

## HFC-410A CHARGING INFORMATION

The unit is factory-charged with the amount of HFC-410A refrigerant indicated on the unit rating plate. This charge is based on a matching indoor coil and outdoor coil with 15 feet (4.6 m) line set. The outdoor unit should be charged during warm weather. However, applications arise in which charging must occur in the colder months. *The method of charging is determined by the outdoor ambient temperature.* Before charging the unit, determine the liquid line temperature and the outdoor ambient temperature.

### Charge Using the Weigh-In Method — *Outdoor Temperature < 64°F (17.7°C)*

If the system is void of refrigerant, or if the outdoor ambient temperature is 64°F (17.7°C) and below, the refrigerant charge should be weighed into the unit. Do this after any leaks have been repaired.

**NOTE** - See system Installation Instructions to calculate charge required for longer line sets.

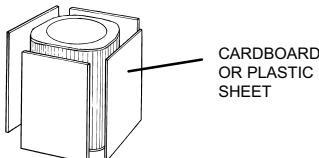
1. Recover the refrigerant from the unit.
2. Conduct a leak check, then evacuate the system as shown in the installation instructions.
3. Weigh in the unit nameplate charge.

If weighing facilities are not available, or if you are charging the unit during warm weather, follow one of the other procedures outlined below.

### Charge Using The Subcooling Method — *Outdoor Temperature > 65°F (18.3°C)*

When the outdoor ambient temperature is 65°F (18.3°C) and above, use the subcooling method to charge the unit. It may be necessary to restrict the air flow through the outdoor coil to achieve pressures in the 325-375 psig (2240-2485 kPa) range. These higher pressures are necessary for checking the charge. Block equal sections of air intake panels and move obstructions sideways until the liquid pressure is in the 325-375 psig (2240-2485 kPa) range. See figure 1.

Block coil one side at a time with cardboard/plastic until proper testing pressures are reached.



**Figure 1. Blocking Outdoor Coil**

1. With the manifold gauge connected to the liquid line service port, allow the unit pressures to stabilize, then, use a digital thermometer to record the liquid line temperature.
2. At the same time, record the liquid line pressure reading.
3. Use a temperature/pressure chart for HFC-410A to determine the saturation temperature for the liquid line pressure reading.
4. Subtract the liquid line temperature from the saturation temperature (according to the chart) to determine subcooling (**Saturation temperature - Liquid line temperature = Subcooling Value**).
5. Compare the subcooling value with those in table 1. If subcooling is greater than shown, recover some refrigerant. If subcooling is less than shown, add refrigerant.

### Charge Using Normal Operating Pressures/Approach or Subcooling

#### Methods (High Capacity) — *Outdoor Temperature ≥ 65°F (18.3°C)*

When the outdoor ambient temperature is 65°F (18.3°C) and above, use the approach or subcooling methods to charge the system. For best results, indoor temperature should be 70°F (21°C) to 80°F (26°C). Monitor system pressures while charging.

1. Record outdoor ambient temperature using a digital thermometer.
2. Attach high pressure gauge set and operate unit for several minutes to allow system pressures to stabilize.

3. Compare stabilized pressures with those provided in table 3, "Normal Operating Pressures." Minor variations are to be expected; significant differences could mean that the system is not properly charged or that a problem exists with some component in the system. Pressures higher than those listed indicate that the system is overcharged. Pressures lower than those listed indicate that the system is undercharged. Verify adjusted charge using the approach method.
4. Use the same digital thermometer used to check outdoor ambient temperature to check liquid line temperature. Verify the unit charge using the approach method.
5. The difference between the liquid and ambient temperatures should match values given in table 2. If the values don't agree with the those in table 2, add refrigerant to lower the approach temperature or recover refrigerant from the system to increase the approach temperature.

### Using the Normal Operating Pressures Table

Table 3 may be used to help perform maintenance checks. This table is not a procedure for charging the system and any minor variations in the pressures may be expected due to differences in installations. However, significant deviations could mean that the system is not properly charged or that a problem exists with some component in the system.

| Charging Temperatures and Pressures   |   |           |           |           |
|---|---|-----------|-----------|-----------|
| XC16 Model  | -024  | -036      | -048      | -060      |
| <b>Table 1 - Subcooling Values (High Capacity)</b><br>Saturation Temperature minus Liquid Line Temperature °F (°C) ± 1°F (0.5°C)    |   |           |           |           |
| <b>Table 2 - Approach Values (High Capacity)</b><br>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ± 1°F (0.5°C) |   |           |           |           |
| Temp. °F (°C)   | 6 (-14.4)   | 5 (-15.0) | 4 (-15.5) | 7 (-13.9) |
| <b>Table 3 - Normal Operating Pressures (Liquid +10 &amp; Suction +5 psig)</b>  |   |           |           |           |
| Air Temperature Entering Outside Coil   | The values below are typical pressures; indoor evaporator match-up, indoor air quantity, and evaporator load will cause the pressures to vary.<br><b>Liquid Line Pressure / Vapor Line Pressure</b> |           |           |           |
| <b>First Stage (Low Capacity)</b>   |   |           |           |           |
| 65 (18.3)   | 215/136   | 217/141   | 229/140   | 229/134   |
| 75 (23.9)   | 248/139   | 251/143   | 263/143   | 264/138   |
| 85 (29.4)   | 289/141   | 292/146   | 304/146   | 305/140   |
| 95 (35.0)   | 334/144   | 337/147   | 350/148   | 349/142   |
| 105 (40.6)  | 384/146   | 387/150   | 400/150   | 402/147   |
| 115 (46.1)  | 439/150   | 440/154   | 453/155   | 455/149   |
| <b>Second Stage (High Capacity)</b>   |   |           |           |           |
| 65 (18.3)   | 226/137   | 230/137   | 234/135   | 244/129   |
| 75 (23.9)   | 260/139   | 265/140   | 269/137   | 282/131   |
| 85 (29.4)   | 302/141   | 307/141   | 312/140   | 324/133   |
| 95 (35.0)   | 351/144   | 354/144   | 359/141   | 371/136   |
| 105 (40.6)  | 400/146   | 405/146   | 409/143   | 422/139   |
| 115 (46.1)  | 459/149   | 460/149   | 465/146   | 474/143   |

