



## FRIEDRICH

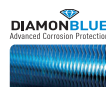
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### **VERT-I-PAK®**

## Single Package Heat Pump



THE EXPERTS IN ROOM AIR CONDITIONING



## MODEL IDENTIFICATION GUIDE

| MODEL NUMBER   | V | H | A | 09 | K | 34 | RT | Q   |
|--|---|---|---|----|---|----|----|---|
| <b>Series</b><br>V = Friedrich® Series   |   |   |   |    |   |    |    | Marketing Revision  |
|  |   |   |   |    |   |    |    | Options<br>RT = Standard Remote Operation   |
|  |   |   |   |    |   |    |    | <b>Electric Heater Size</b><br><u>A Series</u><br>25 = 2.5 kW<br>34 = 3.4 kW<br>50 = 5.0 kW<br>75 = 7.5 kW*<br>10 = 10.0 kW** |
| HA = Air-Source Heat Pump  |   |   |   |    |   |    |    |   |
| <b>Nominal Capacity</b><br>09 = 9,000 Btu/hr    18 = 18,000 Btu/hr<br>12 = 12,000 Btu/hr    24 = 24,000 Btu/hr |   |   |   |    |   |    |    |   |
| <b>Voltage</b><br>K = 208/230V-1Ph-60Hz<br>R = 265V-1Ph-60Hz   |   |   |   |    |   |    |    | * ONLY AVAILABLE ON THE 18 & 24 K/R MODELS<br>**ONLY AVAILABLE ON THE 24 K/R MODELS   |

## GENERAL SPECIFICATIONS

| MODEL                             | VHA09K      | VHA09R      | VHA12K      | VHA12R      | VHA18K          | VHA18R          | VHA24K               | VHA24R               |
|-----------------------------------|-------------|-------------|-------------|-------------|-----------------|-----------------|----------------------|----------------------|
| COOLING DATA                      |             |             |             |             |                 |                 |                      |                      |
| TOTAL COOLING CAP. (Btu/hr) @95°F | 9,000       | 8,800       | 11,000      | 11,000      | 17,600          | 17,400          | 21,800               | 21,600               |
| SENSIBLE COOLING CAP. (Btu/hr)    | 6,650       | 6,650       | 8,100       | 8,100       | 12,500          | 12,500          | 15,400               | 15,000               |
| SEER2                             | 11.9        | 11.9        | 11.9        | 11.9        | 11.9            | 11.9            | 11.9                 | 11.9                 |
| EER2                              | 10.6        | 10.6        | 10.6        | 10.6        | 10.6            | 10.6            | 10.6                 | 10.6                 |
| VOLTAGE                           | 208/230     | 265         | 208/230     | 265         | 208/230         | 265             | 208/230              | 265                  |
| HEATING DATA                      |             |             |             |             |                 |                 |                      |                      |
| HEAT PUMP CAP. (Btu/hr) @ 47°F    | 8,200       | 8,200       | 10,400      | 10,400      | 16,000          | 16,000          | 18,500               | 18,500               |
| HEAT PUMP CAP. (Btu/hr) @ 17°F    | 4,500       | 4,500       | 5,600       | 5,600       | 9,000           | 9,000           | 12,000               | 12,000               |
| COP                               | 3.1         | 3.1         | 3.1         | 3.1         | 3.1             | 3.1             | 3.1                  | 3.1                  |
| HSPF2                             | 6.3         | 6.3         | 6.3         | 6.3         | 6.3             | 6.3             | 6.3                  | 6.3                  |
| HEATER SIZE (kW)                  | 2.5/3.4/5.0 | 2.5/3.4/5.0 | 2.5/3.4/5.0 | 2.5/3.4/5.0 | 2.5/3.4/5.0/7.5 | 2.5/3.4/5.0/7.5 | 2.5/3.4/5.0/7.5/10.0 | 2.5/3.4/5.0/7.5/10.0 |
| PHYSICAL                          |             |             |             |             |                 |                 |                      |                      |
| DIMENSIONS (W X D X H)            | 23"x23"x32" | 23"x23"x32" | 23"x23"x32" | 23"x23"x32" | 23"x23"x47"     | 23"x23"x47"     | 23"x23"x52"          | 23"x23"x52"          |
| REFRIGERANT                       | R410a       |             |             |             |                 |                 |                      |                      |
| VENTILATION AIR                   |             |             |             |             |                 |                 |                      |                      |
| CFM                               | UPTO 60     |             |             |             |                 |                 |                      |                      |

### NOTES:

Due to continuing research in new energy-saving technology, specifications are subject to change without notice.

# ELECTRICAL DATA

| Vert-I-Pak Family | Model Number | Total Refrigeration Amps | Total Electric Heat Amps | Electric Heat Watts | Electric Heat Amps | Compressor RLA/LRA | Blower Motor FLA/HP | Condenser Motor FLA/HP | MCA       | MOP/MOCP |           |           |           |           |
|-------------------|--------------|--------------------------|--------------------------|---------------------|--------------------|--------------------|---------------------|------------------------|-----------|----------|-----------|-----------|-----------|-----------|
| VHA09K (230/208)  | 25RTQ        | 6.8                      | 11.5/10.4                | 2450/2000           | 10.7/9.6           | 4.2/21             | 0.8 - 1/8           | 1.8 - 1/4              | 14.4      | 15       |           |           |           |           |
|                   | 34RTQ        | 6.8                      | 15.4/14.0                | 3350/2740           | 14.6/13.2          |                    |                     |                        | 19.3      | 20       |           |           |           |           |
|                   | 50RTQ        | 6.8                      | 22.5/20.5                | 5000/4090           | 21.7/19.7          |                    |                     |                        | 28.2      | 30       |           |           |           |           |
| VHA09R            | 25RTQ        | 6.8                      | 10                       | 2450                | 9.2                |                    |                     |                        | 12.5      | 15       |           |           |           |           |
|                   | 34RTQ        | 6.8                      | 13.4                     | 3350                | 12.6               |                    |                     |                        | 16.8      | 20       |           |           |           |           |
|                   | 50RTQ        | 6.8                      | 19.7                     | 5000                | 18.9               |                    |                     |                        | 24.7      | 25       |           |           |           |           |
| VHA12K (230/208)  | 25RTQ        | 7.3                      | 11.5/10.4                | 2450/2000           | 10.7/9.6           | 4.7/23             |                     | 0.8 - 1/8              | 1.8 - 1/4 | 14.4     | 15        |           |           |           |
|                   | 34RTQ        | 7.3                      | 15.4/14.0                | 3350/2740           | 14.6/13.2          |                    |                     |                        |           | 19.3     | 20        |           |           |           |
|                   | 50RTQ        | 7.3                      | 22.5/20.5                | 5000/4090           | 21.7/19.7          |                    |                     |                        |           | 28.2     | 30        |           |           |           |
| VHA12R            | 25RTQ        | 7.3                      | 10                       | 2450                | 9.2                |                    |                     |                        |           | 12.5     | 15        |           |           |           |
|                   | 34RTQ        | 7.3                      | 13.4                     | 3350                | 12.6               |                    |                     |                        |           | 16.8     | 20        |           |           |           |
|                   | 50RTQ        | 7.3                      | 19.7                     | 5000                | 18.9               |                    |                     |                        |           | 24.7     | 25        |           |           |           |
| VHA18K (230/208)  | 25RTQ        | 9.1                      | 11.5/10.4                | 2450/2000           | 10.7/9.6           | 6.8/30             | 0.8 - 1/8           |                        | 1.5 - 1/4 | 14.4     | 15        |           |           |           |
|                   | 34RTQ        | 9.1                      | 15.4/14.0                | 3350/2740           | 14.6/13.2          |                    |                     |                        |           | 19.3     | 20        |           |           |           |
|                   | 50RTQ        | 9.1                      | 22.5/20.5                | 5000/4090           | 21.7/19.7          |                    |                     |                        |           | 28.2     | 30        |           |           |           |
|                   | 75RTQ        | 9.1                      | 33.4/30.3                | 7500/6135           | 32.6/29.5          |                    |                     |                        |           | 41.8     | 45        |           |           |           |
| VHA18R            | 25RTQ        | 9.1                      | 10                       | 2450                | 9.2                |                    |                     |                        |           | 6.8/30   | 0.8 - 1/8 | 1.5 - 1/4 | 12.5      | 15        |
|                   | 34RTQ        | 9.1                      | 13.4                     | 3350                | 12.6               |                    |                     |                        |           |          |           |           | 16.8      | 20        |
|                   | 50RTQ        | 9.1                      | 19.7                     | 5000                | 18.9               |                    |                     | 25.3                   |           |          |           |           | 30        |           |
|                   | 75RTQ        | 9.1                      | 29.1                     | 7500                | 28.3               |                    |                     | 36.4                   |           |          |           |           | 40        |           |
| VHA24K (230/208)  | 25RTQ        | 10.7                     | 11.5/10.4                | 2450/2000           | 10.7/9.6           |                    |                     | 8.2/44                 |           |          |           |           | 0.8 - 1/5 | 1.7 - 1/4 |
|                   | 34RTQ        | 10.7                     | 15.4/14.0                | 3350/2740           | 14.6/13.2          | 19.5               |                     |                        | 25        |          |           |           |           |           |
|                   | 50RTQ        | 10.7                     | 22.5/20.5                | 5000/4090           | 21.7/19.7          | 29.6               |                     |                        | 30        |          |           |           |           |           |
|                   | 75RTQ        | 10.7                     | 33.4/30.3                | 7500/6135           | 32.6/29.5          | 41.8               |                     |                        | 45        |          |           |           |           |           |
|                   | 10RTQ        | 10.7                     | 44.3/40.1                | 1000/8180           | 43.5/39.3          | 55.4               | 60                  |                        |           |          |           |           |           |           |
| VHA24R            | 25RTQ        | 10.7                     | 10                       | 2450                | 9.2                | 8.2/44             | 0.8 - 1/5           |                        | 1.7 - 1/4 | 15.3     |           | 20        |           |           |
|                   | 34RTQ        | 10.7                     | 13.4                     | 3350                | 12.6               |                    |                     |                        |           | 18.3     |           | 20        |           |           |
|                   | 50RTQ        | 10.7                     | 19.7                     | 5000                | 18.9               |                    |                     |                        |           | 27.1     |           | 30        |           |           |
|                   | 75RTQ        | 10.7                     | 29.1                     | 7500                | 28.3               |                    |                     |                        |           | 36.4     | 40        |           |           |           |
|                   | 10RTQ        | 10.7                     | 38.5                     | 10000               | 37.7               |                    |                     |                        |           | 48.2     | 50        |           |           |           |

# AIRFLOW DATA

## INDOOR CFM & EXTERNAL STATIC PRESSURE

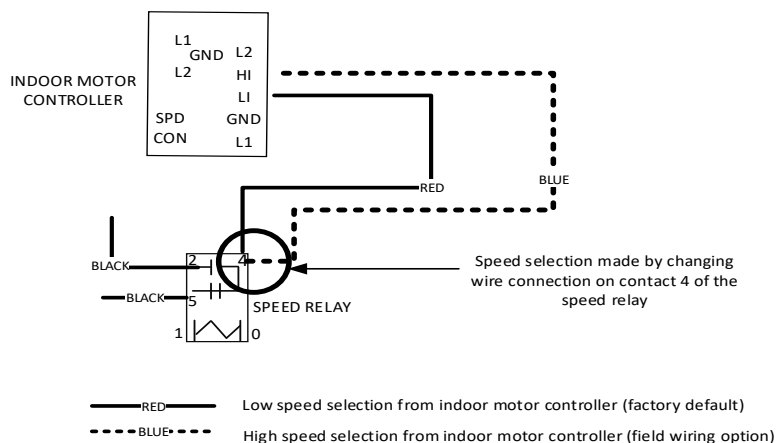
| MODEL     | VHA09 |      | VHA12 |      | VHA18 |      | VHA24 |      |
|-----------|-------|------|-------|------|-------|------|-------|------|
| Fan Speed | Low   | High | Low   | High | Low   | High | Low   | High |
| ESP (")   | SCFM  |      |       |      |       |      |       |      |
| 0.0"      | 360   | 420  | 360   | 460  | 620   | 705  | 675   | 765  |
| 0.05"     | 340   | 400  | 340   | 450  | 580   | 675  | 635   | 735  |
| 0.10"     | 325   | 385  | 325   | 430  | 550   | 640  | 600   | 700  |
| 0.15"     | 310   | 370  | 310   | 415  | 510   | 610  | 560   | 670  |
| 0.20"     | 295   | 355  | 295   | 400  | 480   | 585  | 525   | 635  |
| 0.25"     | 270*  | 325  | 270*  | 380  | 450   | 565  | 490   | 615  |
| 0.30"     | 260   | 300* | 260   | 350* | 400*  | 550  | 440*  | 600  |
| 0.35"     | --    | --   | --    | --   | 365   | 500  | 400   | 540  |
| 0.40"     | --    | --   | --    | --   | 320   | 450* | 350   | 490* |

\*Maximum Allowable Static. Units rated at 0.3" ESP.

## BLOWER CONTROL

All Vert-I-Paks, by default, will be configured to low speed blower operation. The speed setting can be changed to high speed by updating the speed tap settings on the fan control relay. Any non-Friedrich thermostat or low voltage device being powered by the Vert-I-Pak will need to be reviewed and approved for use.

**NOTE:** The fan speed setting **cannot** be changed at the thermostat. Regardless of wiring GH and/or GL, the unit will continue to operate at the speed setting at the fan control relay.



## CONDENSER CFM & EXTERNAL STATIC PRESSURE

Vert-I-Pak is designed to install through an exterior wall with a plenum (VPAWP1-8, VPAWP1-14) and an external louver. If the default plenum and louver combinations are not used, the selections and design must be evaluated by us to ensure the total pressure drop does not exceed the maximum allowable limits.

| Condenser External Static Pressure |        |           |           |
|------------------------------------|--------|-----------|-----------|
| Model                              | Design |           | Maximum   |
|                                    | CFM    | ESP (")WC | ESP (")WC |
| VHA09                              | 650    | 0.03      | 0.12      |
| VHA12                              | 650    | 0.03      | 0.12      |
| VHA18                              | 950    | 0.03      | 0.12      |
| VHA24                              | 980    | 0.03      | 0.12      |

# EXTENDED PERFORMANCE COOLING

| VHA09                    |   |   |      |      |        |      |      |        |      |      |
|--------------------------|---|---|------|------|--------|------|------|--------|------|------|
| Ambient Temperature (°F) | Entering Indoor Wet-Bulb Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |        |      |      |
|                          |   | 70  |      |      | 75     |      |      | 80     |      |      |
|                          |   | Btu/hr                                    | kW   | S/T  | Btu/hr | kW   | S/T  | Btu/hr | kW   | S/T  |
| 65                       | 59  | 9170                                      | 0.67 | 0.62 | 8860   | 0.65 | 0.9  | 9240   | 0.64 | 0.96 |
|                          | 63  | 10180                                     | 0.59 | 0.55 | 10120  | 0.59 | 0.66 | 10170  | 0.61 | 0.79 |
|                          | 67  | 10580                                     | 0.59 | 0.41 | 10720  | 0.6  | 0.48 | 11280  | 0.58 | 0.65 |
| 75                       | 59  | 8600                                      | 0.71 | 0.7  | 8450   | 0.7  | 0.93 | 9000   | 0.69 | 0.95 |
|                          | 63  | 9590                                      | 0.66 | 0.55 | 9630   | 0.66 | 0.67 | 9780   | 0.68 | 0.81 |
|                          | 67  | 10390                                     | 0.64 | 0.42 | 10460  | 0.65 | 0.5  | 10950  | 0.64 | 0.69 |
| 85                       | 59  | 7880                                      | 0.76 | 0.76 | 7900   | 0.76 | 0.96 | 8610   | 0.76 | 0.94 |
|                          | 63  | 8840                                      | 0.73 | 0.56 | 8970   | 0.73 | 0.69 | 9220   | 0.75 | 0.84 |
|                          | 67  | 9890                                      | 0.7  | 0.42 | 9900   | 0.72 | 0.52 | 10320  | 0.71 | 0.72 |
| 95                       | 59  | 7010                                      | 0.82 | 0.87 | 7190   | 0.82 | 1    | 8080   | 0.83 | 0.9  |
|                          | 63  | 7920                                      | 0.8  | 0.58 | 8150   | 0.8  | 0.72 | 8490   | 0.82 | 0.87 |
|                          | 67  | 9090                                      | 0.76 | 0.42 | 9030   | 0.79 | 0.54 | 9380   | 0.8  | 0.76 |
| 105                      | 59  | 6000                                      | 0.89 | 0.92 | 6350   | 0.9  | 1    | 7390   | 0.91 | 0.86 |
|                          | 63  | 6820                                      | 0.87 | 0.61 | 7150   | 0.87 | 0.76 | 7590   | 0.89 | 0.92 |
|                          | 67  | 7990                                      | 0.84 | 0.42 | 7860   | 0.88 | 0.55 | 8140   | 0.89 | 0.79 |
| 115                      | 59  | 4840                                      | 0.97 | 0.92 | 5350   | 0.99 | 1    | 6560   | 1    | 0.86 |
|                          | 63  | 5560                                      | 0.95 | 0.65 | 5990   | 0.95 | 0.8  | 6530   | 0.96 | 1    |
|                          | 67  | 6570                                      | 0.93 | 0.42 | 6380   | 0.97 | 0.57 | 6600   | 0.99 | 0.81 |

| VHA12                    |   |   |      |      |        |      |      |        |      |      |
|--------------------------|---|---|------|------|--------|------|------|--------|------|------|
| Ambient Temperature (°F) | Entering Indoor Wet-Bulb Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |        |      |      |
|                          |   | 70  |      |      | 75     |      |      | 80     |      |      |
|                          |   | Btu/hr                                    | kW   | S/T  | Btu/hr | kW   | S/T  | Btu/hr | kW   | S/T  |
| 65                       | 59  | 11080                                     | 0.79 | 0.62 | 10710  | 0.77 | 0.79 | 11170  | 0.76 | 0.94 |
|                          | 63  | 12310                                     | 0.7  | 0.52 | 12240  | 0.7  | 0.64 | 12290  | 0.73 | 0.76 |
|                          | 67  | 12800                                     | 0.7  | 0.39 | 12960  | 0.71 | 0.46 | 13630  | 0.69 | 0.63 |
| 75                       | 59  | 10390                                     | 0.84 | 0.66 | 10210  | 0.83 | 0.82 | 10880  | 0.83 | 0.95 |
|                          | 63  | 11600                                     | 0.78 | 0.53 | 11640  | 0.78 | 0.65 | 11820  | 0.81 | 0.78 |
|                          | 67  | 12560                                     | 0.76 | 0.4  | 12650  | 0.78 | 0.48 | 13240  | 0.76 | 0.66 |
| 85                       | 59  | 9520                                      | 0.91 | 0.71 | 9550   | 0.9  | 0.85 | 10410  | 0.9  | 0.96 |
|                          | 63  | 10690                                     | 0.87 | 0.54 | 10850  | 0.86 | 0.66 | 11140  | 0.89 | 0.81 |
|                          | 67  | 11960                                     | 0.83 | 0.4  | 11970  | 0.85 | 0.5  | 12480  | 0.85 | 0.7  |
| 95                       | 59  | 8480                                      | 0.98 | 0.82 | 8700   | 0.98 | 0.92 | 9760   | 0.99 | 1    |
|                          | 63  | 9570                                      | 0.95 | 0.56 | 9850   | 0.95 | 0.69 | 10260  | 0.97 | 0.84 |
|                          | 67  | 10990                                     | 0.91 | 0.4  | 10920  | 0.94 | 0.52 | 11340  | 0.95 | 0.73 |
| 105                      | 59  | 7250                                      | 1.06 | 0.88 | 7670   | 1.07 | 0.96 | 8940   | 1.09 | 1    |
|                          | 63  | 8250                                      | 1.04 | 0.59 | 8650   | 1.03 | 0.73 | 9180   | 1.06 | 0.88 |
|                          | 67  | 9650                                      | 1    | 0.4  | 9500   | 1.04 | 0.53 | 9840   | 1.06 | 0.76 |
| 115                      | 59  | 5850                                      | 1.16 | 0.88 | 6470   | 1.17 | 0.96 | 7930   | 1.2  | 1    |
|                          | 63  | 6730                                      | 1.13 | 0.63 | 7250   | 1.12 | 0.77 | 7890   | 1.15 | 0.93 |
|                          | 67  | 7950                                      | 1.1  | 0.4  | 7710   | 1.15 | 0.55 | 7980   | 1.18 | 0.78 |

# EXTENDED PERFORMANCE COOLING

| VHA18                    |   |   |      |      |        |      |      |              |             |             |
|--------------------------|---|---|------|------|--------|------|------|--------------|-------------|-------------|
| Ambient Temperature (°F) | Entering Indoor Wet-Bulb Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |              |             |             |
|                          |   | 70  |      |      | 75     |      |      | 80           |             |             |
|                          |   | Btu/hr                                    | kW   | S/T  | Btu/hr | kW   | S/T  | Btu/hr       | kW          | S/T         |
| 65                       | 59  | 18900                                     | 1.28 | 0.66 | 17760  | 1.29 | 0.88 | 17840        | 1.27        | 1           |
|                          | 63  | 20980                                     | 1.13 | 0.56 | 20270  | 1.17 | 0.69 | 19640        | 1.22        | 0.82        |
|                          | 67  | 21830                                     | 1.13 | 0.42 | 21470  | 1.19 | 0.51 | 21790        | 1.14        | 0.68        |
| 75                       | 59  | 17710                                     | 1.36 | 0.71 | 16950  | 1.39 | 0.9  | 17410        | 1.38        | 1           |
|                          | 63  | 19760                                     | 1.26 | 0.56 | 19300  | 1.3  | 0.7  | 18910        | 1.35        | 0.84        |
|                          | 67  | 21390                                     | 1.23 | 0.42 | 20950  | 1.3  | 0.53 | 21190        | 1.27        | 0.72        |
| 85                       | 59  | 16220                                     | 1.46 | 0.76 | 15840  | 1.5  | 0.92 | 16670        | 1.5         | 1           |
|                          | 63  | 18200                                     | 1.4  | 0.57 | 17980  | 1.44 | 0.72 | 17850        | 1.48        | 0.87        |
|                          | 67  | 20340                                     | 1.34 | 0.43 | 19820  | 1.43 | 0.55 | 19980        | 1.42        | 0.75        |
| 95                       | 59  | 14440                                     | 1.58 | 0.87 | 14430  | 1.63 | 1    | 15640        | 1.65        | 1           |
|                          | 63  | 16300                                     | 1.53 | 0.59 | 16330  | 1.58 | 0.75 | 16440        | 1.62        | 0.91        |
|                          | 67  | 18690                                     | 1.47 | 0.43 | 18080  | 1.57 | 0.57 | <b>18170</b> | <b>1.58</b> | <b>0.79</b> |
| 105                      | 59  | 12350                                     | 1.71 | 0.93 | 12720  | 1.78 | 1    | 14310        | 1.81        | 1           |
|                          | 63  | 14060                                     | 1.68 | 0.63 | 14330  | 1.72 | 0.79 | 14690        | 1.77        | 0.95        |
|                          | 67  | 16430                                     | 1.61 | 0.43 | 15750  | 1.74 | 0.58 | 15750        | 1.76        | 0.82        |
| 115                      | 59  | 9970                                      | 1.87 | 0.93 | 10710  | 1.95 | 1    | 12680        | 2           | 1           |
|                          | 63  | 11470                                     | 1.82 | 0.66 | 12000  | 1.87 | 0.84 | 12610        | 1.91        | 1           |
|                          | 67  | 13570                                     | 1.78 | 0.42 | 12810  | 1.92 | 0.59 | 12730        | 1.96        | 0.85        |

| VHA24                    |   |   |      |      |        |      |      |              |             |             |
|--------------------------|---|---|------|------|--------|------|------|--------------|-------------|-------------|
| Ambient Temperature (°F) | Entering Indoor Wet-Bulb Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |              |             |             |
|                          |   | 70  |      |      | 75     |      |      | 80           |             |             |
|                          |   | Btu/hr                                    | kW   | S/T  | Btu/hr | kW   | S/T  | Btu/hr       | kW          | S/T         |
| 65                       | 59  | 22840                                     | 1.61 | 0.73 | 21590  | 1.63 | 0.9  | 21740        | 1.68        | 1           |
|                          | 63  | 24990                                     | 1.45 | 0.58 | 24120  | 1.52 | 0.7  | 23360        | 1.55        | 0.83        |
|                          | 67  | 25800                                     | 1.43 | 0.46 | 25360  | 1.48 | 0.51 | 26140        | 1.46        | 0.68        |
| 75                       | 59  | 21400                                     | 1.71 | 0.75 | 20600  | 1.73 | 0.91 | 21200        | 1.78        | 1           |
|                          | 63  | 23530                                     | 1.6  | 0.57 | 22960  | 1.67 | 0.69 | 22500        | 1.72        | 0.83        |
|                          | 67  | 25280                                     | 1.57 | 0.47 | 24810  | 1.63 | 0.53 | 25570        | 1.63        | 0.7         |
| 85                       | 59  | 19610                                     | 1.83 | 0.78 | 19260  | 1.86 | 0.92 | 20300        | 1.91        | 1           |
|                          | 63  | 21670                                     | 1.76 | 0.57 | 21400  | 1.84 | 0.7  | 21230        | 1.89        | 0.85        |
|                          | 67  | 24010                                     | 1.72 | 0.48 | 23520  | 1.8  | 0.54 | 24260        | 1.81        | 0.72        |
| 95                       | 59  | 17450                                     | 1.98 | 0.84 | 17550  | 2.01 | 0.96 | 19040        | 2.07        | 1           |
|                          | 63  | 19400                                     | 1.94 | 0.58 | 19430  | 2.03 | 0.73 | 19560        | 2.08        | 0.88        |
|                          | 67  | 22000                                     | 1.9  | 0.48 | 21480  | 1.99 | 0.55 | <b>22200</b> | <b>2.02</b> | <b>0.74</b> |
| 105                      | 59  | 14930                                     | 2.16 | 0.87 | 15480  | 2.19 | 1    | 17420        | 2.25        | 1           |
|                          | 63  | 16730                                     | 2.12 | 0.61 | 17060  | 2.22 | 0.76 | 17490        | 2.29        | 0.92        |
|                          | 67  | 19230                                     | 2.09 | 0.49 | 18700  | 2.2  | 0.56 | 19390        | 2.25        | 0.76        |
| 115                      | 59  | 12050                                     | 2.37 | 0.87 | 13040  | 2.4  | 1    | 15440        | 2.47        | 1           |
|                          | 63  | 13660                                     | 2.33 | 0.64 | 14280  | 2.43 | 0.8  | 15010        | 2.5         | 1           |
|                          | 67  | 15720                                     | 2.31 | 0.49 | 15160  | 2.43 | 0.57 | 15830        | 2.5         | 0.77        |

## EXTENDED PERFORMANCE HEATING

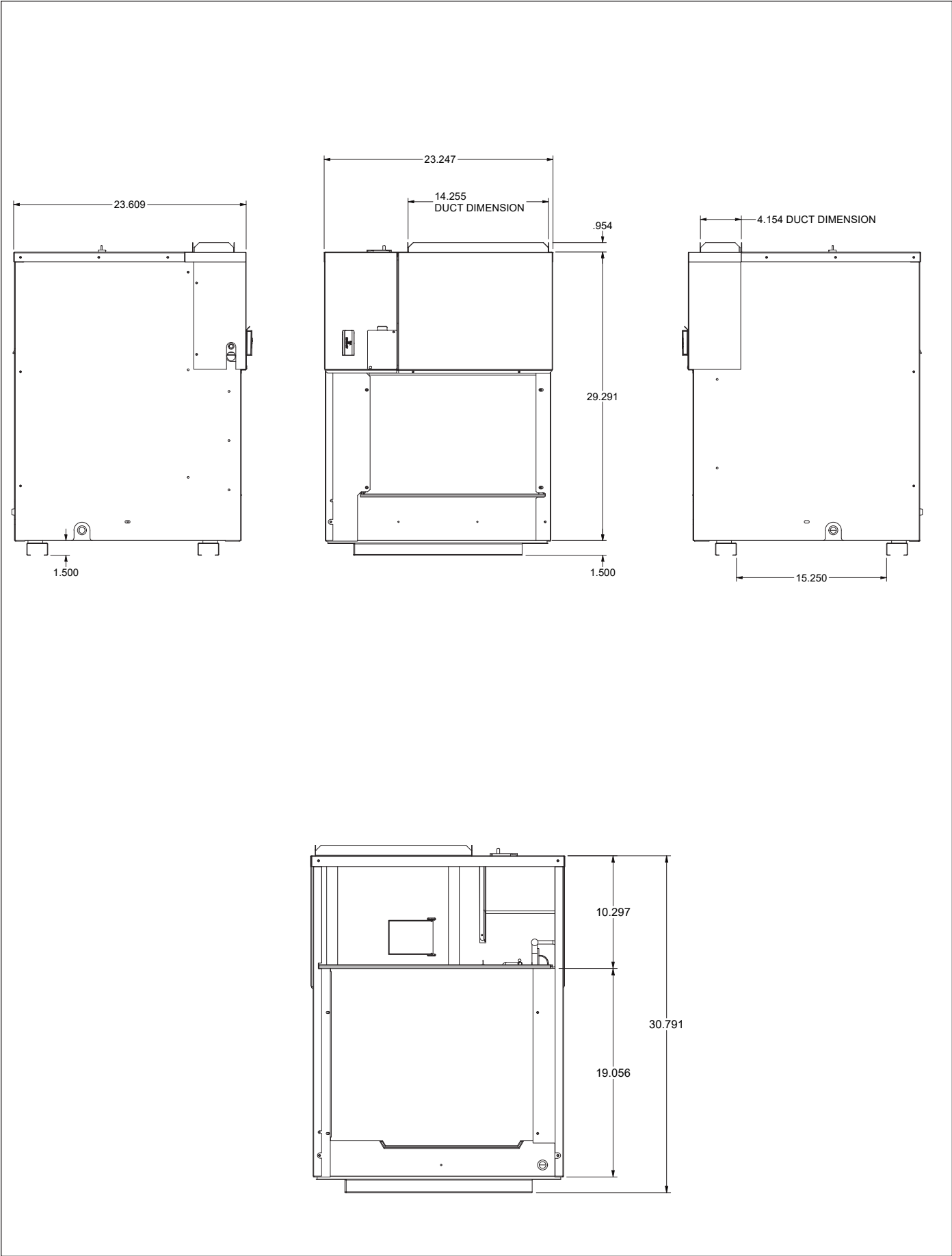
| VHA09                    |   |      |      |        |      |      |        |      |      |
|--------------------------|---|------|------|--------|------|------|--------|------|------|
| Ambient Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |        |      |      |
|                          | 65  |      |      | 70     |      |      | 75     |      |      |
|                          | Btu/hr                                    | kW   | COP  | Btu/hr | kW   | COP  | Btu/hr | kW   | COP  |
| 70                       | 11360                                     | 0.8  | 4.16 | 11170  | 0.84 | 3.9  | 10900  | 0.87 | 3.67 |
| 60                       | 10220                                     | 0.77 | 3.89 | 10030  | 0.8  | 3.67 | 9760   | 0.83 | 3.45 |
| 50                       | 9050                                      | 0.74 | 3.58 | 8860   | 0.77 | 3.37 | 8610   | 0.79 | 3.19 |
| 40                       | 7860                                      | 0.7  | 3.29 | 7680   | 0.73 | 3.08 | 7430   | 0.75 | 2.9  |
| 30                       | 6650                                      | 0.67 | 2.91 | 6470   | 0.69 | 2.75 | 6230   | 0.71 | 2.57 |
| 20                       | 5410                                      | 0.63 | 2.52 | 5240   | 0.65 | 2.36 | 5000   | 0.67 | 2.19 |
| 10                       | 4160                                      | 0.59 | 2.07 | 3990   | 0.61 | 1.92 | 3760   | 0.63 | 1.75 |

| VHA12                    |   |      |      |        |      |      |        |      |      |
|--------------------------|---|------|------|--------|------|------|--------|------|------|
| Ambient Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |        |      |      |
|                          | 65  |      |      | 70     |      |      | 75     |      |      |
|                          | Btu/hr                                    | kW   | COP  | Btu/hr | kW   | COP  | Btu/hr | kW   | COP  |
| 70                       | 14060                                     | 1.04 | 3.96 | 13820  | 1.09 | 3.72 | 13490  | 1.13 | 3.5  |
| 60                       | 12650                                     | 1    | 3.71 | 12410  | 1.04 | 3.5  | 12090  | 1.08 | 3.28 |
| 50                       | 11200                                     | 0.96 | 3.42 | 10970  | 1    | 3.22 | 10650  | 1.03 | 3.03 |
| 40                       | 9730                                      | 0.91 | 3.13 | 9500   | 0.95 | 2.93 | 9190   | 0.98 | 2.75 |
| 30                       | 8230                                      | 0.87 | 2.77 | 8010   | 0.9  | 2.61 | 7710   | 0.92 | 2.46 |
| 20                       | 6700                                      | 0.82 | 2.39 | 6490   | 0.85 | 2.24 | 6190   | 0.87 | 2.09 |
| 10                       | 5150                                      | 0.77 | 1.96 | 4940   | 0.79 | 1.83 | 4650   | 0.81 | 1.68 |

| VHA18                    |   |      |      |        |      |      |        |      |      |
|--------------------------|---|------|------|--------|------|------|--------|------|------|
| Ambient Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |        |      |      |
|                          | 65  |      |      | 70     |      |      | 75     |      |      |
|                          | Btu/hr                                    | kW   | COP  | Btu/hr | kW   | COP  | Btu/hr | kW   | COP  |
| 70                       | 21490                                     | 1.42 | 4.44 | 21250  | 1.46 | 4.27 | 20950  | 1.51 | 4.07 |
| 60                       | 19410                                     | 1.39 | 4.09 | 19130  | 1.43 | 3.92 | 18800  | 1.47 | 3.75 |
| 50                       | 17350                                     | 1.35 | 3.77 | 17040  | 1.39 | 3.59 | 16670  | 1.43 | 3.42 |
| 40                       | 15320                                     | 1.31 | 3.43 | 14970  | 1.35 | 3.25 | 14570  | 1.39 | 3.07 |
| 30                       | 13310                                     | 1.26 | 3.1  | 12930  | 1.3  | 2.92 | 12490  | 1.34 | 2.73 |
| 20                       | 11320                                     | 1.21 | 2.74 | 10910  | 1.25 | 2.56 | 10440  | 1.28 | 2.39 |
| 10                       | 9360                                      | 1.15 | 2.39 | 8910   | 1.19 | 2.19 | 8410   | 1.22 | 2.02 |

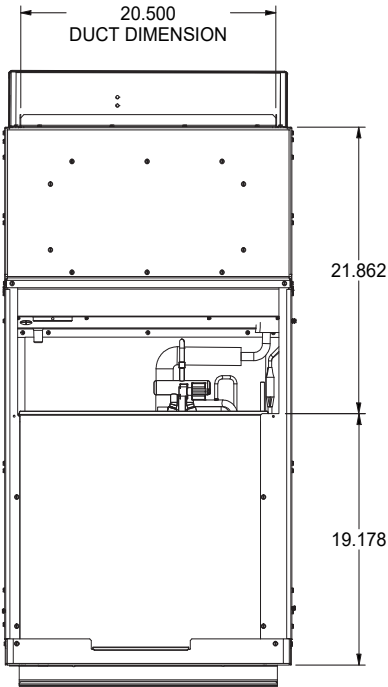
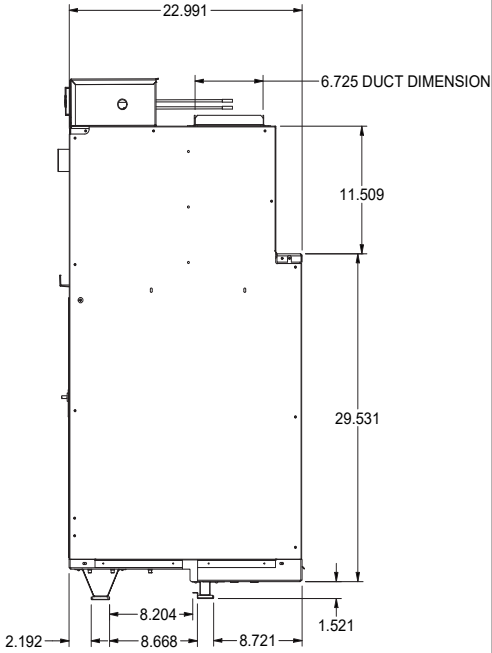
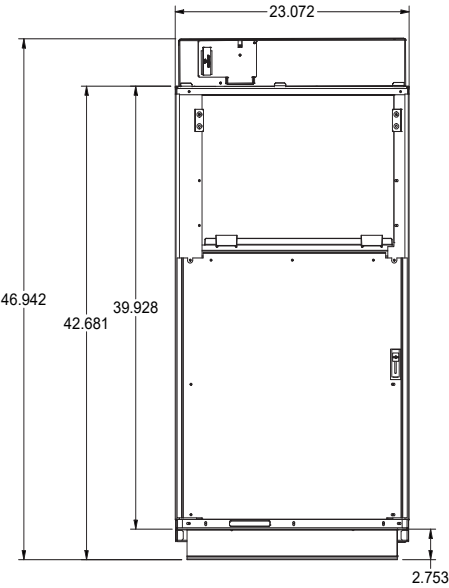
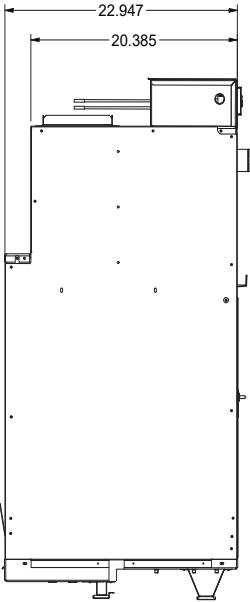
| VHA24                    |   |      |      |        |      |      |        |      |      |
|--------------------------|---|------|------|--------|------|------|--------|------|------|
| Ambient Temperature (°F) | Entering Indoor Dry Bulb Temperature (°F) |      |      |        |      |      |        |      |      |
|                          | 65  |      |      | 70     |      |      | 75     |      |      |
|                          | Btu/hr                                    | kW   | COP  | Btu/hr | kW   | COP  | Btu/hr | kW   | COP  |
| 70                       | 24580                                     | 1.68 | 4.29 | 24320  | 1.73 | 4.12 | 23980  | 1.78 | 3.95 |
| 60                       | 22280                                     | 1.65 | 3.96 | 21970  | 1.69 | 3.81 | 21580  | 1.74 | 3.63 |
| 50                       | 20030                                     | 1.61 | 3.65 | 19670  | 1.65 | 3.49 | 19240  | 1.7  | 3.32 |
| 40                       | 17830                                     | 1.56 | 3.35 | 17430  | 1.61 | 3.17 | 16950  | 1.65 | 3.01 |
| 30                       | 15680                                     | 1.51 | 3.04 | 15230  | 1.55 | 2.88 | 14710  | 1.59 | 2.71 |
| 20                       | 13580                                     | 1.44 | 2.76 | 13080  | 1.49 | 2.57 | 12520  | 1.53 | 2.4  |
| 10                       | 11530                                     | 1.38 | 2.45 | 10990  | 1.42 | 2.27 | 10370  | 1.46 | 2.08 |

UNIT DIMENSIONS - VHA09/12

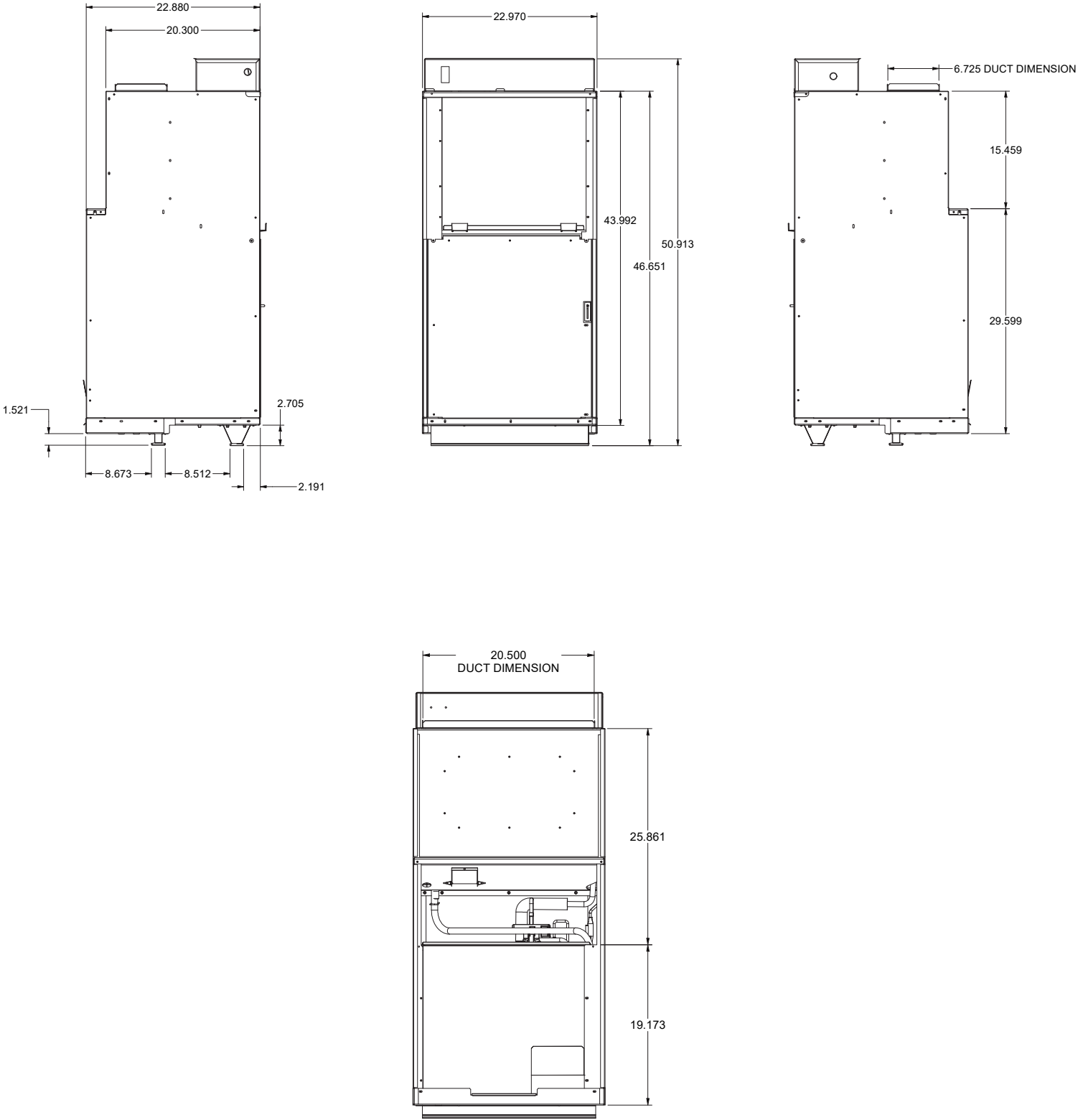




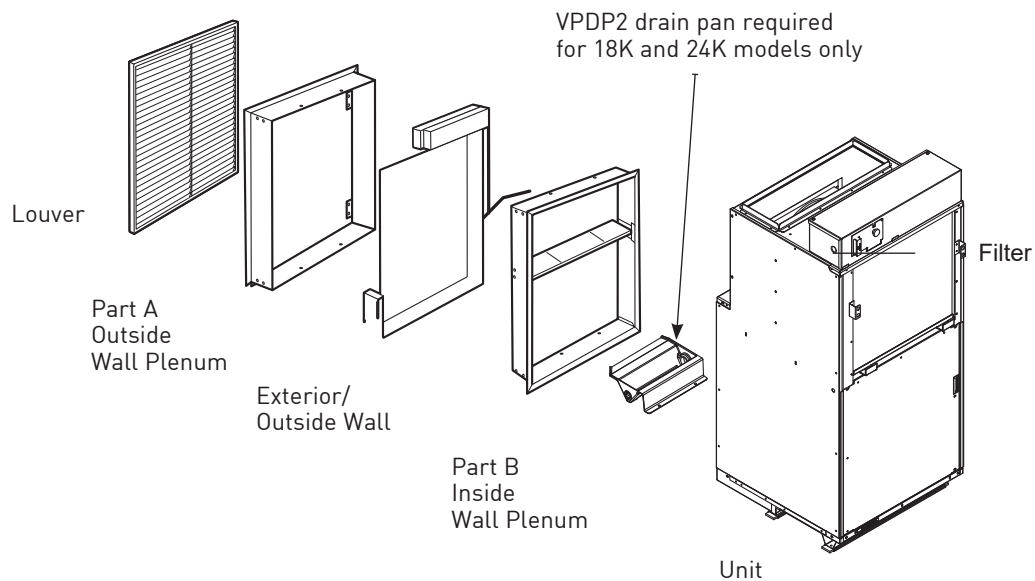
UNIT DIMENSIONS - VHA18



UNIT DIMENSIONS - VHA18



## TYPICAL INSTALLATION FOR VERT-I-PAK



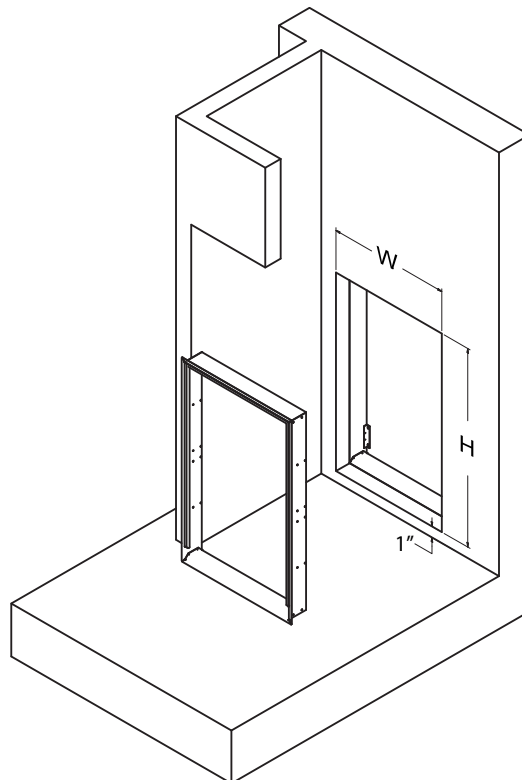
VPAWP1-8 = 5 1/2" - 8" D x 24 1/8" W x 30 3/8" H

VPAWP1-14 = 8" - 14" D x 24 1/8" W x 30 3/8" H

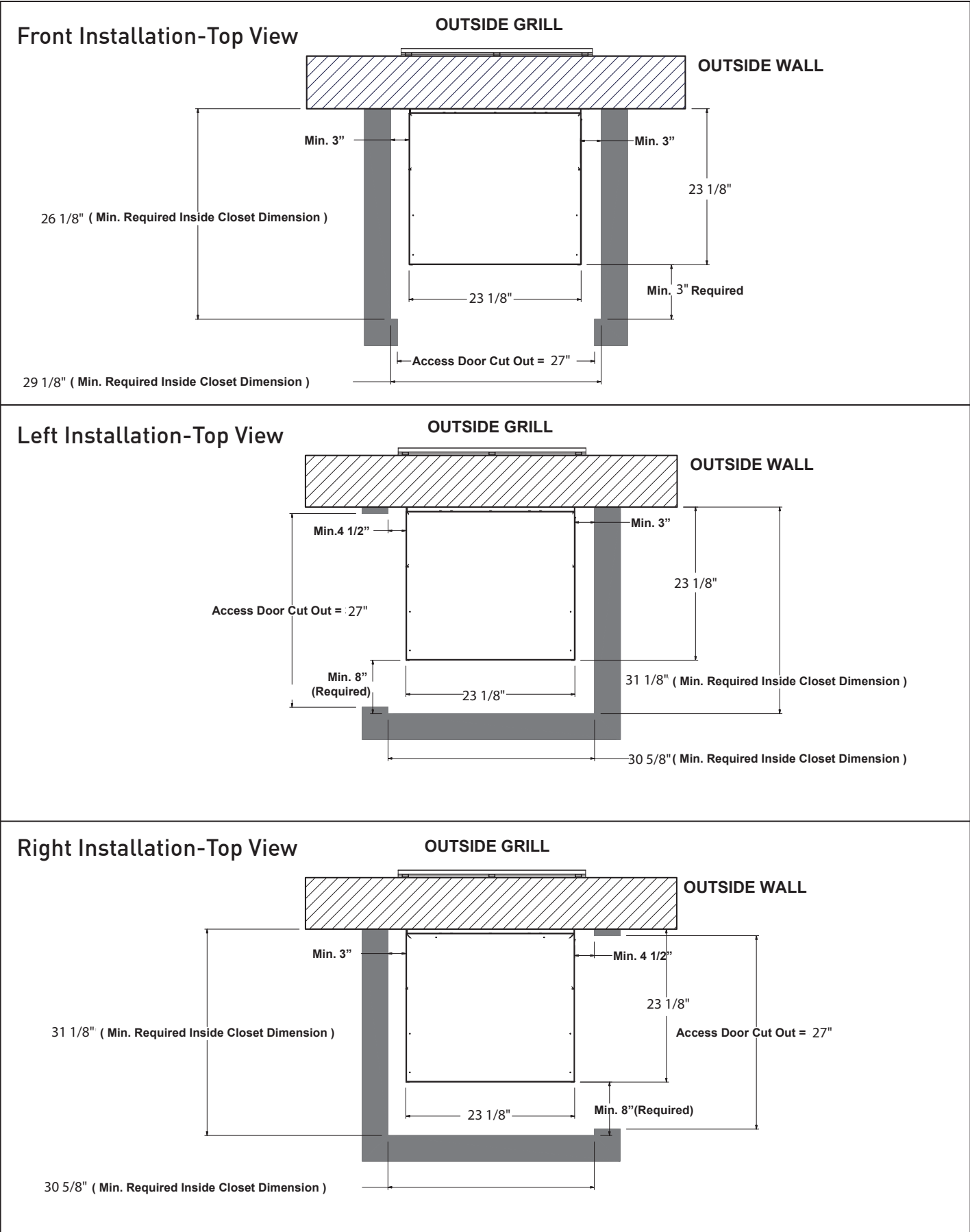
## INSTALL DIMENSIONS

Dimensions (W x H):  
**24 5/8" x 30 7/8"**

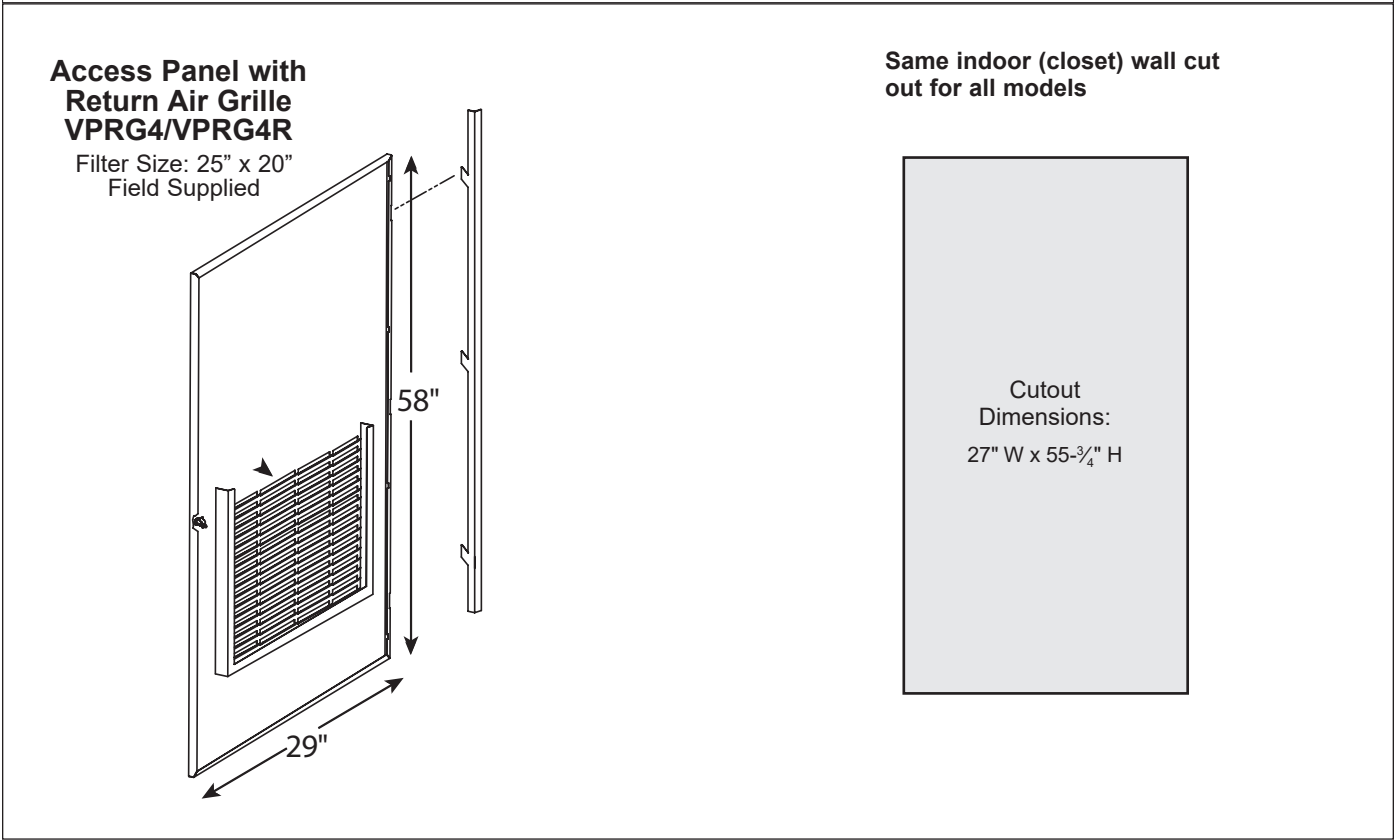
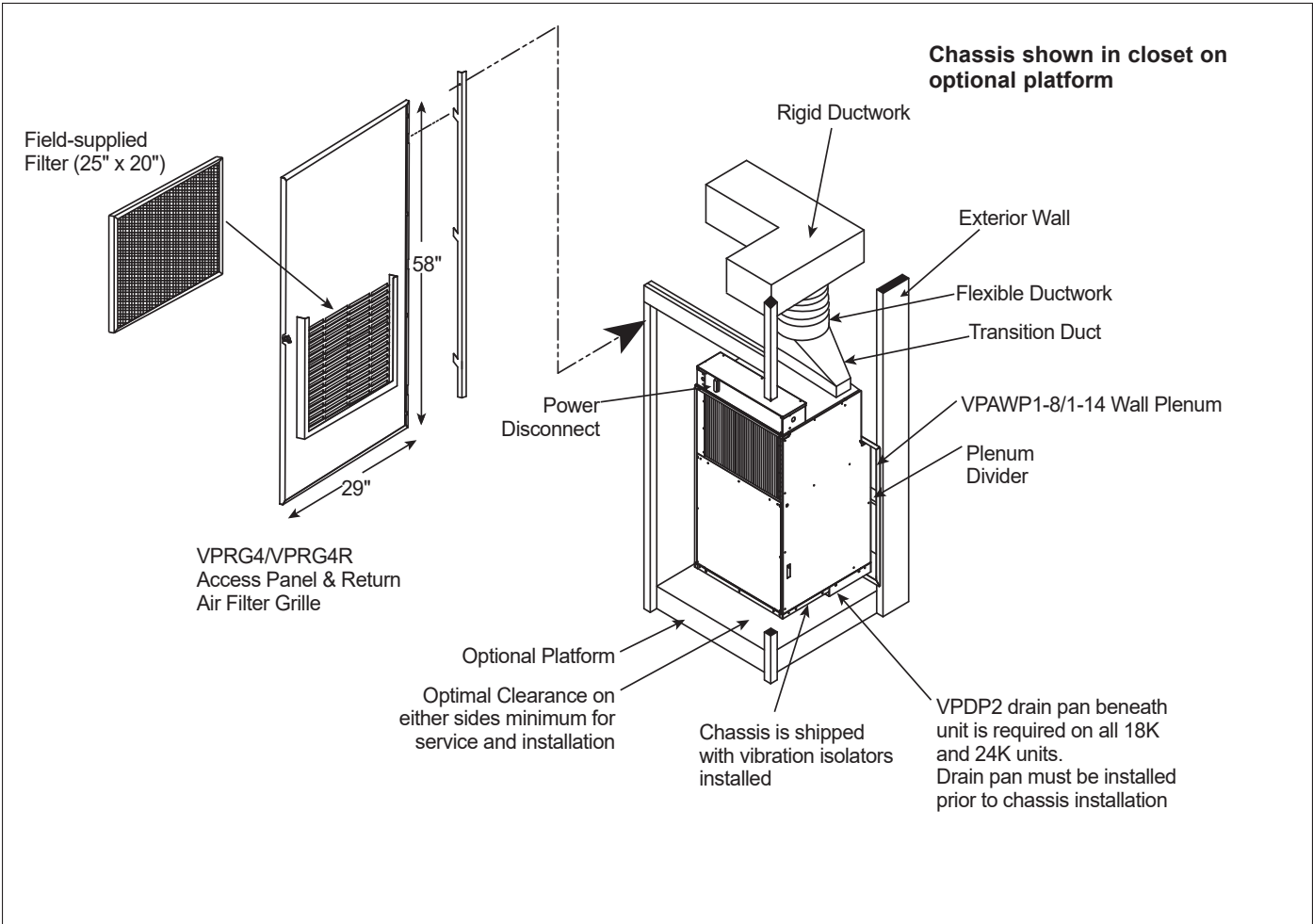
**NOTE:** The distance between the rough opening and the finished floor/platform must be 1".



INSTALLATION OVERVIEW  
CLOSET ORIENTATIONS AND DIMENSIONS

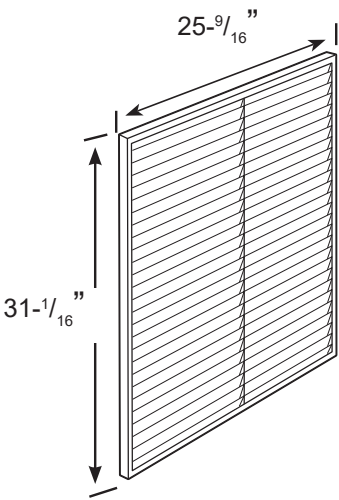


# TYPICAL CLOSET FOR VERT-I-PAK



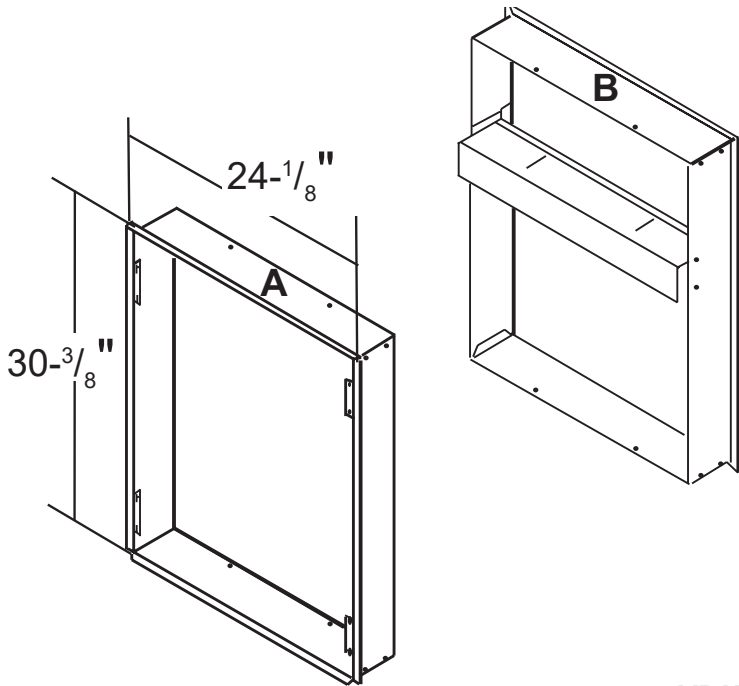
ACCESSORIES DIMENSIONS

Louver



**Architectural Louver**  
**VPAL2/-42/VPSC2/-42**

Wall Plenum



Cutout  
Dimensions:  
24-5/8" W x 30-7/8"H

**Wall Plenum**  
**VPAWP1-8 - telescopes from 5-1/2" to 8"**  
**VPAWP1-14 - telescopes from 8" to 14"**

# Application and Installation

## LOW AMBIENT PERFORMANCE

- All models are equipped to function as a heat pump down to 10°F. The Primary call for heating is always heat pump and the electric heat comes on when thermostat energizes W2 (emergency heat). Electric heat is backup and not supplemental.
- All models are equipped with an integrated base pan heater that aids in the continuous operation of heat pump even at freezing temperatures
- All models are equipped to run a Defrost Cycle based on the outdoor coil temperature and ambient temperature. During this cycle, the unit runs in air-conditioning mode to remove frost from the outdoor coil. Electric heat is allowed to function along with the compressor (only during defrost) to continue conditioning the space (if required).

| Base Heater<br>[kW] | Heat O/P During Defrost<br>[Btu/hr] |
|---------------------|-------------------------------------|
| 2.45                | 3,070                               |
| 3.35                | 5,290                               |
| 5                   | 11,600                              |
| 7.5                 | 17,060                              |
| 10                  | 17,060                              |

## Installation Guidelines

- Chassis is to be installed against an exterior wall. Wall cutout dimensions will be 24 5/8" w x 30 7/8" h.
- Closet should allow for a minimum of three inches on three sides of the unit for return air (if front installed), drain connections and change outs.
- Minimum recommended access door rough-in measurements 27" wide by 55 3/4" high (for VPRG4/VPRG4R).
- It is recommended to use a platform between 24" and 36" above the floor, for ease of installation and serviceability.
- Duct outlet designed for external static pressures up to 0.3" on 9K and 12K Btu/hr models
- Duct outlet designed for external static pressures up to 0.4" on 18K and 24K Btu/hr models
- Wall plenum allows chassis to be inserted 2 3/8" into plenum, thereby minimizing closet dimensions.
- Quick connect drain coupling ships standard to make installation and removal easier.

## Application and Accessories (All models)

- The use of a factory supplied wall plenum is required for installation. Plenum opening is 1" above the finished floor (VPAWP1-8 / VPAWP1-14).
- Return air is accommodated with a return air filter attached to the unit or through the use of a return air filter grille. (VPRG4/VPRG4R).
- Exterior louvers are available in anodized aluminum (VPAL2/VPAL2-42) or in custom painted colors (VPSC2/VPSC2-42).
- Unit is controlled by a remote wall-mounted thermostat. model WRT2 wireless digital thermostat, RT7 wired digital thermostat, RT7P wired programmable thermostat, or EMRT2 or EMWRT2 Energy Management thermostats.
- Central desk control ready.

## Application and Accessories (18K & 24K Models)

- 18K & 24K utilize a drain pan (VPDP2) that can be installed prior to chassis for simplified installation and removal.

## REQUIRED ACCESSORIES

### ARCHITECTURAL LOUVER

#### VPAL2 and VPAL2-42

Extruded aluminum grille (30° or 42° blade angle) that attaches to the outdoor section of the wall plenum.

#### VPSC2 and VPSC2-42

VPAL2 and VPAL2-42 in custom colors.

DIMENSIONS: 25 9/16" W x 31 1/16" H

### WALL PLENUM

#### VPAWP1-8, VPAWP1-14

Two-part sleeve that telescopes in and out. Sits inside the exterior wall penetration.

VPAWP1-8 telescopes from 5 1/2"–8"

VPAWP1-14 telescopes from 8"–14"

DIMENSIONS: 24 1/8" W x 30 3/8" H

CUTOUT DIMENSIONS: 24 5/8" W x 30 7/8" H

### DRAIN PAN

#### VPDP2

Required for all 18K and 24K models. Can be installed prior to chassis for easy installation/removal.

## OPTIONAL ACCESSORIES

### RETURN AIR GRILLE/ACCESS PANEL

#### VPRG4 / VPRG4R

Hinged panel allows access to unit and return air filter.

A field-supplied filter (25" x 20") should be mounted on the inside grille. Panel can be mounted with return air openings high or low on the door for optimum sound attenuation.

DIMENSIONS: 29" W x 58" H

CUTOUT DIMENSIONS: 27" W x 55 3/4" H

### FIRST COMPANY SLEEVE ADAPTER

#### VPASA1

Single piece, welded adapter allows retrofit into existing First Company SPXR-series single package vertical unit wall sleeve and louver. Easy connection to small chassis Vert-I-Pak only.

### SINGLE STAGE THERMOSTATS

#### RT7P

Wired, single stage, wall-mounted programmable thermostat.

#### RT7

Wired, single stage, wall-mounted digital thermostat and backlight.

#### WRT2

Wireless, single stage, wall-mounted digital thermostat and backlight.

### ENERGY MANAGEMENT THERMOSTATS

#### EMRT2 & EMWRT2

Wired/Wireless thermostat with occupancy sensor.

#### EMOCT

#### EMRAF

#### EMROS

Online connection kit. Remote access fee. Remote Occupancy Sensor

#### EMRTS

#### EMRDS

#### EMCWP

#### EMRWOS

Remote Temperature Sensor Door Switch Wall-Plate Wireless Occ. Sensor



VPAL2



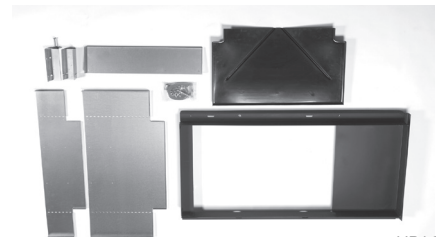
VPDP2



VPAWP1-8/14



VPRG4/R



VPASA1



RT7



RT7P



WRT2



EMRT2, EMWRT2



# HVAC Engineering Specifications

## Single Packaged Heat Pumps

Cooling: 9,000 – 21,200 Btu/hr

Heating: 8,200 – 18,500 Btu/hr (Heat Pump)  
8,500 – 34,130 Btu/hr (Back Up Electric Heat)

All units shall be factory assembled, piped, wired and fully charged with R-410A. All units shall be certified in accordance with AHRI Standard 210/240 under space constrained unitary small equipment. Units shall be ETL listed and carry a ETL label. All units shall be factory run-tested to check operation and be manufactured by Friedrich or equivalent.

The basic unit shall not exceed 23 1/8" wide x 23 1/8" deep. Overall height of the unit from the bottom of the isolators to the top of the duct collar shall not exceed 32 1/4" for models up to 12,000 Btu, 47 1/4" for 18,000 Btu models, and 51 1/4" for 24,000 Btu models. The unit shall be designed so that the unit will insert into a factory supplied wall plenum 2 3/8" to minimize room intrusion. Factory supplied wall plenums shall allow for installation through walls from 4 1/2" – 14" in thickness. Wall plenums will be adjustable to minimize installation clearances. Unit shall draw in ambient air through upper portion of an outside architectural louver measuring 25 9/16" wide x 31 1/16" high and shall exhaust heated air out through the lower portion of the louver. The unit shall be secured to the architectural louver by means of a two part, weather-resistant wall plenum. The unit shall be capable of left, right or straight-in installations into mechanical closet without field modifications.

**REFRIGERATION SYSTEM** – The refrigeration system shall be hermetically sealed and consist of a rotary compressor that is externally mounted on vibration isolators no smaller than 1 3/4" dia. x 1 1/2" high; condenser and evaporator coils constructed of copper tubes and aluminum plate fins; and capillaries as expansion devices. Unit shall have a fan slinger ring to increase efficiency and condensate disposal. A primary condensate removal system consisting of 3/4" FTP fittings on multiple locations shall exist. A secondary overflow from the primary drain pan shall expel water to the outside of the building through the wall plenum and louver in the event that the primary drain line clogs.

**AIR HANDLING SECTION** – All models shall utilize separate motors for both the indoor and outdoor air sections. Airflow shall be directed vertically up through a rectangular opening. The size of the opening is same for 9K and 12K units; and same for 18K and 24K units.

The chassis shall have a built-in damper capable of providing up to 60 CFM of fresh air into the conditioned area. A fine mesh screen shall filter the incoming fresh air. The damper can be controlled by a slide lever located on the front of the unit.

**CONTROLS** – The unit shall be factory equipped with terminal strip for connection to a standard 24-volt single-stage heat/cool thermostat. A transformer shall be included and factory wired to work with Friedrich branded or factory approved devices. Low voltage inputs will include: C (common), R (24V power), Y (cooling), G (fan), W (heat) and B (reversing valve). The unit shall be hard-wired and have a quick-disconnect to disable power for control box service.

**GENERAL CONSTRUCTION** – The unit shall be constructed of 18-gauge galvanized zinc-coated steel. The unit shall feature 1/2" foil backed insulation for sound and thermal efficiency.

The wall plenum (required factory accessory) shall be shipped separately and constructed of 20-gauge galvanized zinc-coated steel; pretreated with zinc-phosphate and sealed with a chromate rinse, then powder-coated for maximum coverage and protection. The plenum shall be black in color for minimal visibility of unit from exterior of building. The plenum shall be shipped with a protective weatherboard for use prior to final installation of the louver and chassis.

The architectural louver (required factory accessory) shall be shipped separately and fabricated from extruded anodized aluminum with louvers in the horizontal plane.

The unit shall include vibration isolators mounted under the chassis and a nonrigid plenum-to-chassis connection to isolate vibrations to the building.

The unit shall have a plastic fan, fan shroud and drain pan and aluminum outdoor coil endplates for corrosion protection and to help prevent rust on the side of the building below the outdoor louver.

The unit shall be shipped with return air filter brackets and a 14" x 20" or 18" x 20" filter affixed directly on to the unit chassis. Optional return air grilles and access panels shall be available as factory accessories for installation in the wall or door of the mechanical closet.

**CORROSION PROTECTION** – The unit shall feature corrosion-resistant materials and finish to help prevent deterioration.

The outdoor coil shall have Diamonblue advanced corrosion protection consisting of hydrophilic-coated fins to prolong the life of the coil in all applications including seacoast protection.

**ACCESSORY ACCESS PANEL** – An optional factory-supplied access panel shall be available to provide access to the unit and adequate return air. The panel shall feature a filter holder to accept a field supplied 25" x 20" x 1" filter. Kit shall contain a hinge bracket for mounting the door with the return air openings high or low on the door for optimal sound attenuation.

**WARRANTY** – The warranty is one year on all parts and labor and 5 years on the sealed system, parts and labor, including compressor, indoor and outdoor coils and refrigerant tubing.

# Vert-I-Pak® Single Package Heat Pumps

|              |              |               |
|--------------|--------------|---------------|
| PURCHASER    | P.O. #       | DATE          |
| PROJECT      | LOCATION     |               |
| ENGINEER     | ARCHITECT    |               |
| SUBMITTED BY | FOR APPROVAL | FOR REFERENCE |

| ITEM | PLAN DESIGNATION | QUANTITY | COOLING Btu | VOLTAGE | MODEL NUMBER |
|------|------------------|----------|-------------|---------|--------------|
|      |                  |          |             |         |              |
|      |                  |          |             |         |              |
|      |                  |          |             |         |              |
|      |                  |          |             |         |              |
|      |                  |          |             |         |              |

## ACCESSORIES (Wall Plenum and Outdoor Louver are required)

|   |     |  |  |     |  |
|---|-----|--|--|-----|--|
| VPAWP1-8 Adjustable Wall Plenum (5 ½" - 8")   | Qty |  | RT7 Wired Digital Wall Thermostat                | Qty |  |
| VPAWP1-14 Adjustable Wall Plenum (8"-14")   | Qty |  | RT7P Wired Programmable Wall Thermostat          | Qty |  |
| VPAL2/VPAL2-42 Architectural Louver   | Qty |  | WRT2 Wireless Digital Wall Thermostat            | Qty |  |
| VPSC2/VPSC2-42 Architectural Louver (color matched)   | Qty |  | EMRT2 Wired Thermostat with Occupancy Sensor     | Qty |  |
| VPASA1 Sleeve adapter for exact fit in existing First Company SPXR-series with small chassis VPAK | Qty |  | EMWRT2 Wireless Thermostat with Occupancy Sensor | Qty |  |
| VPRG4 Return Air Grille/Access Panel  | Qty |  | EMOCT Online Connection Kit                      | Qty |  |
| VPRG4R Access Panel (Right In-swing)  | Qty |  | EMRAF Remote Access Fee                          | Qty |  |
| VPDP2 Drain Pan for *HA18 & *HA24   | Qty |  |  |     |  |

| MODEL NUMBER   | V | H | A | 09 | K | 34 | RT | Q   |
|--|---|---|---|----|---|----|----|---|
| <p><b>Series</b><br/>V = Friedrich® Series</p> <p><b>HA = Air-Source Heat Pump</b></p> <p><b>Nominal Capacity</b><br/>           09 = 9,000 Btu/hr    18 = 18,000 Btu/hr<br/>           12 = 12,000 Btu/hr    24 = 24,000 Btu/hr</p> <p><b>Voltage</b><br/>           K = 208/230V-1Ph-60Hz<br/>           R = 265V-1Ph-60Hz</p> |   |   |   |    |   |    |    | <p style="text-align: center;"><b>Marketing Revision</b></p> <p style="text-align: center;"><b>Options</b><br/>RT = Standard Remote Operation</p> <p><b>Electric Heater Size</b><br/> <u>A Series</u><br/>           25 = 2.5 kW<br/>           34 = 3.4 kW<br/>           50 = 5.0 kW<br/>           75 = 7.5 kW*<br/>           10 = 10.0 kW**</p> <p><b>* ONLY AVAILABLE ON THE 18 &amp; 24 K/R MODELS</b><br/> <b>**ONLY AVAILABLE ON THE 24 K/R MODELS</b></p> |





# FRIEDRICH

## VERT-I-PAK®

### SINGLE PACKAGE HEAT PUMPS

### LIMITED WARRANTY

**SAVE THIS CERTIFICATE.** It gives you specific rights. You may also have other rights which may vary from state to state and province to province.

In the event that your unit needs servicing, contact your nearest authorized service center. If you do not know the nearest service center, ask the company that installed your unit or contact us - see address and telephone number above. To obtain service and/or warranty parts replacement, you must notify an authorized FRIEDRICH Air Conditioning Co. service center, distributor, dealer, or contractor of any defect within the applicable warranty period.

**When requesting service:** please have the **model** and **serial number** from your unit readily available.

**Unless specified otherwise herein,** the following applies:  
**FRIEDRICH VERT-I-PAK HEAT PUMPS**

**LIMITED WARRANTY - FIRST YEAR (Twelve (12) months commencing on the date of installation or 120 days after original end-user purchase, whichever comes first).** Any part found to be defective in the material or workmanship will be repaired or replaced free of charge by our authorized service center during the normal working hours; and

**LIMITED WARRANTY - SECOND THROUGH FIFTH YEAR (Sixty (60) months commencing on the date of installation or 120 days after original end-user purchase, whichever comes first). ON THE SEALED REFRIGERATION SYSTEM.** Any part of the sealed refrigeration system that is defective in material or workmanship will be repaired or replaced free of charge (excluding freight charges) by our authorized service center during normal working hours. The sealed refrigeration system consists of the compressor, metering device, evaporator, condenser, reversing valve, check valve, and the interconnecting tubing.

**These warranties apply only while the unit remains at the original site and only to units installed inside the continental United States, Alaska, Hawaii, Puerto Rico, Mexico and Canada. The warranty applies only if the unit is installed and operated in accordance with the printed instructions and in compliance with applicable local installation and building codes and good trade practices. For international warranty information, contact the Friedrich Air Conditioning Company - International Division.**

Any defective part to be replaced must be made available to **FRIEDRICH** in exchange for the replacement part. Reasonable proof must be presented to establish the date of install, otherwise the beginning date of this certificate will be considered to be our shipment date plus sixty days. Replacement parts can be new or re-manufactured. Replacement parts and labor are only warranted for any unused portion of the unit's warranty.

We will not be responsible for and the user will pay for:

1. Service calls to:  
A) Instruct on unit operation. B) Replace house fuses or correct house wiring. C) Clean or replace air filters. D) Remove the unit from its installed location when not accessible for service required. E) Correct improper installations.
2. Parts or labor provided by anyone other than an authorized service center.
3. Damage caused by:  
A) Accident, abuse, negligence, misuse, riot, fire flood or acts of God. B) Operating the unit where there is a corrosive atmosphere containing chlorine, fluorine, or any damaging chemicals (other than in a normal residential environment). C) Unauthorized alteration or repair of the unit, which in turn affects its stability or performance. D) Failing to provide proper maintenance and service. E) Using and incorrect power source. F) Faulty installation or application of the unit. G) Operation of the unit during construction.

**We shall not be liable for any incidental, consequential, or special damages or expenses in connection with any use or failure of this unit. We have not made and do not make any representation or warranty of fitness for a particular use or purpose and there is no implied condition of fitness for a particular use or purpose. We make no expressed warranties except as stated in this certification. No one is authorized to change this certificate or to create for us any other obligation or liability in connection with this unit. Any implied warranties shall last for one year after the original purchase date.** Some states and provinces do not allow limitations on how long an implied warranty or condition lasts, so the above limitation or exclusions may not apply to you. The provisions of this warranty are in addition to and not a modification of or subtraction from the statutory warranties and other rights and remedies provided by law.

**Performance of Friedrich's Warranty obligation is limited to one of the following methods:**

1. Repair of the unit
2. A refund to the customer for the prorated value of the unit based upon the remaining warranty period of the unit.
3. Providing a replacement unit of equal value

**The method of fulfillment of the warranty obligation is at the sole discretion of Friedrich Air Conditioning.**

**In case of any questions regarding the provisions of this warranty, the English version will govern.**