

Outdoor Split Flow Center Kit
FCP11BDOS (1 pump)
FCP21BDOS (2 pumps)

For Split Geothermal Heat Pump
models GZ & HS

Installation Instructions

NOTE: Read the entire instruction manual before starting the installation.

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and current editions of the National Electrical Code (NEC) NFPA 70. In Canada, refer to current editions of the Canadian electrical code CSA 22.1.

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.



INTRODUCTION

This flow center kit includes components for mounting a flow center on the outside of a Carrier/Bryant/ICP geothermal split system, operating outdoors. This kit is not applicable to other brands of heat pumps. Please read these instructions entirely before attempting to install the flow center kit.

This kit does **NOT** include the following field supplied items:

- Unit mounting pad
- Heat pump risers
- 1/2" brass MPT plugs (if unit has HRP/desuperheater)
- 1-1/4" HDPE elbows or pipe
- Foam insulation tape
- Pipe insulation
- Thread sealant
- Wire tie

The kit contents are shown on the following page. This kit includes a temperature switch. This switch detects air temperature inside the GHP cabinet. The switch and relays turn on the loop pump(s) when the temperature is 25°F or lower, if there is not a call for heating. This function circulates the loop anti-freeze through the heat exchanger to prevent freezing. Once the temperature is at or above 40°F, the switch and relays de-activate the loop pump(s), unless there is a thermostat call for heating or cooling. The loop pump(s) are energized whenever there is a thermostat call for heating or cooling.

CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in unit damage.

This kit is designed for installation in the heat pump model published in this document. Do not install in a heat pump not specified in this manual.

CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing and gloves when handling parts.

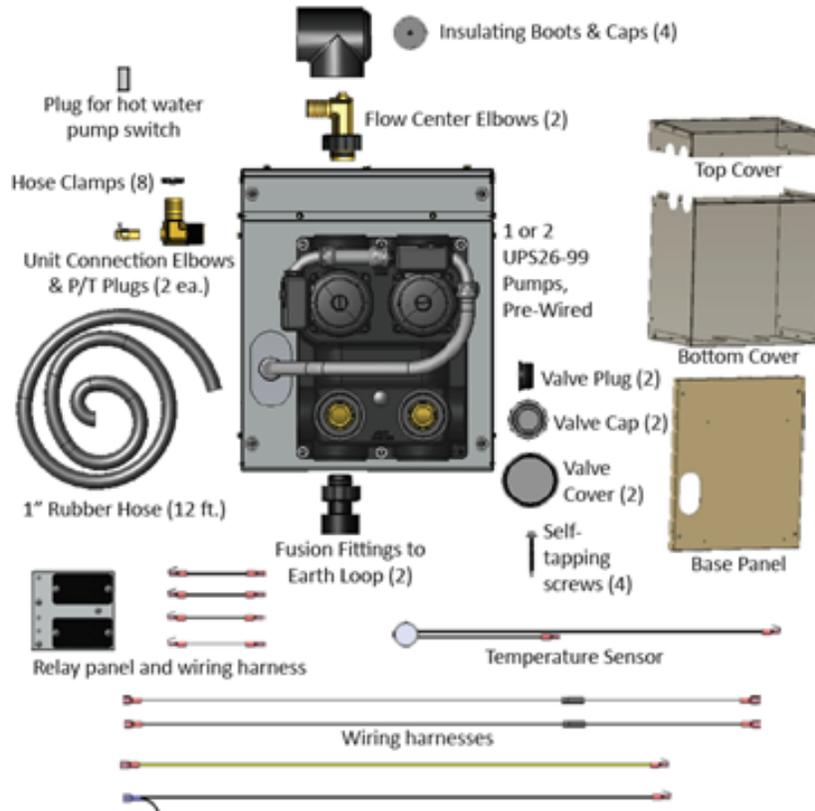
INSTALLATION

1. Verify Package Contents

- a. Unpack the kit and inspect contents and condition. If any part of the kit appears damaged or missing, do not attempt to install the kit. Contact your local distributor for further help.
- b. Ensure that the kit package includes all the listed components. Contact your local distributor for further help.
- c. Ensure all packaging material is removed from kit components.

Kit Contents:

- Installation instructions (kit)
- Installation instructions (flow center)
- Flow center with 1 or 2 UPS26-99 pump(s)-factory mounted on base panel
- Flow center cover, top
- Flow center cover, bottom
- Rubber hose (12 ft.)
- Hose clamps (qty. 8)
- P/T Plugs (qty. 2)
- HDPE fittings – 1-1/4” fusion x double O-ring (qty. 2)
- Temperature switch
- In-line fuses (qty. 2)
- Foam insulating boots (qty. 4)
- Plastic plugs for insulating boots (qty. 4)
- Valve caps (qty. 2)
- Valve cover (qty. 2)
- Valve plugs (qty. 2)
- Packet of white petroleum
- Brass elbows-- hose barb x 1” MPT (qty. 2)
- Brass elbows-- hose barb x double O-ring , w/ plugs (qty. 2 ea)
- Relay panel, factory wired (1 sheet metal panel with 2 relays and wiring kit)
- Hot water pump switch plug, rectangular black plastic
- Screws for mounting panel, #12 x 2” long hex washer head, self-drilling (qty. 4)
- Screws for cover, #10 x 3/8” hex flange head sheet metal screws (qty. 13, 304 stainless steel)
- Screws for mounting relay board, #6 x 3/8” long pan head sheet metal screws (qty. 3)
- Screws for mounting flow center to base panel (qty. 4) and washers (qty. 4)



2. Position loop piping stubs

- a. Consider that the loop piping will enter the kit which will be mounted on the right side of the unit (see Fig. 1).
- b. Use straight 1-1/4" HDPE pipe for vertical section of riser to flow center. At this point, risers should extend about 1 foot (1') above finish grade. These will be cut to length in a later step below (see Fig. 2).
- c. Vertical piping entering the flow center must be 1-1/4" HDPE, 5" on-center spacing of the pipes (see Fig. 3).
- d. Do not completely back-fill around vertical pipes to allow for accessibility and flexibility when fusing and attaching to the flow center.

3. Place Mounting Pad

- a. Use a pad that is suitable for outdoor use.
- b. Ensure mounting pad is placed on level, compacted base, directly adjacent to vertical pipe risers (see Fig. 1).

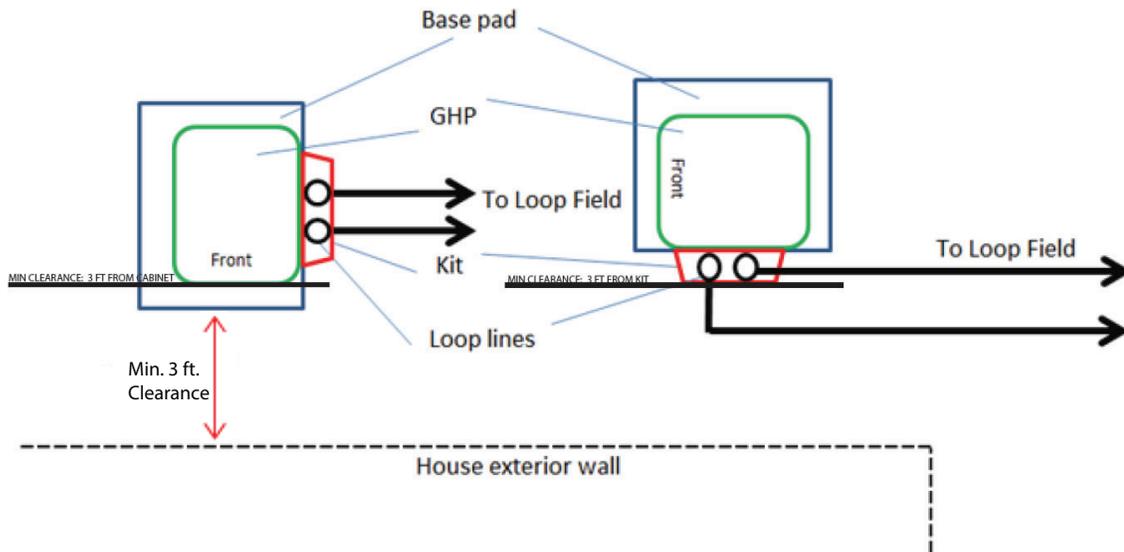


Fig. 1 — Installation Positioning Options (overhead view)

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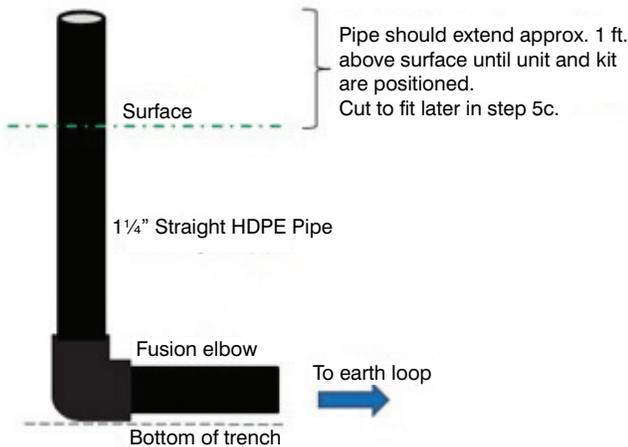


Fig. 2 — HDPE Riser Configuration (not to scale)

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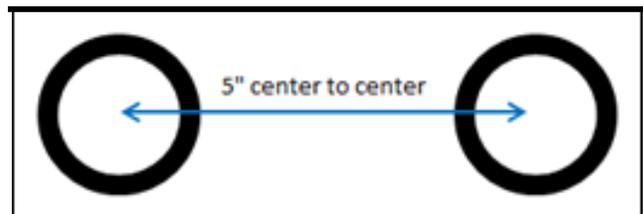


Fig. 3 — HDPE Pipes must be spaced 5" on center

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4. Attach Flow Center to cabinet

- a. Remove top panel of geothermal heat pump (GHP).
- b. Remove right-side panel of GHP.
- c. Remove the kit top cover from the kit bottom cover
- d. Place flow center on the kit base panel, oriented per label on base panel (and Fig. 4 below). Attach flow center to base panel using the provided short (4) self-tapping screws and (4) washers.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in component damage.

Care must be taken to ensure location of screws will not come in contact with piping or wiring inside geothermal unit.

- e. Place flow center panel on top of GHP right side panel 3 inches from the left and 1-1/4 inches from the bottom. Measure in two spots per side to ensure the panel is properly aligned and level. (Fig. 4)
- f. Attach flow center panel to the right side panel of GHP using (4) #12 x 2" long self-drilling screws supplied in kit.
- g. Drill or punch a 7/8" conduit hole for the 1/2" conduit fitting in the center of the flow center panel window. (Fig. 4)
- h. Remove the conduit nut from the straight liquid-tight conduit fitting, and feed the pump wiring harness through the conduit hole drilled in previous step.
- i. Secure the conduit fitting by replacing the conduit nut. It may be necessary to remove some of the insulation on the inside of the GHP panel around the conduit hole to allow the nut to properly seat.

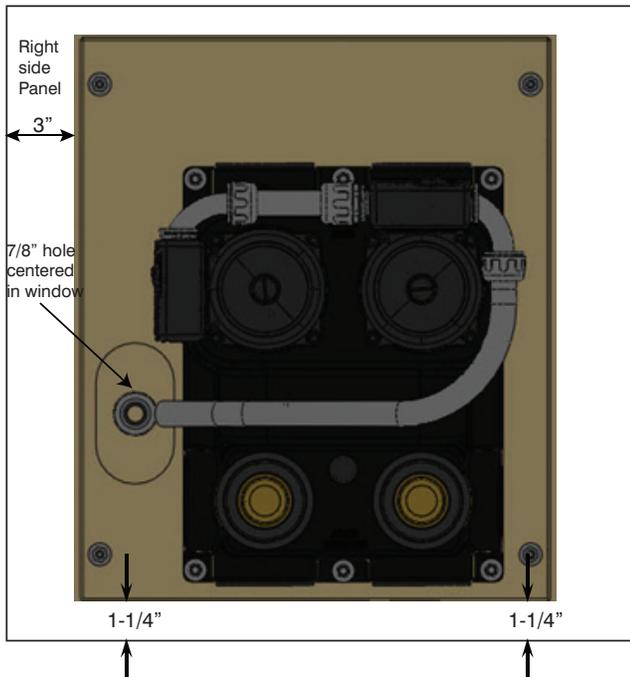


Fig. 4 — Flow Center Panel

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5. Set the unit on the pad

- a. Position the unit on the pad so that the loop piping will enter the bottom of the flow center. The flow center and kit will need to extend over the edge of the pad. (See Fig. 1.) If desired, use heat pump risers in each corner of the GHP to elevate it from the pad to provide for water

run-off and snowfall. The risers should be placed under the unit's base rails as shown in Fig. 5.

- b. Attach the adapters (1-1/4" HDPE fusion x double O-ring) into the bottom of the flow center. Hand-tighten the nut. This will provide an indication to the height of the HDPE riser.
- c. Mark and cut the HDPE risers with consideration of the insertion distance into the fusion fitting.
- d. Remove the adapters from the flow center.
- e. Temporarily move the GHP so that the fittings can be fused onto the pipe.
- f. Place insulation tubing over the vertical section of pipes.
- g. Fuse the fitting onto the pipe. Allow to cool for at least 20 minutes.
- h. While waiting for the pipe to completely cool, the internal wiring can be completed. See step 6. and 7.
- i. Lubricate the O-rings on the double-O-ring fittings and the inner diameter of the 3-way valves with provided white petroleum lubricant.
- j. Replace unit, attaching the double O-ring fitting into bottom of flow center. See Fig. 6. Care must be taken to ensure the O-rings do not get pinched, or roll out of the O-ring groove on the fittings.
- k. Hand-tighten the nuts to secure the fittings to the flow center (see Fig. 6 And 7).
- l. Hand-tighten the conduit fittings.
- m. Reinstall the side panel with the flow center attached. Ensure that the 4 mounting screws will not touch any piping or wiring inside the GHP.
- n. Replace top panel of GHP.

Base Rail

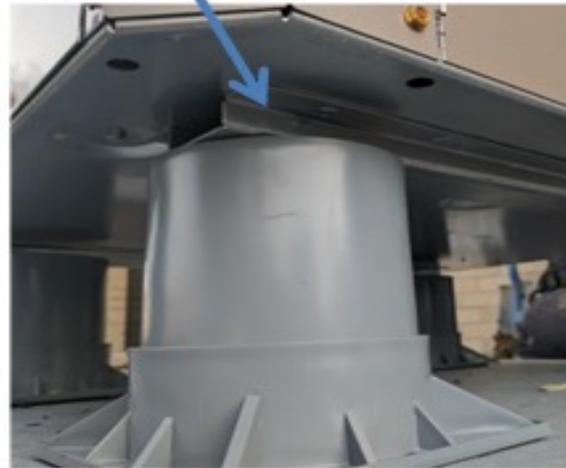


Fig. 5 — Base Rail and Riser

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⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in component damage.

Do not side-load the flow center fittings by forcing the adapters into the bottom of the flow center or installing them at an angle. Angling the fitting or misalignment may cause the O-rings to be out of position, resulting in leaks.

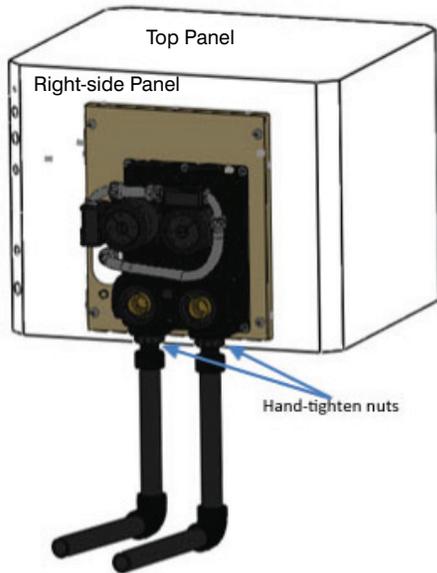


Fig. 6 — Insertion of Pipe Risers Into Flow Center

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Fig. 7 — Pipe risers installed

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6. Open the Power Supply Disconnect. Lockout and Tag Out as required.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before beginning any installation or modification, be sure the main electrical disconnect switch is in the OFF position. TAG THE DISCONNECT SWITCH WITH A SUITABLE WARNING LABEL

Unit contains two power supplies - make sure BOTH are off before servicing.

⚠ CAUTION

EQUIPMENT RELIABILITY HAZARD

Failure to follow this caution may result in component damage.

Do not connect the high voltage wiring to the “T” load side of the heat pump contactor. The outdoor kit must be powered at all times to allow either a compressor call or the temperature switch to energize the pump(s).

7. Complete Internal Wiring

- Attach pre-wired relay panel to the control box with #6 sheet metal screws to the locations shown in Fig. 8 and 9.
- Route the pump wiring harness into the control box to the relay panel. Secure with wire ties as necessary.
- Connect the wiring harness to the available 1/4” male piggy-back spade connections on the relay. White wire from harness attaches to the white wire piggy-back spade; black wire from harness attaches to the black wire piggy-back spade. Connect the green wire from the wiring harness to an appropriate ground lug on the unit. (See Fig. 10)
- Connect the yellow (24VAC) and black wires (common) to the compressor contactor coil.
- Connect the black temperature switch wire to the transformer (24 VAC).
- Connect the two black wires with 5A in-line fuses to the L-side of the GHP contactor (L1 and L2).
- Do not disconnect the temperature switch from the relay panel. The temperature switch must be positioned inside the control box of the GHP, and the sensing portion should not come into contact with any other component or metal in the control box.

NOTE: If this step was completed while waiting for the fusion fitting to cool (step 5g), complete steps 5h through 5n before proceeding.

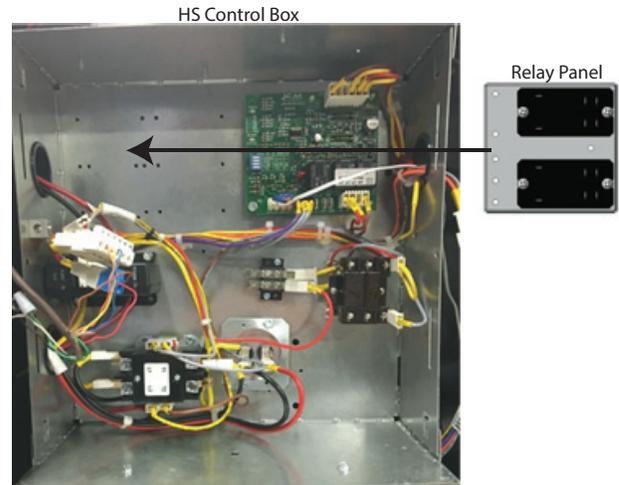
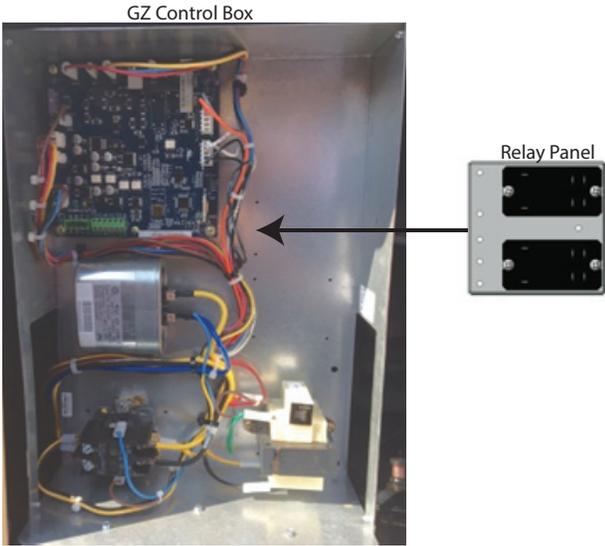


Fig. 8 — Location of Pre-wired Relay Panel for Model HS

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Fig. 9 — Location of Pre-wired Relay Panel for Model GZ

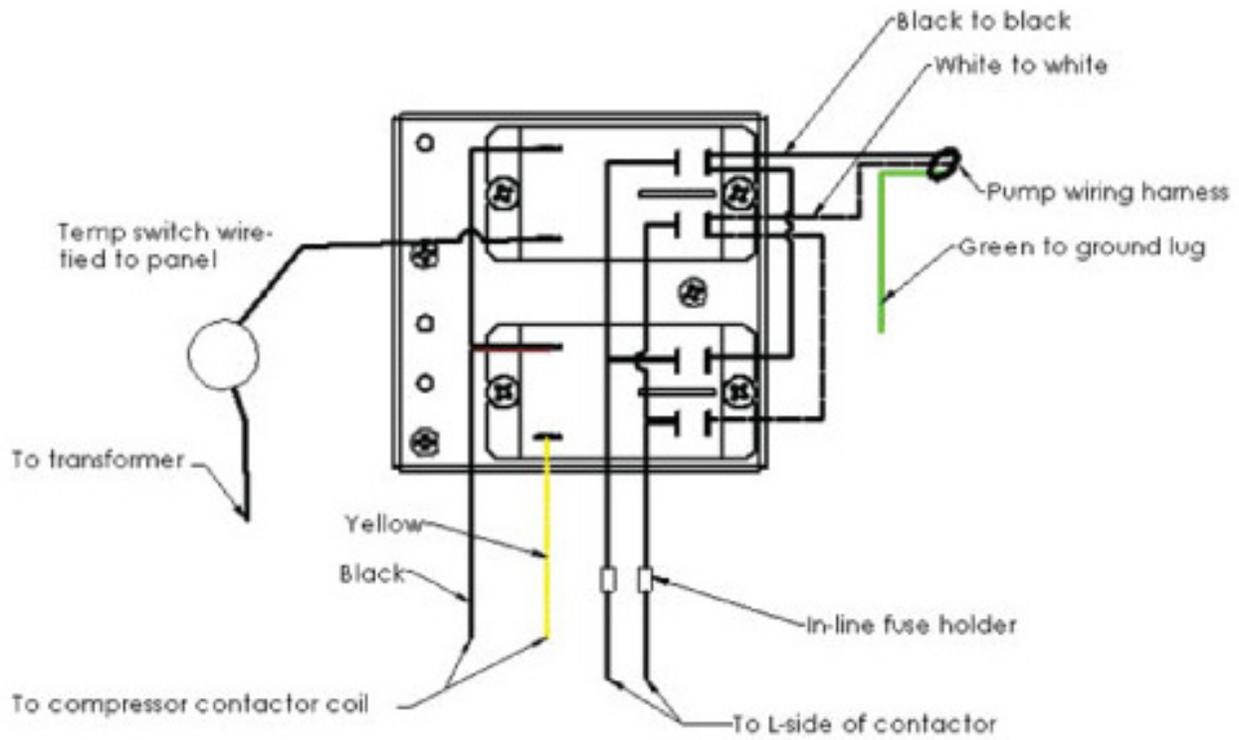


Fig. 10 — Relays on Mounting Panel and Wiring

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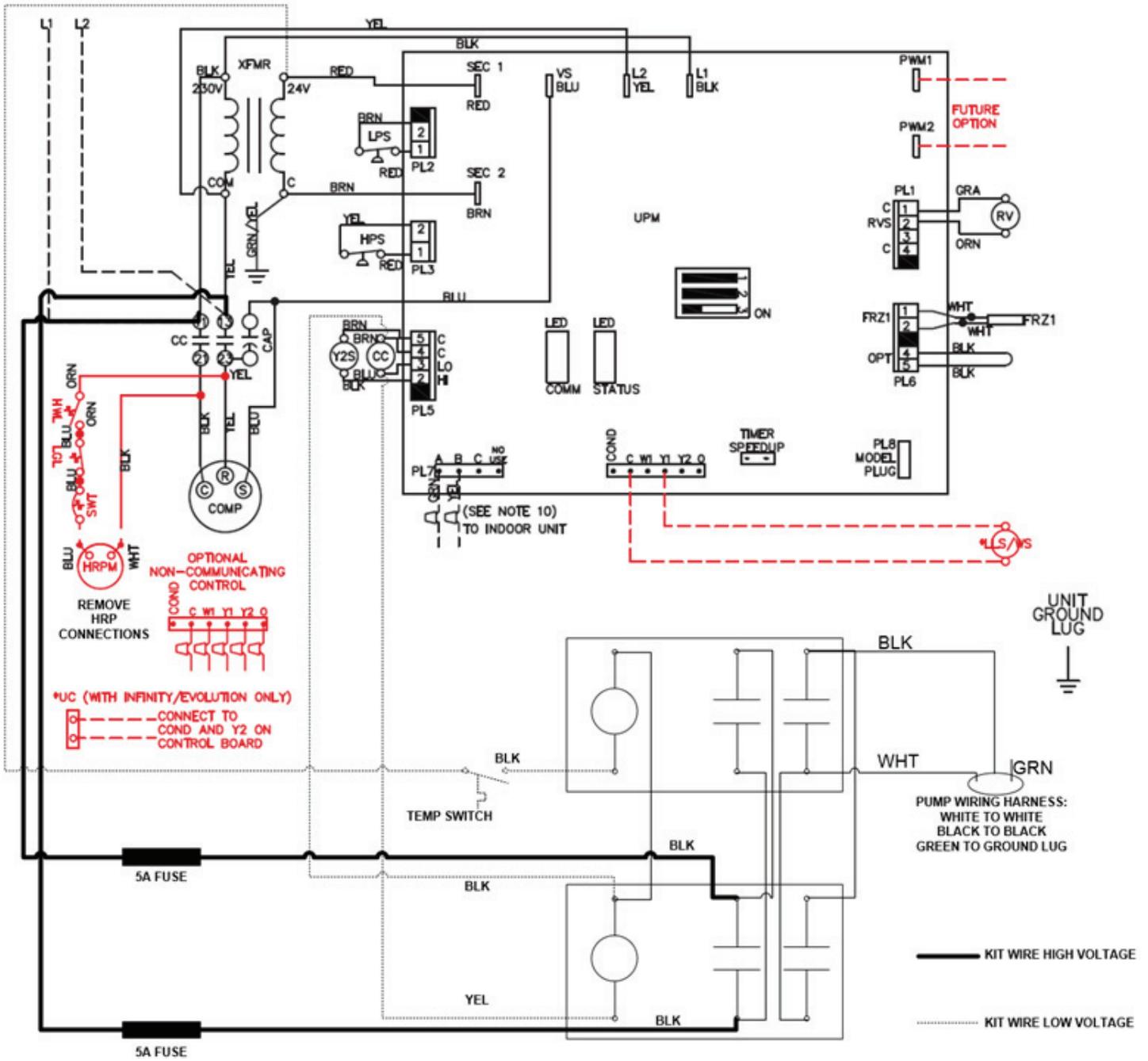


Fig. 11 — GZ Outdoor Flow Center Kit Wiring

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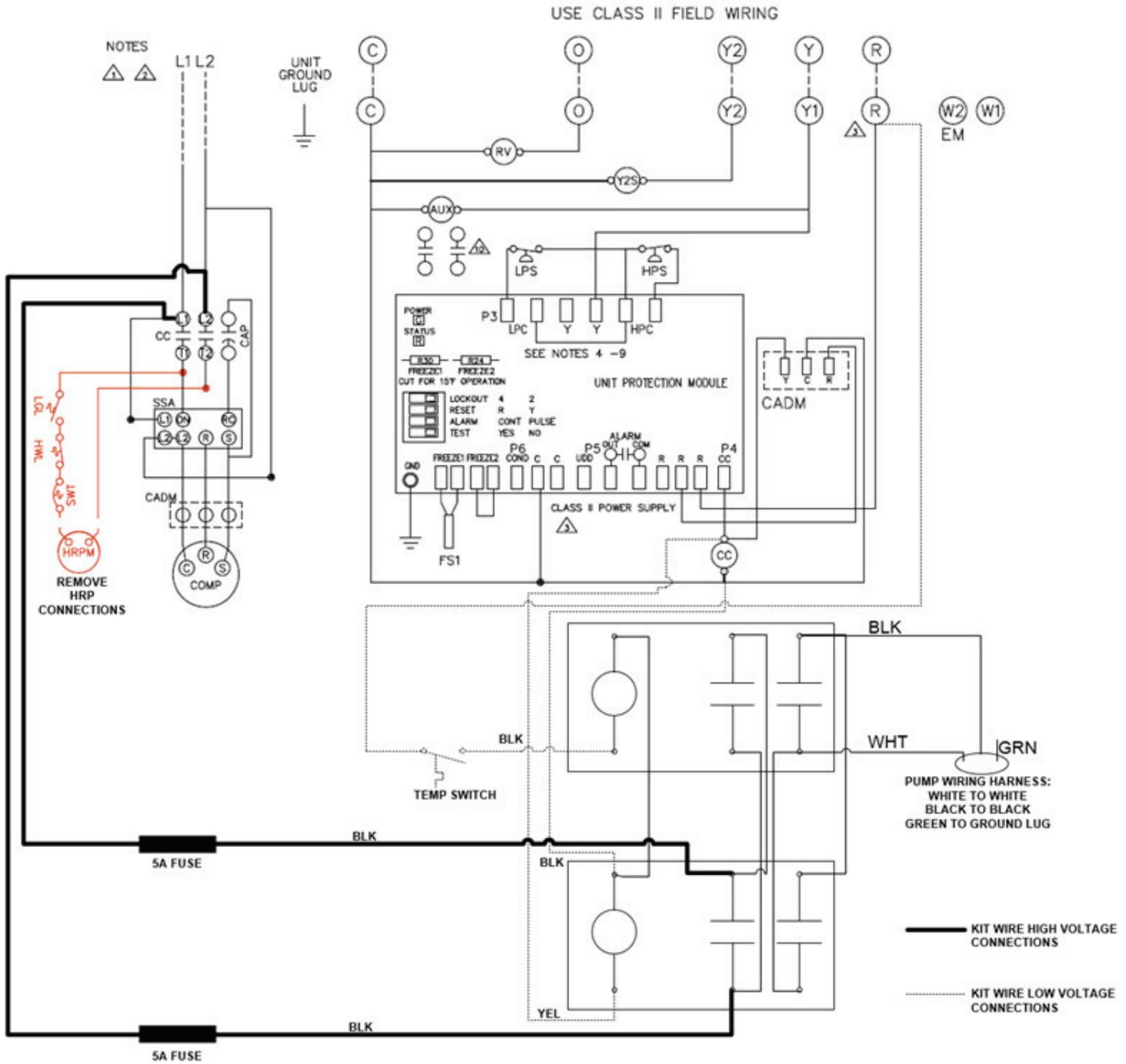


Fig. 12 — HS Outdoor Flow Center Kit Wiring

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8. Attach the hoses & fittings

- a. Install 1/4" PT plugs into the brass MPT X hose barb elbows using appropriate thread sealant (See Fig. 13).
 - b. Reattach the lower flow center cover to the panel (removed in step 4C). Fig. 11.
 - c. Attach the brass elbows (double O-ring x hose barb) to top of flow center. Do not fully tighten at this time.
 - d. Attach the brass elbows (MPT x hose barb) into swivel connections on unit. Do not fully tighten at this time.
 - e. "Aim" the fittings toward the cut-outs in the lower panel. The right side connection on the flow center connects to the lower fitting (water in) on the GHP. The left side connection on the flow center connects to the upper fitting (water out) on the GHP. (Fig. 14)
 - f. To measure the length required for the hoses, hold the rubber hose from one fitting on the flow center to the correct fitting on the unit while directing the hose through the openings on the lower cover.
 - g. Cut hoses to proper length.
 - h. Slide insulation over the hoses.
 - i. Place 4 hose clamps on each hose, 2 at each end (loosely at this point).
 - j. Attaching the hoses onto the fittings is easier if the fittings are removed from the unit and flow center. Insert the fittings into the hose.
 - k. Re-insert the hose/fittings assembly into the unit and flow center, ensuring proper alignment. Tighten the plastic nuts onto the flow center. Tighten the brass swivel rings on the unit.
 - l. Tighten the hose clamps onto the hoses at the fittings. Use 2 clamps on each end. The worm drive on adjacent hose clamps should be 180 degrees apart.
9. If the unit is equipped with the hot water generating (HRP / desuperheater) feature, it must be disabled. This is due to issues with potential of water freezing in cold weather. Units with the HRP / desuperheater are designated with a "D" in the 10th position in the model number, and will have the desuperheater coil and hot water pump inside the unit, and a black toggle switch mounted externally for the pump.
- a. Remove the power supply to the pump. Use electrical tape or wire cap to prevent electrical short.
 - b. Remove the toggle switch.
 - c. Place the black, rectangular plastic plug in place of the toggle switch (Fig. 15).
 - d. Plug the unit's hot water fittings using 1/2" brass MPT plugs.
10. Attach the lineset. (See unit installation instructions.)
11. Remove the lower cover. Flush the loop and add anti-freeze. Provide adequate anti-freeze to achieve 20°F freeze protection or lower.(See flow center instructions). Pressurize the system and check for leaks.



Fig. 13 — Elbow and PT Plug Assembly

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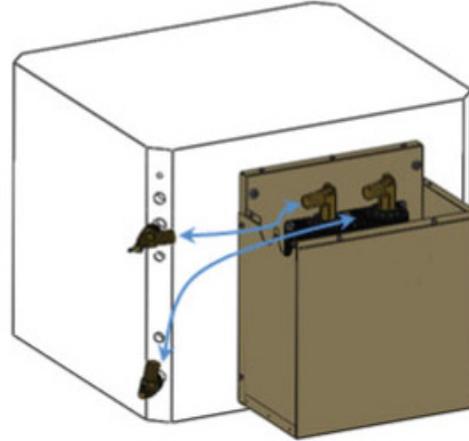


Fig. 14 — Routing of Rubber Hoses

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Fig. 15 — Toggle Switch Plug

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⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage. Inadequate freeze protection could lead to equipment damage.

- 12. Attach the foam insulation boots over the fittings at the unit. Secure with foam insulating tape (Fig. 16)
- 13. Proceed with start-up and system checks. (See unit installation instructions.) Adjust pump speeds as necessary.
- 14. Insert plastic plugs into the insulation boots (Fig. 16).

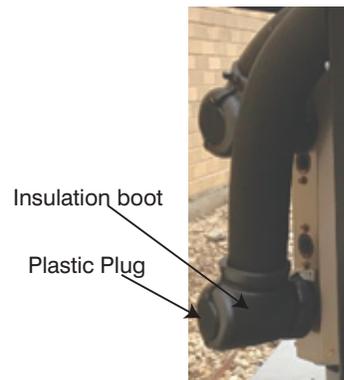


Fig. 16 — Insulation Boots

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15. Ensure plastic valve face covers and flush port plug seals/caps are in place (Fig. 17).
16. Install cover.
 - a. Re-attach the bottom cover to the panel.
 - b. Re-attach the upper cover to the panel
17. Fill in soil around risers and trench. Compact the fill to prevent future indentation caused by natural settling.

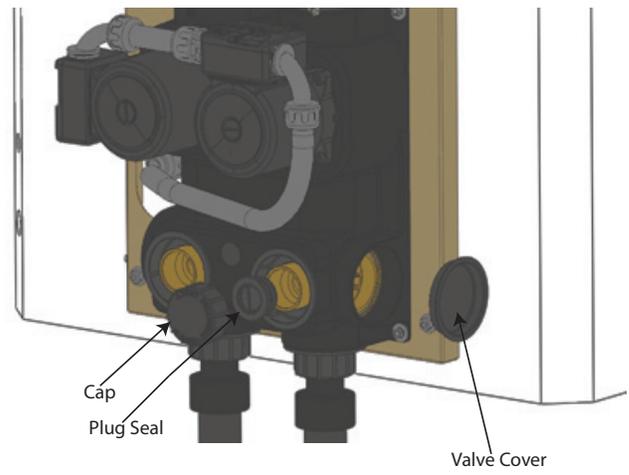


Fig. 17 — Valve Cover

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