PTAC HYDRONIC HEAT KIT
HVK03E AND HWK03E
INSTALLATION INSTRUCTIONS

DESCRIPTION

The PTAC Hydronic Kit is an enclosure kit that provides complete coverage of all PTAC plumbing and coils while still allowing access to controls. The kit can only be installed where there is a central boiler for heating the water. It does not affect unit heating and cooling operations. The hydronic kit chassis slides out for service without removing any hydronic plumbing. The electrical connections are plug-in type to assist in kit installation.

NOTE: Heat pump models will operate on heat pump function down to the switchover temperature before operating on hydronic heat.

Freeze Protection

For PTAC Hydronic Coil freeze protection on hot water systems, the hydronic system should use an antifreeze solution. However, the addition of antifreeze will reduce the capacity of the hydronic coil and affect system sizing. The higher the antifreeze concentration, the greater the capacity reduction. Therefore, for optimum unit performance, only use an antifreeze concentration that will protect to the lowest ambient temperature expected. A 20% solution will protect to approximately 15°F. A 50% solution protect to -35°F.

Use an antifreeze that is formulated for hydronic use. **DO NOT USE AUTOMOTIVE OR PETROLEUM BASED PRODUCTS.**

Tools Required

- 1/4 Inch Electric Drill
- 1/8 Inch Diameter Drill Bit
- Center Punch and Hammer
- 6 Foot Rule
- Combination Square
- 1/4 Inch Nut Driver or Socket
- 5/16 Inch Nut Driver or Socket
- Torch, Solder, Flux, etc.

RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION.

ATTENTION INSTALLING PERSONNEL

As a professional installer you have an obligation to know the product better than the customer. This includes all safety precautions and related items.

Prior to actual installation, thoroughly familiarize yourself with this Instruction Manual. Pay special attention to all safety warnings. Often during installation or repair it is possible to place yourself in a position which is more hazardous than when the unit is in operation.

Remember, it is **your** responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use.

Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific good safety practices...follow them.

The precautions listed in this Installation Manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.

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JOB PREPARATION

Before installing the hydronic kit, determine the following:

- Whether a 2-way or 3-way normally open or normally closed valve is required.
- If an end switch is required to control the circulating pump. (Information relating to U.L. approved valves and current loads is shown on the kit label and is repeated in the following figure).

NOTE: WHEN HYDRONIC HEAT IS USED, DISREGARD THE MINIMUM CIRCUIT AMPACITY AND MAXIMUM FUSE SIZE SHOWN ON THE AUXILIARY NAMEPLATE FOR FIELD INSTALLED HEATERS. USE VALVES SHOWN ON THE MASTER UNIT NAMEPLATE.

CAUTION: VOLTAGE RATING OF VALVE IS 24VAC AND DOES NOT CORRESPOND TO VOLTAGE RATING ON THE UNIT NAMEPLATE.

THIS KIT MAY BE USED WITH ONE OF THE FOLLOWING ELECTRIC CONTROL VALVES:

	HOT WATER	STEAM
ERIE MANUFACTURING CO.	654C0507EA01	654C0407EA01
	654C0527EA01	654C0427EA01
	654C0509EA01	VS2212G14A02A
	654C0529EA01	VS2212G24A02A
	VT2212G14A02A	
	VT2212G24A02A	
	VT3213G14A02A	
BARBER-COLMAN	VA-1403-201	VA-9224-201
	VA-1403-301	VA-9214-201
	VA-3403-201	
HONEYWELL	V8043A	
	V8043B	V8043J
	V8044A	

NOTE: WHEN HYDRONIC HEAT KIT IS EMPLOYED, THE FOLLOWING LOADS OPERATE CONCURRENTLY:

UNIT VOLTAGE RATING	230/208	265
FAN MOTOR AMPS	.6	.6
MOTORIZED VALVE, WATTS	6.5	6.5

MAX. WATER TEMPERATURE	200° F
MAX. WATER PRESSURE	200 PSIG
MAX. STEAM PRESSURE	5.0 PSIG

Also, ensure that the following steps are completed and a hydronic model chassis is installed before installation.

NOTE: The hydronic chassis MUST have a model number in which the 10th, 11th, 12th or 13th digit is H.

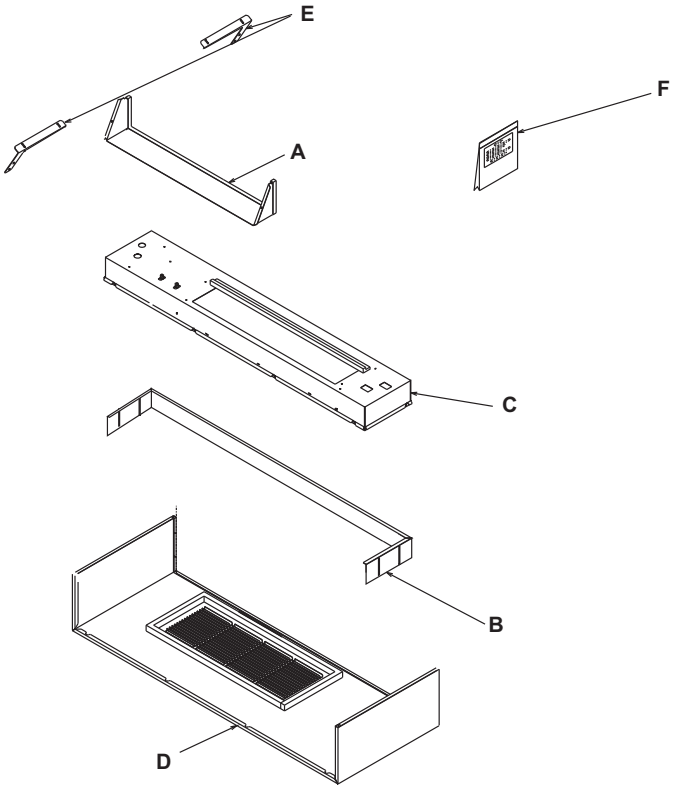
1. Wall sleeve is installed and completely sealed.

   It must extend at least 3” and no more than 3-1/8” past the finished interior wall in order to properly install the hydronic kit.
2. All plumbing stub-outs are completed.
3. Unit chassis is uncrated, uninstalled, and **not yet connected to an electrical source.**

INSTALLATION

The installation and servicing of the equipment referred to in this booklet should be performed by qualified, experienced technicians.

Be sure to engage the services of a qualified water treatment specialist to determine what water treatment, if any, is needed. The manufacturer will not assume responsibility for equipment failures resulting from untreated or improperly treated water.

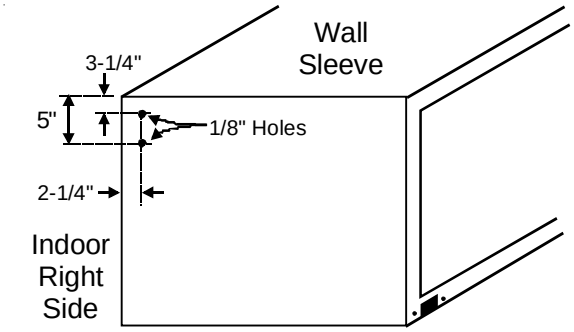


This Installation kit includes:

Item	Qty	Description
A	1	Transition
B	1	Hydronic Skirt
C	1	Hydronic Top Assy
D	1	Hydronic Front Assy
E	2	Support Brackets
F	1	Bag Assembly containing:
		Installation Instructions,
		Gasket foam,
		8 - 3/8” #8 screws
		2 - 1/2” #8 screws
		4 - 1/2” #10 screws
		1 #10 machine screw
		1 snap bushing
		1 valve harness
		4 wire nuts

1. Drill two 1/8” diameter holes on both sides of wall sleeve as shown (Figure 1).

   NOTE: If there is not enough room to drill holes from the side then drill holes from inside the wall sleeve.



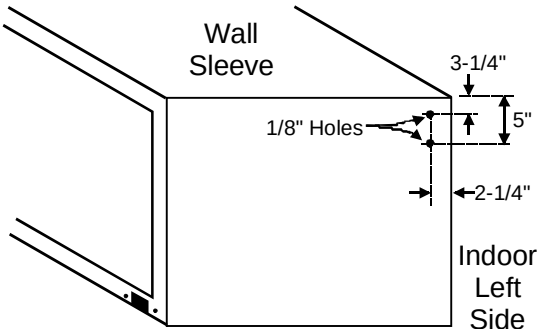


Figure 1

2. Remove the hydronic kit from its packaging. Recycle the cardboard packaging material.
3. Mount the two support brackets to the bottom of the hydronic top (Figure 2) with four (4) 3/8-inch #8 supplied screws.

On HVK03E Hydronic Steam Kits, do not use 1/4 inch head, 3/8 inch long, #8 screws to attach the left support bracket to the hydronic top. Use the provided two 5/16 inch painted head, 1/4 inch long, #8 screws in place of these longer screws. (Figure 3)

NOTE: Failure to use the 1/4 inch long screws instead of the 3/8 inch long screws may result in leaks of the hydronic steam coil.

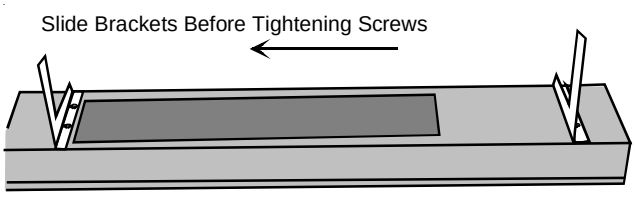


Figure 2

Move the brackets to the left so that screws are located in right side of slot and tighten screws (Figure 3).

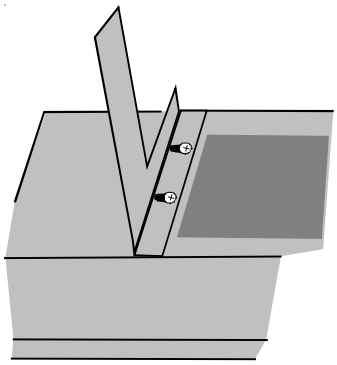


Figure 3

4. Mount the transition to the chassis with two 1/2-inch #8 supplied screws (Figure 4).

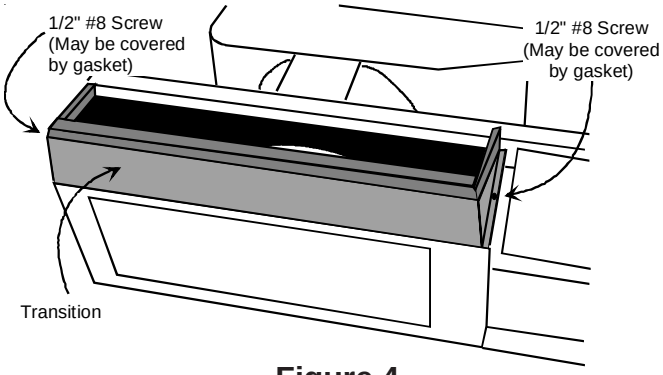


Figure 4

5. Position the hydronic top with support brackets to the wall sleeve and fasten the support brackets to the drilled holes in the wall sleeve with four 1/2-inch #10 supplied screws. (Figure 5)

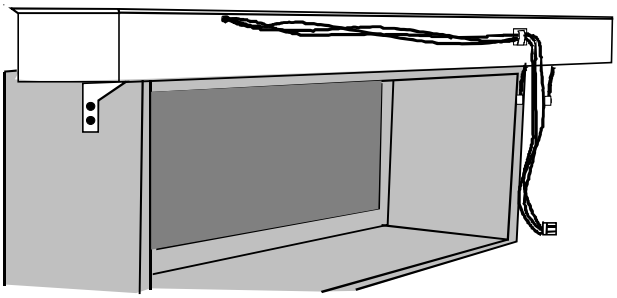


Figure 5

6. Place the chassis back into the wall sleeve and secure chassis to wall sleeve.
7. Measure the actual distance “D” (Figure 6) from the bottom of the chassis basepan to the finished floor to determine how far to extend the skirt below the metal front. If the distance is less than two inches, trim the skirt per Figure 7 so that it will not interfere with the gasket or block the inlet air on the front. In Figure 7, “Y” dimension equals 2” minus actual “D” dimension.

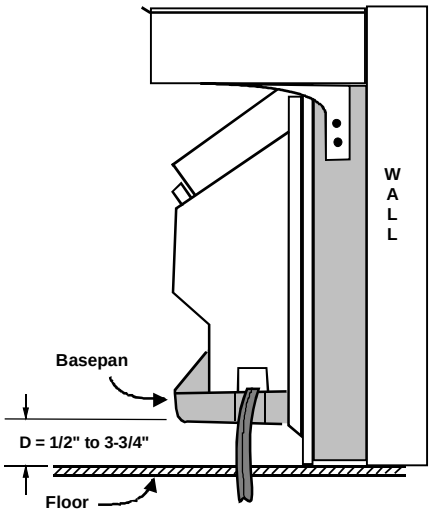


Figure 6

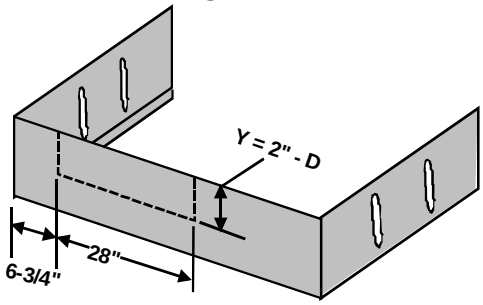


Figure 7

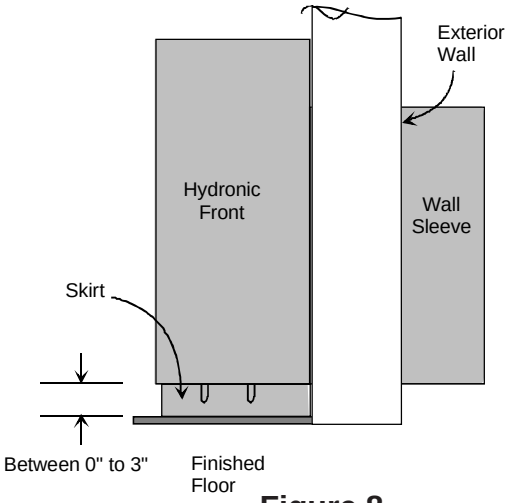


Figure 8

8. Mount the skirt to the metal front with the four remaining 3/8” #8 supplied screws (Figure 9).

NOTE: Skirt is attached to front of top piece during shipping.

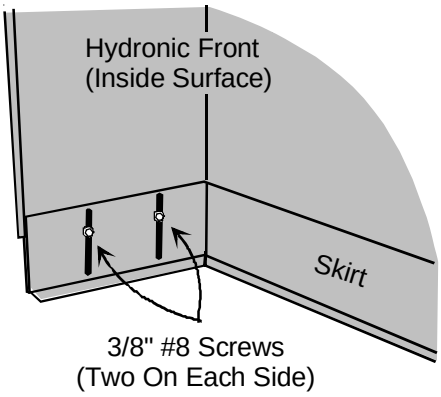


Figure 9

9. Remove the six screws from the top of the hydronic top. Lift the hydronic top straight up and set aside along with the six screws (Figure 10).

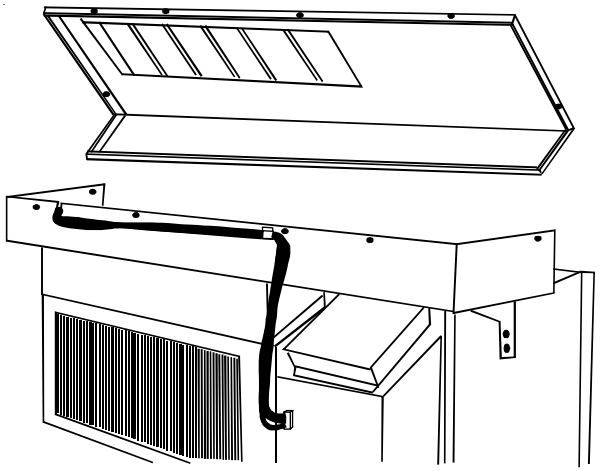


Figure 10

10. Position the wires from the freeze thermostat found on the left side of the hydronic top so the wires slide through the slot opening in the hydronic top.

    Place all wires into the supplied snap bushing (Figure 11.

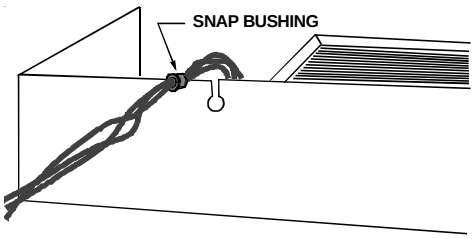


Figure 11

11. Snap the grommet into the hydronic top and pull the wires forward to take out the slack in the wires (Figure 12).

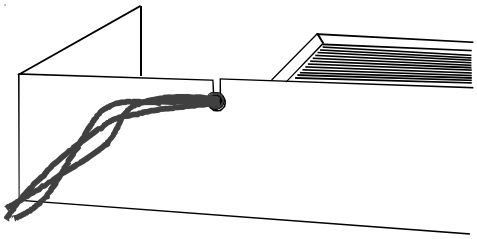


Figure 12

12. Route the freeze thermostat wires through the U-clip on the hydronic top assembly and down in front of the control panel. Snap the plastic male pin connector into the plastic female pin connector located on the outside front surface of the control panel (Figure 13).

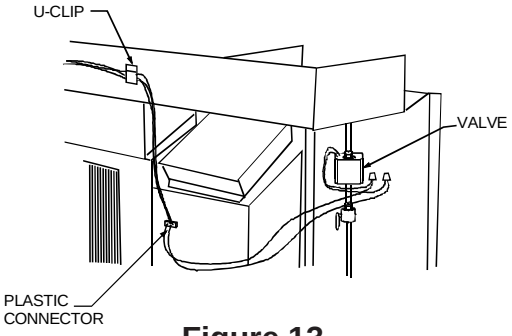
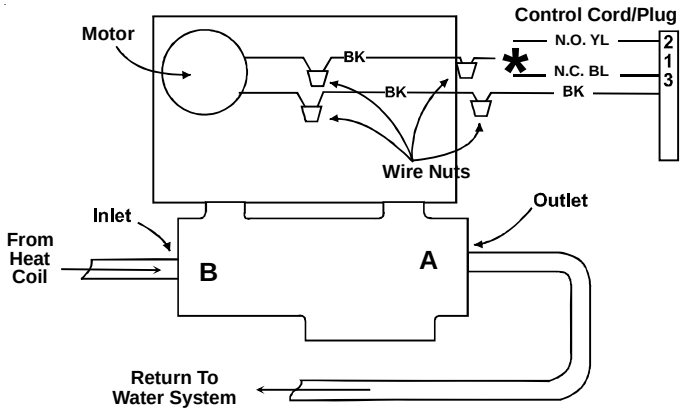


Figure 13

13. If the black valve motor leads are not accessible from the valve housing, remove the valve cover. Connect the supplied valve wire harness leads to the two valve motor leads (not the end switch leads) using the supplied wire nuts (Figure 14). The fiber washer and strain relief supplied with the valve harness must be located in the valve motor enclosure after assembly. Replace the valve cover.



*** Connect YL for Normally Open Valves.**
Connect BL for Normally Closed Valves

Figure 14

14. Using the two remaining wire nuts, connect the wires from the chassis wire harness to valve harness.

    Connect one of the BK wires from the valve to BK wire from the chassis.

    For *normally open* valves, connect the YL chassis harness wire to the second BK wire from the valve.

    For *normally closed* valves, connect the BL chassis harness wire to the second BK wire from the valve.

15. Cut either the YL or BL wire that is not being used at the plastic male connector on the control panel.

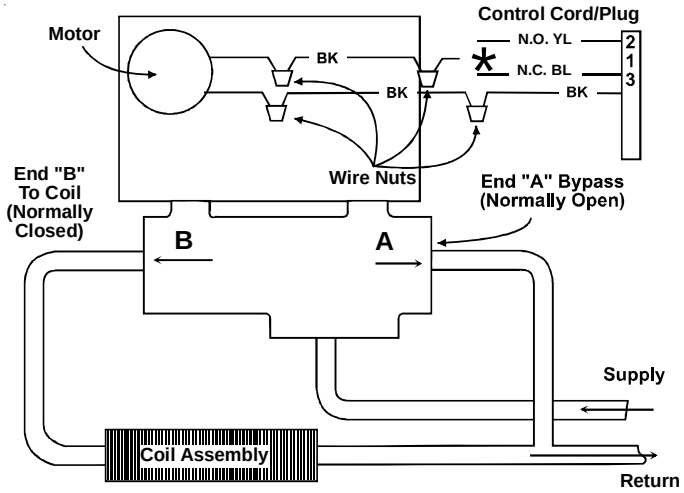
TWO-WAY VALVE INSTALLATION

When installing two-way valves, the flow direction is from end "B" as shown in Figure 15.

Prior to soldering the normally closed two-way valve, open the ports by slowly moving the manual operating lever to the retaining notch until lever is secured by valve spring. The lever will reset to the automatic position the first time the valve is energized.

THREE-WAY VALVE INSTALLATION

When installing three-way diverting valves, end "B" is the supply to coil and end "A" is the bypass end. The inlet port is unmarked. Port markings "A" and "B" are located on the bottom of the valve body (Figure 15).



*** Connect YL for Normally Open Valves.**
Connect BL for Normally Closed Valves

Figure 15

NOTE: For Erie Model VT32* (poptop), the three-way valve is only configured as N.C. to "B" port. For N.O. configuration to the coil, simply turn the valve around.

Prior to soldering the normally closed 3-way valve, open both ports by slowly moving manual operating lever to retaining notch until lever is secured by valve spring.

Flow valve and tubing is to be installed so that it does not restrict removal of the chassis from the sleeve for service.

SOLDERING THE VALVES

Solder the flow valve and other necessary components in line with the plumbing rising from the floor or wall. Do not place the components inside the hydronic top assembly (Figure 16).

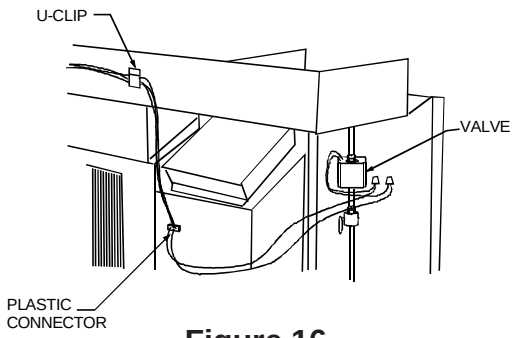


Figure 16

STEAM AND WATER PLUMBING

1. The plumbing can enter from the left and/or right side of the unit through the slots and holes that are supplied in the hydronic top assembly. (See Steam and Water Plumbing Dimensions figures.)
2. Hydronic water kits (HWK03E may have water entering either the left or right side of the coil. Hydronic steam kits (HVK03E) can only have entering steam on the right side of the coil. (See Steam and Water Plumbing Dimensions figures.)
3. Make sure all piping is plumbed to the coil and system has been bled of air. Using the existing six screws and hydronic top from Step 13, place the top cover over the coil deck assembly. Make sure the back flange of the top cover fits inside the small vertical flange in the back of the coil assembly. (Figure 17.)

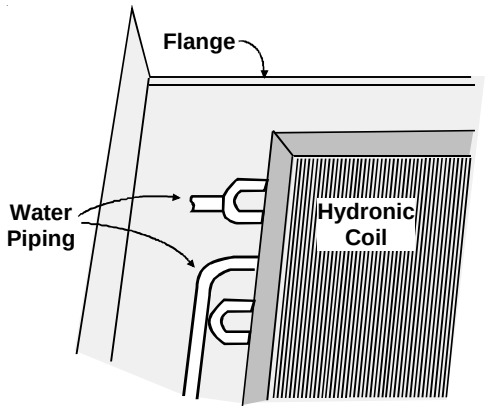


Figure 17

NOTE: A manual bleed valve is supplied with both the Hydronic Water and Hydronic Steam Kits (HWK03E and HVK03E). It is recommended that an automatic bleed valve for Hydronic Steam Kits (HVK03E) be installed. This will eliminate frequent access to the manual bleed valve for purging air from the steam system.

FINAL KIT INSTALLATION STEPS

1. Place the hydronic front on the top assembly so the flanges of the front fit tightly into the flanges of the top assembly.
2. Ensure the inlet air filter is located inside of the inlet grille and held in position with the four brackets (one on each side and two on the bottom). The inlet grille can be hinged open by unlatching the two top levers on the grille.
3. To service the unit, remove the front. Remove the four sheet metal screws that secure the unit to the wall sleeve from each of the side seal mounting brackets. If a subbase is used, remove the right side cover panel from the subbase and disconnect the power cord. The chassis may be removed for service.

NOTE: To prevent water hammering, the use of approved motorized valves and good piping practices is strongly recommended. Opening and closing motorized valves very slowly will help prevent water hammering.

CONFIGURATION SETTINGS FOR R410A

E SERIES MODEL BOARDS

The control can be configured to operate a wide range of options. The options listed below with the * are the factory default settings. If these are acceptable, then the unit does not require any additional configuration and is fully operable. To configure the unit, first select the configuration feature code setting and then an option code to change from the factory default setting.

To **enter configuration feature mode**:

1. **Press** and **hold** the up and down arrow keys at the same time and **press** the **OFF** key **twice within a two (2) second time frame**. The display will indicate - -., and then release the key and press the key one time. The display will then alternate between **C1** and **0**.

   To select a different configuration **feature code**, press the **HEAT** key until the desired configuration comes up. To scroll to a previously viewed configuration codes press the **COOL** key.

   Once you have scrolled to the correct feature, then to select the **option code** for your desired configuration, press either the up or down key to scroll through the options of the selected feature code.

To **exit configuration mode**:

1. **Press** the **OFF** key. Configuration feature mode will also exit **if no keys are pressed** for a period of **two (2) minutes**.

CONFIGURATION SETTINGS

Configuration Code	Description	Option Code	Description
C1	Interface	0*	Chassis Membrane*
		rE	Wireless Remote
		L5	Wired Thermostat
C2	Fan Operation	bP	Button present
		bA*	7-Button, reverts to Cyclic
		A	Always run fan (even in Off)
		bC	7-Button, reverts to Continuous
C3	Reverse Cycle Operation	C	Cooler Only
		H*	Heat Pump*
		0	Service No Operation "Eo"
C4	Room I.D. Digit 1 & 2	00* - 99	00* - 99
C5	Room I.D. Digit 3 & 4	00* - 99	00* - 99
C6	Wired or Wireless Occupancy	0*	Off*
		1	On
		18	18 Hour Automatic Entry
C8	Temp. Limiting Cool	60* - 72	60* - 72
C9	Temp. Limiting Heat	68 - 90, 80*	68 - 90, 80*
Cd	English / Metric Temp	F*	Fahrenheit Scale*
		C	Celsius Scale
d6	Sensorless Un-Occ. Time	1 - 32, 18*	1 - 32, 18*
d7	1st Un-Occ. Set Back Temp.	1 - 16, 2*	1 - 16, 2*
d8	1st Un-Occ. Set Back Time	.1, .5*, 1 - 24	.1 ,.5 ,1 - 24, .5*
d9	2nd Un-Occ. Set Back Temp.	1 - 16, 3*	1 - 16, 3*
dA	2nd Un-Occ. Set Back Time	.1, .5, 1* - 24	(d8) - 24, 1*
db	3rd Un-Occ. Set Back Temp.	1 - 16, 6*	1 - 16, 6*
dC	3rd Un-Occ. Set Back Time	.1, .5, 1 - 24, 3*	(dA) - 24, 3*
dF	Jace Group Code	00* - 99	00* - 99
r4	Room Prefix	00* - 99	00* - 99
r5	Room Suffix	00* - 99	00* - 99

**Indicates factory default*

See manufacturer for additional configuration options.

NOTE: If the unit will be controlled by a wireless thermostat (Goodman DS01E using DT01A antenna on the unit), the board may have to be configured to allow the wireless thermostat to operate the unit.

Enter Configuration Mode, select feature code C1 (C1) by pressing the **HEAT** HEAT button and option rE (rE) by pressing the down arrow.

NOTE: If the unit is being controlled by a wired wall thermostat, the board will have to be configured to allow the thermostat to operate the unit. To configure for a wired wall thermostat,

Enter Configuration Mode, select Feature Code C1 **(C1)** by pressing the heat button and option L5 (L5) by pressing the (down) arrow.

TO SET THE PTAC CONTROL FOR A 4-DIGIT ROOM NUMBER WIRED THERMOSTAT.

To select interface options, enter configuration mode, press the **HEAT** HEAT key until C4 (C4) appears, then press the up down arrows to select the first two digits of a four digit room number.

Press **HEAT** HEAT again until C5 (C5) appears then press the up down arrows to select the last two digits.

Steam Plumbing Dimensions

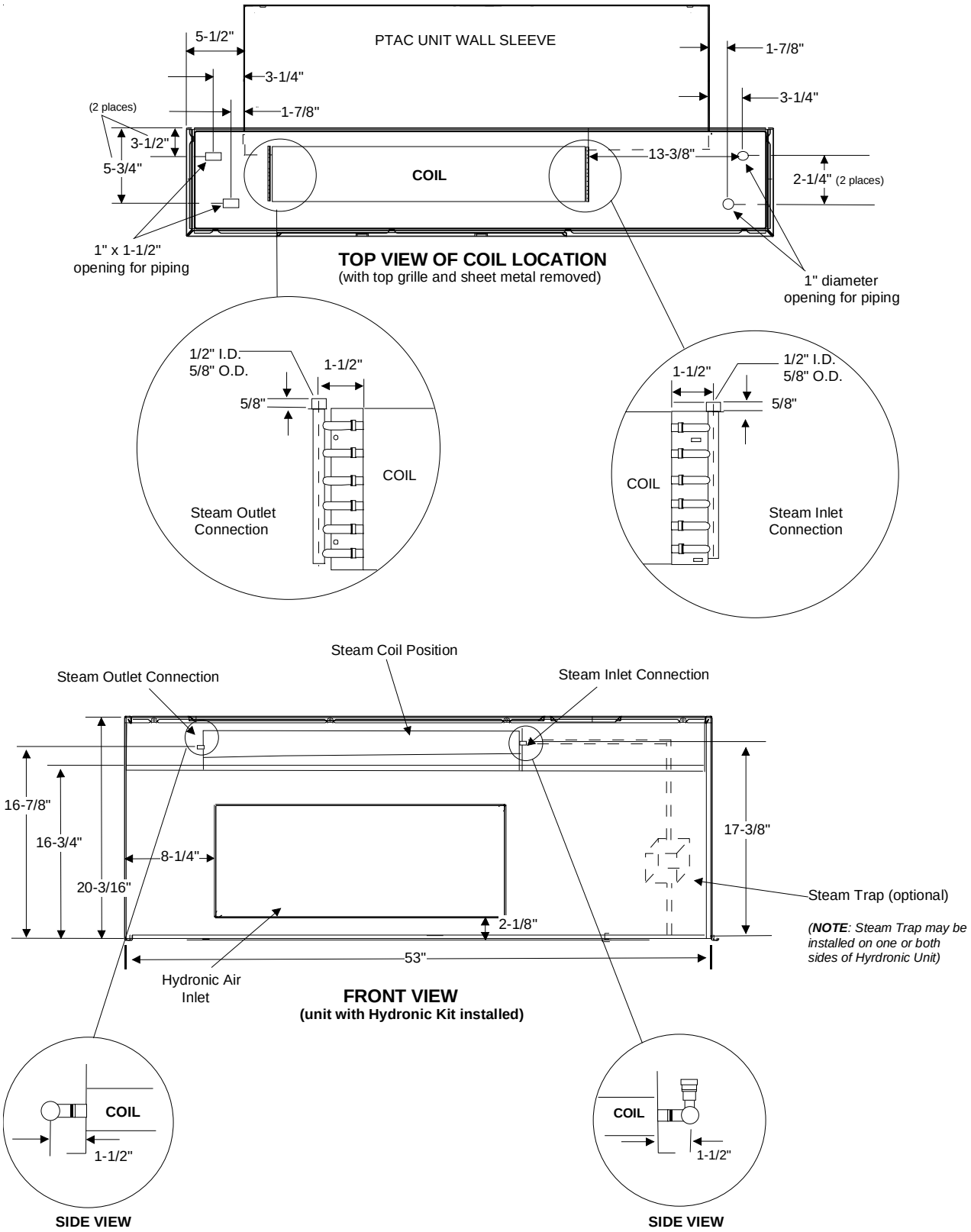


Figure 18

Hot Water Plumbing Dimensions

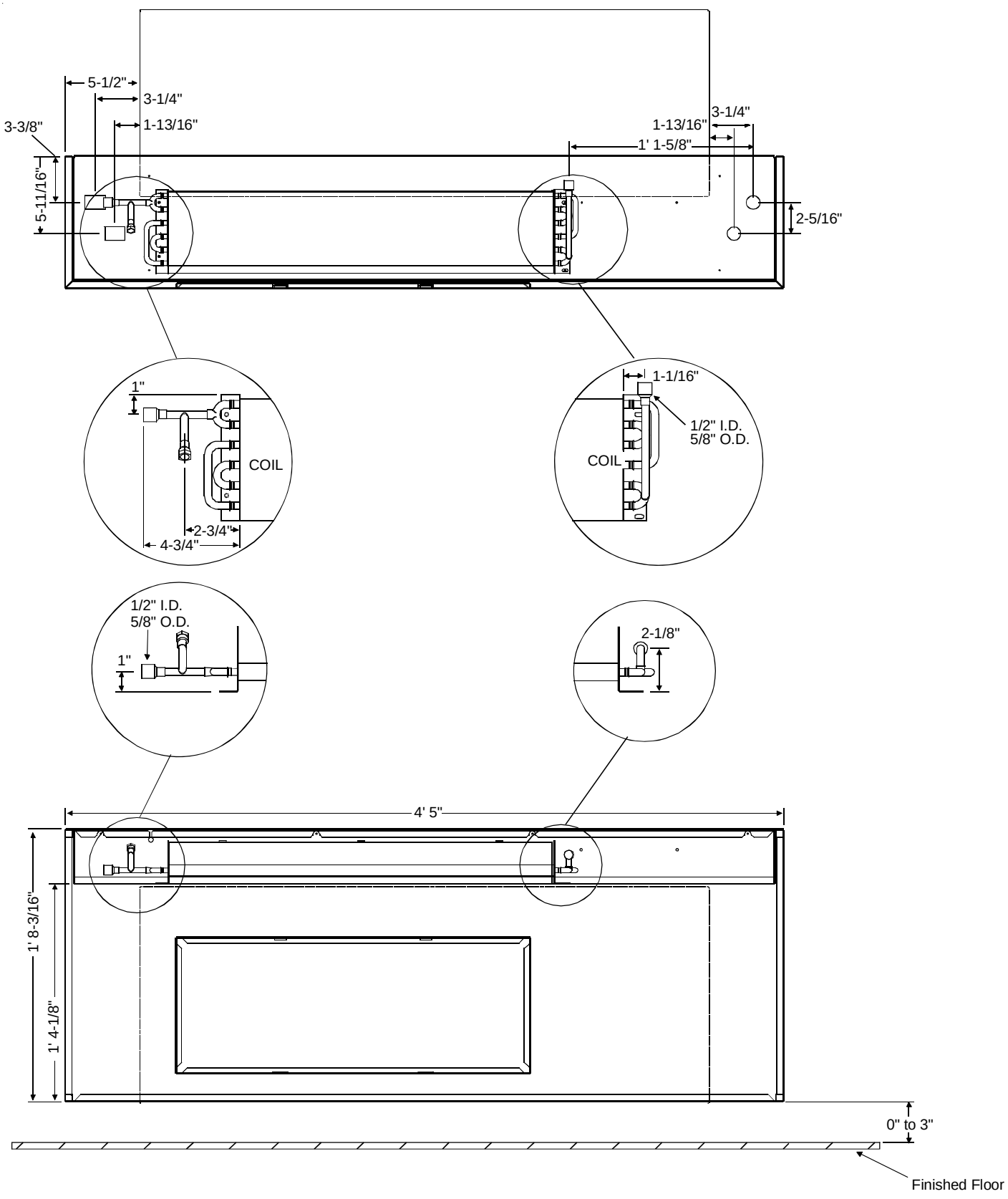


Figure 19

PTAC HYDRONIC KIT SPECIFICATIONS

Heating Capacity

Hydronic Heat Kit Application Data										
Heating Capacity (Btuh)- Hot Water										
Gal. per Min.	Pressure Drop (psig)		7000 BTUH Units				9000, 12000 & 15000 BTUH Units			
			200° F. EWT		180° F. EWT		200° F. EWT		180° F. EWT	
		2-Way	Fan Speed		Fan Speed		Fan Speed		Fan Speed	
	Coil	Valve	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
1.00	0.93	0.16	18200	16500	14900	13600	20600	19000	16900	15600
1.13	1.03	0.20	18600	16900	15200	13900	21100	19500	17300	16000
1.25	1.14	0.25	19000	17300	15500	14200	21500	19900	17600	16300
1.38	1.26	0.30	19400	17600	15900	11500	21900	20300	18000	16600
1.50	1.40	0.36	19700	18000	16200	14700	22300	20700	18300	16900
1.63	1.55	0.43	20000	18200	16400	15000	22700	20900	18600	17200
1.75	1.71	0.49	20300	18400	16600	15100	22900	21200	18800	17400
1.88	1.89	0.57	20500	18600	16800	15300	23200	21500	19000	17600
2.00	2.10	0.64	20600	18800	16900	15400	23400	21600	19200	17700
2.13	2.32	0.73	20800	18900	17100	15600	23600	21800	19400	17900
2.25	2.57	0.81	** 21000	19100	17200	15700	23800	22000	19500	18000
2.38	2.84	0.91	21100	19200	17300	15800	23900	22100	19600	18100
2.50	3.14	1.00	21200	19200	17300	15800	24000	22200	19700	18200
2.63	3.48	1.11	21200	19300	17300	15800	** 24000	22200	19700	18200
2.75	3.85	1.21	21200	19300	17400	15900	24000	22200	19700	18200

** Based on AHRI Rating Conditions of 70°F Entering Air Temp., 200°F Entering Water Temp and 180°F Leaving Water Temp. Max. Water Temp. 200°F. Max. Water Pressure - 200 Psig.

Numbers above are based on systems without antifreeze.

Hydronic Heat Kit Application Data				
Heating Capacity (Btuh) - Steam				
Steam (psig)	7000 BTUH Units		9000 to 15000 BTUH Units	
	Fan Speed		Fan Speed	
	Hi	Low	Hi	Low
2	** 22,600	20,500	** 25,400	23,100
3	23,000	20,900	25,900	23,500
4	23,200	21,100	26,100	23,800

Maximum steam pressure 5 psig

**Based on AHRI rating conditions of 70° F entering air temp. and 2 psig steam pressure

Water Valve Pressure Drop

2-Way Valve ERIE Models: 654C* VT/S22*	
Water GPM	**Pressure Drop (psig)**
1.00	0.16
1.13	0.20
1.25	0.25
1.38	0.30
1.50	0.36
1.63	0.43
1.75	0.49
1.88	0.57
2.00	0.64
2.13	0.73
2.25	0.81
2.38	0.91
2.50	1.00
2.63	1.11
2.75	1.21

CV=2.5

3-Way Valve Bypass ERIE Models: 654C*	
Water GPM	**Pressure Drop (psig)**
1.00	0.11
1.13	0.14
1.25	0.17
1.38	0.21
1.50	0.25
1.63	0.30
1.75	0.34
1.88	0.39
2.00	0.44
2.13	0.50
2.25	0.56
2.38	0.63
2.50	0.69
2.63	0.77
2.75	0.84

CV=3.0

3-Way Valve Service ERIE Models: 654C*	
Water GPM	**Pressure Drop (psig)**
1.00	0.04
1.13	0.05
1.25	0.06
1.38	0.08
1.50	0.09
1.63	0.11
1.75	0.12
1.88	0.14
2.00	0.16
2.13	0.18
2.25	0.20
2.38	0.23
2.50	0.25
2.63	0.28
2.75	0.30

CV=5.0

3-Way Valve Bypass and Service ERIE Models: VT32*	
Water GPM	**Pressure Drop (psig)**
1.00	0.06
1.13	0.08
1.25	0.10
1.38	0.12
1.50	0.14
1.63	0.17
1.75	0.19
1.88	0.22
2.00	0.25
2.13	0.28
2.25	0.32
2.38	0.35
2.50	0.39
2.63	0.43
2.75	0.47

CV=4.0

$$Q = CV\sqrt{Pd}$$

Q = Flow in Gallons/Min

CV = Flow Coefficient of Valve

Pd = Pressure Drop (psig)

Dimensions of Complete Installation

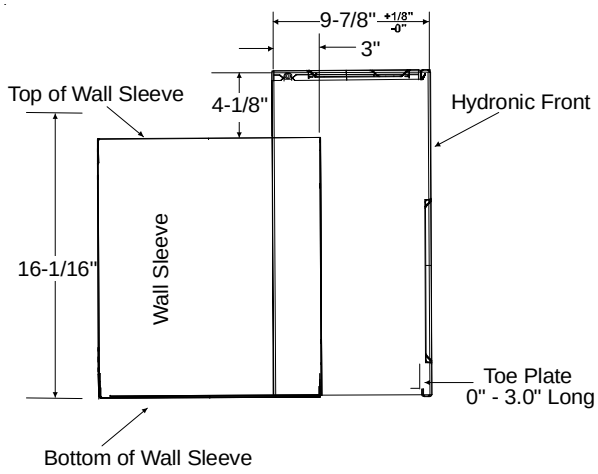


Figure 20
Side View

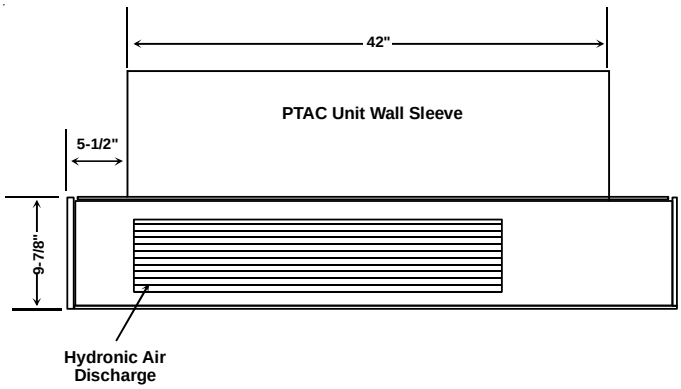


Figure 21
Top View

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