

## 14 SEER HEAT PUMP CHARGING PROCEDURE (R410A)

**IMPORTANT:** BEFORE ADJUSTING CHARGE: SYSTEM COMPONENTS MUST BE FUNCTIONING PROPERLY AND INDOOR / OUTDOOR AIR FLOW ARE WITHIN PROPER RANGE.

**CHARGING METHOD USING REFRIGERANT WEIGHT (COOLING/HEATING MODE):**

- (FOR FIXED ORIFICE OR TXV SYSTEMS WITH AMBIENT TEMPERATURE BELOW 65°F)
1. RECOVER ALL REFRIGERANT FROM SYSTEM THEN CONDUCT LEAK CHECK AND SYSTEM EVACUATION (SEE INSTALLATION INSTRUCTION).
  2. WEIGH IN THE REFRIGERANT AND CHARGE THE SYSTEM PER THE AMOUNT SHOWN ON THE NAMEPLATE.
  3. ADD OR SUBTRACT 0.6 OZ OF REFRIGERANT PER FOOT OF LIQUID LINE (3/8), IF DIFFERENT THAN 1/2 INCH.

**CHARGING METHOD USING SUBCOOLING (COOLING MODE):**

- (FOR TXV SYSTEMS WITH AMBIENT TEMPERATURE ABOVE 65°F)
1. USE A DIGITAL THERMOMETER TO MEASURE LIQUID TEMPERATURE AND MANIFOLD GAUGE TO MEASURE LIQUID PRESSURE AT OUTDOOR UNIT.
  2. USE R410A CHART TO DETERMINE THE SATURATION TEMPERATURE CORRESPONDING TO THE LIQUID PRESSURE READING.
  3. SUBCOOLING VALUE EQUALS SATURATION TEMPERATURE MINUS LIQUID TEMPERATURE.
  4. COMPARE SUBCOOLING WITH VALUES IN TABLE (1). ADD CHARGE TO INCREASE OR REMOVE CHARGE TO DECREASE SUBCOOLING.

**CHARGING USING THE APPROACH METHOD (COOLING MODE):**

- (FOR TXV SYSTEMS WITH AMBIENT TEMPERATURE ABOVE 65°F)
1. USE A DIGITAL THERMOMETER TO MEASURE AMBIENT AND LIQUID LINE TEMPERATURES.
  2. APPROACH TEMPERATURE EQUALS LIQUID TEMPERATURE MINUS AMBIENT TEMPERATURE.
  3. COMPARE APPROACH TEMPERATURE WITH VALUES IN TABLE (2); ADD CHARGE TO INCREASE OR REMOVE CHARGE TO DECREASE APPROACH TEMPERATURE.

**CHARGING METHOD USING SUPERHEAT (COOLING MODE):**

- (FOR FIXED ORIFICE SYSTEMS WITH AMBIENT TEMPERATURE ABOVE 65°F)
1. USE A DIGITAL THERMOMETER TO MEASURE SUCTION LINE TEMPERATURE AND MANIFOLD GAUGE TO MEASURE SUCTION PRESSURE AT OUTDOOR UNIT.
  2. USE R410A CHART TO DETERMINE THE SATURATION TEMPERATURE CORRESPONDING TO THE SUCTION PRESSURE READING.
  3. SUPERHEAT VALUE EQUALS SUCTION TEMPERATURE MINUS SATURATION TEMPERATURE.
  4. COMPARE SUPERHEAT WITH VALUES IN TABLE (4). ADD CHARGE TO DECREASE OR REMOVE CHARGE TO INCREASE SUPERHEAT.

**OPERATING PRESSURE TABLE:**

TABLE (3) IS NOT A PROCEDURE TO CHARGING THE SYSTEM AND MINOR VARIATIONS MAY BE EXPECTED. MAJOR VARIATIONS CAN BE AN INDICATION OF IMPROPERLY CHARGED SYSTEM OR A COMPONENT MALFUNCTION.

CHARGING TEMPERATURES AND PRESSURES							
MODELS	-18	-24	-30	-36	-42	-48	-60
<b>TABLE 1 - SUBCOOLING VALUES</b>							
OUTSIDE TEMP. °F	SATURATION TEMPERATURE MINUS LIQUID LINE TEMPERATURE °F ± 1°F						
65	3	3	11	4	6	8	6
75	2	2	10	4	6	7	6
85	1	1	9	3	5	7	5
95	1	1	9	3	5	6	5
105	1	1	8	2	4	6	5
115	1	1	7	2	4	5	4
<b>TABLE 2 - APPROACH VALUES</b>							
LIQUID LINE TEMPERATURE MINUS OUTDOOR AMBIENT TEMPERATURE °F ± 1°F							
TEMP. °F	11	11	6	12	6	7	9
<b>TABLE 3 - NORMAL OPERATING PRESSURES</b>							
THE VALUES BELOW ARE TYPICAL PRESSURES; INDOOR EVAPORATOR MATCH UP, INDOOR AIR QUALITY, AND EVAPORATOR LOAD WILL CAUSE THE PRESSURES TO VARY.							
*TEMP. °F	LIQUID LINE PRESSURE / VAPOR LINE PRESSURE						
<b>COOLING</b>							
65	211/136	212/135	217/137	219/136	209/131	218/131	222/134
75	256/141	257/137	263/139	266/139	254/134	264/134	268/136
85	300/145	301/140	309/140	313/142	298/137	310/137	314/139
95	345/150	346/142	355/142	360/145	343/140	356/140	360/141
105	390/155	391/144	401/144	407/148	388/143	402/143	406/143
115	434/159	435/147	447/145	454/151	432/146	448/146	4452/146
<b>HEATING</b>							
50	315/115	314/110	317/103	245/109	393/112	362/110	315/115
40	300/99	300/95	303/89	259/95	372/98	340/96	300/99
30	285/83	285/80	288/76	272/80	351/83	318/81	285/83
20	270/68	270/65	273/62	286/65	330/68	297/66	270/68
*TEMPERATURE OF AIR ENTERING OUTSIDE COIL.							

TABLE 4 - SUPERHEAT CHARGING METHOD FOR FIXED METERING DEVICES										
OUTDOOR AMBIENT	60	65	70	75	80	85	90	95	100	105
REQUIRED SUPERHEAT	38	35	30	26	22	18	12	8	5	0

TABLE 5 - RECOMMENDED ORIFICE SIZE							
MODELS SIZE	18	24	30	36	42	48	60
ORIFICE SIZE	.055	.059	.062	.071	.080	.084	.090

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