

SUPPLEMENTAL INSTRUCTIONS

Q-TEC™ QPBHW**-F/D Hot Water Coil

Overview

The hot water plenum boxes listed in Table 1 are designed specifically for use with the Q-TEC QA4 and QH4 Series. They are for duct-free or ducted applications depending on the model specified. Cabinet Extension QCX**A can be used with all models to enclose the valves, piping and ductwork.

TABLE 1

QPBHW Model	Description	Q-TEC Model
QPBHW36-F	Duct-Free Plenum Box Front Outlet	Q36A4 Q42A4
QPBHW36-D	Ducted Plenum Box Top Outlet	Q24H4 Q30H4 Q36H4
QPBHW49-F	Duct-Free Plenum Box Front Outlet	Q48A4 Q42H4 Q48H4
QPBHW49-D	Ducted Plenum Box Top Outlet	

All hot water coil assemblies are shipped from the factory completely assembled. Screws are provided for attaching the plenum to the Q-TEC.

Valve P/N 5650-035 is a bypass type valve. The valve is configured as N.C. (normally closed) to the "B" port. For N.O. (normally open) configuration to the coil, simply turn the valve around.

Plenum boxes without bypass valves (QPBHW**-*-NV) do not require any wiring and will not have those components included in the kit. Pages 4 - 7 of this manual do not apply to those plenum boxes.

The QPBHW Hot Water Coil kit includes:

- Hot water plenum box
- 910-2150 relay assembly (when applicable)
- One (1) black wire (when applicable)
- One (1) brown wire (when applicable)
- Two (2) screws (when applicable)
- Universal bushing (when applicable)
- Wire diagram (when applicable)
- 7960-892B Supplemental Instructions

Tools needed for the installation:

- Personal protection equipment, including gloves and safety glasses
- 5/16" nut driver
- Phillips head screwdriver

CAUTION

Use safe practices when lifting. At least two people are required to lift and position the hot water coil assembly on top of the Q-TEC heat pump.



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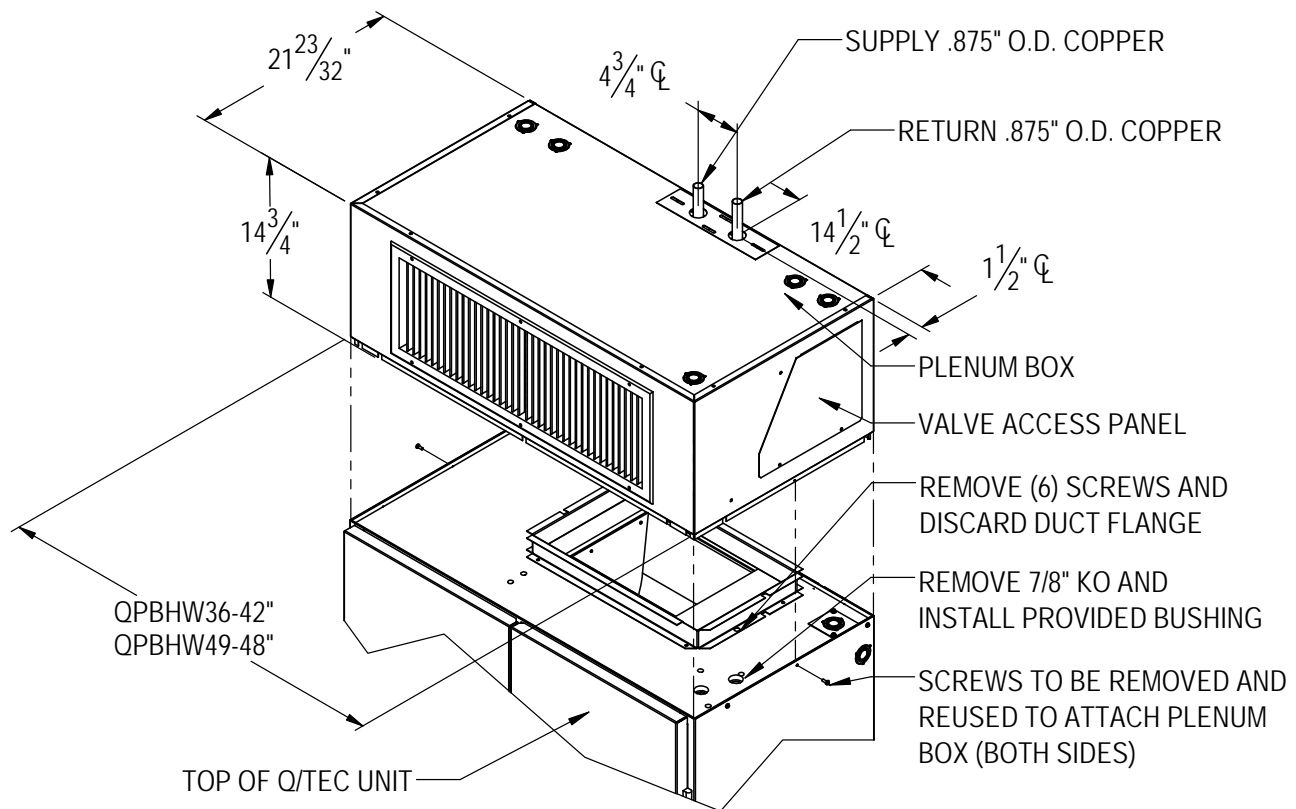
Manual: 7960-892B
Supersedes: 7960-892A
Date: 5-20-22

Installation

NOTICE: High voltage, low voltage valve control and freestat wires must be routed prior to attaching the plenum box to the top of unit.

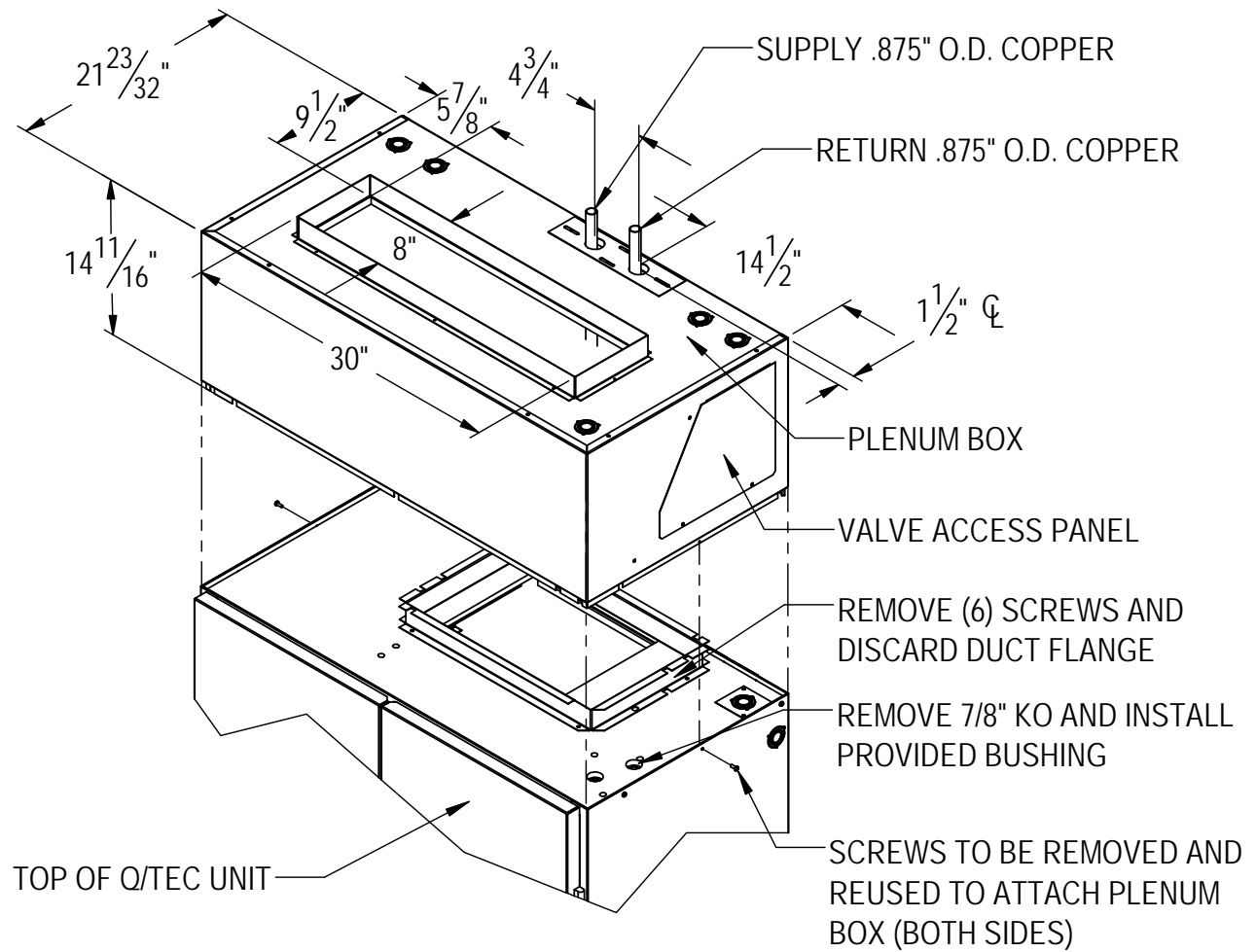
1. Remove center screws near top from left and right side of Q-TEC unit and retain for use later in installation.
2. Locate and remove 7/8" knockout in Q-TEC top then install bushing in hole (see Figure 1 or Figure 2).
3. Remove six (6) screws that secure the duct flange to the top. Discard both the screws and flange.
4. Place plenum box on top of Q-TEC unit with the open side down and the grille or plenum flange at the front of the unit.
5. Make sure the bottom offsets of the plenum box are inside the top of the Q-TEC unit flange. The outside of the plenum box should be flush with the outside of the unit.
6. Re-install center screws in the sides of the top of the Q-TEC unit. These screws will go through clearance holes on the plenum box and hold it in place.
7. Remove the valve access panel on side of hot water plenum box and route low voltage valve wires through grommet (from Step 2) into unit. Open unit front service panels and route wires into upper left opening of the control panel.

FIGURE 1
Duct-Free Plenum



MIS-4238

FIGURE 2
Ducted Plenum



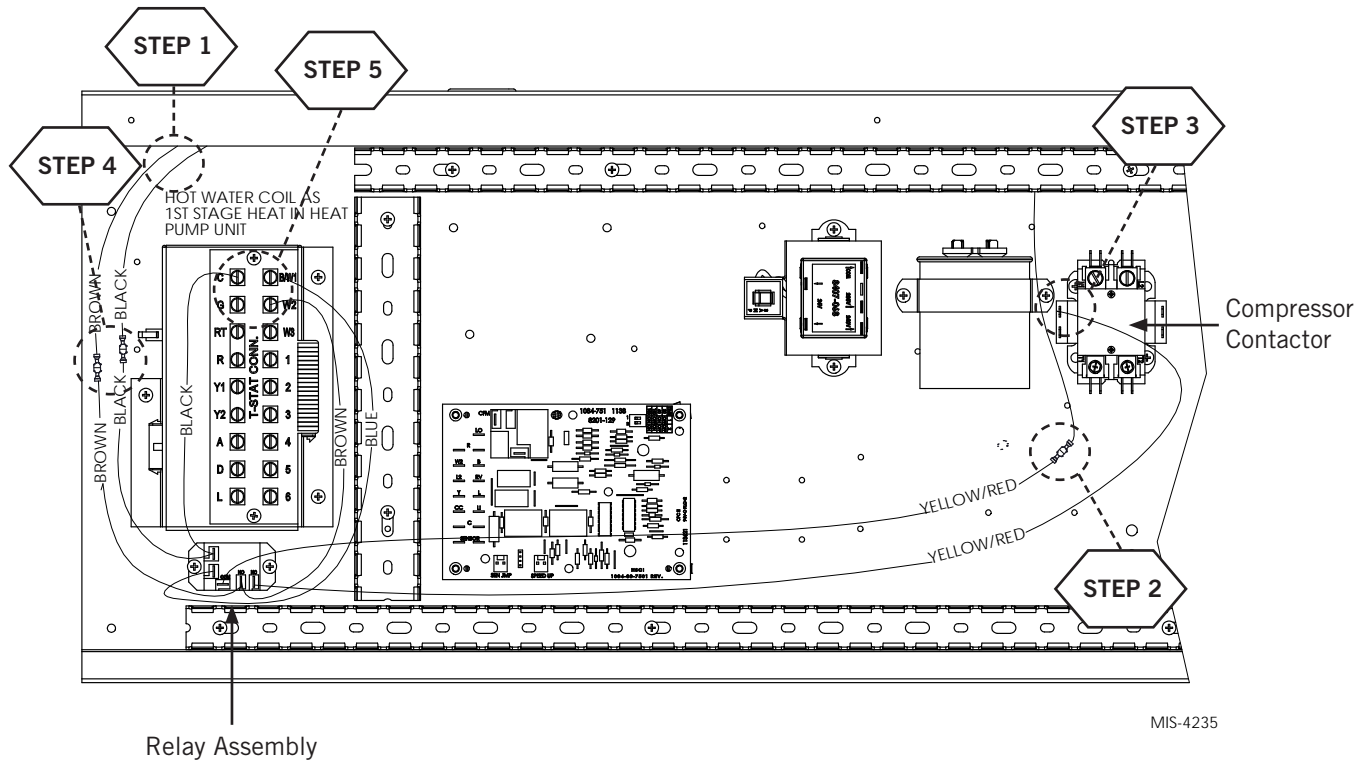
Wiring

Hot Water Heat as Primary Heat for Heat Pumps

1. Install relay assembly in the main control box with screws taped to the back of the relay. Route one (1) black wire and one (1) brown wire from the water control valve to the left of the low voltage terminal strip (see Figure 3).
2. Disconnect yellow/red wire from low voltage connection (left side) of the compressor contactor and reconnect to yellow/red wire from COM on relay.
3. Connect second yellow/red wire from NC on relay to compressor contactor where wire was disconnected in Step 2.
4. Connect the low voltage wires from the water control valve (from Step 1) to black and brown wires with insulated ends from the relay.
5. The last three (3) wires with the fork connectors will connect to the front of the low voltage strip:
Black wire to C
Blue wire to B/W1
Brown wire to W2

When wired as instructed above, the hot water coil will be the first and only stage of heating.

FIGURE 3
Hot Water Coil as 1st Stage Heat in Heat Pump Unit



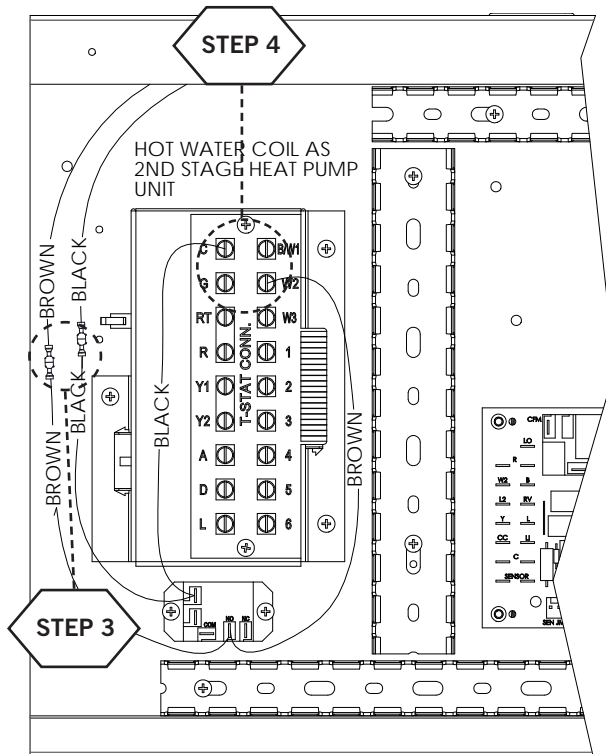
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Hot Water Heat as Supplemental Heat for Heat Pumps

1. Disconnect and discard both yellow/red wires from the relay assembly.
2. Disconnect and discard blue wire from the relay assembly.
3. Connect the low voltage wires from the water control valve to black and brown wires with insulated ends from the relay (see Figure 4).
4. The last two (2) wires with the fork connectors will connect to the front of the low voltage strip:
Black wire to C
Brown wire to W2

When wired as instructed above, the hot water coil will function as supplemental heat for the heat pump.

FIGURE 4
Hot Water Coil as 2nd Stage Heat
in Heat Pump Unit



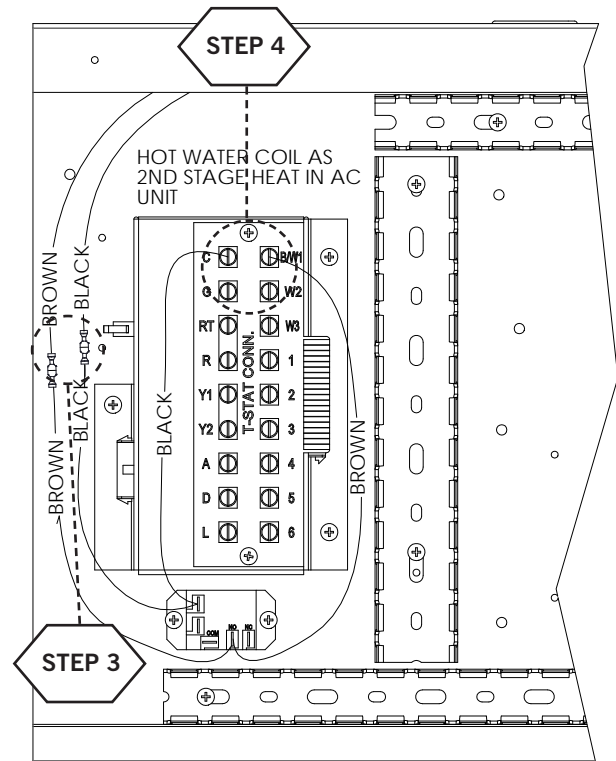
MIS-4236

Hot Water Heat as Supplemental Heat for Air Conditioners

1. Disconnect and discard both yellow/red wires from the relay assembly.
2. Disconnect and discard blue wire from the relay assembly.
3. Connect the low voltage wires from the water control valve to black and brown wires with insulated ends from the relay (see Figure 5).
4. The last two (2) wires with the fork connectors will connect to the front of the low voltage strip:
Black wire to C
Brown wire to B/W1

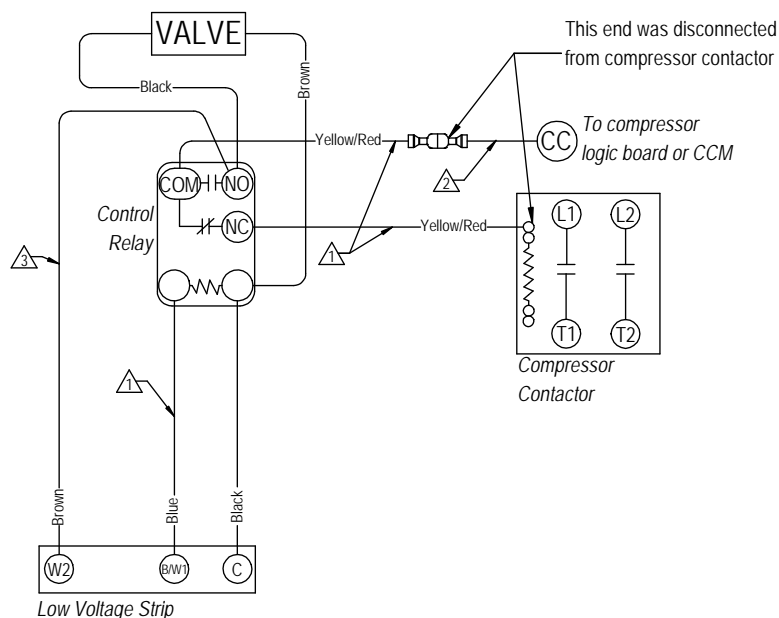
When wired as instructed above, the hot water coil will function as supplemental heat for the AC unit.

FIGURE 5
Hot Water Coil as 2nd Stage Heat in
Air Conditioner Unit



MIS-4237

FIGURE 6
QPBHW-F/D Wiring Diagram**



Wiring shown is for hot water as primary heat in heat pump units

- 1 Discard wires when used for supplemental or secondary heat, or air conditioner models.
- 2 Leave wire from "CC" connected to compressor contactor when used for supplemental or secondary heat
- 3 Brown wire connects to "W2" for heat pump units, but for air conditioners, the brown wire connects to "B/W1".

4102-081A

3-Way Valve

The QPBHW hot water plenum box contains a 3-way valve that allows for heating operation when needed, and provides a way to bypass the water coil when heating is not needed.

The following sequence is explained with the valve in the default position (see Figure 7). In the default valve position, when the valve is energized it will open to provide a flow of hot water through the coil at heat for the room. If the application requires that the valve is de-energized to supply heat for the room, the valve must be removed from the plenum and re-installed with the A and B valve ports reversed.

Sequence of Operation

Non-Heating Operation: 24VAC is not supplied to the valve motor. The valve is in the bypass position. Water flows through the supply line and into the water valve. Hot water flows through the "B" outlet of the valve and bypasses the hot water coil. Water leaves the heating coil and passes out of the plenum through the return tube.

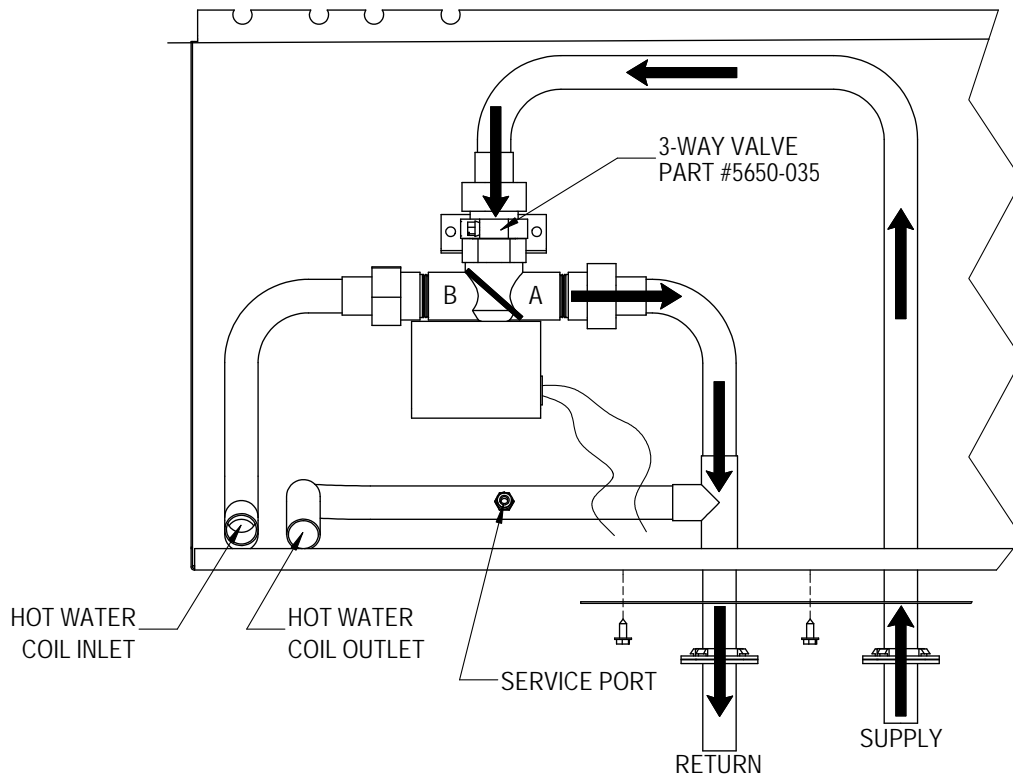
Heating Operation: 24VAC is supplied to the valve motor. The valve is in the open position. Water flows through the supply line and into the water valve. Hot water flows through the "A" outlet of the valve and into the hot water coil heating the air passing through the coil. Water leaves the heating coil and passes out of the plenum through the return tube.

2-Way flow Systems

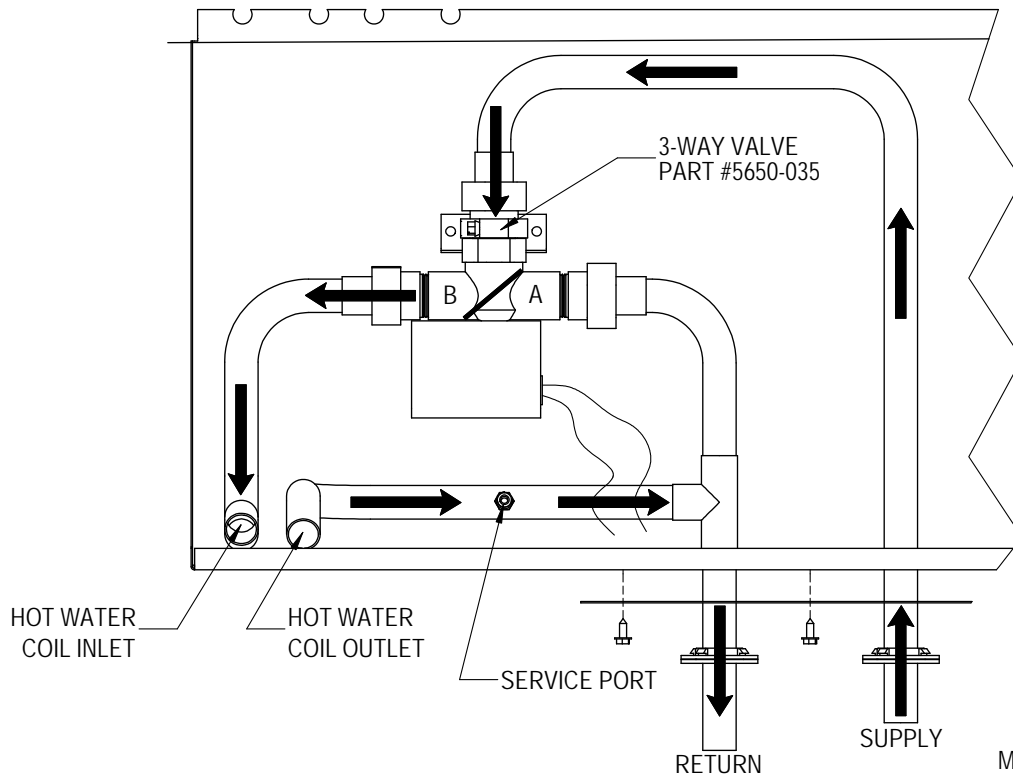
The 3-way valve is capable of having a plug installed to make it operate in a 2-way configuration. However, Bard does not recommend this mode of operation for the QPBHW as additional copper routing will require field-fabricated tubing installation.

FIGURE 7
3-Way Valve Flow Diagram

3-WAY VALVE NOT ENERGIZED (DEFAULT CONFIGURATION)



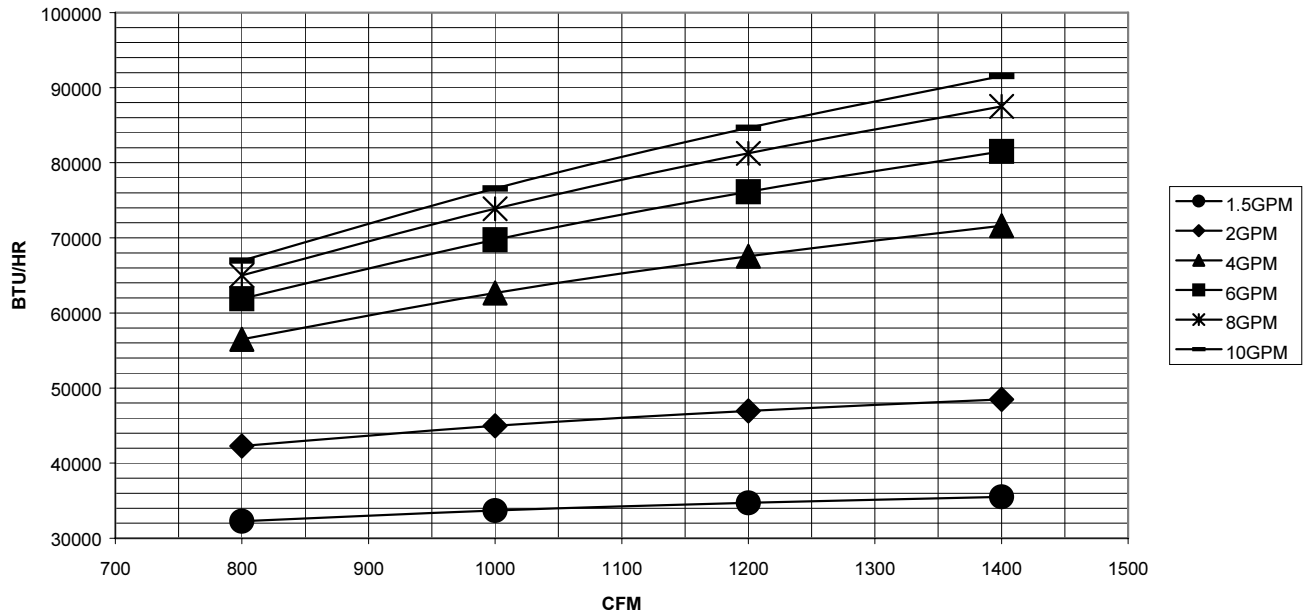
3-WAY VALVE ENERGIZED (DEFAULT CONFIGURATION)



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FIGURE 8
QPBHW Heating Capacity

Heating Capacity @ 180°F Water and 70°F Return Air



NOTES:

- ① Water connections are 7/8" O.D. copper.
- ② 3-way flow valve is field installed.

TABLE 2
QPBHW Hot Water Coil Pressure Drop with Hot Water at 180°

GPM	Water FT Head	PSI
1.5	0.2	0.1
2	0.2	0.1
4	1.4	0.6
6	3.0	1.3
8	5.3	2.3
10	8.3	3.6
12	11.7	5.1