

HEAT EXCHANGER CONDENSATE DRAIN AND VENT KIT

INSTALLATION INSTRUCTIONS

FOR R8HE / PPG3HE SERIES, GROUND MOUNT, CONDENSING STYLE GAS / ELECTRIC PACKAGE UNITS

SAFETY INFORMATION

IMPORTANT: Please read all instructions before installing the kit. Pay attention to all safety warnings and any other special notes highlighted in the manual. Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

WARNING:

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- Before servicing, disconnect all electrical power to the equipment.
- When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.
- Verify proper operation after servicing.

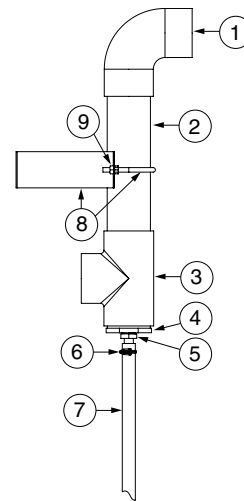
The installer performing this work assumes all responsibility when installing this kit. These instructions are primarily intended to assist qualified individuals experienced in the proper installation of these components. Some local codes require licensed installation/service personnel for this type of equipment. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Improper installation of the components or failure to follow safety warnings could result in serious injury, death, or property damage. After completing the installation, return these instructions to the Homeowner's Package for owner-user's future reference.

ABOUT THE KIT

This accessory kit is for use with 2-5 Ton 95% condensing style package gas/electric unit ground mount installations for proper heat exchanger condensate disposal and venting. Table 1 is a detailed listing of the components in the Heat Exchanger Condensate Drain and Vent Kit. Please check the contents of the kit with that of the parts listing, and familiarize yourself with each component.

KIT SUPPLIED PARTS

ITEM #	DESCRIPTION	QTY
1	2" PVC x 90 DEGREE ELBOW & 1/4" MESH SCREEN	1
2	2" PVC x 10" PIPE	1
3	2" PVC TEE	1
4	2" x 1/2" PVC REDUCER BUSHING	1
5	1/2" BARB x 1/2" NPTF	1
6	SPRING HOSE CLAMP	1
7	1/2" ID x 36" DRAIN HOSE	1
8	HORIZONTAL VENT SUPPORT BRACKET & U-BOLT	1
9	1/4-20 NUTS	4
	SELF DRILLING SCREWS (NOT SHOWN)	2
	WIRE TIE (NOT SHOWN)	1
	3 FT. FLEXIBLE INSULATION (NOT SHOWN)	1



FIELD SUPPLIED PARTS

- 2" PVC pipe x Length. (Length is approximately 16" + Regional Frost Line Depth for unit on standard 2' concrete pad). **NOTE:** For a trench style drain installation (page 3) you will also need 4"x36" (min.) corrugated flexible pipe w/ drain holes, a 2"x4" PVC reducer, 4" corrugated piping connection, 2"x90 degree. PVC elbow, and 4" filtration sleeve or permeable barrier material.
- 40-80 Lb. Rock or chat, (Limestone rock or lime pellets if required by local code for neutralizing the condensate when disposing into the ground).
- PVC Solvent Cleaner and Pipe Cement.

Table 1. Parts List

VENT PIPE & DRAIN HOSE ASSEMBLY

1. Connect the horizontal 13.25" x 2" PVC pipe (supplied with the unit) to the inducer motor rubber coupler and secure using 3" hose clamp provided. **NOTE:** A horizontal pipe length up to 18" is approved if pit location circumstances require it to be further from the unit and pad. A new support bracket or adaptor piece will have to be field created to ensure the vent assembly does not rotate.
2. Clean & glue the 2" x 1/2" reducer bushing into the Tee.
3. Install the 1/2" hose connector to the reducer bushing.
4. Place the 2" PVC Tee onto the end of the horizontal pipe. **DO NOT CEMENT THE TEE ON AT THIS TIME.** Drop a plumb line from the bottom of the 1/2" drain fitting to the ground to locate the starting point of the pit or trench.

VERTICAL DRAIN PIT METHOD

NOTE TO INSTALLER READ THIS BEFORE YOU DIG!

Before you begin digging the pit for the condensate drain line assembly, you may need to call to find out where underground electric, gas, or other utilities are located. Some state laws require that a locate request be placed at least three (3) working days prior to any digging projects. The utilities should respond to your request by marking the approximate location of their utilities or notifying you that they have no utilities in your dig site area. After confirming utility response, you can then proceed with your excavation avoiding damages.

IMPORTANT NOTE: The flue condensate of this unit is slightly acidic and some local codes may require a neutralizing treatment when disposing directly into the ground. Check state or local code requirements for application of this equipment and if necessary substitute limestone rock, chat, or lime pellets to the pit to neutralize the condensate instead of using basic rock or chat.

Preparing the pit

After pit location has been determined, the condensate drain pit must be prepared for installation of the vertical 2" PVC vent pipe and insulated drain hose assembly. If desired, remove any sod and top soil prior to digging for later use at end of installation.

Vertical pit should be approximately 12"-14" in diameter (or larger) for installation of the rock base and vertical piping system to allow for proper drainage with a depth of 4"-6" below the regional frost line if possible. See Figure 1.

Percolation Test (Optional)

A simple percolation test (not required) can be performed to aide in determining if the diameter and depth for the pit is suitable. It will allow you to simply observe how quickly a known volume of water dissipates into the subsoil of a drilled hole of known surface area. In general, sandy soil will absorb more water than soil with a high concentration of clay or where the water table is close to the surface.

FURNACE HX SIZE	UNIT CONDENSATE DISPOSAL RATE
	STEADY STATE
3 Tube – 60 KBTU	0.35 GPH
4 Tube – 80 KBTU	0.45 GPH
5 Tube – 100 KBTU	0.55 GPH

Table 2. Condensate Disposal Rate

1. Using Table 2, identify the approximate volume of water being produced for the equipment being installed.
2. Pour a volume (V) of water large enough into the hole capable of measuring the height.

$$(V) = (X) \times \text{Steady state Disposal Rate.}$$

Example: For 5-Tube (100,000 BTU), if X=4 then water volume (V) = 4 x 0.55 GPH = 2.20 Gallons.

3. Immediately measure the water level depth at the start of the test (Y1Start) and then again after one hour (Y2Final).

NOTE: The pit water level height change should be greater than or equal to the disposal rate height change or you may want to widen or deepen the hole if possible. Pit Water Level Height Change = (Y1Start)-(Y2Final) should be greater than or equal to Disposal Rate Height Change= (Y1Start)/(X).

Vertical Drain Pipe Installation

1. After the pit has been dug out, pour the rock or chat base to a level **approximately 2" below the frost line.** Mix in 50% of the limestone rock, chat, or lime pellets (if required by code) with the initial rock base.
2. Measure the distance between the top of the rock base and bottom of 1/2" drain fitting.
3. Cut the field supplied 2" PVC pipe to the measured length.
4. Cut the drain hose and insulation to the measured length **less 3"** so the drain cannot become blocked.
5. Connect vinyl drain tube to the 1/2" barbed drain connection at bottom of 2" PVC Tee and secure with spring hose clamp.
6. Install flexible insulation over the entire length of drain tube and cut away any excess, then secure at the top with wire tie provided.
7. Place the 2" PVC pipe into the pit and work the drain hose assembly into the pipe until the entire length is inside and the PVC pipe is vertical.
8. Glue or use two 1/2" long screws (field supplied) to secure the 2" PVC Tee to the unit horizontal vent pipe. See Joint A in Figure 1. **NOTE:** Fastening the Tee to the horizontal vent pipe with 1/2" screws will make disassembly easier for future cleaning or inspection of the drain / vent system.
9. While holding the 2" pipe completely vertical and centered to the drain tee, slowly backfill the pit around the outside of the pipe. **NOTE:** Use the remaining rock or chat until above the frost line then use remaining backfill materials from the excavation area.
10. Continue to backfill the hole until 1"-2" above grade level, then grade away to keep rain water from collecting in the pit area as the ground settles over time. Add any remaining top soil & sod back to pit location if desired.
11. Proceed to Completing the Vent section on page 3.

HORIZONTAL DRAIN TRENCH METHOD (ALTERNATE DRAIN CONSTRUCTION)

If the surrounding area does not allow the digging of a pit due to rock, dense clay soil, etc., the drain may be applied in a shallower horizontal trench as long as regional conditions allow. This type of application is not recommended for areas where temperatures are below 20° F for extended periods of time but is also dependent on the final depth of the trench if the frost line cannot be reached. The unit will operate longer and more frequently during colder weather to help keep the trench from freezing.

NOTE TO INSTALLER READ THIS BEFORE YOU DIG!

Before you begin digging the trench for the condensate drain line assembly, you may need to call to find out where underground electric, gas, or other utilities are located. Some state laws require that a locate request be placed at least three (3) working days prior to any digging projects. The utilities should respond to your request by marking the approximate location of their utilities or notifying you that they have no utilities in your dig site area. After confirming utility response, you can then proceed with your excavation avoiding damages.

IMPORTANT NOTE: The flue condensate of this unit is slightly acidic and some local codes may require a neutralizing treatment when disposing directly into the ground. Check state or local code requirements for application of this equipment and if necessary substitute limestone rock, chat, or lime pellets to the pit to neutralize the condensate instead of using basic rock or chat.

Preparing the Trench

Start the trench where the 2" vertical pipe can be installed vertically into the trench and centered under the vent tee. The horizontal trench should be approximately 8"-10" wide x 30"-36" long with a minimum depth of 12"-14" (or deeper) when possible to allow for proper drainage and minimize chance of freeze up. The trench should be directed away from the unit and home with an approximate 1" / 12" slope. To determine if the length and width for the trench is suitable, refer to the optional percolation test section on page 2.

Horizontal Drain Pipe Installation

1. After the trench has been dug out, lay in a 3"-4" rock or chat base the full length of the trench with a slight slope of 1/4"-1/2" / per foot. Mix in 50% of the limestone rock, chat, or lime pellets (if required by code) with the initial rock base.
2. Clean and cement the field supplied 2" x 90 degree elbow and 2" x 4" reducer assembly together.
3. Measure and cut a length of 2" PVC that extends vertically from the bottom of the 3/4" drain fitting at the bottom of the tee to the 2" elbow/reducer assembly resting on the rock base as shown in Figure 2.

4. Cut the 3/4" vinyl drain hose and flexible insulation to the same length as the 2" vertical PVC pipe.
5. Secure the elbow/reducer assembly to one end of the 4" drain pipe.
6. Cut the 4" corrugated flexible drain pipe with drain holes to a length extending to the end of the trench.
7. Connect vinyl drain tube to the 1/2" barbed drain connection at bottom of 2" PVC Tee and secure with spring hose clamp.
8. Install flexible insulation over the entire length of drain tube and cut away any excess, then secure at the top with wire tie provided.
9. Cement the 2" PVC pipe into the elbow/reducer assembly.
10. Work the drain hose assembly into the pipe until the entire length is inside and the PVC pipe is vertical.
11. Glue or use two 1/2" long screws (field supplied) to secure the 2" PVC Tee to the unit horizontal vent pipe. See Joint A in Figure 2. **NOTE:** Fastening the Tee to the horizontal vent pipe with 1/2" screws will make disassembly easier for future cleaning or inspection of the drain / vent system.
12. Prior to backfilling install the 4" flexible pipe filtration sleeve over the drain pipe or lay the permeable barrier material down over the length of pipe in the trench.
13. While holding the 2" pipe completely vertical and centered to the drain tee, slowly backfill the trench over the full length of the pipe. Use any remaining rock or chat until the entire length of 4" drain pipe is covered then use remaining backfill materials from the excavation area.
14. Continue to backfill the hole until 1"-2" above grade level and then grade away to keep rain water from collecting in the trench area as the ground settles over time. Add any remaining top soil and sod back to pit location if needed.

COMPLETING THE VENT INSTALLATION

1. Mark a pencil line up from the centerline of the unit vent exit hole for aligning and attaching the vent support bracket.
 2. Holding bracket on pencil line at desired height (for securing to the 10" vent pipe), secure the support bracket to the unit with two self drilling screws provided in kit.
 3. Carefully insert the 1/4" mesh screen into the elbow and make sure it is firmly in place.
 4. Cement the 2" x 90 degree PVC elbow (opposite end with 1/4" mesh screen) and 10" pipe together.
 5. Cement or mechanically fasten the assembly (with 1/2" long screws) into the top of the tee. Verify the outlet is perpendicular to the unit. See Joint B in Figure 1 and Figure 2.
- NOTE:** Fastening the 10" pipe to the Tee with 1/2" screws will make disassembly easier for future cleaning or inspection of the drain / vent system.
6. Install the 2-1/2" U-Bolt to support bracket using nuts (provided in kit) to secure the vent assembly to the unit.

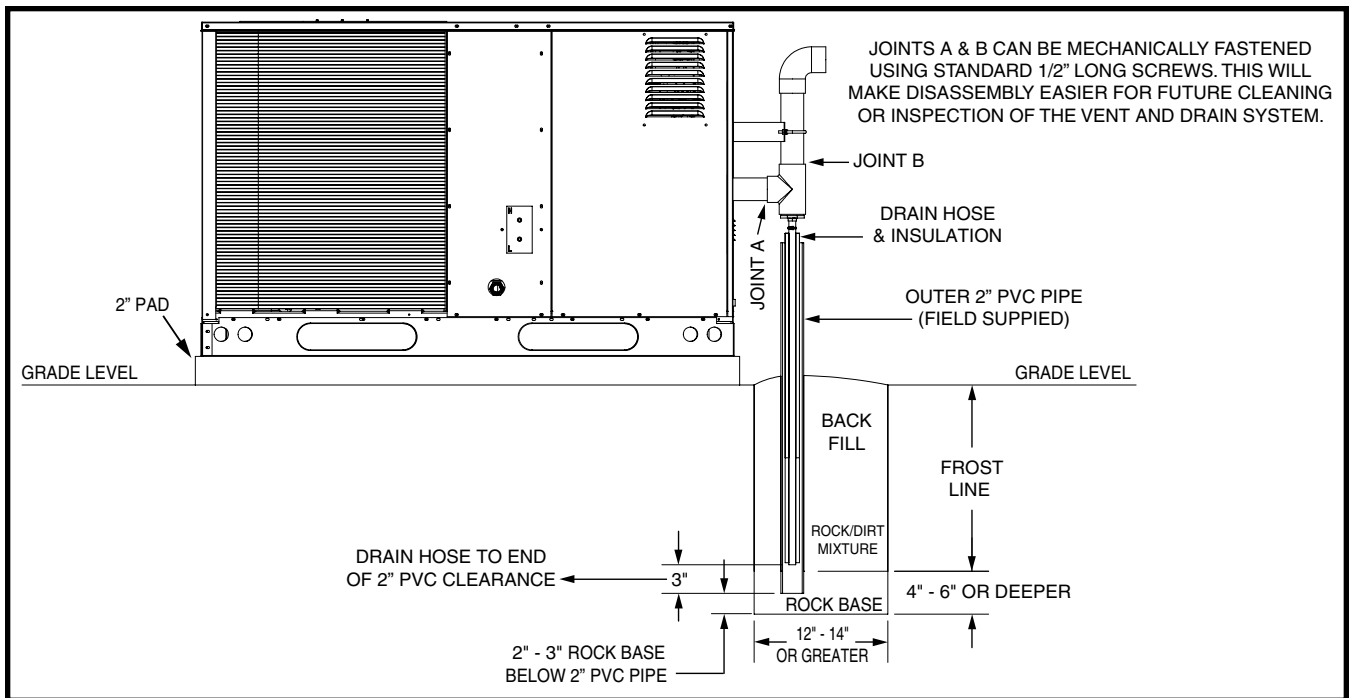


Figure 1. Condensate Disposal Using A Vertical Drainage Pit

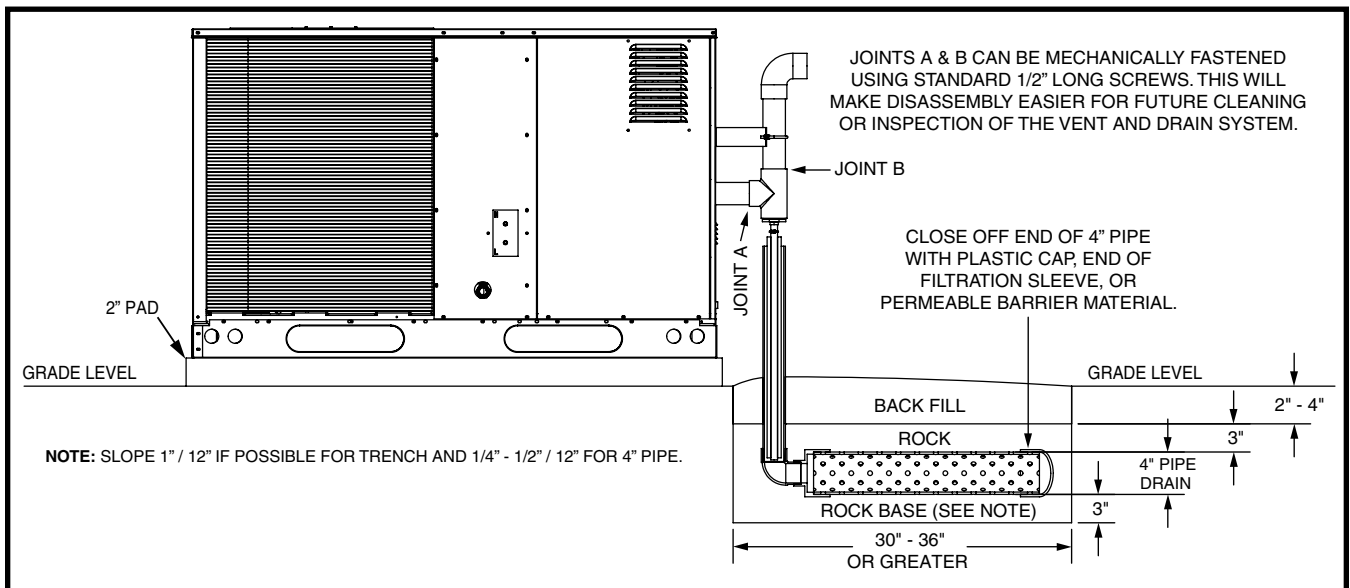


Figure 2. Condensate Disposal Using A Horizontal Drainage Trench