



## Endeavor™ Line Air Handlers



**RF2TZ**  
Constant Torque Motor (ECM)

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## Features and Benefits

- Front or Bottom Return with aluminum tube and fin coil
- TXV for cooling or heat pump operation
- Wall-hanging brackets
- Built in Filter Rack
- Molex Plug Connections for field installed heater kits
- Dual Voltage Direct Drive Blower with multi-speed motor
- Thermoplastic Drain Pan with bottom primary and secondary connections
- Optional Decorative Grill for front return applications
- Optional Factory Installed Condensate Float Switch which shuts off the outdoor unit in the event the condensate pan becomes clogged
- Cabinet air leakage less than 2% at 1 inch H<sub>2</sub>O when tested in accordance with ASHRAE Standard 193
- Can be field wired for single or two stage applications

# Air Handlers

| <u>R</u> | <u>F</u>         | <u>2</u>          | <u>T</u>            | <u>Z</u>    | <u>24</u>                                       | <u>21</u>              | <u>S</u>     | <u>T</u> | <u>A</u>       | <u>N</u>              | <u>S</u>    | <u>J</u>         | <u>B</u>                | <u>0</u>  | <u>417</u>         |
|----------|------------------|-------------------|---------------------|-------------|---|------------------------|--------------|----------|----------------|-----------------------|-------------|------------------|-------------------------|---|--------------------|
| Brand    | Product Category | Stages Of Airflow | Motor Type          | Refrigerant | Capacity  | Width                  | Efficiency   | Metering | Major Series   | Controls              | Coil Series | Voltage          | Disconnect              | Factory Heat  | Option Code        |
| R - Ruud | F - Front Return | 2 - 2-Stage       | T - Constant Torque | Z - R-410A  | 24 - 24,000 [7.03 kW]<br>36 - 36,000 [10.55 kW] | 21 - 21"<br>24 - 24.5" | S - Standard | T - TXV  | A - 1st Design | N - Non-Communicating | S - Slab    | J - 208-240/1/60 | B - Breaker<br>N - None | 0 - No Heat<br>3 - 3 kW<br>5 - 5 kW<br>8 - 8 kW<br>10 - 10 kW | 417 - Float Switch |

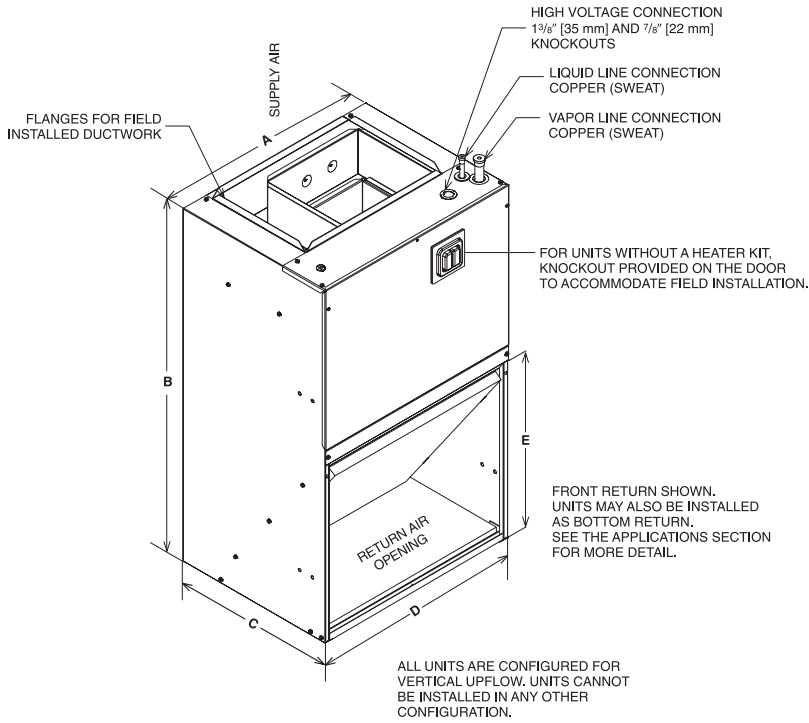
[ ] Designates Metric Conversions

| Available Models      | Description  |
|-----------------------|--|
| RF2TZ2421STANSJB03    | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJB03417 | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJB05    | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJB05417 | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJB08    | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJB08417 | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJB10    | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJB10417 | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJN00    | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ2421STANSJN00417 | Endeavor™ Line 2 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB03    | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB03417 | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB05    | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB05417 | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB08    | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB08417 | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB10    | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJB10417 | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJN00    | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |
| RF2TZ3624STANSJN00417 | Endeavor™ Line 3 ton Two-Stage Front Return 208-240V Air Handler |

| Standard Equipment   |
|--|
| Exclusive Incoloy sheath type electric heating elements  |
| Field convertible air supply   |
| Durable framed cleanable air filter  |
| Indoor coil design provides low air side pressure drop, high performance and compact size                              |
| PVC condensate elbow is standard on all coils  |
| All indoor coils have aluminum tubing and aluminum fins  |
| Molded polymer corrosion resistant condensate drain pan  |
| Supply and return duct flanges   |
| High and low voltage connection points inside cabinet  |
| Concentric knockouts provided for power connection with hole size up to 2 inches [51 mm] for 1 1/2 inch [38mm] conduit |
| Internal checked TX valves for quiet refrigerant metering  |
| Front refrigerant and drain connection   |

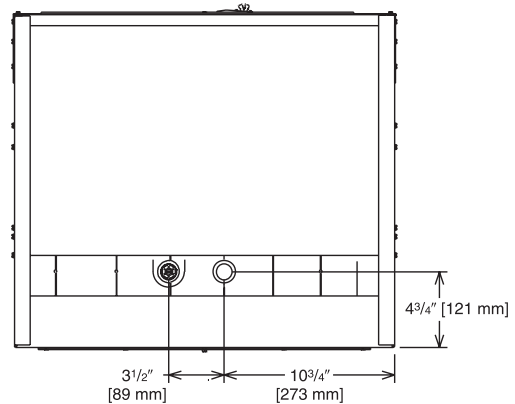
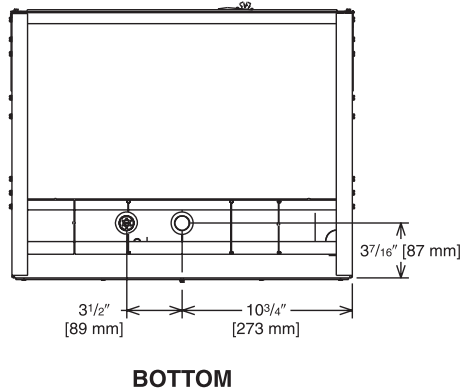
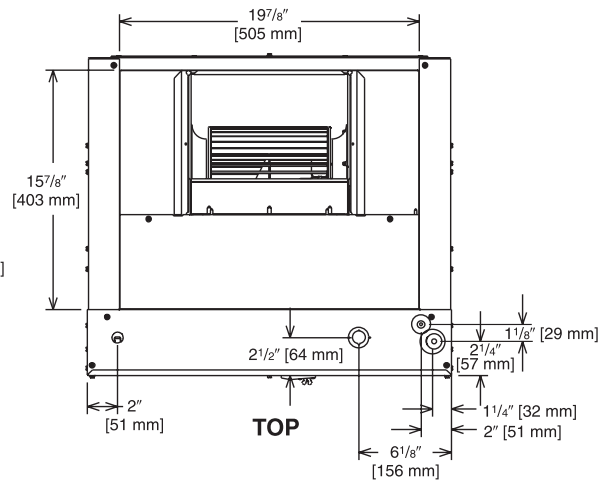
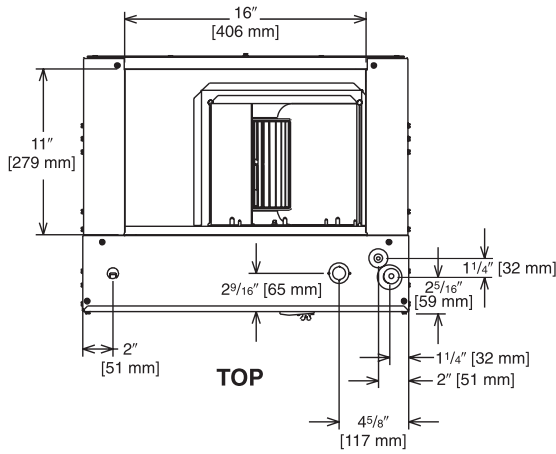
# Unit Dimensions

NOTE: 24" [610 mm] CLEARANCE REQUIRED IN FRONT OF UNIT FOR FILTER AND COIL MAINTENANCE



## Return Air Opening Dimensions

| Model Cabinet Size | Return Air Opening Width (Inches) | Return Air Opening Depth/Length (Inches) |
|--------------------|-----------------------------------|--|
| 17                 | 15 <sup>7</sup> / <sub>8</sub>    | 19 <sup>3</sup> / <sub>4</sub>           |
| 21                 | 19 <sup>3</sup> / <sub>8</sub>    | 19 <sup>3</sup> / <sub>4</sub>           |
| 24                 | 22 <sup>7</sup> / <sub>8</sub>    | 19 <sup>3</sup> / <sub>4</sub>           |



1 1/2 & 2 TON [5.28 & 7.03 kW] MODELS

2 1/2 & 3 TON [8.79 & 10.6 kW] MODELS

[ ] Designates Metric Conversions

## Unit Dimensions & Weights

| Model     | (A) Unit Width<br>In. [mm] | (B) Unit Height<br>In. [mm] | (C) Unit Depth<br>In. [mm] | (D) Return Air Opening<br>Width<br>In. [mm] | (E) Return Air Opening<br>Height<br>In. [mm] | Filter Size<br>in. x in. x in.<br>[mm x mm x mm] | Air Flow CFM<br>(Nom.) [L/s] |            | Unit Weight/Shipping<br>Weight<br>(Lbs.) [kg] |
|-----------|----------------------------|-----------------------------|----------------------------|---|--|--|------------------------------|------------|---|
|           |                            |                             |                            |   |  |  | Low                          | High       |   |
| RF2TZ2421 | 21 <sup>1/2</sup> [546.1]  | 36 [914.4]                  | 17 [431.8]                 | 20 [508.0]                                  | 17 <sup>7/16</sup> [442.9]                   | 20 X 20 X 1<br>[508 X 508 X 25.4]                | 600 [283]                    | 800 [378]  | 95 [43] x 105 [48]                            |
| RF2TZ3624 | 24 [609.6]                 | 36 [914.4]                  | 21 [533.4]                 | 23 [584.2]                                  | 21 <sup>3/8</sup> [542.9]                    | 20 X 25 X 1<br>[508 X 635 X 25.4]                | 1000 [472]                   | 1200 [566] | 95 [43] x 105 [48]                            |

[ ] Designates Metric Conversions

## Airflow Performance

**Airflow performance data is based on cooling performance with a coil and no filter in place.** Select performance table for appropriate unit size, voltage and number of electric heaters to be used. Make sure external static applied to unit allows operation within the minimum and maximum limits shown in

table below for both cooling and electric heat operation. For optimum blower performance, operate the unit in the .3 [8 mm] to .7 inches [18 mm] W.C. external static range. Units with coils should be applied with a minimum of .1 inch [3 mm] W.C. external static range.

## Airflow Operating Limits

| <b>Cooling BTUH x 1,000</b><br><b>Cooling Tons Nominal</b>  | <b>-24</b><br><b>2</b> | <b>-36</b><br><b>3</b> |
|---|------------------------|------------------------|
| Heat Pump or Air Conditioning Maximum Heat/Cool CFM [L/s]<br>(37.5 CFM [18 L/s]/1,000 BTUH) (450 CFM [212 L/s]/Ton Nominal) | 900<br>[425]           | 1350<br>[637]          |
| Heat Pump or Air Conditioning Nominal Heat/Cool CFM [L/s]<br>(33.3 CFM [16 L/s]/1,000 BTUH) (400 CFM [189 L/s]/Ton Nominal) | 800<br>[378]           | 1200<br>[566]          |
| Heat Pump or Air Conditioning Minimum Heat/Cool CFM [L/s]<br>(30.0 CFM [14 L/s]/1,255 BTUH) (360 CFM [170 L/s]/Ton Nominal) | 720<br>[340]           | 1080<br>[510]          |
| Maximum kW Electric Heating & Minimum Electric Heat CFM [L/s]   | 10<br>690 [326]        | 10<br>976 [461]        |
| Maximum Electric Heat Rise °F [°C]  | 44 [7]                 | 44 [7]                 |

[ ] Designates Metric Conversions

## 115V/208V/240V Airflow Performance Data—RF2TZ (Constant Torque (ECM) Motor)

| Model/<br>Nominal<br>Cooling<br>Capacity | Air-Flow Range<br>(Max/Min) CFM | Manufacturer<br>Recommended<br>Blower Size/<br>Motor HP # of<br>Speeds | Motor<br>Speed<br>From<br>Factory | Motor<br>Speed | CFM Dry Delivery/filter/heaters/RPM/Watts |       |       |       |       |       |       |       |
|--|---------------------------------|--|-----------------------------------|----------------|---|-------|-------|-------|-------|-------|-------|-------|
|  |                                 |  |                                   |                | External Static Pressure-Inches W.C.      |       |       |       |       |       |       |       |
|  |                                 |  |                                   |                |   | 0.1   | 0.2   | 0.3   | 0.4   | 0.5   | 0.6   | 0.7   |
| (-)F2TZ24<br>1.5 Tons                    | 825/510                         | 10x6 1/3 Hp<br>2 speed<br>dual voltage                                 | 5                                 | 2              | CFM                                       | 537   | 495   | 451   | 404   | 343   | 286   | 252   |
|  |                                 |  |                                   |                | RPM                                       | 608   | 656   | 702   | 752   | 826   | 879   | 935   |
|  |                                 |  |                                   |                | Watts                                     | 51.2  | 54.5  | 57.6  | 60.9  | 65.9  | 69.5  | 73.2  |
|  |                                 |  | 5                                 | 3              | CFM                                       | 735   | 702   | 666   | 634   | 600   | 565   | 528   |
|  |                                 |  |                                   |                | RPM                                       | 757   | 794   | 836   | 872   | 905   | 942   | 981   |
|  |                                 |  |                                   |                | Watts                                     | 99.1  | 103.2 | 107.7 | 112   | 115.6 | 119.6 | 124.1 |
| (-)F2TZ24<br>2 Tons                      | 973/733                         | 10x6 1/3 Hp<br>2 speed<br>dual voltage                                 | 5                                 | 4              | CFM                                       | 654   | 616   | 581   | 542   | 503   | 463   | 399   |
|  |                                 |  |                                   |                | RPM                                       | 694   | 736   | 777   | 818   | 858   | 899   | 971   |
|  |                                 |  |                                   |                | Watts                                     | 76.4  | 80.1  | 83.7  | 87.6  | 91.3  | 95.1  | 101.6 |
|  |                                 |  | 5                                 | 5              | CFM                                       | 887   | 858   | 830   | 802   | 771   | 743   | 717   |
|  |                                 |  |                                   |                | RPM                                       | 876   | 914   | 945   | 976   | 1014  | 1044  | 1070  |
|  |                                 |  |                                   |                | Watts                                     | 156   | 161.8 | 166.8 | 171.5 | 177.5 | 182.3 | 186.2 |
| (-)F2TZ36<br>2.5 Tons                    | 1145/894                        | 10x8 1/2 Hp<br>2 speed<br>dual voltage                                 | 5                                 | 2              | CFM                                       | 772   | 698   | 635   | 569   | 497   | 438   | 366   |
|  |                                 |  |                                   |                | RPM                                       | 595   | 639   | 698   | 771   | 821   | 866   | 933   |
|  |                                 |  |                                   |                | Watts                                     | 82.9  | 84.9  | 91.6  | 100   | 105.8 | 110.7 | 118.3 |
|  |                                 |  | 5                                 | 3              | CFM                                       | 1106  | 1053  | 1004  | 962   | 918   | 864   | 814   |
|  |                                 |  |                                   |                | RPM                                       | 776   | 816   | 838   | 862   | 901   | 955   | 1007  |
|  |                                 |  |                                   |                | Watts                                     | 183.3 | 191.4 | 195.7 | 200.5 | 208.4 | 219.3 | 230.2 |
| (-)F2TZ36<br>3 Tons                      | 1306/1040                       | 10x8 1/2 Hp<br>2 speed<br>dual voltage                                 | 5                                 | 4              | CFM                                       | 808   | 750   | 698   | 633   | 568   | 504   | 448   |
|  |                                 |  |                                   |                | RPM                                       | 615   | 665   | 713   | 780   | 842   | 884   | 929   |
|  |                                 |  |                                   |                | Watts                                     | 91.4  | 97.7  | 103.9 | 112.4 | 120.2 | 125.5 | 131.2 |
|  |                                 |  | 5                                 | 5              | CFM                                       | 1241  | 1201  | 1148  | 1109  | 1065  | 1028  | 983   |
|  |                                 |  |                                   |                | RPM                                       | 847   | 880   | 905   | 916   | 955   | 991   | 1035  |
|  |                                 |  |                                   |                | Watts                                     | 246.3 | 254.9 | 260.9 | 263.8 | 273.1 | 282.5 | 293.3 |

**NOTE:** All (-)F2TZ air-handlers have 5 speed constant torque motors.

Speed tap 1 is for continuous fan. Speed tap 2 (low static) and speed tap 3 (high static) are for lower tonnage (1.5 or 2.5 tons). Speed tap 4 (low static) and speed tap 5 (high static) are for higher tonnage (2.0 or 3.0 tons).

(-)F2TZ air handlers are always shipped from factory at speed tap 5.

The low static speed tap 2 (lower tonnage) and 4 (higher tonnage) are for external static pressures below 0.5" WC. The high static speed tap 3 (lower tonnage) and 5 (higher tonnage) are used for external static exceeding 0.5" WC. Move the blue wire to the appropriate speed tap on the motor terminal block as required by the application needs.

- The above airflow table lists the airflow information for air handlers with maximum heater allowed for each model.



## Electrical Data—Blower Motor Only—No Electric Heat

| Model/Nominal Cooling Tons | Voltage | Phase | Hertz | HP [W]    | RPM      | Speeds | Circuit Amps. | Minimum Circuit Ampacity | Maximum Circuit Protector |
|----------------------------|---------|-------|-------|-----------|----------|--------|---------------|--------------------------|---------------------------|
| RF2T2421                   | 208/230 | 1     | 60    | 1/3 [249] | 300-1100 | 4      | 1.9           | 3                        | 15                        |
| RF2T3624                   | 208/230 | 1     | 60    | 1/2 [373] | 300-1100 | 4      | 2.7           | 4                        | 15                        |

\*Blower motors are all single phase motors.

## Electrical Data—with Electric Heat

Installation of the U.L. Listed original equipment manufacturer provided heater kits listed in the table below is recommended for all auxiliary heating requirements.

| Cooling Capacity Tons | Model No.     | Heater kW | PH/Hz | No. Elements - kW Per | (208/240V) Type Supply Circuit | Circuit Amps. | Motor Ampacity |      |      | Minimum Circuit Ampacity | Maximum Circuit Protection |
|-----------------------|---------------|-----------|-------|-----------------------|--------------------------------|---------------|----------------|------|------|--------------------------|----------------------------|
|                       |               |           |       |                       |                                |               |                |      |      |                          |                            |
| RF2TZ24               | RXHJ-21B/T03J | 2.25/3.0  | 1/60  | 1-3.0                 | Single                         | 10.8/12.5     | 1.9            | 15.9 | 18   | 16/18                    | 20/20                      |
|                       | RXHJ-21B/T05J | 3.6/4.8   | 1/60  | 1-4.8                 | Single                         | 17.3/20.0     | 1.9            | 24   | 27.4 | 24/28                    | 25/30                      |
|                       | RXHJ-21B/T08J | 5.4/7.2   | 1/60  | 2-3.6                 | Single                         | 26.0/30.0     | 1.9            | 34.9 | 39.9 | 35/40                    | 35/40                      |
|                       | RXHJ-21B/T10J | 7.2/9.6   | 1/60  | 2-4.8                 | Single                         | 34.6/40.0     | 1.9            | 45.6 | 52.4 | 46/53                    | 50/60                      |
| RF2TZ36               | RXHJ-24B/T03J | 2.25/3.0  | 1/60  | 1-3.0                 | Single                         | 10.8/12.5     | 2.7            | 16.9 | 19   | 17/19                    | 20/20                      |
|                       | RXHJ-24B/T05J | 3.6/4.8   | 1/60  | 1-4.8                 | Single                         | 17.3/20.0     | 2.7            | 25   | 28.4 | 25/29                    | 25/30                      |
|                       | RXHJ-24B/T08J | 5.4/7.2   | 1/60  | 2-3.6                 | Single                         | 26.0/30.0     | 2.7            | 35.9 | 40.9 | 36/41                    | 40/45                      |
|                       | RXHJ-24B/T10J | 7.2/9.6   | 1/60  | 2-4.8                 | Single                         | 34.6/40.0     | 2.7            | 46.6 | 53.4 | 47/54                    | 50/60                      |

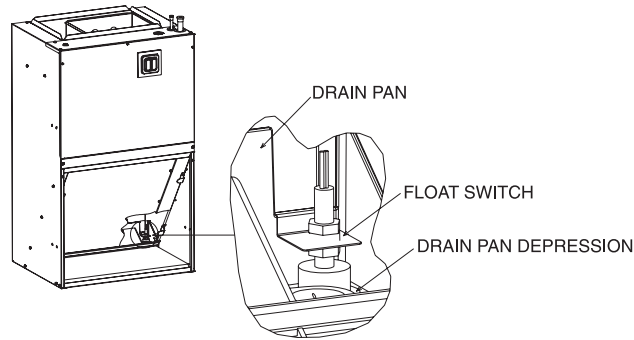
- Electric heater BTUH - (heater watts + motor watts) x 3.414 (see airflow table for motor watts.)
- J voltage (230V) single phase air handler is designed to be used with single or three phase.
- Supply circuit protective devices may be fused or "HACR" type circuit breakers.
- If non-standard fuse size is specified, use next size larger standard fuse size. Without the heater, bring only two leads to terminal block, cap, insulate and fully secure the third lead.
- Largest motor load is included in single circuit or circuit 1 of multiple circuits.
- Do not use 480 volts electrical heaters on 230 volts air handler.

### Electrical Wiring: Power Wiring Grounding

- Field wiring must comply with the National Electrical Code
- This product must be sufficiently grounded in accordance with (C.E.C. in Canada) and any applicable local ordinance. National Electrical Code (C.E.C. in Canada) and any applicable
- Supply wiring must be 75°C minimum copper conductors only. Local ordinance.
- See electrical data for product Ampacity rating and Circuit.
- A grounding lug is provided. Protector requirement.

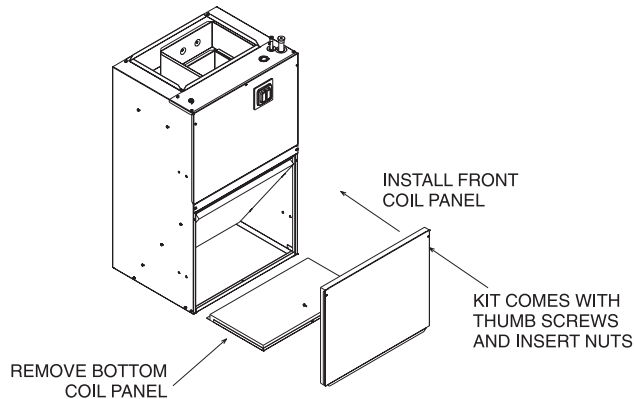
## 16.0 Accessories-Kits-Parts

- **Drain Pan Over Flow Switch RXHK-A01** is used to detect condensate drain blockage and will shut down the outdoor unit in order to prevent structural damage to the surrounding structures of the air handler.



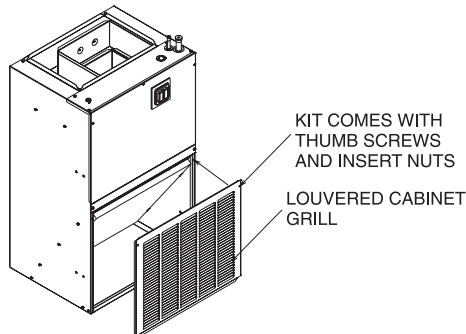
- **Bottom Return Conversion Kit RXHK-** is used to divert the return air from the factory standard front return to a bottom return.

| Accessory Number | Indoor Unit |
|------------------|-------------|
| RXHK-B01         | RF1P-FR18   |
|                  | RF1P-FR24   |
|                  | RF1T-FR24   |
| RXHK-B02         | RF1P-FR30   |
|                  | RF1P-FR36   |
|                  | RF1T-FR36   |

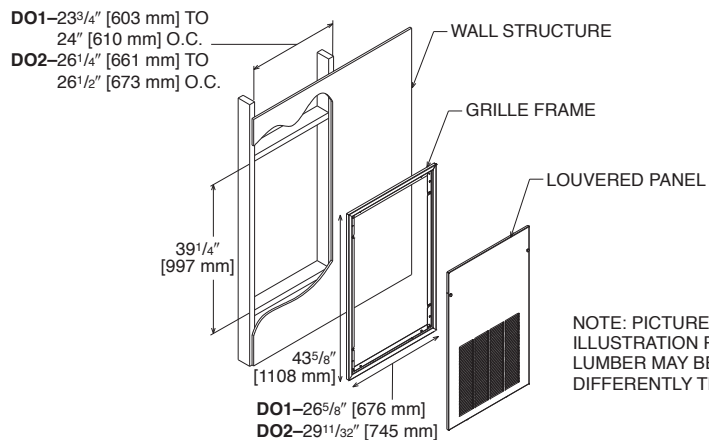


- **Louvered Cabinet Grill RXHK-** is used as decorative grill which covers the return air opening of the front return air handler.

| Accessory Number | Indoor Unit |
|------------------|-------------|
| RXHK-C01         | RF1P-FR18   |
|                  | RF1P-FR24   |
|                  | RF1T-FR24   |
| RXHK-C02         | RF1P-FR30   |
|                  | RF1P-FR36   |
|                  | RF1T-FR36   |



- **Decorative Wall Grill RXHK-D01 or RXHK-D02** is used in applications where the air handler is installed in a closet or interior wall and allows adequate return air back to the unit. Please refer to RXHD-D01/RXHK-D02 installation instructions for complete dimensional information when selecting a decorative wall grill.



[ ] Designates Metric Conversions





**GENERAL TERMS OF LIMITED WARRANTY\***

Ruud will furnish a replacement for any part of this product which fails in normal use and service within the applicable periods stated, in accordance with the terms of the limited warranty.

Conditional Parts  
(Registration Required)..... Ten (10) Years

**\*For complete details of the Limited and Conditional Warranties, including applicable terms and conditions, contact your local contractor or the Manufacturer for a copy of the product warranty certificate.**

**Before proceeding with installation, refer to installation instructions packaged with each model, as well as complying with all Federal, State, Provincial, and Local codes, regulations, and practices.**

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*In keeping with its policy of continuous progress and product improvement, Ruud reserves the right to make changes without notice.*

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