

# RETROAIRE

*The Right Fit for Comfort*

ECR International LLC  
5780 Success Drive  
Rome, NY 13440  
e-mail: [info@RetroAire.com](mailto:info@RetroAire.com)



innovative living™

An ISO 9001-2000 Certified Company

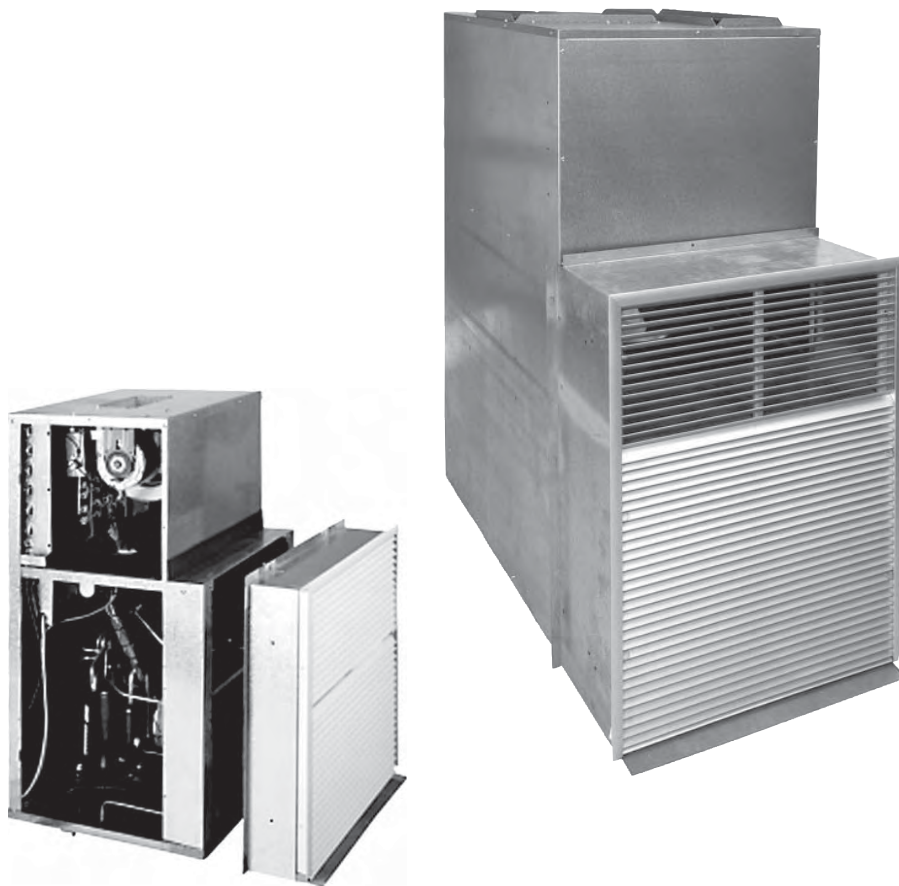
# VPRC / VPRH

Single Package Vertical Air Conditioner/Heat Pump

Straight cool/Limited Range Heat pump nominal capacities

9,000	12,000	18,000	19,000	24,000	30,000	36,000	Btuh
2.6	3.5	5.3	5.6	7.0	8.8	10.5	kW

## Specifications and Performance



### NOTICE

The VPRC/VPRH is backed by EMI and ECR International and is tested and rated in accordance with ARI Standard 390, UL-484 and UL-1995. Due to ongoing product development, product designs and specifications may change without notice. Please contact the factory for more information.

P/N 240007449, Rev. J [4/19/2010]

### General Product Information

#### Product description

The VPRC/VPRH 09–36 single package vertical air conditioner (SPVAC) and heat pump (SPVHP) creates new options in layout and space utilization. The VPRC/VPRH 09–36 offers low cost operation and quiet, comfortable air distribution, especially when used in multi-room suites, apartments, health care facilities, and homes.

Each system utilizes environmentally-friendly R-410A refrigerant, and is supplied with a custom wall sleeve and outdoor louver. The cabinet is constructed with 20 gauge galvanized steel with a G-90U corrosion-resistant rating. The insulated top-discharge indoor compartment provides quiet, ducted, conditioned air delivery to other room location(s).

Framed into a concealed closet enclosure for low operating sound levels, the VPRC/VPRH vertical discharge allows ducting to the top of the room(s) for superior air circulation and distribution.

All VPRC/VPRH models can be applied in non-ducted return air applications. The VPRC/VPRH 30-36 can also be applied in ducted return air applications.

The VPRC/VPRH offers an economic benefit when used in a multi-room suite by supplying conditioned air to more than one room without the need to install additional units. This is also a design advantage since other rooms will not need an exterior wall to accommodate additional units.

VPRH models are limited-range heat pumps — heat pump operation will cease at approximately 40°F (4.4°C) outdoor temperature. Utilizing the electric resistant heat option or the hydronic heat option is recommended if the heating load of the application will require the unit to operate in outdoor ambient temperatures below 40°F (4.4°C).

#### Standard controls and components:

- Cooling or heat pump chassis with high efficiency rotary, scroll or reciprocating type compressors
- Custom wall sleeve
- Anodized aluminum outdoor louver for indoor field installation (optional colors available)
- R-410A refrigerant
- Ability to utilize single or 2-stage thermostat for VPRH emergency heat
- Front-mounted control box standard for 09–36 (right or left-side mounting available for 09–24 only)
- Manual fresh air damper for models 09–24 — motorized fresh air damper for models 30–36
- Filter — disposable return air filter for models 09–24 only, and a washable, reusable return air filter for models 30–36 only
- Thermostatic drain pan valve for heat pump operation condensate removal (VPRH 09, 12, 19–24 only)
- **Air systems**
  - Motors are thermally protected PSC type. Air stream surfaces are insulated with 1/4 inch (6.3 mm) fiberglass or 1/8 inch (3.2 mm) Volara™.
  - The indoor fan is a forward-curved type directly mounted to the motor shaft.
  - Models VPRC/VPRH 09, 12, 19 & 24 blow air across the

outdoor coil, while models VPRC/VPRH 18, 30 & 36 draw air through the outdoor coil.

- **Condensate removal**
  - VPRC/VPRH 09, 12, 19 & 24 — The outdoor blower incorporates a condensate slinger ring. Base pans are designed to accommodate a field-installed drain stub kit if necessary. See field installed accessories.
  - VPRC/VPRH 18, 30 & 36 require an internal drain system. Models VPRC/VPRH 18 are supplied standard with an overflow drain stub kit for field installation.
  - VPRC/VPRH 30-36 outdoor coil side drain stub is integral to the base pan, and allows easy connection of the drain line.
- **Microprocessor control board**
  - Universal control board is used in straight cool electric resistance heat, hydronic heat (models 09–24 only), or cooling/heat pump applications
  - Random start timer prevents multiple units from simultaneous start-ups
  - Fan purge — fan remains on for 60 seconds after heat/cool call is satisfied
  - Anti-short-cycle compressor protection prevents the compressor from rapid cycling
  - Freeze protection — prevents evaporator coil freeze up, improving compressor reliability
  - Low ambient lockout prevents compressor operation in outdoor temperatures less than 40°F (4.4°C)
  - Test operation — all timers are temporarily suppressed to allow ease of testing or troubleshooting
  - Control board LED provides self-diagnostic troubleshooting codes (see Sequence of Operation, page 9)

#### Factory-installed options:

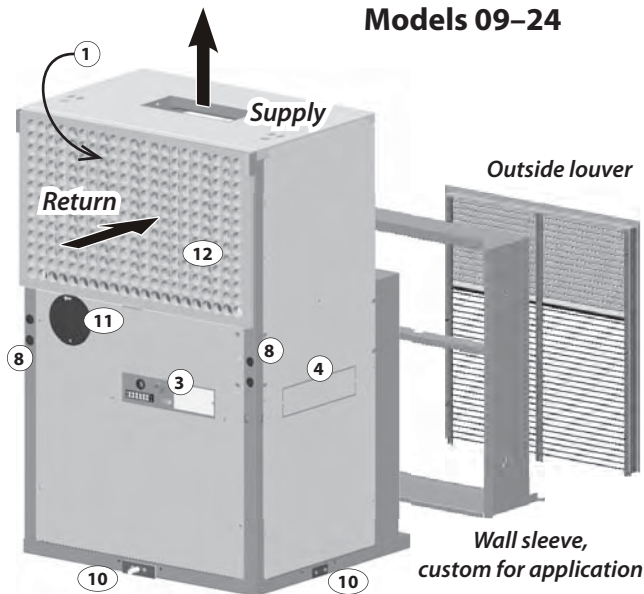
- Supplemental electric heat — see heat options in Figure 1
- 265/277V (contact factory for availability)
- Corrosion-resistant coil options (sea coast and harsh environment usage):
  - Coated aluminum fin/copper tube condenser coil
- Models 09–18 only — 10-inch diameter (254 mm) factory-installed duct collar
- Models 09–12 only — Carrier Model 50QT/ET replacement configuration
- Models 09–24 only — Right or left control box mounting
- Models 09–24 only — Hydronic heat option
- Models 09–24 only — Power disconnect switch — ONLY to a maximum of 5kW electric heat, or hydronic heat

#### Field-installed accessories:

- Hydronic heat plenum (coil included on models 09–24 only)
- Remote wall thermostat (digital 1-stage or 2-stage available)
- Painted condenser louver — (baked enamel/Kynar)
- Return air access panel (standard white, consult factory for custom colors — w/disposable return air filters) — optional solid panel available for application with separate air intake
- Models 09, 12, 19–24 only — Overflow drain stub kit — can be installed on front, right side or left side.
- Wall sleeve transition kit Model 30 only - Needed when installing a VPRC/VPRH 30 in place of a VPAC/VPHP 30. (See Pgs. 27 & 28)

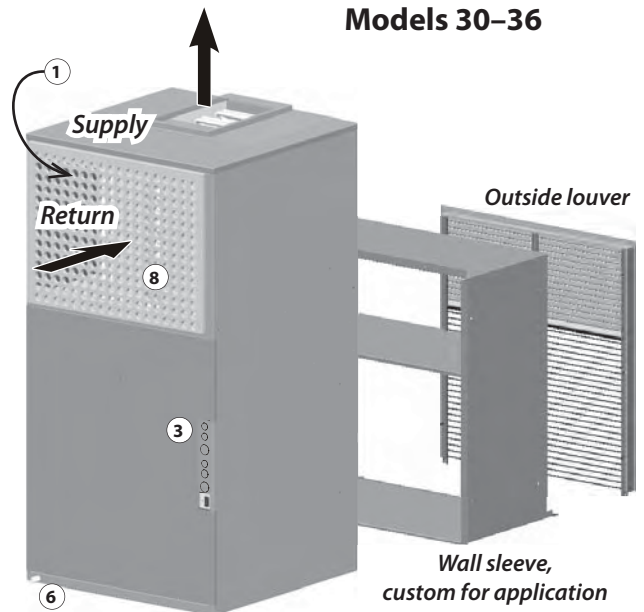
### General Product Information *(continued)*

#### Models 09–24



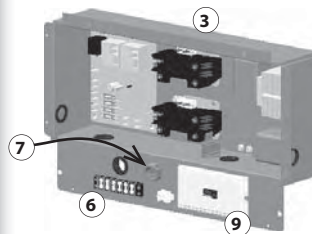
Front — 09, 12, 18, 19, 24

#### Models 30–36



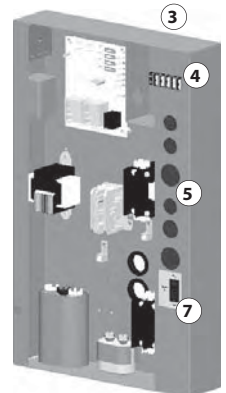
Front — 30, 36

- 1 Indoor coil (behind filter)
- 2 Outdoor coil
- 3 Control/power box
- 4 Alternate control box location (right or left side)
- 5 Thermostatic drain valve (09, 12, 19 and 24 only)
- 6 24-volt connection strip
- 7 Power cord strain relief (for units with power cords)
- 8 Line voltage power entrances (for hard-wired units)
- 9 Optional disconnect switch
- 10 Drain stub location options (front, right or left side) — ½"
- 11 Fresh air shutter
- 12 Return air filter (see Table 2, page 7 for dimensions)

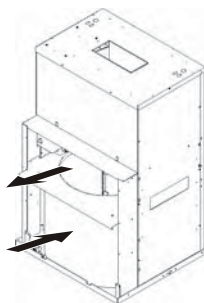


Control panel, typical  
09–24

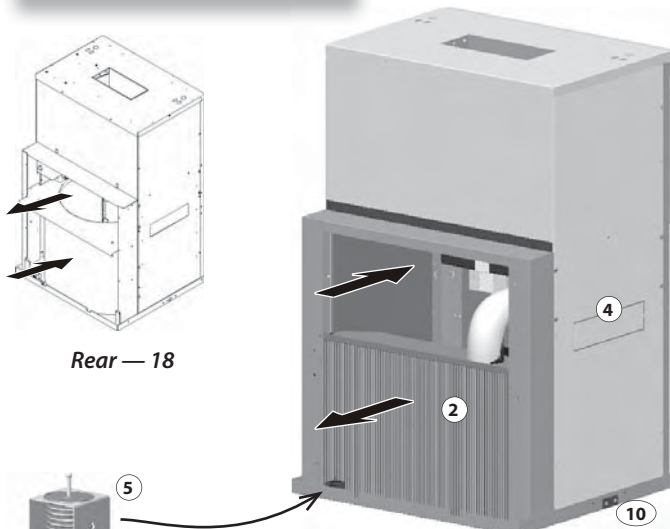
- 1 Indoor coil (behind filter)
- 2 Outdoor coil
- 3 Control/power box
- 4 24-volt connection strip
- 5 Line voltage power entrances
- 6 Drain stub location — ¾"
- 7 Motorized fresh air damper switch
- 8 Return air filter (see Table 2, page 7 for dimensions)



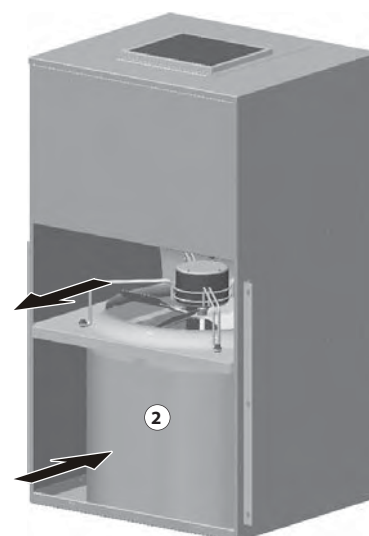
Control panel, typical  
30, 36



Rear — 18



Rear — 09, 12, 19, 24



Rear — 30, 36

### General Product Information *(continued)*

**Figure 1** Model nomenclature

Position:	1, 2, 3, 4	5, 6	7	8	9	10	11	12	13	14	15
Example:	V P R C	1 2	D	5	1	B	A	B	T	0	A

**Product Series:**

VPRC - Straight Cool Unit  
VPRH - Heat Pump Unit

**Cooling Capacity (Btuh):**

09 - 9,000      24 - 24,000  
12 - 12,000    30 - 30,000  
18 - 17,000    36 - 36,000  
19 - 18,000

**Voltage Option:**

D - 208/230 - 1 - 60  
E - 265/277 - 1 - 60

**Heat Options (230 Volts):**

0 - No Heat (09-36)  
3 - 3kW Elect Heat (09-24 Btuh)  
4 - 4kW Elect Heat (09-24 Btuh)  
5 - 5kW Elect Heat (09-36 Btuh)  
7 - 7kW Elect Heat (19-36 Btuh)  
1 - 10kW Elect Heat (19-36 Btuh)  
A - 15kW Elect Heat (36 Btuh)  
8 - Hydronic Coil (09-24 Btuh)

**Controls Options:**

1 - Remote, Front Control Access  
2 - Remote, Right Control Access  
3 - Remote, Left Control Access  
4 - Remote, Front Control, Disconnect Switch (2-5kW 09-24 Btuh Only)  
5 - Remote, Right Control, Disconnect Switch (2-5kW 09-24 Btuh Only)  
6 - Remote, Left Control, Disconnect Switch (2-5kW 09-24 Btuh Only)

**Design Revision:**

A - Revision Level

**Compressor Code:**

0 - Standard  
A - Z Special Option

**Compressor Code:**

T - Rotary (09-12 Btuh Only)  
C - Recip (18, 24, 30, 36 Btuh Only)  
S - Scroll (19 Btuh Only)

**Condenser Coil Option and Filter:**

B - Factory Installed Filter  
C - Coated Coil and Factory Installed Filter

**Options:**

A - NON - Hydronic models  
B - Right Hand Piping with Sweat Connections  
C - Left Hand Piping with Sweat Connections  
D - Front Hand Piping with Sweat Connections  
E - Right Hand Piping with Ball Valves and P/T Ports  
F - Left Hand Piping with Ball Valves and P/T Ports  
G - Front Hand Piping with Ball Valves and P/T Ports  
H - Right Hand Piping with Auto Valves  
J - Left Hand Piping HYD with Auto Valves  
K - Front Hand Piping HYD with Auto Valves

**Options:**

A - 10" Round Duct Collar  
B - Standard  
C - 50QT Option



### Operational Performance Data

Tested/Rated  
in Accordance with  
ARI Standard 390



#### IMPORTANT

Performance data is subject to change without notice. For the most current unit/system performance data, please refer to the Enviromaster International listing of certified products in the ARI certified directory, at [www.ahridirectory.org](http://www.ahridirectory.org).

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

**Table 1** VPRC/VPRH 09–36 performance data

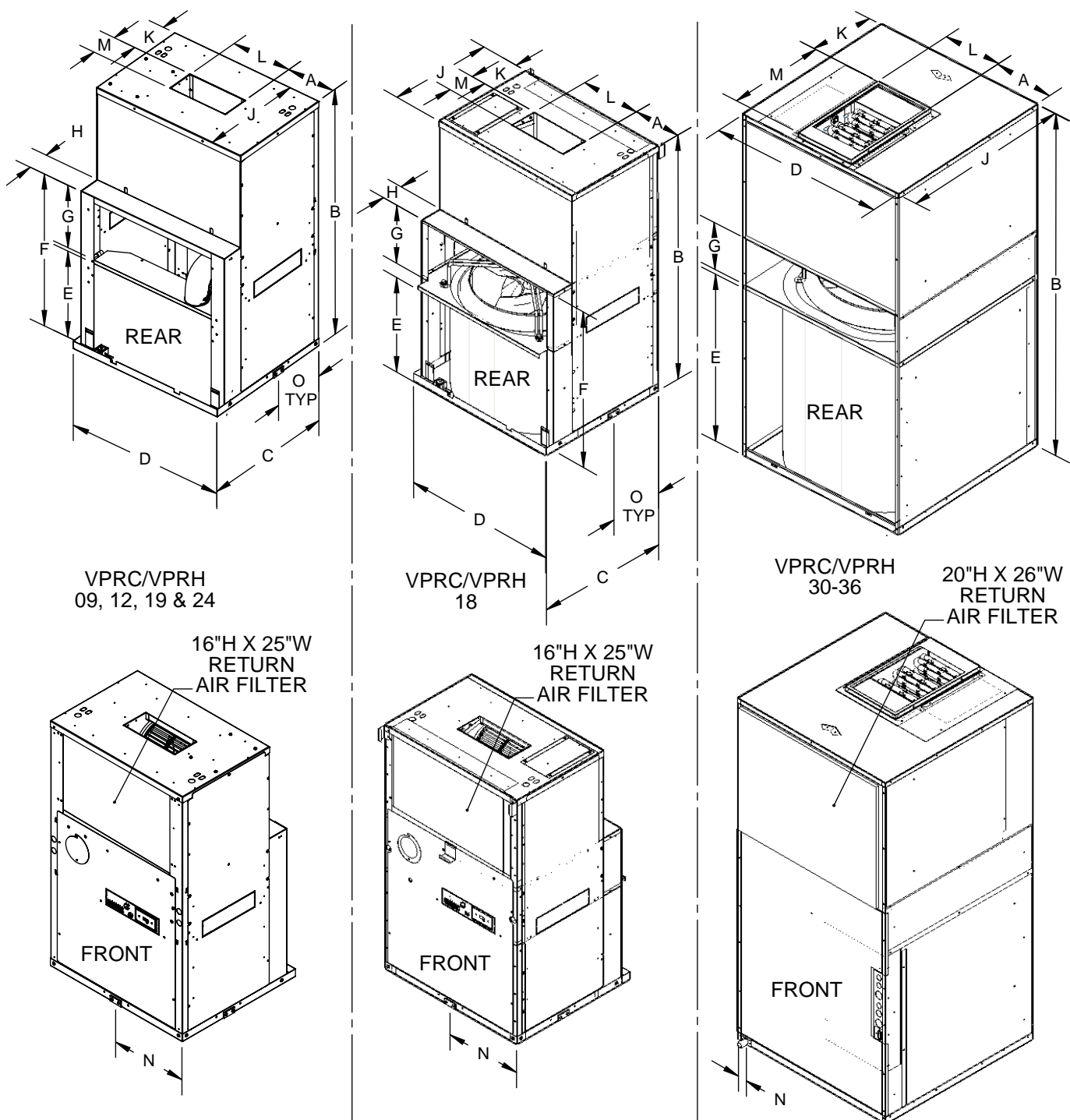
Model	Cooling Btuh (kW)	Sensible Heat Ratio	EER	Heat Pump Btuh (kW)	COP	Air Flow vs External Static Pressure			Fresh Air Inlet Flow	Outdoor Sound Level
						Static Pressure				
						0.10 <i>in. w.c.</i> (2.5 mm w.c.)	0.20 <i>in. w.c.</i> (5.1 mm w.c.)	0.30 <i>in. w.c.</i> (7.6 mm w.c.)		
						CFM (L/s)	CFM (L/s)	CFM (L/s)		
VPRC09	9,000 (2.64)	0.75	9.0	N/A	N/A	330 (156)	300 (142)	250 (118)	30	65
VPRH09	9,000 (2.64)	0.75	9.0	9,000 (2.64)	3.0	330 (156)	300 (142)	250 (118)		
VPRC12	12,000 (3.51)	0.70	9.0	N/A	N/A	440 (208)	385 (182)	350 (165)	35	75
VPRH12	12,000 (3.51)	0.70	9.0	11,400 (3.34)	3.0	440 (208)	385 (182)	350 (165)		
VPRC18	17,200 (5.04)	0.71	9.0	N/A	N/A	600 (283)	550 (260)	500 (236)	40	71
VPRH18	17,200 (5.04)	0.71	9.0	16,200 (4.75)	3.0	600 (283)	550 (260)	500 (236)		
VPRC19	18,400 (5.39)	0.73	9.0	N/A	N/A	710 (335)	650 (307)	600 (283)	50	69
VPRH19	18,400 (5.39)	0.73	9.0	16,400 (4.81)	3.0	710 (335)	650 (307)	600 (283)		
VPRC24	23,200 (6.80)	0.73	9.0	N/A	N/A	710 (335)	650 (307)	600 (283)	60	70
VPRH24	23,200 (6.80)	0.73	9.0	21,600 (6.33)	3.0	710 (335)	650 (307)	600 (283)		
VPRC30	31,600 (9.26)	0.69	9.0	N/A	N/A	1,190 (562)	1,170 (552)	1,130 (533)	95	69
VPRH30	31,600 (9.26)	0.69	9.0	32,000 (9.38)	3.0	1,190 (562)	1,170 (552)	1,130 (533)		
VPRC36	35,600 (10.43)	0.73	9.0	N/A	N/A	1,350 (637)	1,290 (609)	1,210 (571)	95	69
VPRH36	35,600 (10.43)	0.73	9.0	36,000 (10.55)	3.0	1,350 (637)	1,290 (609)	1,210 (571)		

### Dimensional Data

#### IMPORTANT

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

**Figure 2** VPRC/VPRH dimensions — inches (mm)



### Dimensional/Physical Data *(continued)*

#### IMPORTANT

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

**Table 2** Dimensions, shipping weights and return air filter sizes

Dimension	Model				
	09-12 in. (mm)	18 in. (mm)	19-24 in. (mm)	30 in. (mm)	36 in. (mm)
<b>A</b>	75/8 (194)	73/4 (197)	61/2 (165)	83/4 (222)	83/4 (222)
<b>B</b>	40 (1016)	40 (1016)	50 (1270)	56 (1422)	56 (1422)
<b>C</b>	21 7/16 (545)	21 7/16 (545)	26 7/16 (672)		
<b>D</b>	25 (635)	25 (635)	25 (635)	28 (711)	28 (711)
<b>E</b>	145/8 (372)	14 13/16 (376)	205/8 (524)	21 3/4 (553)	21 3/4 (553)
<b>F</b>	25 (635)	24 5/8 (625)	32 (813)		
<b>G</b>	105/16 (261)	9 13/16 (249)	11 3/8 (289)	6 1/4 (159)	6 1/4 (159)
<b>H</b>	3 1/2 (89)	3 1/2 (89)	3 1/2 (89)		
<b>J</b>	16 1/2 (419)	16 1/2 (419)	21 9/16 (548)	28 (711)	28 (711)
<b>K</b>	6 1/8 (156)	6 1/8 (156)	83/16 (208)	11 1/4 (286)	11 1/4 (286)
<b>L</b>	95/8 (245)	9 1/2 (241)	12 (305)	10 1/4 (260)	10 1/4 (260)
<b>M</b>	4 1/4 (108)	4 1/4 (108)	10 3/8 (264)	16 (406)	16 (406)
<b>N</b>	12 1/2 (317)	12 1/2 (317)	12 1/2 (317)	1 5/8 (41)	1 5/8 (41)
<b>O</b>	8 3/4 (222)	8 3/4 (222)	13 3/4 (348)		

Model	Shipping weight — pounds (kg) (shipping weight = unit weight + 60 lbs (27 kg))	Return air filter dimensions — inches (mm) All models must have an air filter installed prior to operation.	
		Chassis mounted	Return air access panel mounted
<b>09</b>	190 (86)	16 x 25 (406 x 635)	20 x 20 (508 x 508)
<b>12</b>	190 (86)	16 x 25 (406 x 635)	20 x 20 (508 x 508)
<b>18</b>	260 (118)	16 x 25 (406 x 635)	20 x 20 (508 x 508)
<b>19</b>	300 (136)	16 x 25 (406 x 635)	20 x 30 (508 x 762)
<b>24</b>	300 (136)	16 x 25 (406 x 635)	20 x 30 (508 x 762)
<b>30</b>	430 (195)	20 x 26 (508 x 660)	20 x 30 (508 x 762)
<b>36</b>	430 (195)	20 x 26 (508 x 660)	20 x 30 (508 x 762)

### Features

#### Hydronic heat operation *(optional)*

An optional factory-supplied, field-installed hydronic heat package is available. With the thermostat system switch set to heat and the setpoint temperature above room temperature, the hydronic valve will open allowing water to flow through the coil. The indoor fan will also switch on and warm air will flow from the unit. Heating will continue as long as the setpoint remains above room temperature. Place the setpoint temperature below room temperature. The hydronic valve will close and indoor fan will switch off after the sixty-second purge time has elapsed. The hydronic valve is a 24vac normally open valve. Should power be lost to the unit, the valve will default to the open position.

The hydronic package is equipped with a thermostat (freeze-stat) that is designed to prevent the hydronic coil from freezing. At 35°F (1.7°C) the thermostat will switch open the hot water valve to prevent the coil from freezing. At 50°F (10°C) the thermostat will reset. If the room thermostat is not calling for heat, the valve will close. The freeze stat is factory preset.

#### Coil freeze protection *(standard)*

This feature prevents the coil from freeze up in the cooling mode. Coil freeze up can occur due to a dirty air filter, low refrigerant charge or low room or outdoor temperatures. This in turn can cause compressor damage. Should a freeze condition be detected, the compressor and condenser fan will be switched off for a minimum of three minutes and until the freeze condition is satisfied. During this time the indoor fan will continue to run to aid in the defrost process.

#### Thermostatic drain valve

*(standard — VPRH 09, 12, 19 & 24 only)*

Heat pump units are equipped with a thermostatic drain valve that will open when outdoor temperatures fall below 50°F (10°C). This keeps the base pan free of condensate water where it may otherwise freeze during colder outdoor temperatures.

#### Emergency heat *(optional)*

##### NOTE

##### VPRH units

ECR International recommends using a factory-supplied, field-installed **two-stage thermostat with heat pump units (VPRH)** equipped with electric resistance heat option. In the event of heat pump system failure, the two-stage thermostat will automatically switch the unit's control from heat pump mode to electric heat mode.

**If a single-stage thermostat is used** and the heat pump system fails, it is possible to manually force the control board into electric heat mode.

##### VPRC units

Use a single-stage heat/cool thermostat, available as a factory option.

#### Anti-short-cycle timer *(standard)*

This feature prevents compressor short cycling. It also prevents multiple units from starting simultaneously after a power outage. This delay-on-break feature ensures that the compressor remains off between cycles until the three-minute time delay period has elapsed, allowing system pressures to equalize before restarting.

#### Random start timer *(standard)*

The random start feature, initiated after a power failure, will add a random time delay (from 5 to 120 seconds) to the three-minute anti short cycle time following a power outage. This will stagger the starting of multiple units in a single facility allowing a building to slowly go back on line when power is restored.

#### Carrier 50QT/ET replacement *(optional)*

The VPRC/VPRH 09–18 can be used to replace the Carrier 50QT/ET series PTAC and older vertical PTAC's from other manufacturers. Refer to Figure 1 on page 4 "Options" when ordering a Carrier 50QT/ET replacement. Model 18 can be field-modified with a simple extension of the outdoor air baffle. Consult your ECR International sales representative for more information.



### Sequence of Operation

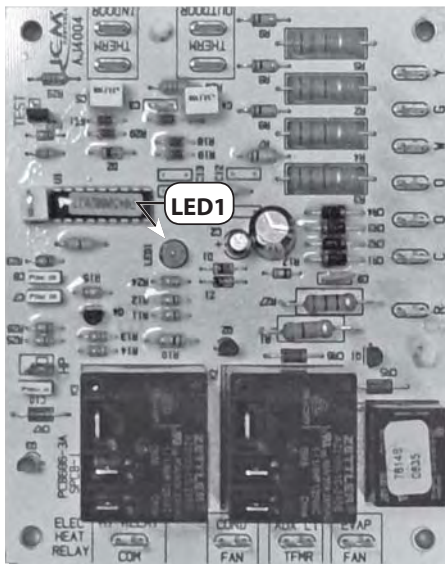
#### Initial power-up or power restoration

When power is applied to the unit, either for the first time or after a power failure, the board will initialize itself. During the initialization, LED1 will be lit continuously for approximately 5 seconds.

Following initialization, a random-start timer is initiated. This timer adds a randomly selected 5-120 seconds to the start-up sequence, reducing the possibility of multiple units starting at the same time.

Once the random start timer has expired, a 180-second anti-short-cycle timer is initiated. LED1 blinks a two-flash code. (The anti-short-cycle timer prevents the compressor from rapid cycling.) After the anti-short-cycle timer expires, LED1 blinks a one-blink code, indicating normal operation.

**Figure 3** Indicator LED1



#### Fan operation

Some thermostats are equipped with an auto/on fan switch.

- When this switch is placed in the on position the indoor fan will run continuous.
- When the switch is in the auto position the indoor fan will cycle with the call for heating or cooling.
- **Fan purge** (auto mode only) — after the room thermostat has been satisfied, the purge feature allows the indoor fan to remain on for an additional 60 seconds. This increases efficiency by pulling the remaining energy from the unit.

#### Cooling operation

If the room temperature is above the thermostat setting, the reversing valve (VPRH only) will be energized. The compressor and outdoor fan will start provided the Anti-Short Cycle Timer has timed out from the initial power-up, power restoration or a previous compressor on cycle. Operation will continue until the room temperature satisfies the thermostat. Once the room temperature falls below the set point by 3 °F (2 °C), the compressor, outdoor fan motor and reversing valve (VPRH only) will de-energize.

As soon as the compressor is de-energized, the anti-short-cycle timer will be initialized and will prevent the compressor from starting again for another 180 seconds. While the anti-short-cycle timer is active, the LED1 is set to blink a two-flash code. After the anti-short-cycle timer expires, the LED1 is set to blink a one-blink code, indicating normal operation.

#### Mechanical heating (VPRH only)

If the outdoor coil temperature remains above 25 °F (-4 °C), the compressor and outdoor fan will start provided the anti-short-cycle timer has timed out from the initial power-up, power restoration or a previous compressor on cycle. Operation will continue until the room temperature satisfies the thermostat.

Once the room temperature rises above the set point by 3 °F (2 °C), the compressor and outdoor fan motor will de-energize.

As soon as the compressor is de-energized, the anti-short-cycle timer will be initialized and will prevent the compressor from starting again for another 180 seconds. While the anti-short-cycle timer is active, LED1 blinks a two-flash code. After the anti-short-cycle timer expires, LED1 flashes a one-blink code, indicating normal operation.

#### Auxiliary heating

If the outdoor coil temperature falls to 25 °F (-4 °C) or below for 180 seconds at anytime during a heating call, the compressor and outdoor fan motor will be de-energized and auxiliary heat will be energized. The anti-short-cycle timer will be initiated, prohibiting compressor operation for 180 seconds. LED1 will flash a three-blink code, indicating auxiliary heat operation. Heating operation with auxiliary heat will continue until the outdoor coil sensor reaches 50 °F (10 °C).

#### Hydronic heating

With a call for heat, a signal from the processor board will activate the water or steam valve and the indoor fan. The signal to the water or steam valve will continue until the room temperature rises above the set point by 3 °F (2 °C).

### Electrical Connections

#### Electrical connections

All field wiring must be done in accordance with the National Electrical Code, ANSI/NFPA 70—latest edition, and local codes (in Canada — CSA C22.1 Canadian Electrical Code Part 1 and local codes).

Check the VPRC/VPRH ratings. The installer is responsible for ensuring that VPRC/VPRH units are installed in accordance with all applicable national and local codes. Check the rating plate for circuit ampacity. Size the breaker(s) or fuse size(s) accordingly.

- Use only HACR type breakers or time delay fuses.
- Select the proper wire for the breaker or fuse size used.
- Some units require more than one power supply.
- If a plug and receptacle are used, check for proper fit.
- Check the nameplate and wiring diagram for further instructions and wire connections.
- Each unit is equipped for a 24v wall thermostat connection.

#### NOTICE

VPRC/VPRH units are wired for 230v primary voltage from the factory. The transformer must be rewired by the installer if the jobsite voltage is 208v.

#### Power cord with integral safety protection

All VPRC/VPRH units that are cord connected to the power supply are equipped with a power cord with an integral sensor that:

- Provides personal shock protection.
- Provides arcing and fire prevention.
- Senses any damage in the line cord and disconnects power before a fire can occur.

Tested in accordance with Underwriters Laboratories, the cord set also offers a unique “passive” operation, meaning the unit does not require resetting if main power is interrupted.

#### Disconnect switch (optional)

The disconnect switch ensures that all power to the control box is disconnected for servicing.

#### Choosing a thermostat

ECR International offers your choice of a single-stage or two-stage mercury-free thermostat that is compatible with all models of the VPRC/VPRH. (Use a two-stage thermostat for VPRH units equipped with the electric heat option.)

- RetroAire™ thermostats have digital readout with a temperature control range from 45°F (7°C) to 90°F (32°C).
- When using a thermostat other than one offered by ECR International, use ONLY a 24v heat/cool thermostat.

#### Cooling-only with electric or hydronic heat (VPRC only)

- Select a thermostat that is compatible with a cooling/electric heat system.
- The thermostat should have “R”, “Y”, “W” and “G” terminals.

#### Heat pump with electric heat (VPRH only)

##### Single-stage thermostat

Select a thermostat that is compatible with a cooling/single stage heat/heat pump system.

- The thermostat should have “R”, “Y”, “O” and “G” terminals. RetroAire™ units are single stage heating only.
- The electric heat and heat pump will not operate simultaneously.

##### Two-stage thermostat

A two-stage heat pump thermostat can be used with VPRH units.

- See the wiring diagram for connections.
- VPRH units are designed to operate as single stage heat pumps — they will alternate between heat pump and electric heat to meet the heat demand.

### Electrical Specifications

















#### NOTICE

All field wiring must be done in accordance with the National Electrical Code, ANSI/NFPA 70—latest edition, and local codes (in Canada — CSA C22.1 Canadian Electrical Code Part 1 and local codes).

**Table 4** Legend for electrical specifications

<b>FLA</b>	Full Load Amps	<b>Min</b>	Minimum
<b>H-WIRE</b>	Hard Wired	<b>MOCP</b>	Maximum Overcurrent Protection Device Amps (HACR-type breakers or time-delay fuses)
<b>HA</b>	Heater Amps	<b>OFM</b>	Outdoor Fan Motor
<b>Hp</b>	Horse Power	<b>RLA</b>	Rated Load Amps
<b>Htr #</b>	Heater Option Number (see Figure 1)	<b>TCA</b>	Total Cooling Amps
<b>IFM</b>	Indoor Fan Motor	<b>THA</b>	Total Heating Amps
<b>LRA</b>	Locked Rotor Amps	<b>Volt</b>	Voltage
<b>Max</b>	Maximum	<b>W</b>	Watts
<b>MCA</b>	Maximum Circuit Ampacity		

**Table 3** NEMA Specifications Non-Locking/Receptacles

VOLTAGE	125V		250V			265V		
	15(A)	20(A)	15(A)	20(A)	30(A)	15(A)	20(A)	30(A)
PLUG	 5-15 P	 5-20 P	 6-15 P	 6-20 P	 6-30 P	 7-15 P	 7-20 P	 7-30 P
RECEPTACLE	 5-15 R	 5-20 R	 6-15 R	 6-20 R	 6-30 R	 7-15 R	 7-20 R	 7-30 R

#### IMPORTANT

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

### Electrical Specifications *(continued)*

**Table 5 VPRC/VPRH 9,000 BTU electrical specifications**

Power Supply Volt — 1–60		Compressor		Indoor Fan Motor		Outdoor Fan Motor		Electric Heat				Unit Electrical Ratings													
Volt	Min	RLA	LRA	FLA	Hp	FLA	Hp	Htr #	Volt	W	HA	TCA	THA	MCA	MOCP	Plug									
208/ 230V	197	3.9	20	0.80	0.07	0.72	0.125	0 or 8	208	N/A	N/A	5.42	0.8*	6.4	15	6–15P									
									230	N/A	N/A														
								3	208	2454	11.8		12.6	15.7	20	6–20P									
									230	3000	13.0														
								4	280	3271	15.7		16.5	20.7	25	6–30P									
									230	4000	17.4														
								5	208	4089	19.7		20.5	25.6	30	6–30P									
									230	5000	21.7														
								265V	240	3.9	18.8		0.56	0.07	1.2	0.125	0 or 8	265	N/A	N/A	5.08	0.56	7.56	15	H- WIRE
																		277	N/A	N/A					
2	265	2655	10.0	10.58	13.2	15																			
	277	2901	10.5																						
3	265	3752	14.2	11.03	13.8	15																			
	277	4100	14.8																						
4	265	4576	17.3	14.72	18.4	20																			
	277	5000	18.1																						
0 or 8	265	3752	14.2	15.36	19.2	20																			
	277	4100	14.8																						
4	265	4576	17.3	17.83	22.3	25																			
	277	5000	18.1																						

\* THA value applies to hydronic heat only, Htr #8.

**Table 6 VPRC/VPRH 12,000 BTU electrical specifications**

Power Supply Volt — 1–60		Compressor		Indoor Fan Motor		Outdoor Fan Motor		Electric Heat				Unit Electrical Ratings													
Volt	Min	RLA	LRA	FLA	Hp	FLA	Hp	Htr #	Volt	W	HA	TCA	THA	MCA	MOCP	Plug									
208/ 230V	197	5.2	27	0.80	0.07	0.7	0.09	0 or 8	208	N/A	N/A	6.7	0.8*	8.1	15	6–15P									
									230	N/A	N/A														
								3	208	2454	11.8		12.6	15.7	20	6–20P									
									230	3000	13.0														
								4	280	3271	15.7		16.5	20.7	25	6–30P									
									230	4000	17.4														
								5	208	4089	19.7		20.5	25.6	30	6–30P									
									230	5000	21.7														
								265V	240	4.6	20		0.56	0.07	1.2	0.125	0 or 8	265	N/A	N/A	6.36	0.56	7.56	15	H- WIRE
																		277	N/A	N/A					
2	265	2655	10.0	10.58	13.2	15																			
	277	2901	10.5																						
3	265	3752	14.2	11.03	13.8	15																			
	277	4100	14.8																						
4	265	4576	17.3	14.72	18.4	20																			
	277	5000	18.1																						
	265	3752	14.2	15.36	19.2	20																			
	277	4100	14.8																						
	265	4576	17.3	17.83	22.3	25																			
	277	5000	18.1																						

\* THA value applies to hydronic heat only, Htr #8.

**Table 7 VPRC/VPRH 18,000 BTU electrical specifications**

Power Supply Volt — 1–60		Compressor		Indoor Fan Motor		Outdoor Fan Motor		Electric Heat				Unit Electrical Ratings													
Volt	Min	RLA	LRA	FLA	Hp	FLA	Hp	Htr #	Volt	W	HA	TCA	THA	MCA	MOCP	Plug									
208/ 230V	197	6.5	43	1.0	0.15	0.8	0.125	0 or 8	208	N/A	N/A	8.3	1.0*	10.0	15	6–15P									
									230	N/A	N/A														
								3	208	2454	11.8		12.8	16.0	20	6–20P									
									230	3000	13.0														
								4	208	3271	15.7		16.7	20.9	25	6–30P									
									230	4000	17.4														
								5	208	4089	19.7		20.7	25.8	30	6–30P									
									230	5000	21.7														
								265V	240	5.8	46		0.56	0.07	0.5	0.17	0 or 8	265	N/A	N/A	6.86	6.86	8.4	15	H-Wire
																		265	3752	14.2					
3	277	4100	14.8	15.4	19.2	20																			
	4	265	4576	17.3	17.8	22.3	25																		
277		5000	18.1	18.6	23.3	25																			

\* THA value applies to hydronic heat only, Htr #8.

# RETROAIRE

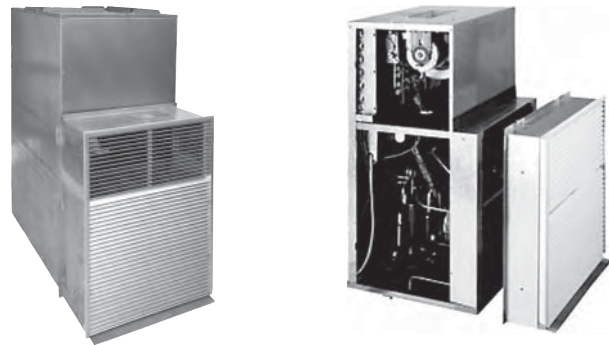
*The Right Fit for Comfort*

## VPRC / VPRH

Single Package Vertical Air Conditioner/Heat Pump

### Engineering Submittal & Wall Sleeve Specification Worksheet

REMOVE THIS SECTION FROM THE BOOKLET, ENTER INFORMATION IN THE SPACES PROVIDED, AND SUBMIT WITH YOUR ORDER.



Job Name:
Location:
Customer:
Project Engineer:
Project Architect:
General Contractor:
Submitted by:
For: Reference [ ] Approval [ ]
Date:

ECR International LLC  
5780 Success Drive  
Rome, NY 13440  
e-mail: info@RetroAire™.com



An ISO 9001-2000 Certified Company



Please enter the decoding for the hydronic coil option that is suitable for your application in the boxes below.  
Refer to the example for information placement.

Example:	H	H		7	1		1		1		9	B		B	A	A	A	0	A
	H	H	F	7	1		1		1		9	B		B	A	A	A	0	A

**Series:** \_\_\_\_\_

**Piping:** \_\_\_\_\_

R - Right Side  
L - Left Side  
F - Front

**Capacity:** \_\_\_\_\_

0 - 09 - 18  
1 - 19 - 24

**Chassis Configuration:** \_\_\_\_\_

1 - Remote  
X - Special

**Aux Heat:** \_\_\_\_\_

8 - 1 Row (09 - 18)  
9 - 2 Row (19 - 24)  
X - Special

**Pipe Connection:** \_\_\_\_\_

B - Standard

**Revision:** \_\_\_\_\_  
A - Revision Level

**Special -Standard:** \_\_\_\_\_  
0 - Standard  
A - Z Special Option

**Shipping:** \_\_\_\_\_  
A - Single (STD)

**OEM:** \_\_\_\_\_  
A - RetroAire (STD)

**Motorized Valve** \_\_\_\_\_  
B - 24V, 3 Way N / C Valve (STD)

**Shut Off Valves:** \_\_\_\_\_  
A - Sweat Connections (STD)  
B - Ball Valves & P/T Ports  
C - Automatic Balancing Valves  
X - Special

Please enter the decoding for the VPRC or VPRH that is suitable for your application in the boxes below. Refer to the example for information placement.

Example:	V	P	R	C	1	2	D	5	1	B	A	B	T	0	A
----------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

**Product Series:**

VPRC - Straight Cool Unit  
VPRH - Heat Pump Unit

**Cooling Capacity (Btuh):**

09 - 9,000    24 - 24,000  
12 - 12,000    30 - 30,000  
18 - 17,000    36 - 36,000  
19 - 18,000

**Voltage Option:**

D - 208/230 - 1 - 60  
E - 265/277 - 1 - 60 (Availability of 09-12 TBD)

**Heat Options (230 Volts):**

0 - No Heat (09-36 Btuh)  
3 - 3 kW Elect Heat (09-24 Btuh)  
4 - 4 kW Elect Heat (09-24 Btuh)  
5 - 5 kW Elect Heat (09-36 Btuh)  
7 - 7 kW Elect Heat (19-36 Btuh)  
1 - 10 kW Elect Heat (19-36 Btuh)  
A - 15 kW Elect Heat (36 Btuh)  
8 - Hydronic Coil (09-24 Btuh)

**Controls Options:**

1 - Remote, Front Control Access  
2 - Remote, Right Control Access  
3 - Remote, Left Control Access  
4 - Remote, Front Control, Disconnect Switch (2-5 kW 09-24 Btuh Only)  
5 - Remote, Right Control, Disconnect Switch (2-5 kW 09-24 Btuh Only)  
6 - Remote, Left Control, Disconnect Switch (2-5 kW 09-24 Btuh Only)

**Design Revision:**

A - Revision Level

**Standard/Special:**

0 - Standard  
A - Z Special Option

**Compressor Code:**

T - Rotary (09-12 Btuh Only)  
C - Recip (18, 24, 30, 36 Btuh Only)  
S - Scroll (19 Btuh Only)

**Condenser Coil Option and Filter:**

B - Factory Installed Filter  
C - Coated Coil and Factory Installed Filter

**Options:**

A - NON-Hydronic models  
B - Right Hand Piping HYD with Sweat Connections  
C - Left Hand Piping HYD with Sweat Connections  
D - Front Hand Piping HYD with Sweat Connections  
E - Right Hand Piping HYD with Ball Valves and P/T Ports  
F - Left Hand Piping HYD with Ball Valves and P/T Ports  
G - Front Hand Piping HYD with Ball Valves and P/T Ports  
H - Right Hand Piping HYD with Auto Valves  
J - Left Hand Piping HYD with Auto Valves  
K - Front Hand Piping HYD with Auto Valves

**Options:**

A - 10" Round Duct Collar  
B - Standard  
C - 50QT Option

Field-installed options	X	Field-installed options	X
Return air access panel with frame and filter		Remote thermostat — Digital — 1-stage	
Painted condenser louver (Specify color)		Remote thermostat — Digital — 2-stage	
Internal drain connection kit (09-24 Btu only)			

### VPRC/VPRH order specifications for engineering purposes

This information is important to ensure that equipment supplied is properly designed for the application for which it is intended.

**1. TYPE OF CONSTRUCTION:** New Construction ☐ Replacement ☐  
 If replacement, what is the current model being replaced? \_\_\_\_\_  
 Manufacturer : \_\_\_\_\_ Model # : \_\_\_\_\_

**2. ELECTRIC HEAT:** Output or kW: \_\_\_\_\_ Current Circuit Breaker Used: \_\_\_\_\_ Amps

**3. IS THERE AN INTERNAL DRAIN SYSTEM FOR CONDENSATE REMOVAL?** Yes ☐ No ☐

**4. WHAT ARE THE DIMENSIONS OF THE UNIT ENCLOSURE?** L \_\_\_\_\_ W \_\_\_\_\_ H \_\_\_\_\_

(NOTE: Unit enclosure must meet minimum clearance specifications.)

**5. IS A RETURN AIR ACCESS PANEL NEEDED?** Yes ☐ No ☐

(NOTE: Standard R/A access panel is supplied with a disposable filter.) If not, what will be used? \_\_\_\_\_

What is return air opening size? L \_\_\_\_\_ W \_\_\_\_\_ What is free area of existing return air opening? \_\_\_\_\_

**6. WHAT IS DESIGNED EXTERNAL STATIC PRESSURE (E.S.P.)?** \_\_\_\_\_

If not known, describe the supply air configuration.

Rectangular Duct ☐ L \_\_\_\_\_ W \_\_\_\_\_ Circular Duct ☐ Diameter \_\_\_\_\_

Duct Length : \_\_\_\_\_ How many supply air diffusers? \_\_\_\_\_

• How many rooms are being conditioned by one unit? \_\_\_\_\_

**7. WHAT IS THE WALL SLEEVE DEPTH? (REFER TO PAGE 26)** \_\_\_\_\_

Attach sketch or  
photo if possible.

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Authorized signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
EMI signature

\_\_\_\_\_  
Date

### Electrical Specifications *(continued)*

#### IMPORTANT

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

**Table 8** VPRC/VPRH 19 electrical specifications

Power Supply Volt — 1–60		Compressor		Indoor Fan Motor		Outdoor Fan Motor		Electric Heat				Unit Electrical Ratings					
Volt	Min	RLA	LRA	FLA	Hp	FLA	Hp	Htr #	Volt	W	HA	TCA	THA	MCA	MOCP	Plug	
208/ 230V	197	7.3	48	1.5	0.25	1.30	0.25	0 or 8	208	N/A	N/A	10.1	1.5*	14.6	15	6–15P	
									230	N/A	N/A						
								3	208	2454	11.8		13.3	16.6	20	6–20P	
									230	3000	13.0		14.5	18.2			
								4	280	3271	15.7		17.2	21.5	25	6–30P	
									230	4000	17.4		18.9	23.6			
								5	208	4089	19.7		21.2	26.4	30	6–30P	
									230	5000	21.7		23.2	29.0			
								7	208	5725	27.5		29.0	36.3	40	H-WIRE	
									230	7000	30.4		31.9	39.9			
								1	208	8178	39.3		40.8	51.0	60		
									230	10,000	43.5		45.0	56.2			
265V	240	7.1	43	1.3	0.25	1.3	0.25	0 or 8	265	N/A	N/A	9.7	9.7	11.5	15		
									265	3752	14.2		15.5	19.3	20		
								3	277	4100	14.8		15.5	20.1	25		
									265	4576	17.3		16.1	22.3	25		
								4	277	5000	18.1		18.6	24.2	25		
									265	6635	25.0		19.4	32.9	35		
								7	277	7250	26.2		26.3	34.3	35		
									265	9152	34.5		35.8	44.8	50		
								1	277	10,000	36.1		37.4	46.8	50		

\* THA value applies to hydronic heat only, Htr #8.

### Electrical Specifications *(continued)*

**Table 9** VPRC/VPRH 24 electrical specifications

Power Supply Volt — 1–60		Compressor		Indoor Fan Motor		Outdoor Fan Motor		Electric Heat				Unit Electrical Ratings					
Volt	Min	RLA	LRA	FLA	Hp	FLA	Hp	Htr #	Volt	W	HA	TCA	THA	MCA	MOC	Plug	
208/ 230V	197	9.4	54.0	1.5	0.25	1.30	0.25	0 or 8	208	N/A	N/A	12.2	1.5*	14.6	20	6–20P	
									230	N/A	N/A		13.3	16.6	20	6–20P	
								3	208	2454	11.8		14.5	18.2			
									230	3000	13.0		17.2	21.5	25	6–30P	
								4	280	3271	15.7		18.9	23.6			
									230	4000	17.4		21.2	26.4	30	6–30P	
								5	208	4089	19.7		23.2	29.0			
									230	5000	21.7		29.0	36.3	40	H-WIRE	
								7	208	5725	27.5		31.9	39.9			
									230	7000	30.4		40.8	51.0	60		
								1	208	8178	39.3		45.0	56.2			
									230	10,000	43.5		9.7	11.4	15		
265V	240	8.0	46	1.3	0.25	1.3	0.25	0 or 8	265	N/A	N/A	6.86	9.7	11.4	15		H-WIRE
									265	3752	14.2		15.5	19.3	20		
								3	277	4100	14.8		16.1	20.1	25		
									4	265	4576		17.3	18.6	23.2		
								277		5000	18.1		19.4	24.2	25		
								7	265	6635	25.0		26.3	34.3	35		
									277	7250	26.2		27.5	34.0	35		
								1	265	9152	34.5		35.8	44.8	50		
									277	10,000	36.1		37.4	46.8	50		

\* THA value applies to hydronic heat only, Htr #8.



### Electrical Specifications *(continued)*

#### IMPORTANT

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

**Table 10 VPRC/VPRH 30 electrical specifications**

Power Supply Volt — 1–60		Compressor		Indoor Fan Motor		Outdoor Fan Motor		Electric Heat				Unit Electrical Ratings												
Volt	Min	RLA	LRA	FLA	Hp	FLA	Hp	Htr #	Volt	W	HA	TCA	THA	MCA	MOCP	Plug								
208/ 230V	197	13.0	74	3.0	0.5	1.3	0.25	0	208	N/A	N/A	17.3	N/A	20.6	30	H-WIRE								
									230	N/A	N/A													
								5	208	4089	19.7		22.7	28.4	30									
									230	5000	21.7		24.7	31.0	35									
								7	280	6134	29.5		32.5	40.7	45									
									230	7500	32.6		35.6	44.5										
								1	208	8178	39.3		42.3	52.9	60									
									230	10,000	43.5		46.5	58.1	60									
								265V	240	10.5	67	2.3		1.4			0	265	N/A	N/A	6.86	14.2	16.8	25
																	4	265	4576	17.3		19.6	24.5	25
277	5000	18.1	20.4	25.5	30																			
7	265	6864	25.9	28.2	35.3	40																		
	277	7500	27.1	29.4	36.8	40																		
1	265	9152	34.5	36.8	46.1	50																		
	277	10,000	36.1	38.4	48.1	50																		

### Electrical Specifications *(continued)*

**Table 11 VPRC/VPRH 36** electrical specifications

Power Supply Voltage — 1/60		Compressor		Indoor Fan Motor		Outdoor Fan Motor		Electric Heat				Unit Electrical Ratings													
Volt	Min	RLA	LRA	FLA	Hp	FLA	Hp	Htr #	Volt	W	HA*	TCA	THA*	MCA*	MOCP*	Plug									
208/230V	197	13.6	88	3.0	0.5	1.3	0.25	0	208	N/A	N/A	17.9	N/A	21.3	30	H-WIRE									
									230	N/A	N/A		N/A												
								5	208	4089	19.7		22.7	28.4	30										
									230	5000	21.7		24.7	31.0	35										
								7	280	6134	29.5		32.5	40.7	45										
									230	7500	32.6		35.6	44.5											
								1	208	8178	39.3		42.3	52.9	60										
									230	10,000	43.5		46.5	58.1	60										
								A	208	12,268	19.7 / 39.3		22.7 / 39.3	28.4 / 49.2	30 / 50										
									230	15,000	21.7 / 43.5		24.7 / 43.5	31.0 / 54.4	35 / 60										
								265V	240	12	67		2.3	0.5	1.4		0.25	0	265	N/A	N/A	15.7	14.2	16.8	25
																			265	4576	17.3		19.6	24.5	30
4	277	5000	18.1	20.4	25.5	30																			
	265	6864	25.9	28.2	35.3	40																			
7	277	7500	27.1	29.4	36.8	40																			
	265	9152	34.5	36.8	46.1	50																			
1	277	10,000	36.1	38.4	48.1	50																			
	265	13,729	17.3/34.5	19.6/34.5	24.5/43.2	30/45																			
A	277	15,000	18.1/36.1	20.4/36.1	25.5/45.2	30/50																			

\* — Where two values are shown, data is displayed as Circuit 1 / Circuit 2

\* — Where two values are shown, data is displayed as Circuit 1 / Circuit 2

#### NOTICE

All field wiring must be done in accordance with the National Electrical Code, ANSI/NFPA 70—latest edition, and local codes (in Canada — CSA C22.1 Canadian Electrical Code Part 1 and local codes).



## Optional return air access panel

### Optional return air access panel *(with filter)*

#### NOTE

All models must have an air filter installed prior to operation.

Return air access panels vary by model. When ordering, be sure to match access panels to units.

Make sure the installation will provide adequate clearance and access to the control panel.

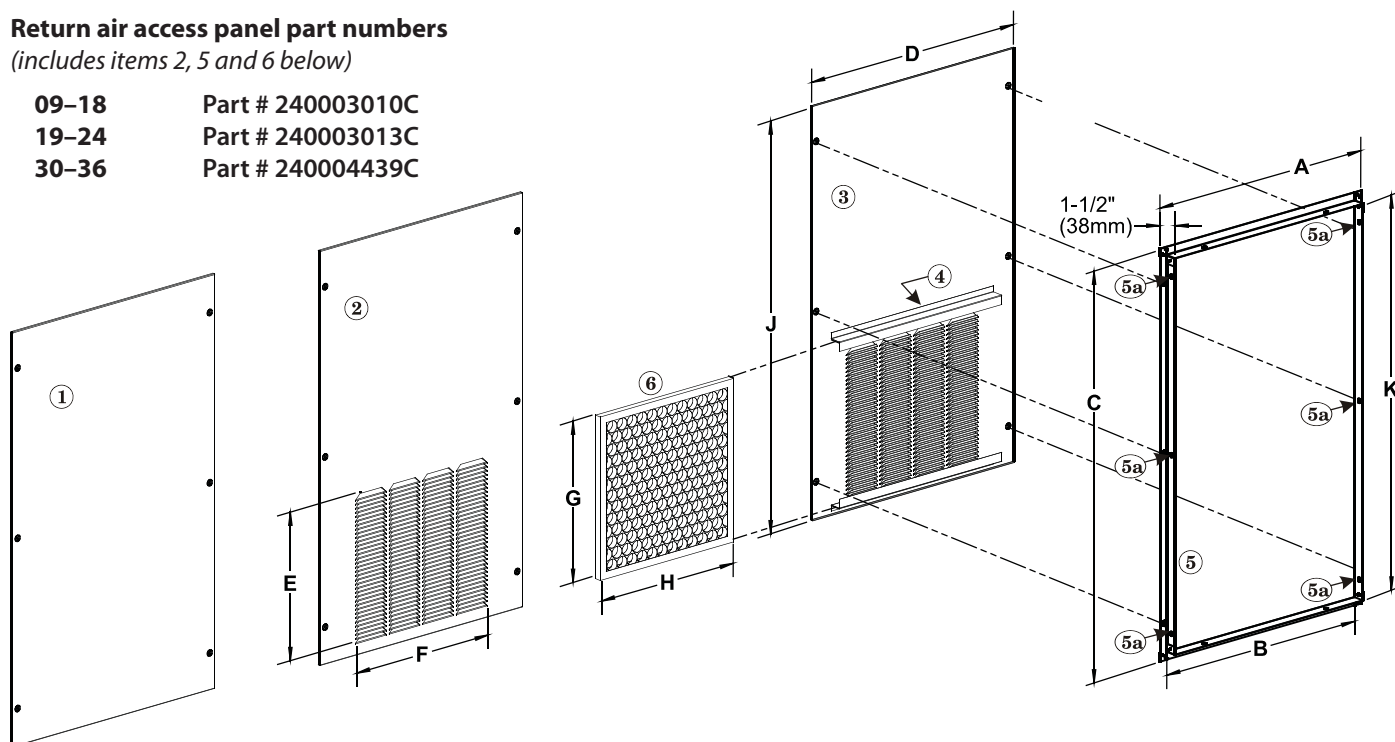
It is necessary to work closely with the other trades to locate the opening for the return air access panel. The return air access panel must be installed with enough room available to remove the unit if necessary. The frame is installed with screws through the lag holes into the frame studs and should be level and plumb (Figure 4). The return air access panel is set onto the frame and held in place with 6 screws.

**Figure 4** Return air access panel (available with solid doors if ducted return air is used; available in standard white or consult factory for custom colors)

#### Return air access panel part numbers

*(includes items 2, 5 and 6 below)*

09–18	Part # 240003010C
19–24	Part # 240003013C
30–36	Part # 240004439C



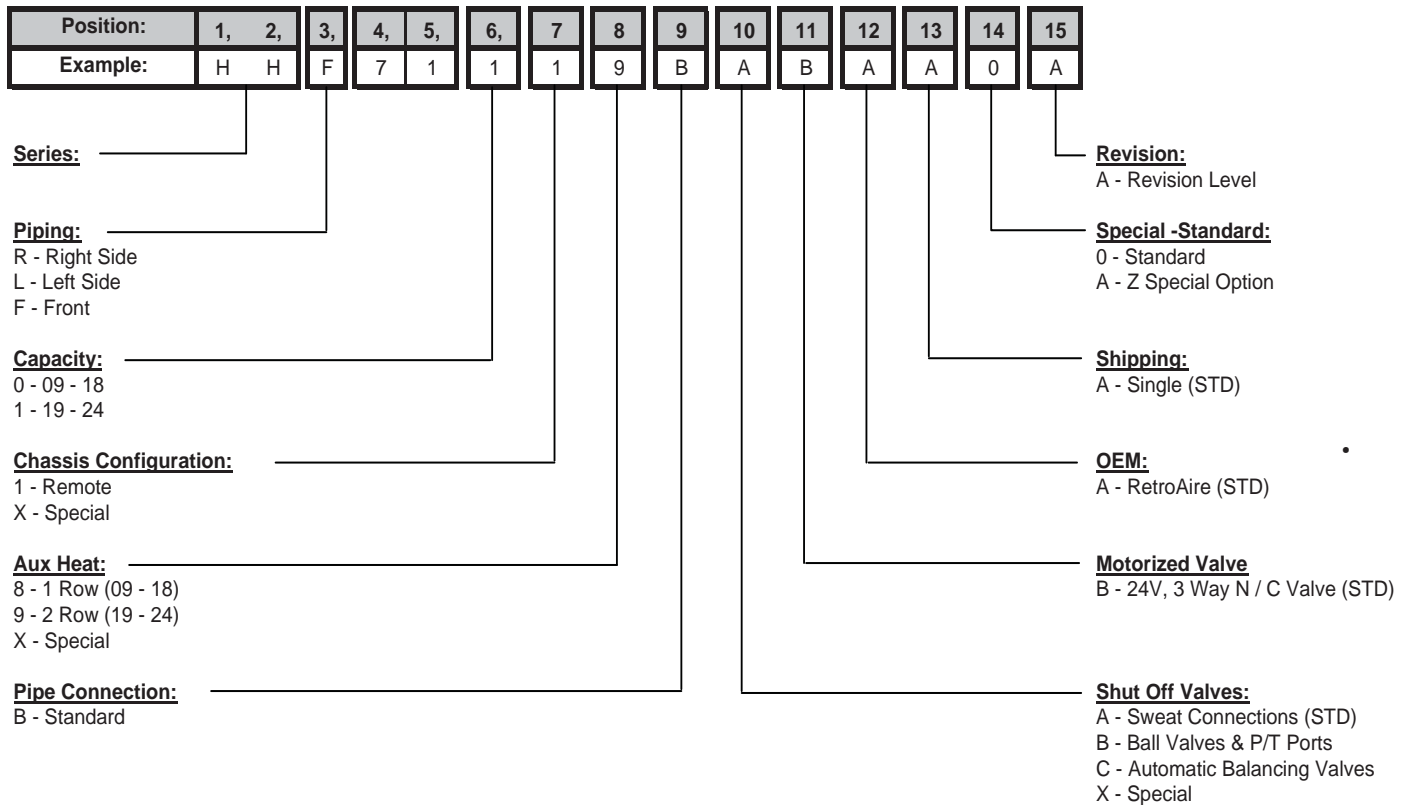
**Table 12** Return air access panel dimensions — inches (mm)

Model	A	B	C	D	E	F	G	H	J	K
09–18 Std.	29 3/4 (756)	27 3/4 (705)	47 3/4 (1213)	30 (762)	17 3/4 (451)	20 1/4 (514)	20 (508)	20 (508)	50 (1270)	45 3/4 (1162)
19–24 Std.	29 3/4 (756)	27 3/4 (705)	59 3/4 (1518)	30 (762)	28 (711)	20 1/4 (514)	30 (762)	20 (508)	62 (1518)	57 3/4 (1467)
30–36 Std.	35 7/8 (911)	33 15/16 (862)	60 (1524)	36 1/8 (918)	17 5/8 (448)	33 9/16 (852)	30 (762)	20 (508)	62 3/16 (1573)	58 (1473)

Item	Description
1	Solid door panel (for ducted return air installations)
2	Door assembly, front view
3	Door assembly, rear view
4	Filter bracket (on back)
5	Frame assembly (items 5a are lag holes, 3 per side)
6	Filter

### Hydronic Coil Option — Performance Data

**Figure 5** Hydronic coil option nomenclature (order as described below to obtain required coil and accessories)



## HH Series Hydronic Coil Option

(Available for VPRC / VPRH models 09-24 only)

### Description

The HH series hydronic coil option is designed for use with VPRC/ VPRH models 09-24 only, and offers an alternative means of space heating.

Encased in a 20-ga. galvanized G90U sheet metal enclosure, the HH option is field mounted to the top of the VPRC/VPRH chassis. It is suspended by 5/16" threaded rods, allowing removal of the VPRC/ VPRH chassis, if necessary, without disconnecting piping connections.

The supply air duct connection is made via a 10" diameter duct collar.

A two- or three-way motorized 24-volt water valve is available

Order the hydronic coil package as either left, right or front aligned — match the control panel alignment of the unit on which it is to be installed.

### IMPORTANT

System duct work is connected to the discharge opening on the duct collar or plenum. A flex collar is advised.

### Standard Features

- 20 Ga. Galvanized G90U sheet metal enclosure.
- Front, Left or Right side piping connections.
- ½" sweat connections
- 24V, 3 way, normally closed motorized valve.
- 10" diameter supply air duct connection.

### Optional Features

- Ball valves & P/T ports
- Automatic balancing valves with P/T ports and shut-off
- Refer to Figure 5, page 20 for HH series nomenclature to order the hydronic coil that meets your needs.

### Hydronic Coil Option — Performance Data *(continued)*

#### IMPORTANT

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

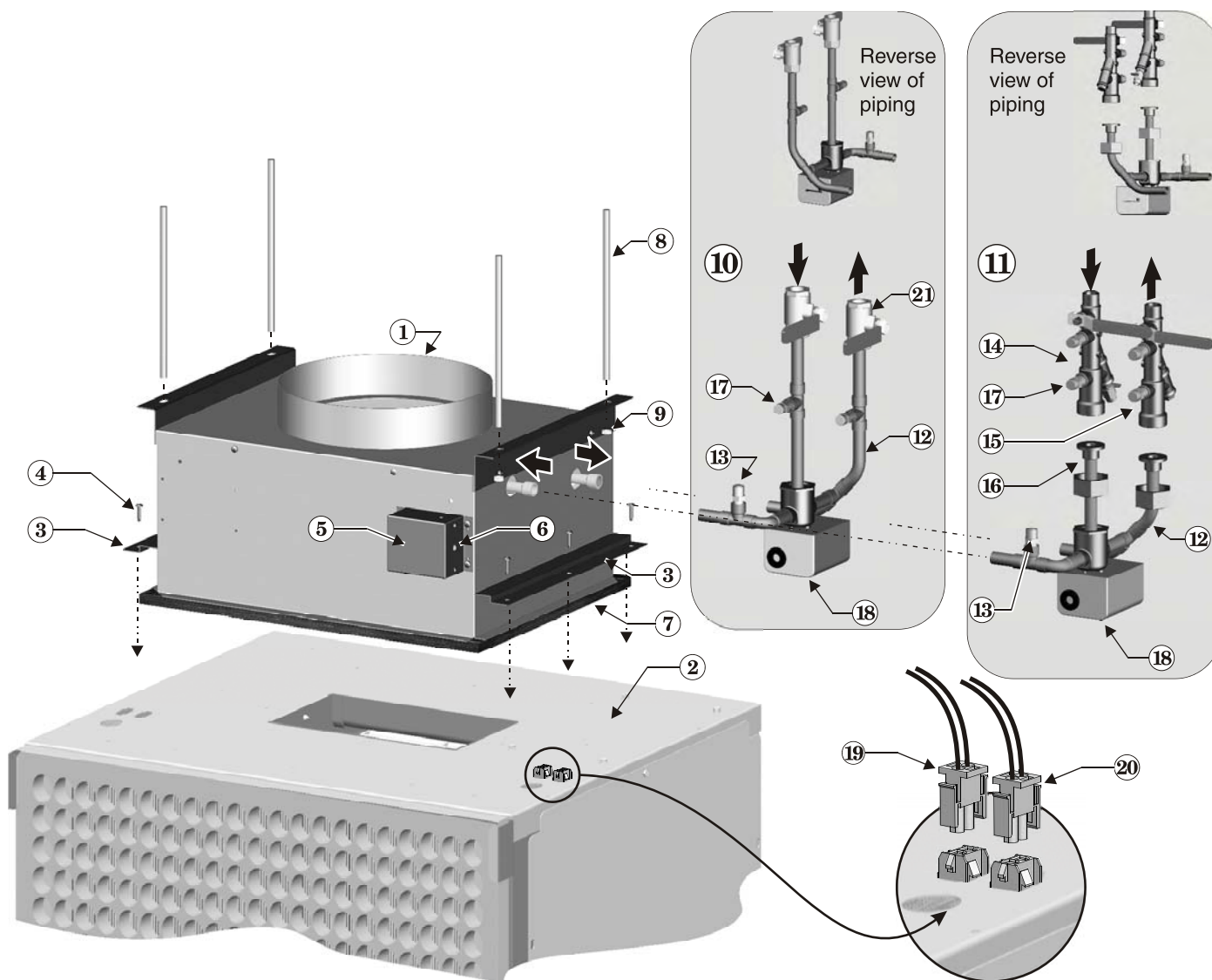
**Table 13** VPRC/VPRH hydrocoil specifications *(Entering Air Temperature on 70°F, dry bulb/58°F, wet bulb)*

Unit Size	CFM (L/s)	GPM (L/s)	Entering H2O Temp F C	Btu/h	(kW)	Head Loss, Ft/H <sub>2</sub> O (see note 1)
09	300 (142)	1 (0.163)	140 (60)	7300	2.14	1.1
		2 (0.126)		8400	2.46	4.0
		3 (0.189)		8900	2.61	8.7
		1 (0.163)	160 (71.1)	9500	2.78	1.1
		2 (0.126)		10900	3.19	3.9
		3 (0.189)		11500	3.37	8.6
		1 (0.163)	180 (82.2)	11800	3.46	1.0
		2 (0.126)		13500	3.95	3.9
		3 (0.189)		14200	4.16	8.4
12	400 (189)	1 (0.163)	140 (60)	8300	2.43	1.1
		2 (0.126)		9800	2.87	4.0
		3 (0.189)		10400	3.05	8.7
		1 (0.163)	160 (71.1)	10800	3.16	1.1
		2 (0.126)		12700	3.72	3.9
		3 (0.189)		13500	3.95	8.6
		1 (0.163)	180 (82.2)	13400	3.92	1.0
		2 (0.126)		15700	4.60	3.9
		3 (0.189)		16600	4.86	8.4
18	500 (236)	2 (0.126)	140 (60)	10900	3.19	4.0
		4 (0.252)		12200	3.57	15.2
		6 (0.379)		12700	3.72	33.2
		2 (0.126)	160 (71.1)	14200	4.16	3.9
		4 (0.252)		15800	4.63	14.9
		6 (0.379)		16400	4.80	32.6
		2 (0.126)	180 (82.2)	17500	5.12	3.9
		4 (0.252)		19400	5.68	14.7
		6 (0.379)		20100	5.89	32.0
19	700 (330)	2 (0.126)	140 (60)	23800	6.97	2.2
		4 (0.252)		28400	8.32	8.4
		6 (0.379)		30300	8.87	18.5
		2 (0.126)	160 (71.1)	30900	9.05	2.2
		4 (0.252)		36700	10.75	8.3
		6 (0.379)		39200	11.48	18.2
		2 (0.126)	180 (82.2)	38000	11.13	2.2
		4 (0.252)		45100	13.21	8.2
		6 (0.379)		48100	14.08	17.9
24	700 (330)	2 (0.126)	140 (60)	23800	6.97	2.2
		4 (0.252)		28400	8.32	8.4
		6 (0.379)		30300	8.87	18.5
		2 (0.126)	160 (71.1)	30900	9.05	2.2
		4 (0.252)		36700	10.75	8.3
		6 (0.379)		39200	11.48	18.2
		2 (0.126)	180 (82.2)	38000	11.13	2.2
		4 (0.252)		45100	13.21	8.2
		6 (0.379)		48100	14.08	17.9
Note 1	Head loss data above is for hydronic coil only. The optional motorized 3-way valve has a Cv of 4.0; the optional AutoFlow valves have a Cv of 7.0 at full open.					



### Hydronic Coil Option — Assembly and dimensions

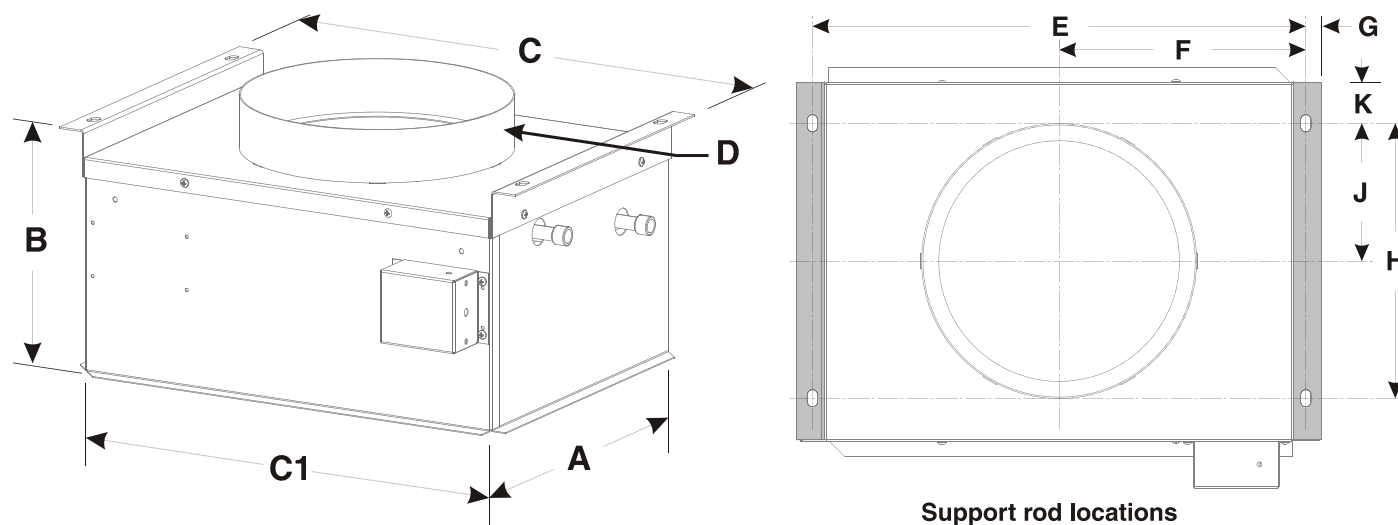
**Figure 7** Hydronic coil option (front/right application shown) -- see Figure 5, Page 20 for ordering information



- |   |  |
|---|--|
| <b>1</b> 10-inch round (254 mm) duct collar   | <b>13</b> Bleed valve  |
| <b>2</b> Chassis top panel  | <b>14</b> Return line Autoatic balancing valve, with drain cock in wye   |
| <b>3</b> Z brackets (factory-supplied)  | <b>15</b> Supply line Autoatic balancing valve   |
| <b>4</b> Z-bracket mounting screws (included)   | <b>16</b> Flanges and nuts — flange is factory-installed with this option; automatic balancing valves are shipped with the HH, and are field installed |
| <b>5</b> Freezestat   | <b>17</b> P/T ports  |
| <b>6</b> Freezestat setpoint adjustment screw   | <b>18</b> Optional 3-way motorized diverting valve (normally closed), factory piped as shown when ordered  |
| <b>7</b> ½ x ½ inch foam gasket   | <b>19</b> Plug with wires to motorized valve (factory-wired to valve when valve is ordered)  |
| <b>8</b> Mounting rods (field-supplied & installed), 5/16-18 all-thread                   | <b>20</b> Plug with wires to freezestat (factory-wired to freezestat)  |
| <b>9</b> 5/16-inch nuts (field-supplied & installed)                                      | <b>21</b> Optional ball valves   |
| <b>10</b> Optional ball valves and P/T ports — includes (2) ball valves and (2) P/T ports |  |
| <b>11</b> Optional Autoatic balancing valves (with dual P/T ports)                        |  |
| <b>12</b> ½-inch copper piping (factory-assembled when valve option is specified)         |  |

## Hydronic Coil Option — Assembly and dimensions *(continued)*

**Figure 8** Hydronic coil dimensions



Dimensions — Inches (mm)											
Models	A	B	C	C1	D	E	F	G	H	J	K
<b>9-18</b>	13 (330)	8 (203)	19 (483)	17 (432)	10 (254) Diameter	18 (457)	9 (229)	½ (13)	10 (254)	5 (127)	1½ (38)
<b>19-24</b>	17 (432)	12 (305)	23 (533)	21 (533)	10 (254) Diameter	22 (559)	11 (279)	½ (13)	13 (330)	6½ (165)	1½ (38)

### Chassis and wall sleeve

#### Provide proper clearances

NOTE: ECR International recommends installing the unit before any carpentry work is started for the enclosure.

It is very important for proper air flow and sound levels that a minimum clearance of 4 inches, 102 mm (models 09–18) or 6 inches, 152 mm (models 24–36) between the enclosure and the chassis be maintained (see Figure 8).

For designed performance, sound levels, and service, maintain a minimum of 6 inches (152 mm) on both sides and front for non-ducted return air applications only.

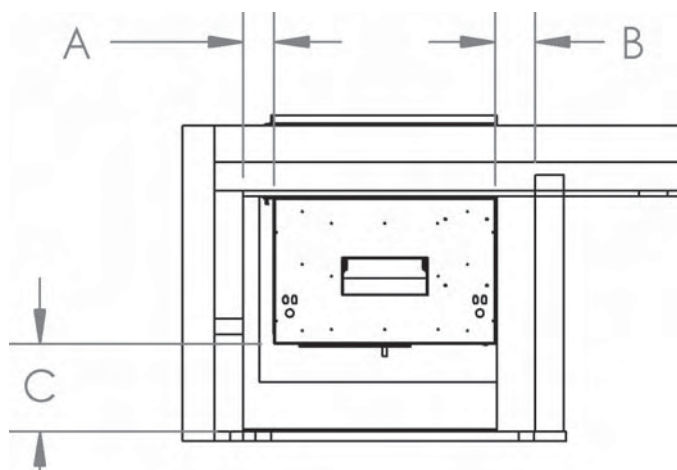
Ducted return air applications only require minimal spacing for service requirements.

Consult ECR International's Sales Department if these minimums can not be met. Depending on the application and return air introduction, some re-configuration can probably be accommodated.

Minimum and maximum operation conditions must be observed to ensure maximum system performance with minimum service required.

**Figure 9** Minimum clearances around unit

Minimum clearances [inches (mm)]			
Model	A	B	C
09, 12, 18	4 (102)	4 (102)	4 (102)
19, 24, 30, 36	6 (152)	6 (152)	6 (152)
A = distance from left side of unit to interior wall B = distance from right side of unit to interior wall C = distance from front of unit to interior wall			



#### Rough openings

**Access opening** — The access opening must allow for the unit to be inserted for installation. Provide at least the minimum opening dimensions below. (See Table 12, page 19, for dimensions of the opening when using the option return access panel assembly.)

**Table 14** Minimum access opening dimensions (item 1, Figure 9)

Model	Width [inches (mm)]		Height [inches (mm)]	
	Front access (front control panel)	Side access (side control panel)	Without hydronic option	With hydronic option
09–12	26 1/8 (664)	26 1/8 (664)	45 3/4 (1162)	55 3/4 (1416)
18	26 1/8 (664)	26 5/8 (676)	45 3/4 (1162)	55 3/4 (664)
19–24	26 1/8 (664)	33 5/8 (854)	57 3/4 (1467)	69 3/4 (664)
30	28 9/16 (726)	36 1/4 (921)	58 3/4 (1492)	N/A
36	28 9/16 (726)	36 1/4 (921)	58 3/4 (1492)	N/A

**Wall sleeve rough opening** — It is very important that the rough opening in the wall for the wall sleeve and louver be the correct dimension and in the exact position necessary for installation.

**Table 15** VPRC/VPRH rough wall sleeve opening

Model	Width [inches (mm)]	Height [inches (mm)]
09–12	26 1/8 (664)	26 1/8 (664)
18	26 1/8 (664)	26 5/8 (676)
19–24	26 1/8 (664)	33 5/8 (854)
30	28 9/16 (726)	36 1/4 (921)
36	28 9/16 (726)	36 1/4 (921)

#### Platform

See Figure 10, Page 25 and Figure 13, Page 27 for details of the platform and wall sleeve installation. The platform height must make the bottom of the VPRC or VPRH chassis flush with the bottom inside edge of the wall sleeve. This means that the platform surface must be 1/2 inch (13 mm) **ABOVE** the bottom of the wall sleeve rough opening.

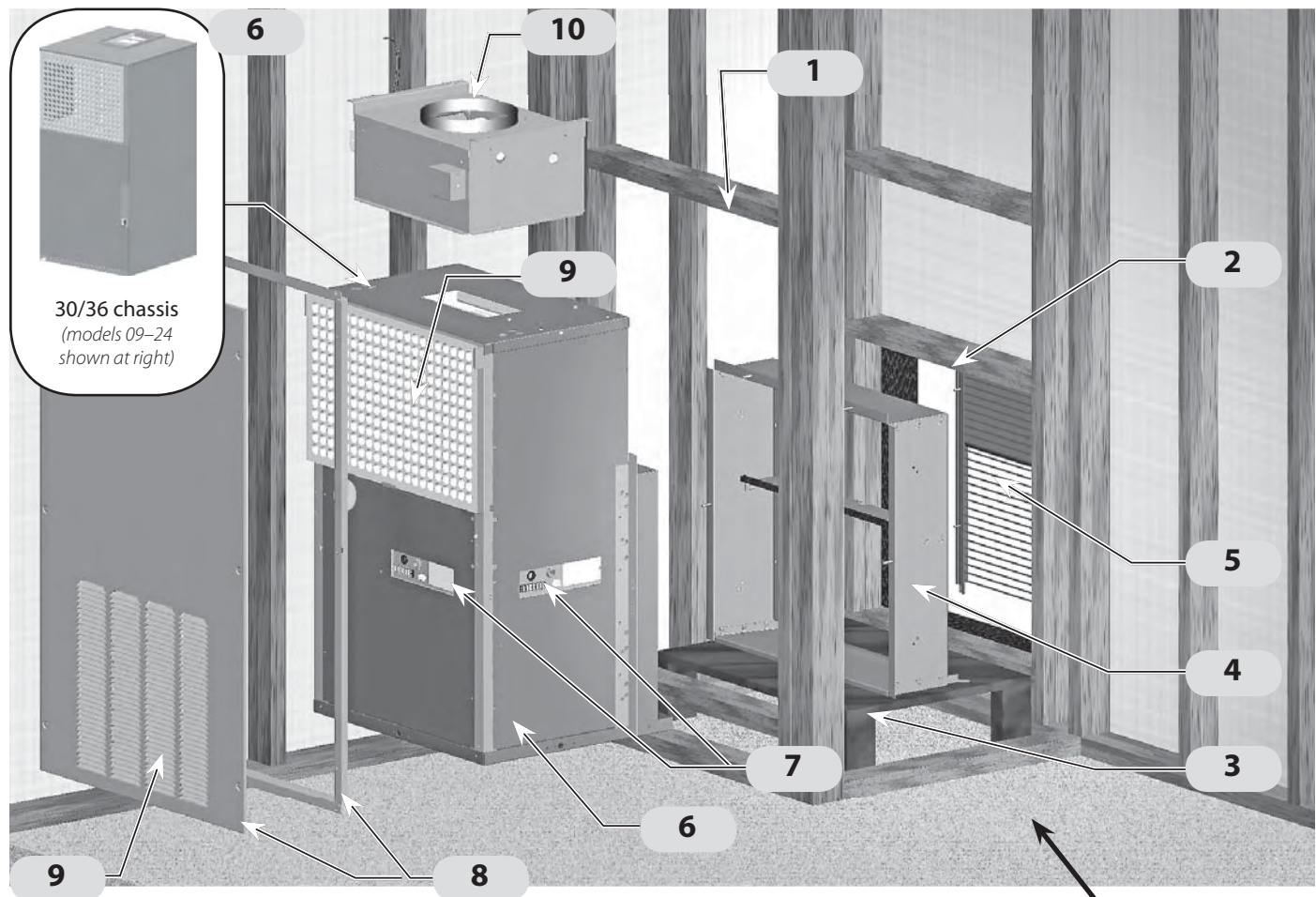
The platform dimensions above will allow the chassis base pan to align with the bottom of the wall sleeve.

#### Air filter

All models must have an air filter installed prior to operation. Use the chassis-mounted air filter supplied with the unit unless using the optional return air access panel. For these applications, remove and discard the filter from the unit and install the access panel with the supplied filter in place.

### Chassis and wall sleeve *(continued)*

**Figure 10** Exploded view of typical installation (chassis shown is typical of models 09–24)



- 1** Access opening (for unit insertion/removal) — See unit dimensions in Figure 2, Page 6. See Table 14, page 24 for minimum recommended opening dimensions. Make sure to account for the extra height of the hydronic coil module, if used.  
  
NOTE: The access opening will be in the left or right side of the enclosure for left or right-side-mounted control panel units (available option on models 09–24 only).  
  
See Table 14, Page 24 for minimum clearances around unit to determine minimum enclosure dimensions.
- 2** Wall sleeve opening to outside — See required dimensions in Table 15, Page 24.
- 3** Platform — See Page 24 for the required platform height. The platform **MUST** be level.
- 4** Wall sleeve (see page 26) — The wall sleeve must be ordered to accommodate the total wall thickness (from inside surface of wall sleeve opening to the surface of the outside wall).
- 5** Outside louver- — The outside louver attaches to the wall sleeve with nuts placed on the louver studs.
- 6** VPRC/VPRH chassis.
- 7** Control panel (front standard; available on left side or right side for models 09–24 only). Access opening must be on the same side of the unit as the control panel. Thermostat connection terminal block located here.
- 8** Optional return access panel assembly. See page 19 for details and dimensions.
- 9** Return air opening — **EVERY** VPRC/VPRH requires an air filter on the return air. The filter is located on the chassis opening unless the optional return air access panel is used (for these applications, the air filter is removed from the chassis — a filter is installed on the access panel).
- 10** Hydronic coil option — See page 20 to page 23.





### Chassis and wall sleeve *(continued)*

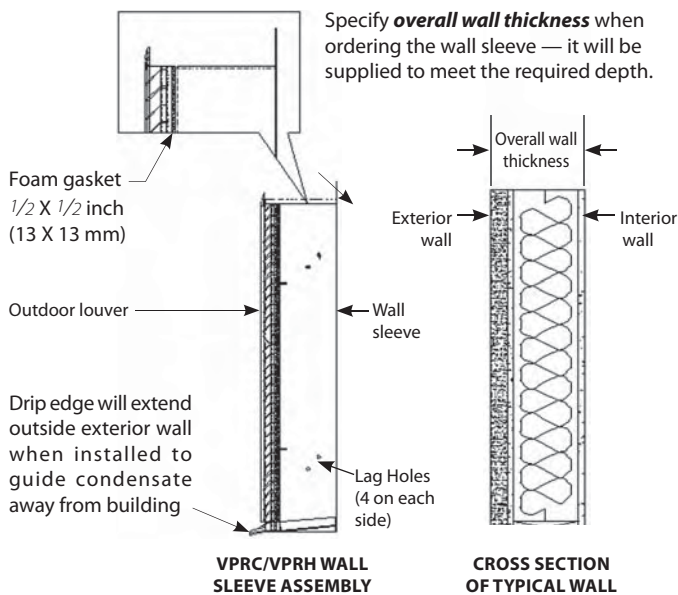
#### Determine wall sleeve depth

The wall sleeve depth must be suitable for the overall wall thickness. It is critical that wall thickness be determined before ordering the wall sleeve (Figure 10).

Consult factory for available wall sleeves.

- The minimum wall sleeve depth is for a 6½ inch (165 mm) overall wall thickness, and available in ½-inch (13-mm) increments for thicker walls.
- For wall thicknesses less than 6½ inches, the wall sleeve will penetrate into the room, and will require interior framing adaptations for proper fit.

**Figure 11** Determining wall sleeve depth



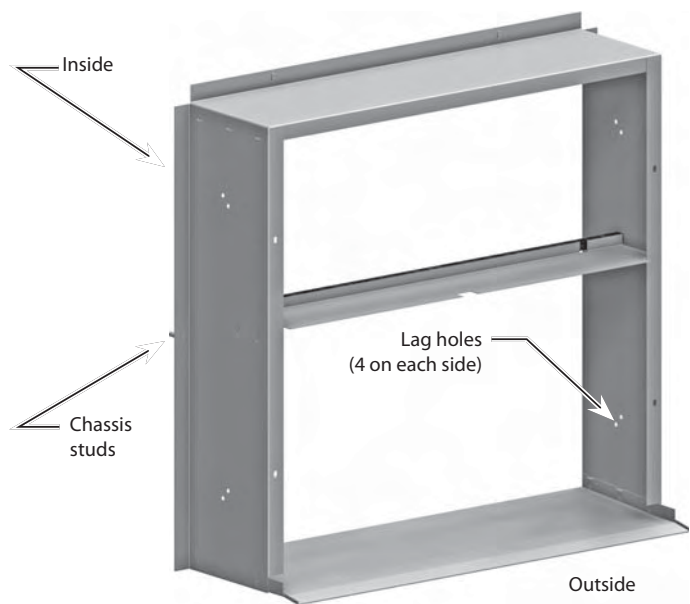
#### Wall sleeve assembly

- Models 09–24 are supplied with a tabbed-assembly wall sleeve, and must be field assembled.
- Wall sleeves for models 30–36 are factory assembled.

#### Determine openings and enclosure

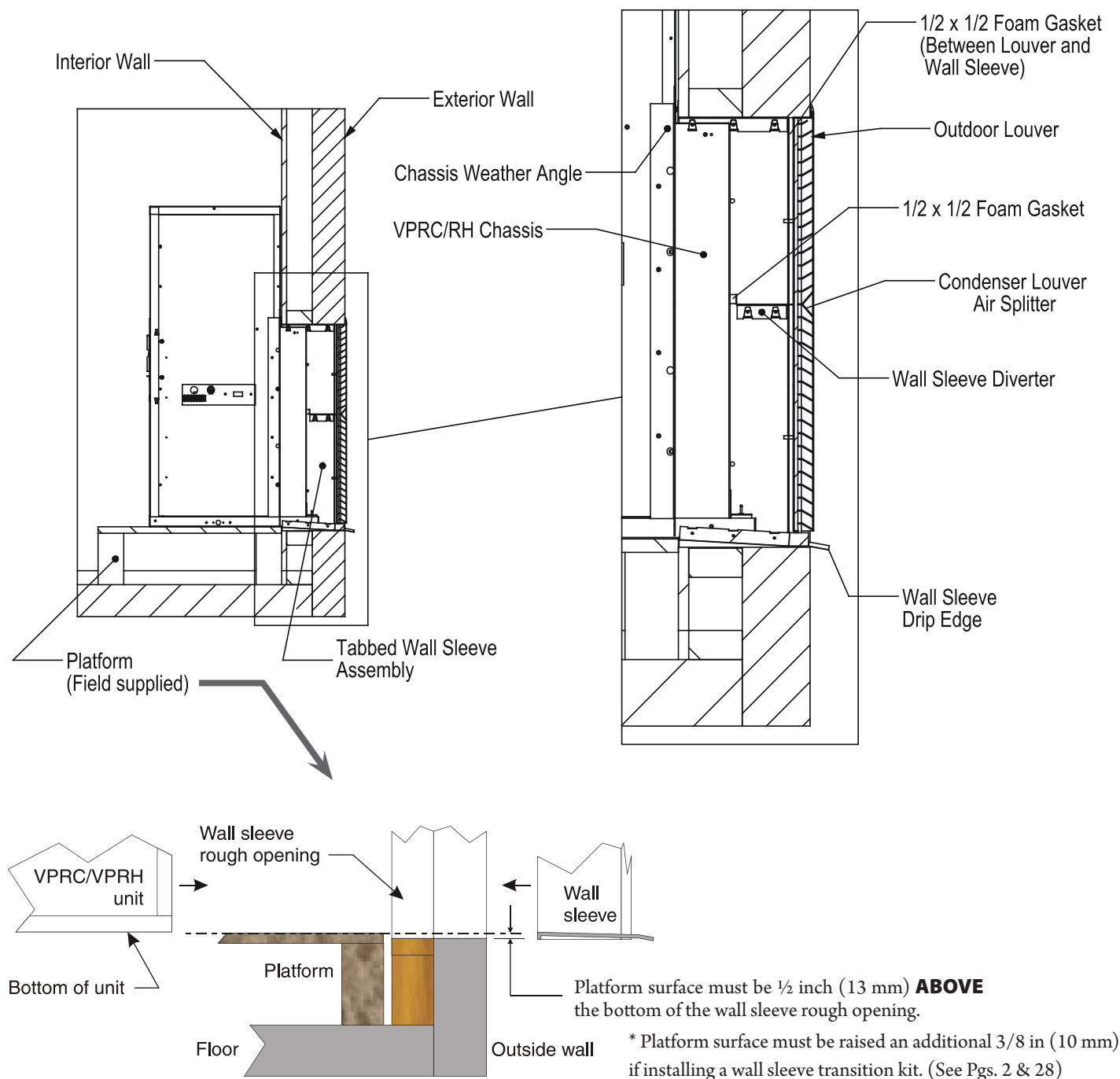
Determine the access opening size, wall sleeve opening size and enclosure size per page 24.

**Figure 12** Typical tabbed-assembly wall sleeve (09–24)



### Chassis and wall sleeve *(continued)*

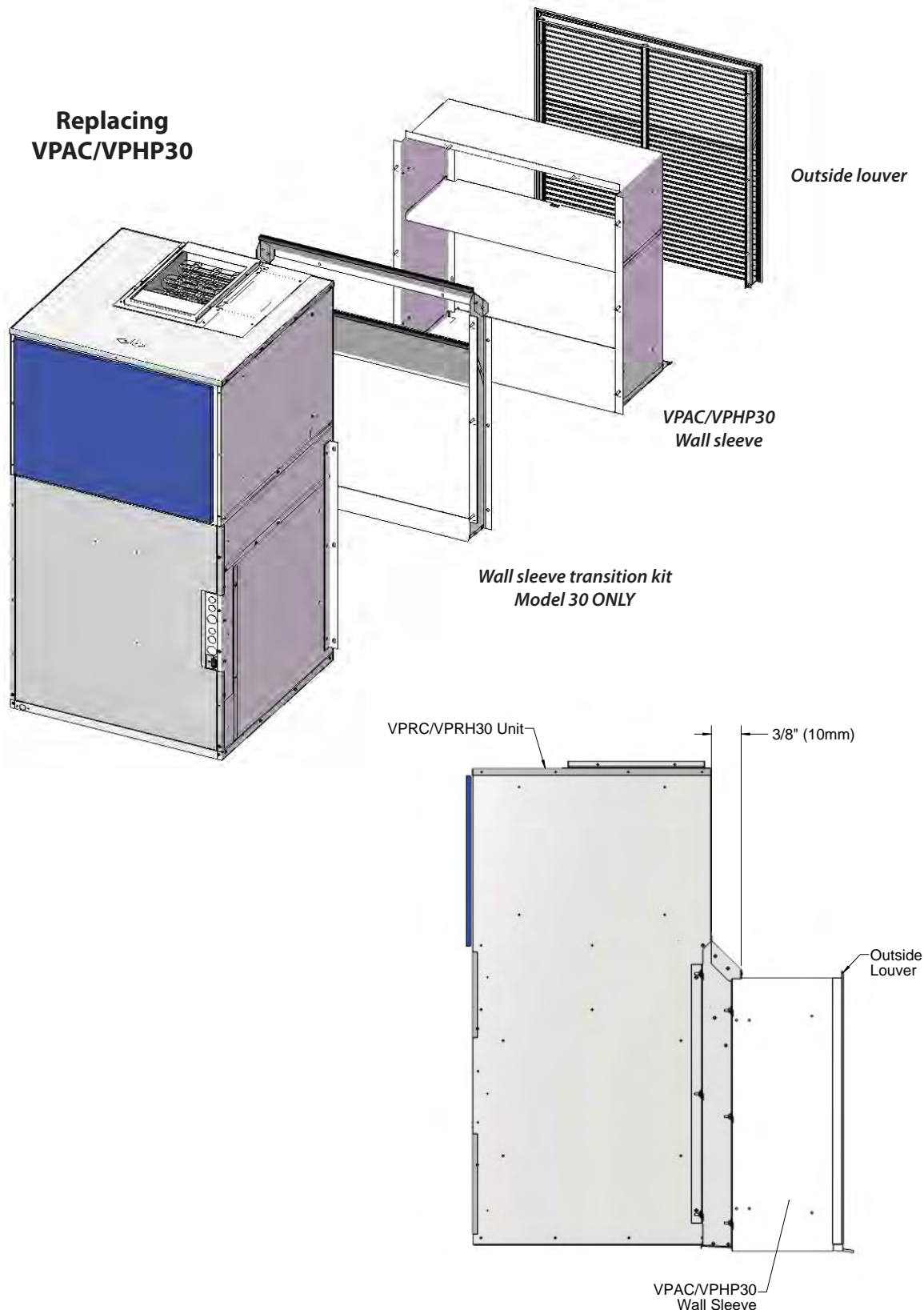
**Figure 13** Typical VPRC/VPRH installation, with platform



### Replacing Older RetroAire VPAC/VPHP30 Units

The VPRC/VPRH30 is larger than the VPAC/VPHP30. Ductwork changes are required. If replacing a VPAC/VPHP30 with a VPRC/VPRH30, RetroAire offers a transition wall sleeve and adapter (550002100) for the existing VPAC/VPHP30 wall sleeve. This adapter adds 3.5" (89mm) to the depth of the unit and allows the use of the existing wall sleeve and louver. If using this transition piece, be sure to maintain the minimum clearances required. The transition adapter also requires the platform height to be increased by 3/8" (10mm).

#### Replacing VPAC/VPHP30





## Notes

ECR International LLC  
2201 Dwyer Avenue  
Utica, NY 13501  
e-mail: [info@RetroAire.com](mailto:info@RetroAire.com)



*An ISO 9001-2000 Certified Company*