HFC-410A CHARGING PROCEDURE

FOR COMPLETE CHARGING DETAILS, REFER TO THE OUTDOOR UNIT INSTALLATION AND SERVICE PROCEDURE (CORP1022-L3)

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 70ºF (21ºC) and 80ºF (27ºC). 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 64ºF (17.7ºC) and below*

If the system is void of refrigerant, or if the outdoor ambient temperature is *64ºF (17.7ºC) 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 65ºF (18.3ºC) 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.

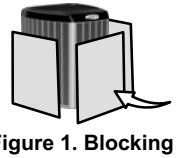

Figure 1. Blocking Outdoor Coil

1 - With the manifold gauge hose still on the liquid service port and the unit's pressures have stabilized, 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)**
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 Approach Method—*Outdoor Temperature 65ºF (18.3ºC) and above*

1 - Record outdoor ambient temperature using a digital thermometer.
2 - Attach high pressure gauge set; 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 to check both outdoor ambient temperature and liquid line temperature. Verify the unit charge using the approach method.
5 - Outdoor temperature should be 65°F (18°C) or above. Use the same digital thermometer used to check outdoor ambient temperature to check liquid line temperature. Verify the unit charge using the approach method. The difference between the ambient and liquid temperatures should match values given in table 2. Loss of charge results in low capacity and efficiency. 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

SL18XC1 Model	-24	-30	-36	-42	-48	-60
Table 1 - Subcooling Values *Saturation Temperature minus Liquid Line Temperature °F (ºC) ± 1ºF (0.5ºC)*						
Temp. °F (°C)	7 (3.9)	5 (2.8)	6 (3.3)	10 (5.6)	5 (2.8)	7 (3.9)
Table 2 - Approach Values *Liquid Line Temperature minus Outdoor Ambient Temperature ºF (ºC) ± 1ºF (0.5ºC)*						
Temp. °F (°C)	3 (1.7)	6 (3.3)	5 (2.8)	3 (1.7)	6 (3.3)	7 (3.9)
Table 3 - Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)*						
Temp. °F (°C)	**Liquid Line Pressure / Vapor Line Pressure**					
65 (18.3)	218 / 137	225 / 136	223 / 134	231 / 134	222 / 130	231 / 134
70 (21.1)	235 / 138	241 / 138	240 / 136	247 / 136	240 / 131	248 / 135
75 (23.9)	250 / 139	260 / 140	259 / 138	267 / 137	260 / 132	268 / 137
80 (26.7)	275 / 140	280 / 141	280 / 139	289 / 138	280 / 132	290 / 138
85 (29.4)	290 / 141	300 / 142	302 / 140	310 / 140	302 / 133	313 / 139
90 (32.2)	318 / 142	323 / 142	325 / 142	333 / 141	326 / 134	338 / 140
95 (35.0)	342 / 144	346 / 144	348 / 143	358 / 142	349 / 135	363 / 141
100 (37.8)	368 / 145	370 / 145	372 / 144	387 / 144	375 / 136	389 / 142
105 (40.6)	394 / 146	395 / 146	397 / 145	412 / 145	401 / 137	416 / 144
110 (43.3)	421 / 148	423 / 148	424 / 146	437 / 146	430 / 139	444 / 145
115 (46.1)	450 / 149	450 / 150	452 / 148	468 / 147	460 / 140	475 / 146

*** The values above are typical pressures; indoor evaporator match up, indoor air quantity, and evaporator load will cause the pressures to vary.**
**** Temperature of air entering outside coil.**

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