

INSTALLATION INSTRUCTIONS

I-TEC® Hot Water Coil

The hot water plenum boxes listed in Table 1 are designed specifically for use with the I-TEC Series heat pumps. It is for duct-free or ducted applications depending on the model specified. Cabinet Extensions ICX28-X, ICX28-1 and ICX28-4 can be used with all models to enclose the valves, piping and ductwork.

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

Water control valves are not furnished and are field installed. Bard offers two valves for this application, or the installer can use a valve of their choice. All piping and fittings to install the valves are field supplied.

Valve part number 5650-035, which is a bypass type, can be used for on/off no-bypass by plugging one port. The valve is only configured as N.C. (normally closed) to the "B" port. For N.O. (normally open) configuration to the coil, simply turn the valve around.

Valve part number 5650-047 is a modulating valve 0-10 volts DC or 4-20 milliamps. It can also be plumbed on/off or bypass the same as the -035 valve.

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

TABLE 1

IPBDF10HW-X-NC	10" High, Beige	Duct-Free Plenum Box w/Hot Water Coil
IPBDF10HW-1-NC	10" High, White	Duct-Free Plenum Box w/Hot Water Coil
IPBDF10HW-4-NC	10" High, Gray	Duct-Free Plenum Box w/Hot Water Coil
IPBDF12HW-X	12" High, Beige	Duct-Free Plenum Box w/Hot Water Coil
IPBDF12HW-1	12" High, White	Duct-Free Plenum Box w/Hot Water Coil
IPBDF12HW-4	12" High, Gray	Duct-Free Plenum Box w/Hot Water Coil
IPBDFH16HWS1-X	16" High, Beige	Ducted Plenum Box w/Hot Water Coil
IPBDFH16HWS1-1	16" High, White	Ducted Plenum Box w/Hot Water Coil
IPBDFH16HWS1-4	16" High, Gray	Ducted Plenum Box w/Hot Water Coil
IHWC	Unpainted	Ducted Hot Water Coil

Ducted or Duct-Free Plenum Box Installation (see Figures 1A, 1B & 1C on pages 2 – 4)

1. Place the plenum box on top of the I-TEC unit with the open side facing down and the grille facing the front of the unit. Allow the front of the plenum to extend about 6" past the front of the unit.
2. Open the left-hand cabinet door. Just to the left of the filter is the low voltage wire shield (see Figure 3 on page 6). Remove the shield by removing two (2) screws.
3. Route the freezestat wires and low voltage valve wires through the top bushing and then through the control panel bushing (see Figure 3). Wiring instructions are on page 7.

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 I-TEC heat pump.



Bard Manufacturing Company, Inc.
Bryan, Ohio 43506
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Manual: 7960-651B
Supersedes: 7960-651A
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4. Re-install low voltage wire shield.
5. Make sure that the bottom offsets on the left and right sides of the plenum box are inside the top of the I-TEC unit flange.
6. Raise the front of the plenum box about 1" and slide toward the rear of the unit. The rear flange of the plenum will slide under the folded down rear duct flange on top of the unit.
7. Make sure all surfaces of the plenum box are flush with the unit.
8. Open the cabinet doors.
9. A piece of foam gasket runs across the entire width of the top of the unit. There is a clearance hole behind this gasket in line with the centerline of the air filter on both sides of the unit. Locate the hole with an awl, or other sharp object.
10. Attach the front of the plenum box to the unit by shooting a sheet metal screw through this clearance hole and into the mounting angle on the plenum box. Do the same on the other side.

FIGURE 1A
IPBDF10HW-NC Non-Ducted Hot Water Coil Without Copper Tubing

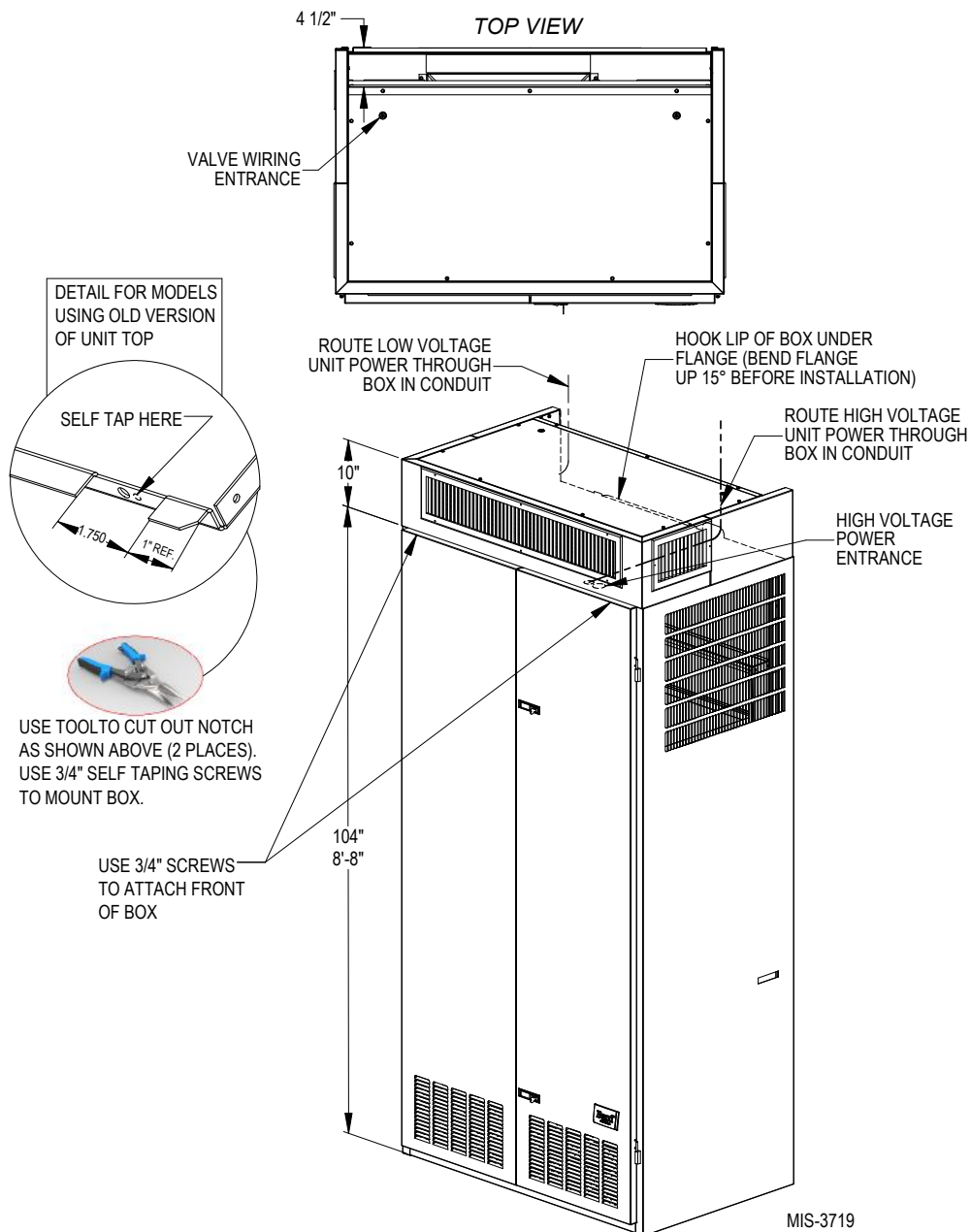
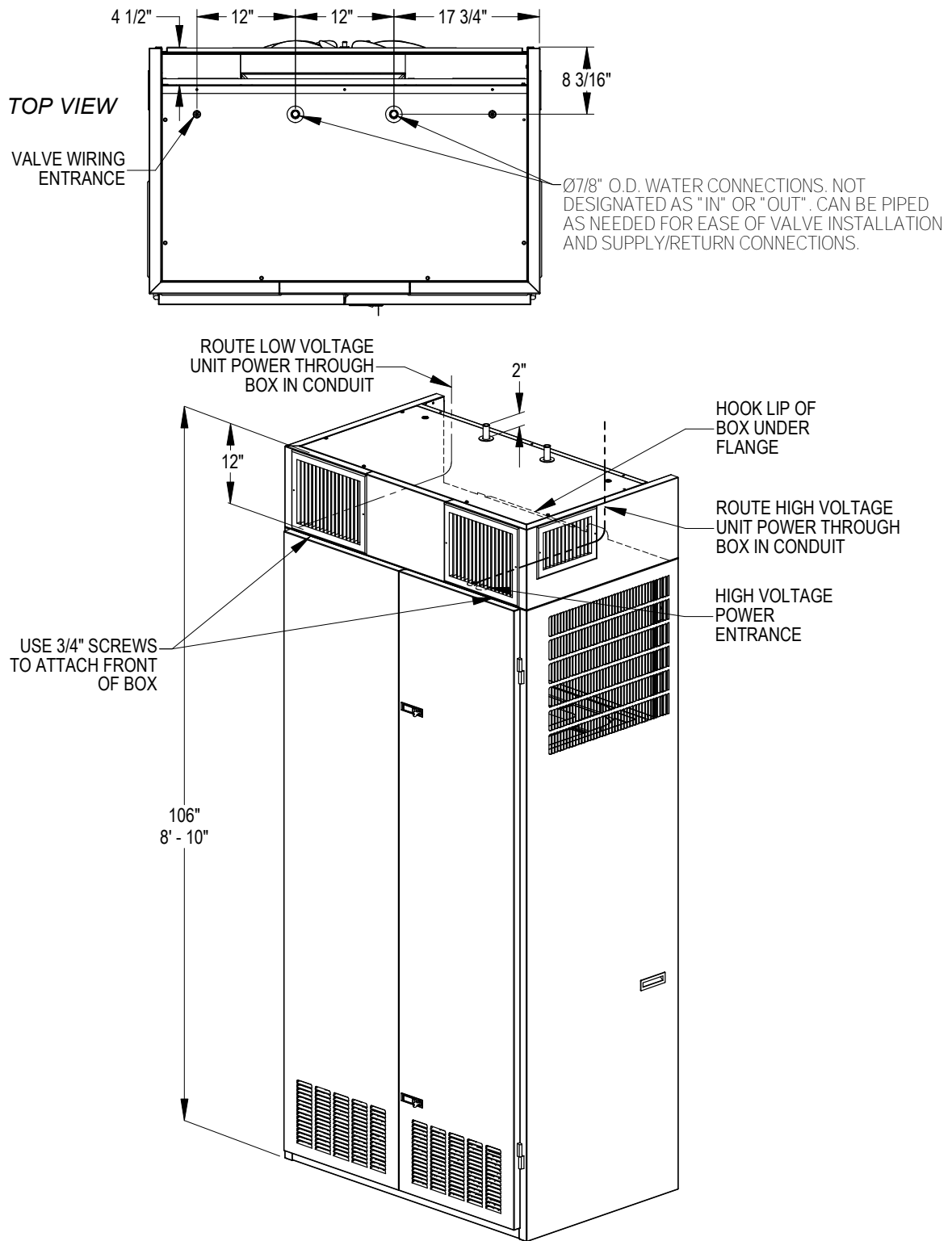
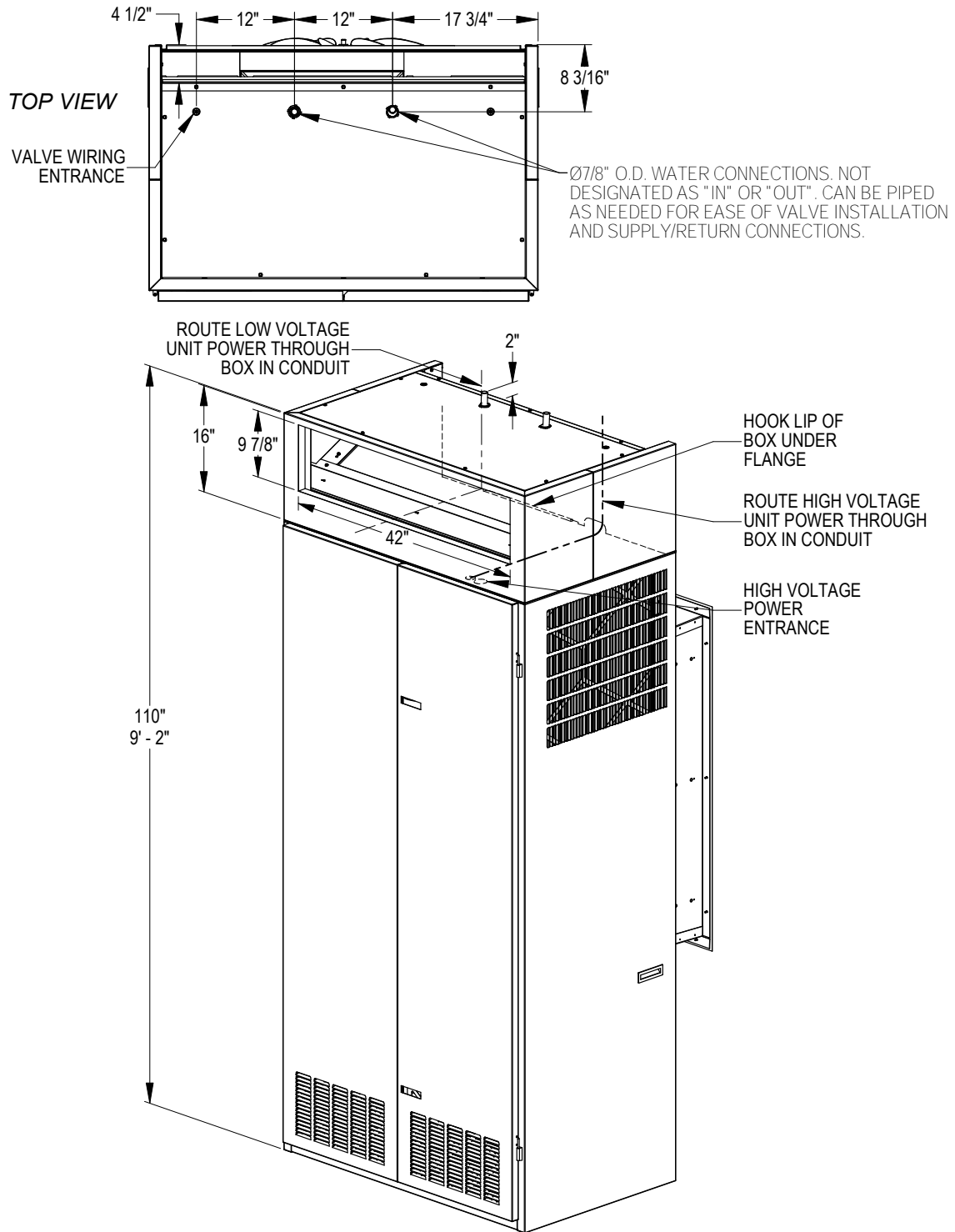


FIGURE 1B
IPBDF12HW Non-Ducted Hot Water Coil



MIS-3056

FIGURE 1C
IPBDF16HWS1 Ducted Hot Water Coil



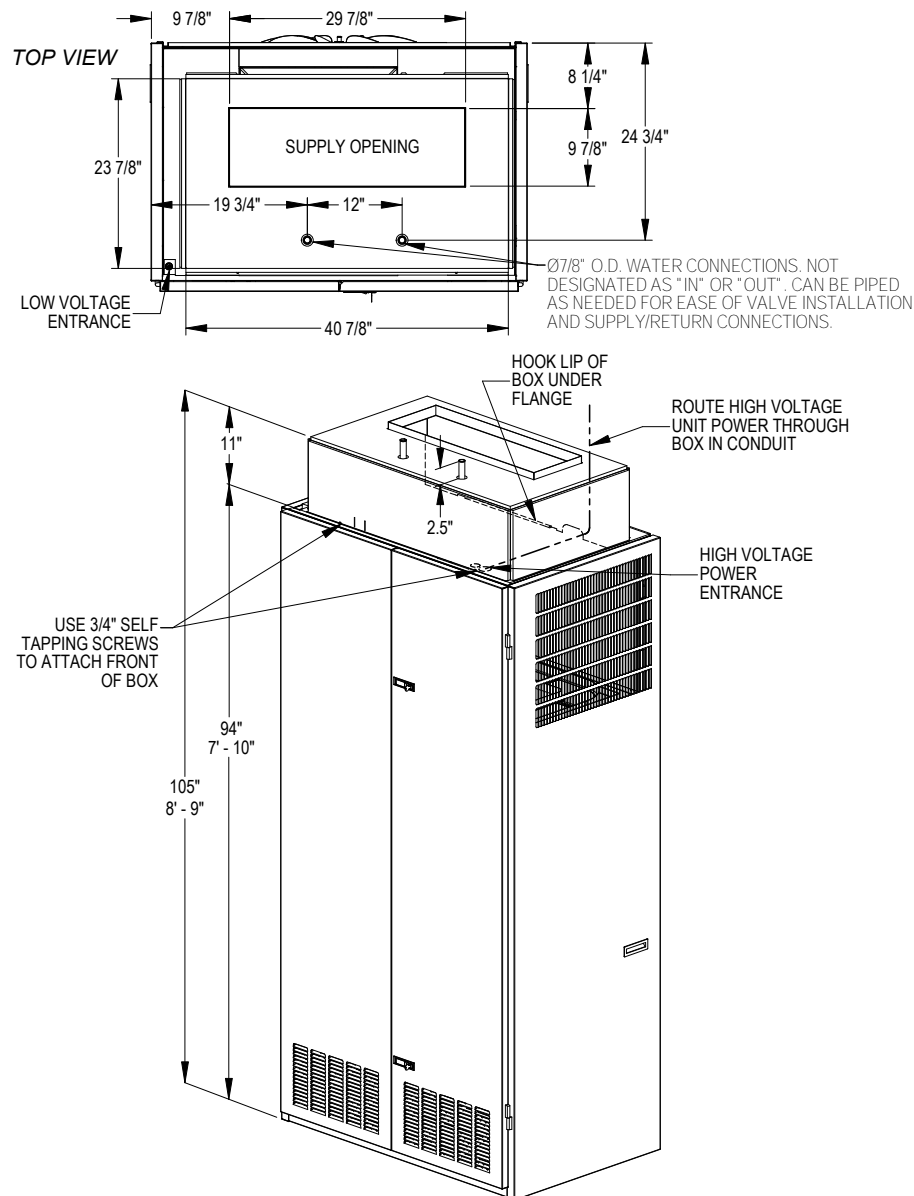
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**Unpainted Ducted Hot Water Coil Installation
(see Figure 2)**

NOTICE: If using a Bard Model ICX28 Cabinet Extension, the cabinet extension sides must be installed prior to placing the ducted plenum box on top of the I-TEC. Follow instructions supplied with the ICX28 accessory.

1. Place the ducted plenum box on top of the I-TEC unit with the open side facing down and the water connections facing the front of the unit. Allow the front of the plenum to extend about 6" past the front of the unit.
2. Raise the front of the plenum box about 1" and slide toward the rear of the unit. The rear flange of
3. Secure the plenum to the unit by shooting two (2) 3/4" self-tapping screws through the front flange of the plenum into the top of the unit.
4. Open the left-hand cabinet door. Just to the left of the filter is the low voltage wire shield (see Figure 3 on page 6). Remove the shield by removing two (2) screws.
5. Route the freezestat wires and low voltage valve wires through the top bushing and then through the control panel bushing (see Figure 3). Wiring instructions are on page 7.
6. Re-install low voltage wire shield.

**FIGURE 2
IHWC Ducted Hot Water Coil**



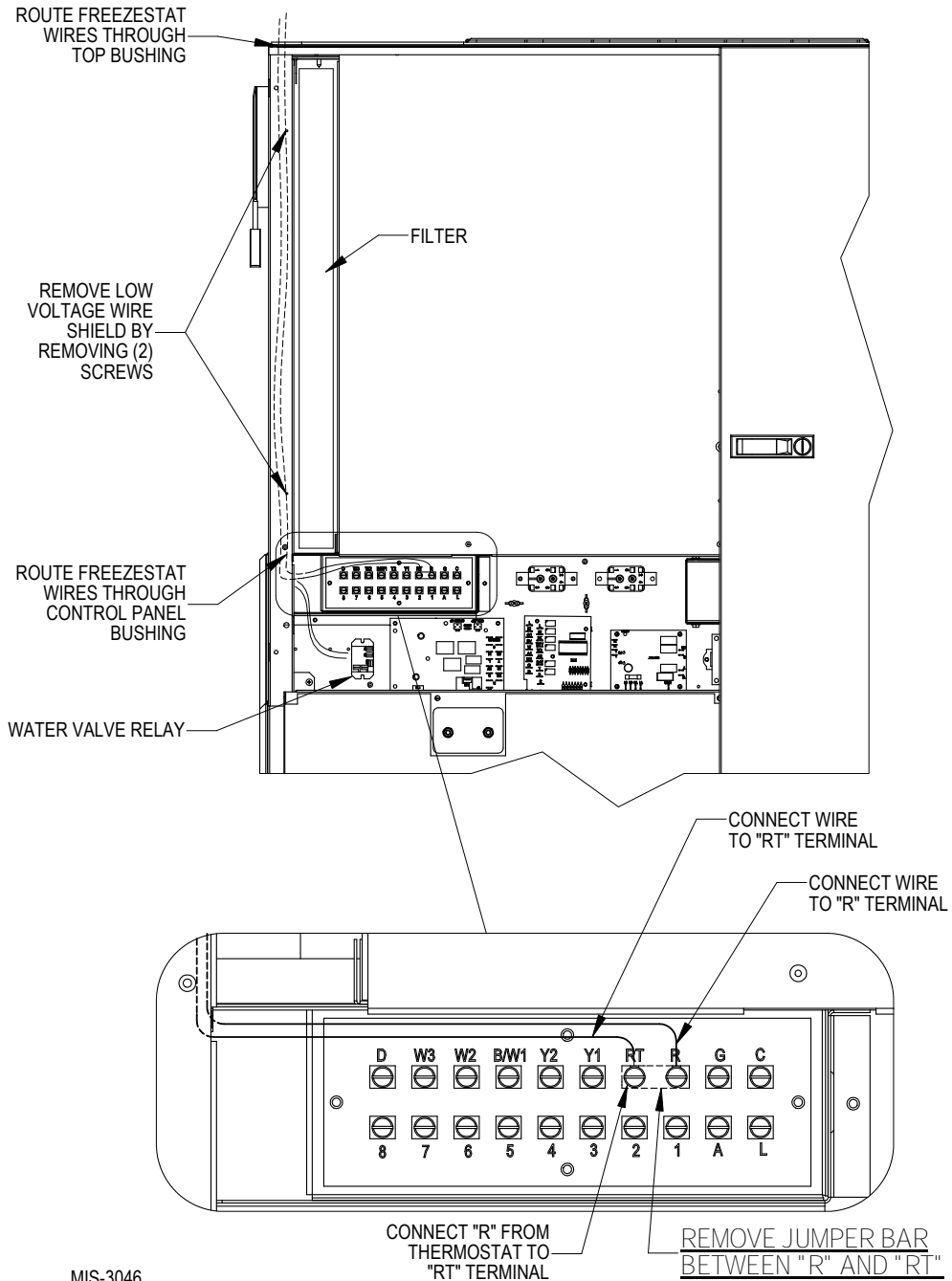
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Freezestat Wiring (Figure 3)

The hot water coil comes with a factory-installed freezestat. The purpose of the freezestat is to protect the water coils from subfreezing air by shutting down the system when the temperature of the air reaching the coils approaches freezing.

1. Route freezestat wires per the plenum box installation instructions.
2. Remove the jumper bar between low voltage terminals "R" and "RT".
3. Connect "R" from the indoor thermostat and one of the wires from the freezestat to "RT".
4. Connect the other freezestat wire to "R".

FIGURE 3
Routing Freezestat and Low Voltage Valve Wires



MIS-3046

SEQUENCE OF OPERATION

Hot Water Heat as Primary Heat for Heat Pumps (Figure 4)

1. Install relay assembly in the main control box with screws taped to the back of the relay. Route wires through control box bushing to the left of the low voltage terminal strip (see Figure 3).
2. Connect "Y/Y1" wire from room thermostat to Terminal 7.
3. Connect the wires from the relay assembly to Terminals 7, B, C, W2 and Y1.
4. Connect the low voltage wires from the water control valve to C and W2.

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

Hot Water Heat as Supplemental Heat for Heat Pumps (Figure 5)

1. Install relay assembly in the main control box with screws taped to the back of the relay. Route wires through control box bushing to the left of the low voltage terminal strip (see Figure 3).
2. Connect "Y/Y1" wire from room thermostat to Terminal 7.
3. Remove the brown wire from the N.O. terminal on the relay and discard.
4. Connect the wires from the relay assembly to Terminals 7, W2, C and Y1.
5. Connect the low voltage wires from the water control valve to C and W2.

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

Wiring with Outdoor Changeover Thermostat (Figure 6)

1. Install relay assembly in the main control box with screws taped to the back of the relay. Route wires through control box bushing to the left of the low voltage terminal strip (see Figure 3).
2. Connect "B" wire from room thermostat to Terminal 8.
3. Connect the wires from the relay assembly to Terminals B/W1, 7, C, W2 and Y1.
4. Connect the low voltage wires from the water control valve to C and W2.

When wired, as instructed above, the hot water coil will function with an outdoor changeover thermostat.

FIGURE 4
Relay Wiring for Hot Water Coil Only Heating

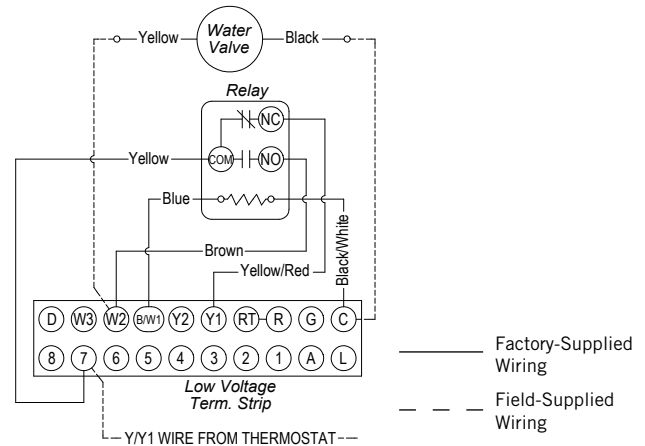


FIGURE 5
Relay Wiring for Hot Water as Supplemental Heat with Compressor Lockout

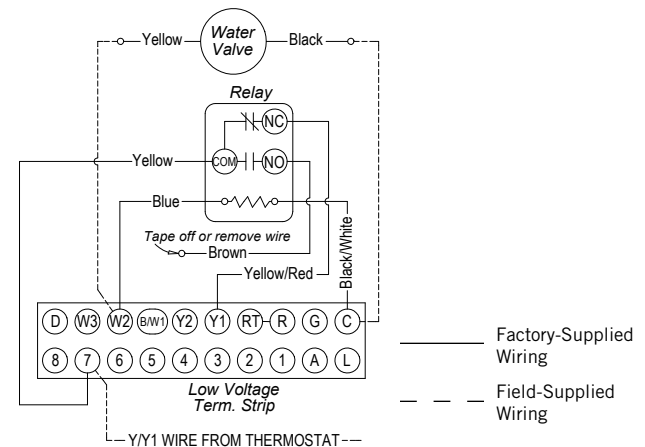
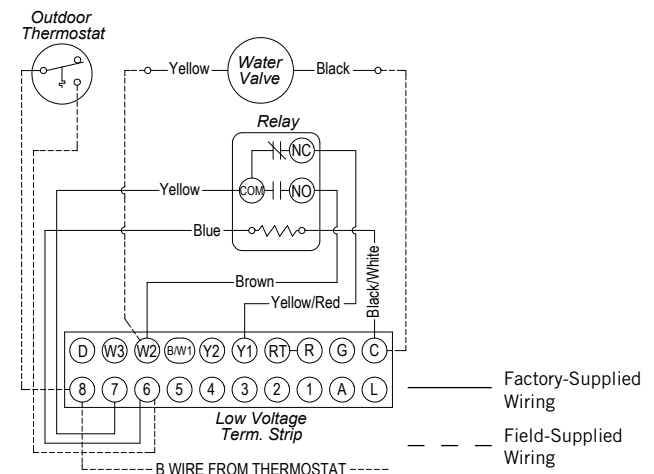


FIGURE 6
Relay Wiring with Outdoor Changeover Thermostat and Included Relay Assembly



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Airflow Adjustment and Piping Connections

1. Adjust louvers to obtain desired air distribution (IPBDF10HW-NC and IPBDF12HW models only).
2. Water control valves and related piping are field supplied. Refer to Figure 7 for piping arrangement options. See Figure 8 for heating capacity at the CFM and flow rate supplied to the hot water coil.

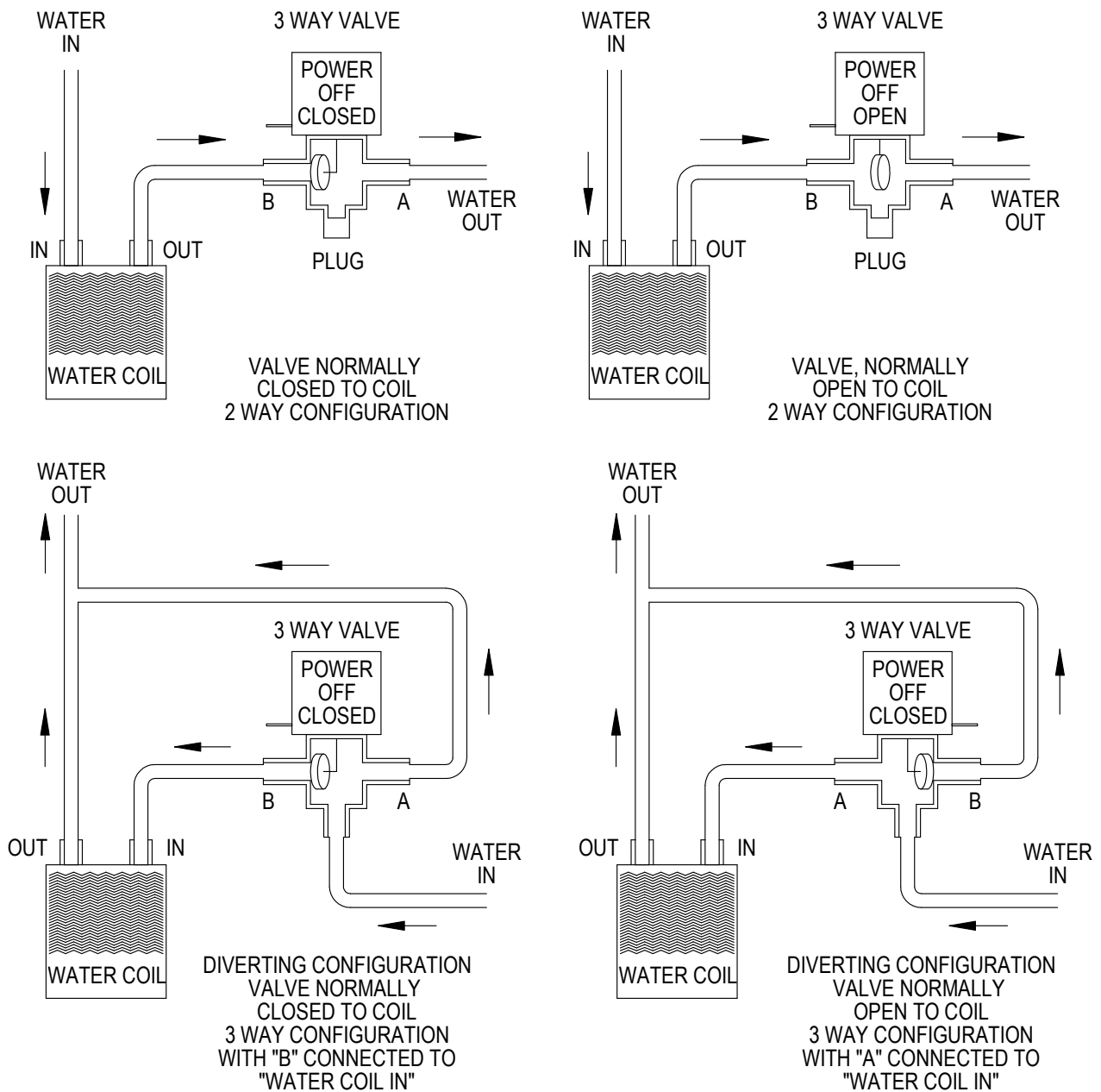
Additional Information

Additional information and installation instructions on Erie™ Poptop™ series motorized valves can be found on the web at <http://source.invensysibs.com/literature/erielit.cfm>

Bard Part Number 5650-035/
Erie Part Number VT3323G14A000

Bard Part Number 5650-047/
Erie Part Number VM3323P33A000

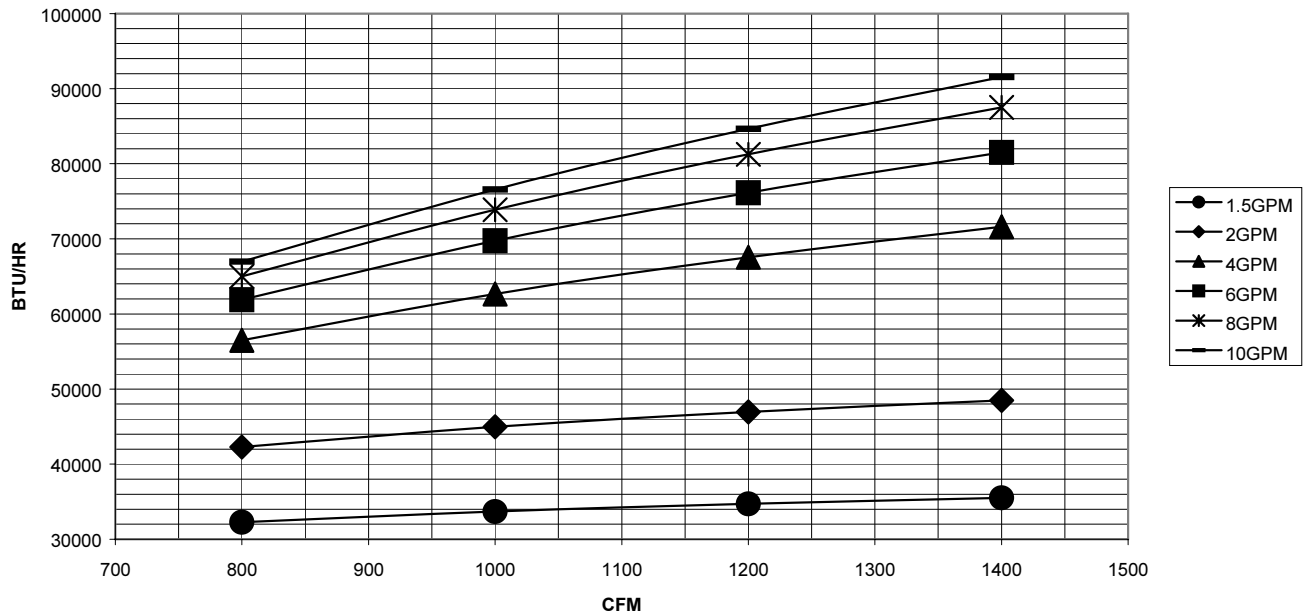
FIGURE 7
Piping Arrangement Options



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FIGURE 8
IPBDFHW and IHWC 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.

FIGURE 9
Hot Water Coil Pressure Drop
with Hot Water at 180°

IPBDF**HW and IHWC		
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