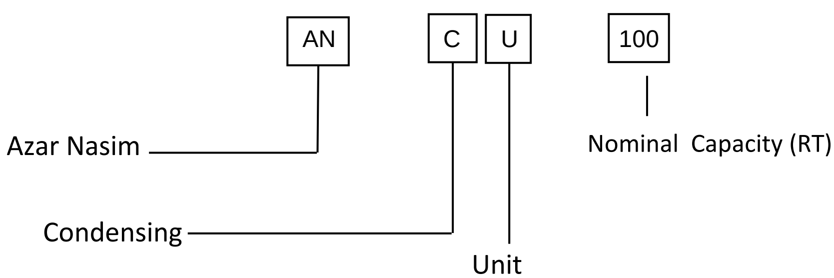
azarnasim
AIR CONDITIONING COMPANY

CONDENSING UNIT

Introduction

Condensing Units are used to supply compressed refrigerant to a direct expansion coil. Conditioning involves cooling, dehumidifying, or reheating the air for optimal space comfort. Condensers are typically utilized when there is a weight or space restriction on the roof. We offer the possibility to make condensing units based on customer's design and lay-out. Our condensing unit production line makes it possible for us to manufacture made-to-order products according to the needs of our customers.This not only includes specific lay-outs, but also our R&D team support for optimization of components in order to obtain the best application performance, samples or prototypes. All this with the guarantee of our experience in the optimization of our compressors.All our condensing units are designed to work at up to 60°C ambient temperature. Customized units can also be designed and manufactured, upon request for 35°C or 55°C ambient temperature.

Nomenclature



Unit Sizing

Intentionally oversizing a unit to assure adequate capacity is not recommended. Erratic system operation and excessive compressor cycling are often a direct result of an oversized condensing unit. In addition, oversized units are usually more expensive to purchase, install and operate. If oversizing is desired, consider using two units.Under sized units have nuisance high pressure tripping. Hence it is critical that AN CU installations, have a system matching done on all on coil AHU and AN CU ambient conditions. As ambient conditions and on coil (AHU) conditions impact the system, both extremes need to be modeled to minimize risk.

System Components

For correctly match a condensing unit with a DX coil, it is important to understand the components of the refrigeration system and their functions. A refrigeration system consists of four major components: the compressor, condenser, expansion valve and evaporator. Each of these components shown in Fig.1 must be properly sized and installed in order to operate together and perform correctly.

Compressor

The function of a compressor is to raise the pressure of the refrigerant gas to a point where the temperature in which the gas will condense is higher than the ambient temperature of the air being used to condense it. For example, if the ambient design air temperature is 100oF, the refrigerant gas will typically be compressed to a pressure where the condensing, temperature is 120 - 130^{o}F.

Condenser

An air-cooled condenser typically has one or more heat transfer coils and one or more fans. The fans pass ambient air through the coils, which causes the hot refrigerant gas inside the tubes to condense. The capacity of an air-cooled condenser depends upon the temperature and flow rate of the ambient air and the surface area of the coil.

As the high-pressure refrigerant flows through the coil, it begins to condense, but remains at a steady temperature and pressure (for R22) while for R407C the temperature and pressure will change due to the glide of the refrigerant. The condenser coils are sized such that the refrigerant gas has completely condensed and more heat will be rejected from it. This process is known as sub-cooling. Sub-cooling the liquid refrigerant prevents it from flashing back to its vapor state as its pressure drops between the condenser and the expansion valve. Sub-cooling also improves the cooling capability of the refrigerant.

Expansion Valve

The expansion device controls the flow of liquid refrigerant to the evaporator coil. Azar Nasim uses electronical and temperature controlled, (electronic and thermostatic) expansion valves. Thermostatic expansion valve has two primary components:

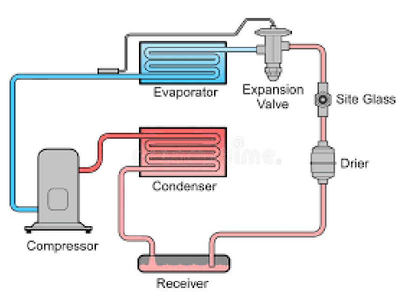
The valve body and the sensing bulb. The valve regulates the flow of refrigerant to the evaporator coil. As refrigerant passes through the valve it is adiabatically expanded (that is, without the addition of energy). This causes the pressure and temperature of the liquid refrigerant to drop, making it suitable for cooling the air. The amount of refrigerant fed to the coil is based on the cooling load of the supply air and the resultant amount of superheat created. As the cooling load increases, the liquid refrigerant absorbs more heat and evaporates more quickly. This means that more of the evaporator coil is available to superheat the refrigerant vapor and it leaves the coil at a higher temperature. Conversely as the cooling load decreases, the liquid refrigerant does not evaporate as quickly so less superheating occurs and the refrigerant leaves the coil at a lower temperature.

The sensing bulb attached to the valve is charged with a mix of liquid and vapor refrigerant. This refrigerant must be the same type as that in the system. The refrigerant vapor in the sensing bulb exerts pressure on a diaphragm in the valve body, which causes the valve to open or close. As the temperature of the superheated suction gas leaving the evaporator rises due to an increase in the cooling load, refrigerant in the sensing bulb evaporates increasing the pressure on the valve diaphragm.

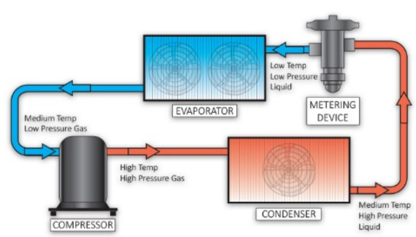
The increased pressure causes the valve to open and allows more refrigerant to flow into the coil to meet the higher cooling demand. When the temperature of the suction gas drops due to a decrease in the cooling load the gas in the sensing bulb condenses reducing its pressure on the valve diaphragm. This allows the valve to restrict the flow of refrigerant into the coil until the lowest cooling demand is adequately met. diaphragm in the valve body, which causes the valve to open or close. As the temperature of the superheated suction gas leaving the evaporator rises due to an increase in the cooling load, refrigerant in the sensing bulb evaporates increasing the pressure on the valve diaphragm.The increased pressure causes the valve to open and allows more refrigerant to flow into the coil to meet the higher cooling demand. When the temperature of the suction gas drops due to a decrease in the cooling load the gas in the sensing bulb condenses reducing its pressure on the valve diaphragm. This allows the valve to restrict the flow of refrigerant into the coil until the lowest cooling demand is adequately met.

Evaporator

The evaporator coil removes heat from the supply air-stream, cooling the supply air in the process. The evaporator coil generally consists of several rows of copper tubing mechanically bonded to aluminum or copper heat transfer fins. Depending on the size and capacity of the coil it may consist of one, or several refrigerant circuits. A refrigerant distributor on each DX evaporator coil circuit feeds low pressure. low temperature liquid refrigerant to the coil tubes. It is critical that all the distributor tubes are the same length; the pressure drop across them will be equal and the refrigerant will be evenly distributed to the coil tubes. As the liquid refrigerant passes through the coil tubes, heat is transferred from the supply air stream to the refrigerant. As heat is added to the liquid refrigerant, it begin to evaporate much like water boiling on a stove. The liquid-vapor mixture remains at a constant temperature and pressure until it completely vaporizes (for R22), while for R407C the temperature and pressure will drop slightly due to the glide of the refrigerant. the coil capacity is determined by the type and amount of refrigerant used, the temperature difference between the air and the liquid refrigerant, and the amount of air passing over the coil. Once the refrigerant has completely evaporated, its ability to cool the air decrease dramatically. If too little refrigerant is fed to the coil, it will evaporate quickly and the air will not be adequately cooled. If too much refrigerant is fed to the coil it will not evaporate at all and liquid refrigerant will return to the compressor. Direct expansion (DX) evaporator coils are designed to evaporate all refrigerant in the coil and then “superheat” the refrigerant gas in the last row or two of the coil tubes. The refrigerant gas is superheated to ensure it does not condense back to its liquid state in the suction line. Superheat is also used to control the expansion device.



Thermostatic Expansion Valve



Electronic Expansion Valve

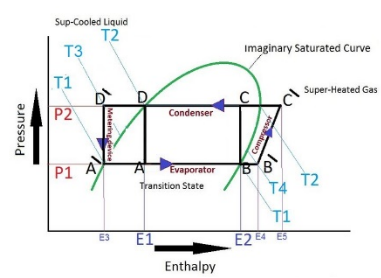


Fig. 1 – Major System Components

Table 1

Technical Data
Scroll Compressor - R22

Models			AN CU 5-A-1	AN CU 10-A-1	AN CU 12-A-1	AN CU 13-A-1	AN CU 15-A-1	AN CU 20-A-1	AN CU 25-A-1	AN CU 30-A-1
Nominal Cooling Capacity	RT		5	10	12	13	15	20	25	30
Compressor	Type		Scroll							
	Quantity		1	1	1	1	1	1	1	1
Refrigerant	Type		R22							
Oil Charge	Lit		1.7	3.4	3.4	3.4	3.9	4.7	6.8	6.3
Condenser	Type		Air Cooled - Copper Tubes, Aluminum Fins							
	Area	Ft^2	14.2	28.41	56.81	28.41	49.71	49.71	99.42	99.42
	Fan	Quantity	1	1	2	1	2	2	4	4
Refrigerant Charge	R22		8	17	20.4	22	25	34	42	50
Electerical Data	Current(A)		12.11	19.67	21.57	27.85	33.25	37.36	53.18	61.44
	Power Input(kW)		65.5	118	118	140	174	225	272	310
Weight	kg		500	600	650	650	800	950	950	1350

Table 2

Performance Data
Scroll Compressor-R22
Evaporation Temperature 45°F (7.2°C)

Condensing Unit Model	Condensing Temperature								
	113°F (45°C)			122°F(50°C)			131°F(55°C)		
	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection
AN CU 5-A-1	4.45	3.68	65.97	4.21	4.05	64.3	3.97	4.48	62
AN CU 10-A-1	9.47	7.31	138	9.01	8.15	136	8.53	9.11	133
AN CU 12-A-1	10.86	8.28	158.3	10.26	9.18	154.5	9.64	10.2	150.5
AN CU 13-A-1	11.77	9.32	173	11.15	10.3	168.9	10.44	11.4	164.1
AN CU 15-A-1	14.02	11.25	206.6	13.25	12.4	201	12.4	13.75	195.7
AN CU 20-A-1	18.17	14.65	268	17.32	16.2	263	16.41	17.95	258.19
AN CU 25-A-1	22.78	18.25	335.66	21.58	20.2	327.9	20.33	22.4	320.4
AN CU 30-A-1	27.89	22.4	411.26	26.59	24.6	403	25.22	27.2	395.5

Table 3													
Technical Data **Scroll Compressor-R22**													
Models			AN CU 10-A-2	AN CU 20-A-2	AN CU 24-A-2	AN CU 26-A-2	AN CU 30-A-2	AN CU 40-A-2	AN CU 50-A-2	AN CU 60-A-2	AN CU 80-A-2	AN CU 100-A-2	AN CU 120-A-2
Nominal Cooling Capacity	RT		10	20	24	26	30	40	50	60	80	100	120
Compressor	Type		Scroll										
	Quantity		2	2	2	2	2	2	2	2	4	4	4
Refrigerant	Type		R22										
Oil Charge	Lit		3.2	6.8	6.8	6.8	7.8	9.4	13.6	12.6	18.8	27.2	27.2
Condenser	Type		Air Cooled - Copper Tubes, Aluminum Fins										
	Total Face Area	Ft^2	28.4	56.81	56.81	99.42	99.42	99.42	149.13	149.13	198.84	248.56	298.27
	Fan	Quantity	1	2	2	4	4	4	6	6	8	10	12
Refrigerant Charge	R22	kg	17	30	36	39	45	60	75	90	120	150	180
Electerical Data	Current(A)		22.8	39.12	42.82	48.06	66.24	74.28	91.12	113.5	117.6	147.72	178.64
	Power Input(kW)		9.8	20.1	21.8	24.3	36.2	40	47.9	61.9	62.1	79.7	94.3
Weight	kg		700	850	850	850	1200	1450	1500	1850	2350	2500	2750

Table 4									
Performance Data **Scroll Compressor-R22** **Evaporation Temperature 45°F (7.2°C)**									
Condensing Unit Model	Condensing Temprature								
	113°F (45°C)			122°F(50°C)			131°F(55°C)		
	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection
	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH
AN CU 10-A-2	8.9	7.36	132	8.4	8.1	128.6	7.9	8.96	124
AN CU 20-A-2	18.94	14.62	277.2	18.03	16.3	272	17.06	18.22	266.9
AN CU 24-A-2	21.72	16.56	317.2	20.53	18.36	309	19.28	20.4	301
AN CU 26-A-2	23.54	18.64	346.2	22.29	20.6	337.88	20.87	22.8	328.3
AN CU 30-A-2	28.04	22.5	413.3	26.5	24.8	402.7	24.79	27.5	391.4
AN CU 40-A-2	36.34	29.3	536.17	34.63	32.4	526.2	32.81	35.9	516.3
AN CU 50-A-2	45.55	36.5	671.33	43.16	40.4	655.9	40.66	44.8	640.9
AN CU 60-A-2	55.79	44.8	822.5	53.17	49.2	806.14	50.44	54.4	791
AN CU 80-A-2	72.68	58.6	1072	69.27	64.8	1052	65.63	71.8	1032
AN CU 100-A-2	91.1	73	1342	86.33	80.8	1311	81.32	89.6	1282
AN CU 120-A-2	111.58	89.6	1645	106.35	98.4	1612	100.89	108.8	1490

Table 5									
Technical Data **Scroll Compressor - R134a**									
Models		AN CU 5-A-1	AN CU 10-A-1	AN CU 12-A-1	AN CU 13-A-1	AN CU 15-A-1	AN CU 20-A-1	AN CU 25-A-1	AN CU 30-A-1
Nominal Cooling Capacity	RT	5	10	12	13	15	20	25	30
Compressor	Type	Scroll							
	Quantity	1	1	1	1	1	1	1	1
Refrigerant	Type	R134a							
Oil Charge	Lit	1.7	3.4	3.4	3.4	3.9	4.7	6.8	6.3
Condenser	Type	Air Cooled - Copper Tubes, Aluminum Fins							
	Area Ft^2	14.2	28.41	28.41	28.41	28.41	49.71	49.71	49.71
	Fan Quantity	1	1	1	1	1	2	2	2
Refrigerant Charge	R134a	8	17	18	20	23	30	37.5	45
Electerical Data	Current(A)	12.11	19.67	21.57	27.85	33.25	37.36	53.18	61.44
	Power Input(kW)	65.5	118	118	140	174	225	272	310
Weight	kg	500	600	650	650	800	950	950	1350

Table 6									
Performance Data Scroll Compressor-R134a EvaporationTemprature 45°F (7.2°C)									
Codensing Unit Model	Condensing Temprature								
	113°F (45°C)			122°F(60°C)			131°F(55°C)		
	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection
	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH
AN CU 5-A-1	3.04	2.46	44.9	2.52	3.36	41.74	2.45	3.51	41.36
AN CU 10-A-1	6.31	5.08	93.1	5.09	6.85	84.4	4.92	7.12	83.3
AN CU 12-A-1	7.17	5.66	105.3	5.74	7.77	95.46	5.53	8.08	94
AN CU 13-A-1	7.76	6.28	114.6	6.31	8.57	105	6.08	8.97	103
AN CU 15-A-1	9.3	7.59	137.5	7.56	10.35	126.1	7.28	10.8	124.2
AN CU 20-A-1	12.17	10.1	180.5	10.12	13.75	168.4	9.84	14.35	167
AN CU 25-A-1	15.07	12.55	223.7	12.57	17.25	209.72	12.23	18	208
AN CU 30-A-1	18.97	15.5	280.5	15.89	21	262	15.44	21.9	260

Table 7

Technical Data
Scroll Compressor-R134

Models			AN CU 10-A-2	AN CU 20-A-2	AN CU 24-A-2	AN CU 26-A-2	AN CU 30-A-2	AN CU 40-A-2	AN CU 50-A-2	AN CU 60-A-2	AN CU 80-A-2	AN CU 100-A-2	AN CU 120-A-2
Nominal Cooling Capacity	RT		10	20	24	26	30	40	50	60	80	100	120
Compressor	Type		Scroll										
	Quantity		2	2	2	2	2	2	2	2	4	4	4
Refrigerant	Type		R134a										
Oil Charge	Lit		6.8	6.8	6.8	6.8	7.8	9.4	13.6	12.6	18.8	25.2	27.2
Condenser	Type		Air Cooled - Copper Tubes, Aluminum Fins										
	Total Coil Face Area	Ft^2	28.81	56.81	56.81	56.81	56.81	99.42	99.42	99.42	149.13	149.13	198.84
	Fan	Quantity	1	2	2	2	2	4	4	4	6	6	8
Refrigerant Charge	R134a	kg	18	30	36	39	45	60	75	90	120	170	180
Evaporator	Type		Shell & Tube										
Electerical Data	Current(A)		32.06	35.04	35.94	41.8	51.28	58.8	77.56	93.02	117.6	147.72	178.64
	Power Input(kW)		19.1	19.9	20.3	23.1	27.5	31.1	43.3	50.6	62.1	79.7	94.3
Weight	kg		1000	1200	1200	1600	2000	2050	2500	1350	2350	2500	1750

Table 8

Performance Data
Scroll Compressor-R134a
Evaporation Temprature 45°F (7.2°C)

Condensing Unit Model	Condensing Temprature											
	113°F (45°C)			122°F(50°C)			131°F(55°C)			140°F(60°C)		
	Actual Cooling Capacity	Power Input (kW)	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection
	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH
AN CU 10-A-2	6.08	5.6	90.5	5.74	5.64	88.25	5.38	6.26	86.21	5.02	6.96	84.23
AN CU 20-A-2	12.62	10.16	186.2	11.83	11.24	180.3	11.03	12.42	174.8	10.18	13.7	168.9
AN CU 24-A-2	14.33	11.32	210.64	13.48	12.62	204.8	12.51	14.04	198	11.49	15.54	190.9
AN CU 26-A-2	15.53	12.56	229.2	14.67	13.86	223.4	13.71	15.36	216.92	12.62	17.14	210
AN CU 30-A-2	18.6	15.18	275	17.57	16.78	268.19	16.38	18.6	260	15.13	20.7	252.2
AN CU 40-A-2	24.34	20.2	361	22.98	22.4	352.2	21.61	24.8	344	20.25	27.5	336.8
AN CU 50-A-2	30.14	25.1	447.4	28.49	27.9	437.2	26.79	31	427.3	25.14	34.5	385.3
AN CU 60-A-2	37.93	31	561	35.94	34.4	548.8	33.84	38	535.8	31.78	42	524.7
AN CU 80-A-2	48.68	40.4	722	45.95	44.8	704	43.22	49.6	688	40.49	55	673
AN CU 100-A-2	60.28	50.2	978	56.98	55.8	874	53.27	62	854.6	50.27	69	839
AN CU 120-A-2	75.86	62	1122	71.88	68.8	1097	67.67	76	1071	63.56	84	1049

Table 9									
Technical Data **Reciprocating Compressor - R22**									
Models			AN CU 24-A-2	AN CU 30-A-2	AN CU 50-A-2	AN CU 60-A-2	AN CU 70-A-2	AN CU 80-A-2	AN CU 100-A-2
Nominal Cooling Capacity	RT		24	30	50	60	70	80	100
Compressor	Type		Reciprocating						
	Quantity		2	2	2	2	2	2	2
Refrigerant	Type		R22						
Oil Charge	Lit		5.2	5.2	9	9	9	9.5	9.5
Condenser	Type		Air Cooled - Copper Tubes, Aluminum Fins						
	Total Coil Face Area	Ft^2	56.81	99.42	99.42	149.13	149.13	198.84	198.84
	Fan	Quantity	2	4	4	6	6	8	8
Refrigerant Charge	R22	kg	36	45	75	90	105	120	150
Electerical Data	Current(A)		39.8	56.4	66.4	88	102.4	128	151.4
	Power Input(kW)		24	32	38	50	56	72	75.2
Weight	kg		1342	1404	1928	2002	2212	2904	3168

Notes:
1. Rated cooling conditions: ambient temprature at 95°F DB .

Table 10									
Performance Data **Reciprocating Compressor-R22** **Evaporation Temprature 45°F (7.2°C)**									
Condensing Unit Model	Condensing Temprature								
	113°F (45°C)			122°F(50°C)			131°F(55°C)		
	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection	Actual Cooling Capacity	Power Input	Heat Rejection
	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH
AN CU 24-A-2	23.2	20.1	359.3	22.867	21.68	348.3	21.4	23.16	336.3
AN CU 30-A-2	27.98	23.06	414.5	26.28	24.8	400	24.63	26.42	385.7
AN CU 50-A-2	43.5	35.98	645	41.014	38.8	624.7	38.5	41.6	604.7
AN CU 60-A-2	50.3	41.4	745.3	47.49	44.6	722.18	44.7	48	700.3
AN CU 70-A-2	60.011	50	890.7	56.65	54.2	864.8	53.299	58.2	838.2
AN CU 80-A-2	74.9	62.2	1111	1041.6	67.2	1077	66.38	71.8	1256.6
AN CU 100-A-2	90.046	75.2	1337	84.98	81.2	1297	79.92	87.2	1256

Table 11

Technical Data

Reciprocating Compressor - R134a

Models			AN CU 18-A-2	AN CU 30-A-2	AN CU 50-A-2	AN CU 60-A-2	AN CU 70-A-2	AN CU 80-A-2	AN CU 100-A-2
Nominal Cooling Capacity	RT		18	30	50	60	70	80	100
Compressor	Type		Reciprocating						
	Quantity		2	2	2	2	2	2	2
Refrigerant	Type		R134a						
Oil Charge	Lit		5.2	5.2	9	9	9	9.5	10
Condenser	Type		Air Cooled - Copper Tubes, Aluminum Fins						
	Total Coil Face Area	Ft^2	56.81	56.81	99.42	99.42	99.42	149.13	198.84
	Fan	Quantity	2	2	4	4	4	6	8
Refrigerant Charge	R134a		27	45	75	90	105	120	150
Electerical Data	Current(A)		23.4	30.12	45	54	63	86	192.4
	Power Input(kW)		13.18	14.9	23.2	27.16	33.86	41.6	102
Weight	kg		1211	1242	1730	1150	1634	2301	2968

Table 12

Performance Data

Reciprocating Compressor-R134a

Evaporation Temprature 45°F (7.2°C)

Condensing Unit Model	Condensing Temprature											
	113°F (45°C)			122°F(50°C)			131°F(55°C)			140°F(60°C)		
	Actual Cooling Capacity	Power Input	Heat Rejecetion	Actual Cooling Capacity	Power Input	Heat Rejecetion	Actual Cooling Capacity	Power Input	Heat Rejecetion	Actual Cooling Capacity	Power Input	Heat Rejecetion
	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH
AN CU 18-A-2	15.9	13.18	134.4	14.73	14.08	224.8	13.5	14.9	213.3	12.34	15.66	201.5
AN CU 30-A-2	17.9	14.96	266.75	16.6	15.94	253.7	15.2	16.8	240.2	13.93	17.52	227
AN CU 50-A-2	28.3	23.2	419.7	26.39	24.8	396.4	24.4	26.28	382.5	22.4	27.64	364
AN CU 60-A-2	33.1	27.16	490	30.8	28.94	468.7	28.4	30.58	446.3	26.22	32.12	424.3
AN CU 70-A-2	31.8	32.86	581	29.69	36.12	557.4	27.4	38.18	533	26.12	40	507
AN CU 80-A-2	48.23	41.6	720.8	45.1	44.4	692.8	41.92	47.2	664	38.6	49.4	632
AN CU 100-A-2	66.28	62.4	858	63.6	66	818.4	57.05	69.2	778.8	52.44	71.8	737.2

Table 13
Technical Data
Screw Compressor-R22

Models			AN CU 100-A-2	AN CU 120-A-2	AN CU 140-A-2	AN CU 160-A-2	AN CU 180-A-2	AN CU 200-A-2	AN CU 220-A-2	AN CU 250-A-2	AN CU 280-A-2	AN CU 320-A-2
Nominal Cooling Capacity	RT		100	120	140	160	180	200	220	250	280	320
Compressor	Type		Screw									
	Quantity		2	2	2	2	2	2	2	2	2	2
Refrigerant	Type		R22									
Oil Charge	Lit		19	19	30	30	30	30	44	44	44	38
Condenser	Type		Air Cooled - Copper Tubes, Aluminum Fins									
	Area	Ft^2	198.84	248.56	298.27	347.98	397.69	447.4	447.4	497.11	596.53	646.25
	Fan	Quantity	8	10	12	14	16	18	18	20	24	26
Refrigerant Charge	R22	kg	75	90	105	120	135	150	165	187	210	240
Electerical Data	Current(A)		157.4	195.2	233	256.8	293.2	337.4	385.8	414	490	529.4
	Power Input(kW)		114.2	143.6	173	193	212.4	227.8	251.2	291.2	334	357.4
Weight	kg		2800	3500	4350	4750	5100	5850	6700	7150	7950	8650

Table 14
Performance Data
Screw Compressor-R22
Evaporation Temprature 45°F (7.2°C)

Condensing Unit Model	Condensing Temprature								
	113°F (45°C)			122°F(50°C)			131°F(55°C)		
	Actual Cooling Capacity	Power Input	Heatin Rejection	Actual Cooling Capacity	Power Input	Heatin Rejection	Actual Cooling Capacity	Power Input	Heatin Rejection
	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH
AN CU 100-A-2	75.64	68.5	1128	71.3	76.2	1101	68.7	81	1101
AN CU 120-A-2	94.91	85.2	1414	89.5	94.6	1378	86.27	100.6	1378
AN CU140-A-2	110.33	102.6	1651	102.7	112.6	1597	97.93	119	1581
AN CU160-A-2	127.39	115.8	1904	118.29	126.4	1829	112.6	133.2	1806
AN CU 180-A-2	153.55	132.6	2266	143.3	145.4	2191	137.05	153.8	2169
AN CU 200-A-2	170.04	150.8	2518	159.23	163.6	2436	152.4	172.8	2419
AN CU 220-A-2	183.69	160.4	2716	170.61	175	2614	162.65	186	2587
AN CU 250-A-2	209.28	183	853.2	194.49	200	2976	185.39	212	2717
AN CU 280-A-2	246.24	223	3672	231.16	241.6	3556	221.79	253.8	3528
AN CU 320-A-2	276.95	239	4081	260.4	260	3959	249.65	274	3931

Table 15												
Technical Data **Screw Compressor** - R134a Evapration Temprature 45°F (7.2°)C												
Models			AN CU 100-A-2	AN CU 120-A-2	AN CU 140-A-2	AN CU 160-A-2	AN CU 180-A-2	AN CU 200-A-2	AN CU 220-A-2	AN CU 250-A-2	AN CU 280-A-2	AN CU 320-A-2
Nominal Cooling Capacity	RT		100	120	140	160	180	200	220	250	280	320
Compressor	Type		Screw									
	Quantity		2	2	2	2	2	2	2	2	2	2
Refrigerant	Type		R134a									
Oil Charge	Lit		30	30	30	44	44	30	44	44	44	60
Condenser	Type		Air Cooled - Copper Tubes, Aluminum Fins									
	Area	Ft^2	149.13	198.8	198.8	248.56	298.27	248.56	347.98	347.98	397.69	497.11
	Fan	Quantity	6	8	8	10	12	10	14	14	16	20
Refrigerant Charge	134a	kg	150	180	210	240	270	300	330	374	420	480
Electerical Data	Current(A)		164.6	193	214	251	296.4	277.6	346	384.6	435.8	500
	Power Input(kW)		114.2	143.6	169.6	193	212.2	241	243	263.8	289.2	344
Weight	kg		3200	3250	3850	5400	5750	4600	6450	6550	7000	9000

Table 16												
Performance Data **Screw Compressor-R134** **Evaporation Temprature 45°F (7.2°C)**												
Conednsing Unit Model	Condensing Temprature											
	113°F (45°C)			122°F(50°C)			131°F(55°C)			140°F(60°C)		
	Actual Cooling Capacity	Power Input	Heating rejection	Actual Cooling Capacity	Power Input	Heating rejection	Actual Cooling Capacity	Power Input	Heating rejection	Actual Cooling Capacity	Power Input	Heating rejection
	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH	RT	kW	MBH
AN CU 100-A-2	75.465	62.6	1118.7	69.892	68.8	1073	64.148	75.8	1028	58.234	83.3	985
AN CU 120-A-2	88.88	72	1312	82.4	79.2	1259	75.63	87.4	1206	68.755	96.6	1155
AN CU 140-A-2	102	82	1500	94.687	90	1447	69.78	85.4	1385	79	109.8	1324
AN CU160-A-2	123.406	99.4	1822	116	109	1761	107.9	121	1706	99.6	134	1658
AN CU 180-A-2	142	113	2095	113.642	125	2027	124	138	1965	115	153	1904
AN CU 200-A-2	117.7	94.8	1733.7	110	103	1680	102	114	1617	94	126	1556
AN CU 220-A-2	143.8	113.6	2116	156	141	2361	144.4	157	2266	132	174	2184
AN CU 250-A-2	184.82	144.6	2700	172.3	159.2	2614	160.3	176.4	2525	147.291	196.2	2443
AN CU 280-A-2	210.4	164.6	3085	196.19	181	2976	182.5	200.8	2873	167.7	223.4	2778
AN CU 320-A-2	249	191	3645	232.5	210.8	3508	215	233	3378	196.7	257.4	3242

Altitude Correction Factor

Correction factors must be applied to standard ratings at altitudes above 2000 ft (610 m) using the following coefficient:

Table 17		
Altitude	**Capacity Coeffident**	**Compressor power**
2000	0.99	1.01
4000	0.98	1.02
6000	0.97	1.03
8000	0.96	1.04
10000	0.95	1.05

Fin Material Correction Factors

The unit ratings are based on copper tube and aluminum fins condenser. For alternative condenser material the following factors must be applied:

Table 18		
Fin Material C.F	AL	CU
	1	1.03

Dimensions (Based On The Quantity Of Fans)

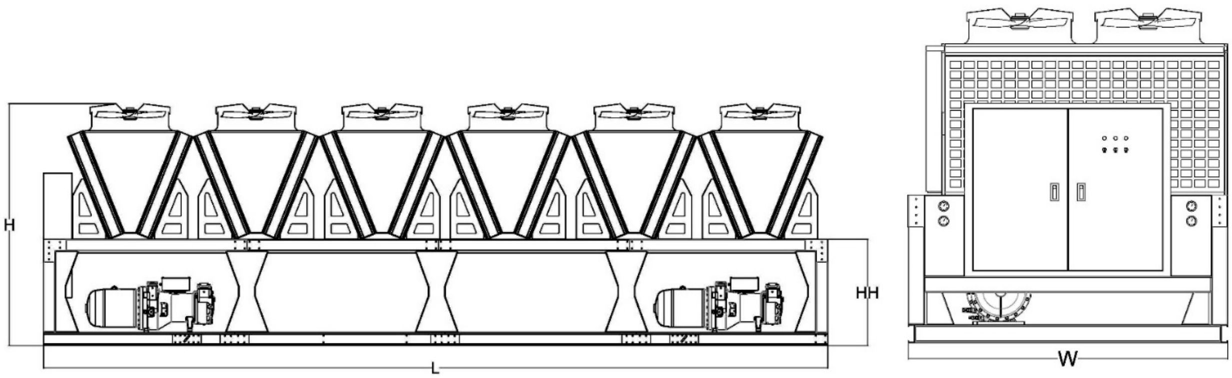


Table19

Quantity Of Fan	2	4	6	8	10	12	14	16	18	20	22	24	26
W	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
L	1450	2630	3800	4960	6130	7300	8450	9620	10780	11950	13110	14280	15250
H	2500	2500	2500	2500	2500	2500	2500	2550	2550	2550	2550	2550	2550

Note:
Fan Size (Diameter): 800 mm
Dimensions are in mm

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