



Extended Charge Procedure Commercial Application

Elite® Series 6 – 20 Ton

AIR CONDITIONERS / HEAT PUMPS
6 - 20 TONS
508349-01
1/2023

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, or service agency.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

⚠ WARNING

To prevent serious injury or death:

1. Lock-out/tag-out before performing maintenance.
2. If system power is required (e.g., smoke detector maintenance), disable power to blower, remove fan belt where applicable, and ensure all controllers and thermostats are set to the “OFF” position before performing maintenance.
3. Always keep hands, hair, clothing, jewelry, tools, etc. away from moving parts.

Refrigerant Charge

NOTE - This extended HFC-410A charging procedure applies to non-matched Indoor and Outdoor units only. For matched Indoor and Outdoor units with same full load capacity, see unit instructions for charging procedure.

The ELITE units have a factory holding charge of 2 pounds of HFC-410A in each circuit. The outdoor unit should be charged during warm weather. However, applications arise in which charging must occur in the colder months. The method of charging is determined by the outdoor ambient temperature. Before charging the unit, determine the liquid line temperature and the outdoor ambient temperature.

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Charge Using the Subcooling Method – Outdoor Temperature > 65°F (18.3°C)

- 1 - Attach pressure gauge set to liquid and suction service valves. Operate unit for at least five (5) minutes to allow system pressures to stabilize, then, use a 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 for the specific system match. If subcooling is greater than shown, recover some refrigerant. If subcooling is less than shown, add refrigerant.
- 6 - Repeat steps 1 – 5 anytime refrigerant is added or recovered.
- 7 - For Heat Pump models – Switch to heating mode and let the system stabilize at least 10 minutes. Then confirm that the pressures obtained from the connected gauges match the normal operating pressures (heating mode) in table for the specific system match.

Charge Using Normal Operating Pressures/Approach Method (High Capacity)

Outdoor Temperature \geq 65°F (18.3°C)

For best results, indoor temperature should be 70°F (21°C) to 80°F (26°C). Monitor system pressures while charging.

- 1 - Attach pressure gauge set to liquid and suction service valves.
- 2 - Operate unit for at least five (5) minutes to allow system pressures to stabilize. Record pressures.
- 3 - Compare stabilized pressures with those provided in table for the specific system match. Minor variations are to be expected; significant differences could mean that the system is not properly charged or that a problem exists with some component in the system. The approach method is not valid for grossly over or under-charged systems.
- 4 - Pressures higher than those listed indicate that the system is overcharged. Pressures lower than those listed indicate that the system is undercharged. Add or recover charge until the pressures are within the tolerances on the table.
- 5 - Repeat steps 2 – 4 each time refrigerant is added or recovered.
- 6 - Verify charge using the approach method.
- 7 - Use the same thermometer to measure and record liquid line temperature.
- 8 - Subtract the outdoor temperature from the liquid line temperature to determine the approach value (Liquid line temperature – Ambient temperature = Approach Temperature).

- 9 - The approach temperature should match value given in table for the specific system match. If the values don't agree with the those in table, add refrigerant to lower the approach temperature or recover refrigerant from the system to increase the approach temperature.
- 10 - Operate unit for at least five (5) minutes to allow system pressures to stabilize.
- 11 - Repeat steps 7 – 10 each time refrigerant is added or recovered.
- 12 - For Heat Pump models – Switch to heating mode and let the system stabilize at least 10 minutes. Then confirm that the pressures obtained from the connected gauges match the normal operating pressures (heating mode) in table for the specific system match.

Outdoor Temperature < 65°F (18.3°C)

When the outdoor ambient temperature is below 65°F (18.3°C) it may be necessary to restrict the air flow through the outdoor coil to achieve pressures in the 325-375 psig (2240-2485 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 (2240-2485 kPa) range. See figure 1. Once pressure is in range, charge using Normal Operating Pressures/Approach Method (High Capacity).

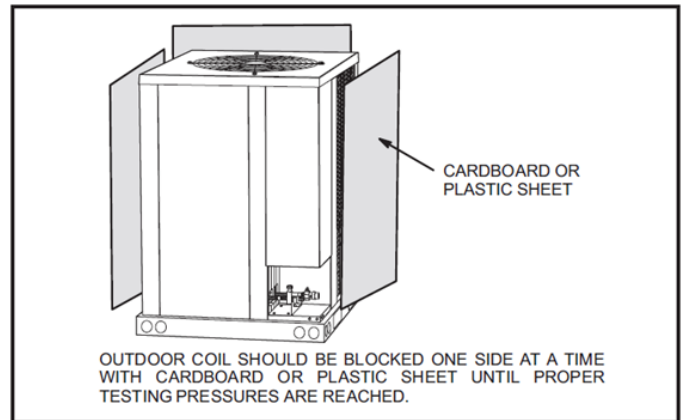


FIGURE 1. Blocking Outdoor Coil Using the Normal Operating Pressures and Temperatures Table

Tables may be used to help perform maintenance checks. This table is not a procedure for charging the system and any minor variations in the pressures may be expected due to differences in installations. However, significant deviations could mean that the system is not properly charged or that a problem exists with some component in the system.

Commercial Cooling Model(s) – Normal Operating Pressures and Temperatures

Note - Pressures at 80°F dry bulb and 67°F wet bulb entering indoor air temperatures.

EL072XCSS - EL090XASD

EL072XC - EL090XA	
Subcooling Values (High Capacity)	
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>	
Temp. °F (°C)	10 (5.6)
Approach Values (High Capacity)	
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>	
Temp. °F (°C)	8 (4.4)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)	
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i> Liquid Line Pressure / Vapor Line Pressure
65 (18)	250/144
75 (24)	290/146
85 (29)	334/148
95 (35)	381/150
105 (41)	432/152
115 (46)	487/155
125 (52)	545/157
SCFM	2750

EL090XCSS - EL120XASD

EL090XC - EL120XA	
Subcooling Values (High Capacity)	
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>	
Temp. °F (°C)	9 (5.0)
Approach Values (High Capacity)	
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>	
Temp. °F (°C)	8 (4.4)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)	
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i> Liquid Line Pressure / Vapor Line Pressure
65 (18)	250/135
75 (24)	290/137
85 (29)	333/139
95 (35)	380/141
105 (41)	431/144
115 (46)	486/147
125 (52)	544/150
SCFM	2750

(2) EL090XCSS - EL180XASD

(2) EL090XC - EL180XA		
	CIR. 1	CIR. 2
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	13 (7.2)	13 (7.2)
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	5 (2.8)	5 (2.8)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i> Liquid Line Pressure / Vapor Line Pressure	
65 (18)	249/124	248/121
75 (24)	289/126	288/124
85 (29)	333/128	331/126
95 (35)	380/131	379/128
105 (41)	431/133	430/131
115 (46)	488/136	486/134
125 (52)	548/140	547/137
SCFM	5200	

(2) EL120XCSS - EL240XASD

(2) EL120XCSS - EL240XA		
	CIR. 1	CIR. 2
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	12 (6.7)	12 (6.7)
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	5 (2.8)	5 (2.8)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure / Vapor Line Pressure	
65 (18)	243/132	243/132
75 (24)	283/134	283/134
85 (29)	326/136	326/136
95 (35)	374/138	374/138
105 (41)	426/140	426/140
115 (46)	483/143	483/143
125 (52)	544/146	544/146
SCFM	7400	

EL150XCSD - EL180XASD

EL150XC - EL180XA		
	CIR. 1	CIR. 2
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	10 (5.6)	10 (5.6)
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	9 (5.0)	9 (5.0)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure / Vapor Line Pressure	
65 (18)	256/138	255/136
75 (24)	295/140	294/138
85 (29)	339/142	337/140
95 (35)	386/144	385/142
105 (41)	437/147	436/145
115 (46)	493/149	491/147
125 (52)	552/152	551/150
SCFM	5200	

EL180XCSD - EL240XASD

EL180XC - EL240XA		
	CIR. 1	CIR. 2
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	10 (5.6)	10 (5.6)
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	6 (3.3)	5 (2.8)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure / Vapor Line Pressure	
65 (18)	239/139	238/140
75 (24)	279/141	277/141
85 (29)	322/143	320/143
95 (35)	370/145	367/145
105 (41)	423/147	420/147
115 (46)	480/149	477/150
125 (52)	544/152	541/152
SCFM	7120	

EL180XCSD - (2) EL090XASD

EL180XCSD - (2) EL090XASD		
	CIR. 1	CIR. 2
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	9 (5.0)	9 (5.0)
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	4 (2.2)	4 (2.2)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure / Vapor Line Pressure	
65 (18)	229/131	229/131
75 (24)	267/134	267/134
85 (29)	309/137	309/137
95 (35)	355/139	355/139
105 (41)	405/143	405/143
115 (46)	460/145	460/145
125 (52)	519/149	519/149
SCFM	5200 (2600 per unit)	

EL240XCSD - (2) EL120XASD

EL240XCSD - (2) EL120XASD		
	CIR. 1	CIR. 2
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	8 (4.4)	8 (4.4)
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	7 (3.9)	7 (3.9)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure / Vapor Line Pressure	
65 (18)	238/137	238/137
75 (24)	277/139	277/139
85 (29)	319/141	319/141
95 (35)	367/144	367/144
105 (41)	417/145	417/145
115 (46)	471/148	471/148
125 (52)	530/151	530/151
SCFM	8000 (4000 per unit)	

Residential Cooling Model(s) – Normal Operating Pressures and Temperatures

Note - Pressures at 80°F dry bulb and 67°F wet bulb entering indoor air temperatures.

EL090XCSS + (2) CX35-60D + (2) EL296UH135XE60D

EL090XCSS + (2) CX35-60D + (2) EL296UH135XE60D	
Subcooling Values (High Capacity)	
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F</i>	
Temp. °F (°C)	11 (6.1)
Approach Values (High Capacity)	
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C)</i>	
Temp. °F (°C)	7 (3.9)
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)	
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i> Liquid Line Pressure / Vapor Line Pressure
65 (18)	252/138
75 (24)	292/140
85 (29)	336/142
95 (35)	383/145
105 (41)	435/148
115 (46)	489/150
125 (52)	549/153
SCFM	3400 (1700 per unit)

EL090XCSS + (2) CX35-60C + (2) EL280UH110E48C

EL090XCSS + (2) CX35-60C + (2) EL280UH110E48C		
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	11 (6.1)	
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	8 (4.4)	
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure Vapor Line Pressure	
65 (18)	254	143
75 (24)	294	144
85 (29)	338	147
95 (35)	385	149
105 (41)	437	151
115 (46)	491	154
125 (52)	550	156
SCFM	3350 (1675 per unit)	

EL090XCSS + (2) CX35-60C + (2) EL280UH110E60C
EL090XCSS + (2) CX35-60C + (2) EL280UH110XE60C
EL090XCSS + (2) CX35-60C + (2) EL296UH110XE60C

EL090XCSS + (2) CX35-60C + (2) EL280UH110E60C EL090XCSS + (2) CX35-60C + (2) EL280UH110XE60C EL090XCSS + (2) CX35-60C + (2) EL296UH110XE60C		
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	11 (6.1)	
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C)</i>		
Temp. °F (°C)	8 (4.4)	
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure Vapor Line Pressure	
65 (18)	254	142
75 (24)	394	144
85 (29)	338	146
95 (35)	385	148
105 (41)	436	150
115 (46)	491	153
125 (52)	549	156
SCFM	3260 (1630 per unit)	

EL120XCSS + (2) CH23-68 + (2) EL280UH110E60C
 EL120XCSS + (2) CH23-68 + (2) EL280UH110XE60C
 EL120XCSS + (2) CH23-68 + (2) EL296UH110XE60C

EL120XCSS + (2) CH23-68 + (2) EL280UH110E60C EL120XCSS + (2) CH23-68 + (2) EL280UH110XE60C EL120XCSS + (2) CH23-68 + (2) EL296UH110XE60C		
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	9 (5.0)	
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	7 (3.9)	
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure Vapor Line Pressure	
65 (18)	242	127
75 (24)	282	129
85 (29)	325	131
95 (35)	373	133
105 (41)	425	136
115 (46)	482	139
125 (52)	544	142
SCFM	3260 (1630 per unit)	

EL120XCSS + (2) CX35-60C + (2) EL280UH110E60C
 EL120XCSS + (2) CX35-60C + (2) EL280UH110XE60C
 EL120XCSS + (2) CX35-60C + (2) EL296UH110XE60C

EL120XCSS + (2) CX35-60C + (2) EL280UH110E60C EL120XCSS + (2) CX35-60C + (2) EL280UH110XE60C EL120XCSS + (2) CX35-60C + (2) EL296UH110XE60C		
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	9 (5.0)	
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	7 (3.9)	
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure Vapor Line Pressure	
65 (18)	243	132
75 (24)	283	134
85 (29)	327	136
95 (35)	375	138
105 (41)	427	141
115 (46)	484	143
125 (52)	545	146
SCFM	3260 (1630 per unit)	

EL120XCSS + (2) CX35-60D + (2) EL296UH135XE60D

EL120XCSS + (2) CX35-60D + (2) EL296UH135XE60D		
Subcooling Values (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F</i>		
Temp. °F (°C)	10 (5.6)	
Approach Values (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C)</i>		
Temp. °F (°C)	6 (3.3)	
Normal Operating Pressures (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary.</i>	
	Liquid Line Pressure Vapor Line Pressure	
65 (18)	242	128
75 (24)	282	130
85 (29)	325	132
95 (35)	373	135
105 (41)	425	137
115 (46)	482	140
125 (52)	543	144
SCFM	3400 (1700 per unit)	

Commercial Heat Pump Model(s) – Normal Operating Pressures and Temperatures

Note - Pressures at 80°F dry bulb and 67°F wet bulb entering indoor air temperatures.

(2) EL090XPSS - EL240XASD

(2) EL090XPSS - EL240XASD		
	CIR. 1	CIR. 2
Subcooling Values - Cooling (High Capacity)		
<i>Saturation Temperature minus Liquid Line Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	6 (3.3)	6 (3.3)
Approach Values - (High Capacity)		
<i>Liquid Line Temperature minus Outdoor Ambient Temperature °F (°C) ±1°F (0.5°C)</i>		
Temp. °F (°C)	7 (3.9)	7 (3.9)
Normal Operating Pressures - Cooling (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary. (Pressures at 80°F dry bulb and 67°F wet bulb entering indoor air temperatures)</i>	
	Liquid Line Pressure / Vapor Line Pressure	
65 (18)	221/137	223/134
75 (24)	260/140	261/136
85 (29)	304/142	305/138
95 (35)	354/145	357/141
105 (41)	403/147	406/143
115 (46)	462/150	469/146
125 (52)	526/152	538/150
Normal Operating Pressures - Heating (Liquid ±10 & Suction ±5 psig)		
Air Temperature Entering Outside Coil	<i>The values below are typical pressures; indoor air quantity, and evaporator load will cause the pressures to vary. (Pressures at 70°F dry bulb entering indoor air temperatures)</i>	
	Liquid Line Pressure / Vapor Line Pressure	
60 (15)	370/119	370/119
50 (10)	350/100	350/100
40 (4)	338/82	338/82
30 (-1)	322/64	322/64
20 (-6)	311/50	311/50
10 (-12)	299/37	299/37
SCFM	6125	