



MARCH 2003

INSTALLATION OPERATION MAINTENANCE INSTRUCTIONS

AIR COOLED CONDENSERS **SERIES CCD-CMD-CQD-CLD
CL8-CHD-CH8-CID**

FLUID COOLERS **SERIES FCD-FMD-FLD-FID**

HEAT RECLAIM UNITS **SERIES HCD-HMD**



CONTENT

SAFETY CONSIDERATIONS	1
INTRODUCTION.....	1
HANDLING.....	1
INSTALLATION.....	2
STEP #1 INSPECTION:	2
STEP #2 LOCATION:	2
STEP #3 WIRING:.....	2
STEP #4 PIPING:.....	2
STEP #5 LEAK TESTING:	3
OPERATION	3
FAN MOTORS:	4
FAN CYCLING:	4
MAINTENANCE.....	4
CLEANING:.....	4
TABLE 1: FLUID COOLERS	5
TABLE 2: CONDENSER AND HEAT RECLAIM.....	6
Fig. #1: Standard Legs.....	9
Fig. #2 : Extended Legs.....	10
Fig #3 : 1 fan	11
Fig # 4: 2 fan	12
Table #3.....	13
Table #4.....	13
Table #5.....	14
Table #6.....	14
REPLACEMENT PARTS LIST	14
WARRANTIES.....	17

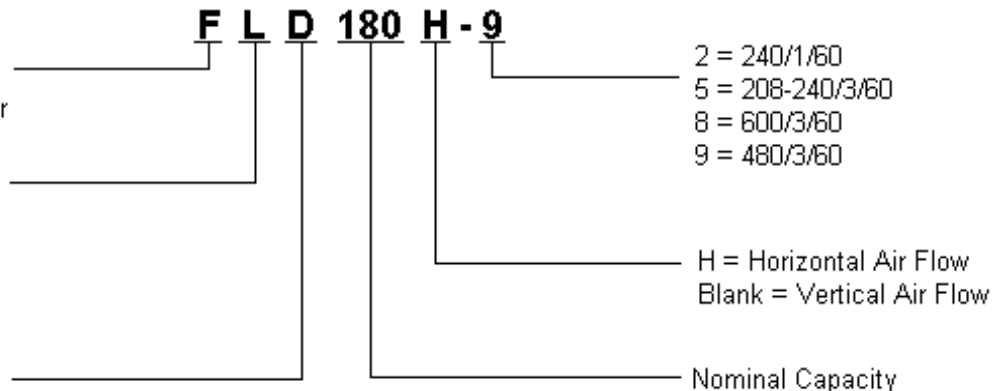
SAFETY CONSIDERATIONS

Installing, starting up, and servicing equipment can be hazardous due to system pressures, electrical components and equipment location (roofs, elevated structures, etc.). Only trained, qualified installers and service mechanics should install, start up, and service this equipment.

When working on the equipment, observe precautions in the literature and on the tags,

Nomenclature:

- C = Condenser
- H = Heat Reclaim
- F = Dry Type Fluid Cooler
- C = 1/4HP - 825 RPM
- M = 1/2HP - 1140 RPM
- L = 1HP - 825 RPM
- I = 1-1/2HP - 1140 RPM
- Q = 1/2HP - 560 RPM
- H = High CFM
- D = Direct Drive Motors
- 8 = 8 Fins Per Inch



stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloths and fire extinguisher nearby when brazing. Use care in handling, rigging, and setting bulky equipment.

WARNING

Before installation, always check to be sure main power to systems is OFF. Electrical shock can cause personal injury or death.

INTRODUCTION

Air Cooled condensers series CCD, CQD, CLD, CMD, CH8, CL8, CHD and CID are designed for refrigerant condensing of refrigeration and air conditioning systems. They can be manufactured for single or multiple circuits, for single or multiple compressors.

Fluid coolers series FCD, FMD, FLD and FID are designed to cool glycol, oil or any other fluid that is not corrosive to copper and will not let the leaving air temperature exceed 140°F (60°C).

Heat recovery units HCD and HMD are designed to recover heat from refrigeration system in warehouse or shipping area.

HANDLING

CAUTION : Do not use forklift truck to handle units. Use only chains with hooks and spread bars to lift units.

When a unit is shipped on its side, two or three hangers are installed. Use them to unload the unit from truck.

A lift truck can be used with the wood base in

that position only to lower the unit on the ground.

Two others hangers, four, six or eight legs (depending on the unit) and the required hardware are supplied attached to the cabinet.

Lifting method 1 :

- Install all the legs on the same side as hangers.
- Gently lower the unit on those legs.
- Install hangers on opposite side.
- Raise the other side and install other legs.
- Install chains and spread bars to raise the unit to its final position.

Lifting method 2 :

- Gently lower the unit on a flat surface.
- Install hangers on opposite side.
- Install chains and spread bars to raise the unit.
- Lift the unit and install all the legs.
- Lift the unit to it's final position.

See fig # 1 for more details. If the unit as been ordered with extended legs, see fig. #2 for field assembly. Also refer to table #1, #2 for unit weight.

INSTALLATION

STEP #1 INSPECTION:

If the unit id suspected of having been damaged in transit, immediately notify the carrier and file a claim with that carrier. The refrigeration coil section(s) of the unit should display a pressurised nitrogen gas holding charge. Unit should then be pressurised to 350 psi with dry nitrogen gas and leak-checked prior to rigging; this to insure no coil damage has occurred after the unit left the factory.

STEP #2 LOCATION:

Condensers and fluid coolers are installed on the roof or ground level. If a unit is installed on the ground it must be fenced to prevent possible damage. Heat recovery units are installed inside at the ceiling level. Check loading capacity of the roof, the ceiling or the floor before installation.

The unit is intended to be installed in an atmosphere containing only neutral water

vapour, natural precipitation and air. Use in any other atmosphere must be checked for compatibility with metals, materials and coating used in manufacturing of this equipment.

Unit positioning as well as firmness and perfect levelness of mounting base supports are important: Good installation practices are well known and are to be followed. Air flow paths on all sides as well as coil inlet and fan discharge areas are not to be restricted. Unit positioning that may result in air recirculation as well as prevailing wind impedance is to be avoided.

If a unit is to be place close to a wall the minimum distance should be 24 inches for single row of fans and 48 inches for double row of fans. If units are to be placed side by side, the minimum distances should be 48 inches for single row of fans and 96 inches for a double row of fans. The chosen location must be convenient and safe accessibility for maintenance.

STEP #3 WIRING:

NOTE : A wiring diagram is provide with the unit, it is located on the innerface of the electrical box access door.

All wiring must be done in accordance with national and local codes. Check the nameplate with the current characteristics to be used for wiring unit. Internal wiring connections of the fan motors, optional controls and contactors has been completed at the factory. Once wired, make sure the unit has been grounded. Disconnect switch at the unit must be provided by others.

On air cooled condensers with flooding valve, one fan (single width unit) or one pair of fans (double width unit) must operate when compressor is operating to avoid internal damage to the condenser coil.

STEP #4 PIPING:

CAUTION : The unit has not been designed to carry the weight of any extended piping or valves. The piping must be well supported otherwise tube breacking at the coil will most probably occur.

All refrigerant or fluid system components must be installed in accordance with applicable local

and national codes and in accordance with good engineering practice required for proper operation.

Use Top quality refrigeration tubing that is internally free of dirt, humidity or other contaminants. Unsealed tubing should not be used. Long radius elbows are recommended.

Dry nitrogen must be swept through the lines while joints are brazed to avoid oxidation and carbon deposits.

IMPORTANT: The use of a calibrated Pressure gage and regulator must always be used with nitrogen gas cylinders.

To minimise hydraulic shock line breakage possibilities, valving and controls must be designed to eliminate any rapid introduction of hot gas into cold piping. Most especially if the piping contains liquid refrigerant or is at a much lower pressure than the hot discharge gas, which can be the case of double-wide condensers that feature one-half operation during winter. Plans should be for utilising either a slow-shifting three-way/four-way valve or not completely lowering to suction pressure the condenser coil side that deactivates during winter. Most often, a combination of both of these options works well in geographic areas that encounter lower than freezing seasonal outdoor temperatures.

Air-cooled condensers must be provided with inverted "P" trap with a purge connection. A separate sub cooling circuit may be necessary if liquid line must rise to level higher than the unit.

Vibration in the discharge or liquid line must be corrected immediately to avoid piping and/or header breakage and refrigerant loss.

Generally, horizontal-piping runs should grade slightly downwards in the direction of the flow. Liquid line piping must be arranged so that it is free draining from the condenser to the receiver. It is the best to pipe liquid lines so that there is an immediate drop, at least 2 or 3 feet, at the condenser outlet, before headering or running horizontally.

STEP #5 LEAK TESTING:

Leak testing and evacuation must be done in accordance with local and national codes.

Once all refrigerant connections are made, leak test all joints before charging the system with refrigerant. After leak testing, all moisture and non-condensable gas must be evacuated from the system. Attach high vacuum line pump and gage on both high and low pressures sides of the system. A minimum vacuum level of 100 microns is required to effectively remove moisture.

Be sure all valves such as compressor, hot gas, receiver, and liquid solenoid valves are open. Break the vacuum in the system with the refrigerant to be used. Always charge the refrigerant into the system through a new 16 cu. in drier (field supplied) in the charging manifold line.

OPERATION

The notice below depicts the label that is affixed to the control box cover.

WARNING
Warranty Condition
ONE FAN (SINGLE WIDTH UNIT) OR ONE PAIR OF FANS (DOUBLE WIDTH UNIT) AND THE COMPRESSOR MUST OPERATE SIMULTANEOUSLY TO AVOID DAMAGE TO THE CONDENSER COIL.

Not complying to this condition can cause uneven rapid expansion and contraction of the condenser core tubing contributing to condenser tubes failures. Violation of this condition will void the warranty of the misused unit.

For a refrigeration system to function properly, the condensing pressure and temperature must be maintained within certain limits.

To prevent excessively low head pressure during winter operation, two basic control methods are used, refrigerant side control and air side control.

- 1) A) Refrigerant-side control is accomplished by modulating the amount of active condensing surface available for condensing by flooding the coil with liquid refrigerant.

This method requires a receiver and a larger charge of refrigerant. See fig. #3.

B) Refrigerant-side control by doing the one-half condenser operation. The condenser is initially resigned with two equal section, each accommodating 50% of the load during normal operation.

During winter an ambient controlled flow divider valve block off one section of the condenser in pump down the inactive section in the suction, This saves the flooding overcharge and sometimes allows the shutdown of the fans on the inactive condenser side. Fig #4.

- 2) Airside control is accomplished by cycling fans in response to condensing pressure or outdoors-ambient temperature. To reduce stress on the condenser coil, one fan or one pair fans must operate when a condenser is operating. Speed control on the constant operating fan may be used to reduce motor cycling and stabilised the operating pressure. See table 3 to 6 for more information.

For low ambient operation this method must be combined with refrigerant side control.

FAN MOTORS:

Check the fan blade clearances within the venturies, as well as check for proper rotation. Fan motors operating at higher elevations will draw lower than rated amp as well as draw less effective air volume across the coil surface. This is due to the reduced density of the higher altitude air; results, which are higher compressor, discharge pressure along with reduced unit capacity. Please consult factory if you suspect this situation.

The fan motors are permanently lubricated for service free operation. The motor may restart on automatic thermal protection. Motors are readily serviced by removing fan guards and fans. If a motor is inoperative or it cycles on thermal protection, check supply voltage at the motor leads. Fan motors may cycle on thermal protection if the coil is blocked.

FAN CYCLING:

Optional temperature or pressure controls are located in the control box. Air temperature sensors are located in the air flow and pressure controls are directly connected to the circuit in a return bend.

Optional line duty controls are connected directly to the fan motors. Controls are double pole single throw, one line remain live on the motors. Units must be completely disconnected before servicing.

Optional pilot duty controls are connected to 3 pole motor contactors. If controls or contactors are defective, they must be replaced.

MAINTENANCE

CLEANING:

After one day of operation, check for any vibration that might have developed in the unit. It is recommended that the unit be inspected occasionally for dirt accumulation. Grease and dust should be removed from the fans, fan guards.

Periodical cleaning of finned surface can be done by washing down dust with warm water spray and a mild detergent. Do not use alkaline or acidic solution as it will attack the coil material.

The inner face of the coil may be cleaned by the access panel on the side of the units or by removing the fan guards.

Always pressure clean in reverse of the air flow.

TABLE 1: FLUID COOLERS

Fluid CoolerID	Width (fan)	Length (fan)	Shipping Weight (lb)	Fluid Cooler ID	Width (fan)	Length (fan)	Shipping Weight (lb)
FCD02	1	1	190	FLD015	1	1	654
FCD03	1	1	201	FLD018	1	2	985
FCD04	1	1	210	FLD021	1	2	1005
FID010	1	1	515	FLD023	1	2	1063
FID011	1	1	525	FLD026	1	2	1091
FID013	1	1	592	FLD028	1	2	1117
FID014	1	1	602	FLD030	1	2	1159
FID016	1	1	641	FLD035	1	3	1460
FID017	1	1	654	FLD040	1	3	1490
FID020	1	2	985	FLD042	2	2	1625
FID023	1	2	1005	FLD043	1	3	1570
FID025	1	2	1063	FLD045	1	3	1609
FID029	1	2	1091	FLD049	2	2	1792
FID031	1	2	1117	FLD050	1	4	1875
FID034	1	2	1159	FLD053	2	2	1781
FID039	1	3	1460	FLD054	1	4	1915
FID044	1	3	1490	FLD056	2	2	1882
FID046	2	2	1625	FLD057	1	4	2019
FID049	1	3	1570	FLD060	2	2	1934
FID051	1	3	1609	FLD061	1	4	2071
FID054	2	2	1792	FLD063	2	3	2323
FID055	1	4	1875	FLD066	1	5	2403
FID058	2	2	1781	FLD070	1	5	2475
FID059	1	4	1915	FLD075	1	5	2540
FID064	2	2	1882	FLD080	2	3	2508
FID065	1	4	2019	FLD085	2	3	2664
FID068	2	2	1934	FLD090	2	3	2742
FID069	1	4	2071	FLD099	2	4	3029
FID070	2	3	2323	FLD106	2	4	3129
FID073	1	5	2403	FLD113	2	4	3338
FID079	1	5	2475	FLD120	2	4	3442
FID085	1	5	2540	FLD124	2	5	4198
FID088	2	3	2508	FLD132	2	5	4298
FID095	2	3	2664	FLD142	2	5	4560
FID101	2	3	2742	FLD150	2	5	4690
FID112	2	4	3029	FLD159	2	6	5292
FID119	2	4	3129	FLD170	2	6	5642
FID129	2	4	3338	FLD180	2	6	5798
FID137	2	4	3442	FLD190	2	6	6535
FID141	2	5	4198	FMD05	1	1	308
FID149	2	5	4298	FMD07	1	1	335
FID162	2	5	4560	FMD08	1	1	350
FID171	2	5	4690	FMD09	1	2	489
FID178	2	6	5292	FMD11	1	2	518
FID194	2	6	5642	FMD12	1	2	532
FID205	2	6	5798	FMD13	1	2	544
FID214	2	6	6535	FMD14	1	2	566
FLD009	1	1	515	FMD18	1	3	727
FLD010	1	1	525	FMD20	1	3	741
FLD012	1	1	592	FMD21	1	3	767
FLD013	1	1	602	FMD23	1	3	789
FLD014	1	1	641				

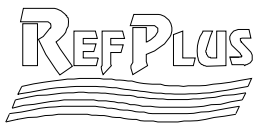
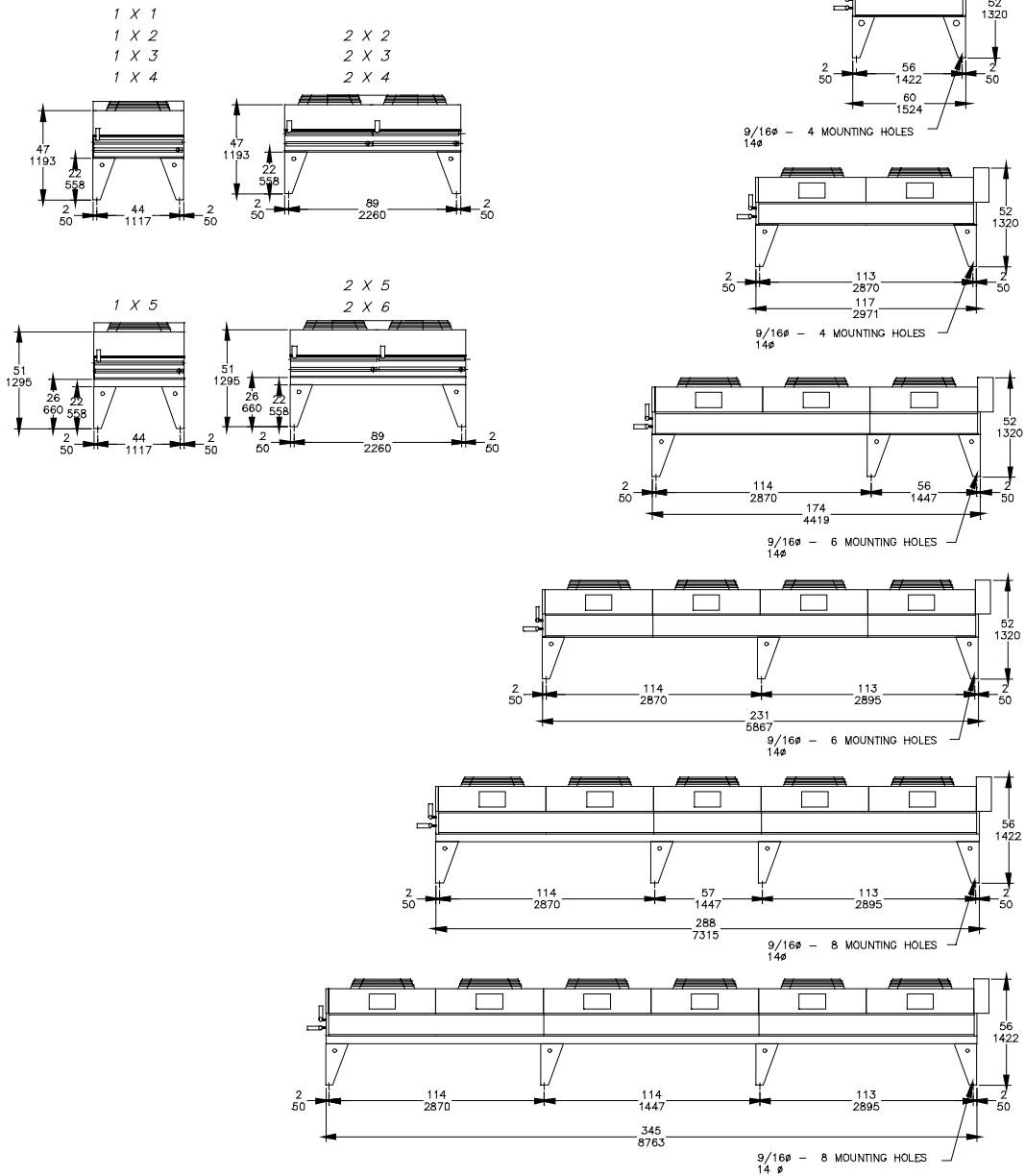
TABLE 2: CONDENSER AND HEAT RECLAIM

Condenser ID	Width (fan)	Length (fan)	Refrigerant Charge Summer (lb)	Refrigerant Charge Winter (lb)	Shipping Weight (lb)	Condenser ID	Width (fan)	Length (fan)	Refrigerant Charge Summer (lb)	Refrigerant Charge Winter (lb)	Shipping Weight (lb)
CCD02	1	1	1.8	5.8	190	CL8053	2	2	47	153	1882
CCD03	1	1	2.7	8.7	201	CL8054	1	4	46	150	2019
CCD04	1	1	3.5	12	210	CL8055	2	3	34	112	2323
CH8010	1	1	5.8	19	515	CL8059	1	5	43	140	2403
CH8013	1	1	8.8	29	592	CL8068	1	5	57	187	2475
CH8015	1	1	12	38	641	CL8071	2	3	52	169	2508
CH8020	1	2	12	38	985	CL8081	2	3	69	225	2664
CH8026	1	2	17	57	1063	CL8094	2	4	68	224	3029
CH8029	1	2	23	76	1117	CL8108	2	4	91	299	3338
CH8038	1	3	26	85	1460	CL8118	2	5	85	280	4198
CH8040	2	2	23	75	1625	CL8135	2	5	114	373	4560
CH8044	1	3	34	112	1570	CL8141	2	6	164	553	5292
CH8051	2	2	35	115	1792	CL8162	2	6	218	717	5642
CH8052	1	4	34	112	1875	CLD009	1	1	5.8	19	515
CH8058	2	2	47	153	1882	CLD010	1	1	5.8	19	525
CH8059	1	4	46	150	2019	CLD012	1	1	8.8	29	592
CH8060	2	3	34	112	2323	CLD013	1	1	8.8	29	602
CH8065	1	5	43	140	2403	CLD014	1	1	12	38	641
CH8074	1	5	57	187	2475	CLD015	1	1	12	38	654
CH8078	2	3	52	169	2508	CLD018	1	2	12	38	985
CH8088	2	3	69	225	2664	CLD021	1	2	12	38	1005
CH8104	2	4	68	224	3029	CLD023	1	2	17	57	1063
CH8118	2	4	91	299	3338	CLD026	1	2	17	57	1091
CH8130	2	5	85	280	4198	CLD028	1	2	23	76	1117
CH8147	2	5	114	373	4560	CLD030	1	2	23	76	1159
CH8156	2	6	197	664	5292	CLD035	1	3	26	85	1460
CH8177	2	6	262	860	5642	CLD040	1	3	26	85	1490
CHD010	1	1	5.8	19	515	CLD042	2	2	23	75	1625
CHD012	1	1	5.8	19	525	CLD043	1	3	34	112	1570
CHD013	1	1	8.8	29	592	CLD045	1	3	34	112	1609
CHD014	1	1	8.8	29	602	CLD049	2	2	35	115	1792
CHD015	1	1	12	38	641	CLD050	1	4	34	112	1875
CHD016	1	1	12	38	654	CLD053	2	2	35	115	1781
CHD020	1	2	12	38	985	CLD054	1	4	34	112	1915
CHD024	1	2	12	38	1005	CLD056	2	2	47	153	1882
CHD026	1	2	17	57	1063	CLD057	1	4	46	150	2019
CHD029	1	2	17	57	1091	CLD060	2	2	47	153	1934
CHD030	1	2	23	76	1117	CLD061	1	4	46	150	2071
CHD032	1	2	23	76	1159	CLD063	2	3	34	112	2323
CHD040	1	3	26	85	1460	CLD066	1	5	43	140	2403
CHD044	1	3	26	85	1490	CLD070	1	5	57	187	2475
CHD045	1	3	23	75	1625	CLD075	1	5	57	187	2540
CHD048	1	3	34	112	1570	CLD080	2	3	52	169	2508
CHD049	2	2	34	112	1609	CLD085	2	3	69	225	2664
CHD055	2	2	35	115	1792	CLD090	2	3	69	225	2742

Condenser ID	Width (fan)	Length (fan)	Refrigerant Charge Summer (lb)	Refrigerant Charge Winter (lb)	Shipping Weight (lb)	Condenser ID	Width (fan)	Length (fan)	Refrigerant Charge Summer (lb)	Refrigerant Charge Winter (lb)	Shipping Weight (lb)
CHD056	1	4	34	112	1875	CLD099	2	4	68	224	3029
CHD059	2	2	35	115	1781	CLD106	2	4	68	224	3129
CHD060	1	4	34	112	1915	CLD113	2	4	91	299	3338
CHD061	2	2	47	153	1882	CLD120	2	4	91	229	3442
CHD062	1	4	46	150	2019	CLD124	2	5	85	280	4198
CHD063	2	2	47	153	1934	CLD132	2	5	85	280	4298
CHD064	1	4	46	150	2071	CLD142	2	5	114	373	4560
CHD073	2	3	34	112	2323	CLD150	2	5	114	373	4690
CHD074	1	5	43	140	2403	CLD159	2	6	164	553	5292
CHD077	1	5	57	187	2475	CLD170	2	6	218	717	5642
CHD079	1	5	57	187	2540	CLD180	2	6	218	717	5798
CHD089	2	3	52	169	2508	CMD05	1	1	3.3	11	308
CHD092	2	3	69	225	2664	CMD07	1	1	4.9	16	335
CHD096	2	3	69	225	2742	CMD08	1	1	6.5	22	350
CHD110	2	4	68	224	3029	CMD09	1	2	6.3	21	489
CHD118	2	4	68	224	3129	CMD11	1	2	9.5	31	518
CHD123	2	4	91	299	3338	CMD12	1	2	9.5	31	532
CHD127	2	4	91	229	3442	CMD13	1	2	13	42	544
CHD138	2	5	85	280	4198	CMD14	1	2	13	42	566
CHD148	2	5	85	280	4298	CMD18	1	3	14	47	727
CHD153	2	5	114	373	4560	CMD20	1	3	14	47	741
CHD159	2	5	114	373	4690	CMD21	1	3	19	62	767
CHD177	2	6	164	553	5292	CMD23	1	3	19	62	789
CHD184	2	6	218	717	5642	CQD008	1	1	5.8	19	525
CHD191	2	6	218	717	5798	CQD009	1	1	5.8	19	535
CID010	1	1	5.8	19	515	CQD010	1	1	8.8	29	602
CID011	1	1	5.8	19	525	CQD011	1	1	8.8	29	612
CID013	1	1	8.8	29	592	CQD012	1	1	12	38	651
CID014	1	1	8.8	29	602	CQD013	1	1	12	38	664
CID016	1	1	12	38	641	CQD016	1	2	12	38	1085
CID017	1	1	12	38	654	CQD019	1	2	12	38	1025
CID020	1	2	12	38	985	CQD021	1	2	17	57	1083
CID023	1	2	12	38	1005	CQD022	1	2	17	57	1111
CID025	1	2	17	57	1063	CQD023	1	2	23	76	1137
CID029	1	2	17	57	1091	CQD024	1	2	23	76	1179
CID031	1	2	23	76	1117	CQD031	1	3	26	85	1490
CID034	1	2	23	76	1159	CQD034	1	3	26	85	1520
CID039	1	3	26	85	1460	CQD035	1	3	34	112	1600
CID044	1	3	26	85	1490	CQD036	1	3	34	112	1639
CID046	2	2	23	75	1625	CQD041	2	2	35	115	1832
CID049	1	3	34	112	1570	CQD042	1	4	34	112	1915
CID051	1	3	34	112	1609	CQD044	2	2	35	115	1821
CID054	2	2	35	115	1792	CQD045	1	4	34	112	1955
CID055	1	4	34	112	1875	CQD046	2	2	47	153	1922
CID058	2	2	35	115	1781	CQD047	1	4	46	150	2059
CID059	1	4	34	112	1915	CQD048	2	2	47	153	1974
CID064	2	2	47	153	1882	CQD049	1	4	46	150	2111
CID065	1	4	46	150	2019	CQD057	1	5	43	140	2453
CID068	2	2	47	153	1934	CQD058	1	5	57	187	2525

Condenser ID	Width (fan)	Length (fan)	Refrigerant Charge Summer (lb)	Refrigerant Charge Winter (lb)	Shipping Weight (lb)	Condenser ID	Width (fan)	Length (fan)	Refrigerant Charge Summer (lb)	Refrigerant Charge Winter (lb)	Shipping Weight (lb)
CID069	1	4	46	150	2071	CQD061	1	5	57	187	2590
CID070	2	3	34	112	2323	CQD069	2	3	52	169	2568
CID073	1	5	43	140	2403	CQD070	2	3	69	225	2724
CID079	1	5	57	187	2475	CQD072	2	3	69	225	2800
CID085	2	5	57	187	2540	CQD083	2	4	68	224	3109
CID088	2	3	52	169	2508	CQD091	2	4	68	224	3209
CID095	2	3	69	225	2664	CQD093	2	4	91	299	3418
CID101	2	3	69	225	2742	CQD096	2	4	91	299	3522
CID112	2	4	68	224	3029	CQD104	2	5	85	280	4298
CID119	2	4	68	224	3129	CQD114	2	5	85	280	4398
CID129	2	4	91	299	3338	CQD116	2	5	114	373	4660
CID137	2	4	91	229	3442	CQD121	2	5	114	373	4790
CID141	2	5	85	280	4198	CQD137	2	6	164	553	5412
CID149	2	5	85	280	4298	CQD140	2	6	218	717	5762
CID162	2	5	114	373	4560	CQD145	2	6	218	717	5918
CID171	2	5	114	373	4690	HCD02	1	1	0.6	0.6	190
CID178	2	6	164	553	5292	HCD03	1	1	0.9	0.9	201
CID194	2	6	218	717	5642	HCD04	1	1	1.2	1.2	210
CID205	2	6	218	717	5798	HMD05	1	1	1.1	1.1	308
CL8009	1	1	5.8	19	515	HMD07	1	1	1.6	1.6	335
CL8012	1	1	8.8	29	592	HMD08	1	1	2.1	2.1	350
CL8014	1	1	12	38	641	HMD09	1	2	2.1	2.1	489
CL8018	1	2	12	38	985	HMD11	1	2	3.1	3.1	518
CL8024	1	2	17	57	1063	HMD12	1	2	3.1	3.1	532
CL8027	1	2	23	76	1117	HMD13	1	2	4.3	4.3	544
CL8035	1	3	26	85	1460	HMD14	1	2	4.3	4.3	566
CL8036	2	2	23	75	1625	HMD18	1	3	4.6	4.6	727
CL8041	1	3	34	112	1570	HMD20	1	3	4.6	4.6	741
CL8047	2	2	35	115	1792	HMD21	1	3	6.3	6.3	767
CL8048	1	4	34	112	1875	HMD23	1	3	6.3	6.3	789

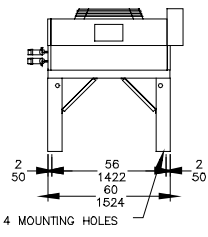
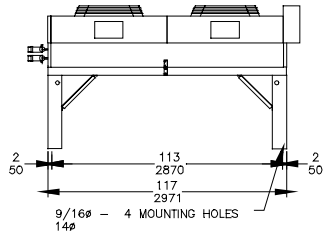
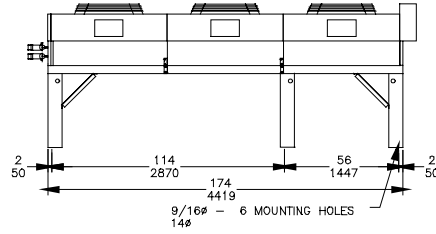
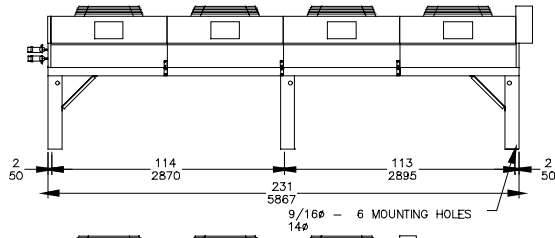
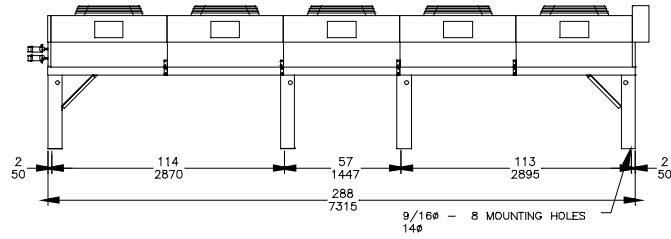
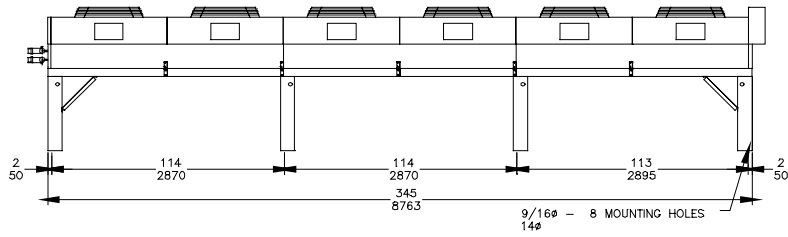
Fig. #1: Standard Legs



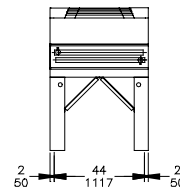
1385 De Coulomb
Boucherville, P.Q.
J4B 7L8
TEL.: (450) 641-2665
FAX: (450) 641-4554

DIMENSIONS ARE IN INCHES
MM

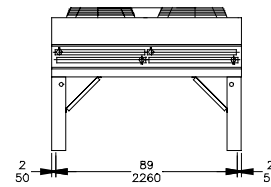
Fig. #2 : Extended Legs



- 1 X 1
- 1 X 2
- 1 X 3
- 1 X 4
- 1 X 5
- 1 X 6



- 2 X 2
- 2 X 3
- 2 X 4
- 2 X 5
- 2 X 6



1385 De Coulomb
 Boucherville, P.Q.
 J4B 7L8

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 FAX: (450) 641-4554

DIMENSIONS ARE IN INCHES
 MM

Fig #3 : 2 fans

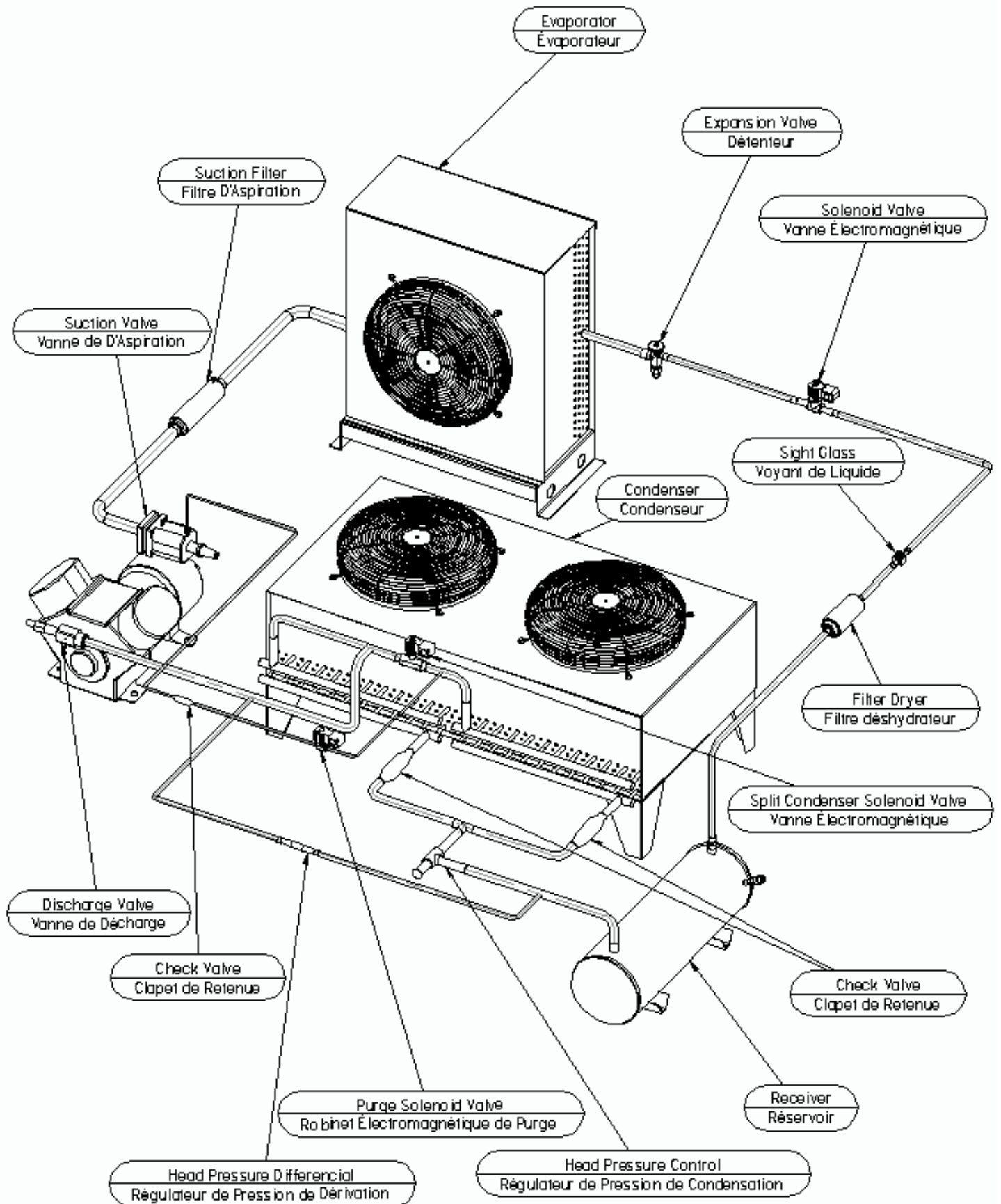


Fig # 4: 1 fan

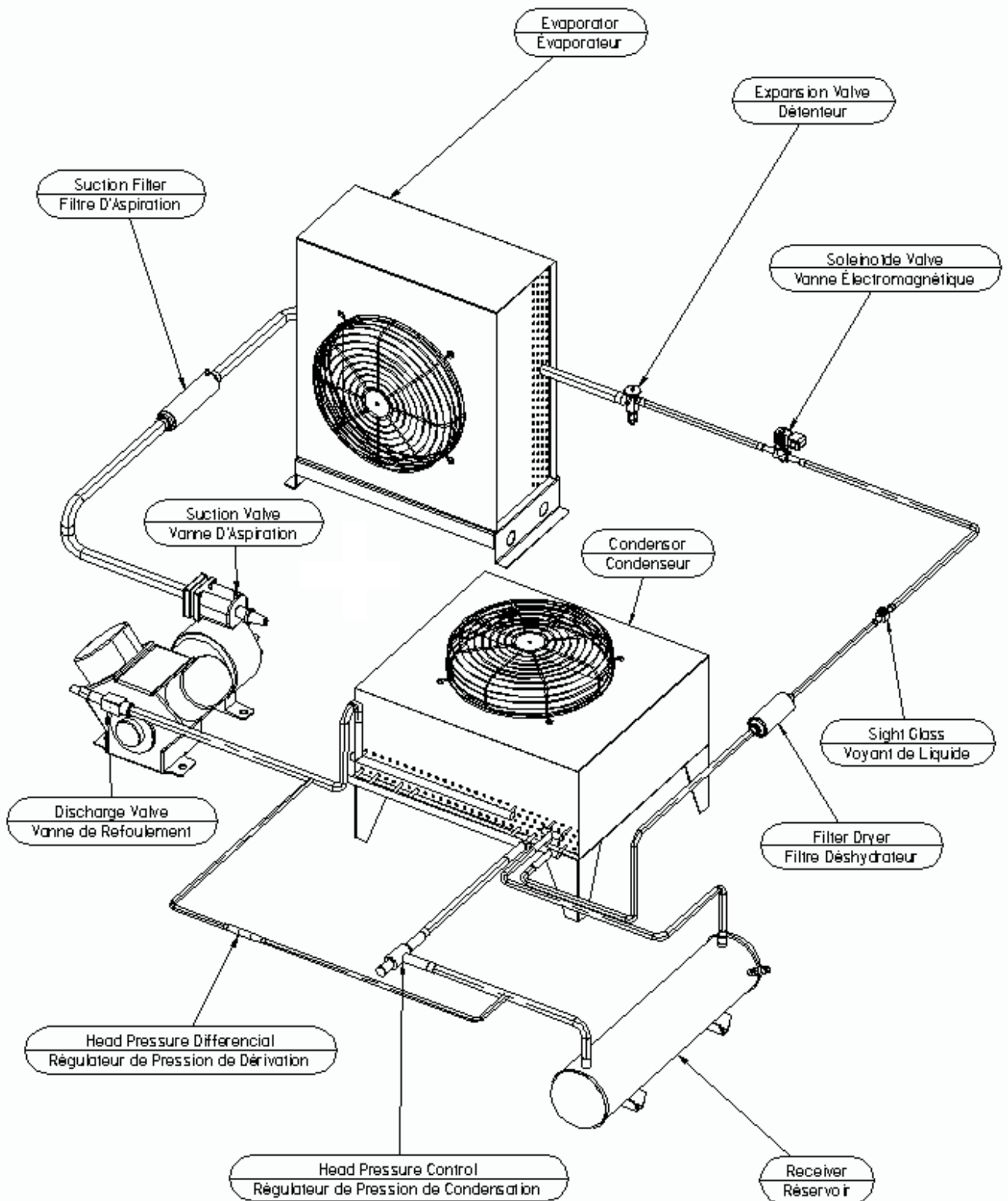


Table #3

Condenser Fan Alignment		Ambient Control Temperature Setting (°F)					
Temperature Control		-----	T1	T2	T3	T4	T5
Fan Motor Number	Single Wide Units	M1	M2	M3	M4	M5	
	Double Wide Units	M1 M2	M3 M4	M5 M6	M7 M8	M9 M10	M11 M12
Difference		FAN (S) RUNS WITH ANY COM- PRESSOR	20				
Fan On			60				
Fan Off			40				
Difference			10	15			
Fan On			55	65			
Fan Off			45	50			
Difference			10	5	5		
Fan On			55	60	70		
Fan Off			45	55	65		
Difference			10	5	5	5	
Fan On			55	60	70	75	
Fan Off			45	55	65	70	
Difference			10	5	5	5	5
Fan On			55	60	65	70	80
Fan Off			45	55	60	65	75

Table #4

Condenser Fan Alignment		Pressure Control Pressure Settings (PSIG) (R-22)					
Pressure Control		-----	P1	P2	P3	P4	P5
Fan Motor Number	Single Wide Units	M1	M2	M3	M4	M5	
	Double Wide Units	M1 M2	M3 M4	M5 M6	M7 M8	M9 M10	M11 M12
Difference		FAN (S) RUNS WITH ANY COM- PRESSOR	40				
Fan On			200				
Fan Off			160				
Difference			40	40			
Fan On			200	210			
Fan Off			160	170			
Difference			40	40	40		
Fan On			200	205	215		
Fan Off			160	165	175		
Difference			40	40	40	40	
Fan On			200	205	210	220	
Fan Off			160	165	170	180	
Difference			40	40	40	40	40
Fan On			200	205	210	215	225
Fan Off			160	165	170	175	185

Table #5

Condenser Fan Alignment		Pressure Control Pressure Settings (PSIG) (R-404A, R-507)					
Pressure Control		-----	P1	P2	P3	P4	P5
Fan Motor Number	Single Wide Units	M1	M2	M3	M4	M5	
	Double Wide Units	M1 M2	M3 M4	M5 M6	M7 M8	M9 M10	M11 M12
Difference		FAN (S) RUNS WITH ANY COM- PRESSOR	40				
Fan On			240				
Fan Off			200				
Difference			40	40			
Fan On			240	250			
Fan Off			200	210			
Difference			40	40	40		
Fan On			240	245	255		
Fan Off			200	205	215		
Difference			40	40	40	40	
Fan On			240	245	250	260	
Fan Off			200	205	210	220	
Difference			40	40	40	40	40
Fan On			240	245	250	255	265
Fan Off			200	205	210	215	225

Table #6

Condenser Fan Alignment		Pressure Control Pressure Settings (PSIG) (R-134)					
Pressure Control		-----	P1	P2	P3	P4	P5
Fan Motor Number	Single Wide Units	M1	M2	M3	M4	M5	
	Double Wide Units	M1 M2	M3 M4	M5 M6	M7 M8	M9 M10	M11 M12
Difference		FAN (S) RUNS WITH ANY COM- PRESSOR	30				
Fan On			125				
Fan Off			95				
Difference			30	30			
Fan On			125	135			
Fan Off			95	105			
Difference			30	30	30		
Fan On			125	130	130		
Fan Off			95	100	110		
Difference			30	30	30	30	
Fan On			125	130	135	145	
Fan Off			95	100	105	115	
Difference			30	30	30	30	30
Fan On			125	130	135	130	150
Fan Off			95	100	105	110	120

REPLACEMENT PARTS LIST

**CONDENSERS
FLUID COOLERS
HEAT RECLAIM UNITS**

**CCD, CMD, CLD, CL8, CID, CHD, CH8, CQD
FCD, FMD, FLD, FID
HCD, HMD**

MOTOR						
MODEL	CCD, FCD, HCD	CMD, FMD, HMD	CLD, CL8, FLD	CID, FID	CHD, CH8	CQD
SUFFIX-2 240/1/60	RMT 0021 ¹	RMT 0022 ²	N/A			
SUFFIX-5 208-240/3/60	N/A	RMT 0031	RMT 0041	RMT 0051	RMT 0061	RMT 0019
SUFFIX-9 480/3/60						
SUFFIX-8 600/3/60		RMT 0032	RMT 0042	RMT 0052	RMT 0062	RMT 0020

NOTE: ¹Motor RMT 0021 requires Run Capacitor model REC 0003.

²Motor RMT 0022 requires Run Capacitor model REC 0004.

MOTOR MOUNT						
MODEL	CCD, FCD, HCD	CMD, FMD, HMD	CLD, CL8, FLD	CID, FID	CHD, CH8	CQD
SUFFIX-2 240/1/60	RGR 0140		N/A			
SUFFIX-5 208-240/3/60	N/A	RGR 0160	RGR 0180			
SUFFIX-9 480/3/60						
SUFFIX-8 600/3/60						

FAN BLADE						
MODEL	CCD, FCD, HCD	CMD, FMD, HMD	CLD, CL8, FLD	CID, FID	CHD, CH8	CQD
SUFFIX-2 240/1/60	RFN 0040		N/A			
SUFFIX-5 208-240/3/60	N/A	RFN 0041	RFN 0050	RFN 0051	RFN 0052	
SUFFIX-9 480/3/60						
SUFFIX-8 600/3/60						

FAN GUARD						
MODEL	CCD, FCD, HCD	CMD, FMD, HMD	CLD, CL8, FLD	CID, FID	CHD, CH8	CQD
SUFFIX-2 240/1/60	RGR 0100	RGR 0100	N/A			
SUFFIX-5 208-240/3/60	N/A		RGR 0120			
SUFFIX-9 480/3/60						
SUFFIX-8 600/3/60						

CONDENSERS
 FLUID COOLERS
 HEAT RECLAIM UNITS

CCD, CMD, CLD, CL8, CID, CHD, CH8, CQD
 FCD, FMD, FLD, FID
 HCD, HMD

CONTROL PANEL						
UNIT	TRANSFORMER			CONTACTOR		
VOLTAGE	CONTROL VOLTAGE			CONTROL VOLTAGE		
	24V	120V	240V	24V	120V	240V
SUFFIX-2 240/1/60	RET 0201	RET 0223	N/A	RER 0306	RER 0266	RER 0232
SUFFIX-5 208-240/3/60						
SUFFIX-9 480/3/60	RET 0206	RET 0203	RET 0208			
SUFFIX-8 600/3/60	RET 0202	RET 0205	RET 0207			

SPEED CONTROL					
UNIT ¹		CMD	CLD	CHD	CID
PRESSURE	SINGLE INPUT	REP 0103			
	DUAL INPUT	REP 0102			
TEMPERATURE	SINGLE INPUT	1 X REP 0112 + 1 X REP 0114			
	DUAL INPUT	2 X REP 0113 + 1 X REP 0114			
TRANSFORMER		RET 0100			
MOTOR		RMT 0013	RMT 0043 ²		
MOTOR MOUNT		RGR 0140	RGR 0180		
FAN		RFN 0040	RFN 0053		
FAN GUARD		RGR 0100	RGR 0120		
RUN CAPACITOR		REC 0006	REC 0008		

NOTE: ¹600 V units need autotransformer no. RET 0214, 2 fuses no. REM 3055 and fuse block REM 3075.

² This motor requires fan model no. RFN 0053.

THERMOSTAT
ALL MODELS
RTH 0022

PRESSURE CONTROL
ALL MODELS
REP 0050

STAGE THERMOSTATS
ALL MODELS
RTH 0023
RTH 0024
RTH 0025
RTH 0035
RTH 0037



WARRANTIES

RefPlus warrants the labeled (serial No.) new Refplus equipment and all parts thereof, to be free from defects in workmanship and material at the time of purchase. Apply to original purchaser only (Not transferable).

Under this warranty RefPlus shall be limited to repairing or exchanging any parts, without charge FOB factory or nearest authorized parts wholesalers, which may prove defective to the satisfaction of RefPlus within one year from date of start up, not to exceed eighteen (18) months from date of shipment from the factory.

The warranties to repair or replace above recited, are the only warranties, express, implied, or statutory, made by RefPlus. No express or implied warranties as to merchantability or fitness for a particular purpose or use. RefPlus neither assumes, nor authorizes any person to assume for it, any other obligation or liability in connection with the sale of said equipment or any part thereof.

EXCLUSIONS

**THIS WARRANTY SHALL NOT APPLY TO LOSS OF FOOD OR REFRIGERANT
DUE TO FAILURE FOR ANY REASON.**

RefPlus SHALL NOT BE LIABLE:

- 1 - For any repairs or replacement by buyer without the written consent of RefPlus, or when the equipment is installed or operated in a manner contrary to the instructions covering installation and service which accompanied such equipment.
- 2- For any damages, delays, or losses, direct or consequential, caused by defects, nor for damages caused by short or reduced supply of materials, fire, flood, strikes, acts of God, or circumstances beyond its control.
- 3- When the failure or defect of any part or parts is incidental to ordinary wear, accident, abuse or misuse; or when the serial number of the equipment has been removed, defaced, altered, or tampered with.
- 4- When this equipment is operated on low or improper voltages.
- 6- When this equipment is moved to different location other than the original installation.
- 5- For payment of any removal or installation charges of parts or units.

Specifications subject to change without notice.