

HFC-410A CHARGING PROCEDURE

FOR COMPLETE CHARGING DETAILS, REFER TO THE OUTDOOR UNIT INSTALLATION AND SERVICE PROCEDURE (CORP 1007-L2).

AIRFLOW CHECK - Both airflow and refrigerant charge must be monitored for a proper system set-up. It may be necessary to alternately check and adjust the airflow and the refrigerant charge.

NOTE - Be sure that filters and indoor and outdoor coils are clean before testing.

The unit is factory-charged with HFC-410A refrigerant in the amount indicated on the unit rating plate. This charge is based on a matching indoor coil and outdoor coil using a 15 foot (4.6 m) line set. The following charging procedure is intended as a general guide. It is intended for use on expansion valve systems only. For best results, indoor temperature should be between 70°F (21°C) and 80°F (27°C). Be sure to monitor system pressures while charging. Charging should be done with unit operating in the cooling mode.

- 1 - Connect the manifold gauge set to the service valves. Connect the low pressure gauge to vapor valve service port and the high pressure gauge to liquid valve service port. Connect the center manifold hose to an upright cylinder of HFC-410A. Close manifold gauge set valves.
- 2 - Set the room thermostat to call for heat. This will create the necessary load to properly charge the system in the cooling cycle.
- 3 - Use a digital thermometer to record the outdoor ambient temperature.
- 4 - When the heating demand has been satisfied, switch the thermostat to cooling mode with a set point of 68°F (20°C). When pressures have stabilized, use a digital thermometer to record the liquid line temperature.
- 5 - The outdoor temperature will determine which charging method to use. Proceed with the appropriate charging procedure.

Using the Weigh-in Method—Outdoor Temperature 64°F (17.7°C) and below

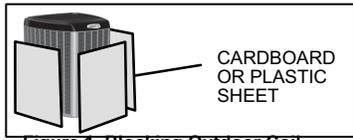
If the system is void of refrigerant, or if the outdoor ambient temperature is 64°F (17.7°C) and below, the refrigerant charge should be weighed into the unit. Do this after any leaks have been repaired.

- 1 - Recover the refrigerant from the unit.
- 2 - Conduct a leak check, then evacuate as outlined 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.

Using the Subcooling Method—Outdoor Temperature 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 (2240-2585 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 (2240-2585 kPa) range. See figure 1.



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

- 1 - With the manifold gauge hose still on the liquid service port and the unit operating stably, 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 some refrigerant.

Using the Approach Method—Outdoor Temperature 65°F (18.3°C) and above

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 in these pressures may be expected due to differences in installations. 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.

Charging Temperatures and Pressures

XC21 Model	-024	-036	-048	-060
Table 1 - Subcooling Values				
Saturation Temperature minus Liquid Line Temperature °F (°C) ± 1°F (0.5°C)				
Temp. °F (°C)	4.0 (2.2)	4.0 (2.2)	4.0 (2.2)	5.0 (2.7)
Table 2 - Approach Values				
Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ± 1°F (0.5°C)				
Temp. °F (°C)	3.5 (1.9)	6.0 (3.3)	6.0 (3.3)	12.0 (6.7)
Table 3 - Normal Operating Pressures (Liquid ±10 and Suction ±5 psig)				
Air Temp*	The values below are typical pressures; indoor evaporator match up, indoor air quantity, and evaporator load will cause the pressures to vary.			
Liquid Line Pressure / Vapor Line Pressure				
First Stage (Low Capacity)				
65°F (18°C)	209 / 144	211 / 142	215 / 140	233 / 133
75°F (24°C)	242 / 145	244 / 144	250 / 142	269 / 136
85°F (29°C)	281 / 146	285 / 146	288 / 144	312 / 137
95°F (35°C)	324 / 148	330 / 149	338 / 146	359 / 140
105°F (41°C)	372 / 151	380 / 151	387 / 149	408 / 144
115°F (46°C)	426 / 152	436 / 154	459 / 152	462 / 149
Second Stage (High Capacity)				
65°F (18°C)	213 / 138	214 / 137	217 / 124	243 / 129
75°F (24°C)	245 / 142	247 / 140	251 / 133	282 / 132
85°F (29°C)	285 / 142	288 / 141	289 / 138	325 / 135
95°F (35°C)	329 / 144	330 / 143	336 / 141	373 / 138
105°F (41°C)	376 / 147	384 / 145	385 / 144	424 / 141
115°F (46°C)	432 / 151	445 / 148	437 / 146	480 / 144

*Air temperature entering outside coil

1/2013



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