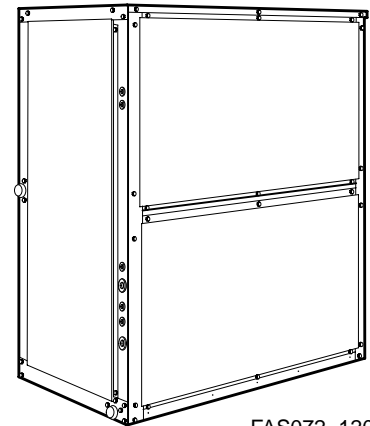


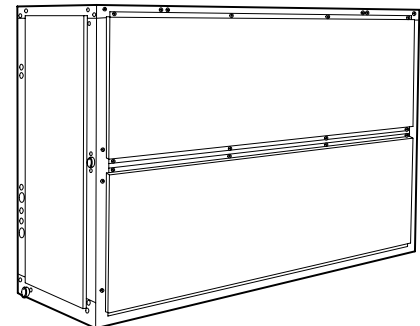
### DIRECT EXPANSION COMMERCIAL PACKAGED AIR HANDLING UNITS, 6 – 25 TONS

#### BUILT TO LAST, EASY TO INSTALL AND SERVICE

- Multi-position design for horizontal or vertical installation without modification.
- Two sloped condensate pans on each unit for horizontal or vertical applications.
- Cleanable insulation treated with Environmental Protection Agency (EPA) registered antimicrobial agent improves indoor air quality.
- 2 inch filters.
- High-static design meets a wide range of applications.
- Powerfull belt-driven forward curved fans.
- Single refrigerant circuit on 072 and 091 sizes. Dual refrigerant circuit on 120–300 sizes. Dual circuit can be field modified for use on single circuit condensers.
- Single blower on 6 to 10 ton units; dual blower on 12.5 to 25 ton units.
- Cooling coils with mechanically bonded fins provide peak heat transfer.
- Standard factory-installed thermo-static expansion valve (TXV) with removable power element.
- Easy maintenance – removal of single panel allows access to virtually all components.
- Die-formed galvanized steel casings provide durability and structural integrity. Optional paint is available.
- 24-volt terminal block for control wiring connection.
- Economizer accessory provides ventilation air and “free” cooling.
- Hot water coil, steam coil, and electric heat accessories are available.



FAS072-120



FAS150-300

#### WARRANTY

- 1 Year parts limited warranty



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org).



| UNIT PERFORMANCE DATA |              |                    |   |                      |
|-----------------------|--------------|--------------------|---|----------------------|
| UNIT                  | Nominal Tons | Number of Circuits | Unit Dimensions H x W x L [mm]                    | Unit Weight lb. [kg] |
| FAS072*AAA0A0A        | 6            | 1                  | 56-1/16" x 49" x 28-3/16" [1424 x 1244 x 714]     | 399 [181]            |
| FAS091*AAA0A0A        | 7 1/2        | 1                  | 56-1/16" x 49" x 28-3/16" [1424 x 1244 x 714]     | 404 [183]            |
| FAS120*AAA0A0A        | 10           | 2                  | 56-1/16" x 49" x 28-3/16" [1424 x 1244 x 714]     | 425 [193]            |
| FAS150*AAA0A0A        | 12 1/2       | 2                  | 56-1/16" x 89" x 28-3/16" [1424 x 2261 x 714]     | 695 [315]            |
| FAS180*AAA0A0A        | 15           | 2                  | 56-1/16" x 89" x 28-3/16" [1424 x 2261 x 714]     | 713 [323]            |
| FAS240*AAA0A0A        | 20           | 2                  | 56-1/16" x 89" x 28-3/16" [1424 x 2261 x 714]     | 730 [331]            |
| FAS300*AAA0A0A        | 25           | 2                  | 65-9/16" x 100-1/2" x 32-5/8" [1665 x 2553 x 829] | 1050 [477]           |

\* Indicates Unit voltage: K = 208/230-1-60, H = 208/230-3-60, M = 208/230/460-3-60, S = 575-3-60

**NOTE: BASE MODEL NUMBERS LISTED. SEE MODEL NOMENCLATURE LISTING FOR ADDITIONAL OPTIONS**

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# MODEL NOMENCLATURE

| MODEL SERIES  | F | A | S | 0 | 9 | 1 | M | A | A | A  | 0  | A  | 0  | A  |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| Position Number   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| F = R-410A Fan Coil Unit  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Air Conditioning (Cooling Only) <span style="float: right;"><b>Type</b></span>                          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| S = Standard Efficiency <span style="float: right;"><b>Efficiency</b></span>                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 072 = 70,000 BTUH = 6 Tons (1 circuit)  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 091 = 83,000 BTUH = 7.5 Tons (1 circuit)  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 120 = 114,000 BTUH = 10 Tons (2 circuit)  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 150 = 140,000 BTUH = 12.5 Tons (2 circuit)  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 180 = 180,000 BTUH = 15 Tons (2 circuit)  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 240 = 240,000 BTUH = 20 Tons (2 circuit)  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 300 = 300,000 BTUH = 25 Tons (2 circuit) <span style="float: right;"><b>Nominal Cooling Capacity</b></span> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| K = 208/230-1-60  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| H = 208/230-3-60  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| M = 460/208/230-3-60  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| L = 460-3-60  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| S = 575-3-60 <span style="float: right;"><b>VOLTAGE</b></span>  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Belt Drive, Standard Motor and Drive  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| B = Belt Drive, High Static Motor and Drive <span style="float: right;"><b>Fan Motor Options</b></span>     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Al/Cu <span style="float: right;"><b>Indoor Coil</b></span>   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Standard D/X Coil <span style="float: right;"><b>Refrigerant System</b></span>                          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 0 = Standard (Future use) <span style="float: right;"><b>Future Use</b></span>                              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = None - Standard   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| B = Painted cabinet (Gray) <span style="float: right;"><b>Painted Cabinet Options</b></span>                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 0 = Standard (Future use) <span style="float: right;"><b>Future Use</b></span>                              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| A = Sales Digit   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

Single phase FAS072-091 units designate standard motor and high static drive.  
 All FAS072-150 with a "M" voltage designation are triple voltage; i.e., 208/230/460-3-60.  
 Size FAS180 is also triple voltage unless high static options is used, See chart below.

| <b>MODEL NUMBERS*</b>  |                    |
|------------------------|--------------------|
| <b>Standard Static</b> | <b>High Static</b> |
| FAS072KAAA0A0A         | FAS072KBAA0A0A     |
| FAS072MAAA0A0A         | FAS072MBAA0A0A     |
| FAS072SAAA0A0A         | FAS072SBAA0A0A     |
| FAS091KAAA0A0A         | FAS091KBAA0A0A     |
| FAS091MAAA0A0A         | FAS091MBAA0A0A     |
| FAS091SAAA0A0A         | FAS091SBAA0A0A     |
| FAS120MAAA0A0A         | FAS120MBAA0A0A     |
| FAS120SAAA0A0A         | FAS120SBAA0A0A     |
| FAS150MAAA0A0A         | FAS150MBAA0A0A     |
| FAS150SAAA0A0A         | FAS150SBAA0A0A     |
| FAS180MAAA0A0A         | FAS180HBAA0A0A     |
| FAS180SAAA0A0A         | FAS180LBAA0A0A     |
| -                      | FAS180SBAA0A0A     |
| FAS240HAAA0A0A         | FAS240HBAA0A0A     |
| FAS240LAAA0A0A         | FAS240LBAA0A0A     |
| FAS240SAAA0A0A         | FAS240SBAA0A0A     |
| FAS300HAAA0A0A         | FAS300HBAA0A0A     |
| FAS300LAAA0A0A         | FAS300LBAA0A0A     |
| FAS300SAAA0A0A         | FAS300SBAA0A0A     |

## FACTORY OPTIONS AND/OR ACCESSORIES

**Alternate fan motors and drives** are available to provide the widest possible range of performance.

**Prepainted steel units** are available from the factory for applications that require painted units. Units are painted with American Sterling Gray color.

### Field-installed accessories

**Two-row hot water coils** have copper tubes mechanically bonded to aluminum plate fins and non-ferrous headers.

**One-row steam coil** has copper tubes and aluminum fins. The Inner Distributing Tube (IDT) design provides uniform temperatures across the coil face. The steam coil has a broad operating pressure range; up to 20 psi (138 kPag) at 260°F (126°C). The IDT steam coils are especially suited to applications where sub-freezing air enters the unit.

**Electric resistance heat coils** have an open-wire design and are mounted in a rigid frame. Safety cutouts for high temperature conditions are standard. Terminal block for single-point power connection is included.

**Economizer (enthalpy controlled)** provides ventilation air and “free” cooling if outside ambient temperature and humidity are suitable. It can also be used with CO<sub>2</sub> sensors to help meet indoor air quality requirements.

**Discharge plenum** directs the air discharge directly into the occupied space; integral horizontal and vertical louvers enable redirection of airflow. Accessory is available unpainted or painted. Field assembly is required (only applicable for vertical application and cannot be used with electric heat).

**Return-air grille** provides a protective barrier over the return-air opening and gives a finished appearance to units installed in the occupied space. Accessory is available unpainted or painted.

**Subbase** provides a stable, raised platform and room for condensate drain trap connection for vertical floor-mounted units. Accessory is available unpainted or painted.

**Overhead suspension package** includes necessary brackets to support units in horizontal ceiling installations.

**CO<sub>2</sub> sensors** can be used in conjunction with the economizer accessory to help meet indoor air quality requirements. The sensor signals the economizer to open when the CO<sub>2</sub> level in the space exceeds the set point. A programmable thermostat can be used to override the sensor if the outside-air temperature is too high or too low.

**Condensate drain trap** includes an overflow shutoff switch that can be wired to turn off the unit if the trap becomes plugged. Kit also includes a wire harness that can be connected to an alarm if desired. The transparent trap is designed for easy service and maintenance.

| ITEM                           | OPTION* | ACCESSORY† |
|--------------------------------|---------|------------|
| High Static Fan Motor / Drives | X       |            |
| CO <sub>2</sub> Sensors        |         | X          |
| Condensate Drain Trap          |         | X          |
| Discharge Plenum               |         | X          |
| Economizer                     |         | X          |
| Electric Heat                  |         | X          |
| Hot Water Heating Coils        |         | X          |
| Overhead Suspension Package    |         | X          |
| Prepainted Units               | X       |            |
| Return Air Grille              |         | X          |
| Steam Heating Coil             |         | X          |
| Subbase                        |         | X          |

\* Factory-installed option.

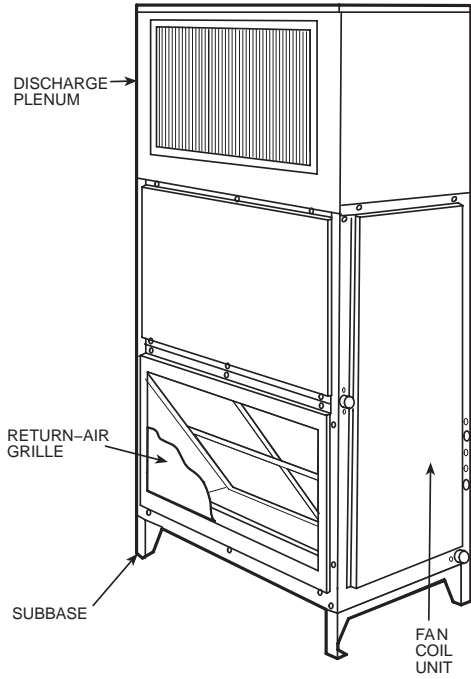
† Field-installed accessory

| ACCESSORIES    |                                       |                          |
|----------------|---------------------------------------|--------------------------|
| Model Number   | Description                           | Used on Unit Size (Tons) |
| AGRC01AA       | Return Air Grille                     | 6 to 10                  |
| AGRPC01AA      | Return Air Grille, Painted            | 6 to 10                  |
| AGRC02BA       | Return Air Grille                     | 12-1/2 to 25             |
| AGRPC02BA      | Return Air Grille, Painted            | 12-1/2 to 25             |
| ASPC01AA       | Steam Coil (1 Row)                    | 6 to 10 Ton              |
| ASPC02BA       | Steam Coil (1 Row)                    | 12-1/2 to 25             |
| ASBC01A        | Floor Mount Base (Subbase)            | 6 to 25                  |
| ASBPC01A       | Floor Mount Base (Subbase), Painted   | 6 to 25                  |
| AHBC01A        | Overhead Suspension Brackets          | 6 to 25                  |
| ACSC01A        | Condensate Overflow Switch            | 6 to 25                  |
| APDC01AA       | Discharge Plenum                      | 6 to 10                  |
| APDPC01AA      | Discharge Plenum, Painted             | 6 to 10                  |
| APDC02BA       | Discharge Plenum                      | 12-1/2 to 25             |
| APDPC02BA      | Discharge Plenum, Painted             | 12-1/2 to 25             |
| DNCBDIOX005A00 | CO <sub>2</sub> Sensor for Economizer | 6 to 25                  |
| AEMC01AA       | Economizer                            | 6 to 10                  |
| AEMC02BA       | Economizer                            | 12-1/2 to 25             |
| AHWC01AA       | Hot Water Coil (2 Row)                | 6 to 10                  |
| AHWC02BA       | Hot Water Coil (2 Row)                | 12-1/2 to 25             |

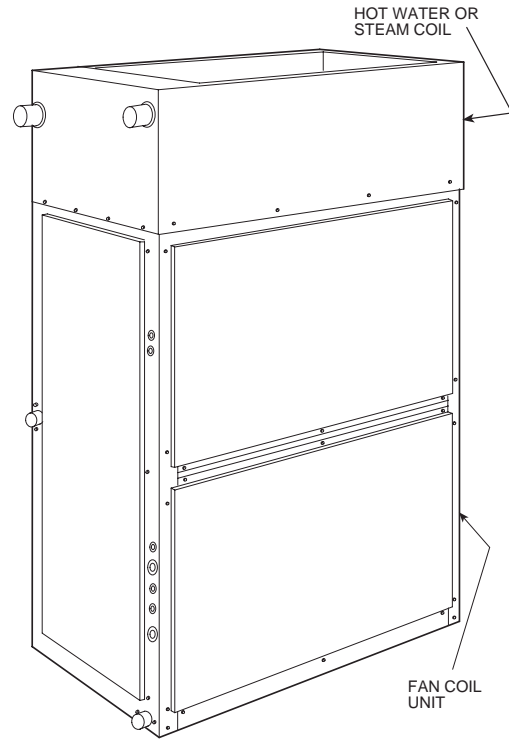
**ACCESSORY HEATERS**

| <b>HEATER PART NO.</b> | <b>DESCRIPTION</b> | <b>Nominal Capacity</b> | <b>Used With</b> |
|------------------------|--------------------|-------------------------|------------------|
| AAHC05AHA              | 5.0 kW, 240–3–60   | 5                       | 072, 091, 120    |
| AAHC10AHA              | 10.0 kW, 240–3–60  | 10                      | 072, 091, 120    |
| AAHC15AHA              | 15.0 kW, 240–3–60  | 15                      | 072, 091, 120    |
| AAHC25AHA              | 25.0 kW, 240–3–60  | 25                      | 072, 091, 120    |
| AAHC35AHA              | 35.0 kW, 240–3–60  | 35                      | 091, 120         |
| AAHC10BHA              | 10.0 kW, 240–3–60  | 10                      | 150, 180, 240    |
| AAHC20BHA              | 20.0 kW, 240–3–60  | 20                      | 150, 180, 240    |
| AAHC30BHA              | 30.0 kW, 240–3–60  | 30                      | 150, 180, 240    |
| AAHC50DHA              | 50.0 kW, 240–3–60  | 50                      | 180, 240         |
| AAHC20EHA              | 20.0 kW, 240–3–60  | 20                      | 300              |
| AAHC40EHA              | 40.0 kW, 240–3–60  | 40                      | 300              |
| AAHC50EHA              | 50.0 kW, 240–3–60  | 50                      | 300              |
| AAHC70EHA              | 70.0 kW, 240–3–60  | 70                      | 300              |
| AAHC05ALA              | 5.0 kW, 480–3–60   | 5                       | 072, 091, 120    |
| AAHC10ALA              | 10.0 kW, 480–3–60  | 10                      | 072, 091, 120    |
| AAHC15ALA              | 15.0 kW, 480–3–60  | 15                      | 072, 091, 120    |
| AAHC25ALA              | 25.0 kW, 480–3–60  | 25                      | 072, 091, 120    |
| AAHC35ALA              | 35.0 kW, 480–3–60  | 35                      | 091, 120         |
| AAHC10BLA              | 10.0 kW, 480–3–60  | 10                      | 150, 180, 240    |
| AAHC20BLA              | 20.0 kW, 480–3–60  | 20                      | 150, 180, 240    |
| AAHC30BLA              | 30.0 kW, 480–3–60  | 30                      | 150, 180, 240    |
| AAHC50DLA              | 50.0 kW, 480–3–60  | 50                      | 180, 240         |
| AAHC20ELA              | 20.0 kW, 480–3–60  | 20                      | 300              |
| AAHC40ELA              | 40.0 kW, 480–3–60  | 40                      | 300              |
| AAHC50ELA              | 50.0 kW, 480–3–60  | 50                      | 300              |
| AAHC70ELA              | 70.0 kW, 480–3–60  | 70                      | 300              |
| AAHC05ASA              | 5.0 kW, 575–3–60   | 5                       | 072, 091, 120    |
| AAHC10ASA              | 10.0 kW, 575–3–60  | 10                      | 072, 091, 120    |
| AAHC15ASA              | 15.0 kW, 575–3–60  | 15                      | 072, 091, 120    |
| AAHC25ASA              | 25.0 kW, 575–3–60  | 25                      | 072, 091, 120    |
| AAHC35ASA              | 35.0 kW, 575–3–60  | 35                      | 091, 120         |
| AAHC10BSA              | 10.0 kW, 575–3–60  | 10                      | 150, 180, 240    |
| AAHC20BSA              | 20.0 kW, 575–3–60  | 20                      | 150, 180, 240    |
| AAHC30BSA              | 30.0 kW, 575–3–60  | 30                      | 150, 180, 240    |
| AAHC50DSA              | 50.0 kW, 575–3–60  | 50                      | 180, 240         |
| AAHC20ESA              | 20.0 kW, 575–3–60  | 20                      | 300              |
| AAHC40ESA              | 40.0 kW, 575–3–60  | 40                      | 300              |
| AAHC50ESA              | 50.0 kW, 575–3–60  | 50                      | 300              |
| AAHC70ESA              | 70.0 kW, 480–3–60  | 70                      | 300              |

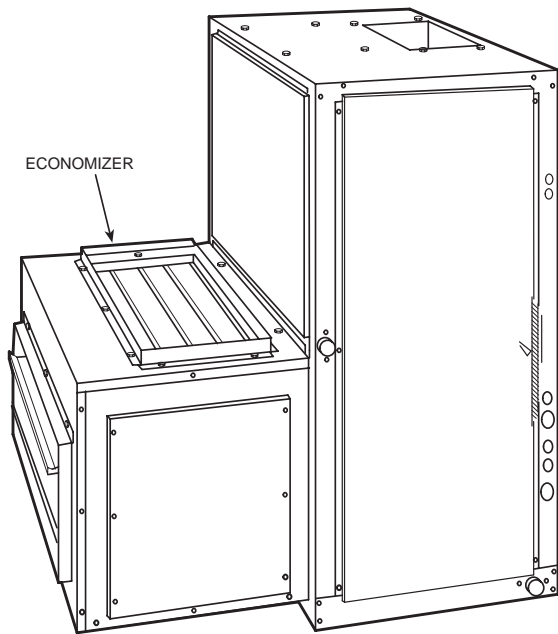
FAS WITH DISCHARGE PLENUM, RETURN AIR GRILLE AND SUBBASE



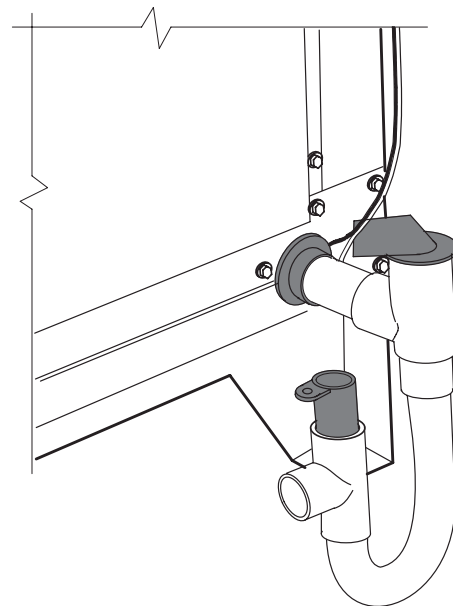
FAS WITH HOT WATER OR STEAM COIL



FAS WITH ECONOMIZER



FAS WITH CONDENSATE TRAP



**Physical Data, English – Cooling Units**

| UNIT FAS                                       | 072  | 091                           | 120       | 150                            | 180                               | 240         | 300                               |
|--|--|-------------------------------|-----------|--------------------------------|-----------------------------------|-------------|-----------------------------------|
| NOMINAL CAPACITY (Tons)                        | 6  | 7 <sup>1</sup> / <sub>2</sub> | 10        | 12 <sup>1</sup> / <sub>2</sub> | 15                                | 20          | 25                                |
| OPERATING WEIGHT (lb)                          |  |                               |           |                                |                                   |             |                                   |
| Base Unit with TXV (4 Row)                     | 399  | 404                           | 425       | 695                            | 713                               | 730         | 1050                              |
| Plenum   | 175  | 175                           | 175       | 225                            | 225                               | 225         | 325                               |
| Economizer                                     | 185  | 185                           | 185       | 340                            | 340                               | 340         | 340                               |
| Hot Water Coil                                 | 195  | 195                           | 195       | 285                            | 285                               | 285         | 345                               |
| Steam Coil                                     | 215  | 215                           | 215       | 340                            | 340                               | 340         | 405                               |
| FANS   |  |                               |           |                                |                                   |             |                                   |
| Qty...Diam. (in.)                              | 1...15   | 1...15                        | 1...15    | 2...15                         | 2...15                            | 2...15      | 2...18                            |
| Nominal Airflow (cfm)                          | 2400   | 3000                          | 4000      | 5000                           | 6000                              | 8000        | 10,000                            |
| Airflow Range (cfm)                            | 1800-3000                                      | 2250-3750                     | 3000-5000 | 3750-6250                      | 4500-7500                         | 6000-10,000 | 7500-12,500                       |
| Nom. Motor Hp (Standard Motor)*                |  |                               |           |                                |                                   |             |                                   |
| 208/230-1-60                                   | 1.3  | 2.4                           | —         | —                              | —                                 | —           | —                                 |
| 208/230-3-60 and 460-3-60                      | 2.4  | 2.4                           | 2.4       | 2.9                            | 3.7                               | 5.0         | 7.5                               |
| 575-3-60                                       | 1.0  | 2.0                           | 2.0       | 3.0                            | 3.0                               | 5.0         | 7.5                               |
| 230-3-50, 400-3-50                             | 2.4  | 2.4                           | 2.9       | 2.9                            | 2.9                               | 5.0         | 7.5                               |
| Motor Speed (rpm)                              |  |                               |           |                                |                                   |             |                                   |
| 208/230-1-60                                   | 1725   | 1725                          | —         | —                              | —                                 | —           | —                                 |
| 208/230-3-60 and 460-3-60                      | 1725   | 1725                          | 1725      | 1725                           | 1725                              | 1745        | 1745                              |
| 575-3-60                                       | 1725   | 1725                          | 1725      | 1725                           | 1725                              | 1745        | 1755                              |
| 230-3-50, 400-3-50                             | 1425   |                               |           |                                |                                   |             |                                   |
| REFRIGERANT                                    | R-410A   |                               |           |                                |                                   |             |                                   |
| Operating charge (lb)<br>(approx per circuit)† | 3.0  | 3.0                           | 1.5/1.5   | 2.0/2.0                        | 2.5/2.5                           | 3.5/3.5     | 4.5/4.5                           |
| DIRECT-EXPANSION COIL                          | Enhanced Copper Tubes, Aluminum Sine-Wave Fins |                               |           |                                |                                   |             |                                   |
| Max Working Pressure (psig)                    | 435  |                               |           |                                |                                   |             |                                   |
| Face Area (sq ft)                              | 6.67   | 8.33                          | 10.01     | 13.25                          | 17.67                             | 19.88       | 24.86                             |
| No. of Splits                                  | 1  | 1                             | 2         | 2                              | 2                                 | 2           | 2                                 |
| Split Type...Percentage                        | Face...50/50                                   |                               |           |                                |                                   |             |                                   |
| No. of Circuits per Split                      | 12   | 15                            | 9         | 12                             | 16                                | 18          | 20                                |
| Fins/in.                                       | 15   | 15                            | 17        | 15                             | 15                                | 17          | 15                                |
| STEAM COIL                                     |  |                               |           |                                |                                   |             |                                   |
| Max Working Press. (psig at 260°F)             | 20   |                               |           |                                |                                   |             |                                   |
| Total Face Area (sq ft)                        | 6.67   | 6.67                          | 6.67      | 13.33                          | 13.33                             | 13.33       | 15.0                              |
| Rows...Fins/in.                                | 1...9  | 1...9                         | 1...9     | 1...10                         | 1...10                            | 1...10      | 1...10                            |
| HOT WATER COIL                                 |  |                               |           |                                |                                   |             |                                   |
| Max Working Pressure (psig)                    | 150  |                               |           |                                |                                   |             |                                   |
| Total Face Area (sq ft)                        | 6.67   | 6.67                          | 6.67      | 13.33                          | 13.33                             | 13.33       | 15.0                              |
| Rows...Fins/in.                                | 2...8.5  | 2...8.5                       | 2...8.5   | 2...8.5                        | 2...8.5                           | 2...8.5     | 2...12.5                          |
| Water Volume                                   |  |                               |           |                                |                                   |             |                                   |
| (gal)  | 8.3  |                               |           |                                | 13.9                              |             | 14.3                              |
| (ft <sup>3</sup> )                             | 1.1  |                               |           |                                | 1.85                              |             | 1.90                              |
| PIPING CONNECTIONS**                           |  |                               |           |                                |                                   |             |                                   |
| Quantity...Size (in.)                          |  |                               |           |                                |                                   |             |                                   |
| DX Coil — Suction (ODF)                        | 1...1 <sup>1</sup> / <sub>8</sub>              |                               |           |                                | 2...1 <sup>1</sup> / <sub>8</sub> |             | 2...1 <sup>3</sup> / <sub>8</sub> |
| DX Coil — Liquid Refrig, (ODF)                 | 1...5 <sup>5</sup> / <sub>8</sub>              |                               |           |                                | 2...5 <sup>5</sup> / <sub>8</sub> |             |                                   |
| Steam Coil, In (MPT)                           |  |                               |           |                                | 1...2 <sup>1</sup> / <sub>2</sub> |             |                                   |
| Steam Coil, Out (MPT)                          |  |                               |           |                                | 1...1 <sup>1</sup> / <sub>2</sub> |             |                                   |
| Hot Water Coil, In (MPT)                       | 1...1 <sup>1</sup> / <sub>2</sub>              |                               |           |                                |                                   |             | 1...2                             |
| Hot Water Coil, Out (MPT)                      | 1...1 <sup>1</sup> / <sub>2</sub>              |                               |           |                                |                                   |             | 1...2                             |
| Condensate (PVC)                               | 1...1 <sup>1</sup> / <sub>4</sub> ODM/1 IDF    |                               |           |                                |                                   |             |                                   |
| FILTERS  | Throwaway — Factory-Supplied                   |                               |           |                                |                                   |             |                                   |
| Quantity...Size (in.)                          | 4...16 x 24 x 2                                |                               |           | 4...16 x 20 x 2                |                                   |             | 4...20 x 24 x 2                   |
|  |  |                               |           | 4...16 x 24 x 2                |                                   |             | 4...20 x 25 x 2                   |
| Access Location                                | Right or Left Side                             |                               |           |                                |                                   |             |                                   |

\* Refer to Alternate Fan Motor Data table, page 36, for alternate motor data.

† Units are shipped without refrigerant charge.

\*\* All piping sizes are OD inches; equivalent sizes in millimeters follow:

| Physical Data, SI – Cooling Units              |  |                                   |                                   |  |                                   |                                   |                                   |
|--|--|-----------------------------------|-----------------------------------|--|-----------------------------------|-----------------------------------|-----------------------------------|
| UNIT FAS                                       | 072  | 091                               | 120                               | 150                                      | 180                               | 240                               | 300                               |
| NOMINAL CAPACITY (kW)                          | 21   | 26                                | 35                                | 43                                       | 52                                | 70                                | 87                                |
| OPERATING WEIGHT (kg)                          |  |                                   |                                   |  |                                   |                                   |                                   |
| Base Unit with TXV (4 Row)                     | 181  | 183                               | 193                               | 315                                      | 323                               | 331                               | 470                               |
| Plenum   | 80   | 80                                | 80                                | 102                                      | 102                               | 102                               | 148                               |
| Economizer                                     | 84   | 84                                | 84                                | 155                                      | 155                               | 155                               | 205                               |
| Hot Water Coil                                 | 89   | 89                                | 89                                | 130                                      | 130                               | 130                               | 157                               |
| Steam Coil                                     | 98   | 98                                | 98                                | 155                                      | 155                               | 155                               | 184                               |
| FANS   |  |                                   |                                   |  |                                   |                                   |                                   |
| Qty...Diam. (mm)                               | 1...381  | 1...381                           | 1...381                           | 2...381                                  | 2...381                           | 2...381                           | 2...457                           |
| Nominal Airflow (L/s)                          | 1133   | 1604                              | 1888                              | 2360                                     | 2831                              | 3775                              | 4719                              |
| Airflow Range (L/s)                            | 850-1416                                       | 1203-2006                         | 1416-2360                         | 1770-2949                                | 2124-3539                         | 2831-4719                         | 3539-5899                         |
| Nominal Motor kW (Standard Motor)*             |  |                                   |                                   |  |                                   |                                   |                                   |
| 208/230-1-60                                   | 0.97   | 1.79                              | —                                 | —  | —                                 | —                                 | —                                 |
| 208/230-3-60 and 460-3-60                      | 1.79   | 1.79                              | 1.79                              | 2.16                                     | 2.76                              | 3.73                              | 5.59                              |
| 575-3-60                                       | 0.75   | 1.49                              | 1.49                              | 2.24                                     | 2.24                              | 3.73                              | 5.59                              |
| 230-3-50, 400-3-50                             | 1.79   | 1.79                              | 2.16                              | 2.16                                     | 2.16                              | 3.73                              | 5.59                              |
| Motor Speed (r/s)                              |  |                                   |                                   |  |                                   |                                   |                                   |
| 208/230-1-60                                   | 28.8   | 28.8                              | —                                 | —  | —                                 | —                                 | —                                 |
| 208/230-3-60 and 460-3-60                      | 28.8   | 28.8                              | 28.8                              | 28.8                                     | 28.8                              | 29.1                              | 29.1                              |
| 575-3-60                                       | 28.8   | 28.8                              | 28.8                              | 28.8                                     | 28.8                              | 29.1                              | 29.3                              |
| 230-3-50, 400-3-50                             | 23.8   | 23.8                              | 23.8                              | 23.8                                     | 23.8                              | 23.8                              | 23.8                              |
| REFRIGERANT                                    | Puron (R-410A)                                 |                                   |                                   |  |                                   |                                   |                                   |
| Operating charge (kg)<br>(approx per circuit)† | 1.36   | 1.36                              | 0.68/0.68                         | 0.90/0.90                                | 1.13/1.13                         | 1.59/1.59                         | 2.04/2.04                         |
| DIRECT-EXPANSION COIL                          | Enhanced Copper Tubes, Aluminum Sine-Wave Fins |                                   |                                   |  |                                   |                                   |                                   |
| Max Working Pressure (kPag)                    | 2999   |                                   |                                   |  |                                   |                                   |                                   |
| Face Area (sq m)                               | 0.62   | 0.77                              | 0.93                              | 1.23                                     | 1.64                              | 1.85                              | 2.30                              |
| No. of Splits                                  | 1  | 1                                 | 2                                 | 2  | 2                                 | 2                                 | 2                                 |
| No. of Circuits per Split (4 Row)              | 12   | 15                                |                                   | 12                                       | 16                                | 18                                | 20                                |
| Split Type...Percentage                        | —  | —                                 |                                   |  | Face...50/50                      |                                   |                                   |
| Fins/m   | 591  | 591                               | 670                               | 591                                      | 591                               | 670                               | 591                               |
| STEAM COIL                                     |  |                                   |                                   |  |                                   |                                   |                                   |
| Max Working Pressure (kPag at 126°C)           | 138  |                                   |                                   |  |                                   |                                   |                                   |
| Total Face Area (sq m)                         | 0.62   | 0.62                              | 0.62                              | 1.24                                     | 1.24                              | 1.24                              | 1.39                              |
| Rows...Fins/m                                  | 1...355  | 1...355                           | 1...355                           | 1...394                                  | 1...394                           | 1...394                           | 1...394                           |
| HOT WATER COIL                                 |  |                                   |                                   |  |                                   |                                   |                                   |
| Max Working Pressure (kPag)                    | 1034   |                                   |                                   |  |                                   |                                   |                                   |
| Total Face Area (sq m)                         | 0.62   | 0.62                              | 0.62                              | 1.24                                     | 1.24                              | 1.24                              | 1.39                              |
| Rows...Fins/m                                  | 2...335  | 2...335                           | 2...335                           | 2...335                                  | 2...335                           | 2...335                           | 2...493                           |
| Water Volume                                   |  |                                   |                                   |  |                                   |                                   |                                   |
| (L)  |  | 31.4                              |                                   |  | 52.6                              |                                   | 54.1                              |
| (m <sup>3</sup> )                              |  | 0.031                             |                                   |  | 0.052                             |                                   | 0.054                             |
| PIPING CONNECTIONS**                           |  |                                   |                                   |  |                                   |                                   |                                   |
| Quantity...Size (in.)                          |  |                                   |                                   |  |                                   |                                   |                                   |
| DX Coil — Suction (ODF)                        | 1...1 <sup>1</sup> / <sub>8</sub>              | 1...1 <sup>1</sup> / <sub>8</sub> | 2...1 <sup>1</sup> / <sub>8</sub> | 2...1 <sup>1</sup> / <sub>8</sub>        | 2...1 <sup>1</sup> / <sub>8</sub> | 2...1 <sup>1</sup> / <sub>8</sub> | 2...1 <sup>3</sup> / <sub>8</sub> |
| DX Coil — Liquid Refrigerant (ODF)             |  | 1... <sup>5</sup> / <sub>8</sub>  |                                   |  | 2... <sup>5</sup> / <sub>8</sub>  |                                   |                                   |
| Steam Coil, In (MPT)                           |  | 1...2 <sup>1</sup> / <sub>2</sub> |                                   |  | 1...2 <sup>1</sup> / <sub>2</sub> |                                   |                                   |
| Steam Coil, Out (MPT)                          |  | 1...1 <sup>1</sup> / <sub>2</sub> |                                   |  | 1...1 <sup>1</sup> / <sub>2</sub> |                                   |                                   |
| Hot Water Coil, In (MPT)                       |  | 1...1 <sup>1</sup> / <sub>2</sub> | 1...1 <sup>1</sup> / <sub>2</sub> |  |                                   | 1...2                             |                                   |
| Hot Water Coil, Out (MPT)                      |  | 1...1 <sup>1</sup> / <sub>2</sub> | 1...1 <sup>1</sup> / <sub>2</sub> |  |                                   | 1...2                             |                                   |
| Condensate (PVC)                               | 1...1 <sup>1</sup> / <sub>4</sub> ODM/1 IDF    |                                   |                                   |  |                                   |                                   |                                   |
| FILTERS  | Throwaway — Factory-Supplied                   |                                   |                                   |  |                                   |                                   |                                   |
| Quantity...Size                                | 4...406 x 610 x 51                             |                                   |                                   | 4...406 x 508 x 51<br>4...406 x 610 x 51 |                                   | 4...508x610x51<br>4...508x635x51  |                                   |
| Access Location                                | Right or Left Side                             |                                   |                                   |  |                                   |                                   |                                   |

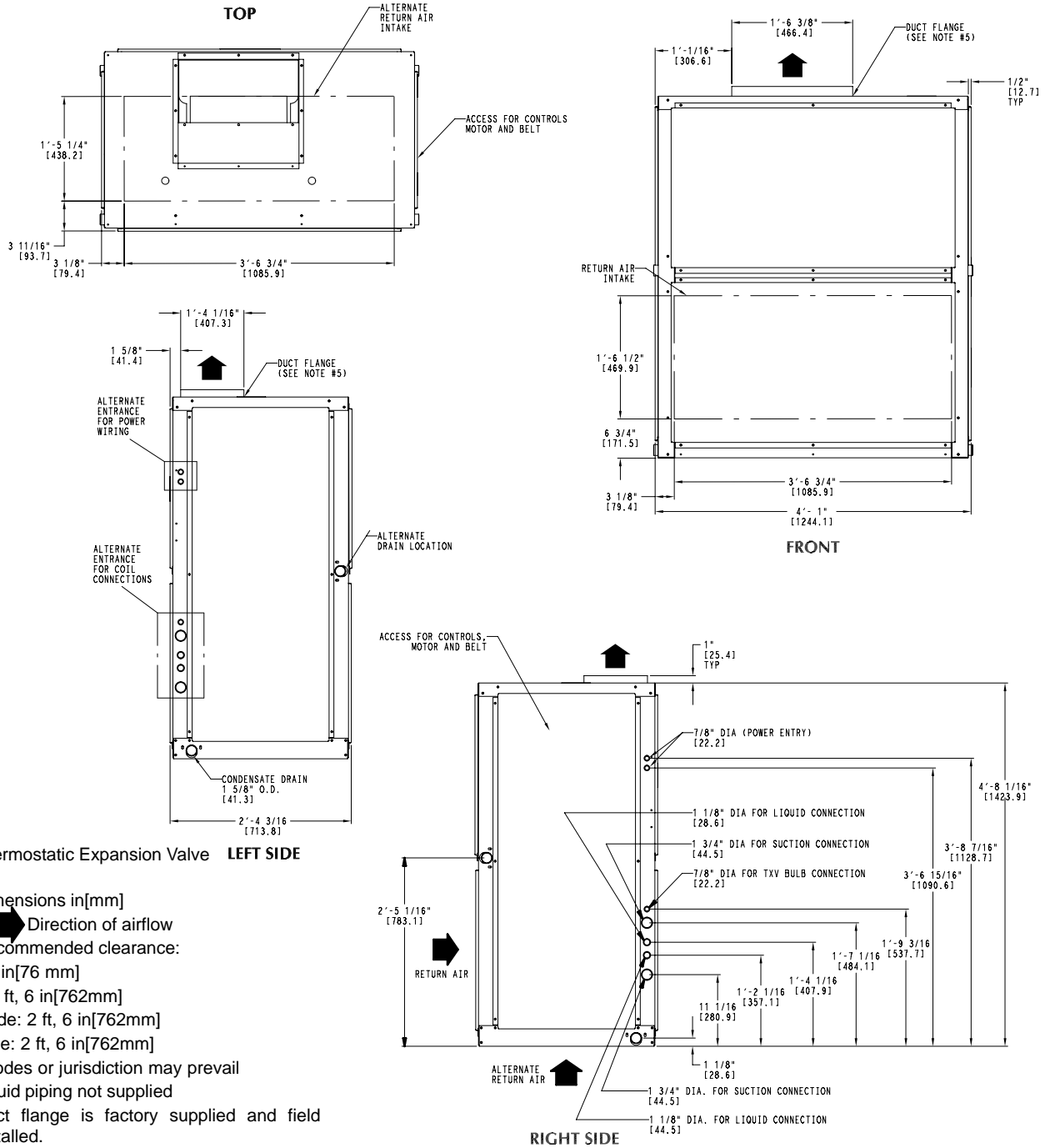
\* Refer to Alternate Fan Motor Data table, page 36, for alternate motor data.

† Units are shipped without refrigerant charge.

\*\* All piping sizes are OD inches; equivalent sizes in millimeters follow:



# Dimensions – Sizes 6 – 10 Ton



**LEGEND**

TXV – Thermostatic Expansion Valve **LEFT SIDE**

**NOTES:**

1. Dimensions in[mm]
2. Direction of airflow
3. Recommended clearance:

Rear: 3 in[76 mm]

Front: 2 ft, 6 in[762mm]

Right side: 2 ft, 6 in[762mm]

Left side: 2 ft, 6 in[762mm]

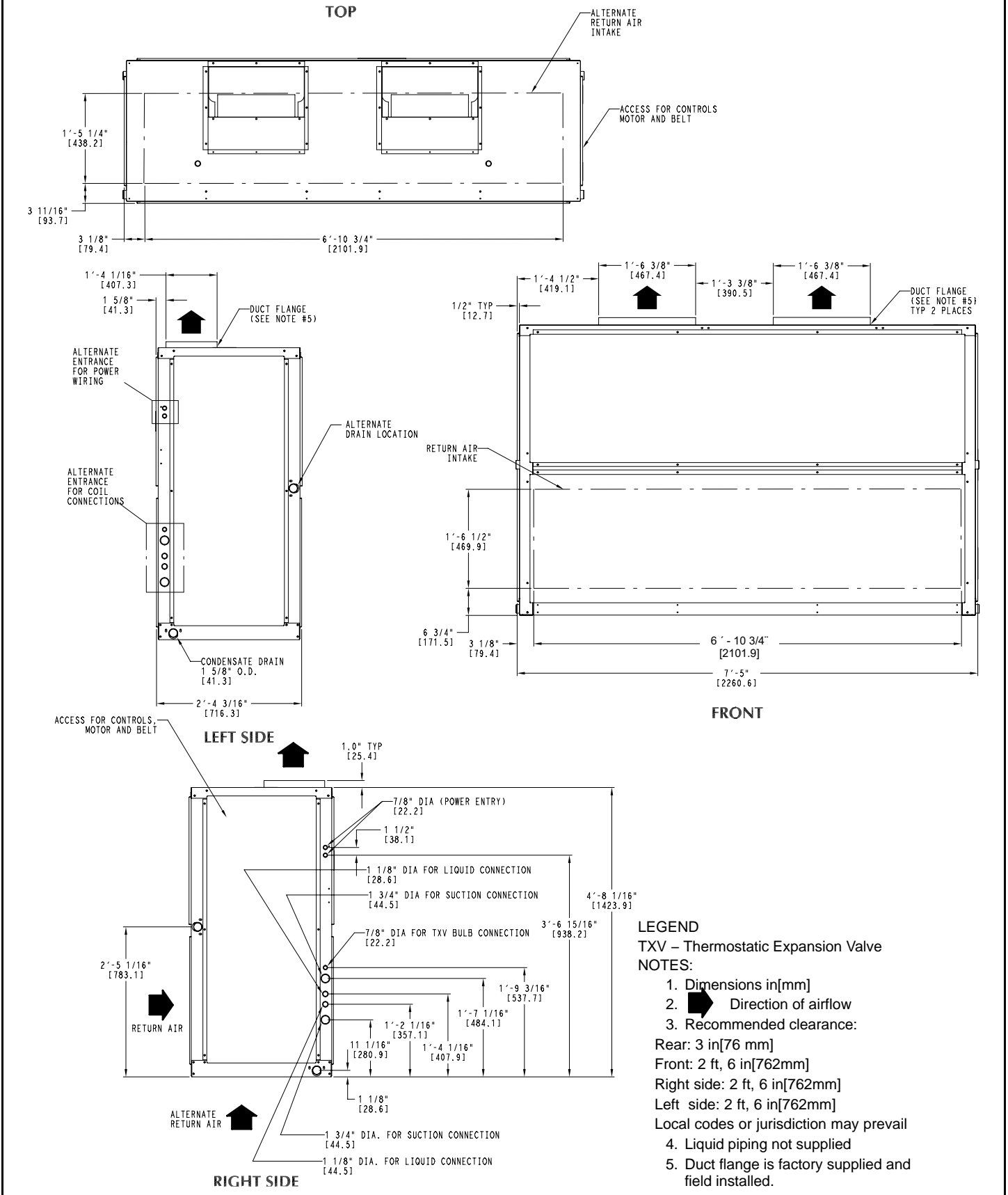
Local codes or jurisdiction may prevail

4. Liquid piping not supplied

5. Duct flange is factory supplied and field installed.

| UNIT   | UNIT WEIGHT lb(kg) |
|--------|--------------------|
| FAS072 | 399 (181)          |
| FAS091 | 404 (183)          |
| FAS120 | 425 (193)          |

# Dimensions – Sizes 12.5 to 20 Ton



**LEGEND**

TXV – Thermostatic Expansion Valve

**NOTES:**

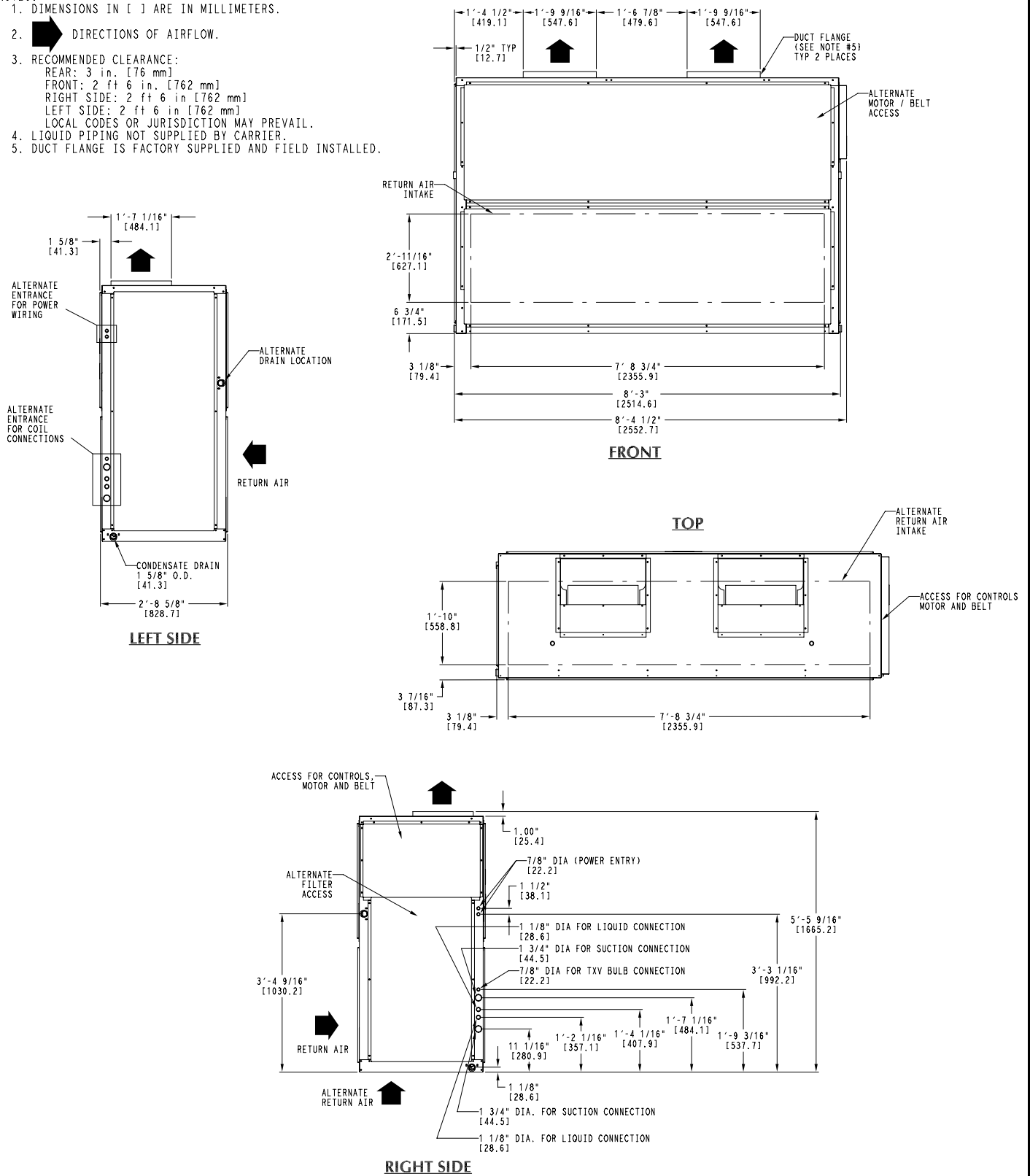
1. Dimensions in[mm]
2. Direction of airflow
3. Recommended clearance:  
Rear: 3 in[76 mm]  
Front: 2 ft, 6 in[762mm]  
Right side: 2 ft, 6 in[762mm]  
Left side: 2 ft, 6 in[762mm]  
Local codes or jurisdiction may prevail
4. Liquid piping not supplied
5. Duct flange is factory supplied and field installed.

| UNIT   | UNIT WEIGHT lb(kg) |
|--------|--------------------|
| FAS150 | 695 (315)          |
| FAS180 | 713 (323)          |
| FAS240 | 730 (331)          |

# Dimensions – Size 25 Ton

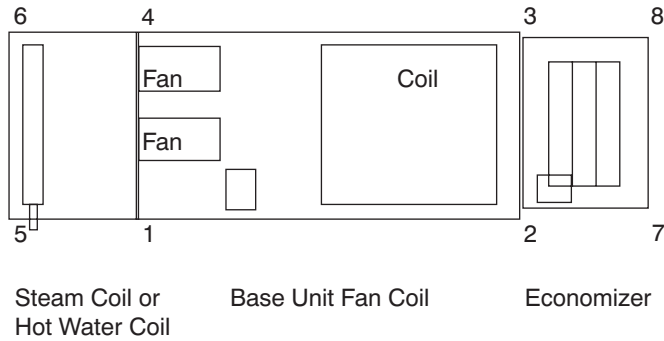
**NOTES:**

1. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. DIRECTIONS OF AIRFLOW.
3. RECOMMENDED CLEARANCE:  
 REAR: 3 in. [76 mm]  
 FRONT: 2 ft 6 in. [762 mm]  
 RIGHT SIDE: 2 ft 6 in. [762 mm]  
 LEFT SIDE: 2 ft 6 in. [762 mm]  
 LOCAL CODES OR JURISDICTION MAY PREVAIL.
4. LIQUID PIPING NOT SUPPLIED BY CARRIER.
5. DUCT FLANGE IS FACTORY SUPPLIED AND FIELD INSTALLED.



| UNIT   | UNIT WEIGHT lb(kg) |
|--------|--------------------|
| FAS300 | 1062 (482)         |

CORNER WEIGHTS  
HORIZONTAL POSITION



FAS – U.S.

| FAS<br>UNIT SIZE     | UNIT OR<br>ACCESSORY<br>NAME |     | UNIT OR<br>ACCESSORY<br>WEIGHT<br>(lb) | CORNER NUMBER (WEIGHT IN LB) |       |       |       |       |       |       |       |
|----------------------|------------------------------|-----|--|------------------------------|-------|-------|-------|-------|-------|-------|-------|
|                      |                              |     |  | 1                            | 2     | 3     | 4     | 5     | 6     | 7     | 8     |
| FAS072               | FAN COIL BASE UNIT           |     | 399                                    | 109.3                        | 106.1 | 90.6  | 93.4  | —     | —     | —     | —     |
| FAS091               | FAN COIL BASE UNIT           |     | 404                                    | 110.7                        | 107.5 | 91.7  | 94.5  | —     | —     | —     | —     |
| FAS120               | FAN COIL BASE UNIT           |     | 425                                    | 116.4                        | 113.0 | 96.5  | 99.4  | —     | —     | —     | —     |
| FAS<br>072, 091, 120 | STEAM COIL                   | ADD | 215                                    | 40.2                         | 0.0   | 0.0   | 40.6  | 66.5  | 67.5  | 0.0   | 0.0   |
|                      | HOT WATER COIL               | ADD | 195                                    | 35.9                         | 0.0   | 0.0   | 36.7  | 60.4  | 62.0  | 0.0   | 0.0   |
|                      | ECONOMIZER                   | ADD | 185                                    | 0.0                          | 36.8  | 35.7  | 0.0   | 0.0   | 0.0   | 56.8  | 55.1  |
|                      | ECO + STEAM COIL             | ADD | 400                                    | 38.8                         | 38.6  | 37.4  | 39.2  | 64.2  | 65.2  | 59.5  | 57.7  |
|                      | ECO + HW COIL                | ADD | 380                                    | 36.9                         | 35.8  | 34.6  | 37.7  | 62.1  | 63.8  | 55.1  | 53.4  |
| FAS150               | FAN COIL BASE UNIT           |     | 695                                    | 224.0                        | 177.7 | 129.8 | 163.7 | —     | —     | —     | —     |
| FAS180               | FAN COIL BASE UNIT           |     | 713                                    | 229.8                        | 182.3 | 133.2 | 167.9 | —     | —     | —     | —     |
| FAS240               | FAN COIL BASE UNIT           |     | 730                                    | 235.6                        | 186.4 | 136.5 | 171.5 | —     | —     | —     | —     |
| FAS<br>150, 180, 240 | STEAM COIL                   | ADD | 340                                    | 61.4                         | 0.0   | 0.0   | 62.0  | 107.8 | 108.8 | 0.0   | 0.0   |
|                      | HOT WATER COIL               | ADD | 285                                    | 51.7                         | 0.0   | 0.0   | 51.3  | 91.5  | 90.6  | 0.0   | 0.0   |
|                      | ECONOMIZER                   | ADD | 340                                    | 0.0                          | 66.9  | 62.0  | 0.0   | 0.0   | 0.0   | 109.8 | 102.0 |
|                      | ECO + STEAM COIL             | ADD | 680                                    | 64.4                         | 63.7  | 59.0  | 65.0  | 113.0 | 114.1 | 104.5 | 97.1  |
|                      | ECO + HW COIL                | ADD | 625                                    | 60.0                         | 57.6  | 53.4  | 59.5  | 106.2 | 105.1 | 94.6  | 87.8  |
| FAS300               | FAN COIL BASE UNIT           |     | 1050                                   | 338.4                        | 268.5 | 196.1 | 247.2 | —     | —     | —     | —     |
| FAS300               | STEAM COIL                   | ADD | 405                                    | 73.2                         | 0.0   | 0.0   | 73.8  | 128.4 | 129.6 | 0.0   | 0.0   |
|                      | HOT WATER COIL               | ADD | 345                                    | 62.6                         | 0.0   | 0.0   | 62.1  | 110.7 | 109.6 | 0.0   | 0.0   |
|                      | ECONOMIZER                   | ADD | 450                                    | 0.0                          | 88.5  | 82.0  | 0.0   | 0.0   | 0.0   | 145.3 | 134.2 |
|                      | ECO + STEAM COIL             | ADD | 855                                    | 80.6                         | 80.1  | 74.1  | 81.6  | 142.0 | 143.4 | 131.3 | 122   |
|                      | ECO + HW COIL                | ADD | 795                                    | 76.8                         | 73.7  | 68.2  | 75.7  | 135.0 | 133.6 | 120.3 | 111.7 |

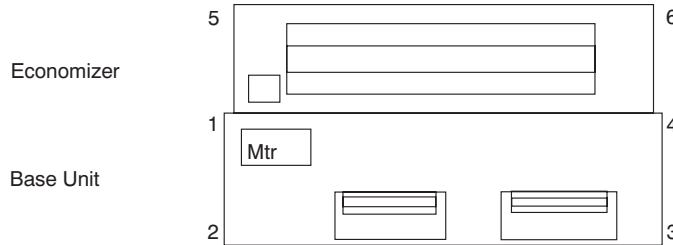
FAS – SI

| FAS<br>UNIT SIZE     | UNIT OR ACCESSORY NAME |     | UNIT OR<br>ACCESSORY<br>WEIGHT<br>(kg) | CORNER NUMBER (WEIGHT IN KG) |       |       |       |      |      |      |      |
|----------------------|------------------------|-----|--|------------------------------|-------|-------|-------|------|------|------|------|
|                      |                        |     |  | 1                            | 2     | 3     | 4     | 5    | 6    | 7    | 8    |
| FAS072               | FAN COIL BASE UNIT     |     | 181                                    | 49.6                         | 48.1  | 41.1  | 42.3  | —    | —    | —    | —    |
| FAS091               | FAN COIL BASE UNIT     |     | 183                                    | 50.1                         | 48.6  | 41.5  | 42.8  | —    | —    | —    | —    |
| FAS120               | FAN COIL BASE UNIT     |     | 193                                    | 52.9                         | 51.3  | 43.8  | 45.2  | —    | —    | —    | —    |
| FAS<br>072, 091, 120 | STEAM COIL             | ADD | 98                                     | 18.2                         | 0.0   | 0.0   | 18.4  | 30.2 | 30.6 | 0.0  | 0.0  |
|                      | HOT WATER COIL         | ADD | 89                                     | 16.4                         | 0.0   | 0.0   | 16.7  | 27.5 | 28.2 | 0.0  | 0.0  |
|                      | ECONOMIZER             | ADD | 84                                     | 0.0                          | 16.7  | 16.2  | 0.0   | 0.0  | 0.0  | 25.8 | 25   |
|                      | ECO + STEAM COIL       | ADD | 182                                    | 17.6                         | 17.5  | 17.0  | 17.8  | 29.1 | 29.6 | 27.0 | 26.2 |
|                      | ECO + HW COIL          | ADD | 173                                    | 16.8                         | 16.3  | 15.8  | 17.2  | 28.3 | 29.0 | 25.1 | 24.3 |
| FAS150               | FAN COIL BASE UNIT     |     | 315                                    | 86.3                         | 83.7  | 71.5  | 73.7  | —    | —    | —    | —    |
| FAS180               | FAN COIL BASE UNIT     |     | 323                                    | 88.5                         | 85.9  | 73.3  | 75.6  | —    | —    | —    | —    |
| FAS150, 180, 240     | STEAM COIL             | ADD | 155                                    | 28.1                         | 0.0   | 0.0   | 28.3  | 49.3 | 49.3 | 0.0  | 0.0  |
|                      | HOT WATER COIL         | ADD | 130                                    | 23.6                         | 0.0   | 0.0   | 23.4  | 41.8 | 41.2 | 0.0  | 0.0  |
|                      | ECONOMIZER             | ADD | 155                                    | 0.0                          | 30.2  | 28.3  | 0.0   | 0.0  | 0.0  | 50.3 | 46.2 |
|                      | ECO + STEAM COIL       | ADD | 310                                    | 29.3                         | 29.0  | 26.9  | 29.6  | 51.5 | 51.9 | 47.6 | 44.2 |
|                      | ECO + HW COIL          | ADD | 285                                    | 27.5                         | 26.4  | 24.4  | 27.1  | 48.5 | 47.9 | 43.1 | 40.1 |
| FAS300               | FAN COIL BASE UNIT     |     | 477                                    | 130.5                        | 126.7 | 108.2 | 111.6 | —    | —    | —    | —    |
| FAS300               | STEAM COIL             | ADD | 184                                    | 33.4                         | 0.0   | 0.0   | 33.6  | 58.5 | 58.5 | 0.0  | 0.0  |
|                      | HOT WATER COIL         | ADD | 156                                    | 28.3                         | 0.0   | 0.0   | 28.0  | 50.3 | 49.4 | 0.0  | 0.0  |
|                      | ECONOMIZER             | ADD | 204                                    | 0.0                          | 39.8  | 37.2  | 0.0   | 0.0  | 0.0  | 66.2 | 60.8 |
|                      | ECO + STEAM COIL       | ADD | 387                                    | 36.5                         | 36.4  | 33.5  | 36.9  | 64.4 | 64.8 | 59.4 | 55.1 |
|                      | ECO + HW COIL          | ADD | 360                                    | 34.8                         | 33.5  | 30.8  | 34.2  | 61.2 | 60.5 | 54.5 | 50.6 |

**LEGEND:**

ECO – Economizer  
 HW – Hot Water

CORNER WEIGHTS  
VERTICAL POSITION



NOTE: Steam, Hot Water & Plenum  
on top of positions 1,2,3,4

FAS – U.S.

| FAS<br>UNIT SIZE     | UNIT OR ACCESSORY<br>NAME |     | UNIT OR<br>ACCESSORY<br>WEIGHT<br>(lb) | CORNER NUMBER (WEIGHT IN LB) |       |       |       |       |       |
|----------------------|---------------------------|-----|--|------------------------------|-------|-------|-------|-------|-------|
|                      |                           |     |  | 1                            | 2     | 3     | 4     | 5     | 6     |
| FAS072               | FAN COIL BASE UNIT        |     | 399                                    | 100.5                        | 114.9 | 98.0  | 85.8  | —     | —     |
| FAS091               | FAN COIL BASE UNIT        |     | 404                                    | 101.7                        | 116.3 | 99.1  | 86.9  | —     | —     |
| FAS120               | FAN COIL BASE UNIT        |     | 425                                    | 107.6                        | 122.3 | 108.0 | 87.1  | —     | —     |
| FAS<br>072, 091, 120 | STEAM COIL                | ADD | 215                                    | 54.1                         | 54.1  | 53.4  | 53.4  | 0.0   | 0.0   |
|                      | HOT WATER COIL            | ADD | 195                                    | 49.4                         | 49.4  | 48.1  | 48.1  | 0.0   | 0.0   |
|                      | PLENUM                    | ADD | 175                                    | 50.8                         | 36.7  | 36.7  | 50.8  | 0.0   | 0.0   |
|                      | ECONOMIZER                | ADD | 195                                    | 38.9                         | 0.0   | 0.0   | 37.1  | 59.9  | 58.3  |
|                      | ECO + STEAM COIL          | ADD | 410                                    | 93.0                         | 53.4  | 52.6  | 91.1  | 61.0  | 59.1  |
|                      | ECO + HW COIL             | ADD | 390                                    | 88.9                         | 52.3  | 50.9  | 86.5  | 56.7  | 54.9  |
| FAS150               | FAN COIL BASE UNIT        |     | 695                                    | 191.2                        | 210.5 | 153.8 | 139.5 | —     | —     |
| FAS180               | FAN COIL BASE UNIT        |     | 713                                    | 196.2                        | 216.0 | 157.8 | 143.1 | —     | —     |
| FAS150, 180          | STEAM COIL                | ADD | 340                                    | 85.4                         | 85.4  | 84.6  | 84.6  | 0.0   | 0.0   |
|                      | HOT WATER COIL            | ADD | 285                                    | 70.9                         | 70.9  | 71.6  | 71.6  | 0.0   | 0.0   |
|                      | PLENUM                    | ADD | 225                                    | 72.5                         | 40.0  | 40.0  | 72.5  | 0.0   | 0.0   |
|                      | ECONOMIZER                | ADD | 340                                    | 66.5                         | 0.0   | 0.0   | 62.0  | 109.5 | 102.0 |
|                      | ECO + STEAM COIL          | ADD | 680                                    | 153.0                        | 89.1  | 88.7  | 147.7 | 104.5 | 97.0  |
|                      | ECO + HW COIL             | ADD | 625                                    | 139.9                        | 82.5  | 83.3  | 136.7 | 94.7  | 87.9  |

FAS – SI

| FAS<br>UNIT SIZE     | UNIT OR ACCESSORY<br>NAME |     | UNIT OR<br>ACCESSORY<br>WEIGHT<br>(kg) | CORNER NUMBER (WEIGHT IN LB) |      |      |      |      |      |
|----------------------|---------------------------|-----|--|------------------------------|------|------|------|------|------|
|                      |                           |     |  | 1                            | 2    | 3    | 4    | 5    | 6    |
| FAS072               | FAN COIL BASE UNIT        |     | 181                                    | 45.5                         | 52.3 | 44.4 | 38.8 | —    | —    |
| FAS091               | FAN COIL BASE UNIT        |     | 183                                    | 46.0                         | 52.7 | 44.9 | 39.4 | —    | —    |
| FAS120               | FAN COIL BASE UNIT        |     | 193                                    | 48.5                         | 55.6 | 47.4 | 41.5 | —    | —    |
| FAS<br>072, 091, 120 | STEAM COIL                | ADD | 98                                     | 24.6                         | 24.6 | 24.4 | 24.4 | 0.0  | 0.0  |
|                      | HOT WATER COIL            | ADD | 89                                     | 22.4                         | 22.4 | 22.1 | 22.1 | 0.0  | 0.0  |
|                      | PLENUM                    | ADD | 80                                     | 23.3                         | 16.8 | 16.8 | 23.3 | 0.0  | 0.0  |
|                      | ECONOMIZER                | ADD | 84                                     | 16.8                         | 0.0  | 0.0  | 16.2 | 25.8 | 25.2 |
|                      | ECO + STEAM COIL          | ADD | 182                                    | 41.3                         | 23.6 | 23.3 | 40.3 | 27.0 | 26.5 |
|                      | ECO + HW COIL             | ADD | 173                                    | 39.3                         | 23.1 | 22.5 | 38.2 | 25.0 | 24.9 |
| FAS150               | FAN COIL BASE UNIT        |     | 315                                    | 86.6                         | 95.5 | 69.8 | 63.3 | —    | —    |
| FAS180               | FAN COIL BASE UNIT        |     | 323                                    | 88.9                         | 97.9 | 71.6 | 64.9 | —    | —    |
| FAS150, 180          | STEAM COIL                | ADD | 155                                    | 39.0                         | 39.0 | 38.5 | 38.5 | 0.0  | 0.0  |
|                      | HOT WATER COIL            | ADD | 130                                    | 32.4                         | 32.4 | 32.6 | 32.6 | 0.0  | 0.0  |
|                      | PLENUM                    | ADD | 102                                    | 32.9                         | 18.1 | 18.1 | 32.9 | 0.0  | 0.0  |
|                      | ECONOMIZER                | ADD | 155                                    | 31.1                         | 0.0  | 0.0  | 28.5 | 49.7 | 45.7 |
|                      | ECO + STEAM COIL          | ADD | 310                                    | 69.8                         | 40.7 | 40.4 | 67.3 | 47.6 | 44.2 |
|                      | ECO + HW COIL             | ADD | 285                                    | 63.8                         | 37.6 | 37.8 | 62.2 | 43.1 | 40.5 |

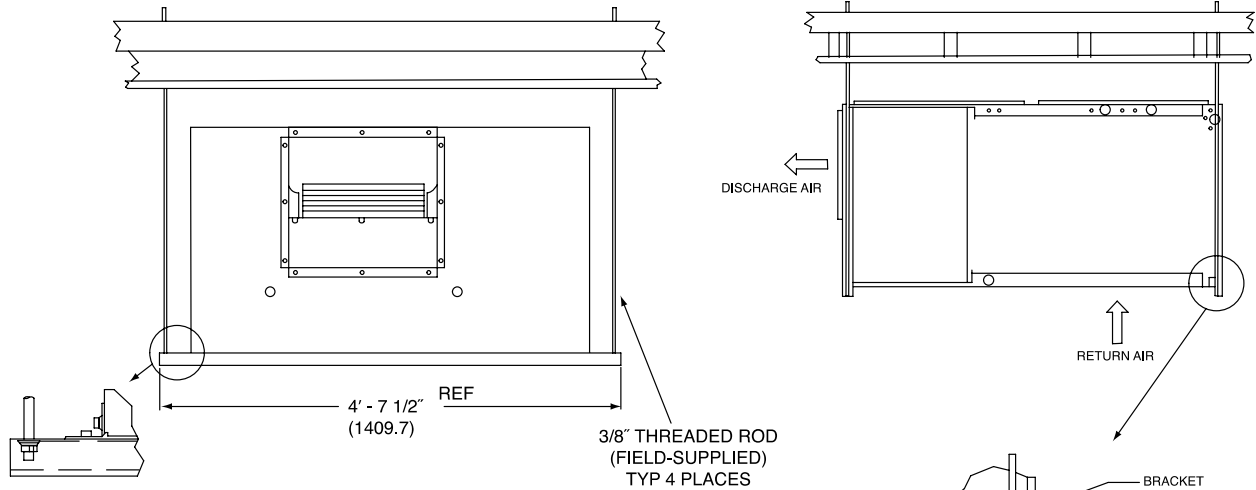
LEGEND:

ECO – Economizer  
HW – Hot Water

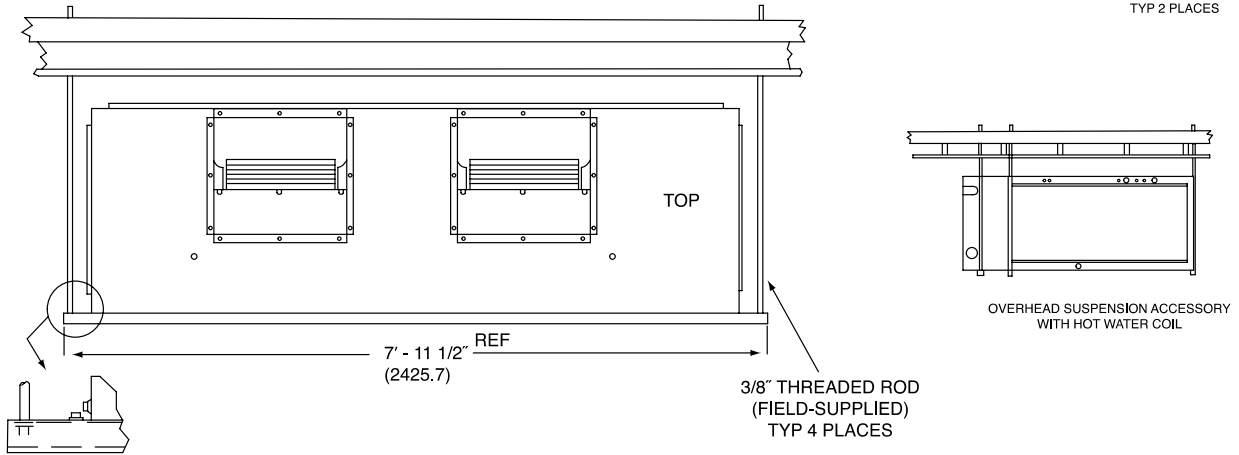
**Dimensions (cont.)**

**Preferred Suspension Technique – Overhead Suspension Accessory**

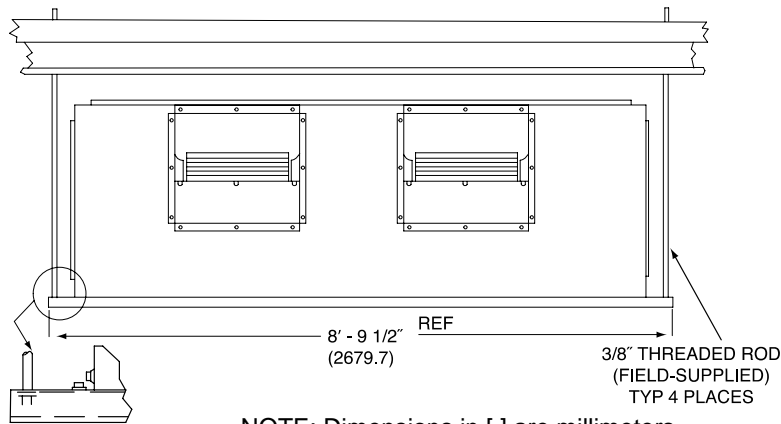
**UNIT SIZES FAS072-120  
(FRONT)**



**UNIT SIZES FAS150-240  
(FRONT)**

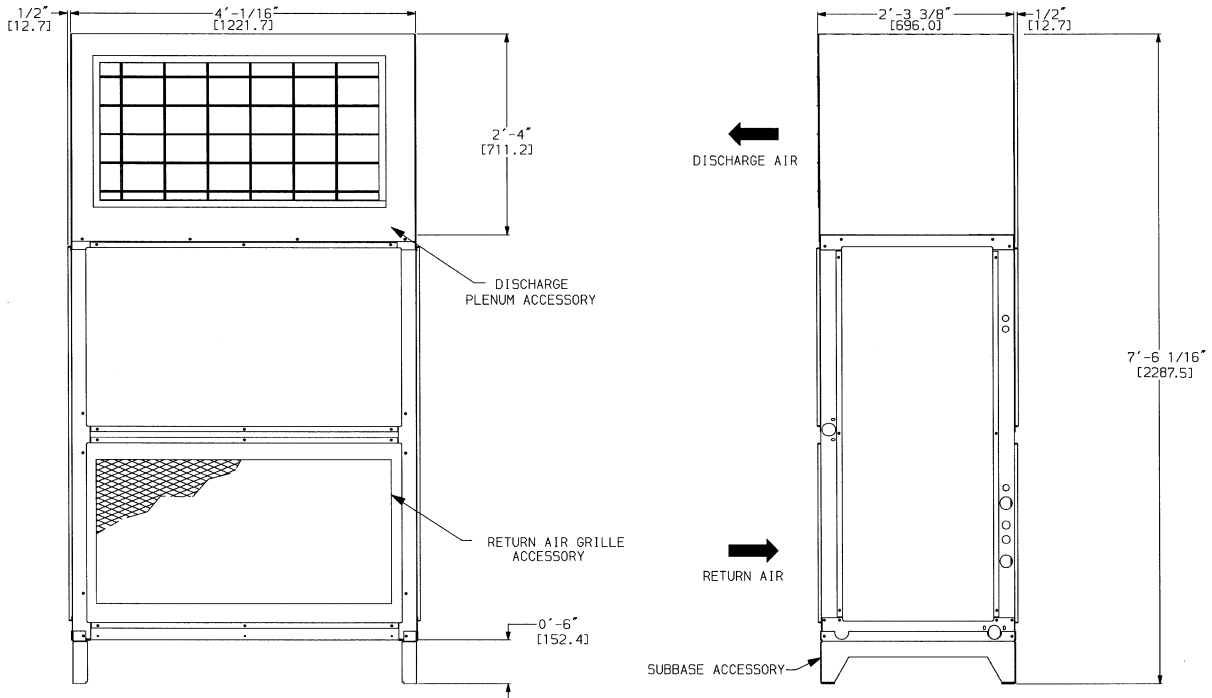


**UNIT SIZES FAS300  
(FRONT)**

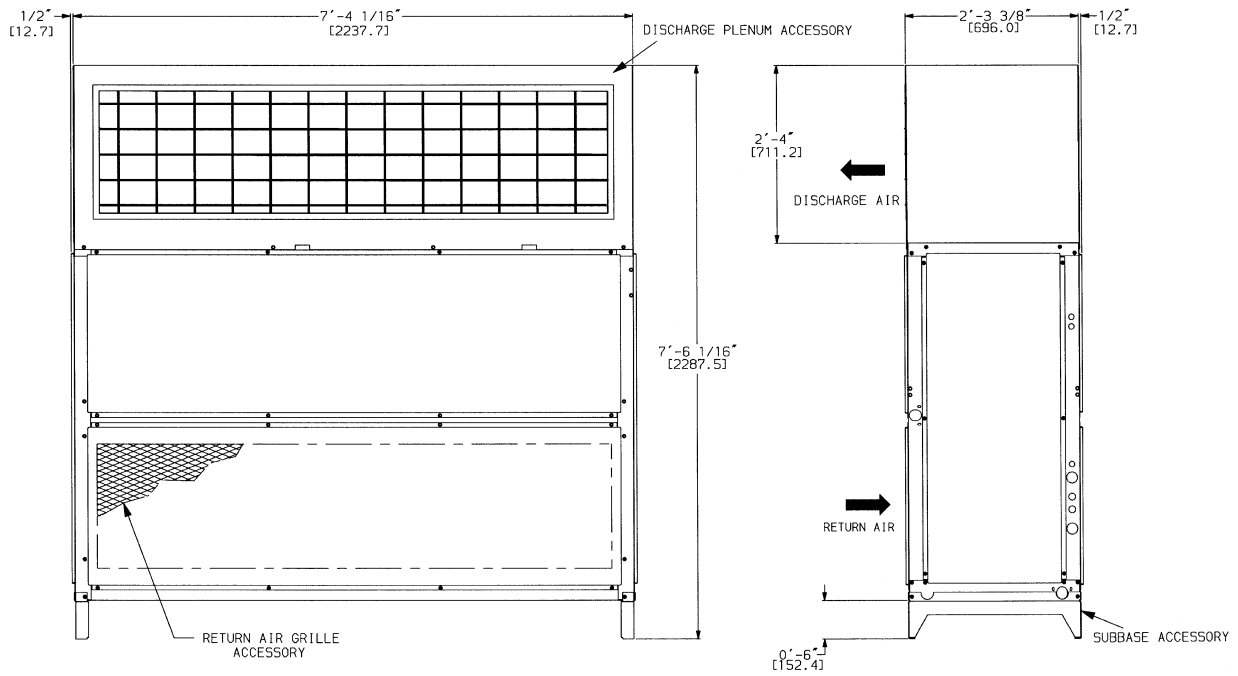


**NOTE: Dimensions in [ ] are millimeters.**

PLENUM, RETURN-AIR GRILLE, AND SUBBASE ACCESSORIES  
UNIT SIZES 072 – 120



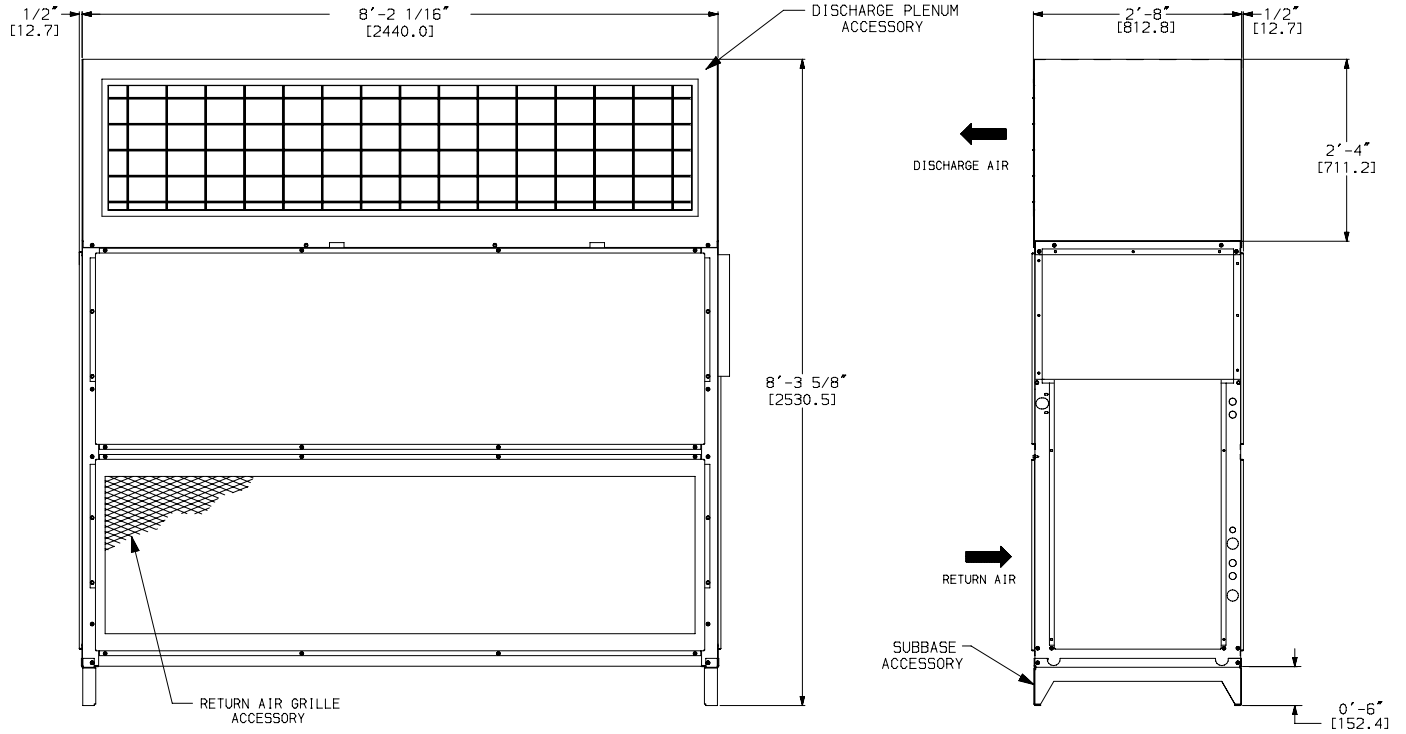
UNIT SIZE 150 – 240



NOTE: Dimensions in [ ] are millimeters.



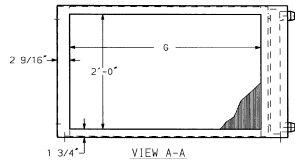
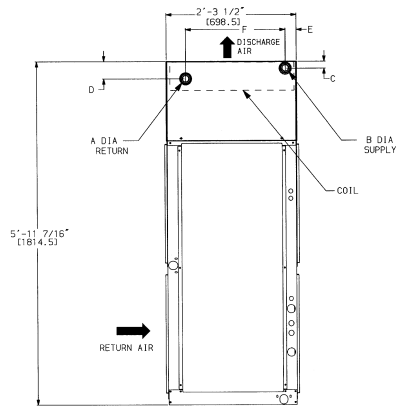
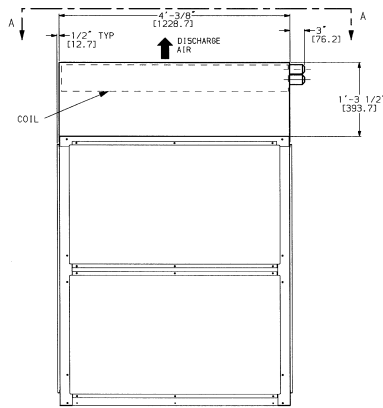
PLENUM, RETURN-AIR GRILLE, AND SUBBASE ACCESSORIES  
UNIT SIZES FAS300



NOTE: Dimensions in [ ] are millimeters.

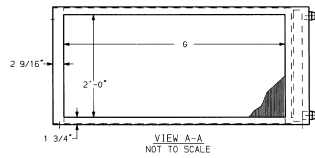
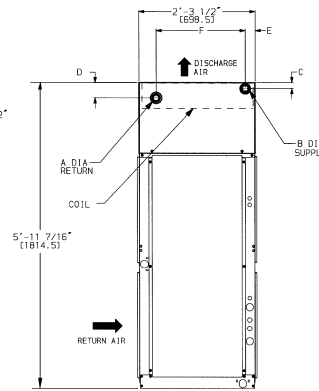
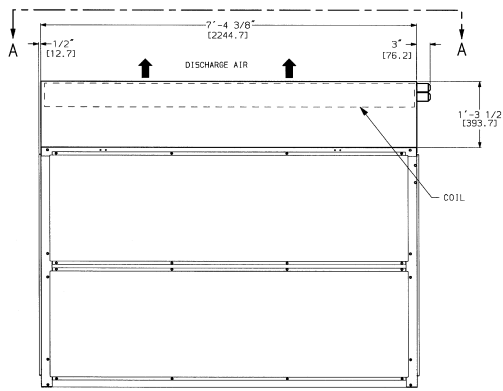
HOT WATER AND STEAM COIL ACCESSORIES

UNIT SIZES 072 – 120



| Dimension | Hot Water Coil     | Steam Coil        |
|-----------|--------------------|-------------------|
| A         | 1-1/2" MPT [38.1]  | 1-1/2" MPT [38.1] |
| B         | 1-1/2" MPT [38.1]  | 2-1/2" MPT [63.5] |
| C         | 2-3/8" [60.3]      | 3-1/8" [79.4]     |
| D         | 4-7/8" [123.8]     | 3-1/8" [79.4]     |
| E         | 2-1/8" [54.0]      | 4-9/16" [115.8]   |
| F         | 1'-11 1/4" [590.6] | 1' 9" [584.2]     |
| G         | 3' 4" [1016.0]     | 3' 4" [1016.0]    |

UNIT SIZE 150 – 240

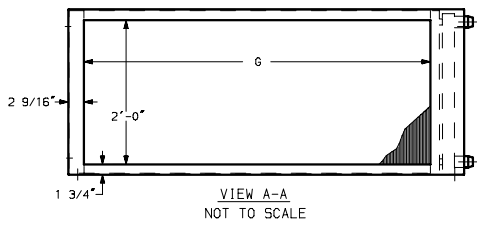
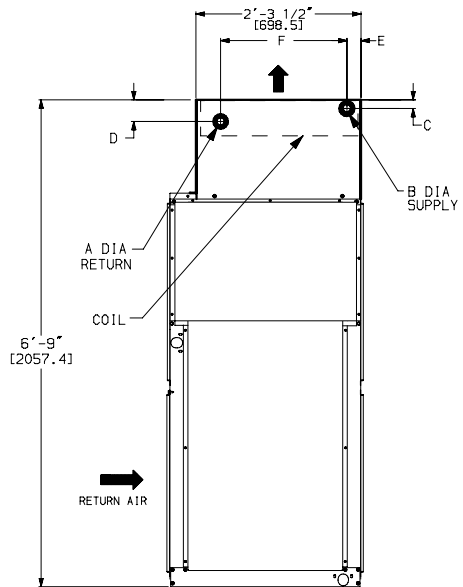
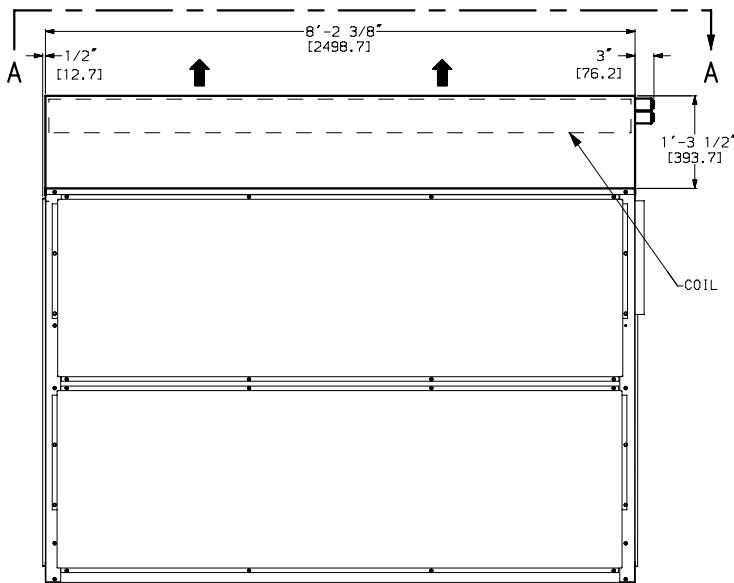


| Dimension | Hot Water Coil     | Steam Coil        |
|-----------|--------------------|-------------------|
| A         | 2" MPT [50.8]      | 1-1/2" MPT [38.1] |
| B         | 2" MPT [50.8]      | 2-1/2" MPT [63.5] |
| C         | 2-3/8" [60.3]      | 3-1/8" [79.4]     |
| D         | 4-7/8" [123.8]     | 3-1/8" [79.4]     |
| E         | 2-1/8" [54.0]      | 4-9/16" [115.8]   |
| F         | 1'-11 1/4" [590.6] | 1' 9" [584.2]     |
| G         | 6' 8" [2032.0]     | 6' 8" [2032.0]    |

NOTE: Dimensions in [ ] are millimeters.

HOT WATER AND STEAM COIL ACCESSORIES

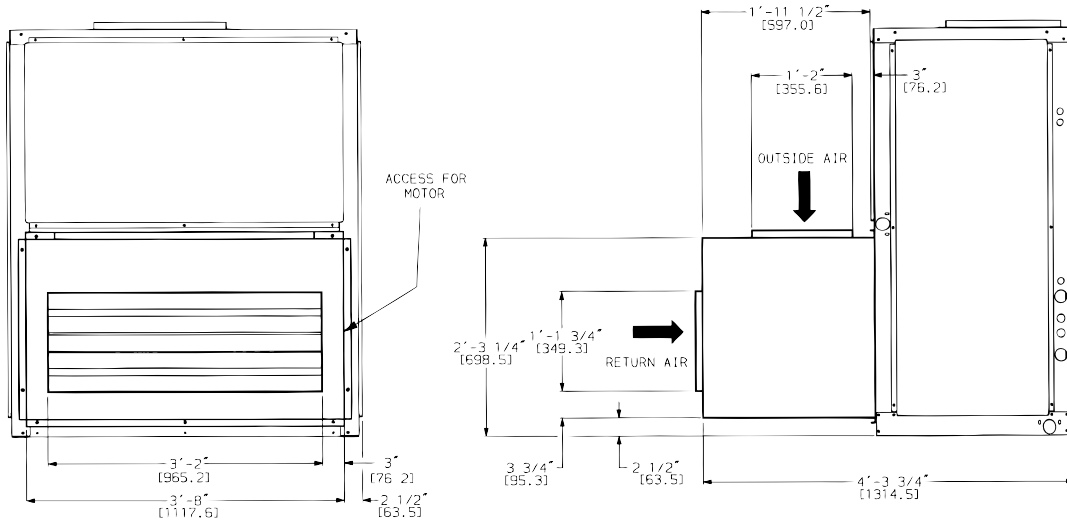
UNIT SIZES 300



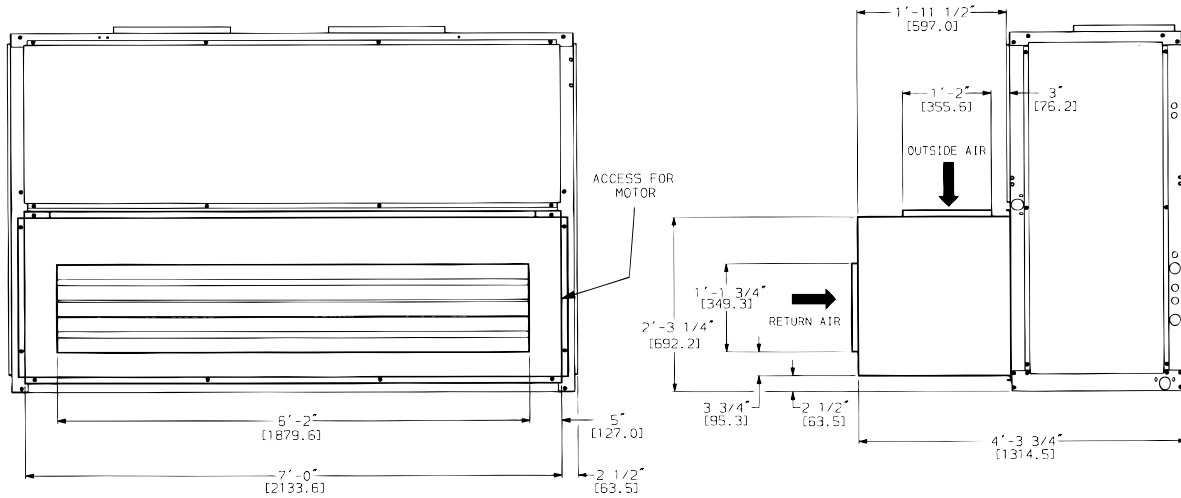
NOTE: Dimensions in [ ] are millimeters.

| Dimension | Hot Water Coil     | Steam Coil        |
|-----------|--------------------|-------------------|
| A         | 2" MPT [50.8]      | 1-1/2" MPT [38.1] |
| B         | 2" MPT [50.8]      | 2-1/2" MPT [63.5] |
| C         | 2-3/8" [60.3]      | 3-1/8" [79.4]     |
| D         | 4-7/8" [123.8]     | 3-1/8" [79.4]     |
| E         | 2-1/8" [54.0]      | 4-9/16" [115.8]   |
| F         | 1'-11 1/4" [590.6] | 1' 9" [584.2]     |
| G         | 7' 6" [2286.0]     | 7' 6" [2286.0]    |

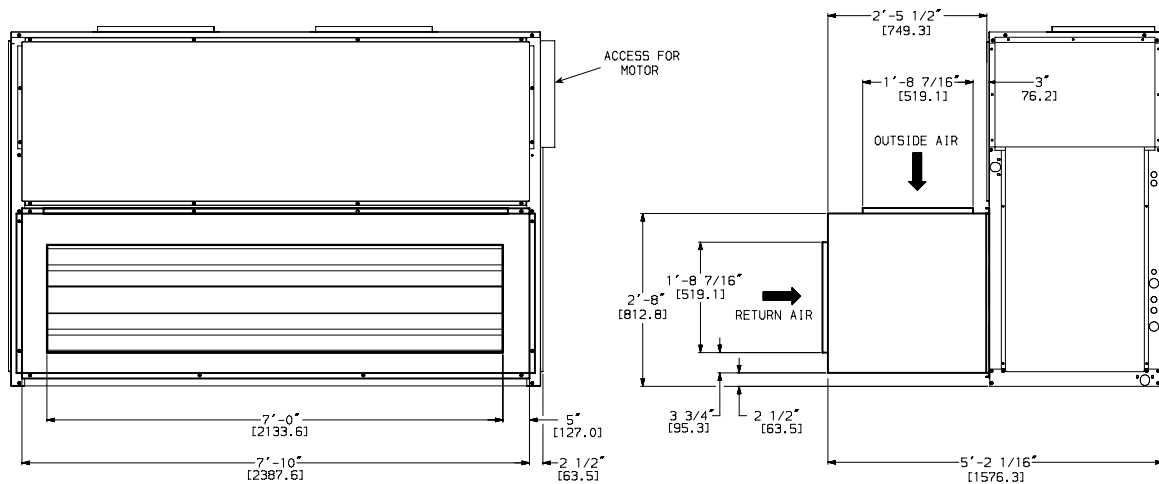
### ECONOMIZER ACCESSORY UNIT SIZES 072 – 120



### UNIT SIZES 150 – 240



### UNIT SIZES 300

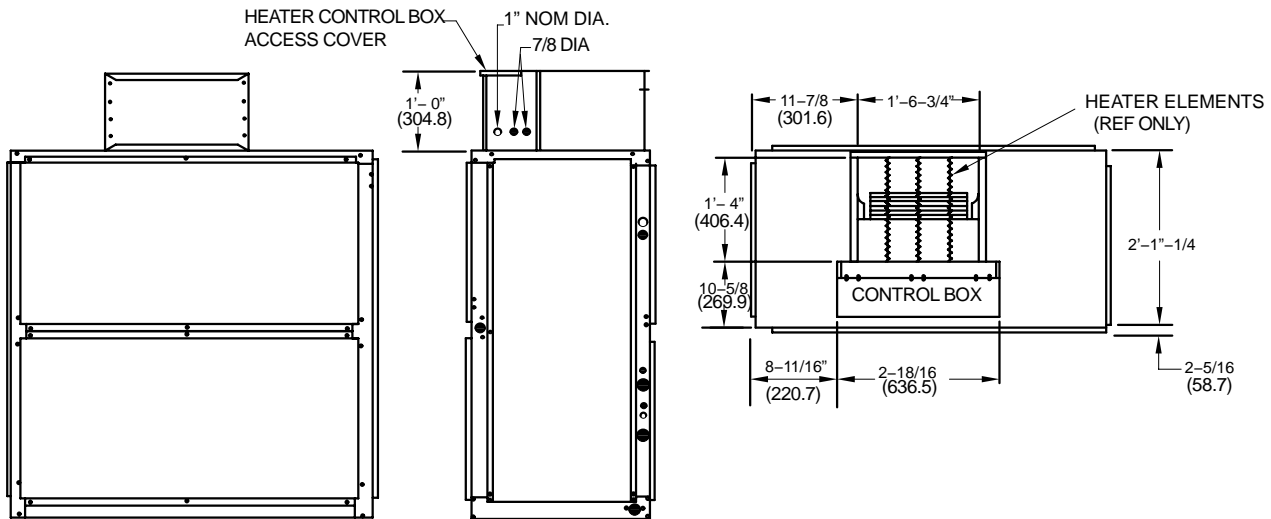


**NOTE:**

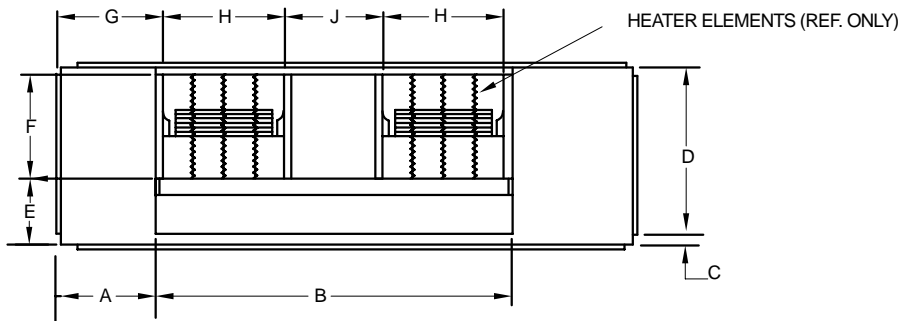
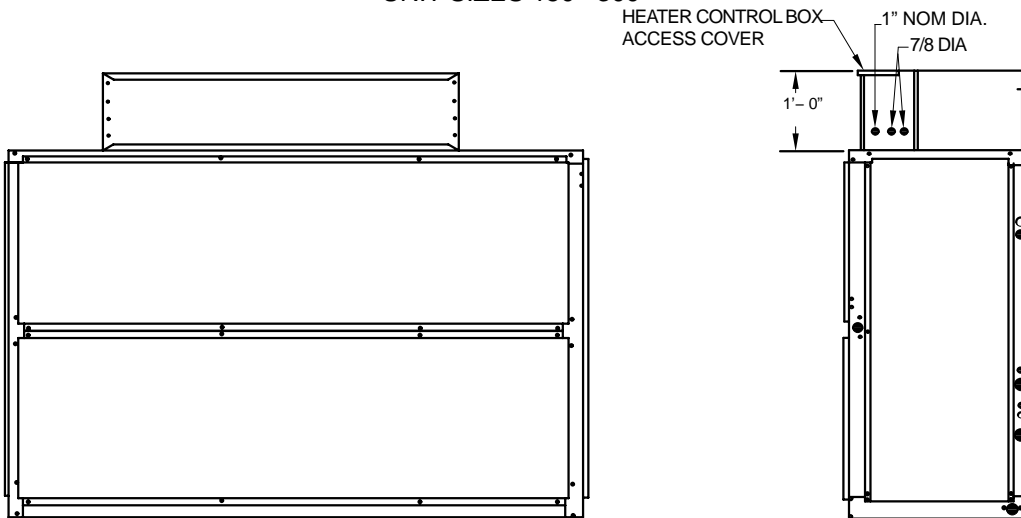
1. For horizontal unit applications, economizer can be attached to end of unit opposite duct connections.
2. Dimensions in [ ] are millimeters.

### ELECTRIC HEAT ACCESSORY

UNIT SIZES 072 – 120



UNIT SIZES 150 – 300



| Unit Size | A                    | B                     | C                 | D                     | E                    | F                | G                     | H                    | J                     |
|-----------|----------------------|-----------------------|-------------------|-----------------------|----------------------|------------------|-----------------------|----------------------|-----------------------|
| 150-240   | 1'-3 1/4"<br>[387.4] | 4'-6 3/8"<br>[1381.1] | 2 5/16"<br>[58.7] | 2'-1 1/4"<br>[641.4]  | 10 5/8"<br>[269.9]   | 1'-4"<br>[406.4] | 1'-4 5/16"<br>[414.3] | 1'-6 3/4"<br>[476.3] | 1'-1/8"<br>[327.0]    |
| 300       | 1'-3 3/8"<br>[390.5] | 5'-4 7/8"<br>[1636.8] | 2 1/16"<br>[26.9] | 2'-6 3/16"<br>[766.8] | 1'-1 1/4"<br>[311.2] | 1'-7"<br>[482.6] | 1'-4 5/16"<br>[414.3] | 1'-10"<br>[558.8]    | 1'-4 7/16"<br>[417.1] |

# SELECTION PROCEDURE (WITH EXAMPLE)

## Cooling (DX)

### I. Determine the cooling load and temperature and quantity of air entering the evaporator.

Given:

Total Capacity ..... 200,000 Btuh  
Sensible Heat Capacity ..... 130,000 Btuh  
Air Temperature Entering Indoor  
Coil ..... 80°F (27°C)db, 67°F (19°C) wb  
Air Quantity Entering Indoor Coil ..... 6000 cfm  
Ductwork Static Pressure Loss ..... 0.8 in. wg  
Power Supply ..... 230-3-60

### II. Determine unit selection and coil refrigerant temperature.

Enter the Cooling Capacities table at 6000 cfm. Select a FAS180 unit which has a total capacity of 207,000 and 174,000 Btuh at 40 and 45°F (4 and 7°C) coil refrigerant temperature, respectively. By interpolation, coil refrigerant temperature of 41.1°F (5.1°C) is needed to give a total capacity of 200,000 Btuh. Sensible capacity is approximately 149,000 Btuh. Cooling load is satisfied.

## Heating (Hot Water Coil)

### I. Determine heating load and temperature of air entering the indoor coil.

Given:

Load ..... 425,000 Btuh  
Entering-Air Temperature ..... 70°F (21°C)  
Coils 2-Row Hot Water  
Coil Entering-Water Temperature ..... 200°F (93°C)  
Water Temperature Drop ..... 20°F (-7°C)

### II. Find the heating capacity.

Enter Hydronic Heating Capacities table for the FAS180 unit at 6000 cfm. A 2-row hot water coil delivers 471,000 Btuh (based on 60°F/16°C entering air temperature and 20°F/-7°C water temperature drop). Since existing entering air temperature is 70°F (21°C), enter the Heating Correction Factors table for hot water coils at 200°F (93°C) entering water temperature, 20°F (-7°C) water temperature drop and 70°F (21°C) entering air. Read a constant of 0.93.

$$471,000 \times 0.93 = 438,000$$

The 438,000 Btuh rating satisfies the heating load.

## Fan

### I. Determine fan speed and brake horsepower:

From the Accessory Pressure Drop table, read a loss of 0.23 in. wg for a hot water coil at 6000 cfm.

$$\begin{aligned} \text{External static pressure} &= 0.80 + 0.23 \\ &= 1.03 \text{ in. wg} \end{aligned}$$

Enter FAS180 Fan Performance table at 6000 cfm and 1.03 in. wg. Interpolate and determine fan speed of 864 rpm and 3.1 bhp.

### II. Determine motor and drive.

Enter the fan motor data tables and find that the 230 v standard motor for a FAS180 unit is rated at 3.7 Hp. Since the bhp required is 3.1, a standard motor satisfies the requirement and should be used.

Next, find the type of drive that satisfies the 864 rpm requirement in the Drive Data tables. For a FAS180 unit, the Medium-Static Drive table shows an rpm range of 742 to 943. Since the rpm required is 864, the medium-static drive satisfies the requirement and should be used. Select the standard motor and medium-static drive combination (option code "A" Standard or "B" High Static).

To select an outdoor unit for this FAS180 indoor section, refer to the Combination Rating sheets for CAS condensing units in the condensing unit Specification

# PERFORMANCE DATA

## FAS COOLING CAPACITIES – ENGLISH

| UNIT<br>FAS | EVAPORATOR<br>AIR      |             | COIL REFRIGERANT TEMP (°F) |     |     |     |     |     |     |     |     |     |
|-------------|------------------------|-------------|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|             | Airflow<br>(Cfm)<br>BF | Ewb<br>(°F) | 30                         |     | 35  |     | 40  |     | 45  |     | 50  |     |
|             |                        |             | TC                         | SHC | TC  | SHC | TC  | SHC | TC  | SHC | TC  | SHC |
| 072         | 1,800<br>.06           | 72          | 124                        | 60  | 113 | 55  | 101 | 49  | 87  | 43  | 71  | 37  |
|             |                        | 67          | 104                        | 64  | 93  | 59  | 81  | 53  | 67  | 47  | 52  | 40  |
|             |                        | 62          | 86                         | 68  | 75  | 62  | 63  | 56  | 49  | 49  | 42  | 42  |
|             | 2,400<br>.10           | 72          | 143                        | 69  | 131 | 64  | 117 | 58  | 101 | 52  | 83  | 44  |
|             |                        | 67          | 121                        | 76  | 108 | 70  | 94  | 64  | 78  | 57  | 60  | 50  |
|             |                        | 62          | 101                        | 83  | 88  | 76  | 73  | 69  | 60  | 60  | 51  | 51  |
|             | 3,000<br>.12           | 72          | 158                        | 77  | 144 | 71  | 129 | 65  | 111 | 58  | 92  | 51  |
|             |                        | 67          | 134                        | 86  | 121 | 80  | 105 | 73  | 87  | 66  | 67  | 58  |
|             |                        | 62          | 113                        | 95  | 98  | 88  | 82  | 80  | 70  | 70  | 59  | 59  |
| 091         | 2,250<br>.06           | 72          | 155                        | 75  | 141 | 68  | 126 | 61  | 108 | 54  | 89  | 46  |
|             |                        | 67          | 130                        | 80  | 116 | 73  | 101 | 66  | 83  | 59  | 64  | 51  |
|             |                        | 62          | 108                        | 85  | 94  | 78  | 78  | 70  | 62  | 62  | 52  | 52  |
|             | 3,000<br>.10           | 72          | 179                        | 86  | 164 | 80  | 146 | 72  | 126 | 64  | 103 | 56  |
|             |                        | 67          | 151                        | 95  | 136 | 88  | 118 | 80  | 98  | 71  | 75  | 62  |
|             |                        | 62          | 126                        | 103 | 110 | 95  | 92  | 86  | 76  | 76  | 64  | 64  |
|             | 3,750<br>.12           | 72          | 197                        | 96  | 180 | 89  | 161 | 82  | 139 | 73  | 115 | 63  |
|             |                        | 67          | 168                        | 108 | 151 | 100 | 131 | 92  | 109 | 82  | 84  | 72  |
|             |                        | 62          | 141                        | 119 | 122 | 110 | 103 | 100 | 87  | 87  | 74  | 74  |
| 120         | 3,000<br>.05           | 72          | 200                        | 96  | 182 | 88  | 161 | 79  | 138 | 70  | 113 | 60  |
|             |                        | 67          | 168                        | 104 | 150 | 96  | 130 | 86  | 107 | 76  | 83  | 66  |
|             |                        | 62          | 140                        | 112 | 121 | 102 | 101 | 92  | 82  | 82  | 69  | 69  |
|             | 4,000<br>.07           | 72          | 228                        | 111 | 208 | 102 | 185 | 93  | 159 | 83  | 130 | 71  |
|             |                        | 67          | 194                        | 124 | 174 | 114 | 150 | 104 | 124 | 93  | 96  | 81  |
|             |                        | 62          | 162                        | 135 | 141 | 124 | 119 | 113 | 99  | 99  | 84  | 84  |
|             | 5,000<br>.12           | 72          | 250                        | 123 | 228 | 114 | 204 | 105 | 175 | 94  | 143 | 81  |
|             |                        | 67          | 214                        | 140 | 192 | 130 | 166 | 119 | 138 | 107 | 106 | 94  |
|             |                        | 62          | 179                        | 155 | 156 | 143 | 133 | 130 | 113 | 113 | 96  | 96  |
| 150         | 3,750<br>.06           | 72          | 251                        | 121 | 228 | 110 | 202 | 99  | 173 | 87  | 140 | 74  |
|             |                        | 67          | 210                        | 129 | 187 | 118 | 161 | 106 | 133 | 94  | 102 | 81  |
|             |                        | 62          | 174                        | 138 | 150 | 126 | 125 | 113 | 100 | 100 | 84  | 84  |
|             | 5,000<br>.08           | 72          | 289                        | 139 | 263 | 128 | 233 | 116 | 200 | 103 | 162 | 88  |
|             |                        | 67          | 244                        | 154 | 218 | 141 | 188 | 128 | 155 | 114 | 119 | 99  |
|             |                        | 62          | 203                        | 167 | 176 | 153 | 146 | 138 | 121 | 121 | 102 | 102 |
|             | 6,250<br>.10           | 72          | 319                        | 155 | 290 | 143 | 258 | 131 | 221 | 116 | 180 | 101 |
|             |                        | 67          | 271                        | 174 | 242 | 161 | 209 | 147 | 172 | 132 | 133 | 115 |
|             |                        | 62          | 226                        | 192 | 196 | 177 | 164 | 160 | 139 | 139 | 118 | 118 |
| 180         | 4,500<br>.03           | 72          | 310                        | 150 | 281 | 136 | 249 | 122 | 214 | 108 | 174 | 92  |
|             |                        | 67          | 260                        | 160 | 231 | 145 | 199 | 131 | 165 | 116 | 127 | 100 |
|             |                        | 62          | 215                        | 169 | 186 | 154 | 154 | 138 | 121 | 121 | 102 | 102 |
|             | 6,000<br>.05           | 72          | 361                        | 175 | 329 | 161 | 292 | 145 | 250 | 128 | 205 | 110 |
|             |                        | 67          | 304                        | 191 | 271 | 175 | 235 | 159 | 194 | 141 | 149 | 122 |
|             |                        | 62          | 254                        | 206 | 220 | 189 | 183 | 170 | 149 | 149 | 125 | 125 |
|             | 7,500<br>.08           | 72          | 401                        | 196 | 366 | 181 | 325 | 164 | 280 | 146 | 229 | 127 |
|             |                        | 67          | 340                        | 218 | 304 | 201 | 263 | 183 | 218 | 164 | 167 | 143 |
|             |                        | 62          | 285                        | 239 | 247 | 220 | 206 | 197 | 172 | 172 | 145 | 145 |

### LEGEND

**BF** — Bypass Factor  
**db** — Dry–Bulb Temp (°F)  
**Ewb** — Entering Wet–Bulb Temp (°F)  
**lwb** — Leaving Wet–Bulb Temp (°F)  
**SHC** — Sensible Heat Capacity (1000 Btuh)  
**TC** — Total Capacity (1000 Btuh)

### NOTES:

1. Ratings based on approximately 15°F superheat leaving coil.
2. Direct interpolation is permissible. Do not extrapolate.
3. Dashes indicate coil loading limits are exceeded.
4. Evaporator fan heat not deducted from ratings.

### 5. Formulas:

$$\text{Leaving db} = \text{entering db} - \frac{\text{sensible heat capacity (Btuh)}}{1.1 \times \text{cfm}}$$

$$\text{Leaving db} = \text{wet–bulb temperature corresponding to enthalpy of air leaving coil (} h_{lwb} \text{)}$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

where  $h_{lwb}$  = enthalpy of air entering coil

6. SHC is based on 80°F db temperature of air entering evaporator coil.

# PERFORMANCE DATA (CONT.)

## FAS COOLING CAPACITIES – ENGLISH (cont.)

| UNIT<br>FAS | EVAPORATOR<br>AIR      |             | COIL REFRIGERANT TEMP (°F) |     |     |     |     |     |     |     |     |     |
|-------------|------------------------|-------------|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|             | Airflow<br>(Cfm)<br>BF | Ewb<br>(°F) | 30                         |     | 35  |     | 40  |     | 45  |     | 50  |     |
|             |                        |             | TC                         | SHC | TC  | SHC | TC  | SHC | TC  | SHC | TC  | SHC |
| 240         | 6,000<br>.03           | 72          | 408                        | 197 | 372 | 180 | 331 | 162 | 272 | 141 | 232 | 123 |
|             |                        | 67          | 344                        | 213 | 307 | 195 | 266 | 176 | 220 | 156 | 169 | 135 |
|             |                        | 62          | 286                        | 227 | 248 | 208 | 207 | 188 | 164 | 164 | 139 | 139 |
|             | 8,000<br>.06           | 72          | 470                        | 228 | 429 | 210 | 382 | 191 | 329 | 170 | 269 | 147 |
|             |                        | 67          | 399                        | 253 | 357 | 233 | 309 | 212 | 256 | 189 | 197 | 166 |
|             |                        | 62          | 333                        | 275 | 290 | 254 | 242 | 230 | 202 | 202 | 170 | 170 |
|             | 10,000<br>.07          | 72          | 516                        | 253 | 471 | 235 | 421 | 215 | 363 | 192 | 297 | 168 |
|             |                        | 67          | 440                        | 287 | 395 | 266 | 343 | 244 | 284 | 219 | 220 | 193 |
|             |                        | 62          | 369                        | 317 | 322 | 294 | 271 | 266 | 232 | 232 | 196 | 196 |
| 300         | 7,500<br>.04           | 72          | 470                        | 226 | 428 | 208 | 379 | 187 | 328 | 167 | 270 | 144 |
|             |                        | 67          | 395                        | 246 | 354 | 227 | 307 | 205 | 255 | 183 | 197 | 159 |
|             |                        | 62          | 329                        | 265 | 287 | 244 | 240 | 221 | 193 | 193 | 163 | 163 |
|             | 10,000<br>.06          | 72          | 535                        | 260 | 487 | 240 | 434 | 219 | 376 | 196 | 310 | 171 |
|             |                        | 67          | 454                        | 291 | 407 | 269 | 354 | 246 | 295 | 221 | 228 | 194 |
|             |                        | 62          | 380                        | 320 | 332 | 296 | 279 | 268 | 235 | 235 | 199 | 199 |
|             | 12,500<br>.08          | 72          | 583                        | 287 | 531 | 267 | 475 | 245 | 412 | 221 | 341 | 194 |
|             |                        | 67          | 499                        | 329 | 448 | 306 | 390 | 282 | 325 | 255 | 252 | 225 |
|             |                        | 62          | 420                        | 367 | 367 | 341 | 310 | 310 | 269 | 269 | 228 | 228 |

### LEGEND

- BF** — Bypass Factor  
**db** — Dry–Bulb Temp (°F)  
**Ewb** — Entering Wet–Bulb Temp (°F)  
**lwb** — Leaving Wet–Bulb Temp (°F)  
**SHC** — Sensible Heat Capacity (1000 Btuh)  
**TC** — Total Capacity (1000 Btuh)

### NOTES:

1. Ratings based on approximately 15°F superheat leaving coil.
2. Direct interpolation is permissible. Do not extrapolate.
3. Dashes indicate coil loading limits are exceeded.
4. Evaporator fan heat not deducted from ratings.

### 5. Formulas:

$$\text{Leaving db} = \text{entering db} - \frac{\text{sensible heat capacity (Btuh)}}{1.1 \times \text{cfm}}$$

$$\text{Leaving db} = \text{wet–bulb temperature corresponding to enthalpy of air leaving coil (} h_{lwb} \text{)}$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

where  $h_{lwb}$  = enthalpy of air entering coil

6. SHC is based on 80°F db temperature of air entering evaporator coil.



# PERFORMANCE DATA (CONT.)

## FAS COOLING CAPACITIES – SI

| UNIT<br>FAS | EVAPORATOR<br>AIR      |             | COIL REFRIGERANT TEMP (°C) |     |    |     |    |     |    |     |    |     |
|-------------|------------------------|-------------|----------------------------|-----|----|-----|----|-----|----|-----|----|-----|
|             | Airflow<br>(L/s)<br>BF | Ewb<br>(°C) | -1                         |     | 2  |     | 4  |     | 7  |     | 10 |     |
|             |                        |             | TC                         | SHC | TC | SHC | TC | SHC | TC | SHC | TC | SHC |
| 072         | 850<br>.06             | 22          | 36                         | 17  | 33 | 16  | 29 | 14  | 25 | 13  | 21 | 11  |
|             |                        | 19          | 31                         | 19  | 27 | 17  | 24 | 16  | 20 | 14  | 15 | 12  |
|             |                        | 17          | 25                         | 20  | 22 | 18  | 18 | 16  | 14 | 14  | 12 | 12  |
|             | 1130<br>.10            | 22          | 42                         | 20  | 38 | 19  | 34 | 17  | 30 | 15  | 24 | 13  |
|             |                        | 19          | 36                         | 22  | 32 | 21  | 28 | 19  | 23 | 17  | 18 | 15  |
|             |                        | 17          | 30                         | 24  | 26 | 22  | 22 | 20  | 18 | 18  | 15 | 15  |
| 1420<br>.12 | 22                     | 46          | 23                         | 42  | 21 | 38  | 19 | 33  | 17 | 27  | 15 |     |
|             | 19                     | 39          | 25                         | 35  | 24 | 31  | 21 | 25  | 19 | 20  | 17 |     |
|             | 17                     | 33          | 28                         | 29  | 26 | 24  | 23 | 20  | 20 | 17  | 17 |     |
| 091         | 1060<br>.06            | 22          | 45                         | 22  | 41 | 20  | 37 | 18  | 32 | 16  | 26 | 14  |
|             |                        | 19          | 38                         | 23  | 34 | 21  | 30 | 19  | 24 | 17  | 19 | 15  |
|             |                        | 17          | 32                         | 25  | 27 | 23  | 23 | 21  | 18 | 18  | 15 | 15  |
|             | 1420<br>.10            | 22          | 52                         | 25  | 48 | 23  | 43 | 21  | 37 | 19  | 30 | 16  |
|             |                        | 19          | 44                         | 28  | 40 | 26  | 35 | 23  | 29 | 21  | 22 | 18  |
|             |                        | 17          | 37                         | 30  | 32 | 28  | 27 | 25  | 22 | 22  | 19 | 19  |
| 1770<br>.12 | 22                     | 58          | 28                         | 53  | 26 | 47  | 24 | 41  | 21 | 34  | 19 |     |
|             | 19                     | 49          | 32                         | 44  | 29 | 38  | 27 | 32  | 24 | 25  | 21 |     |
|             | 17                     | 41          | 35                         | 36  | 32 | 30  | 29 | 26  | 26 | 22  | 22 |     |
| 120         | 1420<br>.05            | 22          | 58                         | 28  | 53 | 26  | 47 | 23  | 41 | 21  | 33 | 18  |
|             |                        | 19          | 49                         | 31  | 44 | 28  | 38 | 25  | 31 | 22  | 24 | 19  |
|             |                        | 17          | 41                         | 33  | 35 | 30  | 30 | 27  | 24 | 24  | 20 | 20  |
|             | 1890<br>.07            | 22          | 67                         | 33  | 61 | 30  | 54 | 27  | 47 | 24  | 38 | 21  |
|             |                        | 19          | 57                         | 36  | 51 | 33  | 44 | 30  | 36 | 27  | 28 | 24  |
|             |                        | 17          | 47                         | 40  | 41 | 36  | 35 | 33  | 29 | 29  | 25 | 25  |
| 2360<br>.12 | 22                     | 73          | 36                         | 67  | 33 | 60  | 31 | 51  | 27 | 42  | 24 |     |
|             | 19                     | 63          | 41                         | 56  | 38 | 49  | 35 | 40  | 31 | 31  | 28 |     |
|             | 17                     | 52          | 45                         | 46  | 42 | 39  | 38 | 33  | 33 | 28  | 28 |     |
| 150         | 1770<br>.06            | 22          | 73                         | 35  | 67 | 32  | 59 | 29  | 51 | 26  | 41 | 22  |
|             |                        | 19          | 62                         | 38  | 55 | 35  | 47 | 31  | 39 | 28  | 30 | 24  |
|             |                        | 17          | 51                         | 40  | 44 | 37  | 37 | 33  | 29 | 29  | 25 | 25  |
|             | 2360<br>.08            | 22          | 85                         | 41  | 77 | 38  | 68 | 34  | 59 | 30  | 47 | 26  |
|             |                        | 19          | 72                         | 45  | 64 | 41  | 55 | 38  | 45 | 33  | 35 | 29  |
|             |                        | 17          | 60                         | 49  | 52 | 45  | 43 | 40  | 35 | 35  | 30 | 30  |
| 2980<br>.10 | 22                     | 93          | 45                         | 85  | 42 | 76  | 38 | 65  | 34 | 53  | 29 |     |
|             | 19                     | 79          | 51                         | 71  | 47 | 61  | 43 | 50  | 39 | 39  | 34 |     |
|             | 17                     | 66          | 56                         | 57  | 52 | 48  | 47 | 41  | 41 | 34  | 34 |     |
| 180         | 2120<br>.03            | 22          | 91                         | 44  | 82 | 40  | 73 | 36  | 63 | 32  | 51 | 27  |
|             |                        | 19          | 76                         | 47  | 68 | 43  | 58 | 38  | 48 | 34  | 37 | 29  |
|             |                        | 17          | 63                         | 50  | 55 | 45  | 45 | 41  | 36 | 36  | 30 | 30  |
|             | 2830<br>.05            | 22          | 106                        | 51  | 96 | 47  | 86 | 43  | 73 | 37  | 60 | 32  |
|             |                        | 19          | 89                         | 56  | 79 | 51  | 69 | 46  | 57 | 41  | 44 | 36  |
|             |                        | 17          | 74                         | 60  | 65 | 55  | 54 | 50  | 44 | 44  | 37 | 37  |
| 3540<br>.08 | 22                     | 118         | 57                         | 107 | 53 | 95  | 48 | 82  | 43 | 67  | 37 |     |
|             | 19                     | 100         | 64                         | 89  | 59 | 77  | 54 | 64  | 48 | 49  | 42 |     |
|             | 17                     | 84          | 70                         | 72  | 65 | 60  | 58 | 50  | 50 | 42  | 42 |     |

### LEGEND

- BF** — Bypass Factor  
**db** — Dry–Bulb Temp (°F)  
**Ewb** — Entering Wet–Bulb Temp (°F)  
**lwb** — Leaving Wet–Bulb Temp (°F)  
**SHC** — Sensible Heat Capacity (1000 Btuh)  
**TC** — Total Capacity (1000 Btuh)

### NOTES:

1. Ratings based on approximately 15°F superheat leaving coil.
2. Direct interpolation is permissible. Do not extrapolate.
3. Dashes indicate coil loading limits are exceeded.
4. Evaporator fan heat not deducted from ratings.

### 5. Formulas:

$$\text{Leaving db} = \text{entering db} - \frac{\text{sensible heat capacity (Btuh)}}{1.1 \times \text{cfm}}$$

$$\text{Leaving db} = \text{wet–bulb temperature corresponding to enthalpy of air leaving coil (h}_{lwb}\text{)}$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

where  $h_{lwb}$  = enthalpy of air entering coil

6. SHC is based on 80°F db temperature of air entering evaporator coil.

# PERFORMANCE DATA (CONT.)

## FAS COOLING CAPACITIES – SI (cont.)

| UNIT<br>FAS | EVAPORATOR<br>AIR      |             | COIL REFRIGERANT TEMP (°C) |     |     |     |     |     |     |     |     |     |
|-------------|------------------------|-------------|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|             | Airflow<br>(L/s)<br>BF | Ewb<br>(°C) | -1                         |     | 2   |     | 4   |     | 7   |     | 10  |     |
|             |                        |             | TC                         | SHC | TC  | SHC | TC  | SHC | TC  | SHC | TC  | SHC |
| 240         | 2830<br>.03            | 22          | 120                        | 58  | 109 | 53  | 97  | 48  | 80  | 41  | 68  | 36  |
|             |                        | 19          | 101                        | 62  | 90  | 57  | 78  | 52  | 64  | 46  | 50  | 40  |
|             |                        | 17          | 84                         | 67  | 73  | 61  | 61  | 55  | 48  | 48  | 41  | 41  |
|             | 3780<br>.06            | 22          | 138                        | 67  | 126 | 62  | 112 | 56  | 96  | 50  | 79  | 43  |
|             |                        | 19          | 117                        | 74  | 105 | 68  | 91  | 62  | 75  | 56  | 58  | 49  |
|             |                        | 17          | 98                         | 81  | 85  | 74  | 71  | 67  | 59  | 59  | 50  | 50  |
|             | 4720<br>.07            | 22          | 151                        | 74  | 138 | 69  | 123 | 63  | 106 | 56  | 87  | 49  |
|             |                        | 19          | 129                        | 84  | 116 | 78  | 100 | 71  | 83  | 64  | 64  | 57  |
|             |                        | 17          | 108                        | 93  | 94  | 86  | 79  | 78  | 68  | 68  | 58  | 58  |
| 300         | 3540<br>.04            | 22          | 138                        | 66  | 125 | 61  | 111 | 55  | 96  | 49  | 79  | 42  |
|             |                        | 19          | 116                        | 72  | 104 | 66  | 90  | 60  | 75  | 54  | 58  | 47  |
|             |                        | 17          | 96                         | 78  | 84  | 72  | 70  | 65  | 57  | 57  | 48  | 48  |
|             | 4720<br>.06            | 22          | 157                        | 76  | 143 | 70  | 127 | 64  | 110 | 57  | 91  | 50  |
|             |                        | 19          | 133                        | 85  | 119 | 79  | 104 | 72  | 86  | 65  | 67  | 57  |
|             |                        | 17          | 111                        | 94  | 97  | 87  | 82  | 79  | 69  | 69  | 58  | 58  |
|             | 5900<br>.08            | 22          | 171                        | 84  | 156 | 78  | 139 | 72  | 121 | 65  | 100 | 57  |
|             |                        | 19          | 146                        | 96  | 131 | 90  | 114 | 83  | 95  | 75  | 74  | 66  |
|             |                        | 17          | 123                        | 107 | 107 | 100 | 91  | 91  | 79  | 79  | 67  | 67  |

### LEGEND

- BF** — Bypass Factor  
**db** — Dry–Bulb Temp (°F)  
**Ewb** — Entering Wet–Bulb Temp (°F)  
**lwb** — Leaving Wet–Bulb Temp (°F)  
**SHC** — Sensible Heat Capacity (1000 Btuh)  
**TC** — Total Capacity (1000 Btuh)

### NOTES:

1. Ratings based on approximately 15°F superheat leaving coil.
2. Direct interpolation is permissible. Do not extrapolate.
3. Dashes indicate coil loading limits are exceeded.
4. Evaporator fan heat not deducted from ratings.

### 5. Formulas:

$$\text{Leaving db} = \text{entering db} - \frac{\text{sensible heat capacity (Btuh)}}{1.1 \times \text{cfm}}$$

$$\text{Leaving db} = \text{wet–bulb temperature corresponding to enthalpy of air leaving coil (} h_{lwb} \text{)}$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

where  $h_{lwb}$  = enthalpy of air entering coil

6. SHC is based on 80°F db temperature of air entering evaporator coil.

# PERFORMANCE DATA (CONT.)

## HYDRONIC HEATING CAPACITIES — English

| UNIT    | AIRFLOW (Cfm) | 1-ROW STEAM* |     | 2-ROW HOT WATER COIL† |     |                  |     |
|---------|---------------|--------------|-----|-----------------------|-----|------------------|-----|
|         |               | Cap.         | Ldb | Cap.                  | Ldb | Water Flow (Gpm) | PD  |
| FAS 072 | 1,800         | 146          | 134 | 156.0                 | 140 | 15.6             | 3.4 |
|         | 2,400         | 173          | 126 | 183.0                 | 131 | 18.3             | 4.3 |
|         | 3,000         | 209          | 123 | 206.0                 | 124 | 20.6             | 5.2 |
| FAS 091 | 2,250         | 168          | 129 | 174.0                 | 133 | 17.4             | 4.0 |
|         | 3,000         | 209          | 123 | 206.0                 | 124 | 20.6             | 5.2 |
|         | 3,750         | 240          | 117 | 238.0                 | 118 | 23.8             | 6.5 |
| FAS 120 | 3,000         | 209          | 123 | 299.0                 | 152 | 29.9             | 5.0 |
|         | 4,000         | 243          | 115 | 275.0                 | 124 | 27.5             | 6.6 |
|         | 5,000         | 279          | 111 | 316.0                 | 119 | 31.6             | 8.2 |
| FAS 150 | 3,750         | 370          | 150 | 362.0                 | 149 | 36.2             | 4.2 |
|         | 5,000         | 425          | 137 | 409.0                 | 136 | 40.9             | 5.1 |
|         | 6,250         | 465          | 128 | 456.0                 | 128 | 45.6             | 6.0 |
| FAS 180 | 4,500         | 402          | 141 | 412.0                 | 145 | 41.2             | 4.5 |
|         | 6,000         | 458          | 129 | 471.0                 | 133 | 47.1             | 5.5 |
|         | 7,500         | 479          | 118 | 529.0                 | 125 | 52.9             | 6.6 |
| FAS 240 | 6,000         | 458          | 129 | 506.0                 | 138 | 50.6             | 5.1 |
|         | 8,000         | 487          | 115 | 584.0                 | 128 | 58.4             | 6.3 |
|         | 10,000        | 499          | 105 | 652.0                 | 120 | 65.2             | 7.5 |
| FAS 300 | 7,500         | 511          | 122 | 649.0                 | 140 | 64.9             | 5.7 |
|         | 10,000        | 575          | 112 | 752.0                 | 130 | 75.2             | 7.1 |
|         | 12,500        | 626          | 106 | 842.0                 | 122 | 84.2             | 8.5 |

**LEGEND:**

Cap. — Capacity (Btuh in thousands)

Ldb — Leaving Air Dry Bulb Temp (°F)

PD — Pressure Drop (ft water)

\* Based on 5 psig steam, 60°F entering-air temperature. All steam coils are non-freeze type.

† Based on 200°F entering water, 20°F water temperature drop, 60°F entering-air temperature.

**NOTES:**

- Maximum operating limits for heating coils: 20 psig at 260°F.
- Leaving db = ent db (°F) +  $\frac{\text{Capacity (Btuh)}}{1.1 \times \text{cfm}}$
- See Heating Correction Factors table.

## HYDRONIC HEATING CAPACITIES — SI

| UNIT    | AIRFLOW (L/s) | 1-ROW STEAM* |     | 2-ROW HOT WATER COIL† |     |                  |      |
|---------|---------------|--------------|-----|-----------------------|-----|------------------|------|
|         |               | Cap.         | Ldb | Cap.                  | Ldb | Water Flow (L/s) | PD   |
| FAS 072 | 850           | 43           | 57  | 46                    | 59  | 1.0              | 10.2 |
|         | 1150          | 53           | 53  | 53                    | 53  | 1.2              | 12.8 |
|         | 1450          | 62           | 51  | 61                    | 50  | 1.3              | 16.0 |
| FAS 091 | 1000          | 48           | 55  | 50                    | 56  | 1.1              | 11.5 |
|         | 1400          | 59           | 50  | 60                    | 50  | 1.3              | 15.3 |
|         | 1800          | 71           | 47  | 70                    | 47  | 1.5              | 19.5 |
| FAS 120 | 1450          | 62           | 50  | 88                    | 65  | 1.9              | 15.0 |
|         | 1900          | 72           | 46  | 90                    | 54  | 2.0              | 24.7 |
|         | 2350          | 82           | 44  | 93                    | 48  | 2.0              | 24.5 |
| FAS 150 | 1750          | 108          | 66  | 106                   | 65  | 2.3              | 12.4 |
|         | 2350          | 122          | 58  | 120                   | 57  | 2.6              | 15.2 |
|         | 2950          | 136          | 53  | 134                   | 52  | 2.9              | 17.9 |
| FAS 180 | 2100          | 117          | 61  | 120                   | 62  | 2.6              | 13.3 |
|         | 2800          | 129          | 53  | 137                   | 55  | 3.0              | 16.2 |
|         | 3500          | 140          | 48  | 154                   | 51  | 3.3              | 19.5 |
| FAS 240 | 2900          | 135          | 53  | 150                   | 58  | 3.3              | 15.6 |
|         | 3800          | 140          | 46  | 170                   | 52  | 3.7              | 18.6 |
|         | 4700          | 146          | 41  | 191                   | 49  | 4.1              | 22.3 |
| FAS 300 | 3500          | 149          | 50  | 189                   | 60  | 4.1              | 16.9 |
|         | 4700          | 166          | 44  | 218                   | 53  | 4.7              | 20.8 |
|         | 5900          | 183          | 41  | 247                   | 50  | 5.4              | 25.4 |

**LEGEND:**

Cap. — Capacity (Btuh in thousands)

Ldb — Leaving Air Dry Bulb Temp (°C)

PD — Pressure Drop (ft water)

\* Based on 34.5 kPag steam, 15.6°C entering-air temperature. All steam coils are non-freeze type.

† Based on 93.3°C entering water temperature, 11.1°C water temperature drop, 15.6°C entering-air temperature.

**NOTES:**

- Maximum operating limits for heating coils: 138 kPag at 126.7°C.
- Leaving db = ent db (°C) +  $\frac{\text{Capacity (kW)}}{1.23 \times 10^{-3} \times \text{L/s}}$
- See Heating Correction Factors table.

## HEATING CORRECTION FACTORS — English

| HOT WATER COIL       |                     |                        |      |      |      |      |
|----------------------|---------------------|------------------------|------|------|------|------|
| Water Temp Drop (°F) | Ent Water Temp (°F) | Entering-Air Temp (°F) |      |      |      |      |
|                      |                     | 40                     | 50   | 60   | 70   | 80   |
| 10                   | 140                 | 0.72                   | 0.64 | 0.57 | 0.49 | 0.41 |
|                      | 160                 | 0.89                   | 0.81 | 0.74 | 0.66 | 0.58 |
|                      | 180                 | 1.06                   | 0.98 | 0.90 | 0.83 | 0.75 |
|                      | 200                 | 1.22                   | 1.15 | 1.07 | 1.00 | 0.92 |
|                      | 220                 | 1.39                   | 1.32 | 1.24 | 1.17 | 1.09 |
| 20                   | 140                 | 0.64                   | 0.57 | 0.49 | 0.41 | 0.33 |
|                      | 160                 | 0.81                   | 0.74 | 0.66 | 0.58 | 0.51 |
|                      | 180                 | 0.98                   | 0.91 | 0.83 | 0.75 | 0.68 |
|                      | 200                 | 1.15                   | 1.08 | 1.00 | 0.93 | 0.85 |
|                      | 220                 | 1.32                   | 1.25 | 1.17 | 1.10 | 1.02 |
| 30                   | 140                 | 0.56                   | 0.49 | 0.41 | 0.33 | 0.24 |
|                      | 160                 | 0.74                   | 0.66 | 0.58 | 0.51 | 0.43 |
|                      | 180                 | 0.91                   | 0.83 | 0.76 | 0.68 | 0.60 |
|                      | 200                 | 1.08                   | 1.00 | 0.93 | 0.85 | 0.78 |
|                      | 220                 | 1.25                   | 1.18 | 1.10 | 1.03 | 0.95 |

| STEAM COIL            |                        |      |      |      |      |
|-----------------------|------------------------|------|------|------|------|
| Steam Pressure (psig) | Entering-Air Temp (°F) |      |      |      |      |
|                       | 40                     | 50   | 60   | 70   | 80   |
| 0                     | 1.06                   | 0.98 | 0.91 | 0.85 | 0.78 |
| 2                     | 1.09                   | 1.02 | 0.95 | 0.89 | 0.82 |
| 5                     | 1.13                   | 1.06 | 1.00 | 0.93 | 0.87 |

**NOTE:** Multiply capacity given in the Hydronic Heating Capacities table by the correction factor for conditions at which unit is actually operating. Correct leaving-air temperature using formula in Note 2 of Hydronic Heating Capacities table.

## HEATING CORRECTION FACTORS — SI

| HOT WATER COIL       |                     |                        |      |      |      |      |
|----------------------|---------------------|------------------------|------|------|------|------|
| Water Temp Drop (°C) | Ent Water Temp (°C) | Entering-Air Temp (°C) |      |      |      |      |
|                      |                     | 4                      | 10   | 16   | 20   | 25   |
| 5                    | 60                  | 0.72                   | 0.64 | 0.55 | 0.50 | 0.43 |
|                      | 70                  | 0.87                   | 0.79 | 0.71 | 0.65 | 0.58 |
|                      | 80                  | 1.02                   | 0.94 | 0.86 | 0.80 | 0.73 |
|                      | 90                  | 1.17                   | 1.09 | 1.01 | 0.95 | 0.89 |
|                      | 100                 | 1.32                   | 1.24 | 1.16 | 1.10 | 1.04 |
| 11                   | 60                  | 0.65                   | 0.56 | 0.48 | 0.42 | 0.35 |
|                      | 70                  | 0.80                   | 0.72 | 0.63 | 0.58 | 0.51 |
|                      | 80                  | 0.95                   | 0.87 | 0.79 | 0.73 | 0.66 |
|                      | 90                  | 1.10                   | 1.02 | 0.94 | 0.89 | 0.82 |
|                      | 100                 | 1.26                   | 1.18 | 1.09 | 1.04 | 0.97 |
| 16                   | 60                  | 0.56                   | 0.48 | 0.39 | 0.33 | 0.26 |
|                      | 70                  | 0.72                   | 0.63 | 0.55 | 0.49 | 0.42 |
|                      | 80                  | 0.87                   | 0.79 | 0.70 | 0.65 | 0.58 |
|                      | 90                  | 1.02                   | 0.94 | 0.86 | 0.81 | 0.74 |
|                      | 100                 | 1.18                   | 1.10 | 1.02 | 0.97 | 0.90 |

| STEAM COIL            |                        |      |      |      |      |
|-----------------------|------------------------|------|------|------|------|
| Steam Pressure (kPag) | Entering-Air Temp (°C) |      |      |      |      |
|                       | 4                      | 10   | 16   | 20   | 25   |
| 0                     | 1.07                   | 0.99 | 0.91 | 0.86 | 0.80 |
| 14                    | 1.10                   | 1.02 | 0.95 | 0.90 | 0.84 |
| 35                    | 1.14                   | 1.07 | 0.99 | 0.95 | 0.89 |

**NOTE:** Multiply capacity given in the Hydronic Heating Capacities table by the correction factor for conditions at which unit is actually operating. Correct leaving-air temperature using formula in Note 2 of Hydronic Heating Capacities table.

# PERFORMANCE DATA (CONT.)

## FAN PERFORMANCE DATA — FAS 0.0-1.2 in. wg ESP — 60 Hz, English

| UNIT<br>FAS | AIRFLOW<br>(Cfm) | EXTERNAL STATIC PRESSURE (in. wg) |             |            |             |            |             |            |             |             |             |             |             |             |             |
|-------------|------------------|-----------------------------------|-------------|------------|-------------|------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|             |                  | 0.0                               |             | 0.2        |             | 0.4        |             | 0.6        |             | 0.8         |             | 1.0         |             | 1.2         |             |
|             |                  | Rpm                               | Bhp         | Rpm        | Bhp         | Rpm        | Bhp         | Rpm        | Bhp         | Rpm         | Bhp         | Rpm         | Bhp         | Rpm         | Bhp         |
| 072         | 1,800            | 419                               | <b>0.21</b> | 471        | 0.26        | 564        | 0.37        | 649        | 0.49        | <u>727</u>  | <u>0.63</u> | 797         | <u>0.77</u> | <u>862</u>  | <u>0.92</u> |
|             | 2,100            | 471                               | 0.31        | 519        | 0.37        | 602        | 0.49        | <u>679</u> | <u>0.62</u> | <u>751</u>  | <u>0.77</u> | 819         | <u>0.92</u> | <u>882</u>  | <u>1.09</u> |
|             | 2,400            | 524                               | 0.44        | 568        | 0.51        | 645        | 0.64        | 715        | <u>0.79</u> | 781         | <u>0.94</u> | 844         | <u>1.11</u> | <u>905</u>  | <u>1.28</u> |
|             | 2,700            | 578                               | 0.61        | 619        | 0.69        | <u>690</u> | <u>0.84</u> | <u>755</u> | <u>0.99</u> | 816         | <u>1.15</u> | 875         | <u>1.33</u> | <u>932</u>  | <u>1.51</u> |
|             | 3,000            | 633                               | 0.81        | <u>671</u> | <u>0.90</u> | <u>738</u> | <u>1.07</u> | <u>799</u> | <u>1.24</u> | <u>856</u>  | <u>1.41</u> | 910         | <u>1.60</u> | <u>963</u>  | <u>1.79</u> |
| 091         | 2,250            | <b>290</b>                        | <b>0.10</b> | <b>510</b> | <b>0.39</b> | 594        | 0.51        | 669        | 0.65        | 739         | 0.79        | <u>806</u>  | <u>0.95</u> | <u>870</u>  | <u>1.12</u> |
|             | 2,600            | <b>349</b>                        | <b>0.19</b> | 561        | 0.55        | 640        | 0.70        | 709        | 0.84        | <u>773</u>  | <u>1.00</u> | <u>834</u>  | <u>1.16</u> | <u>893</u>  | <u>1.34</u> |
|             | 3,000            | 579                               | 0.70        | 621        | 0.79        | 695        | 0.96        | <u>759</u> | <u>1.12</u> | 818         | <u>1.30</u> | <u>874</u>  | <u>1.47</u> | <u>928</u>  | <u>1.66</u> |
|             | 3,400            | 646                               | 0.99        | 683        | 1.09        | <u>752</u> | <u>1.29</u> | <u>813</u> | <u>1.48</u> | <u>869</u>  | <u>1.67</u> | <u>920</u>  | <u>1.86</u> | <u>970</u>  | <u>2.06</u> |
|             | 3,750            | 705                               | 1.31        | 739        | 1.42        | <u>804</u> | <u>1.63</u> | <u>862</u> | <u>1.85</u> | <u>915</u>  | <u>2.05</u> | <u>964</u>  | <u>2.26</u> | <u>1011</u> | <u>2.48</u> |
| 120         | 3,000            | <b>421</b>                        | <b>0.35</b> | <b>592</b> | <b>0.73</b> | 670        | 0.90        | 737        | 1.06        | <u>797</u>  | <u>1.23</u> | <u>854</u>  | <u>1.41</u> | <u>908</u>  | <u>1.59</u> |
|             | 3,500            | <b>626</b>                        | <b>0.98</b> | <b>664</b> | <b>1.08</b> | 735        | 1.28        | 798        | 1.48        | <u>855</u>  | <u>1.67</u> | <u>908</u>  | <u>1.87</u> | <u>958</u>  | <u>2.07</u> |
|             | 4,000            | 706                               | 1.42        | 738        | 1.54        | 803        | 1.77        | 862        | 2.00        | <u>917</u>  | <u>2.23</u> | <u>967</u>  | <u>2.45</u> | <u>1014</u> | <u>2.67</u> |
|             | 4,500            | 786                               | 1.99        | 815        | 2.12        | <u>873</u> | <u>2.39</u> | <u>929</u> | <u>2.65</u> | <u>980</u>  | <u>2.90</u> | <u>1028</u> | <u>3.16</u> | <u>1073</u> | <u>3.41</u> |
|             | 5,000            | 867                               | 2.70        | 893        | 2.84        | <u>946</u> | <u>3.14</u> | 997        | <u>3.43</u> | 1046        | <u>3.72</u> | 1092        | <u>4.00</u> | 1135        | <u>4.28</u> |
| 150         | 3,750            | <b>410</b>                        | <b>0.43</b> | <b>467</b> | <b>0.55</b> | 567        | 0.83        | 649        | 1.12        | 721         | 1.41        | 788         | 1.72        | 851         | 2.05        |
|             | 4,300            | <b>455</b>                        | <b>0.62</b> | <b>504</b> | <b>0.74</b> | 599        | 1.05        | 679        | 1.38        | <u>748</u>  | <u>1.70</u> | <u>811</u>  | <u>2.04</u> | <u>871</u>  | <u>2.39</u> |
|             | 5,000            | <b>514</b>                        | <b>0.92</b> | 556        | 1.06        | 641        | 1.39        | 718        | 1.76        | <u>786</u>  | <u>2.14</u> | <u>847</u>  | <u>2.52</u> | <u>903</u>  | <u>2.91</u> |
|             | 5,700            | 575                               | 1.32        | 612        | 1.47        | 686        | 1.82        | <u>759</u> | <u>2.23</u> | <u>825</u>  | <u>2.66</u> | <u>884</u>  | <u>3.09</u> | <u>939</u>  | <u>3.52</u> |
|             | 6,250            | 624                               | 1.71        | 657        | 1.87        | 725        | 2.24        | <u>793</u> | <u>2.66</u> | <u>856</u>  | <u>3.12</u> | <u>915</u>  | <u>3.59</u> | <u>969</u>  | <u>4.06</u> |
| 180         | 4,500            | <b>437</b>                        | <b>0.61</b> | <b>483</b> | <b>0.72</b> | 576        | 1.01        | 660        | 1.35        | <u>732</u>  | <u>1.69</u> | <u>797</u>  | <u>2.03</u> | <u>856</u>  | <u>2.38</u> |
|             | 5,300            | <b>499</b>                        | <b>0.95</b> | 538        | 1.07        | 617        | 1.37        | 696        | 1.74        | <u>767</u>  | <u>2.13</u> | <u>830</u>  | <u>2.53</u> | <u>888</u>  | <u>2.94</u> |
|             | 6,000            | <b>555</b>                        | <b>1.34</b> | 590        | 1.48        | 659        | 1.79        | <u>730</u> | <u>2.17</u> | <u>798</u>  | <u>2.59</u> | <u>860</u>  | <u>3.04</u> | <u>918</u>  | <u>3.49</u> |
|             | 6,800            | 620                               | 1.91        | 651        | 2.06        | 712        | 2.39        | <u>774</u> | <u>2.78</u> | <u>836</u>  | <u>3.22</u> | <u>896</u>  | <u>3.71</u> | <u>952</u>  | <u>4.21</u> |
|             | 7,500            | 677                               | 2.52        | 706        | 2.69        | <u>761</u> | <u>3.04</u> | <u>817</u> | <u>3.44</u> | <u>873</u>  | <u>3.89</u> | <u>929</u>  | <u>4.39</u> | <u>984</u>  | <u>4.93</u> |
| 240         | 6,000            | <b>542</b>                        | <b>1.29</b> | <b>577</b> | <b>1.42</b> | <b>646</b> | <b>1.72</b> | 716        | 2.09        | 785         | 2.51        | 849         | 2.95        | <u>907</u>  | <u>3.40</u> |
|             | 7,000            | <b>620</b>                        | <b>1.99</b> | <b>652</b> | <b>2.15</b> | 711        | 2.48        | 771        | 2.85        | 831         | 3.28        | <u>890</u>  | <u>3.76</u> | <u>947</u>  | <u>4.27</u> |
|             | 8,000            | 700                               | 2.92        | 728        | 3.10        | 781        | 3.46        | 833        | 3.85        | <u>885</u>  | <u>4.29</u> | <u>938</u>  | <u>4.78</u> | <u>990</u>  | <u>5.32</u> |
|             | 9,000            | 781                               | 4.10        | 806        | 4.30        | 854        | 4.71        | 900        | <u>5.13</u> | <u>946</u>  | <u>5.58</u> | <u>993</u>  | <u>6.08</u> | <u>1039</u> | <u>6.62</u> |
|             | 10,000           | 862                               | 5.56        | <u>885</u> | <u>5.79</u> | <u>929</u> | <u>6.24</u> | <u>971</u> | <u>6.70</u> | <u>1012</u> | <u>7.18</u> | <u>1054</u> | <u>7.69</u> | <u>1096</u> | <u>8.24</u> |
| 300         | 7,500            | <b>476</b>                        | <b>1.39</b> | <b>510</b> | <b>1.58</b> | <b>579</b> | <b>1.99</b> | <b>644</b> | <b>2.40</b> | 701         | 2.81        | 752         | 3.29        | 804         | 3.96        |
|             | 8,750            | <b>545</b>                        | <b>2.14</b> | <b>574</b> | <b>2.35</b> | <b>633</b> | <b>2.81</b> | 691        | 3.29        | 747         | 3.77        | 797         | 4.25        | <u>842</u>  | <u>4.76</u> |
|             | 10,000           | <b>615</b>                        | <b>3.12</b> | <b>641</b> | <b>3.36</b> | 692        | 3.87        | 743        | 4.41        | 794         | 4.96        | <u>843</u>  | <u>5.51</u> | <u>888</u>  | <u>6.05</u> |
|             | 11,250           | 685                               | 4.37        | 709        | 4.64        | 754        | 5.20        | 800        | 5.79        | <u>845</u>  | <u>6.40</u> | <u>891</u>  | <u>7.02</u> | <u>935</u>  | <u>7.64</u> |
|             | 12,500           | 756                               | 5.92        | 778        | 6.22        | 819        | 6.83        | 860        | <u>7.47</u> | <u>901</u>  | <u>8.14</u> | <u>942</u>  | <u>8.83</u> | <u>983</u>  | <u>9.52</u> |

### LEGEND

Bhp — Brake Horsepower Input to Fan

ESP — External Static Pressure

**Bold** indicates field-supplied drive or motor is required.

Plain type indicates standard motor and standard drive.

Underline indicates a different motor and drive combination other than the standard motor and standard drive combination is required. Refer to fan motor and drive tables to complete selection.

### NOTES:

Maximum allowable fan speed is 1100 rpm for unit sizes 028 and 030; 1200 rpm for all other sizes. Fan performance is based on deductions for wet coil, clean 2-in. filters, and unit casing. See table below for factory-supplied filter pressure drop. For 60 Hz units, the medium-static drive and standard motor combination is not available for 028 size.

# PERFORMANCE DATA (CONT.)

## FAN PERFORMANCE DATA — FAS 1.4-2.4 in. wg ESP — 60 Hz, English

| UNIT<br>FAS | AIRFLOW<br>(Cfm) | EXTERNAL STATIC PRESSURE (in. wg) |              |             |              |             |              |             |              |             |             |             |             |
|-------------|------------------|-----------------------------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|-------------|-------------|
|             |                  | 1.4                               |              | 1.6         |              | 1.8         |              | 2.0         |              | 2.2         |             | 2.4         |             |
|             |                  | Rpm                               | Bhp          | Rpm         | Bhp          | Rpm         | Bhp          | Rpm         | Bhp          | Rpm         | Bhp         | Rpm         | Bhp         |
| 072         | 1,800            | <u>921</u>                        | <u>1.07</u>  | <u>975</u>  | <u>1.23</u>  | <u>1026</u> | <u>1.39</u>  | <u>1074</u> | <u>1.55</u>  | <b>1120</b> | <b>1.72</b> | <b>1164</b> | <b>1.90</b> |
|             | 2,100            | <u>942</u>                        | <u>1.26</u>  | <u>997</u>  | <u>1.43</u>  | <u>1048</u> | <u>1.61</u>  | <b>1097</b> | <b>1.79</b>  | <b>1143</b> | <b>1.97</b> | <b>1186</b> | <b>2.16</b> |
|             | 2,400            | <u>963</u>                        | <u>1.47</u>  | <u>1017</u> | <u>1.66</u>  | <u>1069</u> | <u>1.85</u>  | <b>1118</b> | <b>2.05</b>  | <b>1164</b> | <b>2.25</b> | —           | —           |
|             | 2,700            | <u>987</u>                        | <u>1.71</u>  | <u>1039</u> | <u>1.91</u>  | <b>1090</b> | <b>2.12</b>  | <b>1138</b> | <b>2.33</b>  | <b>1185</b> | <b>2.55</b> | —           | —           |
|             | 3,000            | <u>1015</u>                       | <u>1.99</u>  | <u>1065</u> | <u>2.20</u>  | <b>1113</b> | <b>2.42</b>  | <b>1161</b> | <b>2.65</b>  | —           | —           | —           | —           |
| 091         | 2,250            | <u>930</u>                        | <u>1.29</u>  | <u>986</u>  | <u>1.47</u>  | <u>1039</u> | <u>1.65</u>  | <u>1089</u> | <u>1.84</u>  | <b>1136</b> | <u>2.03</u> | <u>1181</u> | <u>2.22</u> |
|             | 2,600            | <u>950</u>                        | <u>1.53</u>  | <u>1005</u> | <u>1.72</u>  | <u>1057</u> | <u>1.92</u>  | <u>1107</u> | <u>2.13</u>  | <b>1154</b> | <u>2.33</u> | —           | —           |
|             | 3,000            | <u>980</u>                        | <u>1.86</u>  | <u>1031</u> | <u>2.06</u>  | <u>1081</u> | <u>2.27</u>  | <u>1129</u> | <u>2.49</u>  | <b>1175</b> | <u>2.72</u> | —           | —           |
|             | 3,400            | <u>1018</u>                       | <u>2.26</u>  | <u>1065</u> | <u>2.48</u>  | <u>1111</u> | <u>2.70</u>  | <u>1156</u> | <u>2.93</u>  | —           | —           | —           | —           |
|             | 3,750            | <u>1057</u>                       | <u>2.69</u>  | <u>1101</u> | <u>2.92</u>  | <u>1144</u> | <u>3.15</u>  | <u>1186</u> | <u>3.39</u>  | —           | —           | —           | —           |
| 120         | 3,000            | <u>961</u>                        | <u>1.78</u>  | <u>1012</u> | <u>1.98</u>  | <u>1062</u> | <u>2.19</u>  | <u>1111</u> | <u>2.41</u>  | <b>1158</b> | <u>2.64</u> | —           | —           |
|             | 3,500            | <u>1005</u>                       | <u>2.27</u>  | <u>1052</u> | <u>2.49</u>  | <u>1098</u> | <u>2.71</u>  | <u>1142</u> | <u>2.94</u>  | <b>1186</b> | <u>3.18</u> | —           | —           |
|             | 4,000            | <u>1058</u>                       | <u>2.90</u>  | <u>1101</u> | <u>3.13</u>  | <u>1143</u> | <u>3.36</u>  | <u>1184</u> | <u>3.60</u>  | —           | —           | —           | —           |
|             | 4,500            | <u>1116</u>                       | <u>3.66</u>  | <u>1157</u> | <u>3.91</u>  | <u>1196</u> | <u>4.16</u>  | —           | —            | —           | —           | —           | —           |
|             | 5,000            | <u>1176</u>                       | <u>4.56</u>  | —           | —            | —           | —            | —           | —            | —           | —           | —           | —           |
| 150         | 3,750            | <u>912</u>                        | <u>2.39</u>  | <u>971</u>  | <u>2.76</u>  | <u>1028</u> | <u>3.14</u>  | <u>1083</u> | <u>3.54</u>  | <b>1135</b> | <b>3.95</b> | <b>1185</b> | <b>4.36</b> |
|             | 4,300            | <u>928</u>                        | <u>2.75</u>  | <u>982</u>  | <u>3.13</u>  | <u>1036</u> | <u>3.53</u>  | <u>1087</u> | <u>3.94</u>  | <b>1138</b> | <b>4.37</b> | <b>1187</b> | <b>4.81</b> |
|             | 5,000            | <u>956</u>                        | <u>3.30</u>  | <u>1007</u> | <u>3.71</u>  | <u>1056</u> | <u>4.13</u>  | <b>1104</b> | <b>4.56</b>  | <b>1151</b> | <b>5.00</b> | <b>1196</b> | <b>5.46</b> |
|             | 5,700            | <u>990</u>                        | <u>3.96</u>  | <u>1039</u> | <u>4.40</u>  | <u>1086</u> | <u>4.85</u>  | <b>1130</b> | <b>5.31</b>  | <b>1174</b> | <b>5.78</b> | —           | —           |
|             | 6,250            | <u>1019</u>                       | <u>4.54</u>  | <u>1067</u> | <u>5.02</u>  | <b>1112</b> | <b>5.50</b>  | <b>1156</b> | <b>5.99</b>  | <b>1198</b> | <b>6.49</b> | —           | —           |
| 180         | 4,500            | <u>912</u>                        | <u>2.75</u>  | <u>967</u>  | <u>3.12</u>  | <u>1019</u> | <u>3.52</u>  | <u>1070</u> | <u>3.92</u>  | <b>1120</b> | <u>4.35</u> | <u>1168</u> | <u>4.79</u> |
|             | 5,300            | <u>942</u>                        | <u>3.34</u>  | <u>992</u>  | <u>3.76</u>  | <u>1041</u> | <u>4.18</u>  | <u>1088</u> | <u>4.61</u>  | <b>1134</b> | <u>5.06</u> | <b>1179</b> | <b>5.52</b> |
|             | 6,000            | <u>971</u>                        | <u>3.95</u>  | <u>1020</u> | <u>4.40</u>  | <u>1067</u> | <u>4.86</u>  | <u>1112</u> | <u>5.33</u>  | <b>1156</b> | <u>5.81</u> | <b>1198</b> | <b>6.29</b> |
|             | 6,800            | <u>1005</u>                       | <u>4.72</u>  | <u>1054</u> | <u>5.23</u>  | <u>1101</u> | <u>5.75</u>  | <u>1145</u> | <u>6.27</u>  | <b>1187</b> | <b>6.79</b> | —           | —           |
|             | 7,500            | <u>1036</u>                       | <u>5.48</u>  | <u>1084</u> | <u>6.04</u>  | <u>1131</u> | <u>6.61</u>  | <b>1174</b> | <b>7.17</b>  | —           | —           | —           | —           |
| 240         | 6,000            | <u>961</u>                        | <u>3.86</u>  | <u>1011</u> | <u>4.31</u>  | <u>1058</u> | <u>4.77</u>  | <u>1104</u> | <u>5.24</u>  | <b>1147</b> | <u>5.71</u> | —           | —           |
|             | 7,000            | <u>1000</u>                       | <u>4.79</u>  | <u>1050</u> | <u>5.32</u>  | <u>1097</u> | <u>5.85</u>  | <u>1142</u> | <u>6.38</u>  | <b>1184</b> | <u>6.91</u> | —           | —           |
|             | 8,000            | <u>1041</u>                       | <u>5.88</u>  | <u>1090</u> | <u>6.47</u>  | <u>1137</u> | <u>7.07</u>  | <b>1181</b> | <u>7.67</u>  | —           | —           | —           | —           |
|             | 9,000            | <u>1086</u>                       | <u>7.21</u>  | <u>1133</u> | <u>7.82</u>  | <u>1178</u> | <u>8.47</u>  | —           | —            | —           | —           | —           | —           |
|             | 10,000           | <u>1138</u>                       | <u>8.83</u>  | <u>1180</u> | <u>9.46</u>  | —           | —            | —           | —            | —           | —           | —           | —           |
| 300         | 7,500            | <u>874</u>                        | <u>5.33</u>  | <u>897</u>  | <u>5.91</u>  | <u>940</u>  | <u>6.80</u>  | <u>990</u>  | <u>7.50</u>  | —           | —           | —           | —           |
|             | 8,750            | <u>886</u>                        | <u>5.36</u>  | <u>930</u>  | <u>6.13</u>  | <u>982</u>  | <u>7.32</u>  | <u>1020</u> | <u>8.10</u>  | —           | —           | —           | —           |
|             | 10,000           | <u>930</u>                        | <u>6.60</u>  | <u>969</u>  | <u>7.20</u>  | <u>1007</u> | <u>7.89</u>  | <u>1045</u> | <u>8.71</u>  | —           | —           | —           | —           |
|             | 11,250           | <u>976</u>                        | <u>8.25</u>  | <u>1014</u> | <u>8.86</u>  | <u>1051</u> | <u>9.49</u>  | <b>1086</b> | <b>10.17</b> | —           | —           | —           | —           |
|             | 12,500           | <u>1023</u>                       | <u>10.20</u> | <u>1061</u> | <u>10.88</u> | <b>1097</b> | <b>11.56</b> | —           | —            | —           | —           | —           | —           |

### LEGEND

Bhp — Brake Horsepower Input to Fan

ESP — External Static Pressure

**Bold** indicates field-supplied drive or motor is required.

Plain type indicates standard motor and standard drive.

Underline indicates a different motor and drive combination other than the standard motor and standard drive combination is required. Refer to fan motor and drive tables to complete selection.

### NOTES:

Maximum allowable fan speed is 1100 rpm for unit sizes 028 and 030; 1200 rpm for all other sizes. Fan performance is based on deductions for wet coil, clean 2-in. filters, and unit casing. See table below for factory-supplied filter pressure drop. For 60 Hz units, the medium-static drive and standard motor combination is not available for 028 size.

# PERFORMANCE DATA (CONT.)

## FAN PERFORMANCE DATA — FAS 0-300 Pa ESP — 60 Hz, SI

| UNIT<br>FAS) | AIRFLOW<br>(L/s) | EXTERNAL STATIC PRESSURE (Pa) |             |              |             |              |             |              |             |              |             |              |             |              |             |
|--------------|------------------|-------------------------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
|              |                  | 0                             |             | 50           |             | 100          |             | 150          |             | 200          |             | 250          |             | 300          |             |
|              |                  | r/s                           | kW          | r/s          | kW          | r/s          | kW          | r/s          | kW          | r/s          | kW          | r/s          | kW          | r/s          | kW          |
| 072          | 850              | <b>6.98</b>                   | <b>0.16</b> | 7.86         | 0.19        | 9.40         | 0.27        | 10.81        | 0.37        | <u>12.11</u> | <u>0.47</u> | <u>13.29</u> | <u>0.57</u> | <u>14.36</u> | <u>0.69</u> |
|              | 990              | 7.84                          | 0.23        | 8.64         | 0.27        | 10.03        | 0.36        | <u>11.31</u> | <u>0.46</u> | <u>12.52</u> | <u>0.57</u> | <u>13.65</u> | <u>0.69</u> | <u>14.71</u> | <u>0.81</u> |
|              | 1130             | 8.73                          | 0.33        | 9.46         | 0.38        | 10.75        | 0.48        | <u>11.91</u> | <u>0.59</u> | <u>13.01</u> | <u>0.70</u> | <u>14.07</u> | <u>0.83</u> | <u>15.08</u> | <u>0.96</u> |
|              | 1270             | 9.63                          | 0.45        | 10.31        | 0.51        | <u>11.51</u> | <u>0.62</u> | <u>12.58</u> | <u>0.74</u> | <u>13.60</u> | <u>0.86</u> | <u>14.58</u> | <u>0.99</u> | <u>15.53</u> | <u>1.13</u> |
|              | 1420             | 10.55                         | 0.61        | <u>11.18</u> | <u>0.67</u> | <u>12.30</u> | <u>0.80</u> | <u>13.31</u> | <u>0.92</u> | <u>14.26</u> | <u>1.05</u> | <u>15.17</u> | <u>1.19</u> | <u>16.05</u> | <u>1.33</u> |
| 091          | 1060             | <b>4.83</b>                   | <b>0.07</b> | <b>8.50</b>  | <b>0.29</b> | 9.91         | 0.38        | 11.15        | 0.48        | 12.32        | 0.59        | <u>13.44</u> | <u>0.71</u> | <u>14.50</u> | <u>0.83</u> |
|              | 1230             | <b>5.81</b>                   | <b>0.14</b> | 9.35         | 0.41        | 10.67        | 0.52        | 11.81        | 0.63        | <u>12.88</u> | <u>0.74</u> | <u>13.90</u> | <u>0.87</u> | <u>14.89</u> | <u>1.00</u> |
|              | 1420             | 9.65                          | 0.52        | 10.35        | 0.59        | 11.59        | 0.71        | <u>12.66</u> | <u>0.84</u> | <u>13.64</u> | <u>0.97</u> | <u>14.57</u> | <u>1.10</u> | <u>15.47</u> | <u>1.24</u> |
|              | 1600             | 10.76                         | 0.74        | 11.39        | 0.81        | <u>12.54</u> | <u>0.96</u> | <u>13.55</u> | <u>1.10</u> | <u>14.48</u> | <u>1.24</u> | <u>15.34</u> | <u>1.39</u> | <u>16.17</u> | <u>1.53</u> |
|              | 1770             | 11.74                         | 0.97        | 12.32        | 1.06        | <u>13.40</u> | <u>1.22</u> | <u>14.37</u> | <u>1.38</u> | <u>15.25</u> | <u>1.53</u> | <u>16.07</u> | <u>1.69</u> | <u>16.86</u> | <u>1.85</u> |
| 120          | 1420             | <b>7.02</b>                   | <b>0.26</b> | <b>9.86</b>  | <b>0.54</b> | 11.17        | 0.67        | 12.28        | 0.79        | <u>13.29</u> | <u>0.92</u> | <u>14.23</u> | <u>1.05</u> | <u>15.14</u> | <u>1.19</u> |
|              | 1650             | <b>10.44</b>                  | <b>0.73</b> | <b>11.06</b> | <b>0.80</b> | 12.25        | 0.96        | 13.31        | 1.10        | <u>14.25</u> | <u>1.25</u> | <u>15.13</u> | <u>1.39</u> | <u>15.96</u> | <u>1.54</u> |
|              | 1890             | 11.76                         | 1.06        | 12.31        | 1.15        | 13.38        | 1.32        | 14.37        | 1.49        | <u>15.28</u> | <u>1.66</u> | <u>16.11</u> | <u>1.83</u> | <u>16.89</u> | <u>1.99</u> |
|              | 2120             | 13.10                         | 1.48        | 13.59        | 1.58        | <u>14.55</u> | <u>1.78</u> | <u>15.48</u> | <u>1.97</u> | <u>16.34</u> | <u>2.17</u> | <u>17.14</u> | <u>2.35</u> | <u>17.89</u> | <u>2.54</u> |
|              | 2360             | 14.45                         | <u>2.01</u> | <u>14.89</u> | <u>2.12</u> | <u>15.76</u> | <u>2.34</u> | <u>16.62</u> | <u>2.56</u> | <u>17.43</u> | <u>2.77</u> | <u>18.20</u> | <u>2.98</u> | <u>18.92</u> | <u>3.19</u> |
| 150          | 1770             | <b>6.84</b>                   | <b>0.32</b> | <b>7.78</b>  | <b>0.41</b> | 9.46         | 0.62        | 10.82        | 0.83        | 12.02        | 1.05        | 13.13        | 1.28        | 14.19        | 1.53        |
|              | 2030             | <b>7.58</b>                   | <b>0.46</b> | <b>8.40</b>  | <b>0.55</b> | 9.98         | 0.78        | 11.31        | 1.03        | <u>12.47</u> | <u>1.27</u> | <u>13.52</u> | <u>1.52</u> | <u>14.51</u> | <u>1.78</u> |
|              | 2360             | <b>8.57</b>                   | <b>0.69</b> | 9.27         | 0.79        | 10.68        | 1.04        | 11.96        | 1.31        | <u>13.09</u> | <u>1.60</u> | <u>14.11</u> | <u>1.88</u> | <u>15.05</u> | <u>2.17</u> |
|              | 2690             | 9.59                          | 0.99        | 10.20        | 1.10        | 11.44        | 1.36        | <u>12.64</u> | <u>1.66</u> | <u>13.74</u> | <u>1.98</u> | <u>14.74</u> | <u>2.30</u> | <u>15.65</u> | <u>2.63</u> |
|              | 2950             | 10.40                         | 1.28        | 10.96        | 1.39        | 12.09        | 1.67        | <u>13.21</u> | <u>1.98</u> | <u>14.27</u> | <u>2.33</u> | <u>15.25</u> | <u>2.68</u> | <u>16.15</u> | <u>3.03</u> |
| 180          | 2120             | <b>7.28</b>                   | <b>0.45</b> | <b>8.05</b>  | <b>0.54</b> | 9.60         | 0.75        | 11.00        | 1.00        | <u>12.21</u> | <u>1.26</u> | <u>13.28</u> | <u>1.51</u> | <u>14.27</u> | <u>1.78</u> |
|              | 2500             | <b>8.32</b>                   | <b>0.71</b> | 8.97         | 0.80        | 10.29        | 1.02        | 11.59        | 1.30        | <u>12.78</u> | <u>1.59</u> | <u>13.84</u> | <u>1.89</u> | <u>14.80</u> | <u>2.19</u> |
|              | 2830             | <b>9.25</b>                   | <b>1.00</b> | 9.83         | 1.10        | 10.99        | 1.33        | <u>12.16</u> | <u>1.62</u> | <u>13.29</u> | <u>1.93</u> | <u>14.34</u> | <u>2.27</u> | <u>15.30</u> | <u>2.60</u> |
|              | 3210             | 10.33                         | 1.42        | 10.85        | 1.54        | 11.87        | 1.78        | <u>12.90</u> | <u>2.07</u> | <u>13.93</u> | <u>2.40</u> | <u>14.93</u> | <u>2.76</u> | <u>15.87</u> | <u>3.14</u> |
|              | 3540             | 11.29                         | 1.88        | 11.77        | 2.01        | <u>12.69</u> | <u>2.27</u> | <u>13.62</u> | <u>2.56</u> | <u>14.56</u> | <u>2.90</u> | <u>15.49</u> | <u>3.27</u> | <u>16.40</u> | <u>3.67</u> |
| 240          | 2830             | <b>9.03</b>                   | <b>0.96</b> | <b>9.62</b>  | <b>1.06</b> | <b>10.77</b> | <b>1.29</b> | 11.94        | 1.56        | 13.08        | 1.87        | 14.15        | 2.20        | <u>15.12</u> | <u>2.54</u> |
|              | 3300             | <b>10.34</b>                  | <b>1.48</b> | <b>10.86</b> | <b>1.60</b> | 11.85        | 1.85        | 12.84        | 2.12        | 13.85        | 2.45        | <u>14.84</u> | <u>2.80</u> | <u>15.78</u> | <u>3.18</u> |
|              | 3780             | 11.67                         | 2.17        | 12.14        | 2.31        | 13.02        | 2.58        | 13.88        | 2.87        | <u>14.75</u> | <u>3.20</u> | <u>15.63</u> | <u>3.56</u> | <u>16.50</u> | <u>3.96</u> |
|              | 4250             | 13.01                         | 3.05        | 13.44        | 3.21        | 14.23        | 3.51        | 15.00        | 3.82        | <u>15.77</u> | <u>4.16</u> | <u>16.54</u> | <u>4.53</u> | <u>17.32</u> | <u>4.94</u> |
|              | 4720             | 14.36                         | 4.15        | <u>14.75</u> | <u>4.32</u> | <u>15.48</u> | <u>4.66</u> | <u>16.18</u> | <u>4.99</u> | <u>16.87</u> | <u>5.35</u> | <u>17.56</u> | <u>5.73</u> | <u>18.26</u> | <u>6.14</u> |
| 300          | 3540             | <b>7.94</b>                   | <b>1.04</b> | <b>8.51</b>  | <b>1.18</b> | <b>9.65</b>  | <b>1.48</b> | <b>10.73</b> | <b>1.79</b> | 11.68        | 2.10        | 12.53        | 2.46        | 13.40        | 2.95        |
|              | 4130             | <b>9.08</b>                   | <b>1.59</b> | <b>9.57</b>  | <b>1.75</b> | <b>10.55</b> | <b>2.10</b> | 11.52        | 2.46        | 12.45        | 2.81        | 13.28        | 3.17        | <u>14.04</u> | <u>3.55</u> |
|              | 4720             | <b>10.24</b>                  | <b>2.33</b> | <b>10.68</b> | <b>2.51</b> | 11.53        | 2.88        | 12.39        | 3.29        | 13.24        | 3.70        | <u>14.05</u> | <u>4.11</u> | <u>14.80</u> | <u>4.51</u> |
|              | 5310             | 11.42                         | 3.26        | 11.81        | 3.46        | 12.57        | 3.88        | 13.33        | 4.32        | <u>14.09</u> | <u>4.77</u> | <u>14.85</u> | <u>5.24</u> | <u>15.58</u> | <u>5.70</u> |
|              | 5900             | 12.60                         | 4.42        | 12.96        | 4.64        | 13.65        | 5.09        | <u>14.33</u> | <u>5.57</u> | <u>15.01</u> | <u>6.07</u> | <u>15.70</u> | <u>6.58</u> | <u>16.38</u> | <u>7.10</u> |

### LEGEND

ESP — External Static Pressure

**Bold** indicates field-supplied drive or motor is required.

Plain type indicates standard motor and standard drive.

Underline indicates a different motor and drive combination other than the standard motor and standard drive combination is required. Refer to fan motor and drive tables to complete selection.

### NOTES:

Maximum allowable fan speed is 18.3 r/s for unit sizes 028 and 030; 20 r/s for all other sizes. Fan performance is based on deductions for wet coil, clean 51-mm filters, and unit casing. See table below for factory-supplied filter pressure drop. For 60 Hz units, the medium-static drive and standard motor combination is not available for 028 size.

# PERFORMANCE DATA (CONT.)

## FAN PERFORMANCE DATA — FAS 350-600 Pa ESP — 60 Hz, SI

| UNIT<br>FAS | AIRFLOW<br>(L/s) | EXTERNAL STATIC PRESSURE (Pa) |      |       |      |       |      |       |      |       |      |       |      |
|-------------|------------------|-------------------------------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
|             |                  | 350                           |      | 400   |      | 450   |      | 500   |      | 550   |      | 600   |      |
|             |                  | r/s                           | kW   | r/s   | kW   | r/s   | kW   | r/s   | kW   | r/s   | kW   | r/s   | kW   |
| 072         | 850              | 15.34                         | 0.80 | 16.25 | 0.92 | 17.10 | 1.03 | 17.90 | 1.16 | 18.66 | 1.28 | 19.39 | 1.41 |
|             | 990              | 15.69                         | 0.94 | 16.61 | 1.07 | 17.47 | 1.20 | 18.28 | 1.33 | 19.04 | 1.47 | 19.77 | 1.61 |
|             | 1130             | 16.04                         | 1.09 | 16.95 | 1.23 | 17.81 | 1.38 | 18.63 | 1.53 | 19.40 | 1.67 | —     | —    |
|             | 1270             | 16.44                         | 1.27 | 17.32 | 1.42 | 18.17 | 1.58 | 18.97 | 1.74 | 19.75 | 1.90 | —     | —    |
|             | 1420             | 16.91                         | 1.49 | 17.75 | 1.64 | 18.56 | 1.81 | 19.34 | 1.97 | —     | —    | —     | —    |
| 091         | 1060             | 15.50                         | 0.96 | 16.43 | 1.10 | 17.31 | 1.23 | 18.14 | 1.37 | 18.93 | 1.51 | 19.68 | 1.66 |
|             | 1230             | 15.84                         | 1.14 | 16.75 | 1.28 | 17.62 | 1.43 | 18.45 | 1.58 | 19.24 | 1.74 | —     | —    |
|             | 1420             | 16.34                         | 1.38 | 17.19 | 1.54 | 18.01 | 1.70 | 18.81 | 1.86 | 19.59 | 2.03 | —     | —    |
|             | 1600             | 16.97                         | 1.69 | 17.76 | 1.85 | 18.52 | 2.02 | 19.27 | 2.19 | —     | —    | —     | —    |
|             | 1770             | 17.61                         | 2.01 | 18.35 | 2.18 | 19.07 | 2.35 | 19.77 | 2.53 | —     | —    | —     | —    |
| 120         | 1420             | 16.02                         | 1.33 | 16.87 | 1.48 | 17.71 | 1.64 | 18.52 | 1.80 | 19.30 | 1.97 | —     | —    |
|             | 1650             | 16.76                         | 1.70 | 17.53 | 1.85 | 18.29 | 2.02 | 19.04 | 2.19 | 19.77 | 2.37 | —     | —    |
|             | 1890             | 17.64                         | 2.16 | 18.35 | 2.33 | 19.05 | 2.51 | 19.74 | 2.69 | —     | —    | —     | —    |
|             | 2120             | 18.60                         | 2.73 | 19.28 | 2.91 | 19.93 | 3.10 | —     | —    | —     | —    | —     | —    |
|             | 2360             | 19.61                         | 3.40 | —     | —    | —     | —    | —     | —    | —     | —    | —     | —    |
| 150         | 1770             | 15.21                         | 1.78 | 16.19 | 2.06 | 17.13 | 2.34 | 18.04 | 2.64 | 18.91 | 2.94 | 19.75 | 3.25 |
|             | 2030             | 15.46                         | 2.05 | 16.37 | 2.33 | 17.26 | 2.63 | 18.12 | 2.94 | 18.96 | 3.26 | 19.78 | 3.59 |
|             | 2360             | 15.94                         | 2.46 | 16.78 | 2.77 | 17.60 | 3.08 | 18.40 | 3.40 | 19.18 | 3.73 | 19.94 | 4.07 |
|             | 2690             | 16.51                         | 2.95 | 17.32 | 3.28 | 18.09 | 3.62 | 18.84 | 3.96 | 19.57 | 4.31 | —     | —    |
|             | 2950             | 16.99                         | 3.39 | 17.78 | 3.74 | 18.54 | 4.10 | 19.26 | 4.47 | 19.96 | 4.84 | —     | —    |
| 180         | 2120             | 15.21                         | 2.05 | 16.11 | 2.33 | 16.98 | 2.62 | 17.83 | 2.93 | 18.66 | 3.24 | 19.47 | 3.57 |
|             | 2500             | 15.69                         | 2.49 | 16.54 | 2.80 | 17.35 | 3.12 | 18.14 | 3.44 | 18.90 | 3.77 | 19.64 | 4.11 |
|             | 2830             | 16.18                         | 2.94 | 17.01 | 3.28 | 17.79 | 3.63 | 18.54 | 3.97 | 19.27 | 4.33 | 19.97 | 4.69 |
|             | 3210             | 16.75                         | 3.52 | 17.57 | 3.90 | 18.34 | 4.29 | 19.08 | 4.67 | 19.78 | 5.06 | —     | —    |
|             | 3540             | 17.26                         | 4.09 | 18.07 | 4.50 | 18.84 | 4.93 | 19.57 | 5.35 | —     | —    | —     | —    |
| 240         | 2830             | 16.01                         | 2.88 | 16.85 | 3.22 | 17.64 | 3.56 | 18.39 | 3.91 | 19.12 | 4.26 | —     | —    |
|             | 3300             | 16.67                         | 3.57 | 17.50 | 3.96 | 18.28 | 4.36 | 19.03 | 4.75 | 19.73 | 5.15 | —     | —    |
|             | 3780             | 17.35                         | 4.39 | 18.17 | 4.82 | 18.95 | 5.27 | 19.68 | 5.72 | —     | —    | —     | —    |
|             | 4250             | 18.11                         | 5.37 | 18.88 | 5.83 | 19.63 | 6.31 | —     | —    | —     | —    | —     | —    |
|             | 4720             | 18.96                         | 6.58 | 19.67 | 7.05 | —     | —    | —     | —    | —     | —    | —     | —    |
| 300         | 3540             | 14.57                         | 3.97 | 14.95 | 4.41 | 15.67 | 5.07 | 16.50 | 5.59 | —     | —    | —     | —    |
|             | 4130             | 14.76                         | 3.99 | 15.51 | 4.57 | 16.36 | 5.46 | 17.00 | 6.04 | —     | —    | —     | —    |
|             | 4720             | 15.49                         | 4.92 | 16.15 | 5.37 | 16.78 | 5.88 | 17.42 | 6.50 | —     | —    | —     | —    |
|             | 5310             | 16.26                         | 6.15 | 16.91 | 6.61 | 17.51 | 7.08 | 18.10 | 7.58 | —     | —    | —     | —    |
|             | 5900             | 17.04                         | 7.61 | 17.68 | 8.11 | 18.28 | 8.62 | —     | —    | —     | —    | —     | —    |

### LEGEND

ESP — External Static Pressure

**Bold** indicates field-supplied drive or motor is required.

Plain type indicates standard motor and standard drive.

Underline indicates a different motor and drive combination other than the standard motor and standard drive combination is required. Refer to fan motor and drive tables to complete selection.

### NOTES:

Maximum allowable fan speed is 18.3 r/s for unit sizes 028 and 030; 20 r/s for all other sizes. Fan performance is based on deductions for wet coil, clean 51-mm filters, and unit casing. See table below for factory-supplied filter pressure drop. For 60 Hz units, the medium-static drive and standard motor combination is not available for 028 size.

# PERFORMANCE DATA (CONT.)

## DUCT SOUND POWER LEVELS (Lw)

| MODEL | SIZE | CFM   | dB(A) | OCTAVE BAND CENTER FREQUENCY (Hz) |      |      |      |      |      |      |
|-------|------|-------|-------|-----------------------------------|------|------|------|------|------|------|
|       |      |       |       | 63                                | 125  | 250  | 500  | 1000 | 2000 | 4000 |
| FAS   | 072  | 2,400 | 86.3  | 93.2                              | 89.2 | 85.2 | 84.2 | 80.2 | 78.2 | 74.2 |
|       | 091  | 3,000 | 88.3  | 95.3                              | 91.3 | 87.3 | 86.3 | 82.3 | 80.3 | 76.3 |
|       | 120  | 4,000 | 91.6  | 98.6                              | 94.6 | 90.6 | 89.6 | 85.6 | 83.6 | 79.6 |
|       | 150  | 5,000 | 91.1  | 97.3                              | 93.3 | 89.3 | 90.3 | 84.3 | 82.3 | 78.3 |
|       | 180  | 6,000 | 92.7  | 98.9                              | 94.9 | 90.9 | 91.9 | 85.9 | 83.9 | 79.9 |

### LEGEND:

ASHRAE – American Society of Heating, Refrigerating and Air Conditioning, Inc.

HVAC – Heating, Ventilation and Air Conditioning

### NOTES:

1. The above estimated sound power levels are based upon the ASHRAE calculation approach from the ASHRAE 1987 HVAC Systems and Applications handbook, Chapter 52.
2. Since this data is calculated, these sound power levels may be different than the actual sound power levels.
3. The acoustic center of the unit is located at the geometric center of the unit.

## FACTORY-SUPPLIED FILTER PRESSURE DROP — English

| SIZE | UNIT | AIRFLOW (Cfm) | PRESSURE DROP (in. wg) |
|------|------|---------------|------------------------|
| 072  | FAS  | 1,800         | 0.05                   |
|      |      | 2,400         | 0.08                   |
|      |      | 3,000         | 0.11                   |
| 091  | FAS  | 2,250         | 0.07                   |
|      |      | 3,000         | 0.11                   |
|      |      | 3,750         | 0.15                   |
| 120  | FAS  | 3,000         | 0.11                   |
|      |      | 4,000         | 0.17                   |
|      |      | 5,000         | 0.23                   |
| 150  | FAS  | 3,750         | 0.06                   |
|      |      | 5,000         | 0.10                   |
|      |      | 6,250         | 0.13                   |
| 180  | FAS  | 4,500         | 0.08                   |
|      |      | 6,000         | 0.12                   |
|      |      | 7,500         | 0.17                   |
| 240  | FAS  | 6,000         | 0.12                   |
|      |      | 8,000         | 0.19                   |
|      |      | 10,000        | 0.26                   |
| 300  | FAS  | 7,500         | 0.15                   |
|      |      | 10,000        | 0.22                   |
|      |      | 12,500        | 0.30                   |

## FACTORY-SUPPLIED FILTER PRESSURE DROP — SI

| SIZE | UNIT | AIRFLOW (L/s) | PRESSURE DROP (Pa) |
|------|------|---------------|--------------------|
| 072  | FAS  | 850           | 13                 |
|      |      | 1150          | 20                 |
|      |      | 1450          | 28                 |
| 091  | FAS  | 1000          | 17                 |
|      |      | 1400          | 27                 |
|      |      | 1800          | 38                 |
| 120  | FAS  | 1450          | 28                 |
|      |      | 1900          | 42                 |
|      |      | 2350          | 56                 |
| 150  | FAS  | 1750          | 15                 |
|      |      | 2350          | 24                 |
|      |      | 2950          | 33                 |
| 180  | FAS  | 2100          | 20                 |
|      |      | 2800          | 30                 |
|      |      | 3500          | 42                 |
| 240  | FAS  | 2900          | 32                 |
|      |      | 3800          | 47                 |
|      |      | 4700          | 64                 |
| 300  | FAS  | 3500          | 36                 |
|      |      | 4700          | 55                 |
|      |      | 5900          | 76                 |



# PERFORMANCE DATA (CONT.)

## ACCESSORY PLENUM AIR THROW DATA — English (Ft)

| UNIT   | AIRFLOW<br>(Cfm) | VANE DEFLECTION |     |     |
|--------|------------------|-----------------|-----|-----|
|        |                  | Straight        | 21° | 45° |
| FAS072 | 2,400            | 39              | 33  | 24  |
| FAS091 | 3,000            | 45              | 38  | 28  |
| FAS120 | 4,000            | 55              | 46  | 33  |
| FAS150 | 5,000            | 45              | 38  | 28  |
| FAS180 | 6,000            | 50              | 43  | 31  |
| FAS240 | 8,000            | 60              | 51  | 37  |
| FAS300 | 10,000           | 76              | 65  | 47  |

**NOTE:** Throw distances shown are for 75 fpm terminal velocity. Use the following multipliers to determine throw values for other terminal velocities.

| TERMINAL VELOCITY<br>(Fpm) | THROW FACTOR |
|----------------------------|--------------|
| 50                         | X 1.50       |
| 100                        | X 0.75       |
| 150                        | X 0.50       |

## ACCESSORY PLENUM AIR THROW DATA — SI(m)

| UNIT   | AIRFLOW<br>(L/s) | VANE DEFLECTION |       |       |
|--------|------------------|-----------------|-------|-------|
|        |                  | Straight        | 21°   | 45°   |
| FAS072 | 1150             | 11.71           | 9.91  | 7.20  |
| FAS091 | 1400             | 13.87           | 11.71 | 8.63  |
| FAS120 | 1900             | 16.65           | 13.93 | 9.99  |
| FAS150 | 2350             | 13.77           | 11.63 | 8.57  |
| FAS180 | 2800             | 15.41           | 13.25 | 9.55  |
| FAS240 | 3800             | 18.17           | 15.44 | 11.20 |
| FAS300 | 4700             | 23.26           | 19.89 | 14.38 |

**NOTE:** Throw distances shown are for 0.381 m/sec terminal velocity. Use the following multipliers to determine throw values for other terminal velocities.

| TERMINAL VELOCITY<br>(m/sec) | THROW FACTOR |
|------------------------------|--------------|
| 0.254                        | X 1.50       |
| 0.508                        | X 0.75       |
| 0.762                        | X 0.50       |

# PERFORMANCE DATA (CONT.)

## ACCESSORY PRESSURE DROP — English (in. wg)

| UNIT   | AIRFLOW (Cfm) | DISCHARGE PLENUM | RETURN AIR GRILLE | Hot Water | Steam | Electric | ECONOMIZER |
|--------|---------------|------------------|-------------------|-----------|-------|----------|------------|
| FAS072 | 1,800         | 0.06             | 0.01              | 0.10      | 0.10  | 0.04     | 0.05       |
|        | 2,400         | 0.10             | 0.01              | 0.16      | 0.16  | 0.06     | 0.07       |
|        | 3,000         | 0.14             | 0.02              | 0.23      | 0.23  | 0.10     | 0.09       |
| FAS091 | 2,250         | 0.09             | 0.01              | 0.15      | 0.15  | 0.06     | 0.06       |
|        | 3,000         | 0.14             | 0.02              | 0.23      | 0.23  | 0.10     | 0.09       |
|        | 3,750         | 0.21             | 0.03              | 0.35      | 0.35  | 0.15     | 0.15       |
| FAS120 | 3,000         | 0.14             | 0.02              | 0.23      | 0.23  | 0.10     | 0.09       |
|        | 4,000         | 0.22             | 0.04              | 0.37      | 0.37  | 0.17     | 0.17       |
|        | 5,000         | 0.32             | 0.06              | 0.53      | 0.53  | 0.26     | 0.28       |
| FAS150 | 3,750         | 0.07             | 0.01              | 0.11      | 0.11  | 0.04     | 0.05       |
|        | 5,000         | 0.12             | 0.02              | 0.17      | 0.17  | 0.07     | 0.07       |
|        | 6,250         | 0.17             | 0.02              | 0.25      | 0.25  | 0.11     | 0.11       |
| FAS180 | 4,500         | 0.10             | 0.01              | 0.15      | 0.15  | 0.06     | 0.06       |
|        | 6,000         | 0.16             | 0.02              | 0.23      | 0.23  | 0.10     | 0.09       |
|        | 7,500         | 0.23             | 0.03              | 0.33      | 0.33  | 0.15     | 0.15       |
| FAS240 | 6,000         | 0.16             | 0.02              | 0.23      | 0.23  | 0.10     | 0.09       |
|        | 8,000         | 0.26             | 0.04              | 0.37      | 0.37  | 0.17     | 0.17       |
|        | 10,000        | 0.37             | 0.06              | 0.53      | 0.53  | 0.26     | 0.28       |
| FAS300 | 7,500         | 0.15             | 0.02              | 0.28      | 0.28  | 0.09     | 0.06       |
|        | 10,000        | 0.24             | 0.03              | 0.44      | 0.44  | 0.16     | 0.09       |
|        | 12,500        | 0.34             | 0.05              | 0.63      | 0.63  | 0.24     | 0.14       |

## ACCESSORY PRESSURE DROP — SI (Pa)

| UNIT   | AIRFLOW (L/s) | DISCHARGE PLENUM | RETURN AIR GRILLE | HEATING COILS |       |          | ECONOMIZER |
|--------|---------------|------------------|-------------------|---------------|-------|----------|------------|
|        |               |                  |                   | Hot Water     | Steam | Electric |            |
| FAS072 | 850           | 15               | 2                 | 25            | 25    | 9        | 12         |
|        | 1150          | 25               | 3                 | 41            | 41    | 16       | 18         |
|        | 1450          | 36               | 5                 | 60            | 60    | 26       | 23         |
| FAS091 | 1000          | 20               | 2                 | 33            | 33    | 12       | 13         |
|        | 1400          | 34               | 5                 | 57            | 57    | 24       | 22         |
|        | 1800          | 51               | 8                 | 85            | 85    | 39       | 39         |
| FAS120 | 1450          | 36               | 5                 | 60            | 60    | 26       | 23         |
|        | 1900          | 56               | 10                | 93            | 93    | 43       | 43         |
|        | 2350          | 79               | 15                | 132           | 132   | 65       | 69         |
| FAS150 | 1750          | 18               | 2                 | 26            | 26    | 10       | 12         |
|        | 2350          | 29               | 5                 | 43            | 43    | 17       | 17         |
|        | 2950          | 43               | 5                 | 62            | 62    | 26       | 27         |
| FAS180 | 2100          | 24               | 2                 | 36            | 36    | 14       | 15         |
|        | 2800          | 39               | 5                 | 57            | 57    | 24       | 22         |
|        | 3500          | 56               | 7                 | 82            | 82    | 37       | 37         |
| FAS240 | 2900          | 41               | 5                 | 60            | 60    | 26       | 23         |
|        | 3800          | 64               | 10                | 93            | 93    | 43       | 43         |
|        | 4700          | 91               | 15                | 132           | 132   | 65       | 69         |
| FAS300 | 3500          | 37               | 5                 | 67            | 67    | 22       | 15         |
|        | 4700          | 59               | 7                 | 109           | 109   | 39       | 22         |
|        | 5900          | 86               | 12                | 157           | 157   | 60       | 35         |

# ELECTRICAL DATA

## STANDARD MOTORS

| UNIT   | V*-PH-Hz     | VOLTAGE LIMITS | FAN MOTOR  |           | POWER SUPPLY         |       |
|--------|--------------|----------------|------------|-----------|----------------------|-------|
|        |              |                | Hp (kW)    | FLA       | Minimum Circuit Amps | MOCP  |
| FAS072 | 208/230-1-60 | 187-253        | 1.3 (0.97) | 7.6       | 9.5                  | 15    |
|        | 208/230-3-60 | 187-253        | 2.4 (1.79) | 5.8       | 7.5                  | 15    |
|        | 460-3-60     | 414-506        | 2.4 (1.79) | 2.6       | 3.3                  | 15    |
|        | 575-3-60     | 518-632        | 1.0 (0.75) | 1.4       | 1.7                  | 15    |
| FAS091 | 208/230-1-60 | 187-253        | 2.4 (1.79) | 11.0      | 13.8                 | 20    |
|        | 208/230-3-60 | 187-253        | 2.4 (1.79) | 5.8       | 6.5                  | 15    |
|        | 460-3-60     | 414-506        | 2.4 (1.79) | 2.6       | 3.3                  | 15    |
|        | 575-3-60     | 518-632        | 2.0 (1.49) | 2.4       | 3.0                  | 15    |
| FAS120 | 208/230-3-60 | 187-253        | 2.4 (1.79) | 5.8       | 7.3                  | 15    |
|        | 460-3-60     | 414-506        | 2.4 (1.79) | 2.6       | 3.3                  | 15    |
|        | 575-3-60     | 518-632        | 2.0 (1.49) | 2.4       | 3.0                  | 15    |
| FAS150 | 208/230-3-60 | 187-253        | 2.4 (1.79) | 5.8       | 7.5                  | 15    |
|        | 460-3-60     | 414-506        | 2.4 (1.79) | 2.6       | 3.3                  | 15    |
|        | 575-3-60     | 518-632        | 3.0 (2.24) | 3.8       | 4.8                  | 15    |
| FAS180 | 208/230-3-60 | 187-253        | 3.7 (2.76) | 10.6      | 13.3                 | 20    |
|        | 460-3-60     | 414-506        | 3.7 (2.76) | 4.8       | 6.0                  | 15    |
|        | 575-3-60     | 518-632        | 3.0 (2.24) | 3.8       | 4.8                  | 15    |
| FAS240 | 208/230-3-60 | 187-253        | 5.0 (3.73) | 14.6/12.8 | 18.3/16.0            | 30/25 |
|        | 460-3-60     | 414-506        | 5.0 (3.73) | 6.4       | 8.0                  | 15    |
|        | 575-3-60     | 518-632        | 5.0 (3.73) | 5.1       | 6.4                  | 15    |
| FAS300 | 208/230-3-60 | 187-253        | 7.5 (5.59) | 21.5/19.4 | 26.9/24.3            | 45/40 |
|        | 460-3-60     | 414-506        | 7.5 (5.59) | 9.7       | 12.1                 | 20    |
|        | 575-3-60     | 518-632        | 7.5 (5.59) | 7.8       | 9.8                  | 15    |

### LEGEND

**FLA** — Full Load Amps

**MOCP** — Maximum Overcurrent Protection

\* Motors are designed for satisfactory operation within 10% of nominal voltages shown. Voltages should not exceed the limits shown in the Voltage Limits column.

### NOTES:

1. Minimum circuit amps (MCA) and MOCP values are calculated in accordance with NEC (National Electrical Code) (U.S.A. standard), Article 440.
2. Motor FLA values are established in accordance with UL (Underwriters' Laboratories) Standard 1995 (U.S.A. standard).
3. Indoor fan motors 5 hp and larger meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT) effective October 24, 1997.
4. Unbalanced 3-Phase Supply Voltage  
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 230-3-60



AB = 224 v  
BC = 231 v  
AC = 226 v

$$\text{Average Voltage} = \frac{(224 + 231 + 226)}{3} = \frac{681}{3} = 227$$

Determine maximum deviation from average voltage.

(AB) 227 - 224 = 3 v

(BC) 231 - 227 = 4 v

(AC) 227 - 226 = 1 v

Maximum deviation is 4 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{4}{227} = 1.76\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.



# ELECTRICAL DATA (CONT.)

## ALTERNATE MOTORS

| UNIT   | V*-PH-Hz     | VOLTAGE LIMITS | FAN MOTOR   |           | POWER SUPPLY         |       |
|--------|--------------|----------------|-------------|-----------|----------------------|-------|
|        |              |                | Hp (kW)     | FLA       | Minimum Circuit Amps | MOCP  |
| FAS072 | 208/230-1-60 | 187-253        | 2.4 (1.79)  | 11.0      | 13.8                 | 20    |
|        | 208/230-3-60 | 187-253        | 2.9 (2.16)  | 7.5       | 9.4                  | 15    |
|        | 460-3-60     | 414-506        | 2.9 (2.16)  | 3.4       | 4.3                  | 15    |
|        | 575-3-60     | 518-632        | 2.0 (1.49)  | 2.3       | 2.9                  | 15    |
| FAS091 | 208/230-1-60 | 187-253        | 2.4 (1.79)  | 11.0      | 13.8                 | 15    |
|        | 208/230-3-60 | 187-253        | 2.9 (2.16)  | 7.5       | 9.4                  | 15    |
|        | 460-3-60     | 414-506        | 2.9 (2.16)  | 3.4       | 4.3                  | 15    |
|        | 575-3-60     | 518-632        | 3.0 (2.24)  | 3.8       | 4.8                  | 15    |
| FAS120 | 208/230-3-60 | 187-253        | 3.7 (2.76)  | 10.2      | 12.8                 | 20    |
|        | 460-3-60     | 414-506        | 3.7 (2.76)  | 4.8       | 6.0                  | 15    |
|        | 575-3-60     | 518-632        | 3.0 (2.24)  | 3.8       | 4.8                  | 15    |
| FAS150 | 208/230-3-60 | 187-253        | 3.7 (2.76)  | 10.2      | 12.7                 | 20    |
|        | 460-3-60     | 414-506        | 3.7 (2.76)  | 4.8       | 6.0                  | 15    |
|        | 575-3-60     | 518-632        | 5.0 (3.73)  | 5.1       | 6.4                  | 15    |
| FAS180 | 208/230-3-60 | 187-253        | 5.0 (3.73)  | 14.6/12.8 | 18.3/16.0            | 30/25 |
|        | 460-3-60     | 414-506        | 5.0 (3.73)  | 6.4       | 8.0                  | 15    |
|        | 575-3-60     | 518-632        | 5.0 (3.73)  | 5.1       | 6.4                  | 15    |
| FAS240 | 208/230-3-60 | 187-253        | 7.5 (5.59)  | 21.5/19.4 | 26.9/24.3            | 45/40 |
|        | 460-3-60     | 414-506        | 7.5 (5.59)  | 9.7       | 12.1                 | 20    |
|        | 575-3-60     | 518-632        | 7.5 (5.59)  | 7.8       | 9.8                  | 15    |
| FAS300 | 208/230-3-60 | 187-253        | 10.0 (7.46) | 28.2/26.8 | 35.3/33.5            | 60/60 |
|        | 460-3-60     | 414-506        | 10.0 (7.46) | 13.4      | 16.8                 | 30    |
|        | 575-3-60     | 518-632        | 10.0 (7.46) | 10.3      | 12.9                 | 20    |

### LEGEND

**FLA** — Full Load Amps

**MOCP** — Maximum Overcurrent Protection

\* Motors are designed for satisfactory operation within 10% of nominal voltages shown. Voltages should not exceed the limits shown in the Voltage Limits column.

### NOTES:

1. Minimum circuit amps (MCA) and MOCP values are calculated in accordance with NEC (National Electrical Code) (U.S.A. standard), Article 440.
2. Motor FLA values are established in accordance with UL (Underwriters' Laboratories) Standard 1995 (U.S.A. standard).
3. Indoor fan motors 5 hp and larger meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT) effective October 24, 1997.
4. Unbalanced 3-Phase Supply Voltage  
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 230-3-60



AB = 224 v  
BC = 231 v  
AC = 226 v

$$\begin{aligned} \text{Average Voltage} &= \frac{(224 + 231 + 226)}{3} = \frac{681}{3} \\ &= 227 \end{aligned}$$

Determine maximum deviation from average voltage.

(AB) 227 - 224 = 3 v

(BC) 231 - 227 = 4 v

(AC) 227 - 226 = 1 v

Maximum deviation is 4 v.

Determine percent of voltage imbalance.

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{4}{227} \\ &= 1.76\% \end{aligned}$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.



# ELECTRICAL DATA (CONT.)

## ELECTRIC HEATER DATA

| HEATER PART NO. | SIZE       | V-PH-Hz  | FAN MOTOR |      |      | ELECTRIC HEATER(S)    |                      |         |       |      | MCA* | MOCP* |
|-----------------|------------|----------|-----------|------|------|-----------------------|----------------------|---------|-------|------|------|-------|
|                 |            |          |           |      |      | Nominal Capacity (kW) | Actual Capacity (kW) |         |       | FLA  |      |       |
|                 |            |          | Hp        | kW   | FLA  |                       | Stage 1              | Stage 2 | Total |      |      |       |
| AAHC05AHA       |            | 208-3-60 | 1.3†      | 0.97 | 7.6  | 5                     | 3.8                  | —       | 3.8   | 10.4 | 22.5 | 25    |
|                 |            |          | 2.4†      | 1.79 | 11.0 | 5                     | 3.8                  | —       | 3.8   | 10.4 | 26.8 | 35    |
|                 |            |          | 2.4       | 1.79 | 5.8  | 5                     | 3.8                  | —       | 3.8   | 10.4 | 20.3 | 25    |
|                 |            |          | 2.9       | 2.16 | 7.5  | 5                     | 3.8                  | —       | 3.8   | 10.4 | 22.4 | 25    |
|                 |            |          | 3.7       | 2.76 | 10.6 | 5                     | 3.8                  | —       | 3.8   | 10.4 | 26.3 | 30    |
|                 |            | 240-3-60 | 1.3†      | 0.97 | 7.6  | 5                     | 5.0                  | —       | 5.0   | 12.0 | 24.5 | 25    |
|                 |            |          | 2.4†      | 1.79 | 11.0 | 5                     | 5.0                  | —       | 5.0   | 12.0 | 28.8 | 35    |
|                 |            |          | 2.4       | 1.79 | 5.8  | 5                     | 5.0                  | —       | 5.0   | 12.0 | 22.3 | 25    |
|                 |            |          | 2.9       | 2.16 | 7.5  | 5                     | 5.0                  | —       | 5.0   | 12.0 | 24.4 | 25    |
|                 |            |          | 3.7       | 2.76 | 10.6 | 5                     | 5.0                  | —       | 5.0   | 12.0 | 28.3 | 30    |
| AAHC05ALA       | 480-3-60   | 2.4      | 1.79      | 2.6  | 5    | 5.0                   | —                    | 5.0     | 6.00  | 10.8 | 15   |       |
|                 |            | 2.9      | 2.16      | 3.4  | 5    | 5.0                   | —                    | 5.0     | 6.00  | 11.8 | 15   |       |
|                 |            | 3.7      | 2.76      | 4.8  | 5    | 5.0                   | —                    | 5.0     | 6.00  | 13.5 | 15   |       |
| AAHC05ASA       | 575-3-60   | 1.0      | 0.75      | 1.4  | 5    | 5.0                   | —                    | 5.0     | 5.00  | 8.0  | 15   |       |
|                 |            | 2.0      | 1.49      | 2.4  | 5    | 5.0                   | —                    | 5.0     | 5.00  | 9.3  | 15   |       |
|                 |            | 3.0      | 2.24      | 3.8  | 5    | 5.0                   | —                    | 5.0     | 5.00  | 11.0 | 15   |       |
| AAHC10AHA       | FAS072-120 | 208-3-60 | 1.3†      | 0.97 | 7.6  | 10                    | 7.5                  | —       | 7.5   | 20.8 | 35.6 | 40    |
|                 |            |          | 2.4†      | 1.79 | 11.0 | 10                    | 7.5                  | —       | 7.5   | 20.8 | 39.8 | 40    |
|                 |            |          | 2.4       | 1.79 | 5.8  | 10                    | 7.5                  | —       | 7.5   | 20.8 | 33.3 | 35    |
|                 |            |          | 2.9       | 2.16 | 7.5  | 10                    | 7.5                  | —       | 7.5   | 20.8 | 35.4 | 40    |
|                 |            |          | 3.7       | 2.76 | 10.6 | 10                    | 7.5                  | —       | 7.5   | 20.8 | 39.3 | 40    |
|                 |            | 240-3-60 | 1.3†      | 0.97 | 7.6  | 10                    | 10.0                 | —       | 10.0  | 24.1 | 39.6 | 40    |
|                 |            |          | 2.4†      | 1.79 | 11.0 | 10                    | 10.0                 | —       | 10.0  | 24.1 | 43.8 | 50    |
|                 |            |          | 2.4       | 1.79 | 5.8  | 10                    | 10.0                 | —       | 10.0  | 24.1 | 37.4 | 40    |
|                 |            |          | 2.9       | 2.16 | 7.5  | 10                    | 10.0                 | —       | 10.0  | 24.1 | 39.4 | 40    |
|                 |            |          | 3.7       | 2.76 | 10.6 | 10                    | 10.0                 | —       | 10.0  | 24.1 | 43.4 | 50    |
| AAHC10ALA       | 480-3-60   | 2.4      | 1.79      | 2.6  | 10   | 10.0                  | —                    | 10.0    | 12.0  | 18.3 | 20   |       |
|                 |            | 2.9      | 2.16      | 3.4  | 10   | 10.0                  | —                    | 10.0    | 12.0  | 19.3 | 20   |       |
|                 |            | 3.7      | 2.76      | 4.8  | 10   | 10.0                  | —                    | 10.0    | 12.0  | 21.0 | 25   |       |
| AAHC10ASA       | 575-3-60   | 1.0      | 0.75      | 1.4  | 10   | 10.0                  | —                    | 10.0    | 10.0  | 14.3 | 15   |       |
|                 |            | 2.0      | 1.49      | 2.4  | 10   | 10.0                  | —                    | 10.0    | 10.0  | 15.5 | 20   |       |
|                 |            | 3.0      | 2.24      | 3.8  | 10   | 10.0                  | —                    | 10.0    | 10.0  | 17.3 | 20   |       |
| AAHC15AHA       |            | 208-3-60 | 1.3†      | 0.97 | 7.6  | 15                    | 11.3                 | —       | 11.3  | 31.3 | 48.6 | 50    |
|                 |            |          | 2.4†      | 1.79 | 11.0 | 15                    | 11.3                 | —       | 11.3  | 31.3 | 52.9 | 60    |
|                 |            |          | 2.4       | 1.79 | 5.8  | 15                    | 11.3                 | —       | 11.3  | 31.3 | 46.4 | 50    |
|                 |            |          | 2.9       | 2.16 | 7.5  | 15                    | 11.3                 | —       | 11.3  | 31.3 | 48.5 | 50    |
|                 |            |          | 3.7       | 2.76 | 10.6 | 15                    | 11.3                 | —       | 11.3  | 31.3 | 52.4 | 60    |
|                 |            | 240-3-60 | 1.3†      | 0.97 | 7.6  | 15                    | 15.0                 | —       | 15.0  | 36.1 | 54.6 | 60    |
|                 |            |          | 2.4†      | 1.79 | 11.0 | 15                    | 15.0                 | —       | 15.0  | 36.1 | 58.9 | 60    |
|                 |            |          | 2.4       | 1.79 | 5.8  | 15                    | 15.0                 | —       | 15.0  | 36.1 | 52.4 | 60    |
|                 |            |          | 2.9       | 2.16 | 7.5  | 15                    | 15.0                 | —       | 15.0  | 36.1 | 54.5 | 60    |
|                 |            |          | 3.7       | 2.76 | 10.6 | 15                    | 15.0                 | —       | 15.0  | 36.1 | 58.4 | 60    |

### LEGEND

**FLA** — Full Load Amps

**Hp** — Horsepower

**MCA** — Minimum Circuit Amps

**MOCP** — Maximum Overcurrent Protection (Amps)

\* Values shown are for single-point connection of electric heat accessory and air handler.

† Single-phase motors. All other motors are 3-phase.

### NOTES:

- Electrical resistance heaters are rated at 240 v, 480 v, or 575 v. To determine heater capacity (kW) at unit nameplate multiply the 240-v, 480-v, or 575-v capacity (kW) by the factor shown in the table below for the unit voltage.

- The following equation converts kW of heat energy to Btuh:

$$\text{kW} \times 3,412 = \text{Btuh}$$

- Heater contactor coils are 24 v and require 8 va holding current.
- Electric heaters are tested and ETL approved at maximum total external static pressure of 1.9 in. wg.
- MCA and MOCP values apply to both standard and alternate factory-supplied motors.
- Approximate shipping weight for heaters that fit 6 to 10 ton units is 55 lb (25 kg) each. Approximate shipping weight for heaters that fit 12.5 to 15 ton units is 60 lb (27 kg) each.

| HEATER RATING VOLTAGE | ACTUAL HEATER VOLTAGE |       |       |     |       |      |       |     |       |     |       |
|-----------------------|-----------------------|-------|-------|-----|-------|------|-------|-----|-------|-----|-------|
|                       | 200                   | 208   | 230   | 240 | 400   | 440  | 460   | 480 | 550   | 575 | 600   |
| 240                   | 0.694                 | 0.751 | 0.918 | 1   | —     | —    | —     | —   | —     | —   | —     |
| 480                   | —                     | —     | —     | —   | 0.694 | 0.84 | 0.918 | 1   | —     | —   | —     |
| 575                   | —                     | —     | —     | —   | —     | —    | —     | —   | 0.915 | 1   | 1.089 |



# ELECTRICAL DATA (cont.)

## ELECTRIC HEATER DATA (cont)

| HEATER PART NO. | SIZE        | V-PH-Hz   | FAN MOTOR |      |      | ELECTRIC HEATER(S)    |                      |         |       |       | MCA*  | MOCP* |    |
|-----------------|-------------|-----------|-----------|------|------|-----------------------|----------------------|---------|-------|-------|-------|-------|----|
|                 |             |           | Hp        | kW   | FLA  | Nominal Capacity (kW) | Actual Capacity (kW) |         |       | FLA   |       |       |    |
|                 |             |           |           |      |      |                       | Stage 1              | Stage 2 | Total |       |       |       |    |
| AAHC15ALA       |             | 480-3-60  | 2.4       | 1.79 | 2.6  | 15                    | 15.0                 | —       | 15.0  | 18.0  | 25.8  | 30    |    |
|                 |             |           | 2.9       | 2.16 | 3.4  | 15                    | 15.0                 | —       | 15.0  | 18.0  | 26.8  | 30    |    |
|                 |             |           | 3.7       | 2.76 | 4.8  | 15                    | 15.0                 | —       | 15.0  | 18.0  | 28.6  | 30    |    |
| AAHC15ASA       |             | 575-3-60  | 1.0       | 0.75 | 1.4  | 15                    | 15.0                 | —       | 15.0  | 15.1  | 20.6  | 25    |    |
|                 |             |           | 2.0       | 1.49 | 2.4  | 15                    | 15.0                 | —       | 15.0  | 15.1  | 21.9  | 25    |    |
|                 |             |           | 3.0       | 2.24 | 3.8  | 15                    | 15.0                 | —       | 15.0  | 15.1  | 23.6  | 25    |    |
| AAHC25AHA       | FAS072-120  | 208-3-60  | 1.3†      | 0.97 | 7.6  | 25                    | 11.3                 | 7.5     | 18.8  | 52.1  | 74.7  | 80    |    |
|                 |             |           | 2.4†      | 1.79 | 11.0 | 25                    | 11.3                 | 7.5     | 18.8  | 52.1  | 78.9  | 80    |    |
|                 |             |           | 2.4       | 1.79 | 5.8  | 25                    | 11.3                 | 7.5     | 18.8  | 52.1  | 72.4  | 80    |    |
|                 |             |           | 2.9       | 2.16 | 7.5  | 25                    | 11.3                 | 7.5     | 18.8  | 52.1  | 74.5  | 80    |    |
|                 |             |           | 3.7       | 2.76 | 10.6 | 25                    | 11.3                 | 7.5     | 18.8  | 52.1  | 78.4  | 80    |    |
|                 |             |           | 1.3†      | 0.97 | 7.6  | 25                    | 15.0                 | 10.0    | 25.0  | 60.1  | 84.7  | 90    |    |
|                 |             | 240-3-60  | 2.4†      | 1.79 | 11.0 | 25                    | 15.0                 | 10.0    | 25.0  | 60.1  | 88.9  | 90    |    |
|                 |             |           | 2.4       | 1.79 | 5.8  | 25                    | 15.0                 | 10.0    | 25.0  | 60.1  | 82.4  | 90    |    |
|                 |             |           | 2.9       | 2.16 | 7.5  | 25                    | 15.0                 | 10.0    | 25.0  | 60.1  | 84.6  | 90    |    |
|                 |             |           | 3.7       | 2.76 | 10.6 | 25                    | 15.0                 | 10.0    | 25.0  | 60.1  | 88.4  | 90    |    |
|                 |             |           | 2.4       | 1.79 | 2.6  | 25                    | 15.0                 | 10.0    | 25.0  | 30.1  | 40.8  | 50    |    |
|                 |             |           | 2.9       | 2.16 | 3.4  | 25                    | 15.0                 | 10.0    | 25.0  | 30.1  | 41.8  | 50    |    |
| AAHC25ALA       | 480-3-60    | 3.7       | 2.76      | 4.8  | 25   | 15.0                  | 10.0                 | 25.0    | 30.1  | 43.6  | 50    |       |    |
|                 |             | 1.0       | 0.75      | 1.4  | 25   | 15.0                  | 10.0                 | 25.0    | 25.1  | 33.1  | 35    |       |    |
|                 |             | 2.0       | 1.49      | 2.4  | 25   | 15.0                  | 10.0                 | 25.0    | 25.1  | 34.4  | 35    |       |    |
| AAHC25ASA       | 575-3-60    | 3.0       | 2.24      | 3.8  | 25   | 15.0                  | 10.0                 | 25.0    | 25.1  | 36.1  | 40    |       |    |
|                 |             | 2.4†      | 1.79      | 11.0 | 35   | 15.0                  | 11.3                 | 26.3    | 73.0  | 105.0 | 110   |       |    |
|                 |             | 2.4       | 1.79      | 5.8  | 35   | 15.0                  | 11.3                 | 26.3    | 73.0  | 98.5  | 100   |       |    |
| AAHC35CHA       | FAS091, 120 | 208-3-60  | 2.9       | 2.16 | 7.5  | 35                    | 15.0                 | 11.3    | 26.3  | 73.0  | 100.6 | 110   |    |
|                 |             |           | 3.7       | 2.76 | 10.6 | 35                    | 15.0                 | 11.3    | 26.3  | 73.0  | 104.5 | 110   |    |
|                 |             |           | 2.4†      | 1.79 | 11.0 | 35                    | 20.0                 | 15.0    | 35.0  | 84.2  | 119.0 | 125   |    |
|                 |             |           | 2.4       | 1.79 | 5.8  | 35                    | 20.0                 | 15.0    | 35.0  | 84.2  | 112.5 | 125   |    |
|                 |             | 240-3-60  | 2.9       | 2.16 | 7.5  | 35                    | 20.0                 | 15.0    | 35.0  | 84.2  | 114.6 | 125   |    |
|                 |             |           | 3.7       | 2.76 | 10.6 | 35                    | 20.0                 | 15.0    | 35.0  | 84.2  | 118.5 | 125   |    |
|                 |             |           | 2.4       | 1.79 | 2.6  | 35                    | 20.0                 | 15.0    | 35.0  | 42.1  | 55.9  | 60    |    |
|                 |             |           | 2.9       | 2.16 | 3.4  | 35                    | 20.0                 | 15.0    | 35.0  | 42.1  | 56.9  | 60    |    |
|                 |             | AAHC35CLA | 480-3-60  | 3.7  | 2.76 | 4.8                   | 35                   | 20.0    | 15.0  | 35.0  | 42.1  | 58.6  | 60 |
|                 |             |           |           | 2.0  | 1.49 | 2.4                   | 35                   | 20.0    | 15.0  | 35.0  | 35.1  | 46.9  | 50 |
|                 |             |           |           | 3.0  | 2.24 | 3.8                   | 35                   | 20.0    | 15.0  | 35.0  | 35.1  | 48.7  | 50 |
|                 |             | AAHC35CSA | 575-3-60  | 3.0  | 2.24 | 3.8                   | 35                   | 20.0    | 15.0  | 35.0  | 35.1  | 48.7  | 50 |

### LEGEND

**FLA** — Full Load Amps

**Hp** — Horsepower

**MCA** — Minimum Circuit Amps

**MOCP** — Maximum Overcurrent Protection (Amps)

\* Values shown are for single-point connection of electric heat accessory and air handler.

† Single-phase motors. All other motors are 3-phase.

### NOTES:

- Electrical resistance heaters are rated at 240 v, 480 v, or 575 v. To determine heater capacity (kW) at unit nameplate multiply the 240-v, 480-v, or 575-v capacity (kW) by the factor shown in the table below for the unit voltage.

| HEATER RATING VOLTAGE | ACTUAL HEATER VOLTAGE |       |       |     |       |      |       |     |       |     |       |
|-----------------------|-----------------------|-------|-------|-----|-------|------|-------|-----|-------|-----|-------|
|                       | 200                   | 208   | 230   | 240 | 400   | 440  | 460   | 480 | 550   | 575 | 600   |
| 240                   | 0.694                 | 0.751 | 0.918 | 1   | —     | —    | —     | —   | —     | —   | —     |
| 480                   | —                     | —     | —     | —   | 0.694 | 0.84 | 0.918 | 1   | —     | —   | —     |
| 575                   | —                     | —     | —     | —   | —     | —    | —     | —   | 0.915 | 1   | 1.089 |

- The following equation converts kW of heat energy to Btuh:  
kW x 3,412 = Btuh.

- Heater contactor coils are 24 v and require 8 va holding current.

- Electric heaters are tested and ETL approved at maximum total external static pressure of 1.9 in. wg.

- MCA and MOCP values apply to both standard and alternate factory-supplied motors.

- Approximate shipping weight for heaters that fit 6 to 10 ton units is 55 lb (25 kg) each. Approximate shipping weight for heaters that fit 12.5 to 15 ton units is 60 lb (27 kg) each.



# ELECTRICAL DATA (cont.)

## ELECTRIC HEATER DATA (cont)

| HEATER PART NO. | SIZE             | V-PH-Hz  | FAN MOTOR |      |      | ELECTRIC HEATER(S)    |                      |         |       |      |       |       |
|-----------------|------------------|----------|-----------|------|------|-----------------------|----------------------|---------|-------|------|-------|-------|
|                 |                  |          | Hp        | kW   | FLA  | Nominal Capacity (kW) | Actual Capacity (kW) |         |       | FLA  | MCA*  | MOCP* |
|                 |                  |          |           |      |      |                       | Stage 1              | Stage 2 | Total |      |       |       |
| AAHC10BHA       | FAS150, 180, 240 | 208-3-60 | 2.9       | 2.16 | 7.5  | 10                    | 7.5                  | —       | 7.5   | 20.8 | 35.4  | 40    |
|                 |                  |          | 3.7       | 2.76 | 10.6 | 10                    | 7.5                  | —       | 7.5   | 20.8 | 39.3  | 40    |
|                 |                  |          | 5.0       | 3.73 | 14.6 | 10                    | 7.5                  | —       | 7.5   | 20.8 | 41.3  | 50    |
|                 |                  | 240-3-60 | 2.9       | 2.16 | 7.5  | 10                    | 10.0                 | —       | 10.0  | 24.1 | 39.4  | 40    |
|                 |                  |          | 3.7       | 2.76 | 10.6 | 10                    | 10.0                 | —       | 10.0  | 24.1 | 43.4  | 50    |
|                 |                  |          | 5.0       | 3.73 | 12.8 | 10                    | 10.0                 | —       | 10.0  | 24.1 | 46.1  | 50    |
| AAHC10BLA       | 480-3-60         | 2.9      | 2.16      | 3.4  | 10   | 10.0                  | —                    | 10.0    | 12.0  | 19.3 | 20    |       |
|                 |                  | 3.7      | 2.76      | 4.8  | 10   | 10.0                  | —                    | 10.0    | 12.0  | 21.0 | 25    |       |
|                 |                  | 5.0      | 3.73      | 6.4  | 10   | 10.0                  | —                    | 10.0    | 12.0  | 23.0 | 25    |       |
| AAHC10BSA       | 575-3-60         | 3.0      | 2.24      | 3.8  | 10   | 10.0                  | —                    | 10.0    | 10.0  | 17.3 | 20    |       |
|                 |                  | 5.0      | 3.73      | 5.1  | 10   | 10.0                  | —                    | 10.0    | 10.0  | 18.9 | 20    |       |
| AAHC20BHA       | FAS150, 180, 240 | 208-3-60 | 2.9       | 2.16 | 7.5  | 20                    | 14.9                 | —       | 14.9  | 41.5 | 61.3  | 70    |
|                 |                  |          | 3.7       | 2.76 | 10.6 | 20                    | 14.9                 | —       | 14.9  | 41.5 | 65.1  | 70    |
|                 |                  |          | 5.0       | 3.73 | 14.6 | 20                    | 14.9                 | —       | 14.9  | 41.5 | 70.1  | 80    |
|                 |                  | 240-3-60 | 2.9       | 2.16 | 7.5  | 20                    | 19.9                 | —       | 19.9  | 47.9 | 69.2  | 70    |
|                 |                  |          | 3.7       | 2.76 | 10.6 | 20                    | 19.9                 | —       | 19.9  | 47.9 | 73.1  | 80    |
|                 |                  |          | 5.0       | 3.73 | 12.8 | 20                    | 19.9                 | —       | 19.9  | 47.9 | 75.8  | 80    |
| AAHC20BLA       | 480-3-60         | 2.9      | 2.16      | 3.4  | 20   | 20.0                  | —                    | 20.0    | 24.1  | 34.3 | 35    |       |
|                 |                  | 3.7      | 2.76      | 4.8  | 20   | 20.0                  | —                    | 20.0    | 24.1  | 36.1 | 40    |       |
|                 |                  | 5.0      | 3.73      | 6.4  | 20   | 20.0                  | —                    | 20.0    | 24.1  | 38.1 | 40    |       |
| AAHC20BSA       | 575-3-60         | 3.0      | 2.24      | 3.8  | 20   | 20.0                  | —                    | 20.0    | 20.1  | 29.9 | 30    |       |
|                 |                  | 5.0      | 3.73      | 5.1  | 20   | 20.0                  | —                    | 20.0    | 20.1  | 31.5 | 35    |       |
| AAHC30BHA       | FAS150, 180, 240 | 208-3-60 | 2.9       | 2.16 | 7.5  | 30                    | 15.0                 | 7.5     | 22.5  | 62.5 | 87.5  | 90    |
|                 |                  |          | 3.7       | 2.76 | 10.6 | 30                    | 15.0                 | 7.5     | 22.5  | 62.5 | 91.4  | 100   |
|                 |                  |          | 5.0       | 3.73 | 14.6 | 30                    | 15.0                 | 7.5     | 22.5  | 62.5 | 96.4  | 100   |
|                 |                  | 240-3-60 | 2.9       | 2.16 | 7.5  | 30                    | 20.0                 | 10.0    | 30.0  | 72.2 | 99.6  | 100   |
|                 |                  |          | 3.7       | 2.76 | 10.6 | 30                    | 20.0                 | 10.0    | 30.0  | 72.2 | 103.5 | 110   |
|                 |                  |          | 5.0       | 3.73 | 12.8 | 30                    | 20.0                 | 10.0    | 30.0  | 72.2 | 106.2 | 110   |
| AAHC30BLA       | 480-3-60         | 2.9      | 2.16      | 3.4  | 30   | 20.0                  | 10.0                 | 30.0    | 36.1  | 49.4 | 50    |       |
|                 |                  | 3.7      | 2.76      | 4.8  | 30   | 20.0                  | 10.0                 | 30.0    | 36.1  | 51.1 | 60    |       |
|                 |                  | 5.0      | 3.73      | 6.4  | 30   | 20.0                  | 10.0                 | 30.0    | 36.1  | 53.1 | 60    |       |
| AAHC30BSA       | 575-3-60         | 3.0      | 2.24      | 3.8  | 30   | 20.0                  | 10.0                 | 30.0    | 30.1  | 42.4 | 50    |       |
|                 |                  | 5.0      | 3.73      | 5.1  | 30   | 20.0                  | 10.0                 | 30.0    | 30.1  | 44.0 | 50    |       |

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Horsepower
- MCA** — Minimum Circuit Amps
- MOCP** — Maximum Overcurrent Protection (Amps)

\* Values shown are for single-point connection of electric heat accessory and air handler.

† Single-phase motors. All other motors are 3-phase.

**NOTES:**

1. Electrical resistance heaters are rated at 240 v, 480 v, or 575 v. To determine heater capacity (kW) at unit nameplate multiply the 240-v, 480-v, or 575-v capacity (kW) by the factor shown in the table below for the unit voltage.

| HEATER RATING VOLTAGE | ACTUAL HEATER VOLTAGE |       |       |     |       |      |       |     |       |     |       |
|-----------------------|-----------------------|-------|-------|-----|-------|------|-------|-----|-------|-----|-------|
|                       | 200                   | 208   | 230   | 240 | 400   | 440  | 460   | 480 | 550   | 575 | 600   |
| 240                   | 0.694                 | 0.751 | 0.918 | 1   | —     | —    | —     | —   | —     | —   | —     |
| 480                   | —                     | —     | —     | —   | 0.694 | 0.84 | 0.918 | 1   | —     | —   | —     |
| 575                   | —                     | —     | —     | —   | —     | —    | —     | —   | 0.915 | 1   | 1.089 |

2. The following equation converts kW of heat energy to Btuh: kW x 3,412 = Btuh.
3. Heater contactor coils are 24 v and require 8 va holding current.
4. Electric heaters are tested and ETL approved at maximum total external static pressure of 1.9 in. wg.
5. MCA and MOCP values apply to both standard and alternate factory-supplied motors.
6. Approximate shipping weight for heaters that fit 6 to 10 ton units is 55 lb (25 kg) each. Approximate shipping weight for heaters that fit 12.5 to 20 ton units is 60 lb (27 kg) each.



# ELECTRICAL DATA (CONT.)

## ELECTRIC HEATER DATA (cont.)

| HEATER PART NO. | SIZE       | V-PH-Hz   | FAN MOTOR |      |      | ELECTRIC HEATER(S)    |                      |         |       |       | MCA*  | MOCP* |    |
|-----------------|------------|-----------|-----------|------|------|-----------------------|----------------------|---------|-------|-------|-------|-------|----|
|                 |            |           | Hp        | kW   | FLA  | Nominal Capacity (kW) | Actual Capacity (kW) |         |       | FLA   |       |       |    |
|                 |            |           |           |      |      |                       | Stage 1              | Stage 2 | Total |       |       |       |    |
| AAHC50DHA       | FAS180-240 | 208-3-60  | 3.7       | 2.76 | 10.2 | 50                    | 22.6                 | 15.0    | 37.6  | 104.3 | 143.1 | 150   |    |
|                 |            |           | 5.0       | 3.73 | 14.6 | 50                    | 22.6                 | 15.0    | 37.6  | 104.3 | 148.6 | 150   |    |
|                 |            |           | 7.5       | 5.59 | 21.5 | 50                    | 22.6                 | 15.0    | 37.6  | 104.3 | 157.2 | 175   |    |
|                 |            | 240-3-60  | 3.7       | 2.76 | 10.2 | 50                    | 30.0                 | 20.0    | 50.0  | 120.3 | 163.1 | 175   |    |
|                 |            |           | 5.0       | 3.73 | 12.8 | 50                    | 30.0                 | 20.0    | 50.0  | 120.3 | 166.4 | 175   |    |
|                 |            |           | 7.5       | 5.59 | 19.4 | 50                    | 30.0                 | 20.0    | 50.0  | 120.3 | 174.6 | 200   |    |
|                 |            | AAHC50DLA | 480-3-60  | 3.7  | 2.76 | 4.8                   | 50                   | 30.0    | 20.0  | 50.0  | 60.1  | 81.2  | 90 |
|                 |            |           |           | 5.0  | 3.73 | 6.4                   | 50                   | 30.0    | 20.0  | 50.0  | 60.1  | 83.2  | 90 |
|                 |            |           |           | 7.5  | 5.59 | 9.7                   | 50                   | 30.0    | 20.0  | 50.0  | 60.1  | 87.3  | 90 |
| AAHC50DSA       | 575-3-60   | 3.0       | 2.24      | 3.8  | 50   | 30.0                  | 20.0                 | 50.0    | 50.2  | 67.5  | 70    |       |    |
|                 |            | 5.0       | 3.73      | 5.1  | 50   | 30.0                  | 20.0                 | 50.0    | 50.2  | 69.1  | 70    |       |    |
|                 |            | 7.5       | 5.59      | 7.8  | 50   | 30.0                  | 20.0                 | 50.0    | 50.2  | 72.5  | 80    |       |    |
| AAHC20EHA       | FAS300     | 208-3-60  | 7.5       | 5.59 | 19.8 | 20                    | 14.9                 | —       | 14.9  | 41.5  | 78.7  | 80    |    |
|                 |            |           | 10.0      | 7.46 | 28.2 | 20                    | 14.9                 | —       | 14.9  | 41.5  | 87.1  | 100   |    |
|                 |            | 240-3-60  | 7.5       | 5.59 | 19.4 | 20                    | 19.9                 | —       | 19.9  | 47.9  | 81.4  | 90    |    |
|                 |            |           | 10.0      | 7.46 | 26.8 | 20                    | 19.9                 | —       | 19.9  | 47.9  | 93.3  | 110   |    |
|                 |            | 480-3-60  | 7.5       | 5.59 | 9.7  | 20                    | 20.0                 | —       | 20.0  | 24.1  | 42.2  | 50    |    |
|                 |            |           | 10.0      | 7.46 | 13.4 | 20                    | 20.0                 | —       | 20.0  | 24.1  | 46.8  | 50    |    |
| AAHC20ELA       | 575-3-60   | 7.5       | 5.59      | 7.8  | 20   | 20.0                  | —                    | 20.0    | 20.1  | 34.9  | 35    |       |    |
|                 |            | 10.0      | 7.46      | 10.3 | 20   | 20.0                  | —                    | 20.0    | 20.1  | 38.0  | 40    |       |    |
| AAHC20ESA       | FAS300     | 208-3-60  | 7.5       | 5.59 | 19.8 | 40                    | 15.0                 | 15.0    | 30.0  | 83.4  | 131.1 | 150   |    |
|                 |            |           | 10.0      | 7.46 | 28.0 | 40                    | 15.0                 | 15.0    | 30.0  | 83.4  | 139.5 | 150   |    |
|                 |            | 240-3-60  | 7.5       | 5.59 | 19.4 | 40                    | 20.0                 | 20.0    | 40.0  | 96.2  | 144.5 | 150   |    |
|                 |            |           | 10.0      | 7.46 | 26.8 | 40                    | 20.0                 | 20.0    | 40.0  | 96.2  | 153.8 | 175   |    |
| AAHC40EHA       | 480-3-60   | 7.5       | 5.59      | 9.7  | 40   | 20.0                  | 20.0                 | 40.0    | 47.9  | 71.9  | 80    |       |    |
|                 |            | 10.0      | 7.46      | 13.4 | 40   | 20.0                  | 20.0                 | 40.0    | 47.9  | 76.6  | 80    |       |    |
| AAHC40ELA       | 575-3-60   | 7.5       | 5.59      | 7.8  | 40   | 20.0                  | 20.0                 | 40.0    | 40.2  | 60.0  | 60    |       |    |
|                 |            | 10.0      | 7.46      | 10.3 | 40   | 20.0                  | 20.0                 | 40.0    | 40.2  | 63.1  | 70    |       |    |

### LEGEND

- FLA** — Full Load Amps
- Hp** — Horsepower
- MCA** — Minimum Circuit Amps
- MOCP** — Maximum Overcurrent Protection (Amps)

\* Values shown are for single-point connection of electric heat accessory and air handler.

† Single-phase motors. All other motors are 3-phase.

### NOTES:

1. Electrical resistance heaters are rated at 240 v, 480 v, or 575 v. To determine heater capacity (kW) at unit nameplate multiply the 240-v, 480-v, or 575-v capacity (kW) by the factor shown in the table below for the unit voltage.

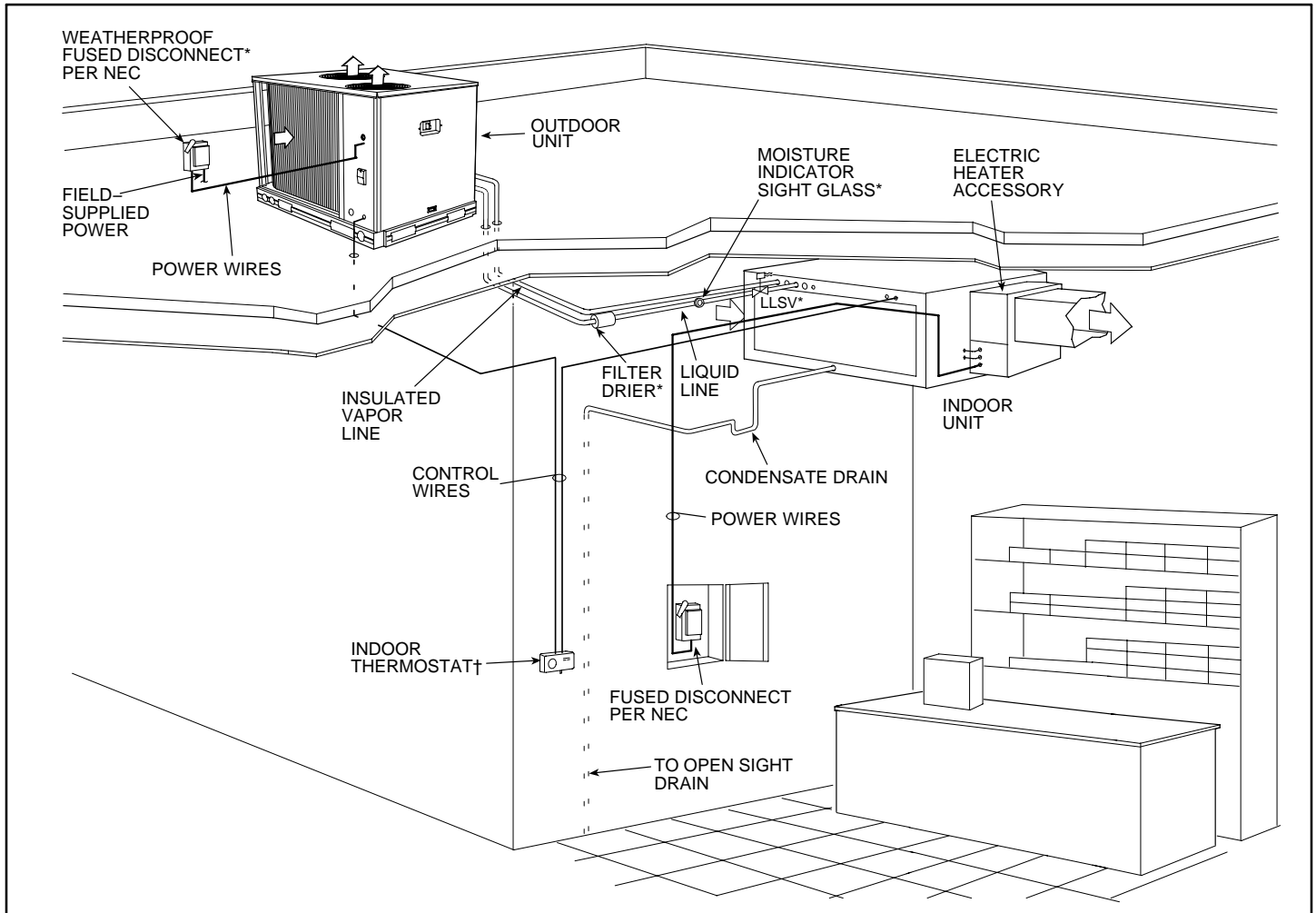
| HEATER RATING VOLTAGE | ACTUAL HEATER VOLTAGE |       |       |     |       |      |       |     |       |     |       |
|-----------------------|-----------------------|-------|-------|-----|-------|------|-------|-----|-------|-----|-------|
|                       | 200                   | 208   | 230   | 240 | 400   | 440  | 460   | 480 | 550   | 575 | 600   |
| 240                   | 0.694                 | 0.751 | 0.918 | 1   | —     | —    | —     | —   | —     | —   | —     |
| 480                   | —                     | —     | —     | —   | 0.694 | 0.84 | 0.918 | 1   | —     | —   | —     |
| 575                   | —                     | —     | —     | —   | —     | —    | —     | —   | 0.915 | 1   | 1.089 |

2. The following equation converts kW of heat energy to Btuh:  
kW x 3,412 = Btuh.
3. Heater contactor coils are 24 v and require 8 va holding current.
4. Electric heaters are tested and ETL approved at maximum total external static pressure of 1.9 in. wg.
5. MCA and MOCP values apply to both standard and alternate factory-supplied motors.
6. Approximate shipping weight for heaters that fit 6 to 10 ton units is 55 lb (25 kg) each. Approximate shipping weight for heaters that fit 12.5 to 20 ton units is 60 lb (27 kg) each.





# TYPICAL PIPING AND WIRING



## LEGEND:

NEC — National Electrical Code

TXV — Thermostatic Expansion Valve

\* Field-supplied

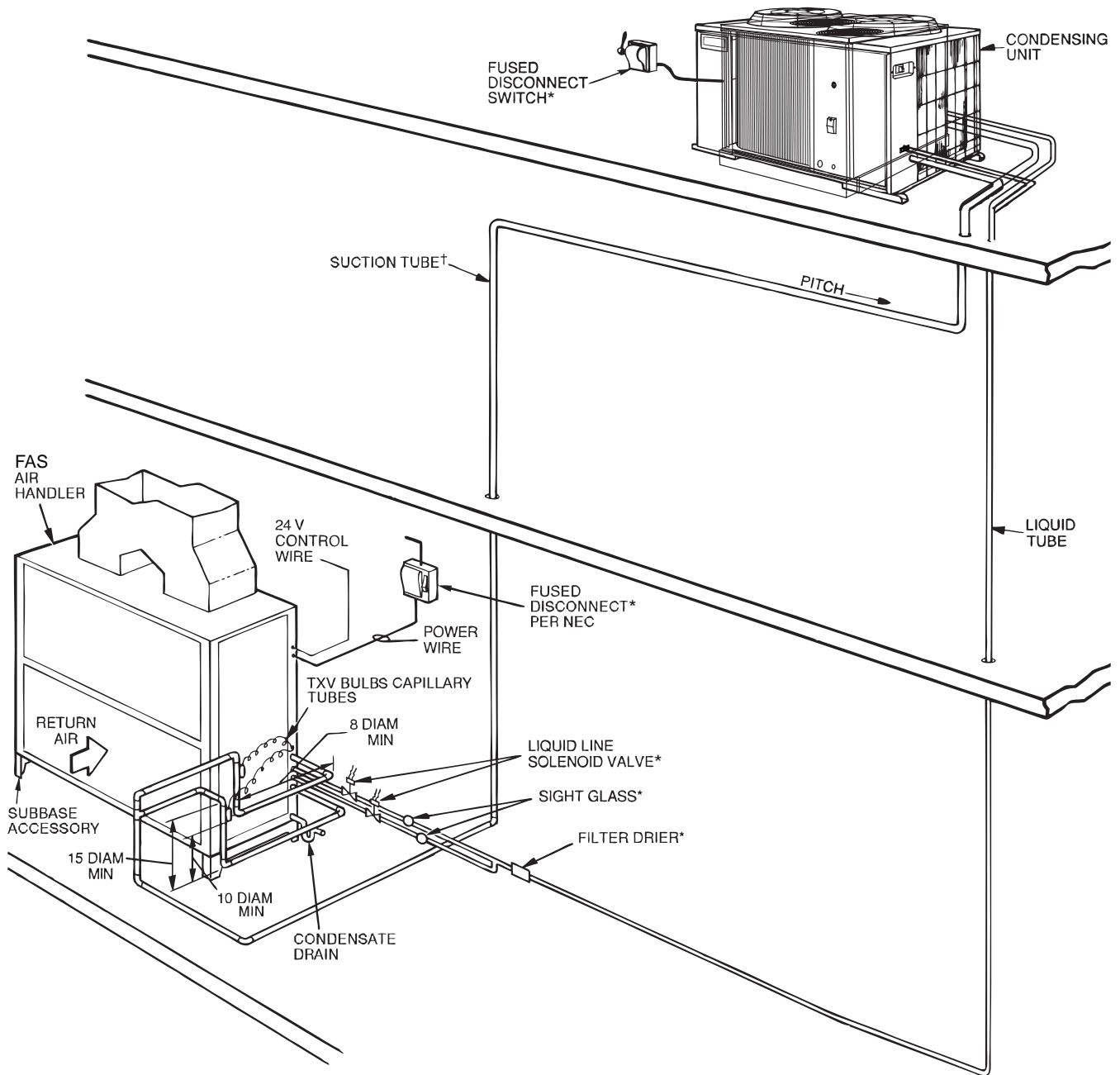
† Double riser may be required. Consult condensing unit product data catalog for details.

## NOTES:

1. All piping must follow standard refrigerant piping techniques.
2. All wiring must comply with the applicable local and national codes.
3. Wiring and piping shown are general points-of-connection guides only and are not intended for, or to include all details for, a specific installation.
4. Liquid line solenoid valve (solenoid drop control) is recommended to prevent refrigerant migration to the compressor.
5. Internal factory-supplied TXVs not shown.

# TYPICAL PIPING AND WIRING (cont.)

## VERTICAL INSTALLATION – FAS (TYPICAL)



C09055

### LEGEND:

LLSV – Liquid Line Solenoid Valve

NEC – National Electrical Code

TXV – Thermostatic Expansion Valve

\* Field-supplied

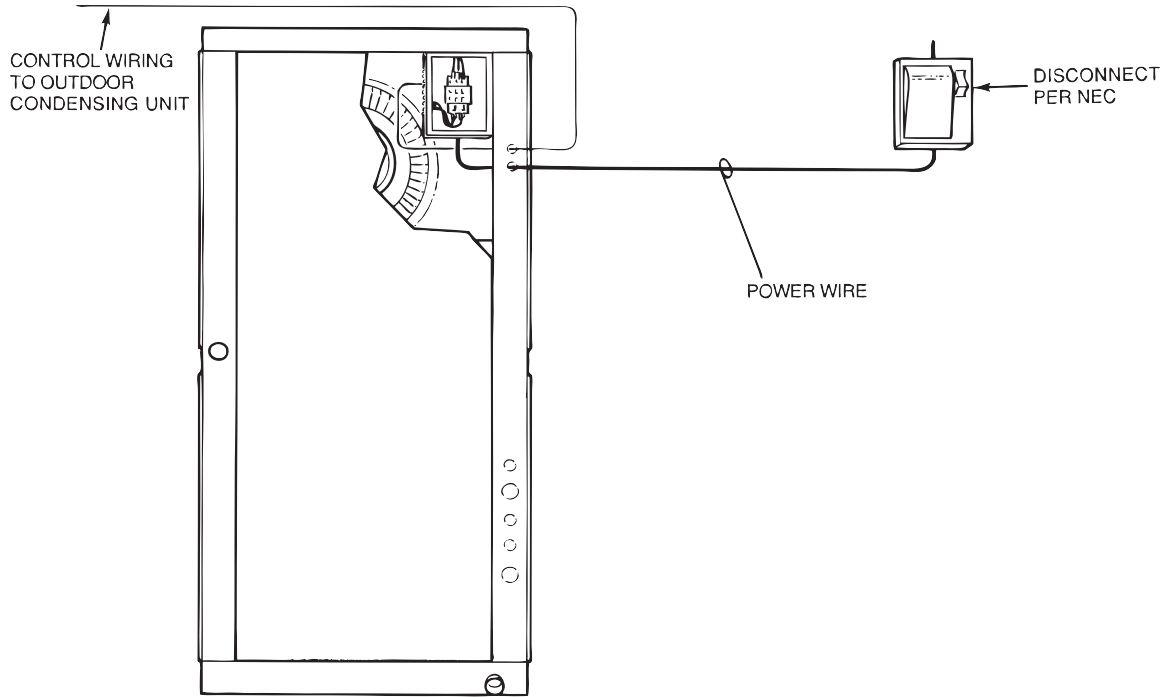
† Double riser may be required Consult condensing unit product data catalog for details.

### NOTES:

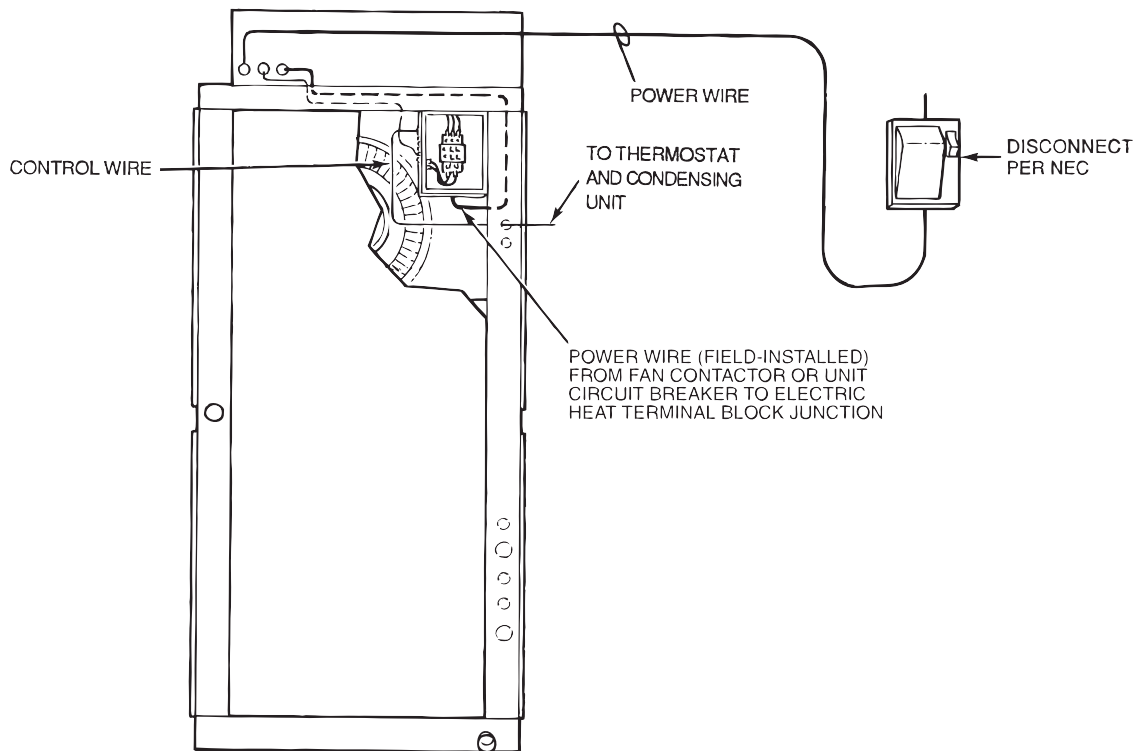
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5. Internal factory-supplied TXVs not shown.

# TYPICAL PIPING AND WIRING (cont.)

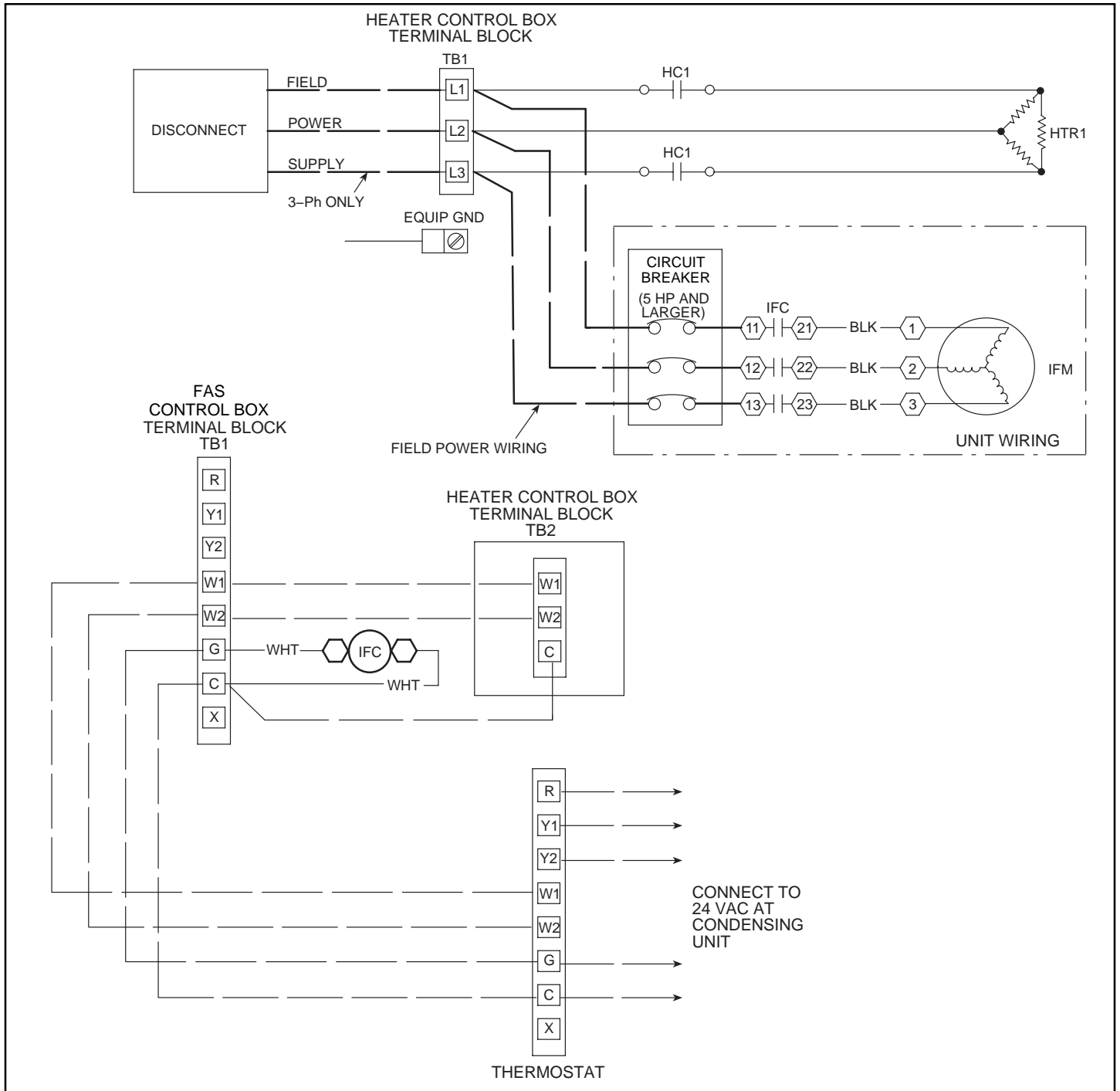
## WIRING ROUTING, BASE UNIT FAS



## WIRING ROUTING, UNIT WITH ELECTRIC HEAT - FAS



# TYPICAL CONTROL WIRING SCHEMATIC



C09050

# APPLICATION DATA

## Operating limits

Maximum fan speed

FAS072-150 ..... 1200 RPM(20 R/S)

## General

**IMPORTANT:** Do not bury refrigerant piping underground.

Select equipment to match or to be slightly less than peak load. This provides better humidity control, less unit cycling, and less part-load operation. Equipment should be selected to perform at no less than 300 cfm/ton (40 L/s per kW).

The air handler fan must always be operating when the condensing unit is operating.

Ductwork should be sized according to unit size, not building load. For larger units with two fans, a split duct

transition is recommended at the fan outlets, but a plenum can be used with slight reduction in external static pressure capability.

For variable air volume (VAV) systems with supply-to-return air recycling, use the equipment room as a return air plenum.

## Hot gas bypass

Hot gas bypass may be required for low load control in certain applications. Hot gas should only be used during first stage cooling operation and should be applied to all evaporator circuits that are active at that time. To apply hot gas bypass, the FAS unit will require a field-installed auxiliary side connector(s). See the Auxiliary Side Connector Data table for part numbers.

### AUXILIARY SIDE CONNECTOR DATA

| UNIT FAS | P/N     | INLET/OUTLET DIAMETER — ODF (in.) | AUXILIARY (Hot Gas) DIAMETER — ODF (in.) |
|----------|---------|-----------------------------------|--|
| 072      | 1178747 | 1 <sup>1</sup> / <sub>8</sub>     | 5 <sup>5</sup> / <sub>8</sub>            |
| 091      | 1178748 | 1 <sup>3</sup> / <sub>8</sub>     | 7 <sup>7</sup> / <sub>8</sub>            |
| 120      | 1178747 | 1 <sup>1</sup> / <sub>8</sub>     | 5 <sup>5</sup> / <sub>8</sub>            |
| 150      | 1178747 | 1 <sup>1</sup> / <sub>8</sub>     | 5 <sup>5</sup> / <sub>8</sub>            |
| 180      | 1178747 | 1 <sup>1</sup> / <sub>8</sub>     | 5 <sup>5</sup> / <sub>8</sub>            |
| 240      | 1178747 | 1 <sup>1</sup> / <sub>8</sub>     | 5 <sup>5</sup> / <sub>8</sub>            |
| 300      | 1178748 | 1 <sup>3</sup> / <sub>8</sub>     | 7 <sup>7</sup> / <sub>8</sub>            |

### FACTORY-INSTALLED NOZZLE AND DISTRIBUTOR DATA

| UNIT | COIL TYPE | TXV Qty...Part No.* | DISTRIBUTOR Qty...Part No.† | FEEDER TUBES PER DISTRIBUTOR Qty...Size (in.) | NOZZLE Qty...Part No. |
|------|-----------|---------------------|-----------------------------|---|-----------------------|
| 072  | 4 Row     | 1...TDEBX8          | 1...1116                    | 12... <sup>1</sup> / <sub>4</sub>             | 1...E5                |
| 091  | 4 Row     | 1...TDEBX8          | 1...1126                    | 15... <sup>1</sup> / <sub>4</sub>             | 1...C6                |
| 120  | 4 Row     | 2...TDEX6           | 2...1115                    | 9... <sup>1</sup> / <sub>4</sub>              | 2...E4                |
| 150  | 4 Row     | 2...TDEBX8          | 2...1115                    | 12... <sup>3</sup> / <sub>16</sub>            | 2...E5                |
| 180  | 4 Row     | 2...TDEBX8          | 2...1126                    | 16... <sup>1</sup> / <sub>4</sub>             | 2...C6                |
| 240  | 4 Row     | 2...TDEBX11         | 2...1126                    | 18... <sup>3</sup> / <sub>16</sub>            | 2...C8                |
| 300  | 4 Row     | 2...TDEBX11         | 2...1126                    | 20... <sup>3</sup> / <sub>16</sub>            | 2...C15               |

#### LEGEND

TXV — Thermostatic Expansion Valve

\* Danfoss part numbers shown.

† Sporlan Valve Co. part numbers shown.

**NOTE:** Hot gas bypass applications require field-supplied auxiliary side connector.

# APPLICATION DATA (cont.)

## FAN MOTOR DATA STANDARD MOTOR — U.S.

| UNIT                      | FAS072 | FAS091 | FAS120 | FAS150 | FAS180 | FAS240 | FAS300 |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| 208/230-1-60              |        |        |        |        |        |        |        |
| Speed (rpm)               | 1725   | 1725   | —      | —      | —      | —      | —      |
| Hp                        | 1.3    | 2.4    | —      | —      | —      | —      | —      |
| Frame (NEMA)              | 56Y    | 56Y    | —      | —      | —      | —      | —      |
| Shaft Dia (in.)           | 5/8    | 5/8    | —      | —      | —      | —      | —      |
| 208/230-3-60 and 460-3-60 |        |        |        |        |        |        |        |
| Speed (rpm)               | 1725   | 1725   | 1725   | 1725   | 1725   | 1745   | 1745   |
| Hp                        | 2.4    | 2.4    | 2.4    | 2.9    | 3.7    | 5.0    | 7.5    |
| Frame (NEMA)              | 56Y    | 56Y    | 56Y    | 56Y    | 56Y    | S184T  | S213T  |
| Shaft Dia (in.)           | 5/8    | 5/8    | 5/8    | 7/8    | 7/8    | 1 1/8  | 1 3/8  |
| 575-3-60                  |        |        |        |        |        |        |        |
| Speed (rpm)               | 1725   | 1725   | 1725   | 1725   | 1725   | 1745   | 1755   |
| Hp                        | 1.0    | 2.0    | 2.0    | 3.0    | 3.0    | 5.0    | 7.5    |
| Frame (NEMA)              | 56     | 56HZ   | 56HZ   | 56HZ   | 56HZ   | 184T   | S213T  |
| Shaft Dia (in.)           | 5/8    | 7/8    | 7/8    | 7/8    | 7/8    | 1 1/8  | 1 3/8  |

**LEGEND:**

**NEMA** — National Electrical Manufacturers Association (U.S.A.)

## HIGH STATIC MOTOR — U.S.

| UNIT                  | FAS072 | FAS091 | FAS120 | FAS150 | FAS180 | FAS240 | FAS300 |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|
| 208/230-1-60          |        |        |        |        |        |        |        |
| Speed (rpm)           | 1725   | 1725   | —      | —      | —      | —      | —      |
| Hp                    | 2.4    | 2.4    | —      | —      | —      | —      | —      |
| Frame (NEMA)          | 56Y    | 56Y    | —      | —      | —      | —      | —      |
| Shaft Dia (in.)       | 5/8    | 5/8    | —      | —      | —      | —      | —      |
| 230-3-60 and 460-3-60 |        |        |        |        |        |        |        |
| Speed (rpm)           | 1725   | 1725   | 1725   | 1725   | 1725   | 1745   | 1745   |
| Hp                    | 2.9    | 2.9    | 3.7    | 3.7    | 5.0    | 7.5    | 10.0   |
| Frame (NEMA)          | 56Y    | 56Y    | Y56Y   | Y56Y   | S184T  | S213T  | S215T  |
| Shaft Dia (in.)       | 7/8    | 7/8    | 7/8    | 7/8    | 1 1/8  | 1 3/8  | 1 3/8  |
| 575-3-60              |        |        |        |        |        |        |        |
| Speed (rpm)           | 1725   | 1725   | 1725   | 1745   | 1745   | 1755   | 1750   |
| Hp                    | 2.0    | 3.0    | 3.0    | 5.0    | 5.0    | 7.5    | 10.0   |
| Frame (NEMA)          | 56HZ   | 56HZ   | 56HZ   | 184T   | 184T   | S213T  | D215T  |
| Shaft Dia (in.)       | 7/8    | 7/8    | 7/8    | 1 1/8  | 1 1/8  | 1 3/8  | 1 3/8  |

**LEGEND:**

**NEMA** — National Electrical Manufacturers Association (U.S.A.)

## MOTOR EFFICIENCY FAS

| MOTOR HP | EPACT MINIMUM | MOTOR EFFICIENCY |
|----------|---------------|------------------|
| 1.3*     | —             | 70%              |
| 2.4      | —             | 82%              |
| 2.9      | —             | 82%              |
| 3.7      | —             | 84%              |
| 5.0      | 87.5%         | 87.5%            |
| 7.5      | 88.5%         | 88.5%            |
| 10.0     | 89.5%         | 89.5%            |

**LEGEND:**

**EPACT** — Energy Policy and Conservation Act of 1992

\* Single-phase only.

# APPLICATION DATA (cont.)

## FAN MOTOR DATA (cont) STANDARD MOTOR — SI

| UNIT                      | FAS072 | FAS091 | FAS120 | FAS150 | FAS180 | FAS240 | FAS300 |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| 208/230-1-60              |        |        |        |        |        |        |        |
| Speed (r/s)               | 28.75  | 28.75  | —      | —      | —      | —      | —      |
| Shaft kW                  | 0.97   | 1.79   | —      | —      | —      | —      | —      |
| Frame (NEMA)              | 56Y    | 56Y    | —      | —      | —      | —      | —      |
| Shaft Dia (mm)            | 15.9   | 15.9   | —      | —      | —      | —      | —      |
| 208/230-3-60 and 460-3-60 |        |        |        |        |        |        |        |
| Speed (r/s)               | 28.75  | 28.75  | 28.75  | 28.75  | 28.75  | 29.08  | 29.08  |
| Shaft kW                  | 1.79   | 1.79   | 1.79   | 2.16   | 2.76   | 3.73   | 5.60   |
| Frame (NEMA)              | 56Y    | 56Y    | 56Y    | 56Y    | 56Y    | S184T  | S213T  |
| Shaft Dia (mm)            | 15.9   | 15.9   | 15.9   | 22.2   | 22.2   | 28.6   | 34.9   |
| 575-3-60                  |        |        |        |        |        |        |        |
| Speed(r/s)                | 28.75  | 28.75  | 28.75  | 28.75  | 28.75  | 29.08  | 29.25  |
| Shaft kW                  | 0.75   | 1.49   | 1.49   | 2.24   | 2.24   | 3.73   | 5.60   |
| Frame (NEMA)              | 56     | 56HZ   | 56HZ   | 56HZ   | 56HZ   | 184T   | S213T  |
| Shaft Dia (mm)            | 15.9   | 22.2   | 22.2   | 22.2   | 22.2   | 28.6   | 34.9   |

**LEGEND:**

**NEMA** — National Electrical Manufacturers Association (U.S.A.)

## HIGH STATIC MOTOR — SI

| UNIT                      | FAS072 | FAS091 | FAS120 | FAS150 | FAS180 | FAS240 | FAS300 |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| 208/230-1-60              |        |        |        |        |        |        |        |
| Speed (r/s)               | 28.75  | 28.75  | —      | —      | —      | —      | —      |
| Shaft kW                  | 1.79   | 1.79   | —      | —      | —      | —      | —      |
| Frame (NEMA)              | 56Y    | 56Y    | —      | —      | —      | —      | —      |
| Shaft Dia (mm)            | 15.9   | 15.9   | —      | —      | —      | —      | —      |
| 208/230-3-60 and 460-3-60 |        |        |        |        |        |        |        |
| Speed(r/s)                | 28.75  | 28.75  | 28.75  | 28.75  | 29.08  | 29.08  | 29.17  |
| Shaft kW                  | 2.16   | 2.16   | 2.76   | 2.76   | 3.73   | 5.60   | 7.46   |
| Frame (NEMA)              | 56Y    | 56Y    | Y56Y   | Y56Y   | S184T  | S213T  | S215T  |
| Shaft Dia (mm)            | 22.2   | 22.2   | 22.2   | 22.2   | 28.6   | 34.9   | 34.9   |
| 575-3-60                  |        |        |        |        |        |        |        |
| Speed (r/s)               | 28.75  | 28.75  | 28.75  | 29.08  | 29.08  | 29.25  | 29.17  |
| Shaft kW                  | 1.50   | 2.24   | 2.24   | 3.73   | 3.73   | 5.60   | 7.46   |
| Frame (NEMA)              | 56HZ   | 56HZ   | 56HZ   | 184T   | 184T   | S213T  | D215T  |
| Shaft Dia (mm)            | 22.2   | 22.2   | 22.2   | 28.6   | 28.6   | 34.9   | 34.9   |

**LEGEND:**

**NEMA** — National Electrical Manufacturers Association (U.S.A.)

# APPLICATION DATA (cont.)

## STANDARD DRIVE DATA, 60 Hz — U.S.

| UNIT  | FAS072          | FAS091          | FAS120          | FAS150            | FAS180            | FAS240            | FAS300               |
|---|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|----------------------|
| <b>MOTOR DRIVE</b>  |                 |                 |                 |                   |                   |                   |                      |
| Motor Pulley Pitch Diameter (in.)                         | 2.4-3.4         | 2.8-3.8         | 3.4-4.4         | 2.8-3.8           | 2.8-3.8           | 3.7-4.7           | 4.3-5.3              |
| Pulley Factory Setting<br>Full Turns Open                 | 2.5             | 2.5             | 2.5             | 2.5               | 2.5               | 3.0               | 3.0                  |
| <b>FAN DRIVE</b>  |                 |                 |                 |                   |                   |                   |                      |
| Pulley Pitch Dia (in.)                                    | 8.8             | 8.8             | 8.8             | 9.0               | 9.0               | 9.4               | 11.0                 |
| Pulley Bore (in.)   | 1               | 1               | 1               | 1 <sup>7/16</sup> | 1 <sup>7/16</sup> | 1 <sup>7/16</sup> | 1 <sup>15/16</sup>   |
| Belt No. — Section  | 1—A             | 1—A             | 1—A             | 1—A               | 1—A               | 1—B               | 2—B*                 |
| Belt Pitch (in.)  | 40.3            | 41.3            | 42.3            | 42.3              | 42.3              | 41.8              | (2) 42.8<br>(2) 43.8 |
| <b>FAN SPEEDS (rpm)</b>                                   |                 |                 |                 |                   |                   |                   |                      |
| Factory Settings  | 568             | 647             | 764             | 632               | 632               | 771               | 752                  |
| Range   | 470-666         | 549-745         | 666-863         | 537-728           | 537-728           | 679-863           | 682-841              |
| Max Allowable Speed (rpm)                                 | 1200            | 1200            | 1200            | 1200              | 1200              | 1200              | 1100                 |
| Change per 1/2 turn of<br>Moveable Motor Pulley<br>Flange | 19.6            | 19.6            | 19.7            | 19.1              | 19.1              | 15.3              | 13.1                 |
| <b>MAX FULL TURNS FROM<br/>CLOSED POSITION</b>            | 5               | 5               | 5               | 5                 | 5                 | 6                 | 6                    |
| <b>SHAFTS CENTER DISTANCE (in.)</b>                       | 10.44-<br>12.32 | 10.44-<br>12.32 | 10.44-<br>12.32 | 10.44-<br>12.32   | 10.44-<br>12.32   | 9.12-<br>10.99    | 6.67-<br>9.43        |

\* Four belts shipped with unit. Use correct set of 2 belts sized according to the pulley setting.

## MEDIUM-STATIC DRIVE DATA, 60 Hz — U.S.

| UNIT  | FAS072          | FAS091          | FAS120          | FAS150            | FAS180            | FAS240            | FAS300               |
|---|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|----------------------|
| <b>MOTOR DRIVE</b>  |                 |                 |                 |                   |                   |                   |                      |
| Motor Pulley Pitch Diameter (in.)                         | 3.4-4.4         | 3.4-4.4         | 3.4-4.4         | 3.4-4.4           | 3.7-4.7           | 4.3-5.3           | 4.3-5.3              |
| Pulley Factory Setting<br>Full Turns Open                 | 2.5             | 2.5             | 2.5             | 2.5               | 3.0               | 3.0               | 3.0                  |
| <b>FAN DRIVE</b>  |                 |                 |                 |                   |                   |                   |                      |
| Pulley Pitch Dia (in.)                                    | 8.8             | 8.0             | 8.0             | 8.2               | 8.6               | 9.4               | 9.4                  |
| Pulley Bore (in.)   | 1               | 1               | 1               | 1 <sup>7/16</sup> | 1 <sup>7/16</sup> | 1 <sup>7/16</sup> | 1 <sup>15/16</sup>   |
| Belt No. — Section  | 1—A             | 1—A             | 1—A             | 1—A               | 1—B               | 1—B               | 2—B*                 |
| Belt Pitch (in.)  | 42.3            | 40.3            | 40.3            | 41.3              | 41.8              | 41.8              | (2) 38.8<br>(2) 39.8 |
| <b>FAN SPEEDS (rpm)</b>                                   |                 |                 |                 |                   |                   |                   |                      |
| Factory Setting   | 764             | 841             | 841             | 820               | 842               | 881               | 881                  |
| Range   | 666-863         | 733-949         | 733-949         | 715-926           | 742-943           | 798-984           | 798-984              |
| Max Allowable Speed (rpm)                                 | 1200            | 1200            | 1200            | 1200              | 1200              | 1200              | 1100                 |
| Change per 1/2 Turn of<br>Moveable Motor Pulley<br>Flange | 19.7            | 21.6            | 21.6            | 21.1              | 16.7              | 15.3              | 15.3                 |
| <b>MAX FULL TURNS FROM<br/>CLOSED POSITION</b>            | 5               | 5               | 5               | 5                 | 6                 | 6                 | 6                    |
| <b>SHAFTS CENTER DISTANCE (in.)</b>                       | 10.44-<br>12.32 | 10.44-<br>12.32 | 10.44-<br>12.32 | 10.44-<br>12.32   | 10.44-<br>12.32   | 9.16-<br>10.99    | 6.67-<br>9.43        |

\* Four belts shipped with unit. Use correct set of 2 belts sized according to the pulley setting.



# APPLICATION DATA (cont.)

## HIGH-STATIC DRIVE DATA, 60 Hz — U.S.

| UNIT  | FAS072      | FAS091      | FAS120      | FAS150                         | FAS180                         | FAS240                         | FAS300                          |
|---|-------------|-------------|-------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|
| <b>MOTOR DRIVE</b>  |             |             |             |                                |                                |                                |                                 |
| Motor Pulley Pitch Diameter (in.)                         | 3.4-4.4     | 3.4-4.4     | 3.4-4.4     | 3.7-4.7                        | 4.3-5.3                        | 4.3-5.3                        | 4.3-5.3                         |
| Pulley Factory Setting<br>Full Turns Open                 | 2.5         | 2.5         | 2.5         | 3.0                            | 3.0                            | 3.0                            | 3.0                             |
| <b>FAN DRIVE</b>  |             |             |             |                                |                                |                                |                                 |
| Pulley Pitch Dia (in.)                                    | 7.0         | 6.0*        | 6.0         | 7.4                            | 7.9                            | 7.4                            | 8.6                             |
| Pulley Bore (in.)   | 1           | 1           | 1           | 1 <sup>7</sup> / <sub>16</sub> | 1 <sup>7</sup> / <sub>16</sub> | 1 <sup>7</sup> / <sub>16</sub> | 1 <sup>15</sup> / <sub>16</sub> |
| Belt No. — Section  | 1—A         | 1—A         | 1—A         | 1—B                            | 1—B                            | 2—B                            | 2—B                             |
| Belt Pitch (in.)  | 41.3        | 37.3        | 37.3        | 39.8                           | 39.8                           | 36.8                           | 37.8                            |
| <b>FAN SPEEDS (rpm)</b>                                   |             |             |             |                                |                                |                                |                                 |
| Factory Setting   | 961         | 1121        | 1121        | 979                            | 1060                           | 1118                           | 1024                            |
| Range   | 838-1084    | 978-1200*†  | 978-1200†   | 873-1096                       | 950-1171                       | 1014-1200†                     | 873-1075                        |
| Max Allowable Speed (rpm)                                 | 1200        | 1200        | 1200        | 1200                           | 1200                           | 1200                           | 1100                            |
| Change per 1/2 Turn of<br>Moveable Motor Pulley<br>Flange | 24.6        | 28.7        | 28.7        | 19.4                           | 18.4                           | 19.4                           | 16.7                            |
| <b>MAX FULL TURNS FROM<br/>CLOSED POSITION</b>            |             |             |             |                                |                                |                                |                                 |
|   | 5           | 5           | 5           | 6                              | 6                              | 6                              | 6                               |
| <b>SHAFTS CENTER DISTANCE (in.)</b>                       |             |             |             |                                |                                |                                |                                 |
|   | 10.44-12.32 | 10.44-12.32 | 10.44-12.32 | 10.44-12.32**                  | 9.16-10.99                     | 8.16-10.02                     | 6.67-9.43                       |

\* Values for 3-phase motor shown. For single-phase motor, pulley pitch diameter is 7 in. and resulting fan speed is 837-1096 rpm.

† It is possible to adjust drive so that fan speed exceeds maximum allowable. DO NOT exceed 1200 rpm.

\*\* 575-v unit has a center distance of 9.16-10.99.

## STANDARD DRIVE DATA, 60 Hz — SI

| UNIT  | FAS072    | FAS091    | FAS120     | FAS150    | FAS180    | FAS240     | FAS300               |
|---|-----------|-----------|------------|-----------|-----------|------------|----------------------|
| <b>MOTOR DRIVE</b>  |           |           |            |           |           |            |                      |
| Motor Pulley Pitch Diameter (mm)                          | 61.0-86.4 | 71.1-96.5 | 86.4-111.8 | 71.1-96.5 | 71.1-96.5 | 94.0-119.4 | 109.2-134.6          |
| Pulley Factory Setting<br>Full Turns Open                 | 2.5       | 2.5       | 2.5        | 2.5       | 2.5       | 3.0        | 3.0                  |
| <b>FAN DRIVE</b>  |           |           |            |           |           |            |                      |
| Pulley Pitch Dia (mm)                                     | 224       | 224       | 224        | 229       | 229       | 239        | 279                  |
| Pulley Bore (mm)  | 25.4      | 25.4      | 25.4       | 36.5      | 36.5      | 36.5       | 49.2                 |
| Belt No. — Section  | 1—A       | 1—A       | 1—A        | 1—A       | 1—A       | 1—B        | 2—B*                 |
| Belt Pitch (mm)   | 1024      | 1049      | 1074       | 1074      | 1074      | 1062       | (2) 1087<br>(2) 1113 |
| <b>FAN SPEEDS (r/s)</b>                                   |           |           |            |           |           |            |                      |
| Factory Setting   | 9.5       | 10.8      | 12.7       | 10.5      | 10.5      | 12.9       | 12.5                 |
| Range   | 7.8-11.1  | 9.2-12.4  | 11.1-14.4  | 9.0-12.1  | 9.0-12.1  | 11.3-14.4  | 11.4-14.0            |
| Max Allowable Speed (r/s)                                 | 20.0      | 20.0      | 20.0       | 20.0      | 20.0      | 20.0       | 18.3                 |
| Change per 1/2 Turn of<br>Moveable Motor Pulley<br>Flange | 0.327     | 0.327     | 0.328      | 0.318     | 0.318     | 0.255      | 0.218                |
| <b>MAX FULL TURNS FROM<br/>CLOSED POSITION</b>            |           |           |            |           |           |            |                      |
|   | 5         | 5         | 5          | 5         | 5         | 6          | 6                    |
| <b>SHAFTS CENTER DISTANCE (mm)</b>                        |           |           |            |           |           |            |                      |
|   | 265-313   | 265-313   | 265-313    | 265-313   | 265-313   | 232-279    | 169-240              |

\* Four belts shipped with unit. Use correct set of 2 belts sized according to the pulley setting.

# APPLICATION DATA (cont.)

## MEDIUM-STATIC DRIVE DATA, 60 Hz — SI

| UNIT  | FAS072     | FAS091     | FAS120     | FAS150     | FAS180     | FAS240      | FAS300              |
|---|------------|------------|------------|------------|------------|-------------|---------------------|
| <b>MOTOR DRIVE</b>  |            |            |            |            |            |             |                     |
| Motor Pulley Pitch Diameter (mm)                          | 86.4-111.8 | 86.4-111.8 | 86.4-111.8 | 86.4-111.8 | 94.0-119.4 | 109.2-134.6 | 109.2-134.6         |
| Pulley Factory Setting<br>Full Turns Open                 | 2.5        | 2.5        | 2.5        | 2.5        | 3.0        | 3.0         | 3.0                 |
| <b>FAN DRIVE</b>  |            |            |            |            |            |             |                     |
| Pulley Pitch Dia (mm)                                     | 224        | 203        | 203        | 208        | 218        | 239         | 239                 |
| Pulley Bore (mm)  | 25.4       | 25.4       | 25.4       | 36.5       | 36.5       | 36.5        | 49.2                |
| Belt No. — Section  | 1—A        | 1—A        | 1—A        | 1—A        | 1—B        | 1—B         | 2—B*                |
| Belt Pitch (mm)   | 1074       | 1024       | 1024       | 1049       | 1062       | 1062        | (2) 986<br>(2) 1011 |
| <b>FAN SPEEDS (r/s)</b>                                   |            |            |            |            |            |             |                     |
| Factory Setting   | 12.7       | 14.0       | 14.0       | 13.7       | 14.0       | 14.7        | 14.7                |
| Range   | 11.1-14.4  | 12.2-15.8  | 12.2-15.8  | 11.9-15.4  | 12.4-15.7  | 13.3-16.4   | 13.3-16.4           |
| Max Allowable Speed (r/s)                                 | 20.0       | 20.0       | 20.0       | 20.0       | 20.0       | 20.0        | 18.3                |
| Change per 1/2 Turn of<br>Moveable Motor Pulley<br>Flange | 0.328      | 0.360      | 0.360      | 0.352      | 0.278      | 0.255       | 0.255               |
| <b>MAX FULL TURNS FROM<br/>CLOSED POSITION</b>            | 5          | 5          | 5          | 6          | 6          | 6           | 6                   |
| <b>SHAFTS CENTER DISTANCE (mm)</b>                        | 265-313    | 265-313    | 265-313    | 265-313    | 265-313    | 232-279     | 169-240             |

\* Four belts shipped with unit. Use correct set of 2 belts sized according to the pulley setting.

## HIGH-STATIC DRIVE DATA, 60 Hz — SI

| UNIT  | FAS072     | FAS091      | FAS120     | FAS150     | FAS180      | FAS240      | FAS300      |
|---|------------|-------------|------------|------------|-------------|-------------|-------------|
| <b>MOTOR DRIVE</b>  |            |             |            |            |             |             |             |
| Motor Pulley Pitch Diameter (mm)                          | 86.4-111.8 | 86.4-111.8  | 86.4-111.8 | 94.0-119.4 | 109.2-134.6 | 109.2-134.6 | 109.2-134.6 |
| Pulley Factory Setting<br>Full Turns Open                 | 2.5        | 2.5         | 2.5        | 3.0        | 3.0         | 3.0         | 3.0         |
| <b>FAN DRIVE</b>  |            |             |            |            |             |             |             |
| Pulley Pitch Dia (mm)                                     | 178        | 152*        | 152        | 188        | 201         | 188         | 203         |
| Pulley Bore (mm)  | 25.4       | 25.4        | 25.4       | 36.5       | 36.5        | 36.5        | 49.2        |
| Belt No. — Section  | 1—A        | 1—A         | 1—A        | 1—B        | 1—B         | 2—B         | 2—B         |
| Belt Pitch (mm)   | 1049       | 947         | 947        | 1011       | 1011        | 935         | 935         |
| <b>FAN SPEEDS (r/s)</b>                                   |            |             |            |            |             |             |             |
| Factory Setting   | 16.0       | 18.7        | 18.7       | 16.3       | 17.7        | 18.6        | 17.1        |
| Range   | 14.0-18.1  | 16.3-20.0*† | 16.3-20.0† | 14.4-18.3  | 15.8-19.5   | 16.9-20.0†  | 14.6-17.9   |
| Max Allowable Speed (r/s)                                 | 20.0       | 20.0        | 20.0       | 20.0       | 20.0        | 20.0        | 18.3        |
| Change per 1/2 Turn of<br>Moveable Motor Pulley<br>Flange | 0.410      | 0.478       | 0.478      | 0.323      | 0.307       | 0.323       | 0.278       |
| <b>MAX FULL TURNS FROM<br/>CLOSED POSITION</b>            | 5          | 5           | 5          | 6          | 6           | 6           | 6           |
| <b>SHAFTS CENTER DISTANCE (mm)</b>                        | 265-313    | 265-313     | 265-313    | 265-313**  | 232-279     | 207-255     | 169-240     |

\* Values for 3-phase motor shown. For single-phase motor, pulley pitch diameter is 178 mm and resulting fan speed is 14.0-18.3 r/s.

† It is possible to adjust drive so that fan speed exceeds maximum allowable. DO NOT exceed 20 r/s.

\*\* 575-v unit has a center distance of 233-279.

# GUIDE SPECIFICATIONS

## Commercial Packaged Air-Handling Unit

### HVAC Guide Specifications

Size Range: **2,400 to 10,000 Cfm (1133 to 4719 L/s), Nominal Airflow, 6 to 25 Tons (21 to 87 kW), Nominal Cooling**

Model Number: **FAS (Direct-Expansion Coil)**

#### Part 1 — GENERAL

##### 1.01 SYSTEM DESCRIPTION

- A. Indoor, packaged air-handling unit for use in commercial split systems. Unit shall have a multi-position design and shall be capable of horizontal or vertical installation on a floor or in a ceiling, with or without ductwork. (Only vertical units are to be applied without ductwork.)
- B. Unit with direct-expansion coil shall be used in a refrigerant circuit with a matching air-cooled condensing unit. Unit with chilled water coil shall be used in a chilled water circuit.

##### 1.02 QUALITY ASSURANCE

- A. Coils shall be designed and tested in accordance with ASHRAE 15 Safety Code for Mechanical Refrigeration (U.S.A.), latest edition.
- B. Unit shall be constructed in accordance with ETL (U.S.A.) and ETL, Canada, standards and shall carry the ETL and ETL, Canada, labels.
- C. Unit insulation and adhesive shall comply with NFPA-90A (U.S.A.) requirements for flame spread and smoke generation. Insulation shall contain an EPA-registered immobilized antimicrobial agent to effectively resist the growth of bacteria and fungi as proven by tests in accordance with ASTM standards G21 and 22 (U.S.A.).
- D. Unit shall be manufactured in a facility registered to the ISO 9001:2000 manufacturing quality standard.
- E. Direct-expansion and chilled water coils shall be burst and leak tested at 435 psi (2999 kPa).

##### 1.03 DELIVERY AND STORAGE

Units shall be stored and handled per manufacturer's recommendations.

#### Part 2 — PRODUCTS

##### 2.01 EQUIPMENT

Indoor mounted, draw-thru, packaged air-handling unit that can be used in a suspended horizontal configuration or a vertical configuration. Unit shall consist of forward-curved belt-driven centrifugal fan(s), motor and drive assembly, pre-wired fan motor contactor, factory-installed refrigerant metering devices (direct-expansion coil units), cooling coil, 2-in. (51-mm) disposable air filters, and

condensate drain pans for vertical or horizontal configurations.

##### A. Base Unit:

1. Cabinet shall be constructed of mill-galvanized steel.
2. Cabinet panels shall be fully insulated with 1/2-in. (12.7-mm) fire-retardant material. Insulation shall contain an EPA-registered immobilized antimicrobial agent to effectively resist the growth of bacteria and fungi as proven by tests in accordance with ASTM standards G21 and 22 (U.S.A.).
3. Unit shall contain non-corroding condensate drain pans for both vertical and horizontal applications. Drain pans shall have connections on right and left sides of unit to facilitate field connection. Drain pans shall have the ability to be sloped toward the right or left side of the unit to prevent standing water from accumulating in pans.
4. Unit shall have factory-supplied 2-in. (51 mm) throwaway-type filters installed upstream from the cooling coil. Filter access shall be from either the right or left side of the unit.

##### B. Coils:

DX coil is 4-row and consists of copper tubes with sine-wave aluminum fins bonded to the tubes by mechanical expansion. Suction and liquid line connections or supply and discharge connections shall be made on the same side of the coil.

1. Direct-expansion coils shall feature factory installed thermostatic expansion valves (TXVs) for refrigerant control. The TXVs shall be R-410A compatible and capable of external adjustment. Direct-expansion heat pump coils shall have a factory-installed bypass line and check valve assembly around the TXVs to allow liquid flow from the coil to the outdoor unit during the heating mode. Coil tubing shall be internally rifled to maximize heat transfer.

##### C. Operating Characteristics:

Unit shall be capable of providing \_\_\_\_\_ cfm (L/s) airflow at an external static pressure of \_\_\_\_\_ in. wg (kPag).

##### D. Motor:

1. Fan motor of the size and electrical characteristics specified on the equipment schedule shall be factory supplied and installed.

## GUIDE SPECIFICATIONS (cont.)

2. Motors rated at 1.3 through 3.7 hp (0.97 through 2.76 kW) shall have internal thermal overload protection. Motors rated at 5 hp (3.73 kW) shall be protected by a circuit breaker.
3. Evaporator-fan motor shall have permanently lubricated, sealed bearings and inherent automatic-reset thermal overload protection or manual reset calibrated circuit breakers. Evaporator motors are designed specifically for our units and do not have conventional horsepower (hp) ratings listed on the motor nameplate. Motors are designed and qualified in the "air-over" location downstream of the cooling coil and carry a maximum continuous bhp rating that is the maximum application bhp rating for the motor; no "safety factors" above that rating may be applied.
4. All evaporator-fan motors 5 hp and larger shall meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT), effective October 24, 1997.

### E. Special Features:

#### 1. High Static Motor and Drive:

A high-static drive shall be available to meet the airflow and external static pressure requirements specified on the equipment schedule.

#### 2. External Paint:

Where conditions require, units shall be painted with an American Sterling Gray finish.

#### 3. Hot Water Coil:

Coil shall be 2-row, U-bend coil with copper tubes and aluminum plate fins bonded to the tubes by mechanical expansion. Coil shall be mounted in a galvanized steel housing that shall be fastened to the unit's fan deck for blow-thru heating operation. Coil shall have maximum working pressure of 150 psig (1034 kPag).

#### 4. Steam Distributing Coil:

Coil shall consist of one row of copper tubes with aluminum plate fins, and shall have inner steam distributing tubes. Coil shall be mounted in a galvanized steel housing and shall be fastened to the unit's fan deck for blow-thru heating operation. Coil shall have maximum working pressure of 20 psig at 260°F (138 kPag at 126°C).

#### 5. Electric Heaters:

Heaters for nominal 240, 480, or 575-volt, 3-phase, 60 Hz shall be factory-supplied for field installation as shown on the equipment drawings. Electric heat assembly shall be ETL (U.S.A.) and ETL, Canada, agency approved, and shall have single-point power wiring. Heater assembly shall include contactors with 24-v coils, power wiring, 24-v control wiring

terminal blocks, and a hinged access panel. Electric heaters shall not be used with air discharge plenum.

#### 6. Air Discharge Plenum:

Plenum shall be factory-supplied to provide free-blow air distribution for vertical floor-mounted units. A grille with moveable vanes for horizontal or vertical airflow adjustment shall be included. Plenum shall be field-assembled and field-installed on the unit's fan deck for blow-thru air distribution. Plenum shall not be used with electric heaters.

#### 7. Return-Air Grille:

Grille shall be factory-supplied for field installation on the unit's return air opening.

#### 8. Unit Subbase:

Subbase assembly shall be factory-supplied for field installation. Subbase shall elevate floor-mounted vertical units to provide access for correct condensate drain connection.

#### 9. Economizer:

Economizer for ventilation or "free" cooling shall be factory provided for field installation on either return air opening of air handler. For free cooling applications, economizer shall be compatible with separate thermostat; economizer dampers shall open when outdoor air enthalpy is suitable for free cooling. Economizer shall be compatible with separate CO<sub>2</sub> sensor accessory; economizer dampers shall open when indoor CO<sub>2</sub> level rises above predetermined set point. Economizer shall include enthalpy control and damper actuator.

#### 10. Overhead Suspension Package:

Package shall include necessary brackets to support units in a horizontal ceiling installation.

#### 11. CO<sub>2</sub> Sensor:

Sensor shall provide the ability to signal the economizer to open when the space CO<sub>2</sub> level exceeds the predetermined setpoint. Sensor shall have the capability of being connected to Comfort System relay pack or to economizer using field-supplied and field-installed Honeywell dc adapter no. Q769C1004.

#### 12. Condensate Drain Trap:

Trap shall have transparent, serviceable design for easy cleaning. Kit shall include overflow shutoff switch and wiring harness for connection to an alarm if desired.