SUPPLEMENTAL INSTRUCTIONS

I-TEC® Hot Water Coil

Overview

The hot water plenum boxes listed in Table 1 are designed specifically for use with I-TEC Series air conditioners or heat pumps. They are 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. Cabinet extensions also hide the visible insulation on the IHWC.

TABLE 1

IPBDF10HW-X-NC	10" High, Beige	Duct-free plenum box w/hot water coil and copper routing out of top of box
IPBDF10HW-1-NC	10" High, White	
IPBDF10HW-4-NC	10" High, Gray	
IPBDF12HW-X	12" High, Beige	Duct-free plenum box w/hot water coil and copper routing out of top of box
IPBDF12HW-1	12" High, White	
IPBDF12HW-4	12" High, Gray	
IPBDFH16HWS1-X	16" High, Beige	(Front Outlet) Ducted plenum box w/hot water coil and copper routing out of top of box
IPBDFH16HWS1-1	16" High, White	
IPBDFH16HWS1-4	16" High, Gray	
IPB16L/R22HW-X	22" High, Beige	(Ø16" Side Outlet) Ducted plenum box w/hot water coil and copper routing out of top of box
IPB16L/R22HW-1	22" High, White	
IPB16L/R22HW-4	22" High, Gray	
IHWC	11" High, Unpainted	(Top Outlet) Ducted plenum box w/hot water coil and copper routing out of top of box

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 P/N 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 P/N 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.

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

Installation

⚠ 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.

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

Bard® SINCE 1914
Climate Control Solutions

Bard Manufacturing Company, Inc.
Bryan, Ohio 43506

www.bardhvac.com

Manual: 7960-651F
Supersedes: 7960-651E
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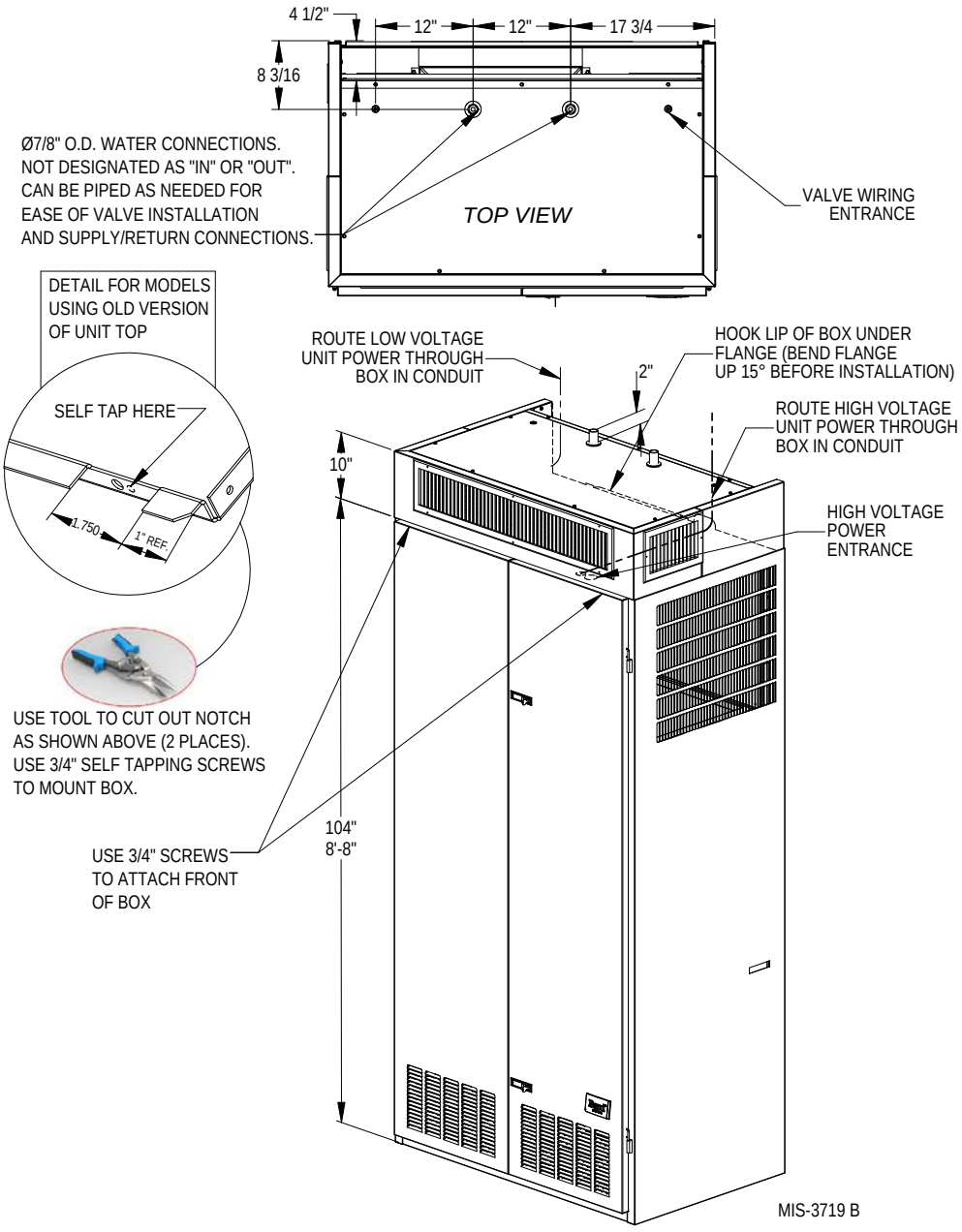
front of the unit. Allow the front of the plenum to extend about 6" past the front of the unit.

2. Open the left-hand cabinet door. Just to the left of the filter is the low voltage wire shield (see Figure 4 on page 8). 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 4). Wiring instructions are on page 9.
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.

FIGURE 1A
IPBDF10HW-NC Non-Ducted Hot Water Coil



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 1B
IPBDF12HW Non-Ducted Hot Water Coil

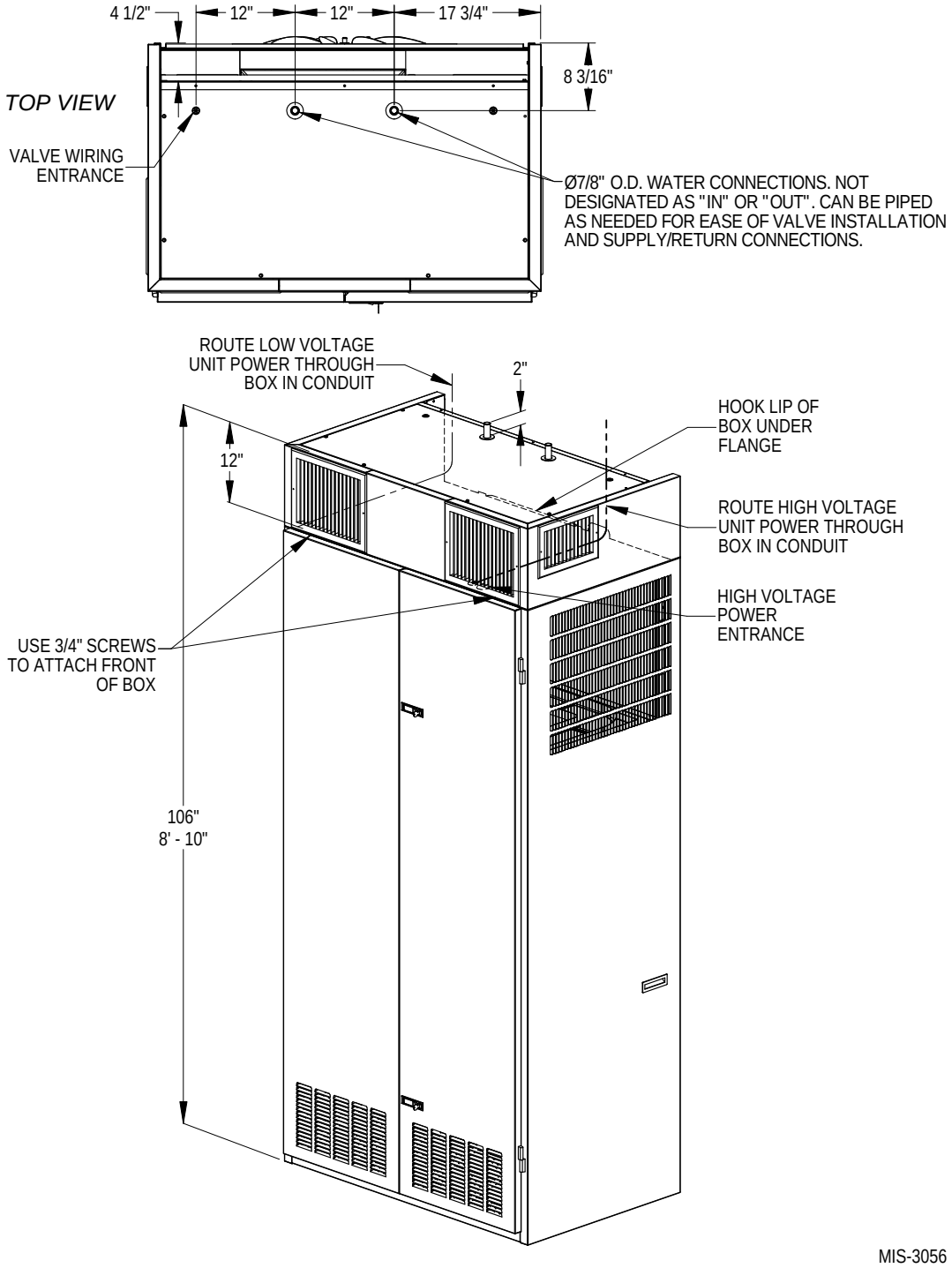
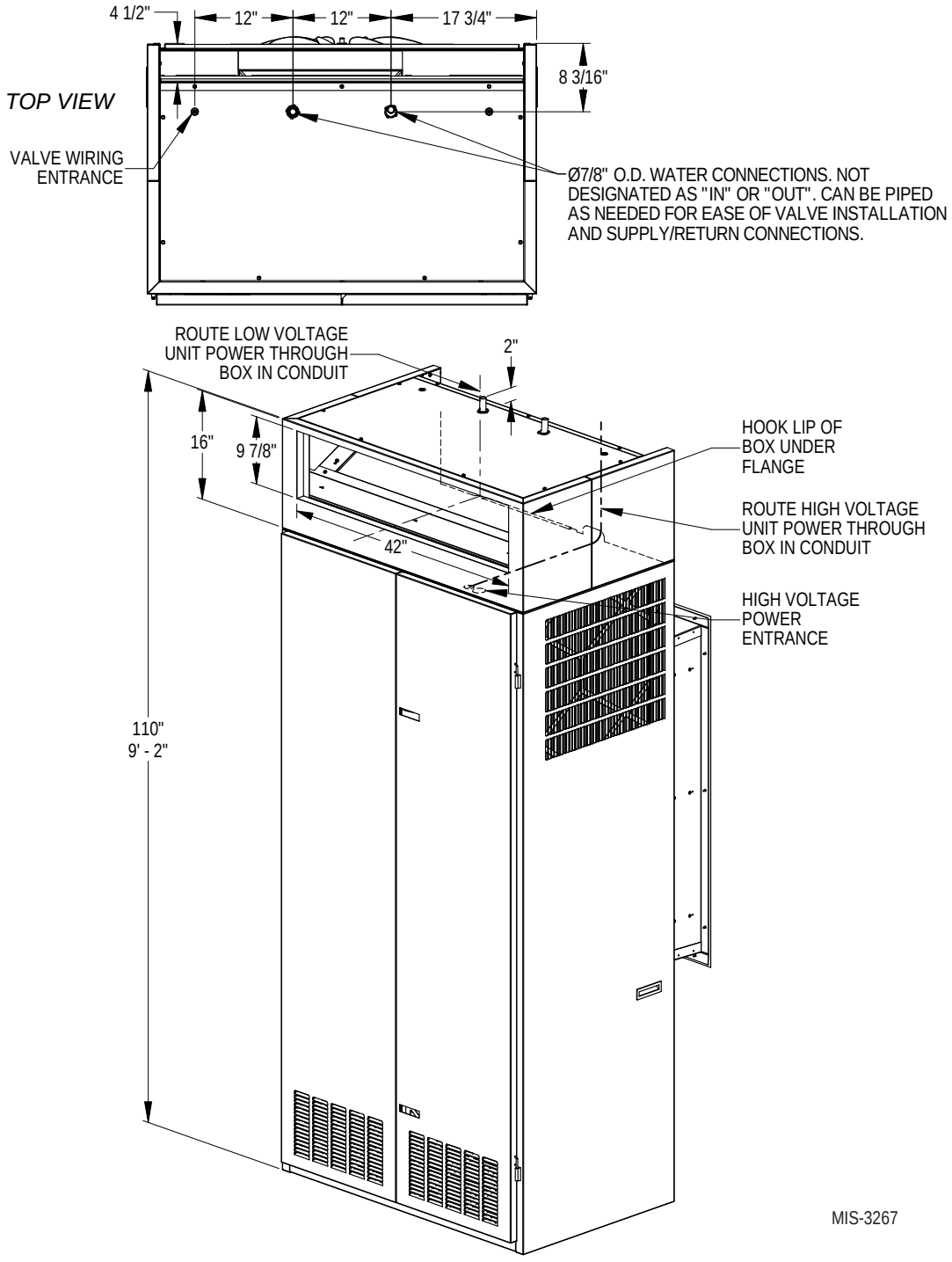


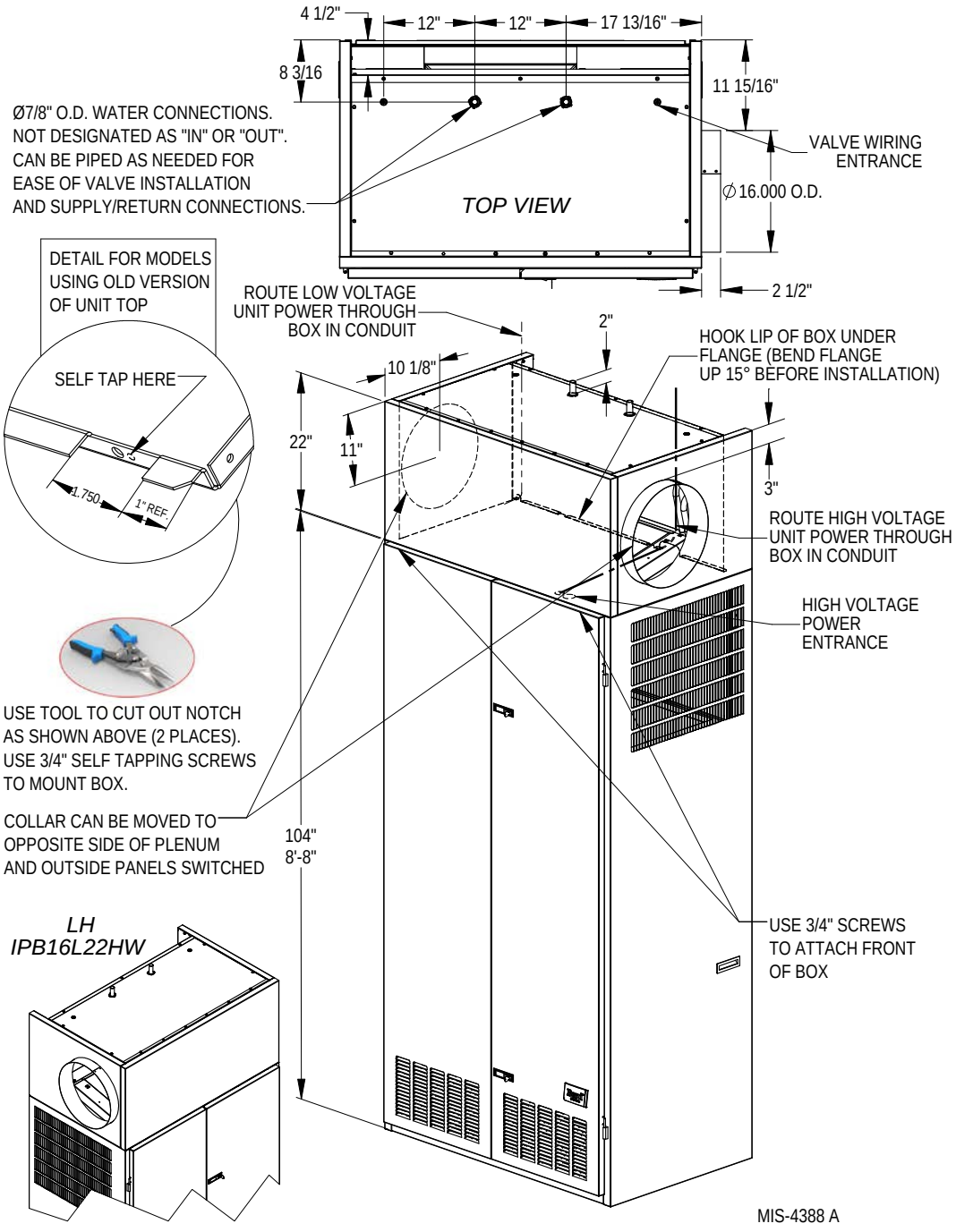
FIGURE 1C
IPBDFH16HWS1 Ducted Hot Water Coil



IPB16L/R22HW Ducted Hot Water Coil Installation (see Figure 2 on page 6)

1. Although a left-hand configuration version is available (IPB16L22HW), the right-hand and left-hand side can be swapped with each other prior to installation to allow for a left-hand duct connection. The screws holding each side can be accessed by removing the plenum back and inner liner.
2. Place the plenum box on top of the I-TEC with the open side facing down and the Ø16" side to the right (or left depending on duct work). Allow the front of the plenum to extend about 6" past the front of the unit.
3. Open the left-hand cabinet door. Just to the left of the filter is the low voltage wire shield (see Figure 4). Remove the shield by removing two (2) screws.
4. Route the freezestat wires and low voltage valve wires through the top bushing (see Figure 4). Wiring instructions are on page 9.
5. Re-install low voltage wire shield.
6. 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.
7. 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.
8. Make sure all surfaces of the plenum box are flush with the unit.
9. Open the cabinet doors.
10. 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.
11. 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 2
IPB16R22HW Ducted Hot Water Coil with Ø16" O.D. Duct Collar
(see insert below for IPB16L22HW Ducted Hot Water Coil)



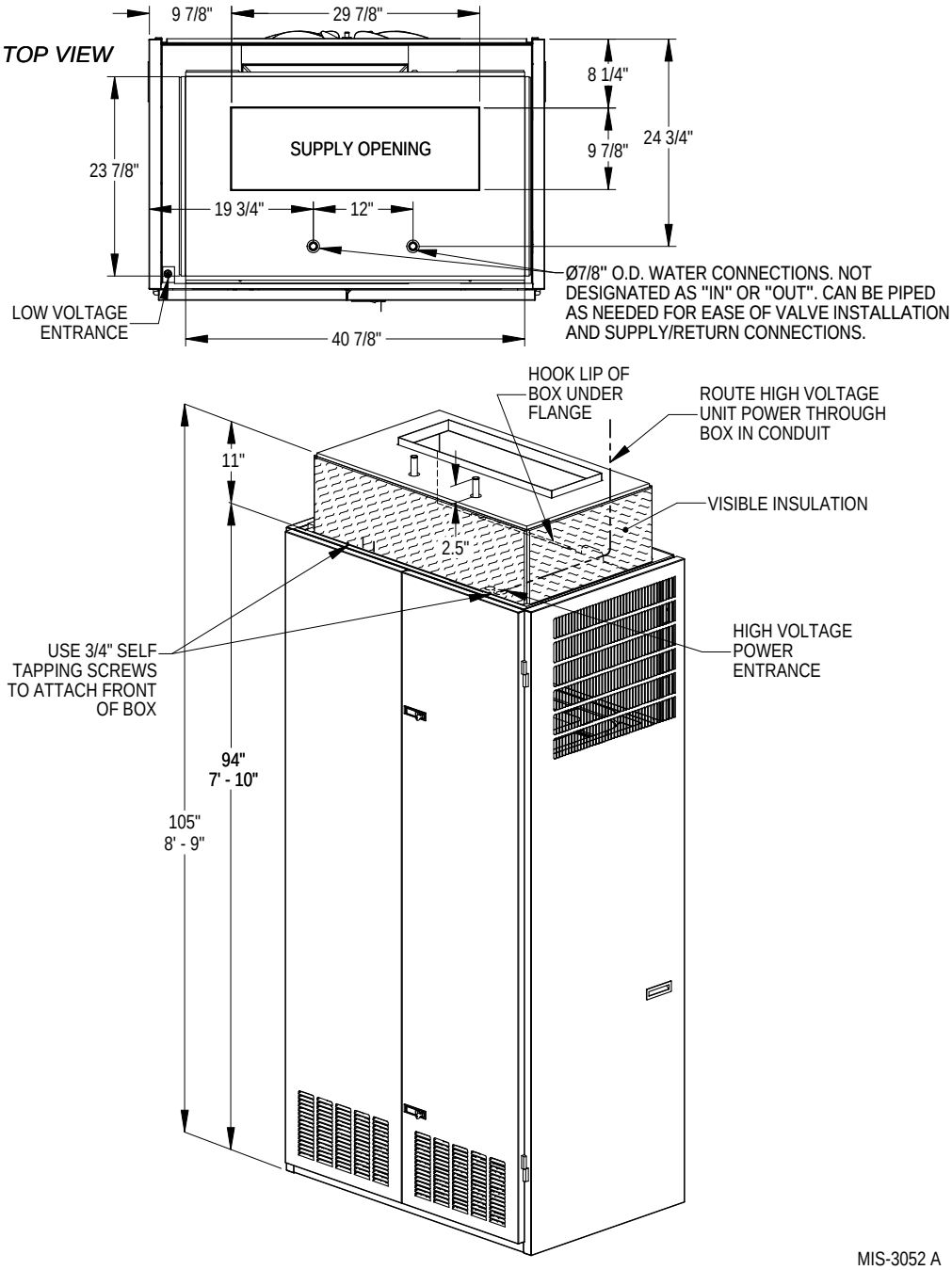
Unpainted Ducted Hot Water Coil Installation (see Figure 3)

NOTE: *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. The ICX28 cabinet can be used with the IHWC Ducted Hot Water Coil to enclose the duct work and insulation.*

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 the plenum will slide under the folded down rear duct flange on top of the unit.
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 4 on page 8). 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 4). Wiring instructions are on page 9.
6. Re-install low voltage wire shield.

FIGURE 3
IHWC Ducted Hot Water Coil

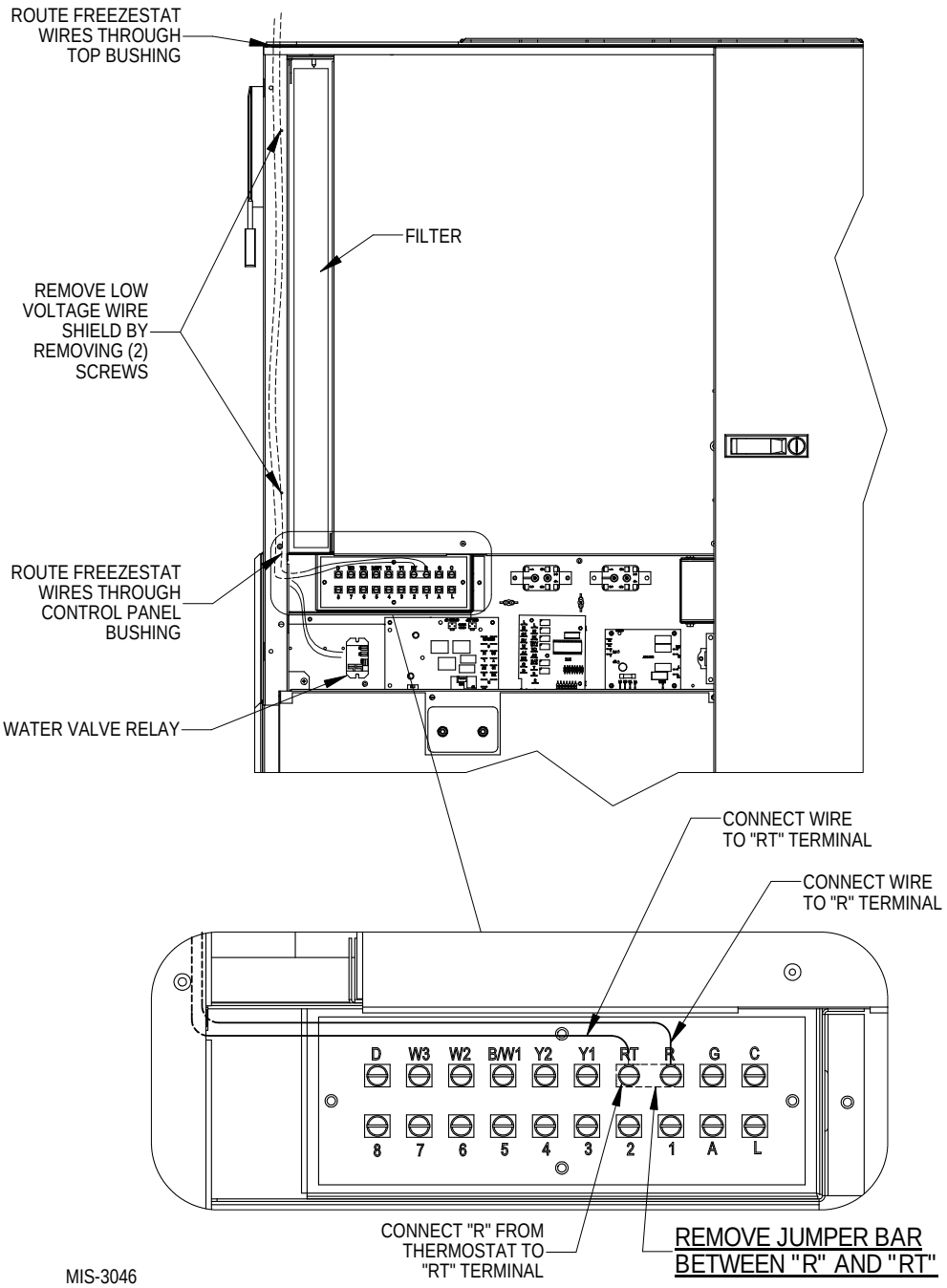


Freezestat Wiring (see Figure 4)

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 4
Routing Freezestat and Low Voltage Valve Wires



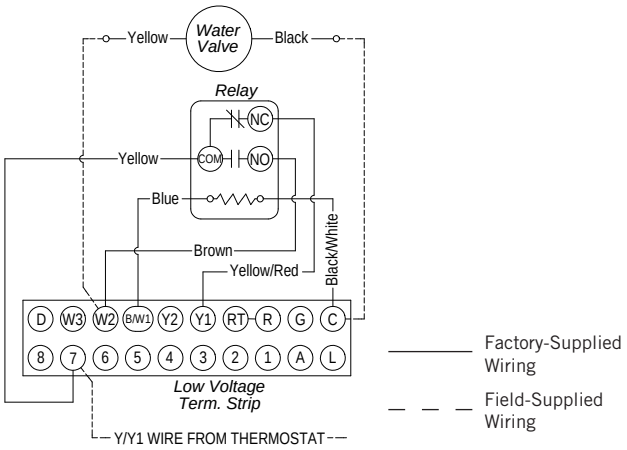
Sequence of Operation

Hot Water Heat as Primary Heat for Heat Pumps (see 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 4).
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.

FIGURE 5
Relay Wiring for Hot Water Coil Only Heating

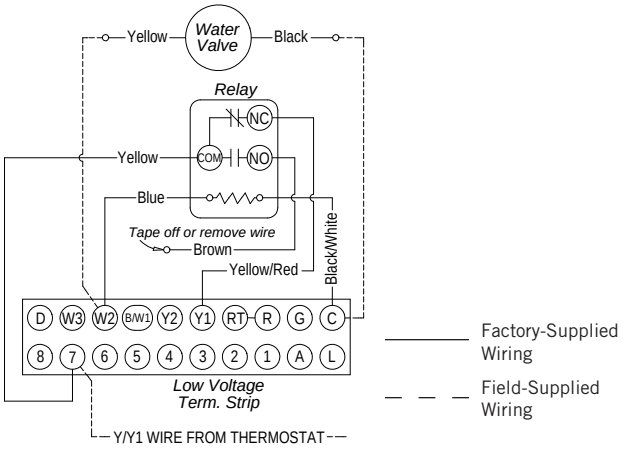


Hot Water Heat as Supplemental Heat for Heat Pumps (see Figure 6)

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 4).
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.

FIGURE 6
Relay Wiring for Hot Water as Supplemental Heat with Compressor Lockout

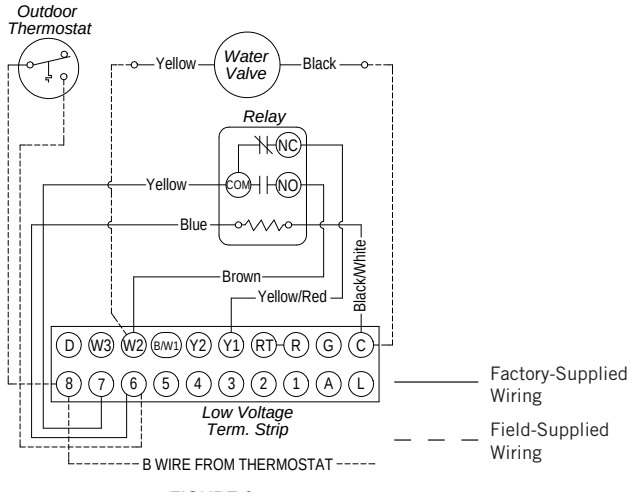


Wiring with Outdoor Changeover Thermostat (see Figure 7)

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 4).
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 7
Relay Wiring with Outdoor Changeover Thermostat and Included Relay Assembly



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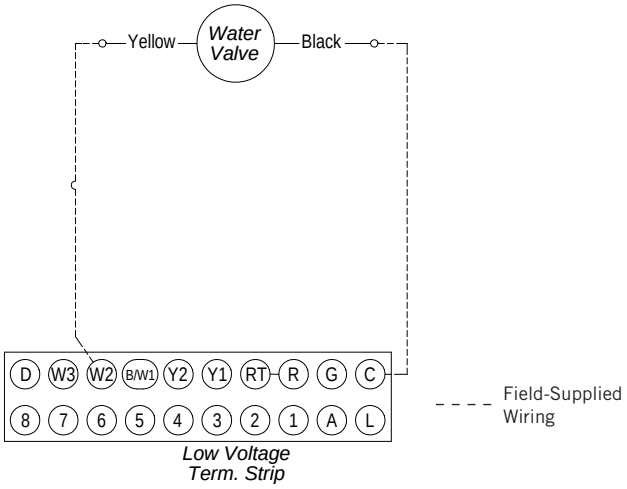
Hot Water Heat as Primary Heat for Air Conditioners (see Figure 8)

1. 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.

FIGURE 8
Wiring for Hot Water Coil Only Heating for Air Conditioner



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 9 for piping arrangement options. See Figure 10 on page 12 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://www.schneider-electric.com/ww/en/.

Bard P/N 5650-035

Erie P/N VT3323G14A000

Bard P/N 5650-047

Erie P/N VM3323P33A000

FIGURE 9
Piping Arrangement Options

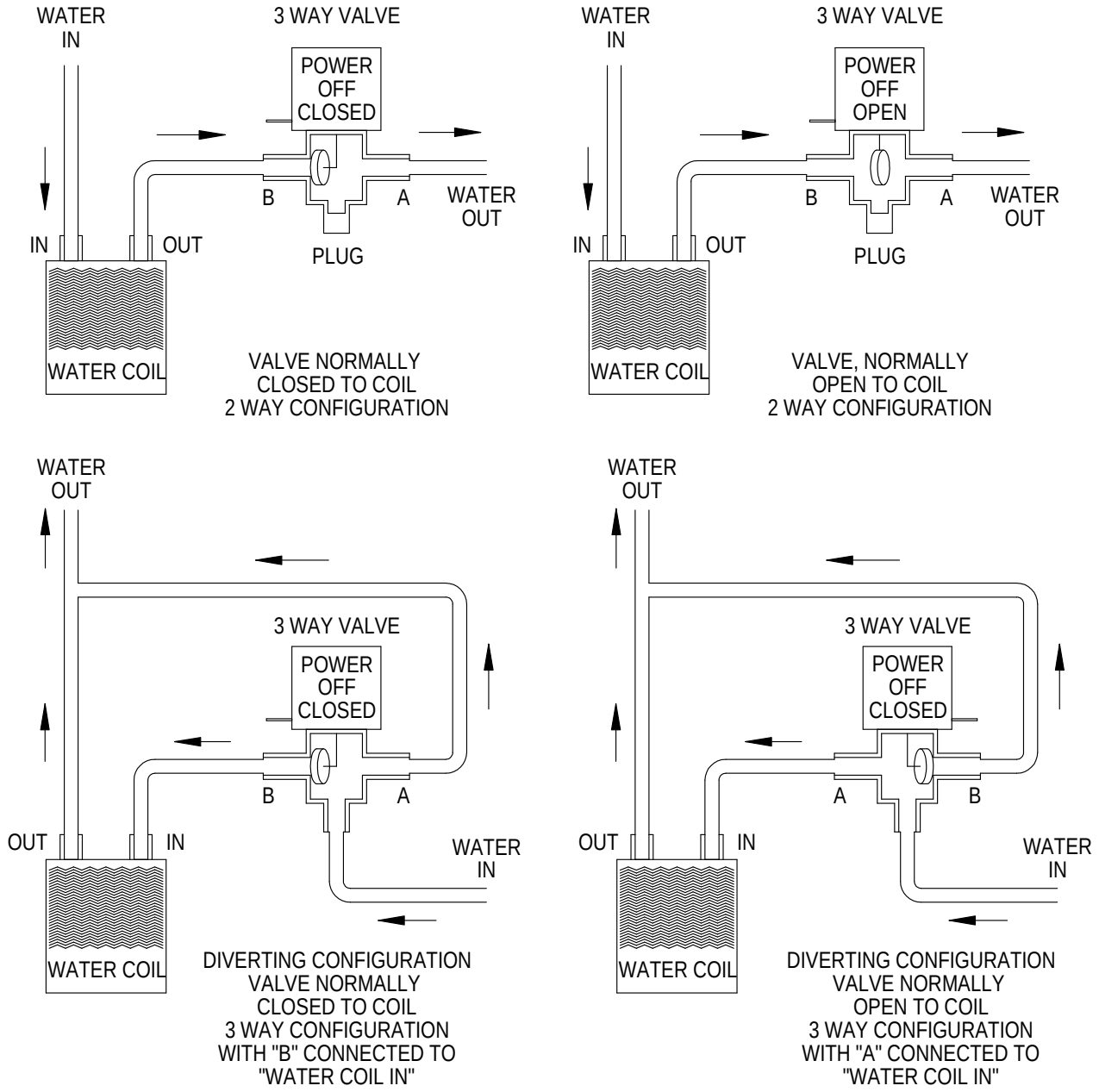


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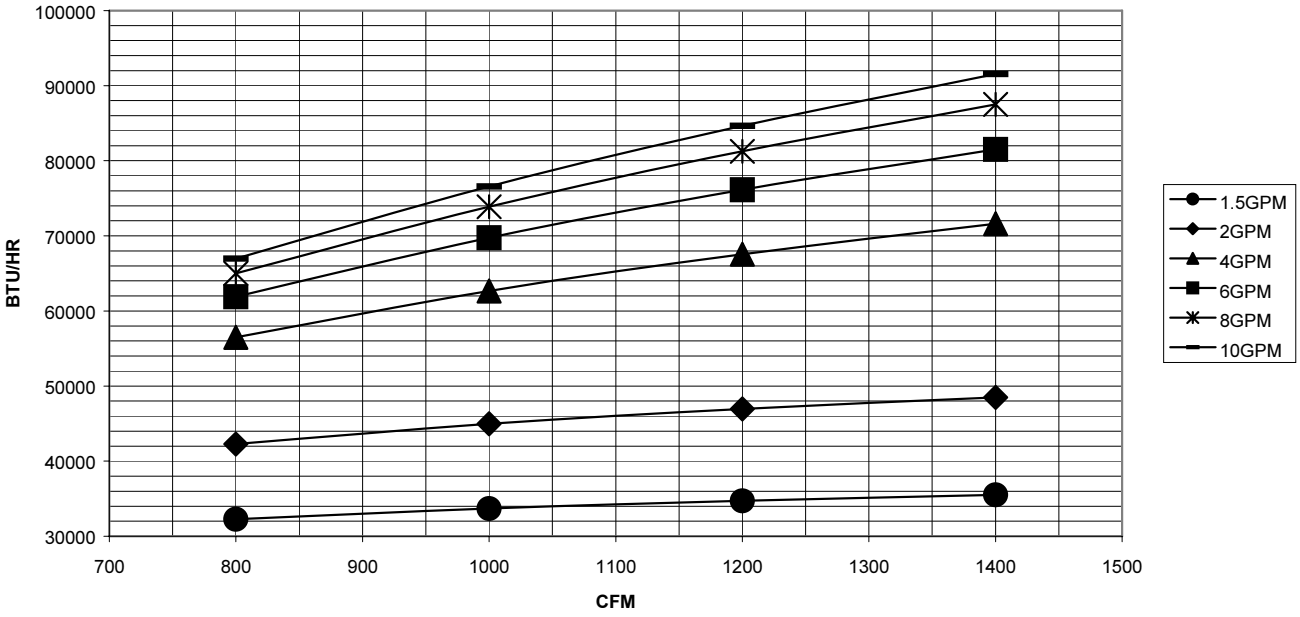
FIGURE 10
IPBDFHW, IHWC and IPB16L/R22HW Heating Capacity**

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
Hot Water Coil Pressure Drop with Hot Water at 180°

IPBDF**HW, IHWC and IPB16L/R22HW		
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