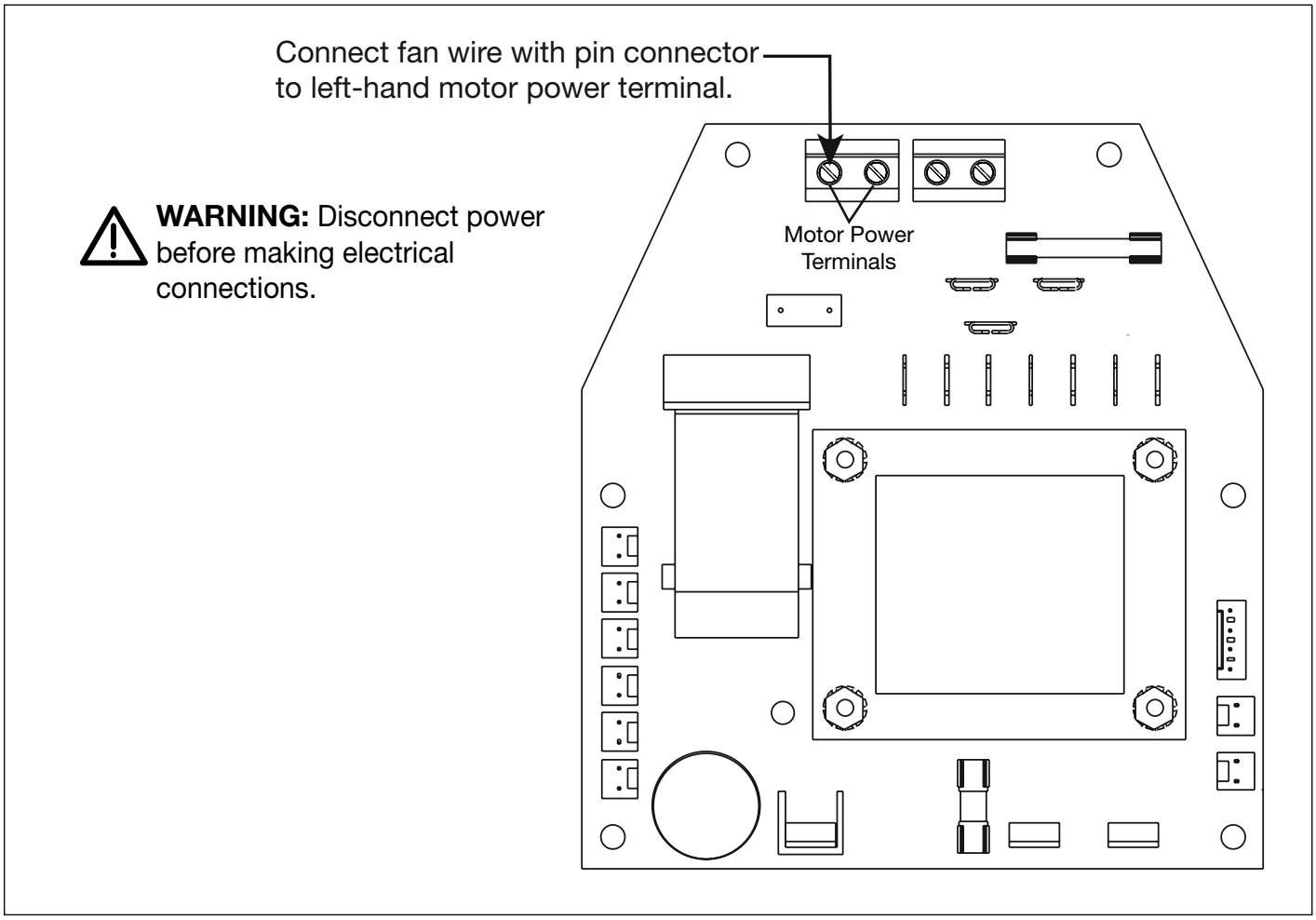


Figure 9, Connection to Power Board - 115V and 230V Fans (LCD equipped pumps only)

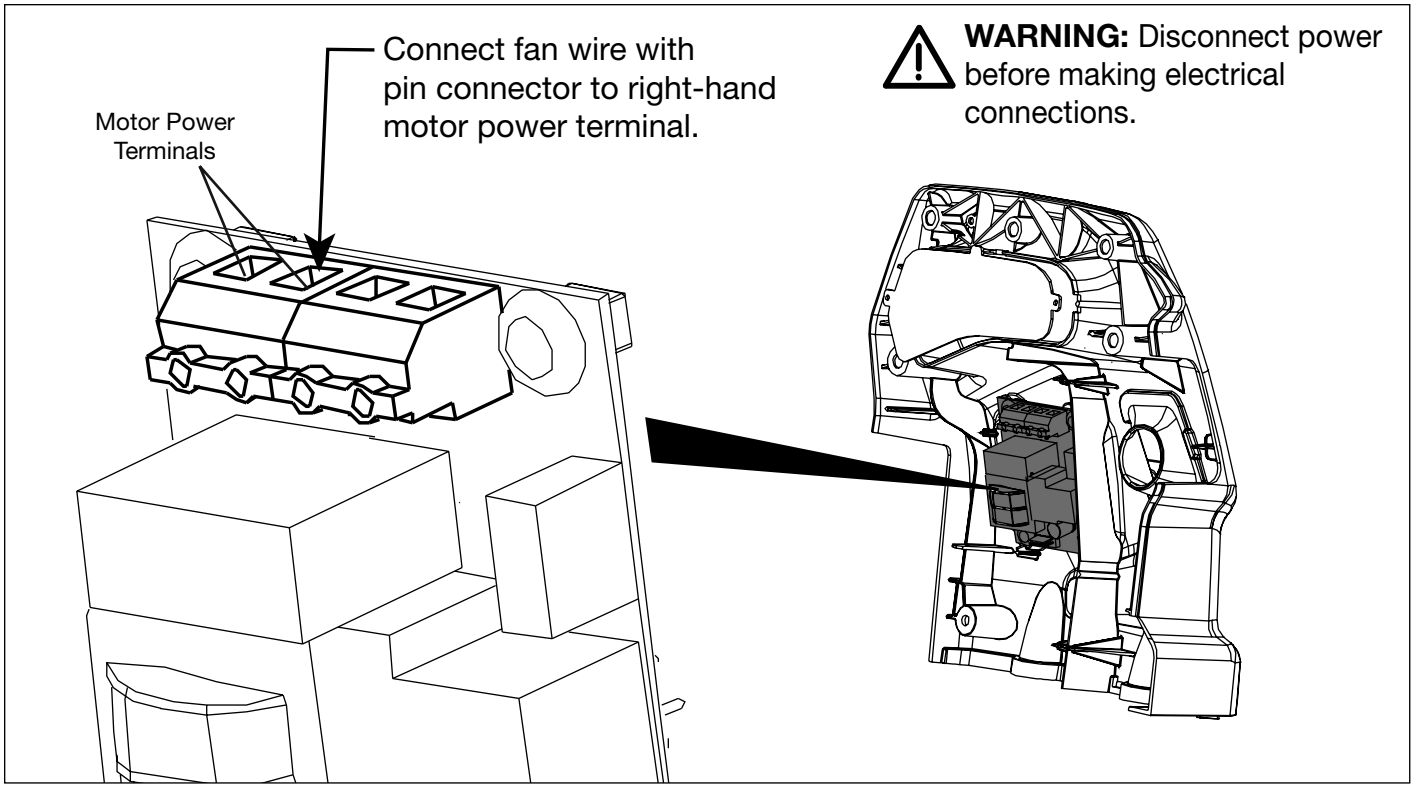


Figure 10, Connection to Standard Board - 115V and 230V Fans (Standard pumps NOT equipped with LCD)

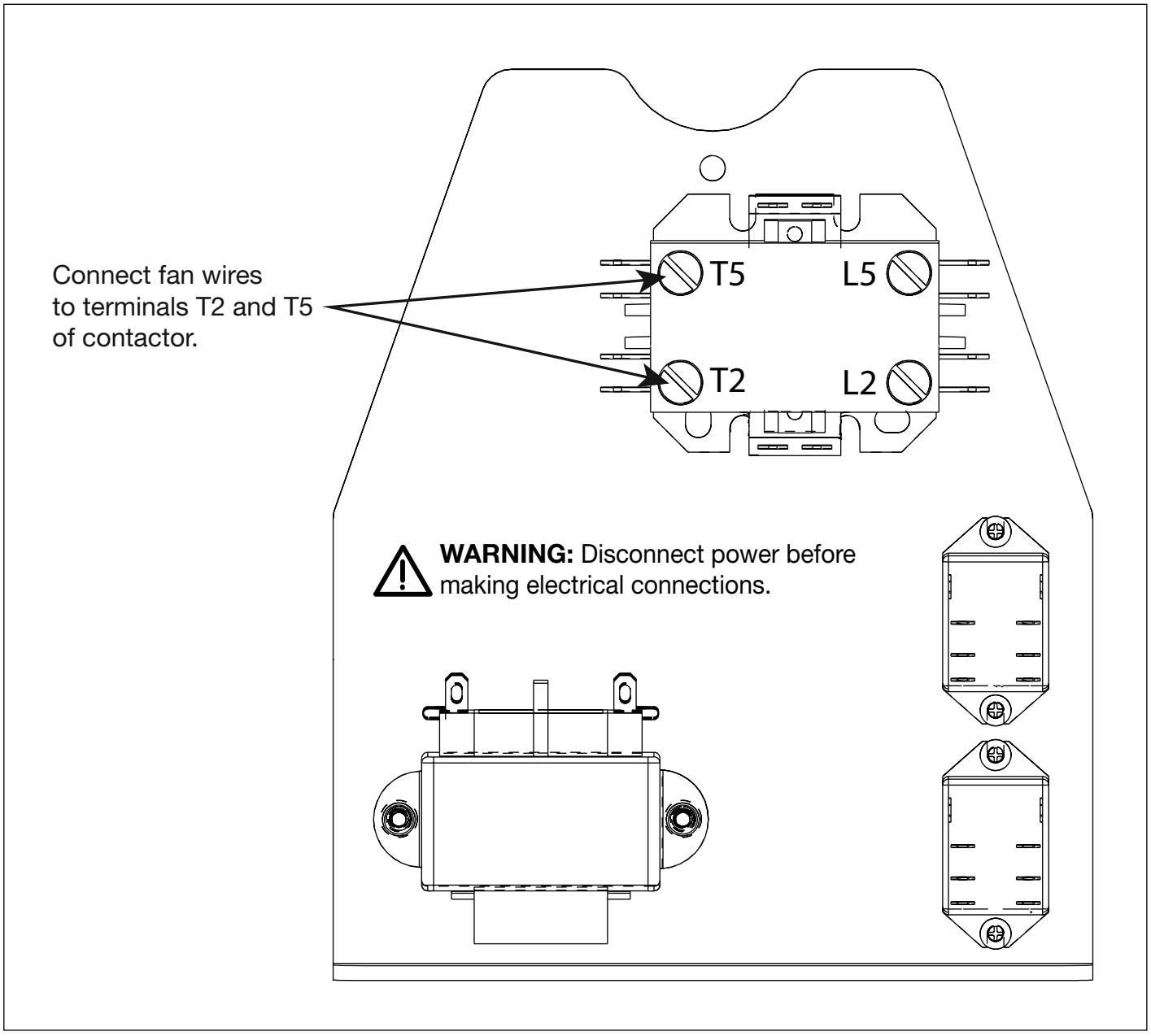


Figure 11, Connections to Contactor - 115V and 230V Fans (PT and BTW pumps only)

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