



# Installation Instructions

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## SAFETY CONSIDERATIONS

Installing, starting up, and servicing this equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.).

Only trained, qualified installers and service mechanics should install, start up, and service this equipment.

Untrained personnel can perform basic maintenance functions, such as cleaning coils. All other operations should be performed by trained service personnel.

When working on the equipment, observe precautions in the literature, and on tags, stickers, and labels attached to the equipment and any other safety precautions that may apply.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Use care in handling, rigging, and setting bulky equipment.

### WARNING

Open all remote disconnects before servicing this equipment. Failure to do so could result in personal injury from electric shock.

### CAUTION

Puron refrigerant (R-410A) systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on Puron refrigerant equipment. If service equipment is not rated for Puron refrigerant, equipment damage or personal injury may result.

## INSTALLATION

**Step 1 — Inspect Shipment** — Inspect unit for damage upon arrival. If damage is found, immediately file a claim with the shipping company. Verify proper unit delivery by checking unit nameplate data and the model number nomenclature shown in Fig. 1. See Tables 1-4 for unit physical data.

**Step 2 — Rig and Place Unit** — All units are designed for overhead rigging, and it is *important that this method be used*. Lifting holes are provided in the frame base rails. It is recommended to use shackles in the lifting holes (see rigging label on the unit and Table 5, and Fig. 2 and 3 for rigging weights and center of gravity). All panels must be in place when rigging.

**IMPORTANT:** To maintain unit stability while lifting, use 4 cables, chains or straps of equal length. Attach one end of each cable to shackle attachment point and the other end of each cable to the overhead rigging point.

*Use spreader bars or frame to keep the cables, chains, and straps clear of the unit sides.* Leave standard coil protection packaging in place during rigging to provide protection to coils. Remove and discard all coil protection after rigging cables are detached.

### CAUTION

All panels must be in place when rigging. Failure to comply could result in equipment damage.

### CAUTION

For unit sizes 025 to 060 when handling with a forklift, handle only through fork pocket holes. Failure to follow this caution could result in equipment damage or personal injury.

### CAUTION

For unit sizes 070 to 100, do not forklift the unit unless unit is attached to a skid designed for forklifting. Failure to follow this caution could result in equipment damage or personal injury.

**DOMESTIC UNITS** — Standard 38AP unit packaging consists of coil protection only. *Skids are not provided.* If overhead rigging is not available at the jobsite, place the unit on a skid or pad before dragging or rolling. When rolling, use a minimum of 3 rollers. When dragging, pull the pad or skid. *Do not apply force to the unit.* When in final position, raise from above to lift unit off the pad or skid.

**EXPORT UNITS** — All export units are mounted on skids with vertical coil protection. Leave the unit on the skid until it is in final position. *While on the skid, the unit can be rolled or skidded. Apply force to the skid, not to the unit.* Use a minimum of 3 rollers when rolling. When in final position, raise from above to remove the skid.

**PLACING UNITS** — When considering location of the unit, be sure to consult National Electrical Code (NEC, U.S.A.) and local code requirements. Allow sufficient space for airflow, wiring, piping, and service. The placement area must be level and strong enough to support the operating weight of the unit. (See Table 5.) When unit is in proper location, use of mounting holes in base rails is recommended for securing unit to supporting structure. For mounting unit on vibration isolators,

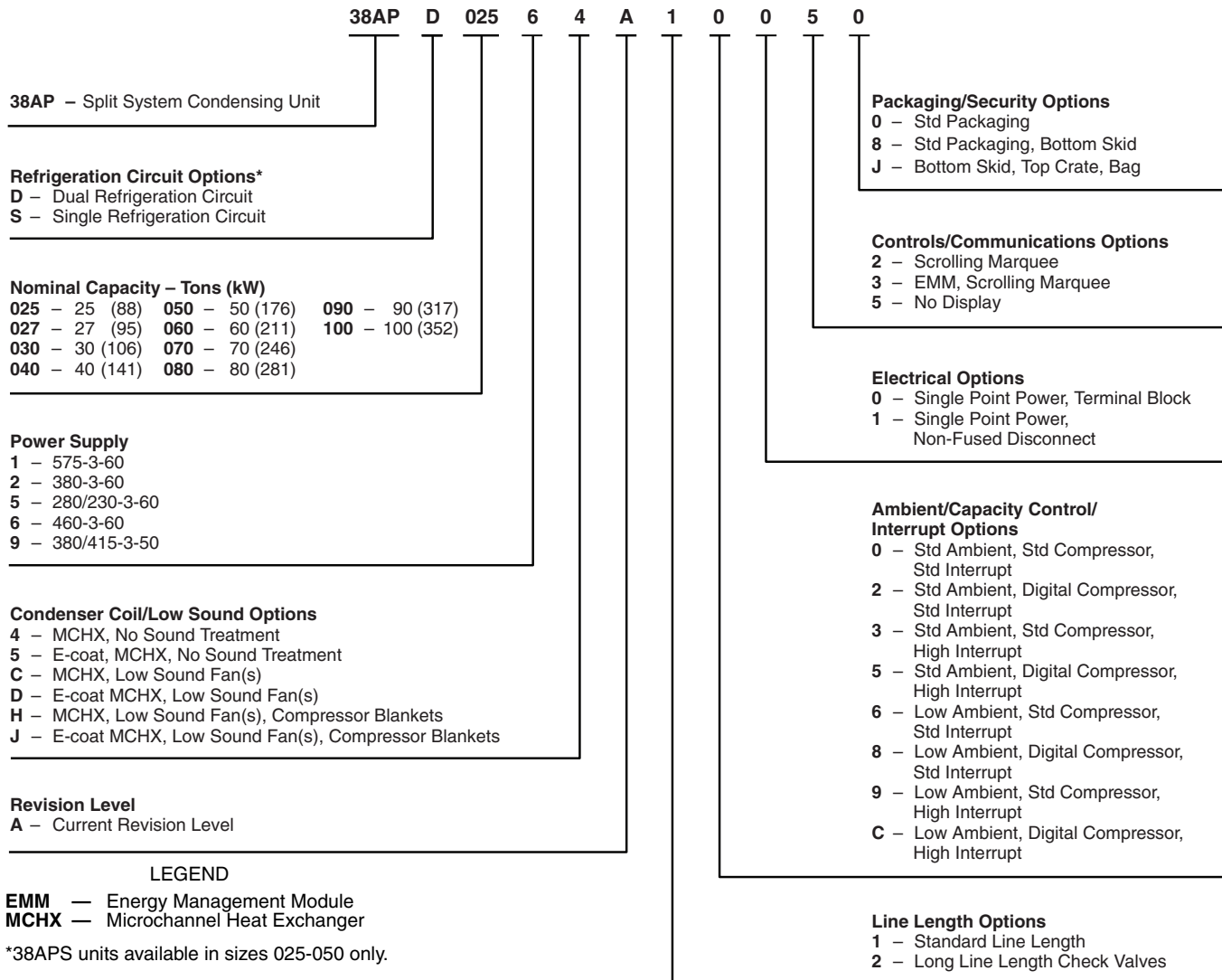
4 x 24 in. perimeter support ASTM “C” channels between unit and the isolators are recommended with a minimum of 4 channels per unit. Fasteners for mounting unit are field supplied. See Fig. 4.

Refer to Fig. 5-8 for airflow clearances. Recommended minimum clearances are 6 ft (1829 mm) for unrestricted airflow and service on sides of unit, 4 ft (1219 mm) on ends, and unrestricted clear air space above the unit. Provide ample space to connect liquid and suction lines to indoor unit. For multiple units, allow 10 ft (3048 mm) separation between airflow surfaces. If walls surround the unit, wall height should not exceed the top of the unit fan discharge. Installation in a pit is not recommended.

**IMPORTANT:** Be sure to mount unit level to ensure proper oil return to compressors.

Refer to Fig. 9 for outdoor fan and compressor layout.

Refer to Fig. 10 and 11 for unit piping installation. See Table 6 for refrigerant specialties part numbers.



**Fig. 1 — Model Number Nomenclature**

**Table 1 — 38AP025-050 Unit Physical Data — English**

| 38AP UNIT SIZE                                | 025   |                               | 027   |                               | 030   |                               | 040   |                               | 050   |                               |
|---|---|-------------------------------|---|-------------------------------|---|-------------------------------|---|-------------------------------|---|-------------------------------|
| NOMINAL CAPACITY, 50/60Hz (tons)              | 21/25   |                               | 23/27   |                               | 25/30   |                               | 33/40   |                               | 42/50   |                               |
| CIRCUIT                                       | Dual  | Single                        | Dual  | Single                        | Dual  | Single                        | Dual  | Single                        | Dual  | Single                        |
| OPERATING WEIGHTS (lb)                        |   |                               |   |                               |   |                               |   |                               |   |                               |
| Standard                                      | 1095  | 1077                          | 1258  | 1240                          | 1264  | 1246                          | 2094  | 1968                          | 2120  | 1977                          |
| With Low Sound Option                         | 1131  | 1113                          | 1294  | 1276                          | 1300  | 1282                          | 2148  | 2022                          | 2174  | 2031                          |
| APPROXIMATE REFRIGERANT CHARGE, TYPICAL (lb)* | 28  | 24                            | 30  | 26                            | 30  | 26                            | 52  | 40                            | 52  | 40                            |
| NITROGEN SHIPPING CHARGE                      | 15 psig   |                               |   |                               |   |                               |   |                               |   |                               |
| COMPRESSOR hp (Qty) (CKT A/CKT B)             | 11 (2)  | 11 (2)                        | 13 (2)  | 13 (2)                        | 15 (2)  | 15 (2)                        | 10 (2)/<br>8.5 (2)  | 13 (3)                        | 11 (2)/<br>13 (2)   | 15 (3)                        |
| CAPACITY STEPS                                |   |                               |   |                               |   |                               |   |                               |   |                               |
| Standard                                      | 2   | 2                             | 2   | 2                             | 2   | 2                             | 4   | 3                             | 4   | 3                             |
| Digital Option                                | 22  | 22                            | 22  | 22                            | 22  | 22                            | 44  | 33                            | 44  | 33                            |
| CRANKCASE HEATER (W) (each compressor)        | 90  |                               |   |                               |   |                               |   |                               |   |                               |
| CONDENSER FANS                                |   |                               |   |                               |   |                               |   |                               |   |                               |
| Standard                                      | Propeller Type - Direct Drive                                 |                               |   |                               |   |                               |   |                               |   |                               |
| Quantity                                      | 2   | 2                             | 2   | 2                             | 2   | 2                             | 3   | 3                             | 3   | 3                             |
| RPM   | 1140 (60 Hz), 950 (50 Hz)                                     |                               |   |                               |   |                               |   |                               |   |                               |
| Diameter (in.)                                | 30  |                               |   |                               |   |                               |   |                               |   |                               |
| Total Watts (60 Hz)                           | 3300  | 3300                          | 3300  | 3300                          | 3300  | 3300                          | 4200  | 4200                          | 4200  | 4200                          |
| Total Watts (50 Hz)                           | 2750  | 2750                          | 2750  | 2750                          | 2750  | 2750                          | 3500  | 3500                          | 3500  | 3500                          |
| Low Noise                                     | Shrouded Axial Fan - Direct Drive                             |                               |   |                               |   |                               |   |                               |   |                               |
| Quantity                                      | 2   | 2                             | 2   | 2                             | 2   | 2                             | 3   | 3                             | 3   | 3                             |
| RPM   | 850 (60 Hz), 700 (50 Hz)                                      |                               |   |                               |   |                               |   |                               |   |                               |
| Diameter (in.)                                | 30  |                               |   |                               |   |                               |   |                               |   |                               |
| Total Watts (60 Hz)                           | 2750  | 2750                          | 2750  | 2750                          | 2750  | 2750                          | 3500  | 3500                          | 3500  | 3500                          |
| Total Watts (50 Hz)                           | 2300  | 2300                          | 2300  | 2300                          | 2300  | 2300                          | 2900  | 2900                          | 2900  | 2900                          |
| CONDENSER COIL                                | MCHX Type   |                               |   |                               |   |                               |   |                               |   |                               |
| No. Coils per Circuit                         | 1   |                               |   |                               |   |                               |   |                               |   |                               |
| sq ft   | 27.1  | 27.1                          | 33.9  | 33.9                          | 33.9  | 33.9                          | 67.8  | 67.8                          | 67.8  | 67.8                          |
| TEMPERATURE RELIEF                            | Fusible Plug on Liquid Lines of Each Circuit - 210 F          |                               |   |                               |   |                               |   |                               |   |                               |
| CONNECTIONS (in.) ODF (CKT A/CKT B)           |   |                               |   |                               |   |                               |   |                               |   |                               |
| Suction Line                                  | 1 <sup>3</sup> / <sub>8</sub> / 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> / 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> / 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| Liquid Line                                   | 5/ <sub>8</sub> / 5/ <sub>8</sub>                             | 5/ <sub>8</sub>               | 5/ <sub>8</sub> / 5/ <sub>8</sub>                             | 5/ <sub>8</sub>               | 5/ <sub>8</sub> / 5/ <sub>8</sub>                             | 7/ <sub>8</sub>               | 5/ <sub>8</sub> / 5/ <sub>8</sub>                             | 7/ <sub>8</sub>               | 5/ <sub>8</sub> / 5/ <sub>8</sub>                             | 7/ <sub>8</sub>               |
| MAXIMUM HEIGHT FOR 3° F SUBCOOLING (ft)†      | 75  | 75                            | 75  | 75                            | 75  | 75                            | 75  | 75                            | 75  | 75                            |
| CAPACITY PER CIRCUIT (%) (CKT A/CKT B)        | 50/50   | 100                           | 50/50   | 100                           | 50/50   | 100                           | 54/46   | 100                           | 48/52   | 100                           |
| MINIMUM UNIT CAPACITY (%)                     | 50  | 50                            | 50  | 50                            | 50  | 50                            | 23  | 33                            | 23  | 33                            |

**LEGEND**

**MCHX** — Microchannel Heat Exchanger  
**ODF** — Outside Diameter, Female

\*Typical operating charge with 25 ft of interconnecting piping. Operating charge is approximate for maximum system capacity. Unit is factory supplied with nitrogen holding charge. Refrigerant charge for dual circuit units is the total for both circuits.

†Maximum vertical separation between evaporator coil and condensing unit if condensing unit is below the evaporator.

**Table 2 — 38AP060-100 Unit Physical Data — English**

| 38AP UNIT SIZE                                | 060   | 070   | 080   | 090   | 100   |
|---|---|---|---|---|---|
| NOMINAL CAPACITY, 50/60Hz (tons)              | 50/60   | 58/70   | 67/80   | 75/90   | 83/100  |
| CIRCUIT                                       | Dual  | Dual  | Dual  | Dual  | Dual  |
| OPERATING WEIGHTS (lb)                        |   |   |   |   |   |
| Standard                                      | 2227  | 2450  | 2610  | 2835  | 2844  |
| With Low Sound Option                         | 2299  | 2522  | 2700  | 2943  | 2952  |
| APPROXIMATE REFRIGERANT CHARGE, TYPICAL (lb)* | 60  | 70  | 78  | 96  | 100   |
| NITROGEN SHIPPING CHARGE                      | 15 psig   |   |   |   |   |
| COMPRESSOR<br>hp (Qty) (CKT A/CKT B)          | 13 (2)/15 (2)   | 15 (2)/11 (3)   | 15 (2)/15 (3)   | 13 (3)/15 (3)   | 15 (3)/15 (3)   |
| CAPACITY STEPS                                |   |   |   |   |   |
| Standard                                      | 4   | 5   | 5   | 6   | 6   |
| Digital Option                                | 44  | 55  | 55  | 66  | 66  |
| CRANKCASE HEATER (W) (each compressor)        | 90  |   |   |   |   |
| CONDENSER FANS                                |   |   |   |   |   |
| Standard                                      | Propeller Type - Direct Drive                                 |   |   |   |   |
| Quantity                                      | 4   | 4   | 5   | 6   | 6   |
| RPM   | 1140 (60 Hz), 950 (50 Hz)                                     |   |   |   |   |
| Diameter (in.)                                | 30  |   |   |   |   |
| Total Watts (60 Hz)                           | 6200  | 6000  | 7500  | 9000  | 9000  |
| Total Watts (50 Hz)                           | 5150  | 5000  | 6250  | 7500  | 7500  |
| Low Noise                                     | Shrouded Axial Fan - Direct Drive                             |   |   |   |   |
| Quantity                                      | 4   | 4   | 5   | 6   | 6   |
| RPM   | 850 (60 Hz), 700 (50 Hz)                                      |   |   |   |   |
| Diameter (in.)                                | 30  |   |   |   |   |
| Total Watts (60 Hz)                           | 5200  | 5000  | 6250  | 7500  | 7500  |
| Total Watts (50 Hz)                           | 4300  | 4150  | 5200  | 6250  | 6250  |
| CONDENSER COIL                                | MCHX Type   |   |   |   |   |
| No. Coils per Circuit                         | 1   | 2   | 2 to 3  | 3   | 3   |
| sq ft   | 67.8  | 99.6  | 124.5   | 149.4   | 149.4   |
| TEMPERATURE RELIEF                            | Fusible Plug on Liquid Lines of Each Circuit - 210 F          |   |   |   |   |
| CONNECTIONS (in.) ODF (CKT A/CKT B)           |   |   |   |   |   |
| Suction Line                                  | 1 <sup>5</sup> / <sub>8</sub> / 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> / 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> / 2 <sup>5</sup> / <sub>8</sub> |
| Liquid Line                                   | 5 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> |
| MAXIMUM HEIGHT FOR 3° F SUBCOOLING (ft)†      | 75  | 75  | 75  | 75  | 75  |
| CAPACITY PER CIRCUIT (%) (CKT A/CKT B)        | 46/54   | 47/53   | 40/60   | 46/54   | 50/50   |
| MINIMUM UNIT CAPACITY (%)                     | 23  | 24  | 20  | 15  | 17  |

LEGEND

- MCHX — Microchannel Heat Exchanger
- ODF — Outside Diameter, Female

\*Typical operating charge with 25 ft of interconnecting piping. Operating charge is approximate for maximum system capacity. Unit is factory supplied with nitrogen holding charge. Refrigerant charge for dual circuit units is the total for both circuits.

†Maximum vertical separation between evaporator coil and condensing unit if condensing unit is below the evaporator.

**Table 3 — 38AP025-050 Unit Physical Data — SI**

| 38AP UNIT SIZES                                      | 025   |                               | 027   |                               | 030   |                               | 040   |                               | 050   |                               |
|--|---|-------------------------------|---|-------------------------------|---|-------------------------------|---|-------------------------------|---|-------------------------------|
| <b>NOMINAL CAPACITY 50/60 Hz (kW)</b>                | 74/88   |                               | 81/95   |                               | 88/106  |                               | 116/141   |                               | 148/176   |                               |
| <b>CIRCUIT</b>                                       | Dual  | Single                        | Dual  | Single                        | Dual  | Single                        | Dual  | Single                        | Dual  | Single                        |
| <b>OPERATING WEIGHTS (kg)</b>                        |   |                               |   |                               |   |                               |   |                               |   |                               |
| Standard   | 497   | 489                           | 571   | 562                           | 573   | 565                           | 950   | 893                           | 961   | 897                           |
| With Low Sound Option                                | 513   | 505                           | 587   | 579                           | 590   | 582                           | 974   | 917                           | 986   | 921                           |
| <b>APPROXIMATE REFRIGERANT CHARGE, TYPICAL (kg)*</b> | 12.7  | 10.9                          | 13.6  | 11.8                          | 13.6  | 11.8                          | 23.6  | 18.1                          | 23.6  | 18.1                          |
| <b>NITROGEN SHIPPING CHARGE</b>                      | 1.03 bar  |                               |   |                               |   |                               |   |                               |   |                               |
| <b>COMPRESSOR kW (Qty) (CKT A/CKT B)</b>             | 8.2 (2)   | 8.2 (2)                       | 9.7 (2)   | 9.7 (2)                       | 11.2 (2)  | 11.2 (2)                      | 7.5 (2)/<br>6.3 (2)   | 9.7 (3)                       | 8.2 (2)/<br>9.7 (2)   | 11.2 (3)                      |
| <b>CAPACITY STEPS</b>                                |   |                               |   |                               |   |                               |   |                               |   |                               |
| Standard   | 2   | 2                             | 2   | 2                             | 2   | 2                             | 4   | 3                             | 4   | 3                             |
| Digital Option                                       | 22  | 22                            | 22  | 22                            | 22  | 22                            | 44  | 33                            | 44  | 33                            |
| <b>CRANKCASE HEATER (W) (each compressor)</b>        | 90  |                               |   |                               |   |                               |   |                               |   |                               |
| <b>CONDENSER FANS</b>                                |   |                               |   |                               |   |                               |   |                               |   |                               |
| Standard   | Propeller Type - Direct Drive                                 |                               |   |                               |   |                               |   |                               |   |                               |
| Quantity   | 2   | 2                             | 2   | 2                             | 2   | 2                             | 3   | 3                             | 3   | 3                             |
| r/s  | 19 (60 Hz), 16 (50 Hz)  |                               |   |                               |   |                               |   |                               |   |                               |
| Diameter (mm)  | 762   |                               |   |                               |   |                               |   |                               |   |                               |
| Total Watts (60 Hz)                                  | 3300  | 3300                          | 3300  | 3300                          | 3300  | 3300                          | 4200  | 4200                          | 4200  | 4200                          |
| Total Watts (50 Hz)                                  | 2750  | 2750                          | 2750  | 2750                          | 2750  | 2750                          | 3500  | 3500                          | 3500  | 3500                          |
| Low Noise  | Shrouded Axial Fan - Direct Drive                             |                               |   |                               |   |                               |   |                               |   |                               |
| Quantity   | 2   | 2                             | 2   | 2                             | 2   | 2                             | 3   | 3                             | 3   | 3                             |
| r/s  | 14 (60 Hz), 12 (50 Hz)  |                               |   |                               |   |                               |   |                               |   |                               |
| Diameter (mm)  | 762   |                               |   |                               |   |                               |   |                               |   |                               |
| Total Watts (60 Hz)                                  | 2750  | 2750                          | 2750  | 2750                          | 2750  | 2750                          | 3500  | 3500                          | 3500  | 3500                          |
| Total Watts (50 Hz)                                  | 2300  | 2300                          | 2300  | 2300                          | 2300  | 2300                          | 2900  | 2900                          | 2900  | 2900                          |
| <b>CONDENSER COIL</b>                                | MCHX Type   |                               |   |                               |   |                               |   |                               |   |                               |
| No. Coils per Circuit                                | 1   |                               |   |                               |   |                               |   |                               |   |                               |
| sq m   | 2.5   | 2.5                           | 3.2   | 3.2                           | 3.2   | 3.2                           | 6.3   | 6.3                           | 6.3   | 6.3                           |
| <b>TEMPERATURE RELIEF</b>                            | Fusible Plug on Liquid Lines of Each Circuit - 99 C           |                               |   |                               |   |                               |   |                               |   |                               |
| <b>CONNECTIONS (in.) ODF (CKT A/CKT B)</b>           |   |                               |   |                               |   |                               |   |                               |   |                               |
| Suction Line   | 1 <sup>3</sup> / <sub>8</sub> / 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> / 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> / 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| Liquid Line  | 5/8 / 5/8   | 5/8                           | 5/8 / 5/8   | 5/8                           | 5/8 / 5/8   | 7/8                           | 5/8 / 5/8   | 7/8                           | 5/8 / 5/8   | 7/8                           |
| <b>MAXIMUM HEIGHT FOR 1.7° C SUBCOOLING (m)†</b>     | 23  | 23                            | 23  | 23                            | 23  | 23                            | 23  | 23                            | 23  | 23                            |
| <b>CAPACITY PER CIRCUIT (%) (CKT A/CKT B)</b>        | 50/50   | 100                           | 50/50   | 100                           | 50/50   | 100                           | 54/46   | 100                           | 48/52   | 100                           |
| <b>MINIMUM UNIT CAPACITY (%)</b>                     | 50  | 50                            | 50  | 50                            | 50  | 50                            | 23  | 33                            | 23  | 33                            |

**LEGEND**

- MCHX** — Microchannel Heat Exchanger
- ODF** — Outside Diameter, Female

\*Typical operating charge with 7.62 m of interconnecting piping. Operating charge is approximate for maximum system capacity. Unit is factory supplied with nitrogen holding charge. Refrigerant charge for dual circuit units is the total for both circuits.

†Maximum vertical separation between evaporator coil and condensing unit if condensing unit is below the evaporator.

**Table 4 — 38AP060-100 Unit Physical Data — SI**

| 38AP UNIT SIZES                                      | 060   | 070   | 080   | 090   | 100   |
|--|---|---|---|---|---|
| <b>NOMINAL CAPACITY 50/60 Hz (kW)</b>                | 176/211   | 204/246   | 236/281   | 264/317   | 292/352   |
| <b>CIRCUIT</b>                                       | Dual  | Dual  | Dual  | Dual  | Dual  |
| <b>OPERATING WEIGHTS (kg)</b>                        |   |   |   |   |   |
| Standard   | 1010  | 1111  | 1184  | 1286  | 1290  |
| With Low Sound Option                                | 1043  | 1144  | 1225  | 1335  | 1339  |
| <b>APPROXIMATE REFRIGERANT CHARGE, TYPICAL (kg)*</b> | 27.2  | 31.8  | 35.4  | 43.5  | 45.4  |
| <b>NITROGEN SHIPPING CHARGE</b>                      | 1.03 bar  |   |   |   |   |
| <b>COMPRESSOR kW (Qty) (CKT A/CKT B)</b>             | 9.7 (2)/11.2 (2)  | 11.2 (2)/8.2 (3)  | 11.2 (2)/11.2 (3)   | 9.7 (3)/11.2 (3)  | 11.2 (3)/11.2 (3)   |
| <b>CAPACITY STEPS</b>                                |   |   |   |   |   |
| Standard   | 4   | 5   | 5   | 6   | 6   |
| Digital Option                                       | 44  | 55  | 55  | 66  | 66  |
| <b>CRANKCASE HEATER (W) (each compressor)</b>        | 90  |   |   |   |   |
| <b>CONDENSER FANS</b>                                |   |   |   |   |   |
| <b>Standard</b>                                      |   |   | Propeller Type - Direct Drive                                 |   |   |
| Quantity   | 4   | 4   | 5   | 6   | 6   |
| r/s  |   |   | 19 (60 Hz), 16 (50 Hz)  |   |   |
| Diameter (mm)  |   |   | 762   |   |   |
| Total Watts (60 Hz)                                  | 6200  | 6000  | 7500  | 9000  | 9000  |
| Total Watts (50 Hz)                                  | 5150  | 5000  | 6250  | 7500  | 7500  |
| <b>Low Noise</b>                                     |   |   | Shrouded Axial Fan - Direct Drive                             |   |   |
| Quantity   | 4   | 4   | 5   | 6   | 6   |
| r/s  |   |   | 14 (60 Hz), 12 (50 Hz)  |   |   |
| Diameter (mm)  |   |   | 762   |   |   |
| Total Watts (60 Hz)                                  | 5200  | 5000  | 6250  | 7500  | 7500  |
| Total Watts (50 Hz)                                  | 4300  | 4150  | 5200  | 6250  | 6250  |
| <b>CONDENSER COIL</b>                                |   |   | MCHX Type   |   |   |
| No. Coils per Circuit                                | 1   | 2   | 2 - 3   | 3 - 3   | 3 - 3   |
| sq m   | 6.3   | 9.3   | 11.6  | 13.9  | 13.9  |
| <b>TEMPERATURE RELIEF</b>                            | Fusible Plug on Liquid Lines of Each Circuit - 99 C           |   |   |   |   |
| <b>CONNECTIONS (in.) ODF (CKT A/CKT B)</b>           |   |   |   |   |   |
| Suction Line   | 1 <sup>5</sup> / <sub>8</sub> / 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> / 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> / 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> / 2 <sup>5</sup> / <sub>8</sub> |
| Liquid Line  | 5 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> | 7 <sup>8</sup> / <sub>8</sub> / 7 <sup>8</sup> / <sub>8</sub> |
| <b>MAXIMUM HEIGHT FOR 1.7° C SUBCOOLING (m)†</b>     | 23  | 23  | 23  | 23  | 23  |
| <b>CAPACITY PER CIRCUIT (%) (CKT A/CKT B)</b>        | 46/54   | 47/53   | 40/60   | 46/54   | 50/50   |
| <b>MINIMUM UNIT CAPACITY (%)</b>                     | 23  | 24  | 20  | 15  | 17  |

**LEGEND**

- MCHX** — Microchannel Heat Exchanger
- ODF** — Outside Diameter, Female

\*Typical operating charge with 7.62 m of interconnecting piping. Operating charge is approximate for maximum system capacity. Unit is factory supplied with nitrogen holding charge. Refrigerant charge for dual circuit units is the total for both circuits.

†Maximum vertical separation between evaporator coil and condensing unit if condensing unit is below the evaporator.

**Table 5 — Operational Corner Weights with Refrigerant Charge (Approximate)**

**38APS Unit (lb)**

| 38APS UNIT SIZE | TOTAL WEIGHT | OPERATIONAL CORNER WEIGHT |     |     |     |
|-----------------|--------------|---------------------------|-----|-----|-----|
|                 |              | A                         | B   | C   | D   |
| 025             | 1089         | 356                       | 253 | 200 | 281 |
| 027             | 1255         | 396                       | 291 | 240 | 327 |
| 030             | 1261         | 399                       | 293 | 241 | 328 |
| 040             | 1998         | 619                       | 616 | 380 | 382 |
| 050             | 2007         | 623                       | 620 | 381 | 383 |

**38APS Unit (kg)**

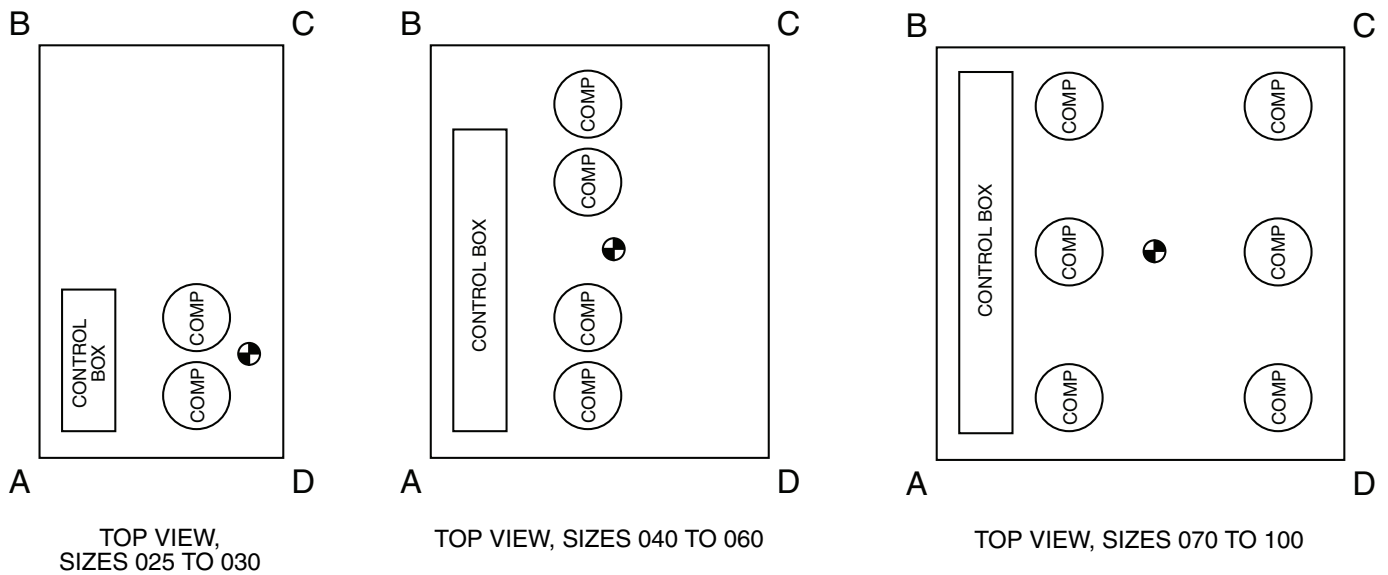
| 38APS UNIT SIZE | TOTAL WEIGHT | OPERATIONAL CORNER WEIGHT |     |     |     |
|-----------------|--------------|---------------------------|-----|-----|-----|
|                 |              | A                         | B   | C   | D   |
| 025             | 494          | 161                       | 115 | 91  | 127 |
| 027             | 569          | 180                       | 132 | 109 | 148 |
| 030             | 572          | 181                       | 133 | 109 | 149 |
| 040             | 906          | 281                       | 280 | 173 | 173 |
| 050             | 910          | 282                       | 281 | 173 | 174 |

**38APD Unit (lb)**

| 38APD UNIT SIZE | TOTAL WEIGHT | OPERATIONAL CORNER WEIGHT |     |     |     |
|-----------------|--------------|---------------------------|-----|-----|-----|
|                 |              | A                         | B   | C   | D   |
| 025             | 1107         | 360                       | 258 | 204 | 285 |
| 027             | 1273         | 401                       | 296 | 245 | 331 |
| 030             | 1279         | 404                       | 297 | 245 | 333 |
| 040             | 2124         | 672                       | 671 | 390 | 390 |
| 050             | 2150         | 683                       | 684 | 392 | 391 |
| 060             | 2257         | 706                       | 705 | 422 | 423 |
| 070             | 2494         | 723                       | 620 | 532 | 620 |
| 080             | 2665         | 791                       | 679 | 552 | 643 |
| 090             | 2901         | 759                       | 750 | 692 | 700 |
| 100             | 2910         | 759                       | 750 | 696 | 705 |

**38APD Unit (kg)**

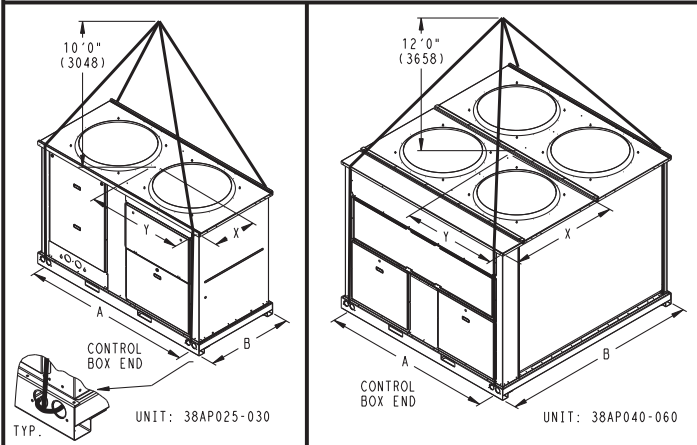
| 38APD UNIT SIZE | TOTAL WEIGHT | OPERATIONAL CORNER WEIGHT |     |     |     |
|-----------------|--------------|---------------------------|-----|-----|-----|
|                 |              | A                         | B   | C   | D   |
| 025             | 502          | 163                       | 117 | 93  | 129 |
| 027             | 577          | 182                       | 134 | 111 | 150 |
| 030             | 580          | 183                       | 135 | 111 | 151 |
| 040             | 963          | 305                       | 305 | 177 | 177 |
| 050             | 975          | 310                       | 310 | 178 | 178 |
| 060             | 1024         | 320                       | 320 | 192 | 192 |
| 070             | 1131         | 328                       | 281 | 241 | 281 |
| 080             | 1209         | 359                       | 308 | 250 | 292 |
| 090             | 1316         | 344                       | 340 | 314 | 318 |
| 100             | 1320         | 344                       | 340 | 316 | 320 |



**Fig. 2 — Corner Weights**

**CAUTION - NOTICE TO RIGGERS:**  
 ALL PANELS MUST BE IN PLACE WHEN RIGGING. FORK ONLY THROUGH BASE RAIL FORK OPENINGS.

NOTES:  
 1. RIG WITH FOUR CABLES USING A MINIMUM 20 FT.(6094mm) LENGTH FOR 025-030 SIZES AND 24 FT.(7315mm) LENGTH FOR 040-060 SIZES.  
 2. CENTRAL LIFTING POINT MUST BE A MINIMUM OF 10 FT.(3048mm) FOR 025-030 SIZES AND 12 FT.(3658mm) FOR 040-060 SIZES ABOVE THE TOP OF THE UNIT.  
 3. LIFTING HOLES PROVIDED ARE 2.25 IN.(57.2mm) DIAMETER.  
 4. CHECK BILL OF LADING FOR SHIPPING WEIGHT OF UNIT.



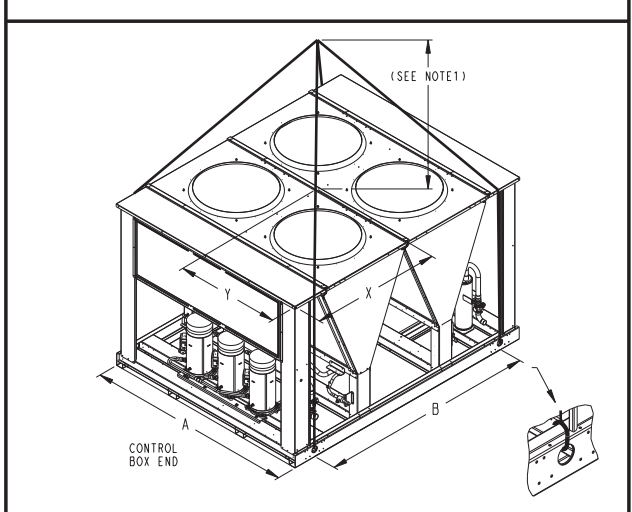
| MODEL NUMBER | MAX. SHIP WT. W/O PACKAGING |      | MAX. SHIP WT. W/PACKAGING |      | LIFTING HOLES |      |       |      | CENTER OF GRAVITY |     |       |      |
|--------------|-----------------------------|------|---------------------------|------|---------------|------|-------|------|-------------------|-----|-------|------|
|              |                             |      |                           |      | A             |      | B     |      | X                 |     | Y     |      |
|              | LBS                         | KGS  | LBS                       | KGS  | IN            | MM   | IN    | MM   | IN                | MM  | IN    | MM   |
| 38APS025     | 1113                        | 505  | 1163                      | 528  | 79.39         | 2017 | 40.25 | 1022 | 17.78             | 452 | 36.87 | 937  |
| 38APD025     | 1131                        | 513  | 1181                      | 536  | 79.39         | 2017 | 40.25 | 1022 | 17.82             | 453 | 36.99 | 940  |
| 38APS027     | 1276                        | 579  | 1326                      | 601  | 79.39         | 2017 | 40.25 | 1022 | 18.21             | 463 | 37.60 | 955  |
| 38APD027     | 1294                        | 587  | 1344                      | 610  | 79.39         | 2017 | 40.25 | 1022 | 18.23             | 463 | 37.69 | 957  |
| 38APS030     | 1282                        | 582  | 1332                      | 604  | 79.39         | 2017 | 40.25 | 1022 | 18.18             | 462 | 37.52 | 953  |
| 38APD030     | 1300                        | 590  | 1350                      | 612  | 79.39         | 2017 | 40.25 | 1022 | 18.20             | 462 | 37.61 | 955  |
| 38APS040     | 2022                        | 917  | 2097                      | 951  | 79.39         | 2017 | 92.12 | 2340 | 35.00             | 889 | 44.00 | 1118 |
| 38APD040     | 2148                        | 974  | 2223                      | 1008 | 79.39         | 2017 | 92.12 | 2340 | 33.66             | 855 | 44.06 | 1119 |
| 38APS050     | 2031                        | 921  | 2106                      | 955  | 79.39         | 2017 | 92.12 | 2340 | 34.90             | 886 | 44.00 | 1118 |
| 38APD050     | 2174                        | 986  | 2249                      | 1020 | 79.39         | 2017 | 92.12 | 2340 | 33.39             | 848 | 44.12 | 1121 |
| 38APD060     | 2299                        | 1043 | 2374                      | 1077 | 79.39         | 2017 | 92.12 | 2340 | 34.35             | 873 | 44.06 | 1119 |

38AP501542

SIZES 025 TO 060

**CAUTION - NOTICE TO RIGGERS:**  
 ALL PANELS MUST BE IN PLACE WHEN RIGGING. DO NOT FORK THIS UNIT WITHOUT SKID.

NOTES:  
 1. RIG WITH FOUR CABLES USING A MINIMUM 20 FT.(6094mm) LENGTH FOR 060,070 SIZES AND 24 FT.(7315mm) LENGTH FOR 080-100 SIZES.  
 2. CENTRAL LIFTING POINT MUST BE A MINIMUM OF 10 FT.(3048mm) FOR 060,070 SIZES AND 12 FT.(3658mm) FOR 080-100 SIZES ABOVE THE TOP OF THE UNIT.  
 3. LIFTING HOLES PROVIDED ARE 2.50 IN.(63.5mm) DIAMETER.  
 4. CHECK BILL OF LADING FOR SHIPPING WEIGHT OF UNIT.

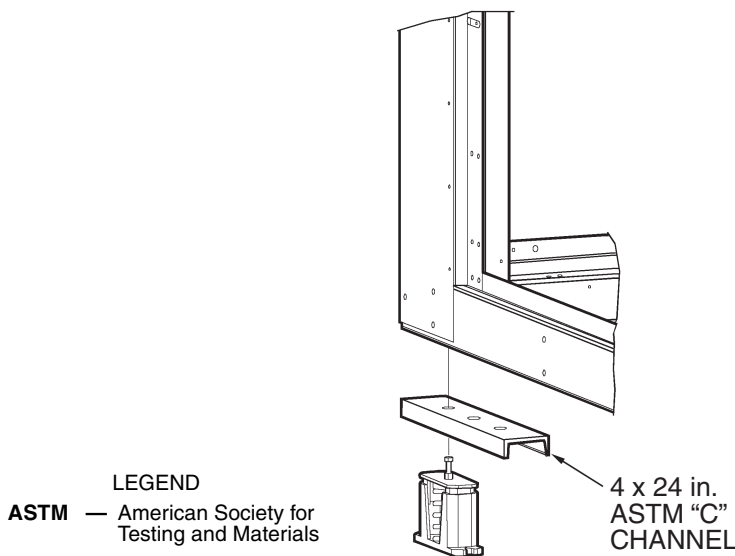


| MODEL NUMBER | MAX. SHIP WT. W/O PACKAGING |      | MAX. SHIP WT. WITH PACKAGING |      | LIFTING HOLES |      |        |      | CENTER OF GRAVITY |      |       |      |
|--------------|-----------------------------|------|------------------------------|------|---------------|------|--------|------|-------------------|------|-------|------|
|              |                             |      |                              |      | A             |      | B      |      | X                 |      | Y     |      |
|              | LBS                         | KGS  | LBS                          | KGS  | IN            | MM   | IN     | MM   | IN                | MM   | IN    | MM   |
| 38APD070     | 2522                        | 1144 | 2622                         | 1189 | 88.00         | 2235 | 91.37  | 2321 | 50.92             | 1293 | 40.60 | 1031 |
| 38APD080     | 2700                        | 1225 | 2830                         | 1284 | 88.00         | 2235 | 131.62 | 3343 | 67.57             | 1716 | 40.15 | 1020 |
| 38APD090     | 2943                        | 1335 | 3073                         | 1394 | 88.00         | 2235 | 131.62 | 3343 | 72.40             | 1839 | 43.25 | 1099 |
| 38APD100     | 2952                        | 1339 | 3082                         | 1398 | 88.00         | 2235 | 131.62 | 3343 | 72.61             | 1844 | 43.25 | 1099 |

38AP501543

SIZES 070 TO 100

**Fig. 3 — Rigging Labels**



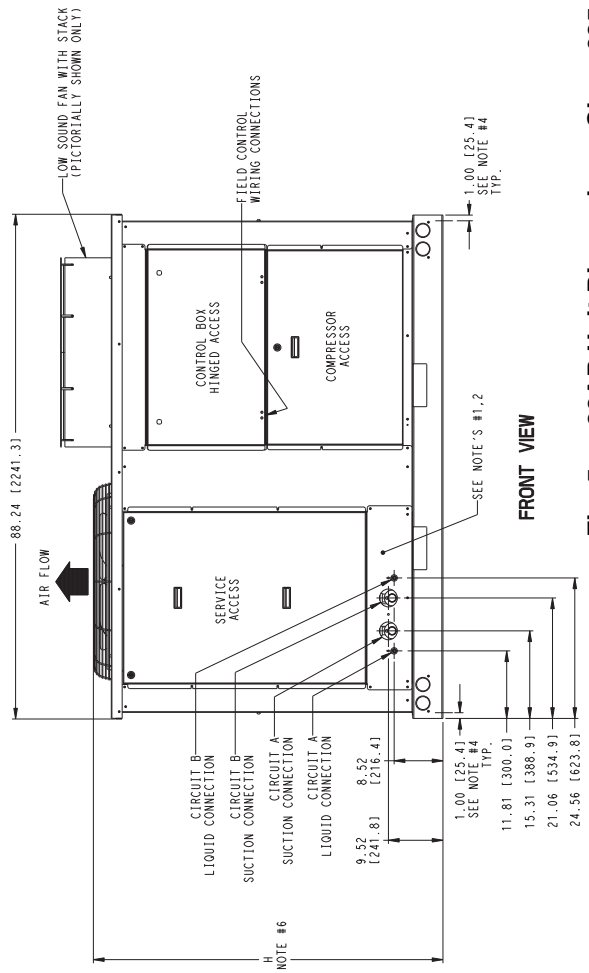
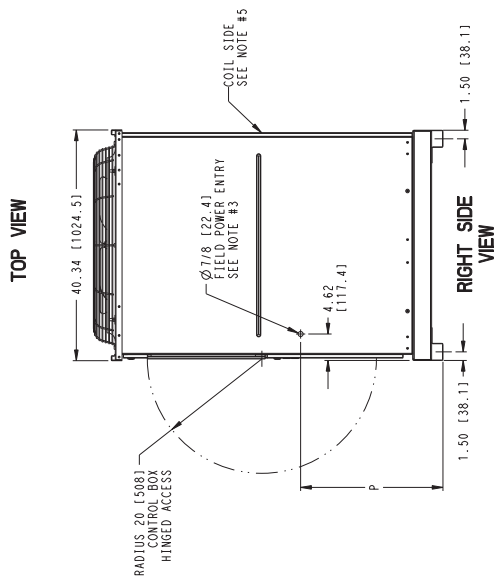
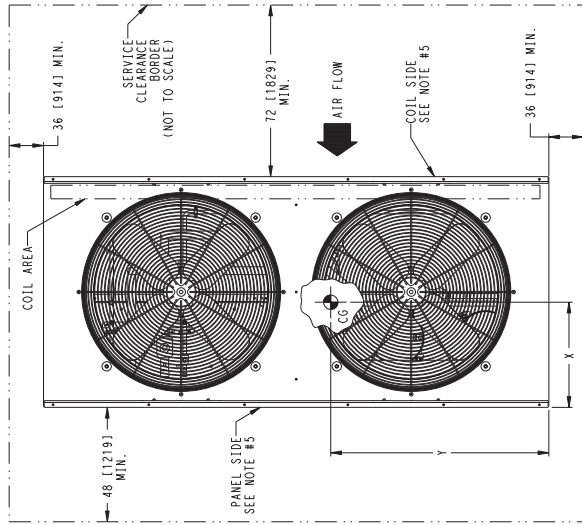
**Fig. 4 — Perimeter Support Channel**



| UNIT      | STANDARD WEIGHT, lb (kg) | CENTER OF GRAVITY, in. (mm) |            | HEIGHT, in. (mm) |            | POWER ENTRY, in. (mm)              |                                    | SERVICE VALVE CONNECTIONS, in. (mm) |  |
|-----------|--------------------------|-----------------------------|------------|------------------|------------|------------------------------------|------------------------------------|-------------------------------------|--|
|           |                          | X                           | Y          | H                | P          | Suction                            | Liquid                             |                                     |  |
| Standard  | 38APS025                 | 17.8 (452)                  | 36.9 (937) | 61.0 (1549)      | 24.9 (632) | 1 <sup>5</sup> / <sub>8</sub> (41) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APD025                 | 17.8 (452)                  | 37.0 (940) |                  |            | 1 <sup>3</sup> / <sub>8</sub> (35) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APS027                 | 18.2 (462)                  | 37.6 (955) |                  |            | 1 <sup>5</sup> / <sub>8</sub> (41) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APD027                 | 18.2 (462)                  | 37.6 (955) | 73.1 (1857)      | 36.9 (937) | 1 <sup>3</sup> / <sub>8</sub> (35) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APS030                 | 1246 (565)                  | 18.2 (462) | 37.5 (955)       |            | 1 <sup>5</sup> / <sub>8</sub> (41) | 7 <sup>1</sup> / <sub>8</sub> (22) |                                     |  |
|           | 38APD030                 | 1264 (573)                  | 18.2 (462) | 37.6 (955)       |            | 1 <sup>3</sup> / <sub>8</sub> (35) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
| Low Sound | 38APS025                 | 1113 (505)                  | 36.9 (937) | 66.5 (1689)      | 24.9 (632) | 1 <sup>5</sup> / <sub>8</sub> (41) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APD025                 | 1131 (513)                  | 37.0 (940) |                  |            | 1 <sup>3</sup> / <sub>8</sub> (35) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APS027                 | 1276 (579)                  | 37.6 (955) |                  |            | 1 <sup>5</sup> / <sub>8</sub> (41) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APD027                 | 1294 (587)                  | 37.6 (955) | 78.6 (1996)      | 36.9 (937) | 1 <sup>3</sup> / <sub>8</sub> (35) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |
|           | 38APS030                 | 1282 (582)                  | 37.5 (955) |                  |            | 1 <sup>5</sup> / <sub>8</sub> (41) | 7 <sup>1</sup> / <sub>8</sub> (22) |                                     |  |
|           | 38APD030                 | 1300 (590)                  | 37.6 (955) |                  |            | 1 <sup>3</sup> / <sub>8</sub> (35) | 5 <sup>1</sup> / <sub>8</sub> (16) |                                     |  |

**NOTES:**

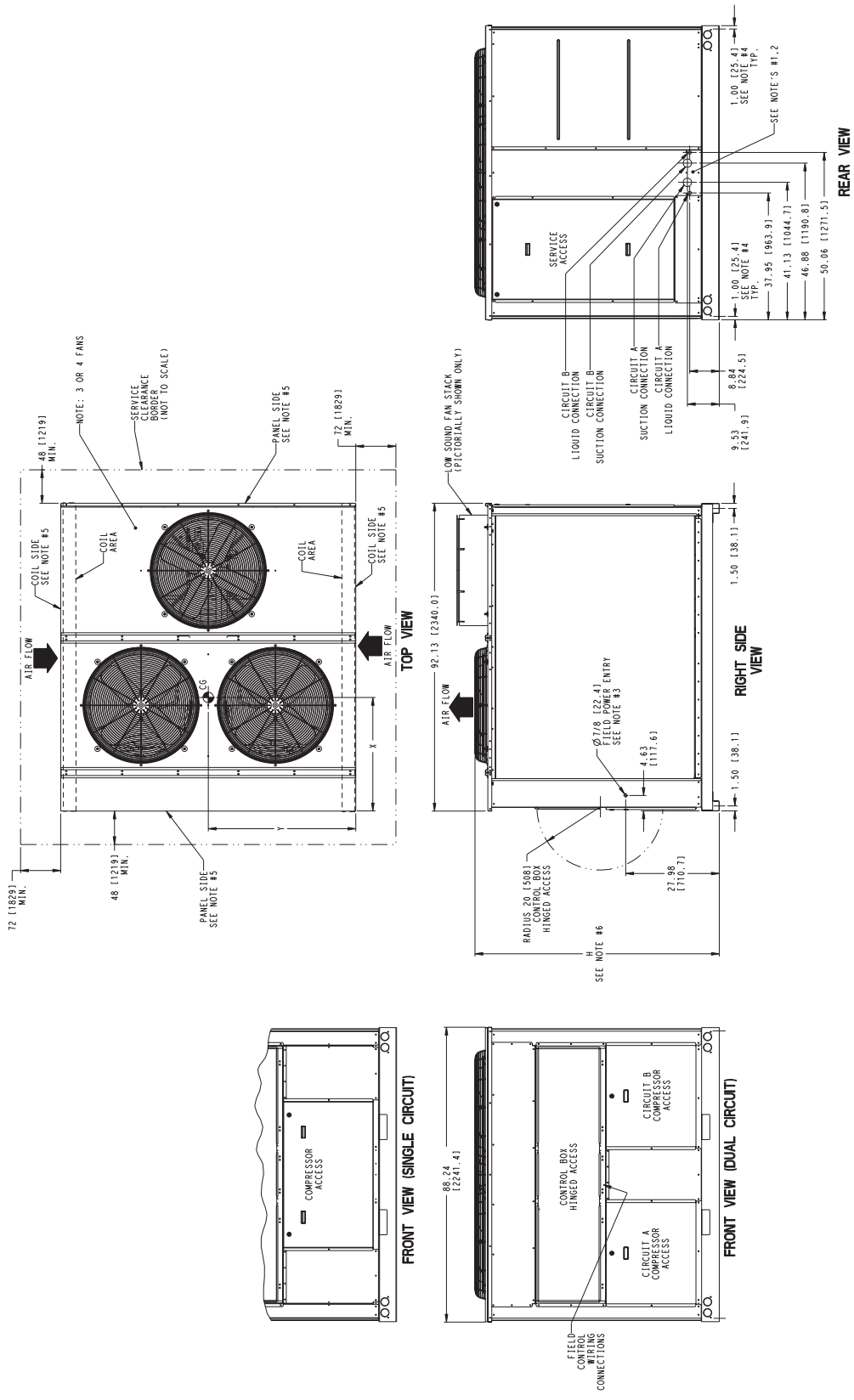
1. Be sure to use a wet rag to remove all valve cores before brazing field piping.
2. Do not cap or otherwise obstruct the liquid line temperature relief.
3. A 7/8 in. (22.4 mm) diameter hole is provided for locating field power wiring. Actual hole size required depends on field wire sizing.
4. A 0.437 in. (11.1 mm) diameter hole is used for mounting unit.
5. Unit must have clearances as follows:  
Top - Do not restrict.  
Coil End - 72 in. (1829) from solid surface.  
Panel Side - 48 in. (1219) per NEC (National Electrical Code, U.S.A. Standard).
6. Unit height dimension for standard and low sound unit with stack fan option.
7. Installation in a pit is not recommended.
8. Unit can be handled using the fork truck lift pockets.
9. Dimensions shown in inches (mm).



**Fig. 5 — 38AP Unit Dimensions, Sizes 025-030**

| UNIT      | STANDARD WEIGHT, lb (kg) | CENTER OF GRAVITY, in. (mm) |            | HEIGHT, in. (mm) | SERVICE VALVE CONNECTIONS, in. (mm) |          |
|-----------|--------------------------|-----------------------------|------------|------------------|-------------------------------------|----------|
|           |                          | X                           | Y          |                  | Suction                             | Liquid   |
| Standard  | 38APS040                 | 1968 (893)                  | 35.0 (869) | 44.0 (1118)      | 2 1/8 (54)                          | 7/8 (22) |
|           | 38APD040                 | 2094 (950)                  | 33.7 (856) | 44.1 (1120)      | 1 5/8 (41)                          | 5/8 (16) |
|           | 38APS050                 | 1977 (897)                  | 34.9 (886) | 44.0 (1118)      | 2 1/8 (54)                          | 7/8 (22) |
|           | 38APD050                 | 2120 (961)                  | 33.4 (848) | 44.1 (1120)      | 1 5/8 (41)                          | 5/8 (16) |
|           | 38APD060                 | 2227 (1010)                 | 34.4 (874) | 44.1 (1120)      | 1 5/8 (41)                          | 5/8 (16) |
|           | 38APS040                 | 2022 (917)                  | 35.0 (869) | 44.0 (1118)      | 2 1/8 (54)                          | 7/8 (22) |
| Low Sound | 38APD040                 | 2148 (974)                  | 33.7 (856) | 44.1 (1120)      | 1 5/8 (41)                          | 5/8 (16) |
|           | 38APS050                 | 2031 (921)                  | 34.9 (886) | 44.0 (1118)      | 2 1/8 (54)                          | 7/8 (22) |
|           | 38APD050                 | 2174 (986)                  | 33.4 (848) | 44.1 (1120)      | 1 5/8 (41)                          | 5/8 (16) |
|           | 38APD060                 | 2299 (1043)                 | 34.4 (874) | 44.1 (1120)      | 1 5/8 (41)                          | 5/8 (16) |

- NOTES:**
- Be sure to use a wet rag to remove all valve cores before brazing field piping.
  - Do not cap or otherwise obstruct the liquid line temperature relief.
  - A 7/8 in. (22.4 mm) diameter hole is provided for locating field power wiring.
  - Actual hole size required depends on field wire sizing.
  - A 0.437 in. (11.1 mm) diameter hole is used for mounting unit.
  - Unit must have clearances as follows:  
Top - Do not restrict.  
Coil End - 72 in. (1829) from solid surface.  
Panel Side - 48 in. (1219) per NEC (National Electrical Code, U.S.A. Standard).  
Unit height dimension for standard and low sound unit with stack fan option.
  - Installation in a pit is not recommended.
  - Unit can be handled using the fork truck lift pockets.
  - Dimensions shown in inches (mm).
  - Sizes 040 and 050 units have 3 condenser fans. Size 060 units have 4 condenser fans.

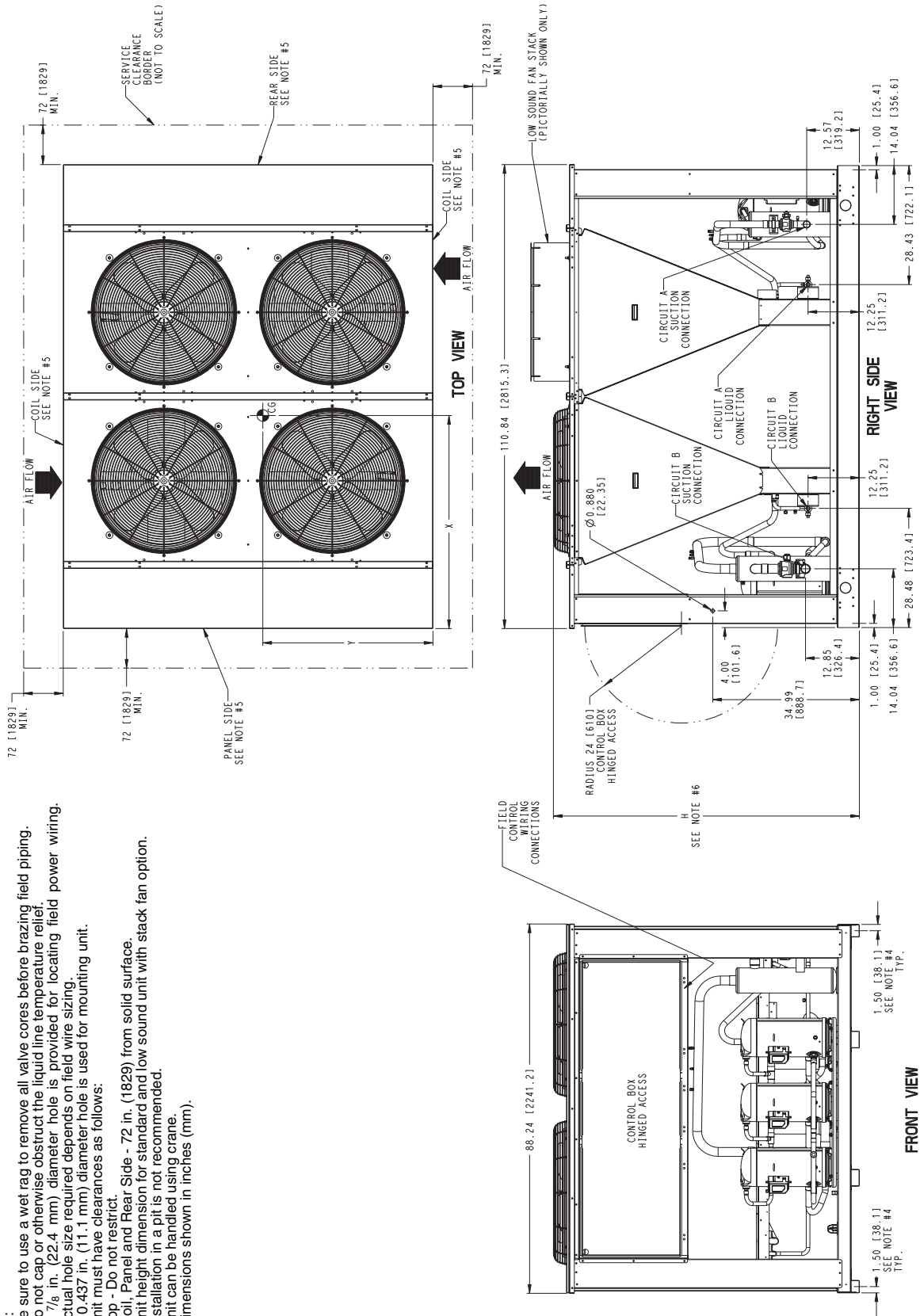


**Fig. 6 — 38AP Unit Dimensions, Sizes 040-060**

| UNIT      | STANDARD WEIGHT, lb (kg) | CENTER OF GRAVITY, in. (mm) |             | HEIGHT, in. (mm) | SERVICE VALVE CONNECTIONS, in. (mm) |            |          |
|-----------|--------------------------|-----------------------------|-------------|------------------|-------------------------------------|------------|----------|
|           |                          | X                           | Y           |                  | Suction                             |            | Liquid   |
|           |                          |                             |             |                  | Circuit A                           | Circuit B  |          |
| Standard  | 2450 (1111)              | 50.9 (1293)                 | 40.6 (1031) | 73.0 (1854)      | 2 7/8 (54)                          | 1 5/8 (41) | 7/8 (22) |
| Low Sound | 2522 (1144)              | 50.9 (1293)                 | 40.6 (1031) | 78.5 (1994)      | 2 7/8 (54)                          | 1 5/8 (41) | 7/8 (22) |

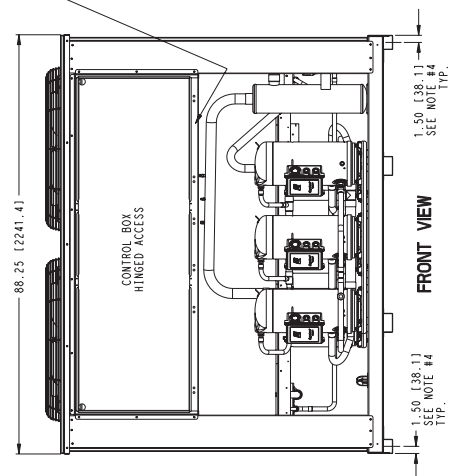
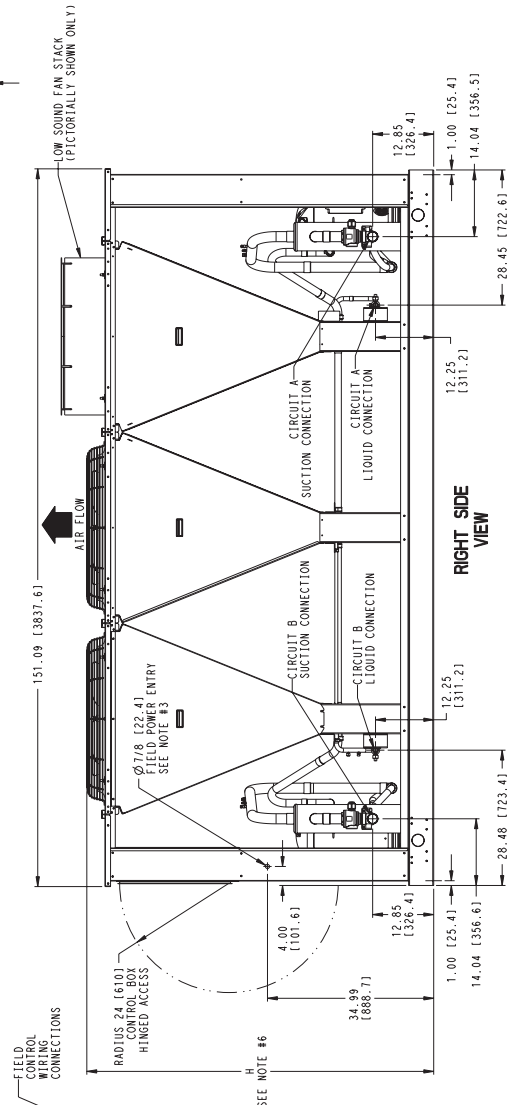
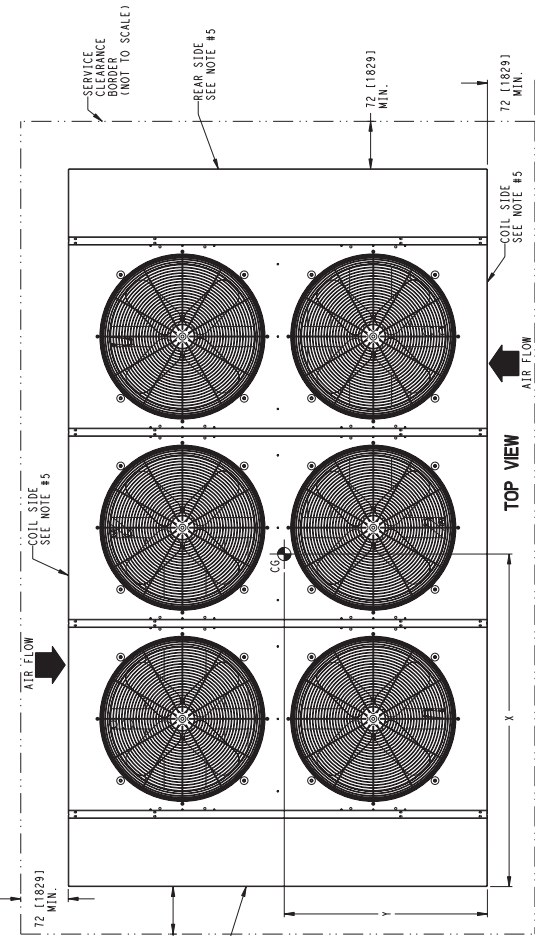
**NOTES:**

1. Be sure to use a wet rag to remove all valve cores before brazing field piping.
2. Do not cap or otherwise obstruct the liquid line temperature relief.
3. A 7/8 in. (22.4 mm) diameter hole is provided for locating field power wiring.
4. Actual hole size required depends on field wire sizing.
5. A 0.437 in. (11.1 mm) diameter hole is used for mounting unit. Top - Do not restrict.
6. Coil, Panel and Rear Side - 72 in. (1829) from solid surface.
7. Unit height dimension for standard and low sound unit with stack fan option.
8. Installation in a pit is not recommended.
9. Unit can be handled using crane.
9. Dimensions shown in inches (mm).



**Fig. 7 — 38AP Unit Dimensions, Size 070**

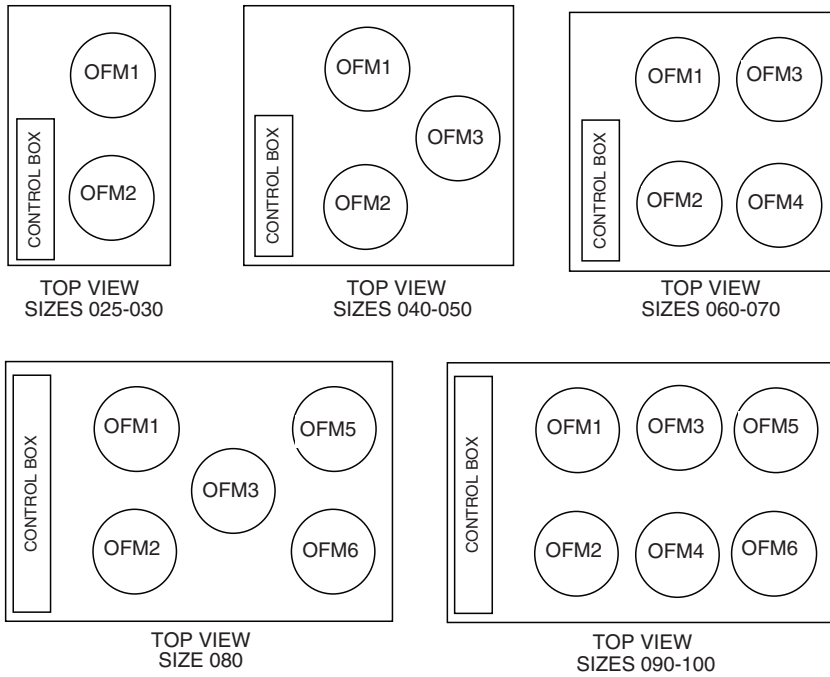
| UNIT      | STANDARD WEIGHT, lb (kg) | CENTER OF GRAVITY, in. (mm) |             | HEIGHT, in. (mm) | SERVICE VALVE CONNECTIONS, in. (mm) |            |          |
|-----------|--------------------------|-----------------------------|-------------|------------------|-------------------------------------|------------|----------|
|           |                          | X                           | Y           |                  | Suction                             |            | Liquid   |
|           |                          |                             |             |                  | Circuit A                           | Circuit B  |          |
| Standard  | 38APD080                 | 2610 (1184)                 | 67.6 (1716) | 40.2 (1020)      | 2 1/8 (54)                          | 1 5/8 (41) | 7/8 (22) |
|           | 38APD090                 | 2835 (1286)                 | 72.4 (1839) | 43.3 (1099)      | 2 1/8 (54)                          | 2 1/8 (54) | 7/8 (22) |
|           | 38APD100                 | 2844 (1290)                 | 72.6 (1844) | 43.3 (1099)      | 2 1/8 (54)                          | 2 1/8 (54) | 7/8 (22) |
| Low Sound | 38APD080                 | 2700 (1225)                 | 67.6 (1716) | 40.2 (1020)      | 2 1/8 (54)                          | 1 5/8 (41) | 7/8 (22) |
|           | 38APD090                 | 2943 (1335)                 | 72.4 (1839) | 43.3 (1099)      | 2 1/8 (54)                          | 2 1/8 (54) | 7/8 (22) |
|           | 38APD100                 | 2952 (1339)                 | 72.6 (1844) | 43.3 (1099)      | 2 1/8 (54)                          | 2 1/8 (54) | 7/8 (22) |



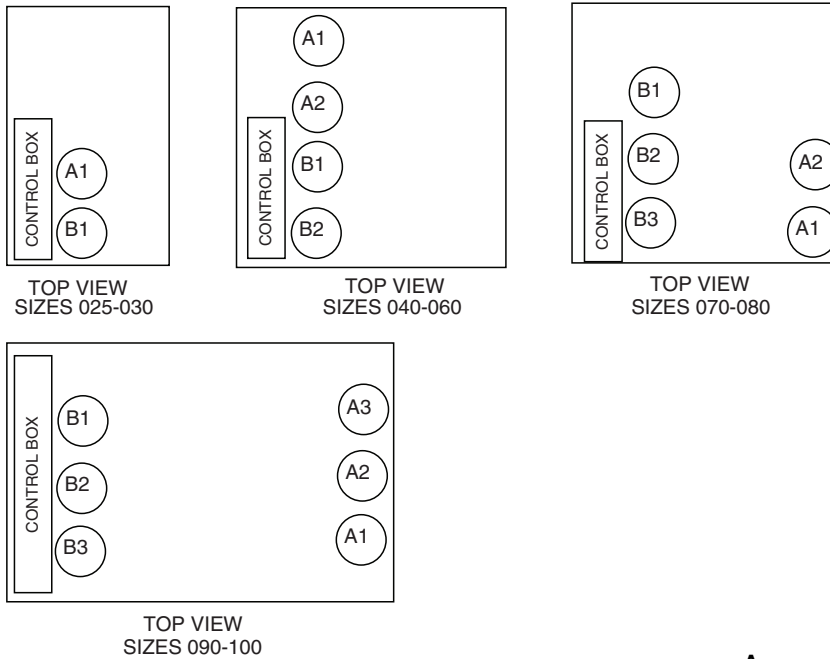
- NOTES:**
1. Be sure to use a wet rag to remove all valve cores before brazing field piping.
  2. Do not cap or otherwise obstruct the liquid line temperature relief.
  3. A 7/8 in. (22.4 mm) diameter hole is provided for locating field power wiring. Actual hole size required depends on field wire sizing.
  4. A 0.437 in. (11.1 mm) diameter hole is used for mounting unit.
  5. Unit must have clearances as follows:  
Top - Do not restrict.  
Coil, Panel and Rear Side - 72 in. (1829) from solid surface.  
Unit height dimension for standard and low sound unit with stack fan option.
  6. Installation in a pit is not recommended.
  7. Unit can be handled using crane.
  8. Dimensions shown in inches (mm).
  9. Size 080 units have 5 condenser fans. Sizes 090 and 100 units have 6 condenser fans.

**Fig. 8 — 38AP Unit Dimensions, Sizes 080-100**

### OUTDOOR FAN LAYOUT (Single and Dual Circuit)



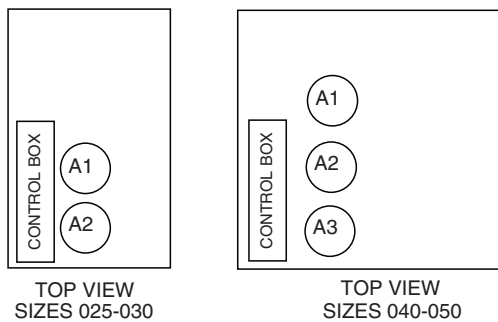
### COMPRESSOR LAYOUT DUAL CIRCUIT



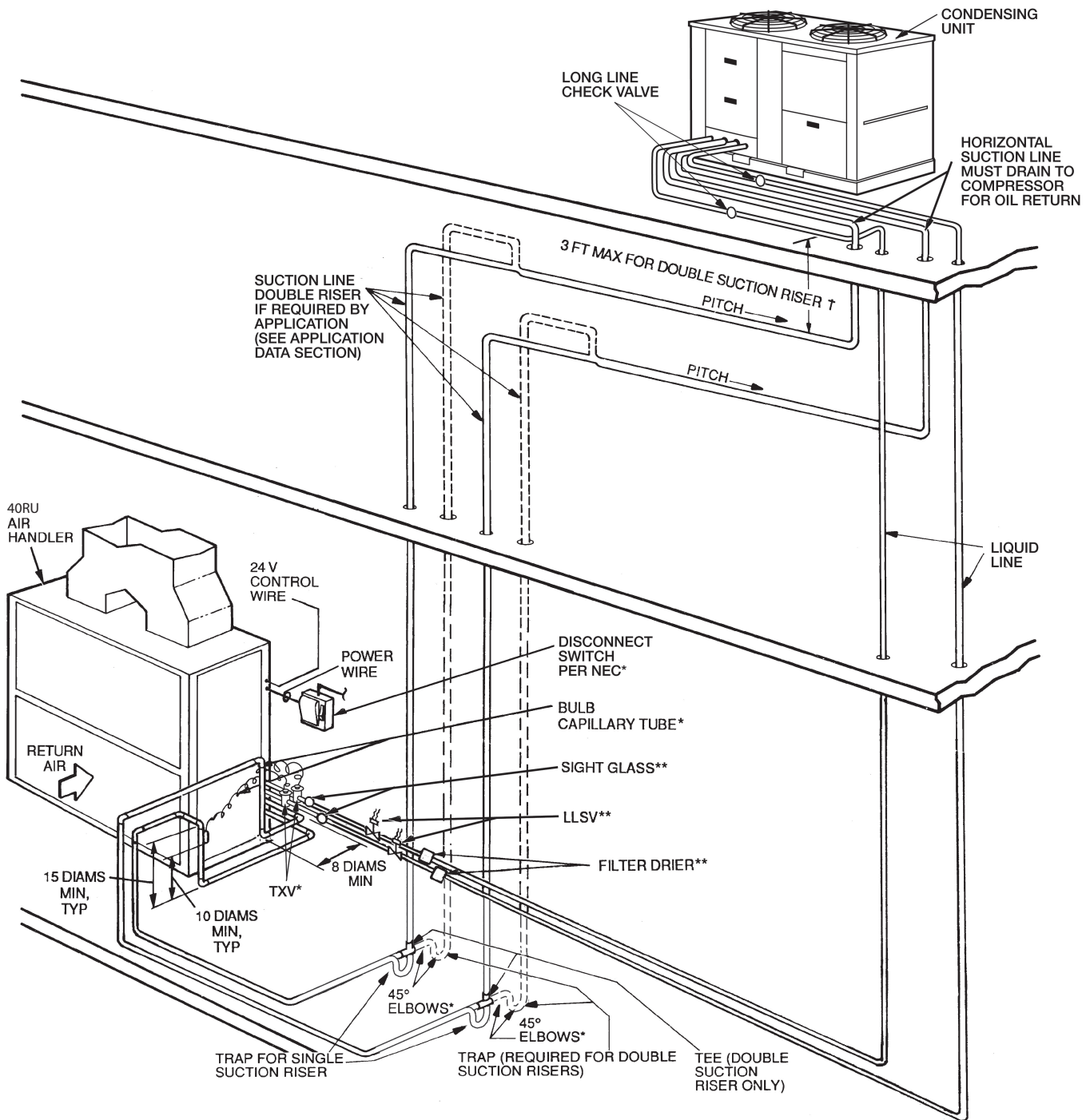
#### LEGEND

- A** — Circuit 1 Compressor
- B** — Circuit 2 Compressor
- OFM** — Outdoor Fan



### COMPRESSOR LAYOUT SINGLE CIRCUIT



**Fig. 9 — Outdoor Fan and Compressor Layout**



#### LEGEND

- LLSV** — Liquid Line Solenoid Valve  
**NEC** — National Electrical Code  
**TXV** — Thermostatic Expansion Valve  
 Piping  
 Double Riser Piping (if required)

\*Field supplied.

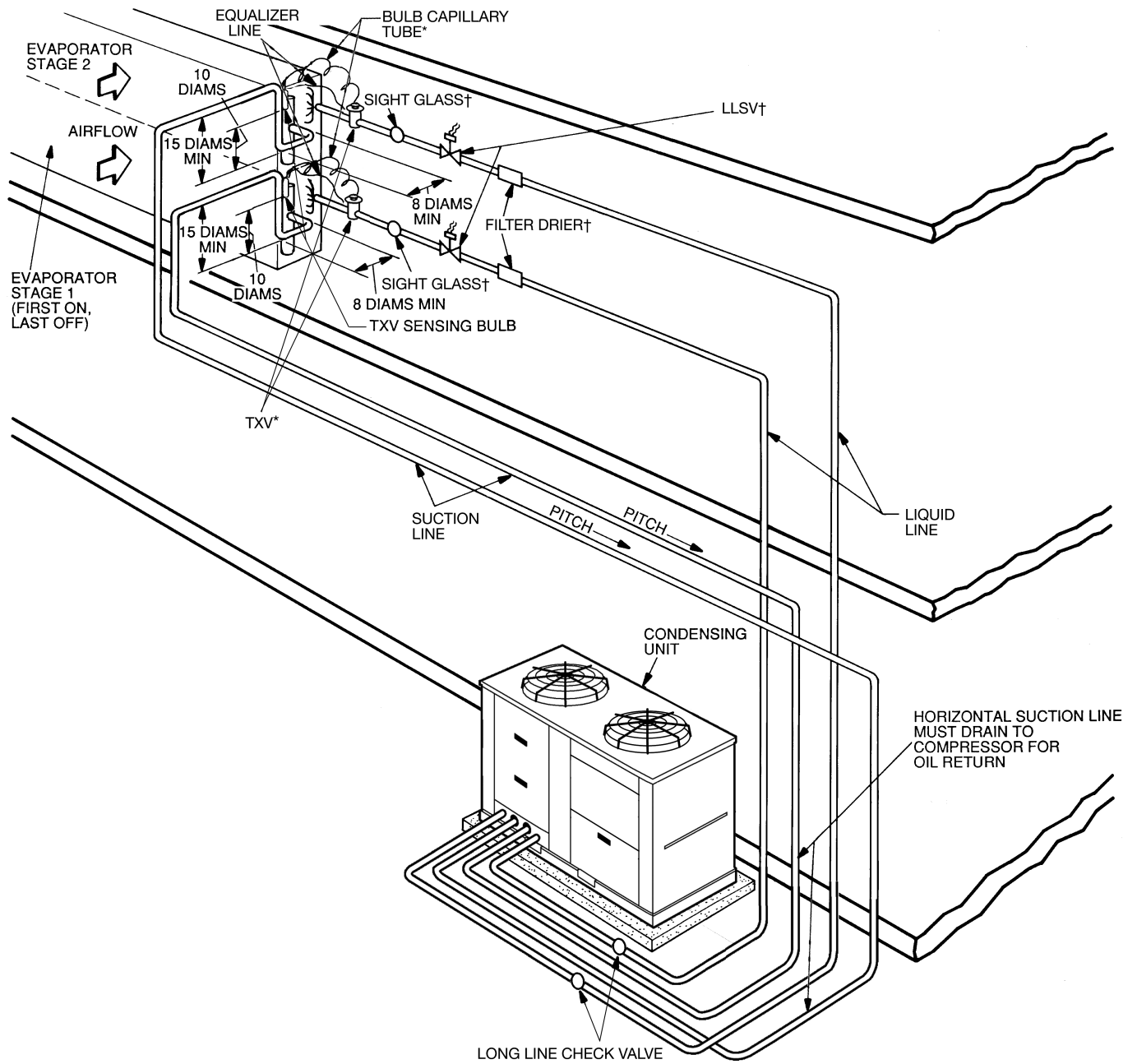
†If double suction riser is required for piping system, size short riser (3 ft maximum) according to Fig. 12.

\*\*Field supplied. See Table 6 for refrigerant specialties part numbers.

#### NOTES:

1. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual for details.
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. Install field-supplied disconnect switch in accordance with all local and national electrical codes.
5. Liquid line solenoid valves (solenoid drop control) are not required but are recommended to prevent refrigerant migration to the compressor.
6. Factory-supplied accumulator not shown.
7. Dual-circuit piping shown. Single-circuit piping is similar but would only have one suction line and one liquid line.
8. A field-supplied, 5% bleed port TXV is required for every application.
9. Sight glass, LLSV, and filter drier are field supplied.
10. Long line length check valves are required for liquid line installation on all linear line length applications of more than 100 ft (30.5 m). For any 025-030 size dual-circuit unit application where evaporator is located higher than the condensing unit, check valves are required for linear line length above 55 ft (16.8 m).

**Fig. 10 — 38AP Unit Rooftop Installation**



**LEGEND**

- LLSV** — Liquid Line Solenoid Valve
- NEC** — National Electrical Code
- TXV** — Thermostatic Expansion Valve
- Piping

\*Field supplied.

†Field supplied. See Table 6 for refrigerant specialties part numbers.

**NOTES:**

1. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual for details.
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. Install field-supplied disconnect switch in accordance with all local and national electrical codes.
5. Liquid line solenoid valves (solenoid drop control) are not required but are recommended to prevent refrigerant migration to the compressor.
6. Factory-supplied accumulator not shown.
7. Dual-circuit piping shown. Single-circuit piping is similar but would only have one suction line and one liquid line.
8. A field-supplied, 5% bleed port TXV is required for every application.
9. Sight glass, LLSV, and filter drier are field supplied.
10. Long line length check valves are required for liquid line installation on all linear line length applications of more than 100 ft (30.5 m). For any 025-030 size dual-circuit unit application where evaporator is located higher than the condensing unit, check valves are required for linear line length above 55 ft (16.8 m).

**Fig. 11 — 38AP Unit Ground Level Installation**

**Table 6 — Refrigerant Specialties Part Numbers**

| 38APS UNIT SIZE | CIRCUIT A |                     |                                  |                                  |                                  |                                   |
|-----------------|-----------|---------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|
|                 | Tons      | LL Size (in.)       | LLSV                             | LLSV Coil<br>24-v, 50/60 Hz      | Sight Glass                      | Filter Drier                      |
| 025             | 24.0      | 5/8<br>7/8          | EF680028<br>EF680029             | EF680032<br>EF680032             | KM680005<br>KM680006             | KH680002<br>KH680003              |
| 027             | 26.7      | 5/8<br>7/8          | EF680028<br>EF680029             | EF680032<br>EF680032             | KM680005<br>KM680006             | KH680002<br>KH680003              |
| 030             | 31.1      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680002<br>KH680003<br>KH680004  |
| 040             | 39.8      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680003*<br>KH680003<br>KH680004 |
| 050             | 48.1      | 7/8<br>1 1/8        | EF680029<br>EF680030             | EF680032<br>EF680032             | KM680006<br>KM680007             | KH680003<br>KH680004              |

| 38APD UNIT SIZE | CIRCUIT A |                     |                                  |                                  |                                  |                                   | CIRCUIT B |                     |                                  |                                  |                                  |                                   |
|-----------------|-----------|---------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|-----------|---------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|
|                 | Tons      | LL Size (in.)       | LLSV                             | LLSV Coil<br>24-v, 50/60 Hz      | Sight Glass                      | Filter Drier                      | Tons      | LL Size (in.)       | LLSV                             | LLSV Coil<br>24-v, 50/60 Hz      | Sight Glass                      | Filter Drier                      |
| 025             | 12.0      | 1/2<br>5/8          | EF680031<br>EF680028             | EF680032<br>EF680032             | KM680004<br>KM680005             | KH680001<br>KH680002              | 12.0      | 1/2<br>5/8          | EF680031<br>EF680028             | EF680032<br>EF680032             | KM680004<br>KM680005             | KH680001<br>KH680002              |
| 027             | 13.3      | 1/2<br>5/8          | EF680031<br>EF680028             | EF680032<br>EF680032             | KM680004<br>KM680005             | KH680001<br>KH680002              | 13.3      | 1/2<br>5/8          | EF680031<br>EF680028             | EF680032<br>EF680032             | KM680004<br>KM680005             | KH680001<br>KH680002              |
| 030             | 15.6      | 1/2<br>5/8<br>7/8   | EF680031<br>EF680028<br>EF680029 | EF680032<br>EF680032<br>EF680032 | KM680004<br>KM680005<br>KM680006 | KH680001<br>KH680002<br>KH680003  | 15.6      | 1/2<br>5/8<br>7/8   | EF680031<br>EF680028<br>EF680029 | EF680032<br>EF680032<br>EF680032 | KM680004<br>KM680005<br>KM680006 | KH680001<br>KH680002<br>KH680003  |
| 040             | 21.0      | 5/8<br>7/8          | EF680028<br>EF680029             | EF680032<br>EF680032             | KM680005<br>KM680006             | KH680002<br>KH680003              | 18.2      | 1/2<br>5/8<br>7/8   | EF680028<br>EF680029<br>EF680029 | EF680032<br>EF680032<br>EF680032 | KM680004<br>KM680005<br>KM680006 | KH680001<br>KH680002<br>KH680003  |
| 050             | 23.8      | 5/8<br>7/8          | EF680028<br>EF680029             | EF680032<br>EF680032             | KM680005<br>KM680006             | KH680002<br>KH680003              | 26.3      | 5/8<br>7/8          | EF680028<br>EF680029             | EF680032<br>EF680032             | KM680005<br>KM680006             | KH680002<br>KH680003              |
| 060             | 26.8      | 5/8<br>7/8          | EF680028<br>EF680029             | EF680032<br>EF680032             | KM680005<br>KM680006             | KH680002<br>KH680003              | 31.5      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680002<br>KH680003<br>KH680004  |
| 070             | 31.8      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680002<br>KH680003<br>KH680004  | 35.5      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680002<br>KH680003<br>KH680004  |
| 080             | 31.3      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680002<br>KH680003<br>KH680004  | 46.7      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680003*<br>KH680003<br>KH680004 |
| 090             | 40.3      | 5/8<br>7/8<br>1 1/8 | EF680028<br>EF680029<br>EF680030 | EF680032<br>EF680032<br>EF680032 | KM680005<br>KM680006<br>KM680007 | KH680003*<br>KH680003<br>KH680004 | 47.1      | 7/8<br>1 1/8        | EF680029<br>EF680030             | EF680032<br>EF680032             | KM680006<br>KM680007             | KH680003<br>KH680004              |
| 100             | 48.0      | 7/8<br>1 1/8        | EF680029<br>EF680030             | EF680032<br>EF680032             | KM680006<br>KM680007             | KH680003<br>KH680004              | 48.0      | 7/8<br>1 1/8        | EF680029<br>EF680030             | EF680032<br>EF680032             | KM680006<br>KM680007             | KH680003<br>KH680004              |

**LEGEND**

LL — Liquid Line  
 LLSV — Liquid Line Solenoid Valve

\*Bushing required to fit 5/8 in. line.

**NOTE:**

1. Filter driers have been sized based upon 1 to 2 psig pressure drop clean in accordance with ARI Standard 710.
2. All pipe sizes are OD inches. Equivalent sizes in millimeters follow:

| in.   | mm   |
|-------|------|
| 1/2   | 12.7 |
| 5/8   | 15.9 |
| 7/8   | 22.2 |
| 1 1/8 | 28.6 |



### Step 3 — Make Refrigerant Piping Connections

#### ⚠ CAUTION

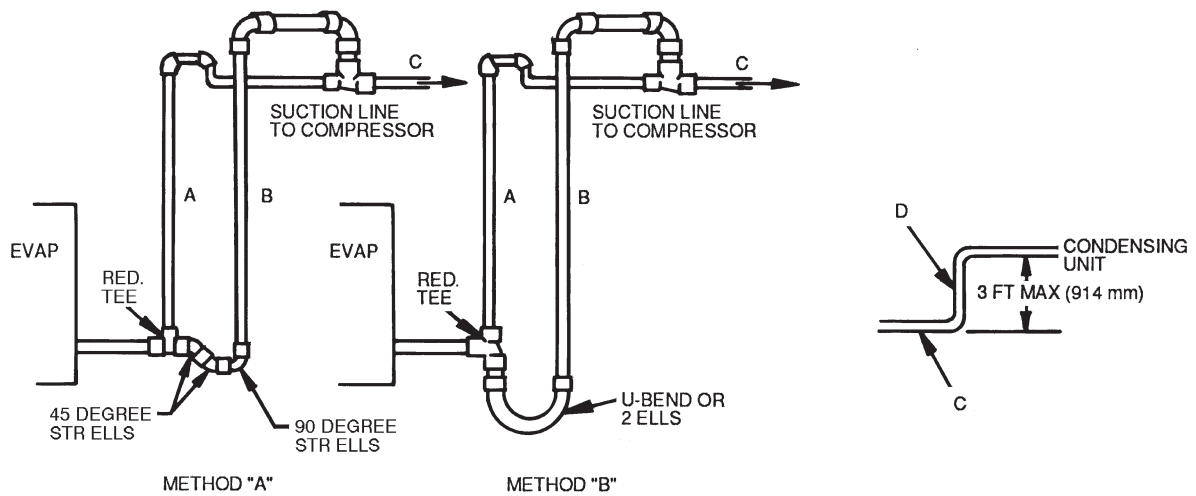
Do NOT bury refrigerant piping underground. Failure to comply could result in equipment damage.

The units have large suction lines to minimize friction losses. The units also have the ability to operate at low capacity. Because of these capabilities, use special care with suction piping and suction risers to ensure proper compressor oil return under all operating conditions. If the evaporator is above the condensing unit, the maximum allowable vertical separation between the condensing unit and the evaporator is 75 ft (22.9 m) for all units. Size suction lines in accordance with Table 7 and Fig. 12.

**SIZE REFRIGERANT LINES** — Consider the length of piping required between the condensing unit and indoor unit (evaporator), the amount of liquid lift, and compressor oil return. Suction and liquid lines should be sized in accordance with Table 7. *Double suction risers may be required* if condensing unit is located above the evaporator to assure proper oil return at minimum load operating conditions. See Table 7 and Fig. 12. Note the indoor unit installation instructions for additional information.

#### ⚠ CAUTION

The field-supplied liquid line solenoid valve *must* be installed at the evaporator to avoid possible compressor damage during unit operation if the maximum allowable evaporator size is exceeded per Table 8. See Fig. 13 (for 38APD025-100 dual-circuit units), or Fig. 14 (for 38APS025-050 single-circuit units).



#### LEGEND

- A** — Pipe A, Suction Riser, without Trap
- B** — Pipe B, Suction Riser with Trap
- C** — Suction Line to Condensing Unit
- D** — Pipe D, Suction Riser Short Lift
- RED.** — Reducer
- STR** — Street

#### NOTES:

1. Short riser, pipe D, is used when routing suction line to condensing unit connection. See table at right.
2. See Table 7 for values of A, B, and C.

| 38AP<br>UNIT<br>SIZE | D PIPE DIAMETER               |     |                               |     |                               |    |
|----------------------|-------------------------------|-----|-------------------------------|-----|-------------------------------|----|
|                      | Dual Circuit                  |     |                               |     | Single Circuit                |    |
|                      | Circuit A                     |     | Circuit B                     |     |                               |    |
| in.                  | mm                            | in. | mm                            | in. | mm                            |    |
| 025                  | 1 <sup>1</sup> / <sub>8</sub> | 29  | 1 <sup>1</sup> / <sub>8</sub> | 29  | 1 <sup>3</sup> / <sub>8</sub> | 35 |
| 027                  | 1 <sup>1</sup> / <sub>8</sub> | 29  | 1 <sup>1</sup> / <sub>8</sub> | 29  | 1 <sup>3</sup> / <sub>8</sub> | 35 |
| 030                  | 1 <sup>1</sup> / <sub>8</sub> | 29  | 1 <sup>1</sup> / <sub>8</sub> | 29  | 1 <sup>3</sup> / <sub>8</sub> | 35 |
| 040                  | 1 <sup>3</sup> / <sub>8</sub> | 35  | 1 <sup>1</sup> / <sub>8</sub> | 29  | 1 <sup>5</sup> / <sub>8</sub> | 41 |
| 050                  | 1 <sup>3</sup> / <sub>8</sub> | 35  | 1 <sup>3</sup> / <sub>8</sub> | 35  | 1 <sup>5</sup> / <sub>8</sub> | 41 |
| 060                  | 1 <sup>3</sup> / <sub>8</sub> | 35  | 1 <sup>5</sup> / <sub>8</sub> | 41  | —                             | —  |
| 070                  | 1 <sup>5</sup> / <sub>8</sub> | 41  | 1 <sup>5</sup> / <sub>8</sub> | 41  | —                             | —  |
| 080                  | 1 <sup>5</sup> / <sub>8</sub> | 41  | 1 <sup>5</sup> / <sub>8</sub> | 41  | —                             | —  |
| 090                  | 1 <sup>5</sup> / <sub>8</sub> | 41  | 1 <sup>5</sup> / <sub>8</sub> | 41  | —                             | —  |
| 100                  | 1 <sup>5</sup> / <sub>8</sub> | 41  | 1 <sup>5</sup> / <sub>8</sub> | 41  | —                             | —  |

Fig. 12 — Double Suction Riser Construction

**Table 7 — Refrigerant Piping Requirements**  
**38APS025-050 Single-Circuit Units (60 Hz)**

| 38APS<br>UNIT<br>SIZE | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |       |            |       |             |       |             |       |             |       |             |       |             |       |             |       |
|-----------------------|---|-------|------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|                       | 0-25  |       | 25-50      |       | 50-75       |       | 75-100      |       | 100-125     |       | 125-150     |       | 150-175     |       | 175-200     |       |
|                       | (0-7.6)   |       | (7.6-15.2) |       | (15.2-22.9) |       | (22.9-30.5) |       | (30.5-38.1) |       | (38.1-45.7) |       | (45.7-53.3) |       | (53.3-61.0) |       |
|                       | L   | S     | L          | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     |
| 025                   | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 027                   | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 030                   | 5/8   | 1 3/8 | 7/8        | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 |
| 040                   | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
| 050                   | 7/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |

**38APD025-100 Dual-Circuit Units (60 Hz)**

| 38APD<br>UNIT<br>SIZE |       | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |       |            |       |             |       |             |       |             |       |             |       |             |       |             |       |
|-----------------------|-------|---|-------|------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|                       |       | 0-25  |       | 25-50      |       | 50-75       |       | 75-100      |       | 100-125     |       | 125-150     |       | 150-175     |       | 175-200     |       |
|                       |       | (0-7.6)   |       | (7.6-15.2) |       | (15.2-22.9) |       | (22.9-30.5) |       | (30.5-38.1) |       | (38.1-45.7) |       | (45.7-53.3) |       | (53.3-61.0) |       |
|                       |       | L   | S     | L          | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     |
| 025                   | Ckt A | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 |
| 027                   | Ckt A | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 |
| 030                   | Ckt A | 1/2   | 1 1/8 | 5/8        | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 5/8        | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 |
| 040                   | Ckt A | 5/8   | 1 3/8 | 5/8        | 1 3/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 5/8        | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 |
| 050                   | Ckt A | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 060                   | Ckt A | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 5/8   | 1 3/8 | 7/8        | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 1/8 |
| 070                   | Ckt A | 5/8   | 1 5/8 | 7/8        | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 1/8 |
|                       | Ckt B | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 |
| 080                   | Ckt A | 5/8   | 1 3/8 | 7/8        | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 1/8 |
|                       | Ckt B | 7/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
| 090                   | Ckt A | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
|                       | Ckt B | 7/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
| 100                   | Ckt A | 7/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
|                       | Ckt B | 7/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |

**LEGEND**

**L** — Liquid Line  
**S** — Suction Line

- Suction and liquid line sizing is based on pressure drop equivalent to 2 F (1.1 C) at nominal rating conditions.
- All pipe sizes are OD inches. Equivalent sizes in millimeters follow:

| in.   | mm   |
|-------|------|
| 1/2   | 12.7 |
| 5/8   | 15.9 |
| 7/8   | 22.2 |
| 1 1/8 | 28.6 |
| 1 3/8 | 34.9 |
| 1 5/8 | 41.3 |
| 2 1/8 | 54.0 |
| 2 5/8 | 66.7 |

**NOTES:**

- Shading indicates double suction riser required on units if condensing unit is located higher than evaporator.
- Pipe sizes are based on an equivalent length equal to the maximum length of interconnecting piping, shown for each column, plus 50% for fittings. Example: Equivalent length = Maximum linear length x 1.5.

**Table 7 — Refrigerant Piping Requirements (cont)**  
**38APS025-050 Single-Circuit Units (50 Hz)**

| 38APS<br>UNIT<br>SIZE | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |       |            |       |             |       |             |       |             |       |             |       |             |       |             |       |
|-----------------------|---|-------|------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|                       | 0-25  |       | 25-50      |       | 50-75       |       | 75-100      |       | 100-125     |       | 125-150     |       | 150-175     |       | 175-200     |       |
|                       | (0-7.6)   |       | (7.6-15.2) |       | (15.2-22.9) |       | (22.9-30.5) |       | (30.5-38.1) |       | (38.1-45.7) |       | (45.7-53.3) |       | (53.3-61.0) |       |
|                       | L   | S     | L          | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     |
| 025                   | 5/8   | 1 1/8 | 5/8        | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 027                   | 5/8   | 1 3/8 | 5/8        | 1 3/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 030                   | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 040                   | 5/8   | 1 3/8 | 7/8        | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 050                   | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |

**38APD025-100 Dual-Circuit Units (50 Hz)**

| 38APD<br>UNIT<br>SIZE |       | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |       |            |       |             |       |             |       |             |       |             |       |             |       |             |       |
|-----------------------|-------|---|-------|------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|                       |       | 0-25  |       | 25-50      |       | 50-75       |       | 75-100      |       | 100-125     |       | 125-150     |       | 150-175     |       | 175-200     |       |
|                       |       | (0-7.6)   |       | (7.6-15.2) |       | (15.2-22.9) |       | (22.9-30.5) |       | (30.5-38.1) |       | (38.1-45.7) |       | (45.7-53.3) |       | (53.3-61.0) |       |
|                       |       | L   | S     | L          | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     | L           | S     |
| 025                   | Ckt A | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 1/2         | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 1/2         | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 |
| 027                   | Ckt A | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 1/2         | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 1/2         | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 |
| 030                   | Ckt A | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 1/2        | 1 1/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 |
| 040                   | Ckt A | 1/2   | 1 1/8 | 5/8        | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 1/2   | 1 1/8 | 5/8        | 1 3/8 | 5/8         | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 |
| 050                   | Ckt A | 5/8   | 1 3/8 | 5/8        | 1 3/8 | 5/8         | 1 5/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 5/8   | 1 3/8 | 5/8        | 1 3/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 060                   | Ckt A | 5/8   | 1 3/8 | 5/8        | 1 3/8 | 5/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 070                   | Ckt A | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 5/8   | 1 3/8 | 7/8        | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
| 080                   | Ckt A | 5/8   | 1 3/8 | 5/8        | 1 5/8 | 7/8         | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 |
|                       | Ckt B | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
| 090                   | Ckt A | 5/8   | 1 3/8 | 7/8        | 1 5/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 1/8 |
|                       | Ckt B | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
| 100                   | Ckt A | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |
|                       | Ckt B | 5/8   | 1 5/8 | 7/8        | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 7/8         | 2 1/8 | 1 1/8       | 2 1/8 | 1 1/8       | 2 5/8 | 1 1/8       | 2 5/8 |

**LEGEND**

**L** — Liquid Line  
**S** — Suction Line

**NOTES:**

- Shading indicates double suction riser required on units if condensing unit is located higher than evaporator.
- Pipe sizes are based on an equivalent length equal to the maximum length of interconnecting piping, shown for each column, plus 50% for fittings. Example: Equivalent length = Maximum linear length x 1.5.

- Suction and liquid line sizing is based on pressure drop equivalent to 2 F (1.1 C) at nominal rating conditions.
- All pipe sizes are OD inches. Equivalent sizes in millimeters follow:

| in.   | mm   |
|-------|------|
| 1/2   | 12.7 |
| 5/8   | 15.9 |
| 7/8   | 22.2 |
| 1 1/8 | 28.6 |
| 1 3/8 | 34.9 |
| 1 5/8 | 41.3 |
| 2 1/8 | 54.0 |
| 2 5/8 | 66.7 |

**Table 7 — Refrigerant Piping Requirements (cont)**  
**38APS025-50 Single-Circuit Units Double Suction Riser (60 Hz)**

| 38APS UNIT SIZE | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |   |   |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |
|-----------------|---|---|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                 | 0-25  |   |   | 25-50                         |                               |                               | 50-75                         |                               |                               | 75-100                        |                               |                               | 100-125                       |                               |                               | 125-150                       |                               |                               | 150-175                       |                               |                               | 175-200                       |                               |                               |
|                 | (0-7.6)   |   |   | (7.6-15.2)                    |                               |                               | (15.2-22.9)                   |                               |                               | (22.9-30.5)                   |                               |                               | (30.5-38.1)                   |                               |                               | (38.1-45.7)                   |                               |                               | (45.7-53.3)                   |                               |                               | (53.3-61.0)                   |                               |                               |
|                 | A   | B | C | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             |
| 025             | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 027             | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 030             | —   | — | — | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 040             | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 050             | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |

**38APD025-100 Dual-Circuit Units Double Suction Riser (60 Hz)**

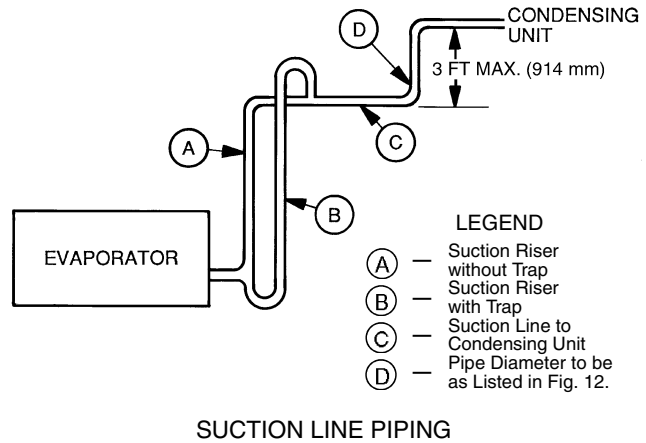
| 38APD UNIT SIZE |       | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |   |   |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |
|-----------------|-------|---|---|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                 |       | 0-25  |   |   | 25-50                         |                               |                               | 50-75                         |                               |                               | 75-100                        |                               |                               | 100-125                       |                               |                               | 125-150                       |                               |                               | 150-175                       |                               |                               | 175-200                       |                               |                               |
|                 |       | (0-7.6)   |   |   | (7.6-15.2)                    |                               |                               | (15.2-22.9)                   |                               |                               | (22.9-30.5)                   |                               |                               | (30.5-38.1)                   |                               |                               | (38.1-45.7)                   |                               |                               | (45.7-53.3)                   |                               |                               | (53.3-61.0)                   |                               |                               |
|                 |       | A   | B | C | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             |
| 025             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |
| 027             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |
| 030             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |
| 040             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 050             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 060             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 070             | Ckt A | —   | — | — | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 080             | Ckt A | —   | — | — | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |
| 090             | Ckt A | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |
| 100             | Ckt A | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |

**LEGEND**

- — Not Required
- Pipe A** — Suction Riser without Trap
- Pipe B** — Suction Riser with Trap
- Pipe C** — Suction Line Condensing Unit

- Refer to the figure located to the right for suction line piping locations.
- Pipe sizes are based on an equivalent length equal to the maximum length of interconnecting piping, shown for each column, plus 50% for fittings.
- Suction and liquid line sizing is based on pressure drop equivalent to 2 F (1.1 C) at nominal rating conditions.
- All pipe sizes are OD inches. Equivalent sizes in millimeters follow:

| in.   | mm   |
|-------|------|
| 1/2   | 12.7 |
| 5/8   | 15.9 |
| 7/8   | 22.2 |
| 1 1/8 | 28.6 |
| 1 3/8 | 34.9 |
| 1 5/8 | 41.3 |
| 2 1/8 | 54.0 |
| 2 5/8 | 66.7 |



**SUCTION LINE PIPING**

**Table 7 — Refrigerant Piping Requirements (cont)**  
**38APS025-50 Single-Circuit Units Double Suction Riser (50 Hz)**

| 38APS UNIT SIZE | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |   |   |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |
|-----------------|---|---|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                 | 0-25  |   |   | 25-50                         |                               |                               | 50-75                         |                               |                               | 75-100                        |                               |                               | 100-125                       |                               |                               | 125-150                       |                               |                               | 150-175                       |                               |                               | 175-200                       |                               |                               |                               |                               |                               |
|                 | (0-7.6)   |   |   | (7.6-15.2)                    |                               |                               | (15.2-22.9)                   |                               |                               | (22.9-30.5)                   |                               |                               | (30.5-38.1)                   |                               |                               | (38.1-45.7)                   |                               |                               | (45.7-53.3)                   |                               |                               | (53.3-61.0)                   |                               |                               |                               |                               |                               |
|                 | A   | B | C | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             |                               |                               |                               |
| 025             | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |
| 027             | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |
| 030             | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |
| 040             | —   | — | — | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
| 050             | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |

**38APD025-100 Dual-Circuit Units Double Suction Riser (50 Hz)**

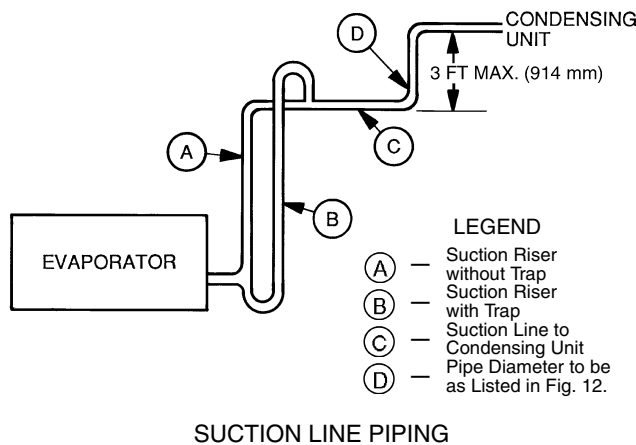
| 38APD UNIT SIZE |       | TOTAL LINEAR LENGTH OF INTERCONNECTING PIPE, ft (m) |   |   |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |
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|                 |       | 0-25  |   |   | 25-50                         |                               |                               | 50-75                         |                               |                               | 75-100                        |                               |                               | 100-125                       |                               |                               | 125-150                       |                               |                               | 150-175                       |                               |                               | 175-200                       |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |
|                 |       | (0-7.6)   |   |   | (7.6-15.2)                    |                               |                               | (15.2-22.9)                   |                               |                               | (22.9-30.5)                   |                               |                               | (30.5-38.1)                   |                               |                               | (38.1-45.7)                   |                               |                               | (45.7-53.3)                   |                               |                               | (53.3-61.0)                   |                               |                               |                               |                               |                               |                               |                               |                               |                               |                               |
|                 |       | A   | B | C | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             | A                             | B                             | C                             |                               |                               |                               |                               |                               |                               |                               |                               |
| 025             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |                               |                               |                               |                               |                               |                               |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |                               |                               |                               |                               |                               |                               |
| 027             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |                               |                               |                               |                               |                               |                               |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |                               |                               |                               |                               |                               |                               |
| 030             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |                               |                               |                               |                               |                               |                               |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |                               |                               |                               |                               |                               |                               |
| 040             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |                               |                               |                               |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             |                               |                               |                               |                               |                               |                               |
| 050             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |                               |                               |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |                               |                               |
| 060             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |                               |                               |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |                               |
| 070             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |                               |
|                 | Ckt B | —   | — | — | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |
| 080             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |                               |                               |                               |
|                 | Ckt B | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |                               |
| 090             | Ckt A | —   | — | — | —                             | —                             | —                             | —                             | —                             | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> |
|                 | Ckt B | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |                               |
| 100             | Ckt A | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |                               |
|                 | Ckt B | —   | — | — | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 1 <sup>3</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 2 <sup>1</sup> / <sub>8</sub> | 2 <sup>5</sup> / <sub>8</sub> |                               |

**LEGEND**

- — Not Required
- Pipe A** — Suction Riser without Trap
- Pipe B** — Suction Riser with Trap
- Pipe C** — Suction Line Condensing Unit

1. Refer to the figure located to the right for suction line piping locations.
2. Pipe sizes are based on an equivalent length equal to the maximum length of interconnecting piping, shown for each column, plus 50% for fittings.
3. Suction and liquid line sizing is based on pressure drop equivalent to 2 F (1.1 C) at nominal rating conditions.
4. All pipe sizes are OD inches. Equivalent sizes in millimeters follow:

| in.                           | mm   |
|-------------------------------|------|
| 1/2                           | 12.7 |
| 5/8                           | 15.9 |
| 7/8                           | 22.2 |
| 1 <sup>1</sup> / <sub>8</sub> | 28.6 |
| 1 <sup>3</sup> / <sub>8</sub> | 34.9 |
| 1 <sup>5</sup> / <sub>8</sub> | 41.3 |
| 2 <sup>1</sup> / <sub>8</sub> | 54.0 |
| 2 <sup>5</sup> / <sub>8</sub> | 66.7 |



**LIQUID LINE SOLENOID VALVE** — Field-supplied liquid line solenoid valve(s) must be installed at the evaporator if coil surface area is exceeded per Table 8. Install liquid line solenoid valve just ahead of the TXVs (thermostatic expansion valves) which will be mounted at the evaporator. See Fig. 13 (for 38APD025-100 dual-circuit units), or Fig. 14 (for 38APS025-050 single-circuit units). Refer to Table 6.

**THERMOSTATIC EXPANSION VALVES** — All 38AP units must be installed with 5% bleed TXVs to ensure proper unit operation.

To achieve good mixing of the refrigerant leaving the evaporator suction header for proper sensing by the TXV bulb:

1. Install a minimum of two 90-degree elbows upstream of the TXV bulb location. See Fig. 15 for dual-circuit units and Fig. 16 for single-circuit units.
2. Locate the TXV bulb on a vertical riser, where possible. If a horizontal location is necessary, secure the bulb at approximately the 4 o'clock position.

If an oil return connection is located at the bottom of the evaporator suction header, tee-in this connection ahead of first mixing elbow. See Fig. 15 (for dual-circuit units) or Fig. 16 (for single-circuit units). When the compressor is below the evaporator, the riser at the evaporator should extend to the top of the evaporator section. After the riser is installed, the suction line can elbow down immediately. Refer to the evaporator product data for sizing information.

**LIQUID LINE FILTER DRIER** — *Installation of a field-supplied filter drier and sight glasses in each refrigerant circuit is required.* Select the filter drier for maximum unit capacity and minimum pressure drop. Figure 13 (for dual-circuit units) or Fig. 14 (for single-circuit units) shows required location of solenoid valves and recommended locations for the filter driers and sight glasses. Complete the refrigerant piping from the evaporator to the condenser before opening the liquid and suction lines at the condenser. Refer to Table 6.

#### ⚠ CAUTION

For all units with liquid lines of 100 ft (30.5 m) or more or any 025-030 size dual circuit unit application where evaporator is located higher than the condensing unit and liquid lines exceed 55 feet (16.8 m), a long line option kit must be installed to prevent compressor failure. The long line option kit must be mounted in the liquid line near the condensing unit. See Fig. 17.

**LONG LINE APPLICATIONS** — A long line option kit must be installed for:

1. Any 025-030 size dual circuit unit where the evaporator is located higher than the condensing unit and the linear line length exceeds 55 ft (16.8 m).
2. Any size dual or single circuit unit with linear line length of 100 ft (30.5 m) or more.

The kit consists of a liquid line check valve and a bypass check valve to prevent charge migration to compressor. The long line option kit must be mounted in the liquid line near the condensing unit. The kit may be mounted in any orientation, horizontally or vertically. See Fig. 17 for orientation and Fig. 11 for location.

**HOT GAS BYPASS** — Hot gas bypass is not recommended. If hot gas bypass is used, it should be introduced before the evaporator.

#### FINAL CONNECTION AND LEAK TEST

#### ⚠ CAUTION

The 38AP unit is shipped with a nitrogen holding charge. Use caution when relieving unit pressure to avoid possible equipment damage or personal injury.

Relieve the pressure caused by the nitrogen holding charge. Connect liquid line and suction line to field piping. Refer to Fig. 5-8 for circuit orientation.

**IMPORTANT:** Protect the liquid and suction service valves from the heat of brazing. Schrader valve cores must be removed from the liquid and suction service valves before brazing in field connection piping to avoid damage. Reinsert cores after brazing is completed.

The refrigerant system must not be opened and exposed to atmosphere for longer than 15 minutes. Connection and pump-down should be made as soon as possible to avoid acids forming in the compressor POE (polyolester) oils, which could damage the compressors.

Leak test the entire system by using soap bubbles and nitrogen or R-410A and an electronic leak detector.

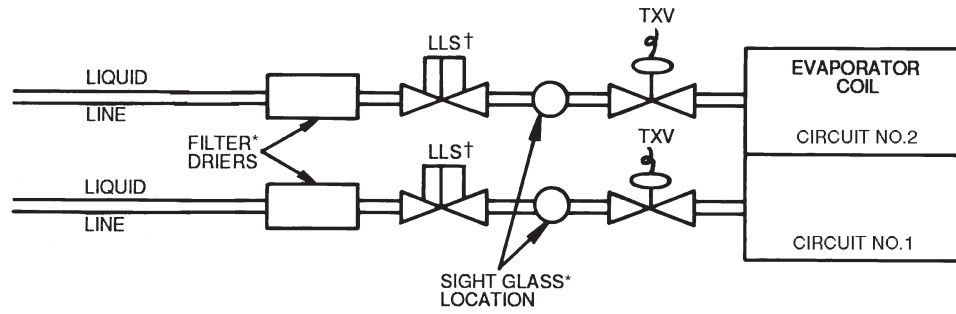
Purge nitrogen or recover R-410A from system after completion of leak-checking procedure. Repair leak if one is found. When finished, evacuate and dehydrate system using the following method.

**EVACUATION AND DEHYDRATION** — Because the 38AP systems use polyolester oil, which can absorb moisture, it is important to minimize the amount of time that the system interior is left exposed to the atmosphere. Minimizing the exposure time of the oil to the atmosphere will minimize the amount of moisture that needs to be removed during evacuation.

Once all of the piping connections are complete, leak test the unit and then pull a deep dehydration vacuum. Connect the vacuum pump to the charging valve in the suction line and to the liquid line service valve. For best results, it is recommended that a vacuum of at least 500 microns (0.5 mm Hg) be obtained. Afterwards, to ensure that no moisture is present in the system, perform a standing vacuum-rise test.

With the unit in deep vacuum (500 microns or less), isolate the vacuum pump from the system. Observe the rate-of-rise of the vacuum in the system. If the vacuum rises by more than 50 microns in a 30-minute time period, then continue the dehydration process. Maintain a vacuum on the system until the standing vacuum requirement is met. This will ensure a dry system.

By following these evacuation and dehydration procedures, the amount of moisture present in the system will be minimized. It is required that liquid line filter driers be installed between the condenser(s) and the expansion devices to capture any foreign debris and provide additional moisture removal capacity. Be sure to consider the pressure drop of the filter drier when determining piping requirements.



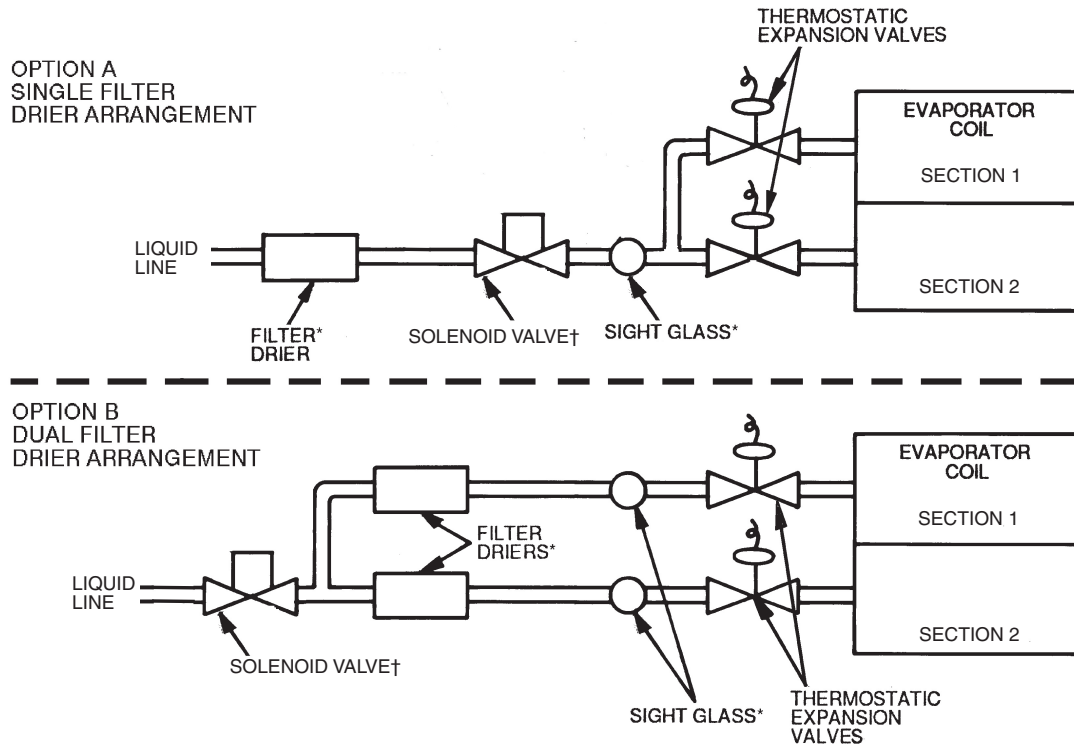
LEGEND

LLS — Liquid Line Solenoid  
 TXV — Thermostatic Expansion Valve

\*Field-supplied.

†Field-supplied when required. See Table 8.

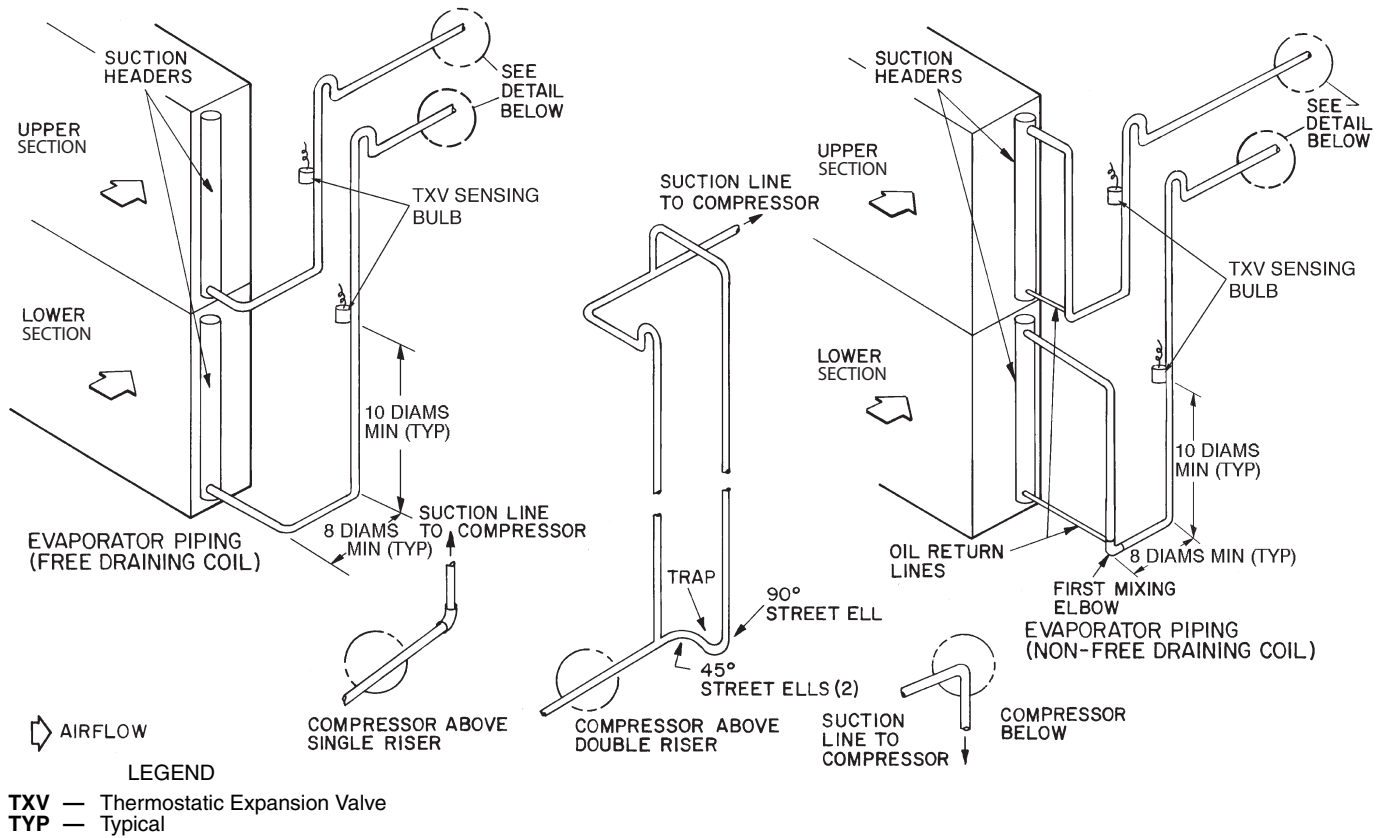
**Fig. 13 — Required Location of Solenoid Valves and Recommended Filter Drier and Sight Glass Locations for 38APD025-100 Dual-Circuit Units**



\*Field-supplied.

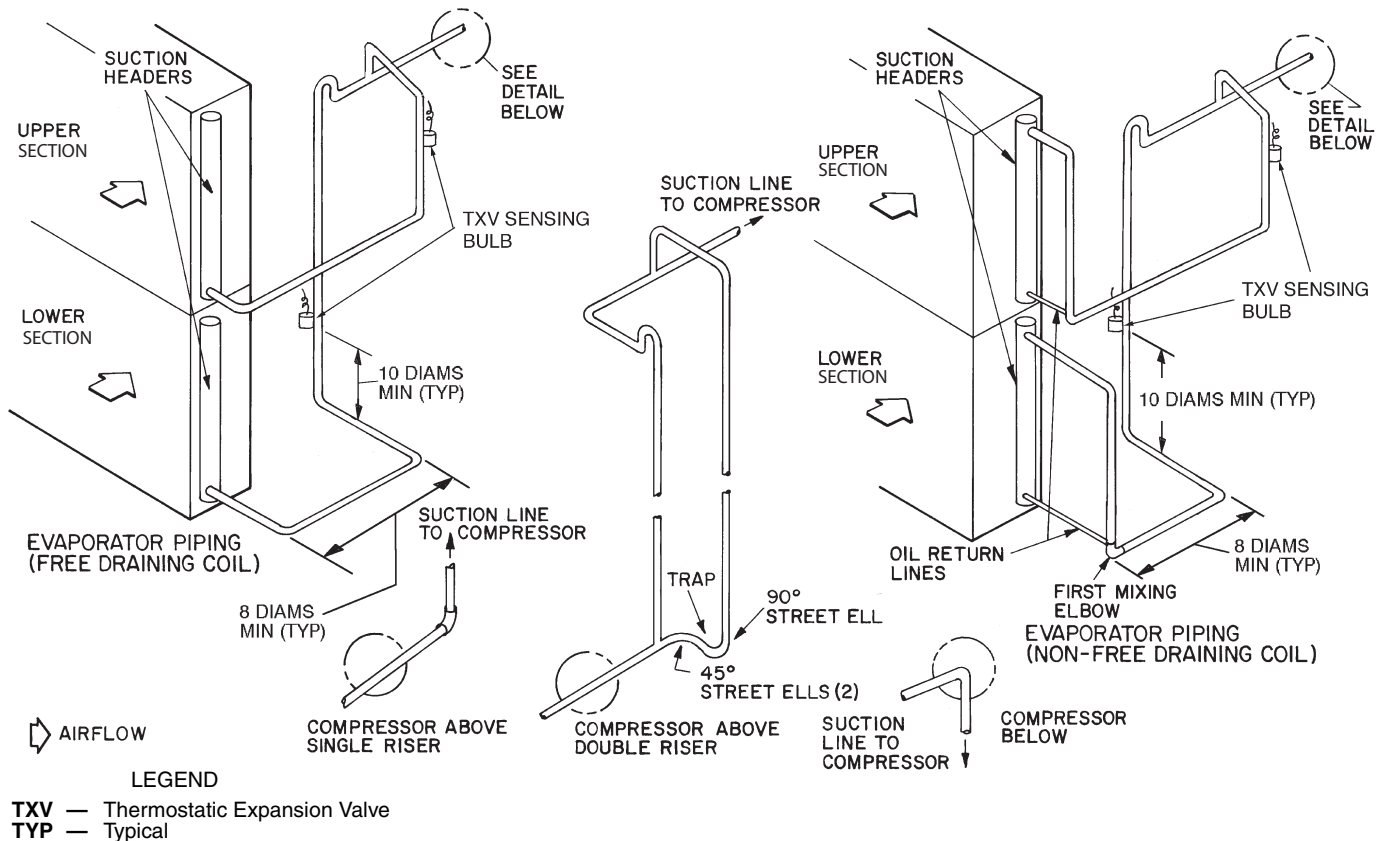
†Field-supplied when required. See Table 8.

**Fig. 14 — Required Location of Solenoid Valves and Recommended Filter Drier and Sight Glass Locations for 38APS025-050 Single-Circuit Units**



NOTE: For units with single condensate pan, lower coil section is first on, last off.

**Fig. 15 — Typical Piping Connections for Face Split Coils for 38APD025-100 Dual-Circuit**



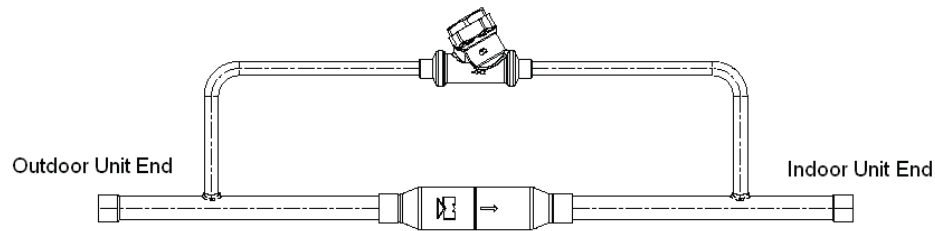
NOTE: For units with single condensate pan, lower coil section is first on, last off.

**Fig. 16 — Typical Piping Connections for Face Split Coils for 38APS025-050 Single-Circuit Units**



**Table 8 — Requirements for Installation of Liquid Line Solenoid Valve**

| 38AP UNIT SIZE | CIRCUIT        | MAXIMUM ALLOWABLE EVAPORATOR SURFACE AREA WITHOUT LIQUID LINE SOLENOID VALVE (sq ft) |                     |                     |                     |                     |
|----------------|----------------|--|---------------------|---------------------|---------------------|---------------------|
|                |                | 4-Row, 1/2 in. Tube  | 6-Row, 1/2 in. Tube | 8-Row, 1/2 in. Tube | 3-Row, 3/8 in. Tube | 4-Row, 3/8 in. Tube |
| 025            | Circuit A      | 18.9   | 12.7                | 9.5                 | 36.1                | 28.1                |
|                | Circuit B      | 18.9   | 12.7                | 9.5                 | 36.1                | 28.1                |
|                | Single Circuit | 37.9   | 25.3                | 18.9                | 72.3                | 56.3                |
| 027            | Circuit A      | 21.7   | 14.5                | 10.9                | 41.4                | 32.3                |
|                | Circuit B      | 25.6   | 17.1                | 12.8                | 48.9                | 38.1                |
|                | Single Circuit | 47.3   | 31.6                | 23.7                | 90.3                | 70.4                |
| 030            | Circuit A      | 21.7   | 14.5                | 10.9                | 41.4                | 32.3                |
|                | Circuit B      | 25.6   | 17.1                | 12.8                | 48.9                | 38.1                |
|                | Single Circuit | 47.3   | 31.6                | 23.7                | 90.3                | 70.4                |
| 040            | Circuit A      | 47.3   | 31.6                | 23.7                | —                   | —                   |
|                | Circuit B      | 47.3   | 31.6                | 23.7                | —                   | —                   |
|                | Single Circuit | 94.7   | 63.3                | 47.3                | —                   | —                   |
| 050            | Circuit A      | 47.3   | 31.6                | 23.7                | —                   | —                   |
|                | Circuit B      | 47.3   | 31.6                | 23.7                | —                   | —                   |
|                | Single Circuit | 94.7   | 63.3                | 47.3                | —                   | —                   |
| 060            | Circuit A      | 47.3   | 31.6                | 23.7                | —                   | —                   |
|                | Circuit B      | 47.3   | 31.6                | 23.7                | —                   | —                   |
| 070            | Circuit A      | 69.7   | 46.6                | 34.9                | —                   | —                   |
|                | Circuit B      | 69.7   | 46.6                | 34.9                | —                   | —                   |
| 080            | Circuit A      | 69.7   | 46.6                | 34.9                | —                   | —                   |
|                | Circuit B      | 104.6  | 69.9                | 52.3                | —                   | —                   |
| 090            | Circuit A      | 104.6  | 69.9                | 52.3                | —                   | —                   |
|                | Circuit B      | 104.6  | 69.9                | 52.3                | —                   | —                   |
| 100            | Circuit A      | 104.6  | 69.9                | 52.3                | —                   | —                   |
|                | Circuit B      | 104.6  | 69.9                | 52.3                | —                   | —                   |



NOTE: Locate long line kit as close to the condensing unit as possible.

**Fig. 17 — Long Line Option Kit Installation**

## Step 4 — Make Electrical Connections

### ⚠ WARNING

Before performing service or maintenance operations on unit, turn off main power switch to unit. Electrical shock could cause personal injury.

**IMPORTANT:** When starting up this equipment for operation, be sure to check tightness of all electrical terminal connections, clamps, screws, etc., as they may have become loose during shipment. It is also advisable to re-tighten all electrical connections after equipment has been in operation and components have reacted to operating temperature.

**POWER SUPPLY** — The electrical characteristics of the available power supply must agree with the unit nameplate rating. Supply voltage must be within the limits shown in Tables 9-12. See Table 13 for incoming power options.

**IMPORTANT:** Operating unit on improper supply voltage or with excessive phase imbalance constitutes abuse and may adversely affect Carrier warranty.

### ⚠ CAUTION

Proper rotation of condenser fan(s) **MUST** be verified before compressors are started. Consult the Controls, Start-Up and Operation guide provided with the 38AP units for correct procedure. Failure to comply could result in possible equipment damage.

**POWER WIRING** — All power wiring must comply with applicable local and national codes. Install field-supplied branch circuit fused disconnect per NEC (National Electrical Code, U.S.A) of a type that can be locked OFF or OPEN. Disconnect must be within sight and readily accessible from the unit in compliance with NEC Article 440-14.

General Wiring Notes:

1. The control circuit does NOT require a separate power source. Control circuit power is obtained by a step-down transformer from the main three-phase power supply. Be sure that the appropriate connection tap is connected on all transformers for the supply voltage.
2. A low-voltage terminal strip (LVT) is provided for field-wired control devices.

**NOTE:** The field-supplied disconnect should never be off except when unit is being serviced or is to be down for a prolonged period.

3. Power entry is at one end only.
4. All field power enters the unit through a hole located in the corner post of the unit or the bottom of the control box shelf. Refer to Fig. 18 for field power wiring details. Refer to Fig. 5-8 for exact location of field power entry.
5. Terminals for field power supply are suitable only for copper conductors. Insulation must be rated 75 C minimum.
6. Units with high short circuit ratings and terminal block option require that specific fuses be applied to achieve this rating. Refer to Table 13.

**CONTROL POWER** — Control power is obtained from the main power supply and does NOT require a separate source. A toggle switch (marked Emergency On-Off on the unit label diagram and by the switch) allows the control circuit to be manually disconnected when necessary. Crankcase heaters are in an operable state when this switch is in the Off position. All field control wiring must comply with applicable local and national codes.

**IMPORTANT:** For 208-v systems, the connection tap for all transformers must be changed. The factory default setting is for 230-v. Failure to connect to the proper tap may result in unreliable operation.

**FIELD CONTROL WIRING** — The standard unit control is microprocessor based which supports multiple control configurations. See Fig. 19 for EAT (evaporator air temperature sensor) and SAT (supply air temperature sensor) layout. Figures 20-24 show specific field wiring, depending on unit configuration and desired control requirements.

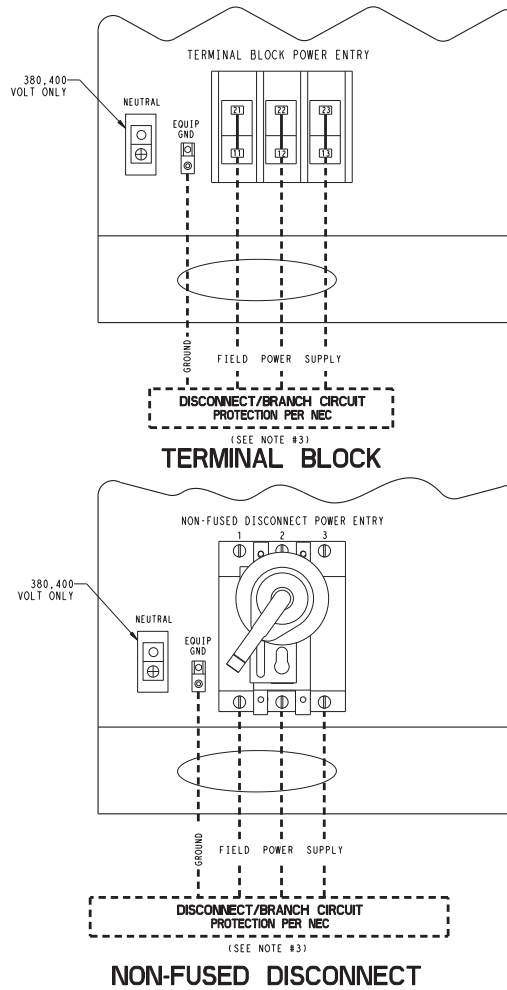
#### Constat Volume Application Control Options

1. Two-Stage Thermostat (Part No. 33CS2PP2S-01) — Refer to Fig. 20.
2. Two-Stage Thermostat (Part No. 33CS2PP2S-01) with Multi-Step Control — Refer to Fig. 21. This thermostat also requires installation of supply-air temperature sensor and return-air temperature sensor (Part No. 33ZCSENSAT).
3. Space Sensor Control — Refer to Fig. 22. This control also requires installation of supply-air temperature sensor and return-air temperature sensor (Part No. 33ZCSENSAT).
  - a. Space Temperature Sensor with Occupancy Override Button (Part No. 33ZCT55SPT)
  - b. Space Temperature Sensor with Occupancy Override Button and Set Point Adjustment Slidebar (Part No. 33ZCT56SPT)
  - c. Space Temperature Sensor with Occupancy Override Button, Set Point Adjustment Slidebar, and LCD (liquid crystal display) Display (Part No. 33ZCT59SPT)

#### Variable Air Volume Application Control Options

1. Discharge-air temperature control requires installation of supply-air temperature sensor and return-air temperature sensor (Part No. 33ZCSENSAT). Refer to Fig. 23.
2. Interface with building automation system may require EMM (energy management module) or translator accessory. Refer to Fig. 23.

**Energy Management Module (EMM) Option** — The EMM is available for factory or field installation. See Fig. 24 for EMM field wiring.

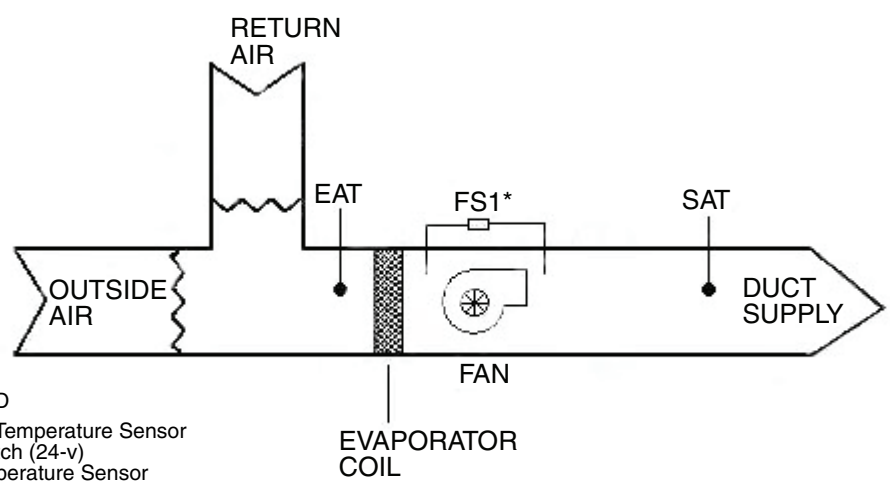


**LEGEND**  
**EQUIP GND** — Equipment Ground  
**NEC** — National Electrical Code

- NOTES:**
1. Factory wiring is in accordance with UL 1995 standards. Field modifications or additions must be in compliance with all applicable codes.
  2. All units or modules have single point primary power connection. Main power must be supplied from a field or factory-supplied disconnect.
  3. Wiring for main field supply must be rated 75 C. Use copper conductors only.
    - a. Incoming wire size range for terminal block with MCA (minimum circuit amps) up to 175 amps is 14 AWG (American Wire Gage) to 2/0.

- b. Incoming wire size range for terminal block with MCA from 175.1 amps to 420 amps is 2 AWG to 600 kcmil.
  - c. Incoming wire size range for non-fused disconnect with MCA up to 100 amps is 14 AWG to 1/0.
  - d. Incoming wire size range for non-fused disconnect with MCA from 100.1 amp to 200 amps is 6 AWG to 350 kcmil.
  - e. Incoming wire size range for non-fused disconnect with MCA from 200.1 amp to 450 amps is 3/0 to 500 kcmil.
4. Refer to certified dimensional drawings for exact locations of the main power and control power entrance locations.

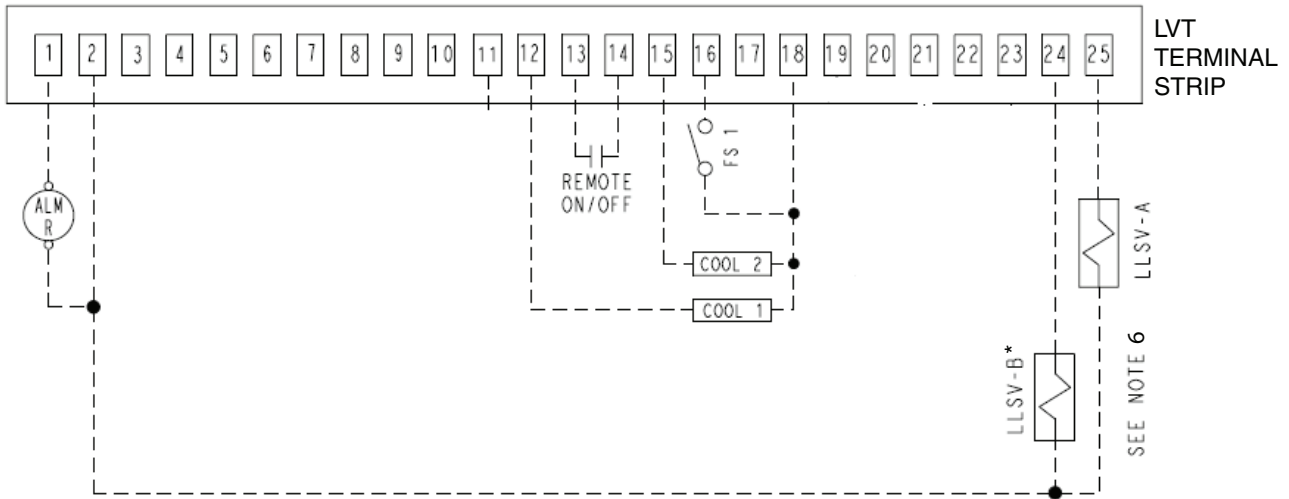
**Fig. 18 — Field Power Wiring**



**LEGEND**  
**EAT** — Evaporator Air Temperature Sensor  
**FS1** — Fan Status Switch (24-v)  
**SAT** — Supply Air Temperature Sensor

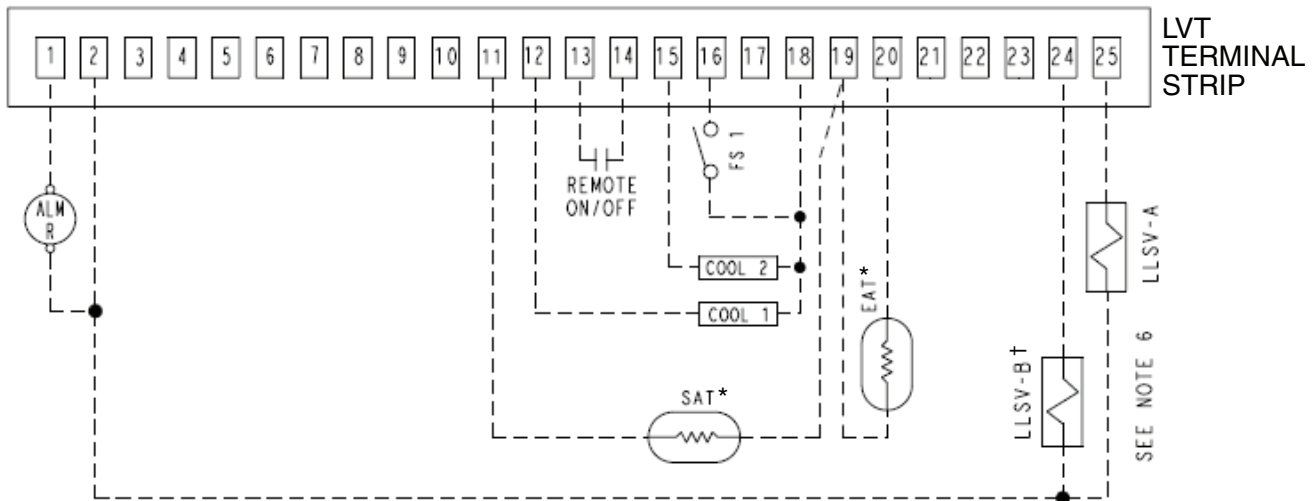
\*FS1 can be pressure differential switch (shown), motor current detection, or sail switch.

**Fig. 19 — EAT and SAT Sensor Layout**



\*Not required for single circuit units.

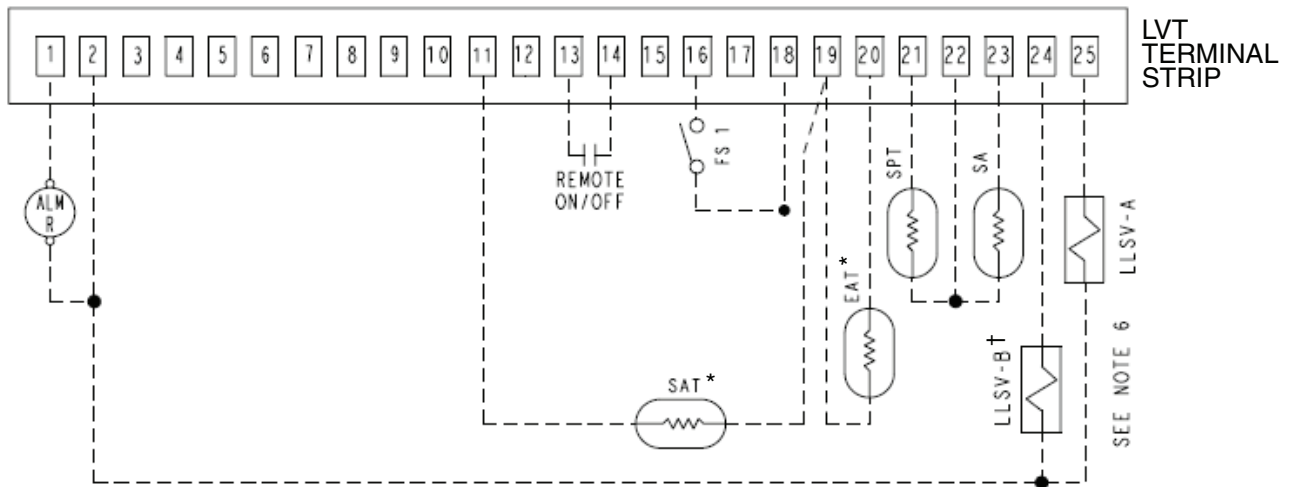
**Fig. 20 — Constant Volume Application Wiring Diagram 2-Stage Thermostat Control, Sizes 025-030 — without Digital Scroll Option**



\*See Fig. 19 for EAT and SAT location.

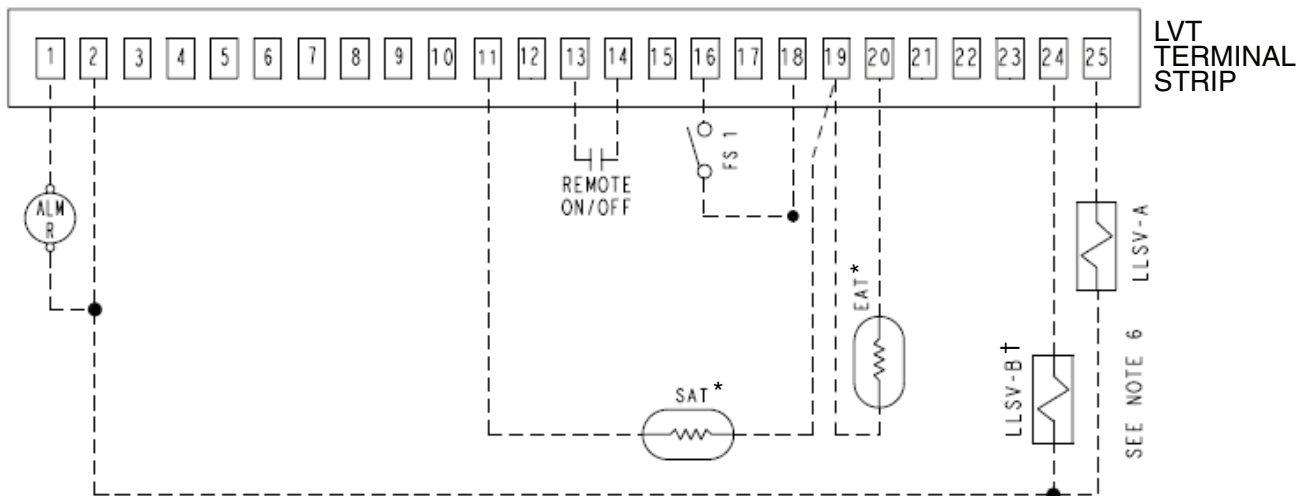
†Not required for single circuit units.

**Fig. 21 — Constant Volume Application Wiring Diagram 2-Stage Thermostat Control — with Digital Scroll Option, Sizes 025-30 or without Digital Scroll Option, Sizes 040-100**



\*See Fig. 19 for EAT and SAT location.  
 †Not required for single circuit units.

**Fig. 22 — Constant Volume Application Wiring Diagram Space Temperature Sensor Control, Sizes 025-100**



\*See Fig. 19 for EAT and SAT location.  
 †Not required for single circuit units.

**Fig. 23 — Variable Air Volume Application Wiring Diagram, Sizes 025-100**

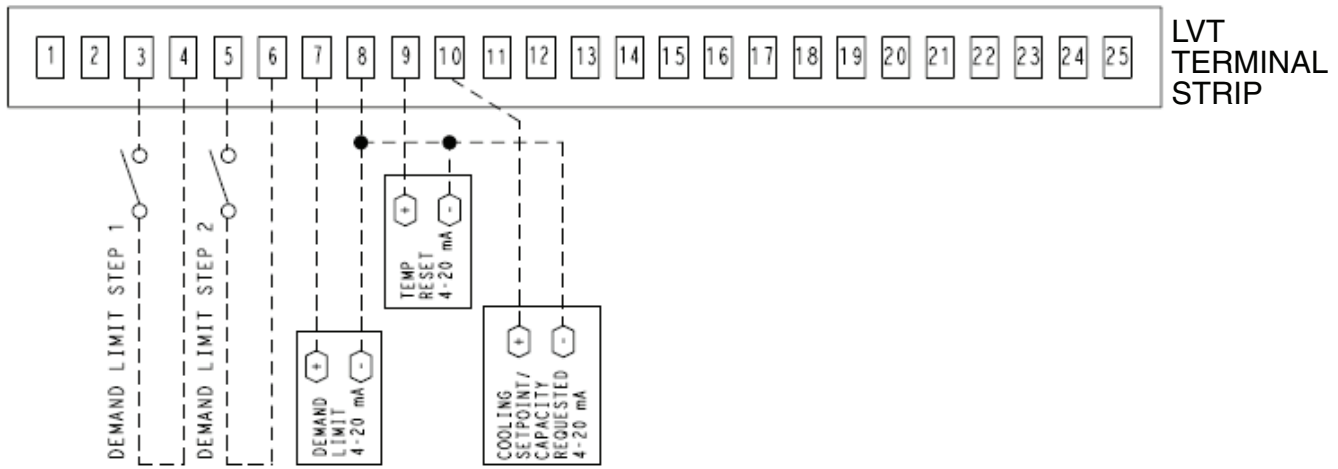


Fig. 24 — Optional Energy Management Module Wiring

Legend and Notes for Fig. 20-24

| LEGEND    |   |
|-----------|---|
| ALM R     | — Alarm Relay (24-v), 5-va Maximum            |
| COM       | — Communication                               |
| COOL1     | — Thermostat Stage 1 (24-v)                   |
| COOL2     | — Thermostat Stage 2 (24-v)                   |
| EAT       | — Evaporator Air Temperature Sensor           |
| EMM       | — Energy Management Module                    |
| EQUIP GND | — Equipment Ground                            |
| FS1       | — Fan Status Switch (24-v)                    |
| LLSV      | — Liquid Line Solenoid Valve                  |
| LVT       | — Low Voltage Terminal                        |
| NEC       | — National Electrical Code                    |
| SA        | — Set Point Adjustment (T-56, T-59)           |
| SAT       | — Supply Air Temperature Sensor               |
| SPT       | — Space Temperature Sensor (T-55, T-56, T-59) |
| - - - -   | Field Power Supply                            |
| - - - -   | Field Control Wiring                          |

NOTES:

1. Factory wiring is in accordance with UL 1995 standards. Field modifications or additions must be in compliance with all applicable codes.
2. All units or modules have single point primary power connection. Main power must be supplied from a field or factory-supplied disconnect.

3. Wiring for main field supply must be rated 75 C. Use copper conductors only.
  - a. Incoming wire size range for terminal block with MCA (minimum circuit amps) up to 175 amps is 14 AWG (American Wire Gage) to 2/0.
  - b. Incoming wire size range for terminal block with MCA from 175.1 amps to 420 amps is 2 AWG to 600 kcmil.
  - c. Incoming wire size range for non-fused disconnect with MCA up to 100 amps is 14 AWG to 1/0.
  - d. Incoming wire size range for non-fused disconnect with MCA from 100.1 amp to 200 amps is 6 AWG to 350 kcmil.
  - e. Incoming wire size range for non-fused disconnect with MCA from 200.1 amp to 450 amps is 3/0 to 500 kcmil.
4. Terminals 1 and 2 of the LVT are for the alarm relay. The maximum load allowed for the alarm relay is 5-va sealed and 10-va inrush at 24-v. Field power supply is not required.
5. Refer to certified dimensional drawings for exact locations of the main power and control power entrance locations.
6. Terminals 24, 25, and 2 of the LVT are for the control of the field-supplied LLSV. The maximum load allowed for the LLSV is 15-va sealed and 30-va inrush at 24-v. Field power supply is not required.
7. LLSV (24-v) should be 15-va maximum per valve as required.
8. Not used on single circuit unit.
9. Installation of fan status switch (FS1) is recommended.
10. The contacts for remote ON/OFF, fan status, and demand limit options must be rated for dry circuit application capable of handling a 24-vac load up to 50 mA.

**Table 9 — 38APS Standard Condenser Fan Electrical Data**

| 38APS UNIT SIZE | V-Ph-Hz      | SUPPLY VOLTAGE |     | COMPRESSOR |      |     | CONDENSER FAN |     | MCA   | MOCP | REC FUSE | ICF   |
|-----------------|--------------|----------------|-----|------------|------|-----|---------------|-----|-------|------|----------|-------|
|                 |              | Min            | Max | Qty        | RLA  | LRA | Total Qty     | FLA |       |      |          |       |
| 025             | 208/230-3-60 | 187            | 254 | 2          | 48.1 | 245 | 2             | 6.6 | 121.4 | 150  | 150      | 306.3 |
|                 | 380-3-60     | 342            | 418 |            | 23.7 | 145 |               | 3.9 | 61.1  | 80   | 70       | 176.5 |
|                 | 460-3-60     | 414            | 506 |            | 18.6 | 125 |               | 3.3 | 48.5  | 60   | 60       | 150.2 |
|                 | 575-3-60     | 518            | 632 |            | 14.7 | 100 |               | 2.6 | 38.3  | 50   | 45       | 119.9 |
|                 | 380/415-3-50 | 342            | 440 |            | 18.6 | 118 |               | 3.3 | 48.5  | 60   | 60       | 143.2 |
| 027             | 208/230-3-60 | 187            | 254 | 2          | 51.3 | 300 | 2             | 6.6 | 128.6 | 175  | 150      | 364.5 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |               | 3.9 | 68.3  | 90   | 80       | 173.7 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |               | 3.3 | 58.6  | 80   | 70       | 179.7 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |               | 2.6 | 50.0  | 60   | 60       | 134.1 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |               | 3.3 | 58.6  | 80   | 70       | 169.7 |
| 030             | 208/230-3-60 | 187            | 254 | 2          | 55.8 | 340 | 2             | 6.6 | 138.8 | 175  | 175      | 409.0 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |               | 3.9 | 84.3  | 110  | 100      | 237.8 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |               | 3.3 | 67.1  | 90   | 80       | 212.5 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |               | 2.6 | 58.5  | 80   | 70       | 160.9 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |               | 3.3 | 67.1  | 90   | 80       | 207.5 |
| 040             | 208/230-3-60 | 187            | 254 | 3          | 51.3 | 300 | 3             | 6.6 | 186.5 | 225  | 200      | 422.4 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |               | 3.9 | 99.1  | 125  | 110      | 204.5 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |               | 3.3 | 85.0  | 100  | 100      | 206.1 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |               | 2.6 | 72.5  | 90   | 80       | 156.6 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |               | 3.3 | 85.0  | 100  | 100      | 196.1 |
| 050             | 208/230-3-60 | 187            | 254 | 3          | 55.8 | 340 | 3             | 6.6 | 201.2 | 250  | 225      | 471.4 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |               | 3.9 | 122.2 | 150  | 150      | 275.7 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |               | 3.3 | 97.3  | 110  | 110      | 242.7 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |               | 2.6 | 84.8  | 100  | 100      | 187.2 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |               | 3.3 | 97.3  | 110  | 110      | 237.7 |

**Table 10 — 38APS Low Sound Condenser Fan Electrical Data**

| 38APS UNIT SIZE | V-Ph-Hz      | SUPPLY VOLTAGE |     | COMPRESSOR |      |     | CONDENSER FAN |     | MCA   | MOCP | REC FUSE | ICF   |
|-----------------|--------------|----------------|-----|------------|------|-----|---------------|-----|-------|------|----------|-------|
|                 |              | Min            | Max | Qty        | RLA  | LRA | Total Qty     | FLA |       |      |          |       |
| 025             | 208/230-3-60 | 187            | 254 | 2          | 48.1 | 245 | 2             | 6.0 | 120.2 | 150  | 150      | 305.1 |
|                 | 380-3-60     | 342            | 418 |            | 23.7 | 145 |               | 3.9 | 61.1  | 80   | 70       | 176.5 |
|                 | 460-3-60     | 414            | 506 |            | 18.6 | 125 |               | 2.9 | 47.7  | 60   | 60       | 149.4 |
|                 | 575-3-60     | 518            | 632 |            | 14.7 | 100 |               | 2.4 | 37.9  | 50   | 45       | 119.5 |
|                 | 380/415-3-50 | 342            | 440 |            | 18.6 | 118 |               | 2.9 | 47.7  | 60   | 60       | 142.4 |
| 027             | 208/230-3-60 | 187            | 254 | 2          | 51.3 | 300 | 2             | 6.0 | 127.4 | 175  | 150      | 363.3 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |               | 3.9 | 68.3  | 90   | 80       | 173.7 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |               | 2.9 | 57.8  | 80   | 70       | 178.9 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |               | 2.4 | 49.6  | 60   | 60       | 133.7 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |               | 2.9 | 57.8  | 80   | 70       | 168.9 |
| 030             | 208/230-3-60 | 187            | 254 | 2          | 55.8 | 340 | 2             | 6.0 | 137.6 | 175  | 175      | 407.8 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |               | 3.9 | 84.3  | 110  | 100      | 237.8 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |               | 2.9 | 66.3  | 90   | 80       | 211.7 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |               | 2.4 | 58.1  | 80   | 70       | 160.5 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |               | 2.9 | 66.3  | 90   | 80       | 206.7 |
| 040             | 208/230-3-60 | 187            | 254 | 3          | 51.3 | 300 | 3             | 6.0 | 184.7 | 225  | 200      | 420.6 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |               | 3.9 | 99.1  | 125  | 110      | 204.5 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |               | 2.9 | 83.8  | 100  | 100      | 204.9 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |               | 2.4 | 71.9  | 90   | 80       | 156.0 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |               | 2.9 | 83.8  | 100  | 100      | 194.9 |
| 050             | 208/230-3-60 | 187            | 254 | 3          | 55.8 | 340 | 3             | 6.0 | 199.4 | 250  | 225      | 469.6 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |               | 3.9 | 122.2 | 150  | 150      | 275.7 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |               | 2.9 | 96.1  | 110  | 110      | 241.5 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |               | 2.4 | 84.2  | 100  | 100      | 186.6 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |               | 2.9 | 96.1  | 110  | 110      | 236.5 |

**LEGEND**

- FLA** — Full Load Amps
- ICF** — Maximum Instantaneous Current Flow
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps
- MOCP** — Maximum Overcurrent Protection
- RLA** — Rated Load Amps

**NOTES:**

1. Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage 2%; amps 10%.
2. All units or modules have single point primary power connection. Main power must be supplied from a field-supplied disconnect.
3. For MCA that is less than or equal to 380 amps, 3 conductors are required.  
For MCA between 381 and 760 amps, 6 conductors are required.  
Calculation of conductors required is based on 75 C copper wire.

4. Wiring for main field supply must be rated 75 C. Use copper conductors only.
  - a. Incoming wire size range for terminal block with MCA up to 175 amps is 14 AWG (American Wire Gage) to 2/0.
  - b. Incoming wire size range for terminal block with MCA from 175.1 amps to 420 amps is 2 AWG to 600 kcmil.
  - c. Incoming wire size range for non-fused disconnect with MCA up to 100 amps is 14 AWG to 1/0.
  - d. Incoming wire size range for non-fused disconnect with MCA from 100.1 amp to 200 amps is 6 AWG to 350 kcmil.
  - e. Incoming wire size range for non-fused disconnect with MCA from 200.1 amp to 450 amps is 3/0 to 500 kcmil.



**Table 11 — 38APD Standard Condenser Fan Electrical Data**

| 38APD UNIT SIZE | V-Ph-Hz      | SUPPLY VOLTAGE |     | COMPRESSOR |      |     |           |      |     | CONDENSER FAN |     | MCA   | MOCP | REC FUSE | ICF   |
|-----------------|--------------|----------------|-----|------------|------|-----|-----------|------|-----|---------------|-----|-------|------|----------|-------|
|                 |              |                |     | CIRCUIT A  |      |     | CIRCUIT B |      |     | Total Qty     | FLA |       |      |          |       |
|                 |              | Min            | Max | Qty        | RLA  | LRA | Qty       | RLA  | LRA |               |     |       |      |          |       |
| 025             | 208/230-3-60 | 187            | 254 | 1          | 48.1 | 245 | 1         | 48.1 | 245 | 2             | 6.6 | 121.4 | 150  | 150      | 306.3 |
|                 | 380-3-60     | 342            | 418 |            | 23.7 | 145 |           | 23.7 | 145 |               | 3.9 | 61.1  | 80   | 70       | 176.5 |
|                 | 460-3-60     | 414            | 506 |            | 18.6 | 125 |           | 18.6 | 125 |               | 3.3 | 48.5  | 60   | 60       | 150.2 |
|                 | 575-3-60     | 518            | 632 |            | 14.7 | 100 |           | 14.7 | 100 |               | 2.6 | 38.3  | 50   | 45       | 119.9 |
|                 | 380/415-3-50 | 342            | 440 |            | 18.6 | 118 |           | 18.6 | 118 |               | 3.3 | 48.5  | 60   | 60       | 143.2 |
| 027             | 208/230-3-60 | 187            | 254 | 1          | 51.3 | 300 | 1         | 51.3 | 300 | 2             | 6.6 | 128.6 | 175  | 150      | 364.5 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |           | 26.9 | 139 |               | 3.9 | 68.3  | 90   | 80       | 173.7 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |           | 23.1 | 150 |               | 3.3 | 58.6  | 80   | 70       | 179.7 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |           | 19.9 | 109 |               | 2.6 | 50.0  | 60   | 60       | 134.1 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |           | 23.1 | 140 |               | 3.3 | 58.6  | 80   | 70       | 169.7 |
| 030             | 208/230-3-60 | 187            | 254 | 1          | 55.8 | 340 | 1         | 55.8 | 340 | 2             | 6.6 | 138.8 | 175  | 175      | 409.0 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 34.0 | 196 |               | 3.9 | 84.3  | 110  | 100      | 237.8 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 26.9 | 179 |               | 3.3 | 67.1  | 90   | 80       | 212.5 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 23.7 | 132 |               | 2.6 | 58.5  | 80   | 70       | 160.9 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 26.9 | 174 |               | 3.3 | 67.1  | 90   | 80       | 207.5 |
| 040             | 208/230-3-60 | 187            | 254 | 2          | 35.8 | 239 | 2         | 33.4 | 225 | 3             | 6.6 | 167.2 | 200  | 175      | 361.4 |
|                 | 380-3-60     | 342            | 418 |            | 23.7 | 145 |           | 19.2 | 140 |               | 3.9 | 103.5 | 125  | 110      | 218.9 |
|                 | 460-3-60     | 414            | 506 |            | 17.9 | 125 |           | 16.7 | 114 |               | 3.3 | 83.6  | 100  | 90       | 186.2 |
|                 | 575-3-60     | 518            | 632 |            | 14.3 | 80  |           | 13.4 | 80  |               | 2.6 | 66.7  | 80   | 70       | 128.8 |
|                 | 380/415-3-50 | 342            | 440 |            | 17.9 | 118 |           | 16.7 | 111 |               | 3.3 | 83.6  | 100  | 90       | 179.2 |
| 050             | 208/230-3-60 | 187            | 254 | 2          | 51.3 | 300 | 2         | 51.3 | 300 | 3             | 6.6 | 231.4 | 250  | 250      | 467.3 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |           | 26.9 | 139 |               | 3.9 | 119.6 | 125  | 125      | 225.0 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |           | 23.1 | 150 |               | 3.3 | 99.1  | 110  | 110      | 220.2 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |           | 19.9 | 109 |               | 2.6 | 82.0  | 100  | 90       | 166.1 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |           | 23.1 | 140 |               | 3.3 | 99.1  | 110  | 110      | 210.2 |
| 060             | 208/230-3-60 | 187            | 254 | 2          | 51.3 | 300 | 2         | 55.8 | 340 | 4             | 6.6 | 254.6 | 300  | 300      | 524.8 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |           | 34.0 | 196 |               | 3.9 | 145.9 | 175  | 175      | 299.4 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |           | 26.9 | 179 |               | 3.3 | 119.9 | 125  | 125      | 265.3 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |           | 23.7 | 132 |               | 2.6 | 103.5 | 125  | 110      | 205.9 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |           | 26.9 | 174 |               | 3.3 | 119.9 | 125  | 125      | 260.3 |
| 070             | 208/230-3-60 | 187            | 254 | 2          | 55.8 | 340 | 3         | 46.1 | 245 | 4             | 6.6 | 296.3 | 300  | 300      | 566.5 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 23.7 | 145 |               | 3.9 | 163.2 | 175  | 175      | 316.7 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 18.6 | 125 |               | 3.3 | 129.5 | 150  | 150      | 274.9 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 14.7 | 100 |               | 2.6 | 107.8 | 125  | 125      | 210.2 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 18.6 | 118 |               | 3.3 | 129.5 | 150  | 150      | 269.9 |
| 080             | 208/230-3-60 | 187            | 254 | 2          | 55.8 | 340 | 3         | 55.8 | 340 | 5             | 6.6 | 326.0 | 350  | 350      | 596.2 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 34.0 | 196 |               | 3.9 | 198.0 | 225  | 225      | 351.5 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 26.9 | 179 |               | 3.3 | 157.7 | 175  | 175      | 303.1 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 23.7 | 132 |               | 2.6 | 137.4 | 150  | 150      | 239.8 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 26.9 | 174 |               | 3.3 | 157.7 | 175  | 175      | 298.1 |
| 090             | 208/230-3-60 | 187            | 254 | 3          | 51.3 | 300 | 3         | 55.8 | 340 | 6             | 6.6 | 374.9 | 400  | 400      | 645.1 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |           | 34.0 | 196 |               | 3.9 | 214.6 | 225  | 225      | 368.1 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |           | 26.9 | 179 |               | 3.3 | 176.5 | 200  | 200      | 321.9 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |           | 23.7 | 132 |               | 2.6 | 152.3 | 175  | 150      | 254.7 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |           | 26.9 | 174 |               | 3.3 | 176.5 | 200  | 200      | 311.9 |
| 100             | 208/230-3-60 | 187            | 254 | 3          | 55.8 | 340 | 3         | 55.8 | 340 | 6             | 6.6 | 388.4 | 400  | 400      | 658.6 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 34.0 | 196 |               | 3.9 | 235.9 | 250  | 250      | 389.4 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 26.9 | 179 |               | 3.3 | 187.9 | 200  | 200      | 333.3 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 23.7 | 132 |               | 2.6 | 163.7 | 175  | 175      | 266.1 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 26.9 | 174 |               | 3.3 | 187.9 | 200  | 200      | 328.3 |

**LEGEND**

- FLA** — Full Load Amps
- ICF** — Maximum Instantaneous Current Flow
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps
- MOCP** — Maximum Overcurrent Protection
- RLA** — Rated Load Amps

**NOTES:**

1. Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage 2%; amps 10%.
2. All units or modules have single point primary power connection. Main power must be supplied from a field-supplied disconnect.
3. For MCA that is less than or equal to 380 amps, 3 conductors are required.  
For MCA between 381 and 760 amps, 6 conductors are required.  
Calculation of conductors required is based on 75 C copper wire.

4. Wiring for main field supply must be rated 75 C. Use copper conductors only.
  - a. Incoming wire size range for terminal block with MCA up to 175 amps is 14 AWG (American Wire Gage) to 2/0.
  - b. Incoming wire size range for terminal block with MCA from 175.1 amps to 420 amps is 2 AWG to 600 kcmil.
  - c. Incoming wire size range for non-fused disconnect with MCA up to 100 amps is 14 AWG to 1/0.
  - d. Incoming wire size range for non-fused disconnect with MCA from 100.1 amp to 200 amps is 6 AWG to 350 kcmil.
  - e. Incoming wire size range for non-fused disconnect with MCA from 200.1 amp to 450 amps is 3/0 to 500 kcmil.





**Table 12 — 38APD Low Sound Condenser Fan Electrical Data**

| 38APD UNIT SIZE | V-Ph-Hz      | SUPPLY VOLTAGE |     | COMPRESSOR |      |     |           |      |     | CONDENSER FAN |     | MCA   | MOCP | REC FUSE | ICF   |
|-----------------|--------------|----------------|-----|------------|------|-----|-----------|------|-----|---------------|-----|-------|------|----------|-------|
|                 |              |                |     | CIRCUIT A  |      |     | CIRCUIT B |      |     | Total Qty     | FLA |       |      |          |       |
|                 |              | Min            | Max | Qty        | RLA  | LRA | Qty       | RLA  | LRA |               |     |       |      |          |       |
| 025             | 208/230-3-60 | 187            | 254 | 1          | 48.1 | 245 | 1         | 48.1 | 245 | 2             | 6.0 | 120.2 | 150  | 150      | 305.1 |
|                 | 380-3-60     | 342            | 418 |            | 23.7 | 145 |           | 23.7 | 145 |               | 3.9 | 61.1  | 80   | 70       | 176.5 |
|                 | 460-3-60     | 414            | 506 |            | 18.6 | 125 |           | 18.6 | 125 |               | 2.9 | 47.7  | 60   | 60       | 149.4 |
|                 | 575-3-60     | 518            | 632 |            | 14.7 | 100 |           | 14.7 | 100 |               | 2.4 | 37.9  | 50   | 45       | 119.5 |
|                 | 380/415-3-50 | 342            | 440 |            | 18.6 | 118 |           | 18.6 | 118 |               | 2.9 | 47.7  | 60   | 60       | 142.4 |
| 027             | 208/230-3-60 | 187            | 254 | 1          | 51.3 | 300 | 1         | 51.3 | 300 | 2             | 6.0 | 127.4 | 175  | 150      | 363.3 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |           | 26.9 | 139 |               | 3.9 | 68.3  | 90   | 80       | 173.7 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |           | 23.1 | 150 |               | 2.9 | 57.8  | 80   | 70       | 178.9 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |           | 19.9 | 109 |               | 2.4 | 49.6  | 60   | 60       | 133.7 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |           | 23.1 | 140 |               | 2.9 | 57.8  | 80   | 70       | 168.9 |
| 030             | 208/230-3-60 | 187            | 254 | 1          | 55.8 | 340 | 1         | 55.8 | 340 | 2             | 6.0 | 137.6 | 175  | 175      | 407.8 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 34.0 | 196 |               | 3.9 | 84.3  | 110  | 100      | 237.8 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 26.9 | 179 |               | 2.9 | 66.3  | 90   | 80       | 211.7 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 23.7 | 132 |               | 2.4 | 58.1  | 80   | 70       | 160.5 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 26.9 | 174 |               | 2.9 | 66.3  | 90   | 80       | 206.7 |
| 040             | 208/230-3-60 | 187            | 254 | 2          | 35.8 | 239 | 2         | 33.4 | 225 | 3             | 6.0 | 165.4 | 200  | 175      | 359.6 |
|                 | 380-3-60     | 342            | 418 |            | 23.7 | 145 |           | 19.2 | 140 |               | 3.9 | 103.5 | 125  | 110      | 218.9 |
|                 | 460-3-60     | 414            | 506 |            | 17.9 | 125 |           | 16.7 | 114 |               | 2.9 | 82.4  | 100  | 90       | 185.0 |
|                 | 575-3-60     | 518            | 632 |            | 14.3 | 80  |           | 13.4 | 80  |               | 2.4 | 66.1  | 80   | 70       | 128.2 |
|                 | 380/415-3-50 | 342            | 440 |            | 17.9 | 118 |           | 16.7 | 111 |               | 2.9 | 82.4  | 100  | 90       | 178.0 |
| 050             | 208/230-3-60 | 187            | 254 | 2          | 48.1 | 245 | 2         | 51.3 | 300 | 3             | 6.0 | 229.6 | 250  | 250      | 465.5 |
|                 | 380-3-60     | 342            | 418 |            | 23.7 | 145 |           | 26.9 | 139 |               | 3.9 | 119.6 | 125  | 125      | 225.0 |
|                 | 460-3-60     | 414            | 506 |            | 18.6 | 125 |           | 23.1 | 150 |               | 2.9 | 97.9  | 110  | 110      | 219.0 |
|                 | 575-3-60     | 518            | 632 |            | 14.7 | 100 |           | 19.9 | 109 |               | 2.4 | 81.4  | 100  | 90       | 165.5 |
|                 | 380/415-3-50 | 342            | 440 |            | 18.6 | 118 |           | 23.1 | 140 |               | 2.9 | 97.9  | 110  | 110      | 212.0 |
| 060             | 208/230-3-60 | 187            | 254 | 2          | 51.3 | 300 | 2         | 55.8 | 340 | 4             | 6.0 | 252.2 | 300  | 300      | 522.4 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |           | 34.0 | 196 |               | 3.9 | 145.9 | 175  | 175      | 299.4 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |           | 26.9 | 179 |               | 2.9 | 118.3 | 125  | 125      | 263.7 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |           | 23.7 | 132 |               | 2.4 | 102.7 | 125  | 110      | 205.1 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |           | 26.9 | 174 |               | 2.9 | 118.3 | 125  | 125      | 253.7 |
| 070             | 208/230-3-60 | 187            | 254 | 2          | 55.8 | 340 | 3         | 46.1 | 245 | 4             | 6.0 | 293.9 | 300  | 300      | 564.1 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 23.7 | 145 |               | 3.9 | 163.2 | 175  | 175      | 316.7 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 18.6 | 125 |               | 2.9 | 127.9 | 150  | 150      | 273.3 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 14.7 | 100 |               | 2.4 | 107.0 | 125  | 125      | 209.4 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 18.6 | 118 |               | 2.9 | 127.9 | 150  | 150      | 268.3 |
| 080             | 208/230-3-60 | 187            | 254 | 2          | 55.8 | 340 | 3         | 55.8 | 340 | 5             | 6.0 | 323.0 | 350  | 350      | 587.2 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 34.0 | 196 |               | 3.9 | 198.0 | 225  | 225      | 347.6 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 26.9 | 179 |               | 2.9 | 155.7 | 175  | 175      | 298.2 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 23.7 | 132 |               | 2.4 | 136.4 | 150  | 150      | 236.4 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 26.9 | 174 |               | 2.9 | 155.7 | 175  | 175      | 293.2 |
| 090             | 208/230-3-60 | 187            | 254 | 3          | 51.3 | 300 | 3         | 55.8 | 340 | 6             | 6.0 | 371.3 | 400  | 400      | 641.5 |
|                 | 380-3-60     | 342            | 418 |            | 26.9 | 139 |           | 34.0 | 196 |               | 3.9 | 214.6 | 225  | 225      | 368.1 |
|                 | 460-3-60     | 414            | 506 |            | 23.1 | 150 |           | 26.9 | 179 |               | 2.9 | 174.1 | 200  | 200      | 319.5 |
|                 | 575-3-60     | 518            | 632 |            | 19.9 | 109 |           | 23.7 | 132 |               | 2.4 | 151.1 | 175  | 150      | 253.5 |
|                 | 380/415-3-50 | 342            | 440 |            | 23.1 | 140 |           | 26.9 | 174 |               | 2.9 | 174.1 | 200  | 200      | 309.5 |
| 100             | 208/230-3-60 | 187            | 254 | 3          | 55.8 | 340 | 3         | 55.8 | 340 | 6             | 6.0 | 384.8 | 400  | 400      | 655.0 |
|                 | 380-3-60     | 342            | 418 |            | 34.0 | 196 |           | 34.0 | 196 |               | 3.9 | 235.9 | 250  | 250      | 389.4 |
|                 | 460-3-60     | 414            | 506 |            | 26.9 | 179 |           | 26.9 | 179 |               | 2.9 | 185.5 | 200  | 200      | 330.9 |
|                 | 575-3-60     | 518            | 632 |            | 23.7 | 132 |           | 23.7 | 132 |               | 2.4 | 162.5 | 175  | 175      | 264.9 |
|                 | 380/415-3-50 | 342            | 440 |            | 26.9 | 174 |           | 26.9 | 174 |               | 2.9 | 185.5 | 200  | 200      | 325.9 |

**LEGEND**

- FLA** — Full Load Amps
- ICF** — Maximum Instantaneous Current Flow
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps
- MOCP** — Maximum Overcurrent Protection
- RLA** — Rated Load Amps

**NOTES:**

1. Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage 2%; amps 10%.
2. All units or modules have single point primary power connection. Main power must be supplied from a field-supplied disconnect.
3. For MCA that is less than or equal to 380 amps, 3 conductors are required.  
For MCA between 381 and 760 amps, 6 conductors are required.  
Calculation of conductors required is based on 75 C copper wire.

4. Wiring for main field supply must be rated 75 C. Use copper conductors only.
  - a. Incoming wire size range for terminal block with MCA up to 175 amps is 14 AWG (American Wire Gage) to 2/0.
  - b. Incoming wire size range for terminal block with MCA from 175.1 amps to 420 amps is 2 AWG to 600 kcmil.
  - c. Incoming wire size range for non-fused disconnect with MCA up to 100 amps is 14 AWG to 1/0.
  - d. Incoming wire size range for non-fused disconnect with MCA from 100.1 amp to 200 amps is 6 AWG to 350 kcmil.
  - e. Incoming wire size range for non-fused disconnect with MCA from 200.1 amp to 450 amps is 3/0 to 500 kcmil.



**Table 13 — Unit Incoming Power Options**

| MOCp VALUE   | UNIT INCOMING POWER OPTION     |               |                                 |               |                     |  |               |
|--|--------------------------------|---------------|---------------------------------|---------------|---------------------|--|---------------|
|  | Standard Terminal Block Option |               | High SCCR Terminal Block Option |               |                     | Standard and High SCCR Disconnect Option |               |
|  | Max Wire Size                  | Min Wire Size | Max Wire Size                   | Min Wire Size | High SCCR Fuse Type | Max Wire Size                            | Min Wire Size |
| 100 A or less                                      | 2/0                            | #14 AWG       | 2/0                             | #6 AWG        | J, RK1, or RK5      | 1/0                                      | #14 AWG       |
| Greater than 100 A and Less than or Equal to 200 A | 2/0                            | #14 AWG       | 2/0                             | #6 AWG        | J or RK1            | 350 kcmil                                | #6 AWG        |
| Greater than 200                                   | 600 kcmil                      | #2            | 600 kcmil                       | 3/0           | J or RK1            | 500 kcmil (1)<br>500 kcmil (2)           | 3/0           |

**LEGEND**

- AWG** — American Wire Gage
- kcmil** — Thousand Circular Mills
- MOCp** — Maximum Overcurrent Protection
- SCCR** — Short Circuit Current Rating

**NOTES:**

1. Terminal block high SCCR option units must use approved fuses to meet high SCCR rating.
2. High SCCR disconnect option units can use either approved fuse or circuit breaker for incoming power protection.
3. Time delay fuse type required.

**Step 5 — Install Accessories**

**LOW-AMBIENT OPERATION** — If operating temperatures below those found in Table 14 are expected, Motormaster® V fan motor control is recommended.

**Table 14 — 38AP Unit Low Ambient Limitations**

**Single Circuit**

| 38APS UNIT SIZE | MINIMUM LOW AMBIENT (Standard Unit) | MINIMUM LOW AMBIENT MOTORMASTER® CONTROL (Factory-Installed Option) |
|-----------------|-------------------------------------|---|
| 025-050         | 45 F (7.2 C)                        | -20 F (-28.9 C)   |

**Dual Circuit**

| 38APD UNIT SIZE | MINIMUM LOW AMBIENT (Standard Unit) | MINIMUM LOW AMBIENT MOTORMASTER CONTROL (Factory-Installed Option) |
|-----------------|-------------------------------------|--|
| 025-040         | 32 F (0 C)                          | -20 F (-28.9 C)  |
| 050-060         | 25 F (-3.9 C)                       | -20 F (-28.9 C)  |
| 070-100         | 32 F (0 C)                          | -20 F (-28.9 C)  |

**MISCELLANEOUS ACCESSORIES** — Energy management module, Navigator™ display, remote enhanced display, Touch Pilot™ display, BACnet™ translator control, LON (local operating network) translator control, and long line accessory kit are available for special applications.





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