

# 13ACX CHARGING INFORMATION

**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.*

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  $\pm 3^\circ\text{F}$  ( $\pm 1.8^\circ\text{C}$ ) of table value; if too low, decrease the indoor fan speed (refer to indoor unit for information). 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  $4^\circ\text{F}$  higher than table value); action necessary: increase fan speed.

**Table 1. Evaporator Coil Delta-T**

Dry bulb temperature of air entering indoor coil ( $^\circ\text{F}$ )	80	24	24	24	23	23	22	22	22	20	19	18	17	16	15
	78	23	23	23	22	22	21	21	20	19	18	17	16	15	14
	76	22	22	22	21	21	20	19	19	18	17	16	15	14	13
	74	21	21	21	20	19	19	18	17	16	15	14	13	12	11
	72	20	20	19	18	17	17	16	15	15	14	13	12	11	10
	70	19	19	18	18	17	17	16	15	15	14	13	12	11	10
$^\circ\text{F}$	57	58	59	60	61	62	63	64	65	66	67	68	69	70	
[ Wet bulb temperature of air entering indoor coil ]															

**Table 2. Superheat (SH) Value (RFC)**

Suction line saturation temperature minus suction line temperature.									
Outdoor Temp ( $^\circ\text{F}$ )	65	70	75	80	85	90	95	100	105
Superheat ( $^\circ\text{F}$ )	35	30	25	22	18	12	8	5	5
All measurements are at the service valves and are based on 80db / 67wb indoor temperature.									

**Table 3. RFC Sizes**

Unit Size	-18	-24	-30	-36	-42	-48	-60
RFC Size	0.053	0.057	0.063	0.072	0.074	0.082	0.090

**Table 4- Normal Operating Pressures<sup>1</sup>**

Size	-18	-24	-30	-36	-42	-48	-60
$^\circ\text{F}(^\circ\text{C})^2$	Fixed Orifice (RFC) - Liquid Line ( $\pm 10$ psig) / Vapor Line ( $\pm 5$ psig)						
65 (18)	233 / 121	246 / 126	245 / 123	261 / 134	246 / 126	247 / 125	248 / 124
70 (21)	250 / 124	265 / 129	265 / 126	281 / 136	263 / 128	266 / 128	266 / 126
75 (24)	270 / 128	286 / 132	286 / 129	301 / 138	284 / 131	286 / 131	288 / 130
80 (27)	291 / 131	307 / 135	308 / 132	324 / 140	305 / 133	307 / 133	309 / 133
85 (29)	313 / 134	330 / 137	331 / 135	346 / 142	327 / 135	329 / 135	330 / 135
90 (32)	335 / 136	353 / 140	355 / 138	371 / 144	350 / 138	353 / 138	354 / 138
95 (35)	359 / 138	378 / 142	380 / 140	396 / 146	374 / 140	377 / 140	377 / 140
100 (38)	383 / 140	402 / 143	405 / 142	422 / 148	399 / 142	403 / 142	406 / 142
105 (41)	409 / 142	428 / 145	431 / 144	448 / 150	424 / 144	428 / 144	431 / 144
110 (43)	436 / 145	456 / 147	458 / 146	477 / 151	452 / 146	455 / 146	457 / 146
115 (46)	464 / 147	486 / 149	487 / 148	506 / 153	481 / 148	483 / 147	484 / 148
$^\circ\text{F}(^\circ\text{C})^2$	TXV System - Liquid Line ( $\pm 10$ psig) / Vapor Line ( $\pm 5$ psig)						
65 (18)	233 / 132	244 / 137	248 / 127	263 / 135	238 / 132	235 / 132	241 / 130
70 (21)	251 / 133	263 / 138	263 / 131	281 / 138	262 / 133	254 / 132	260 / 130
75 (24)	265 / 133	285 / 139	284 / 132	302 / 140	280 / 134	276 / 134	280 / 132
80 (27)	292 / 135	307 / 140	307 / 134	325 / 142	301 / 136	298 / 134	299 / 134
85 (29)	314 / 136	329 / 141	330 / 135	349 / 142	327 / 137	323 / 135	321 / 135
90 (32)	338 / 137	354 / 142	355 / 136	375 / 143	353 / 138	350 / 137	344 / 134
95 (35)	362 / 138	379 / 143	380 / 137	404 / 144	377 / 140	377 / 138	371 / 135
100 (38)	388 / 140	404 / 144	407 / 138	433 / 145	404 / 141	406 / 140	400 / 137
105 (41)	415 / 141	438 / 145	434 / 139	462 / 147	435 / 142	430 / 141	428 / 139
110 (43)	444 / 142	464 / 147	465 / 141	494 / 149	465 / 143	464 / 142	458 / 141
115 (45)	475 / 143	495 / 148	497 / 142	527 / 150	499 / 144	495 / 143	484 / 142

**Table 5- Approach (APP) Values<sup>3</sup> - TXV System -  $^\circ\text{F}(^\circ\text{C}) \pm 1^\circ\text{F}(0.5^\circ\text{C})$**

All	8 (4.4)	11 (6.1)	10 (5.5)	13 (7.2)	7 (3.9)	7 (3.9)	13 (7.2)
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**Table 6- Subcooling (SC) Values<sup>4</sup> - TXV System -  $^\circ\text{F}(^\circ\text{C}) \pm 1^\circ\text{F}(0.5^\circ\text{C})$**

65	5 (2.8)	8 (4.4)	5 (2.8)	3 (1.7)	8 (4.4)	6 (3.3)	4 (2.2)
75	5 (2.8)	8 (4.4)	6 (3.3)	3 (1.7)	9 (5.0)	7 (3.9)	4 (2.2)
85	5 (2.8)	8 (4.4)	6 (3.3)	4 (2.2)	9 (5.0)	7 (3.9)	5 (2.8)
95	6 (3.3)	9 (5.0)	7 (3.9)	4 (2.2)	10 (5.5)	8 (4.4)	5 (2.8)
105	7 (3.9)	9 (5.0)	8 (4.4)	5 (2.8)	11 (6.1)	9 (5.0)	5 (2.8)
115	9 (5.0)	10 (5.5)	8 (4.4)	5 (2.8)	11 (6.1)	9 (5.0)	4 (2.2)

- 1 Typical pressures; indoor evaporator match up, indoor air quantity, and evaporator load will cause the pressures to vary.
- 2 Temperature of air entering outside coil.
- 3 Approach = Liquid Line Temp. minus Outdoor Ambient Temperature
- 4 Subcooling = Saturation Temp. minus Liquid Line Temp Temperature

