

## CHARGING INFORMATION FOR 13ACDN UNIT SHIPPED WITH DRY NITROGEN CHARGE

This unit is factory shipped with a nitrogen gas holding charge to prevent moisture infiltration. The 13ACDN unit is intended as a replacement component for an existing (previously installed) system. 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.

### Initial Weigh-In Charge

- After evacuation of the outdoor unit, line set, and indoor unit is complete, close the manifold gauge set valves. Disconnect vacuum pump from center hose of gauge set.
- Connect the center hose of the gauge set to a cylinder of HCFC-22 and purge the hose. Then, place the cylinder upside down on a scale.
- Open the high side manifold gauge valve and weigh in liquid refrigerant. Refer to unit nameplate to determine correct weigh-in charge.
- Close the high side manifold gauge valve when proper charge has been weighed in.

### Optimizing System Charge

*NOTE — Refrigerant tank should be turned right-side-up to deliver refrigerant gas during charge optimizing procedure.*

- Make sure the refrigerant cylinder is right-side-up so that it will deliver gas during the charge optimizing procedure.**
  - Set the thermostat for a cooling demand. Turn on power to the indoor unit and close the outdoor unit disconnect switch to start the unit.
  - Allow unit to run for five minutes to allow pressures to stabilize.
  - Check and adjust indoor airflow using procedure provided below.
  - Use either **approach**, **subcooling** or **superheat** method (see table 3 and 4) to optimize system charge. Adjust charge as necessary.
- NOTE — Complete procedures for approach, subcooling and superheat methods are located in the unit installation instruction.*
- Replace the stem and service port caps and tighten.

### Adjusting Indoor Airflow

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

To determine temperature drop across indoor coil (Delta-T), measure the entering air dry bulb (DB) and wet bulb (WB) temperatures at the indoor coil. Find Delta-T in table 1. Measure coil's leaving air DB and subtract that value from entering air DB. The measured difference should be within +3°F (+1.8°C) of table value; if too low, decrease the indoor fan speed. If the Delta-T is too high, increase the indoor fan speed. Repeat charging procedure and Delta-T (air flow adjustment) procedure until both are correct.

**Example:** Assume entering air DB - 72, WB - 64, leaving DB - 53. Therefore, Delta-T should be 15 (per table); delta across coil is 72 - 53 or 19 (which is 4°F higher than table value); action necessary: increase fan speed.

**Table 1. Superheat (SH) Value** RFC System - +5°F

Unit Capacity	-018	-024	-030	-036	-042	-048	-060	
<b>65</b>	26	23	33	22	23	21	30	
<b>70</b>	22	23	30	21	22	20	25	
<b>75</b>	19	21	26	20	21	19	22	
Outdoor temperature (°F)	<b>80</b>	16	18	22	18	20	17	20
	<b>85</b>	13	16	18	16	19	14	17
	<b>90</b>	10	13	14	13	18	11	12
	<b>95</b>	7	10	7	10	16	6	7
	<b>100</b>	4	6	3	5	14	2	1
	<b>105</b>	2	2	1	2	11	1	1

### Charging Temperatures and Pressures

Model	-018	-024	-030	-036	-042	-048	-060
<b>Table 2- Normal Operating Pressures<sup>1</sup></b>							
°F(°C) <sup>2</sup>	TXV System - Liquid Line (±10 psig) / Vapor Line (±5 psig)						
65 (18)	138 / 79	148 / 79	147 / 75	155 / 79	147 / 78	144 / 77	152 / 73
70 (21)	148 / 80	160 / 79	159 / 75	169 / 80	158 / 78	152 / 77	164 / 75
75 (24)	160 / 80	174 / 80	172 / 76	183 / 81	172 / 79	163 / 78	177 / 77
80 (27)	174 / 81	188 / 81	186 / 77	199 / 81	189 / 79	179 / 78	192 / 78
85 (29)	188 / 81	203 / 81	201 / 77	215 / 82	205 / 80	195 / 79	208 / 79
90 (32)	204 / 81	220 / 82	216 / 78	233 / 82	222 / 81	212 / 80	225 / 80
95 (35)	219 / 82	236 / 83	233 / 79	252 / 83	241 / 81	229 / 80	243 / 80
100 (38)	236 / 82	253 / 83	250 / 80	271 / 83	259 / 82	245 / 81	261 / 81
105 (41)	253 / 83	272 / 84	268 / 80	291 / 84	279 / 82	265 / 81	280 / 82
110 (43)	272 / 84	291 / 85	287 / 81	311 / 85	299 / 83	287 / 82	299 / 83
115 (45)	291 / 84	311 / 85	306 / 82	331 / 86	320 / 84	309 / 83	320 / 83
°F(°C) <sup>2</sup>	Fixed Orifice - Liquid Line (±10 psig) / Vapor Line (±5 psig)						
65 (18)	140 / 71	149 / 72	147 / 63	163 / 75	154 / 72	149 / 74	143 / 68
70 (21)	151 / 74	159 / 73	161 / 67	175 / 77	165 / 74	158 / 76	156 / 71
75 (24)	163 / 76	172 / 75	176 / 71	187 / 78	173 / 76	169 / 77	169 / 73
80 (27)	176 / 78	186 / 77	190 / 74	202 / 80	189 / 77	180 / 79	183 / 76
85 (29)	190 / 80	200 / 79	206 / 76	217 / 81	202 / 79	192 / 80	198 / 78
90 (32)	205 / 82	216 / 80	222 / 78	232 / 82	217 / 80	206 / 82	213 / 80
95 (35)	220 / 83	232 / 82	239 / 80	248 / 83	233 / 82	222 / 83	228 / 81
100 (38)	236 / 84	247 / 83	256 / 81	266 / 84	248 / 83	238 / 84	245 / 82
105 (41)	252 / 85	265 / 84	273 / 82	279 / 85	265 / 84	255 / 85	262 / 84
110 (43)	269 / 86	280 / 85	291 / 83	302 / 86	283 / 86	273 / 86	279 / 85
115 (45)	288 / 87	303 / 87	309 / 84	320 / 87	298 / 86	292 / 88	297 / 86
<b>Table 3- Approach (APP) Values<sup>3</sup> -</b> TXV System - °F (°C) ±1°F (0.5°C)							
All	6 (3.3)	6 (3.3)	8 (4.4)	12 (6.7)	5 (2.8)	6 (3.3)	7 (3.8)
<b>Table 4- Subcooling (SC) Values<sup>4</sup> -</b> TXV System - °F (°C) ±1°F (0.5°C)							
All	7 (3.8)	12 (6.7)	9 (5)	10 (5.6)	14 (8)	10 (5.6)	13 (7.2)
<sup>1</sup> Typical pressures; indoor evaporator match up, indoor air quantity, and evaporator load will cause the pressures to vary. <sup>2</sup> Temperature of air entering outside coil. <sup>3</sup> Approach = Liquid Line Temp. minus Outdoor Ambient Temperature <sup>4</sup> Subcooling = Saturation Temp. minus Liquid Line Temp Temperature							

