INSTALLATION
OPERATION
MAINTENANCE
AND PARTS
MANUAL

COMPU-KOOL III

AIR COOLED(CKA)
WATER COOLED (CKW)
GLYCOL COOLED (CKG)
CHILLED WATER (CKC)
SPLIT EVAP. SECTION (CKE)

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ISO 9002 REGISTERED COMPANY

INDEX

ADDENDUM

CORRECT PHASING OF SCROLL COMPRESSORS:

The scroll compressor is an unidirectional compressor and will only compress refrigerant in one rotation direction. Therefore, the proper rotation of the scroll compressor must be checked. The scroll compressor will run in the reverse direction but it will not pump refrigerant and will draw substantially reduced current as compared to listed values, and will result in elevated sound levels. Scroll compressor will trip on internal protection after running for some time in the reverse direction.

Verification of the proper rotation of the scroll compressor is done by observing that suction pressure drops and discharge pressure rises when the compressor is energized.

WARNING:
EXTENDED IMPROPER ROTATION OPERATION MAY ALSO VOID COMPRESSOR WARRANTY.

GENERAL

The Compu-Aire Compu-Kool series is a complete environmental control system, factory wired, tested, and specifically designed to provide temperature, humidity, and dust control for computer room installations.

The unit as shipped from the factory includes a blower/motor package, evaporator with expansion valves, co-axial condensers, water control valve, humidifier, reheat elements, electrical control package, control monitor, and other specified special options.

TRANSPORTATION DAMAGE

Visual inspection of the outer casing provides a simple indication of possible internal damage to the equipment. Move the unit to the installation site in the upright position. **FILE A CLAIM WITH THE SHIPPING COMPANY IF THE SHIPMENT IS DAMAGED OR INCOMPLETE. FREIGHT DAMAGE CLAIMS ARE THE RESPONSIBILITY OF THE RECEIVER.**

Optional articles such as jackstand parts, condensate pump, and remote control panel are packed inside the unit.

IMPORTANT - READ BEFORE INSTALLING

Check the power supply. Voltage, frequency and phase must correspond to that specified on the unit nameplate. The power supply must be able to handle the additional load imposed by this equipment.

LOCATING THE UNIT

Consult local building codes and National Code for special installation requirements. When installing the unit, allow sufficient space for air flow clearance, wiring and servicing the unit. Left side, right side and front should have a minimum clearance of 36 inches for servicing. Rear clearance should be at least 1 inch to allow for out-of-square walls. The unit may be set directly on top of the raised floor or on adjustable jackstands.

The unit should not be placed near ny corner of the room. For best air distribution, the unit should be place in mid-point against the longest wall, and as close to the load(s) as possible. For multiple units, place them as far apart from each other as possible for optimum air distribution. Before placing a unit directly on the raised floor, it is important that the proper openings have already been cut.

The unit you have received is very special. It is specifically designed for Computer Room applications. Please read the following INSTRUCTIONS prior to working on the equipment.

ELECTRICAL DATA: 208v, 3 phase, 60 hz, 460v, 3 phase, 60 hz, 208v, 1 phase, 60 hz, 575v, 3 phase, 60 hz or 415/380v, 3 phase, 50 hz. Please check the voltage.

NAMEPLATE DATE: Refer to the unit name plate. It indicates all the electrical data for the unit. **LOCAL ELECTRICAL CODES OR ANY OTHER APPLICABLE CODES MUST BE COMPLIED WITH PRIOR TO WORKING IN THE UNIT.**

HUMIDIFIER: Unit is equipped with one of the following humidifiers:

A. Electric Immersion
B. Infrared
C. Disposable Cylinder
D. Wetted Media
E. No Humidifier

Check your unit for the kind of humidifier. Each kind requires a water supply. Make sure the water pressure does not exceed 50 psig. Some localities require a vacuum breaker in the line.

REHEAT: Unit is equipped with one of the following reheats:
A. Electrical
B. Hot Gas
C. Hot Water
D. Steam
E. No Reheat

Check you unit for the kind of reheat it has. For type C and D piping connections are required. Make sure shut off valves are provided external to the unit.

CONDENSATE DRAINS: Two condensate drains are provided (primary and secondary). Each drain is to be trapped and separately piped to the drain.

CONDENSATE PUMP (optional): When provided it is shipped separately. To avoid any flooding problems provide a separate power source. **WIRE THE PUMP TO SHUT THE SYSTEM OFF IN CASE OF OVERFLOW OR PUMP FAILURE. A SYSTEM CUT OFF TERMINAL IS PROVIDED IN THE UNIT.**

COMPRESSOR: Standard units are provided with hermetic compressors. Each compressor is provided with a safety high pressure switch. It is manual resetable and is factory set to open at 400 psig. A low pressure switch is also provided which is automatic reset.

AIR COOLED UNITS (CKA): These units are provided in two sections; indoor (Compu-Aire unit) and the outdoor (Air Cooled Condenser). Standard units are provided with Low Ambient control system operable down to 0°F. Variable Fan Speed Control along with fan cycling in case of multiple fans are provided.

AIR COOLED CONDENSERS (ACC): These are mostly dropped shipped to the job site ahead of the unit. Air cooled condenser supplied are provided with:

A. Variable Speed Fan Motor
B. Control Box where motor wires terminates less any controls
C. Access fittings to hook up SCR controller

CONTROL PANEL: This is for the air cooled condenser which is shipped from COMPU-AIRE with the air conditioner. This control panel is to be field installed and wired in the field. **MAKE SURE TO PROPERLY HOOK UP THE SENSOR CONNECTION TO THE SCR CONTROLLER WHICH ARE TO BE MADE IN THE FIELD.**

FOR UNITS EQUIPPED WITH LOW AMBIENT CONTROL BELOW 0°F: A head pressure control valve for each refrigeration circuit is provided and is shipped with the Computer Room air Conditioner for FIELD installation on the air cooled condenser. An appropriate control panel for with fan cycling control is also supplied for field installation on the air cooled condenser.

ALL REFRIGERATION PIPING SHALL BE INSTALLED PER ASHRAE STANDARDS.

WATER COOLED UNITS(CKW): These units are factory piped and wired. Water cooled condenser(s) are complete with a head pressure control valve(s). Field piping must be provided with a shut off valve for the supply and return. **MAXIMUM WATER SIDE WORKING PRESSURE SHOULD NOT EXCEED 125 psig.** Higher pressure units are provided. Refer to the nameplate.

GLYCOL COOLED UNITS(CKG): These units are similar to water cooled units, except they are provided with remote DRY FLUID COOLER AND A PUMP.

DRY FLUID COOLERS: These are mostly dropped shipped on the job site prior to the air conditioner. These units are shipped from the factory with the following:

A. Control Box
B. Surge Tank (if ordered it is pre-piped)
C. Pump Mounting Kit consisting of a special mounting leg and a weather shield (optional)

CONTROL PANEL: With fan cycling thermostats, etc, are shipped from Compu-Aire with the air conditioner. This control panel is to be field mounted, wired and provide a fused disconnect switch for the power.

PLEASE NOTE the nameplate on the condenser does not include power consumed by the pump. Add these amps to the nameplate data prior to wire sizing, etc.

PUMPS FOR CKG MODELS: These are shipped from Compu-Aire along with the air conditioners. Pump supplied are internally protected, but in many localities local codes require that a separate fused disconnect be provided. These pumps are to be field mounted. Every care should be taken to ascertain that no undue noise or vibration be carried to the structure. Provide vibration eliminator and shut off valves.

DUAL PUMP PACKAGE WITH AUTOMATIC CHANGE OVER AND MANUAL CHANGE OVER(optional) FOR CKG MODELS: Control panel are factory supplied for field installation. Flow switch and check valve are to be supplied and installed by the contractor per the drawing shown inside.

CHILLED WATER UNITS(CKC): These units are factory piped with a three way water regulating valve. These systems are designed for working pressure of 200 psig. Higher pressure -Refer to nameplate.

IMPORTANT SUGGESTION
In order to have trouble free operation please maintain the humidifiers, regularly check the belts for proper tension and change filters when dirty.

For assistance, please call COMPU-AIRE, INC. at (562)945-8971

ABOUT COMPU-KOOL

The COMPU-KOOL is designed to provide localized temperature and humidity control in high heat load areas found in commercial and industrial settings. This free standing unit operates independently of the central air conditioning system and provided auxiliary cooling to a pre-selected environment. Completely factory assembled, piped, and wired, the COMPU-KOOL offers flexibility features to meet virtually any floor plan.

Finally a unique field reversible blower mounting allows air flow discharge to be reversed from an up-flow configuration to a downflow arrangement for raised flooring systems. Installed in the room center, against a wall, or in a corner, the COMPU-KOOL will deliver maximum performance at the lowest cost.

Maintaining consistent temperature and humidity conditions requires quick response to changing heat loads in the computer room. COMPU-KOOL meets this challenge through constant fan operation, thus preventing stratification of room air. COMPU-KOOL constantly monitors the return air stream for any change in space conditions, the appropriate air conditioning mode is quickly initiated. All cooling, heating, humidification and dehumidification controls are fully automatic. To keep noise levels at a minimum, thermal and sound barrier insulation fully line cabinet. COMPU-KOOL is available as an air, water, or glycol cooled system. COMPU-KOOL answers the need for localized environmental control.

TECHNICAL DATA

SELF CONTAINED AIR COOLED SYSTEM CKA WITH AIR COOLED CONDENSER				TABLE NO.1
NOMINAL TONS / **MODEL**	2 **CKA-2**	3 **CKA-3**	4 **CKA-4**	5 **CKA-5**
ENERGY EFFICIENCY RATIO	9.7	10.6	9.2	10.2
CAPACITY DATA				
80°F DB, 67°F WB (26.7°C DB, 19.4°C WB) 50% RH ENTERING AIR				
Total-BTU/HR(**kW**)	33973(**9.9**)	43750(**12.8**)	59600(**17.4**)	64600(**18.9**)
Sensible-BTU/HR(**kW**)	23713(**6.7**)	34350(**10.1**)	50335(**14.7**)	54200(**15.9**)
75°F DB, 62.5°F WB (23.9°C DB, 16.9°C WB) 50% RH ENTERING AIR				
Total-BTU/HR(**kW**)	26501(**7.8**)	41550(**12.2**)	53715(**15.7**)	62100(**18.2**)
Sensible-BTU/HR(**kW**)	21443(**6.3**)	33500(**9.8**)	48219(**14.1**)	52120(**15.3**)
72°F DB, 60°F WB (22.2°C DB, 15.5°C WB) 50% RH ENTERING AIR				
Total-BTU/HR(**kW**)	23415(**6.8**)	39820(**11.7**)	44348(**13.0**)	60950(**17.9**)
Sensible-BTU/HR(**kW**)	20216(**5.9**)	32320(**9.5**)	44348(**13.0**)	52120(**15.3**)
72°F DB, 58.6°F WB (22.2°C DB, 14.8°C WB) 45% RH ENTERING AIR				
Total-BTU/HR(**kW**)	20349(**5.9**)	38320(**11.2**)	44348(**13.0**)	59150(**17.3**)
Sensible-BTU/HR(**kW**)	20349(**5.9**)	35120(**10.3**)	44348(**13.0**)	59150(**17.3**)
FAN DATA-Double width double inlet belt driven - Variable pitch pulley				
Fan Motor HP	3/4	3/4	1	1 1/2
CFM (**L/s**)	1000 (**470**)	1800 (**850**)	2350 (**1104**)	3050 (**1439**)
ESP IN. WC(**Pa**)	0.3 (**75**)	0.3 (**75**)	0.3 (**75**)	0.3 (**75**)
COIL DATA- High efficiency copper tubing-aluminum fins				
Face Area FT^2(m^2)	5.9(**0.55**)	5.9(**0.55**)	5.9(**0.55**)	5.9(**0.55**)
Rows	2	2	3	4
COMPRESSOR DATA- Heat pump duty scroll R-22				
Size	2	3	4	5
EER	13.8	13.7	13.8	14.0
REHEAT DATA- Electric- 2 stages				
kW	6	6	10	10
BTU/HR - Includes Fan Motor	22510	22510	40650	40650
HUMIDIFIER DATA-Electronic self generating steam type with disposable cylinder				
kW	3.4	3.4	3.4	3.4
LBS/HR (**kg/hr**)	10.0(**4.5**)	10.0(**4.5**)	10.0(**4.5**)	10.0(**4.5**)
FILTER DATA-30% Efficiency based on ASHRAE 52-76 standard				
Downflow 14 X 25 X 2	2	2	2	2
Upflow 16 X 25 X 2	2	2	2	2
Effective Area FT^2(m^2)	20.2(**1.88**)	20.2(**1.88**)	20.2(**1.88**)	20.2(**1.88**)
PIPING CONNECTION DATA - All sizes in copper OD				
Liquid Line	1/2"	1/2"	5/8"	5/8"
Hot Gas Line	5/8"	5/8"	7/8"	7/8"
Humidifier Water Supply	1/4"	1/4"	1/4"	1/4"
Condensate Drain	3/4"	3/4"	3/4"	3/4"
WEIGHT LBS(**kg**)	450(**204**)	550(**250**)	600(**272**)	650(**295**)
AIR COOLED CONDENSER BASED ON 95°F (35°C) AMBIENT-Variable Fan Speed Type - Good down to –20°F (–7°C).				
CONDENSER MODEL	**ACC-2**	**ACC-5**	**ACC-5**	**ACC-6**
FAN DATA - DIRECT DRIVE - Propeller Fan Type				
CFM (**L/s**)	2500(**1180**)	5200(**2454**)	5200(**2454**)	5100(**2407**)
Motor HP	1/6	3/4	3/4	3/4
Fan Size	18	24	24	24
PIPING CONNECTION DATA - All sizes in copper OD				
Liquid Line	1/2"	7/8"	7/8"	7/8"
Hot Gas Line	5/8"	1 1/8"	1 1/8"	1 1/8"
WEIGHT LBS(**kg**)	240(**109**)	275(**125**)	310(**140**)	350(**159**)

BOLD FACE DATA IN METRIC UNITS

TECHNICAL DATA

SELF CONTAINED WATER COOLED SYSTEM CKW — TABLE NO. 2

NOMINAL TONS MODEL	2 CKW-2	3 CKW-3	4 CKW-4	5 CKW-5
ENERGY EFFICIENCY RATIO	10.2	12.3	10.3	11.2
CAPACITY DATA				
80°F DB 67°F WB(26.7°C DB, 19.4°C WB) 50% RH ENTERING AIR				
Total-BTU/HR**(kW)** Sensible-BTU/HR**(kW)**	33973**(9.9)** 23713**(6.7)**	43750**(12.8)** 34350**(10.1)**	59600**(17.4)** 50335**(14.7)**	64600**(18.9)** 54200**(15.9)**
75°F DB 62.5°F WB(23.9°C DB, 16.9°C WB) 50% RH ENTERING AIR				
Total-BTU/HR**(kW)** Sensible-BTU/HR**(kW)**	26501**(7.8)** 21443**(6.3)**	41550**(12.2)** 33500**(9.8)**	53715**(15.7)** 48219**(14.1)**	62100**(18.2)** 52120**(15.3)**
72°F DB 60°F WB(22.2°C DB, 15.5°C WB) 50% RH ENTERING AIR				
Total-BTU/HR**(kW)** Sensible-BTU/HR**(kW)**	23415**(6.8)** 20216**(5.9)**	39820**(11.7)** 32320**(9.5)**	44348**(13.0)** 44348**(13.0)**	60950**(17.9)** 52120**(15.3)**
72°F DB 58.6°F WB(22.2°C DB, 14.8°C WB) 45% RH ENTERING AIR				
Total-BTU/HR**(kW)** Sensible-BTU/HR**(kW)**	20349**(5.9)** 20349**(5.9)**	38320**(11.2)** 35120**(10.3)**	44348**(13.0)** 44348**(13.0)**	59150**(17.3)** 59150**(17.3)**
FAN DATA-Double width double inlet belt driven - variable pitch pulley				
Fan Motor HP CFM **(L/s)** ESP IN. WC **(Pa)**	3/4 1000 **(470)** 0.3 **(75)**	3/4 1800 **(850)** 0.3 **(75)**	1 2350 **(1104)** 0.3 **(75)**	1 1/2 3050 **(1439)** 0.3 **(75)**
COIL DATA- High efficiency copper tubing- aluminum fins				
Face Area FT² **(m²)** Rows	5.9**(0.55)** 2	5.9**(0.55)** 2	5.9**(0.55)** 3	5.9**(0.55)** 4
COMPRESSOR DATA- Heat pump duty scroll R-22				
Size EER	2 13.8	3 13.7	4 13.8	5 14.0
REHEAT DATA- Electric- 2 stages				
kW BTU/HR - Includes Fan Motor	6 22510	6 22510	10 40650	10 40650
HUMIDIFIER DATA-Electronic self generating steam type with disposable cylinder				
kW LBS/HR **(kg/hr)**	3.4 10.0**(4.5)**	3.4 10.0**(4.5)**	3.4 10.0**(4.5)**	3.4 10.0**(4.5)**
WATER DATA - 125 psig working pressure. Higher pressure available if required				
Condenser type	Co-axial	Co-axial	Co-axial	Co-axial
65°F**(18.3°C)** Entering Water Temperature				
Flow Rate GPM **(L/s)** Press. Drop Ft-H20**(kPA)**	2.0**(0.12)** 4.3**(12.4)**	3.0**(0.19)** 4.5**(13.0)**	4.0**(0.25)** 4.6**(13.1)**	5.1**(0.32)** 5.1**(14.7)**
75°F**(23.9°C)** Entering Water Temperature				
Flow Rate GPM **(L/s)** Press. Drop Ft-H20**(kPA)**	3.0**(0.19)** 8.3**(23.9)**	4.5**(0.28)** 9.3**(26.8)**	6.0**(0.38)** 9.4**(27.1)**	7.5**(0.48)** 12.2**(35.2)**
85°F**(29.4°C)** Entering Water Temperature				
Flow Rate GPM**(L/s)** Press. Drop Ft-H20**(kPA)**	5.0**(0.32)** 12.3**(35.5)**	7.5**(0.28)** 19.3**(55.7)**	10.0**(0.64)** 21.4**(61.8)**	12.5**(0.80)** 27.2**(78.6)**
FILTER DATA-30% Efficiency based on ASHRAE 52-76 standard				
Downflow 14 X 25 X 2 Upflow 16 X 25 X 2 Effective Area FT²**(m²)**	2 2 20.2**(1.88)**	2 2 20.2**(1.88)**	2 2 20.2**(1.88)**	2 2 20.2**(1.88)**
PIPING CONNECTION DATA - All sizes in copper OD				
Water Supply/Return Humidifier Water Supply Condensate Drain	3/4" 1/4" 3/4"	3/4" 1/4" 3/4"	1 1/8" 1/4" 3/4"	1 1/8" 1/4" 3/4"
WEIGHT LBS**(kg)**	480**(218)**	610**(277)**	625**(284)**	675**(306)**

BOLD FACE DATA IN METRIC UNITS

TECHNICAL DATA

SELF CONTAINED GLYCOL COOLED SYSTEM CKG WITH DRY FLUID COOLER				TABLE NO.3
NOMINAL TONS MODEL	2 CKG-2	3 CKG-3	4 CKG-4	5 CKG-5
ENERGY EFFICIENCY RATIO	8.6	10.5	8.9	10.2
CAPACITY DATA				
80°F DB, 67°F WB(26.7°C DB, 19.4°C WB), 50% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible BTU/HR(**kW**)	30753(**9.0**) 21341(**6.2**)	39500(**11.6**) 32100(**9.4**)	53640(**15.7**) 45301(**13.3**)	62300(**18.2**) 53100(**15.5**)
75°F DB, 62.5°F WB(23.9°C DB, 16.9°C WB), 50% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible-BTU/HR(**kW**)	23850(**7.0**) 19298(**5.7**)	36100(**10.6**) 31323(**9.2**)	48343(**14.2**) 43397(**12.7**)	57100(**16.7**) 52100(**15.3**)
72°F DB, 60°F WB(22.2°C DB, 15.5°C WB), 50% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible-BTU/HR(**kW**)	19434(**5.7**) 18194(**5.3**)	33420(**9.8**) 31900(**9.3**)	38139(**11.2**) 38139(**11.2**)	55200(**16.2**) 50200(**14.7**)
72°F DB, 58.6°F WB(22.2°C DB, 14.8°C WB), 45% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible-BTU/HR(**kW**)	18314(**5.4**) 18314(**5.4**)	34500(**10.1**) 34500(**10.1**)	38139(**11.2**) 38139(**11.2**)	56150(**16.4**) 56150(**16.4**)
FAN DATA-Double width double inlet belt driven - variable pitch pulley				
Fan Motor HP CFM (**L/s**) ESP IN. WC (**Pa**)	3/4 1000 (**470**) 0.3 (**75**)	3/4 1800 (**850**) 0.3 (**75**)	1 2350 (**1104**) 0.3 (**75**)	1 1/2 3050 (**1439**) 0.3 (**75**)
COIL DATA- High efficiency copper tubing- aluminum fins				
Face Area FT²(**m²**) Rows	5.9(**0.55**) 2	5.9(**0.55**) 2	5.9(**0.55**) 3	5.9(**0.55**) 4
COMPRESSOR DATA- Heat pump duty scroll R-22				
Size EER	2 13.8	3 13.7	4 13.8	5 14.0
REHEAT DATA- electric - 2 stages				
kW BTU/HR - Includes Fan Motor	6 22510	6 22510	10 40650	10 40650
HUMIDIFIER DATA-Electronic self generating steam type with disposable cylinder				
kW LBS/HR (**kg/hr**)	3.4 10.0(**4.5**)	3.4 10.0(**4.5**)	3.4 10.0(**4.5**)	3.4 10.0(**4.5**)
WATER DATA - 125 PSIG working pressure. specify higher pressure if required.				
Condenser type GPM (**L/s**) Pressure drop FT (**kPA**)	Co-Axial 8.0 (**0.51**) 20.3(**58.6**)	Co-Axial 12.0(**0.77**) 28.5(**82.3**)	Co-Axial 15.0(**0.96**) 32.3(**93.3**)	Co-Axial 18.5(**1.2**) 35.2(**101.7**)
FILTER DATA-30% Efficiency based on ASHRAE 52-76 standard				
Downflow 14 X 25 X 2 Upflow 16 X 25 X 2 Effective Area FT²(**m²**)	2 2 20.2(**1.88**)	2 2 20.2(**1.88**)	2 2 20.2(**1.88**)	2 2 20.2(**1.88**)
PIPING CONNECTION DATA - all sizes in copper OD				
Water Supply/Return Humidifier Water supply Condensate Drain	3/4" 1/4" 3/4"	3/4" 1/4" 3/4"	1 1/8" 1/4" 3/4"	1 1/8" 1/4" 3/4"
WEIGHT LBS(kg)	480(**218**)	610(**277**)	625(**284**)	675(**306**)
DRY FLUID COOLER BASED ON 95°F (35°C) AMBIENT **CONDENSER MODEL**	**DFC -3**	**DFC-6**	**DFC-8**	**DFC-11**
FAN DATA - DIRECT DRIVE - Propeller Fan Type				
CFM (**L/s**) Motor HP Qty Fan Size	2400(**1128**) 1/6 1 18	5100(**2397**) 3/4 1 24	4900(**2303**) 3/4 1 24	10400(**4888**) 3/4 2 24
PIPING CONNECTION DATA - all sizes in copper OD				
Water Supply/Return	7/8"	7/8"	7/8"	7/8"
WEIGHT LBS(kg)	290(**132**)	340(**155**)	360(**164**)	400(**182**)
PUMP DATA- Base Mounted - Available Head Ft. 90 (260.1 kPA)				
HP GPM (**L/s**)	3/4 8.0(**0.51**)	3/4 12.0(**0.77**)	1 15.0(**0.96**)	1 18.5(**1.19**)

BOLD FACE DATA IN METRIC UNITS

SELF CONTAINED GLYCOL COOLED ENERGY MISER SYSTEM CKG-EM WITH DRY FLUID COOLER — TABLE NO.4

All items listed in the table 3 apply plus the following

NOMINAL TONS MODEL	2 CKG-2 EM	3 CKG-3 EM	4 CKG-4 EM	5 CKG-5 EM
ENERGY MISER COIL DATA				
Face Area FT²(m²)	5.9(0.55)	5.9(0.55)	5.9(0.55)	5.9(0.55)
Rows	2	2	2	2
Capacity-BTU/HR (kW)	28359(8.3)	42187(12.4)	46250(13.5)	55000(16.1)
WATER DATA - 125 PSIG working pressure. specify higher pressure if required.				
Condenser type	Co-Axial	Co-Axial	Co-Axial	Co-Axial
GPM (L/s)	8.0 (0.51)	12.0 (0.77)	15.0 (0.96)	18.5(1.20)
Pressure drop FT (kPA)	20.3(58.6)	28.5(82.3)	32.3(93.3)	35.2(101.7)

CHILLED WATER SYSTEM CKC — TABLE NO.5

NOMINAL TONS MODEL	2 CKC-2	3 CKC-3	4 CKC-4	5 CKC-5
CAPACITY DATA				
80°F DB 67°C WB(26.7°C DB, 19.4°C WB), 50% RH ENTERING AIR				
Total-BTU/HR(kW)	34651(10.1)	68200(20.0)	74204(21.7)	104235(30.5)
Sensible-BTU/HR(kW)	23971(7.0)	50150(14.7)	54851(16.0)	79380(23.2)
75°F DB 62.5 WB(23.9°C DB, 16.9°C WB), 50% RH ENTERING AIR				
Total-BTU/HR(kW)	26190(7.7)	47974(14.0)	56085(16.4)	78783(23.1)
Sensible-BTU/HR(kW)	21319(6.4)	40021(11.0)	49145(14.1)	64926(19.0)
72°F DB 60°C WB(22.2°C DB, 15.5°C WB), 50% RH ENTERING AIR				
Total-BTU/HR(kW)	21834(6.4)	42300(12.4)	46889(13.7)	65679(19.2)
Sensible-BTU/HR(kW)	19272(5.7)	37714(11.0)	46889(13.7)	59679(17.5)
72°F DB 58.6°C WB(22.2°C DB, 14.8°C WB), 45% RH ENTERING AIR				
Total-BTU/HR(kW)	20567(6.0)	39803(11.6)	46889(13.7)	61184(18.1)
Sensible-BTU/HR(kW)	20567(6.0)	39803(11.6)	46889(13.7)	61184(18.1)
WATER DATA - Entering Water Temperature 45°F (7.2°C)				
GPM (L/s)	6.0 (0.38)	10 (0.63)	11.2 (0.71)	18.7 (1.18)
Press.Drop FT. (kPA)	15.1 (43.7)	16.3 (47.1)	17.6 (50.9)	21.2 (61.3)
Control Valve - 3 way 150 psig working pressure- Higher pressure available				
Size	3/4	3/4	1	1
Cv	8.0	8.0	12.0	12.0
FAN DATA-Double width double inlet belt driven - variable pitch pulley				
Fan Motor HP	3/4	3/4	1	1 1/2
CFM (L/s)	1000 (470)	1800 (850)	2350 (1104)	3050 (1439)
ESP IN. WC (Pa)	0.3 (75)	0.3 (75)	0.3 (75)	0.3 (75)
COIL DATA- High efficiency copper tubing- aluminum fins				
Face Area FT²(m²)	5.9(0.55)	5.9(0.55)	5.9(0.55)	5.9(0.55)
Rows	2	3	4	4
REHEAT DATA- Electric- 2 stages				
kW	6	6	10	10
BTU/HR - Includes Fan Motor	22510	22510	40650	40650
HUMIDIFIER DATA-Electronic self generating steam type with disposable cylinder				
kW	3.4	3.4	3.4	3.4
LBS/HR (kg/hr)	10.0(4.5)	10.0(4.5)	10.0(4.5)	10.0(4.5)
FILTER DATA-30% Efficiency based on ASHRAE 52-76 standard				
Downflow 14 X 25 X 2	2	2	2	2
Upflow 16 X 25 X 2	2	2	2	2
Effective Area FT²(m²)	20.2(1.88)	20.2(1.88)	20.2(1.88)	20.2(1.88)
PIPING CONNECTION DATA - All sizes in copper OD				
Water Supply/Return	3/4"	3/4"	1 1/8"	1 1/8"
Humidifier Water Supply	1/4"	1/4"	1/4"	1/4"
Condensate Drain	3/4"	3/4"	3/4"	3/4"
WEIGHT LBS(kg)	475(216)	490(223)	525(239)	550(250)

BOLD FACE DATA IN METRIC UNITS

EVAPORATOR SECTION CKE matches with either — TABLE NO.6

Centrifugal Fan Condensing Unit (CFCU) (Refer to Table No.7)
or Propeller Fan Condensing Unit (PFCU) (Refer to Table No.8)
or Water Cooled Condensing Unit (WCCU) (Refer to Table No.9).

NOMINAL TONS MODEL	2 CKE-2	3 CKE-3	4 CKE-4	5 CKE-5
ENERGY EFFICIENCY RATIO				
CKE WITH CFCU **CKE WITH PFCU** **CKE WITH WCCU**	8.3 9.2 10.2	10.6 11.5 12.3	8.3 9.2 10.3	9.4 10.2 11.2
CAPACITY DATA				
80°F DB, 67°F WB(26.7°C DB, 19.4°C WB) 50% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible-BTU/HR(**kW**)	33973(**9.9**) 23713(**6.7**)	43750(**12.8**) 34350(**10.1**)	59600(**17.4**) 50335(**14.7**)	64600(**18.9**) 54200(**15.9**)
75°F DB, 62.5°F WB(23.9°C DB, 16.9°C WB) 50% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible-BTU/HR(**kW**)	26501(**7.8**) 21443(**6.3**)	41550(**12.2**) 33500(**9.8**)	53715(**15.7**) 48219(**14.1**)	62100(**18.2**) 52120(**15.3**)
72°F DB, 60°F WB (22.2°C DB, 15.5°C WB) 50% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible-BTU/HR(**kW**)	23415(**6.8**) 20216(**5.9**)	39820(**11.7**) 32320(**9.5**)	44348(**13.0**) 44348(**13.0**)	60950(**17.9**) 52120(**15.3**)
72°F DB, 58.6°F WB(22.2°C DB, 14.8°C WB) 45% RH ENTERING AIR				
Total-BTU/HR(**kW**) Sensible-BTU/HR(**kW**)	20349(**5.9**) 20349(**5.9**)	38320(**11.2**) 35120(**10.3**)	44348(**13.0**) 44348(**13.0**)	59150(**17.3**) 59150(**17.3**)
FAN DATA-Double width double inlet belt driven - variable pitch pulley				
Fan Motor HP CFM (**L/s**) ESP IN. WC (**Pa**)	3/4 1000 (**470**) 0.3 (**75**)	3/4 1800 (**850**) 0.3 (**75**)	1 2350 (**1104**) 0.3 (**75**)	1 1/2 3050 (**1439**) 0.3 (**75**)
OPTIONAL AIR - Consult factory for capacities.				
CFM (**L/s**) Fan Motor HP ESP IN. WC (**PA**)	1250(**587**) 3/4 0.3(**75**)	2300(**1086**) 1 0.3 (**75**)	2650(**1245**) 1 1/2 0.3 (**75**)	NA NA 0.3 (**75**)
COIL DATA- High efficiency copper tubing- aluminum fins				
Face Area FT²(**m²**) Rows	5.9(**0.55**) 2	5.9(**0.55**) 2	5.9(**0.55**) 3	5.9(**0.55**) 4
REHEAT DATA- Electric- 2 stages				
kW BTU/HR - Includes Fan Motor	6 22510	6 22510	10 40650	10 40650
HUMIDIFIER DATA-Electronic self generating steam type with disposable cylinder				
kW LBS/HR (**kg/hr**)	3.4 10.0(**4.5**)	3.4 10.0(**4.5**)	3.4 10.0(**4.5**)	3.4 10.0(**4.5**)
FILTER DATA-30% Efficiency based on ASHRAE 52-76 standard				
Downflow 14 X 25 X 2 Upflow 16 X 25 X 2 Effective Area FT²(**m²**)	2 2 20.2(**1.88**)	2 2 20.2(**1.88**)	2 2 20.2(**1.88**)	2 2 20.2(**1.88**)
PIPING CONNECTION DATA - All sizes in copper OD				
Liquid Line Suction Line Humidifier Water Supply Condensate Drain	1/2" 3/4" 1/4" 3/4"	1/2" 3/4" 1/4" 3/4"	5/8" 7/8" 1/4" 3/4"	5/8" 7/8" 1/4" 3/4"
WEIGHT LBS(**kg**)	490(**222**)	510(**231**)	505(**229**)	520(**236**)

BOLD FACE DATA IN METRIC UNITS

AIR COOLED CENTRIFUGAL FAN CONDENSING UNIT CFCU — TABLE NO.7

MODEL	CFCU-2	CFCU-3	CFCU-4	CFCU-5
NOMINAL TONNAGE	2	3	4	5
EER	8.3	10.6	8.3	9.4
COMPRESSOR DATA- Heat pump duty high efficiency scroll R-22				
Size	2	3	4	5
EER	13.8	13.7	13.8	14.0
FAN DATA- Centrifugal fan type direct drive				
Air Volume CFM(**L/s**)	1020(**482**)	1670(**788**)	3580(**1690**)	3580(**1690**)
Motor HP	3/4	3/4	1	1 1/2
ESP IN WC (**Pa**)	0.50(**125**)	0.50(**125**)	0.50(**125**)	0.50(**125**)
CONDENSER COIL DATA				
Face Area FT²(**m²**)	1.75(**0.17**)	4.6(**0.43**)	7.6(**0.71**)	7.6(**0.71**)
Rows	4	3	4	4
Fpi	12	12	12	12
PIPING DATA- All sizes are in copper OD				
Liquid Line	1/2"	1/2"	5/8"	5/8"
Suction Line	3/4"	3/4"	7/8"	7/8"
WEIGHT LBS(**kg**)	310(**140**)	340(**154**)	365(**166**)	395(**180**)

AIR-COOLED PROPELLER FAN CONDENSING UNIT PFCU — TABLE NO.8

MODEL	PFCU-2	PFCU-3	PFCU-4	PFCU-5
NOMINAL TONNAGE	2	3	4	5
EER	9.2	11.5	9.2	10.2
COMPRESSOR DATA- Heat pump duty high efficiency scroll R-22				
Size	2	3	4	5
EER	13.8	13.7	13.8	14.0
FAN DATA- Propeller fan type direct drive				
CFM (**L/s**)	1600(**755**)	2400(**1132**)	3200(**1510**)	4000(**1888**)
Fan Size	20"	24"	24"	24"
Fan Quantity	1	1	1	1
Motor Hp	1/3	1/3	3/4	3/4
Quantity Of Motors	1	1	1	1
CONDENSER COIL DATA				
Face Area FT²(**m²**)	5.0(**0.46**)	7.7(**0.72**)	10.5(**0.98**)	10.5(**0.98**)
Rows	2	2	3	3
PIPING DATA all sizes are in copper OD				
Liquid Line	1/2"	1/2"	5/8"	5/8"
Suction Line	3/4"	3/4"	7/8"	7/8"
WEIGHT LBS(**kg**)	310(**140**)	325(**148**)	335(**152**)	340(**155**)

WATER COOLED CONDENSING UNIT WCCU — TABLE NO.9

MODEL	WCCU-2	WCCU-3	WCCU-4	WCCU-5
NOMINAL TONNAGE	2	3	4	5
EER	10.2	12.3	10.3	11.2
COMPRESSOR DATA- Heat pump duty high efficiency scroll R-22				
Size	2	3	4	5
EER	13.8	13.7	13.8	14.0
WATER COOLED CONDENSER DATA				
Condenser Type	Co-Axial	Co-Axial	Co-Axial	Co-Axial
GPM(**L/s**) 75°F EWT	3.0(**0.19**)	4.5(**0.28**)	7.5(**0.47**)	7.5(**0.47**)
Pressure Drop Ft.of H2O(**kPA**)	10.1(**30.1**)	10.1(**30.1**)	10.1(**30.1**)	10.1(**30.1**)
GPM(**L/s**) 85°F EWT	6.0(**0.39**)	7.5(**0.47**)	15.0(**0.95**)	15.0(**0.95**)
Pressure Drop Ft.of H2O(**kPA**)	17.1(**50.9**)	17.1(**50.9**)	17.1(**50.9**)	17.1(**50.9**)
GPM(**L/s**) 105°F EWT	8.0(**0.5**)	12.0(**0.76**)	20.0(**1.26**)	20.0(**1.26**)
Pressure Drop Ft.of H2O(**kPA**)	37.1(**110.9**)	37.1(**110.9**)	37.1(**110.9**)	37.1(**110.9**)
PIPING DATA all sizes are in copper OD				
Liquid Line	1/2"	1/2"	5/8"	5/8"
Suction Line	3/4"	3/4"	7/8"	7/8"
Water Supply	7/8"	1 1/8"	1 1/8"	1 1/8"
Water Return	7/8"	1 1/8"	1 1/8"	1 1/8"
Weight LBS(**kg**)	275(**125**)	290(**132**)	320(**145**)	345(**159**)

BOLD FACE DATA IN METRIC UNITS

REFER TO PAGE 20 FOR DIMENSIONS

ELECTRICAL DATA

Compu Kool III Air Conditioners using scroll compressor, electric reheat and electronic electrode type humidifier. For electrical data using alternate reheat, no reheat, alternate humidifier, or no humidifier, consult factory.

TABLE NO.13

AIR COOLED - CKA WATER COOLED - CKW
GLYCOL COOLED - CKG GLYCOL COOLED ENERGY MISER - CKG-EM

VOLT/PH/HZ	CKA-23* CKW-23* CKG-23* CKG-23* EM	CKA-33* CKW-33* CKG-33* CKG-33* EM	CKA-43* CKW-43* CKG-43* CKG-43* EM	CKA-53* CKW-53* CKG-53* CKG-53* EM
208/3/60				
FLA	30.2	31.1	46.7	52.8
MCA	37.0	38.1	57.4	64.6
MFS	50A	50A	70A	80A
380/3/50				
FLA	14.5	16.0	25.0	27.3
MCA	17.8	19.7	30.9	33.6
MFS	20A	25A	40A	45A
460/3/60				
FLA	13.5	14.7	22.6	25.0
MCA	16.5	18.0	27.8	33.6
MFS	20A	25A	35A	40A
575/3/60				
FLA	11.3	11.7	17.8	19.9
MCA	13.8	14.4	21.9	24.4
MFS	20A	20A	30A	30A

TABLE NO.14

EVAPORATOR SECTION - CKE AND CHILLED WATER - CKC

VOLT/PH/HZ	CKE-23* CKC-23*	CKE-33* CKC-33*	CKE-43* CKC-43*	CKE-53* CKC-53*
208/3/60				
FLA	19.9	19.8	31.7	33.5
MCA	24.8	24.8	39.7	41.9
MFS	25A	25A	40A	45A
380/3/50				
FLA	10.3	10.3	16.8	17.3
MCA	12.9	12.9	21.0	21.6
MFS	15A	15A	25A	25A
460/3/60				
FLA	8.9	8.9	14.4	15.0
MCA	11.2	11.2	17.9	18.8
MFS	15A	15A	20A	20A
575/3/60				
FLA	7.0	7.0	11.4	12.0
MCA	8.8	8.8	14.3	15.0
MFS	15A	15A	20A	20A

TABLE NO.15

CENTRIFUGAL FAN CONDENSING UNIT - CFCU

VOLT/PH/HZ	CFCU-23*	CFCU-33*	CFCU-43*	CFCU-53*
208/3/60				
FLA	15.5	16.4	20.0	24.3
MCA	18.1	19.3	23.8	29.1
MFS	30A	30A	40A	50A
380/3/50				
FLA	7.4	7.4	10.3	12.1
MCA	8.6	8.8	12.4	14.6
MFS	15A	15A	20A	25A
460/3/60				
FLA	6.9	8.2	10.6	12.4
MCA	8.0	9.6	12.7	14.9
MFS	15A	15A	20A	25A
575/3/60				
FLA	5.3	5.7	8.4	9.9
MCA	6.4	6.9	10.0	11.9
MFS	15A	15A	15A	20A

TABLE NO.16

PROPELLER FAN CONDENSING UNIT - PFCU

VOLT/PH/HZ	PFCU-23*	PFCU-33*	PFCU-43*	PFCU-53*
208/3/60				
FLA	12.9	13.8	20.0	24.3
MCA	15.5	16.7	23.8	29.1
MFS	25A	30A	40A	50A
380/3/50				
FLA	7.2	7.0	10.7	12.5
MCA	8.4	8.4	12.8	15.0
MFS	15A	15A	20A	25A
460/3/60				
FLA	6.6	6.9	10.7	12.5
MCA	7.75	8.3	12.8	15.0
MFS	15A	15A	20A	25A
575/3/60				
FLA	6.0	6.0	8.0	10.5
MCA	7.2	7.2	9.4	12.5
MFS	15A	15A	15A	20A

TABLE NO.17

WATER COOLED CONDENSING UNIT - WCCU

VOLT/PH/HZ	WCCU-23*	WCCU-33*	WCCU-43*	WCCU-53*
208/3/60				
FLA	10.5	11.4	15.0	19.3
MCA	13.1	14.3	18.8	24.1
MFS	25A	25A	35A	45A
380/3/50				
FLA	4.6	5.7	8.2	10.0
MCA	5.7	7.1	10.3	12.5
MFS	15A	15A	20A	25A
460/3/60				
FLA	4.3	5.7	8.6	10.0
MCA	5.4	7.1	10.3	12.5
MFS	15A	15A	20A	25A
575/3/60				
FLA	4.3	4.7	6.4	7.9
MCA	5.4	5.9	8.0	9.9
MFS	15A	15A	15A	20A

*DENOTES VOLTAGE 2=208/230, 3=380/415, 4=460, 5=575

ELECTRICAL DATA

AIRCOOLED CONDENSER (ACC) — TABLE NO.18

	VOLTAGE/ PHASE/ HERTZ														
	208V/1/60			208-230V/3/60			380V/3/50			460V/3/60			575V/3/60		
MODEL	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
ACC-2	2.9	3.6	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ACC-5	4.5	5.6	15	4.5	5.6	15	2.3	2.9	15	2.3	2.9	15	2.3	2.9	15
ACC-5	4.5	5.6	15	4.5	5.6	15	2.3	2.9	15	2.3	2.9	15	2.3	2.9	15
ACC-6	4.5	5.6	15	4.5	5.6	15	2.3	2.9	15	2.3	2.9	15	2.3	2.9	15

DRY FLUID COOLER (DFC) — TABLE NO.19

	VOLTAGE/ PHASE/ HERTZ														
	PUMP	208V/1/60			208-230V/3/60			380V/3/50			460V/3/60			575V/3/60		
MODEL	HP	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
DFC-3	0.75	9.8	11.5	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DFC-6	0.75	10.9	13.1	15	7.3	8.4	15	3.7	4.3	15	3.7	4.3	15	3.7	4.3	15
DFC-8	1.0	12.5	14.5	20	8.1	9.2	15	4.1	4.7	15	4.1	4.7	15	4.1	4.7	15
DFC-11	1.0	17.0	19.0	25	12.6	13.7	15	6.4	7.0	15	6.4	7.0	15	6.4	7.0	15

FAN MOTOR AND PUMP MOTOR ELECTRICAL DATA — TABLE NO.20

	VOLTAGE/ PHASE/ HERTZ									
	208V/3/60		230V/3/60		380V/3/50		460V/3/60		575V/3/60	
HORSEPOWER	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA
0.75	3.0	18.5	2.9	16.8	1.2	8.4	1.5	8.4	1.0	6.6
1.0	3.9	23.1	3.6	21.0	1.6	10.8	1.8	10.8	1.4	8.4
1.5	5.7	33.0	5.2	30.0	2.1	15.0	2.4	15.0	2.0	12.6

HERMETIC COMPRESSORS — TABLE NO.21

	VOLTAGE/ PHASE/ HERTZ					
	208-230V/3/60		460V/3/60		575V/3/60	
SIZE-TONS	RLA	LRA	RLA	LRA	RLA	LRA
2	8.5	65.0	4.5	27.0	N/A	N/A
3	14.3	74.0	6.7	41.0	N/A	N/A
4	17.9	90.0	8.6	45.0	6.0	30.0
5	21.4	130.0	9.6	65.0	7.9	52.0

SCROLL COMPRESSORS — TABLE NO.22

	VOLTAGE/ PHASE/ HERTZ					
	208-230V/3/60		460V/3/60		575V/3/60	
SIZE-TONS	RLA	LRA	RLA	LRA	RLA	LRA
2	8.6	55.0	4.3	27.0	4.3	23.0
3	11.4	77.0	5.7	39.0	4.7	30.6
4	15.0	99.0	8.2	49.5	6.4	40.0
5	19.3	137.0	10.0	62.0	7.9	50.0

REHEAT — TABLE NO.23

	VOLTAGE/ PHASE/ HERTZ				
kW.	208V/3/60	230V/3/60	380V/3/50	460V/3/60	575V/3/60
6.0	16.7	15.1	9.1	7.5	6.0
10.0	27.8	25.1	15.2	12.6	10.0

HUMIDIFIER — TABLE NO.24

		VOLTAGE/ PHASE/ HERTZ				
TYPE	kW.	208V/3/60	230V/3/60	380V/3/50	460V/3/60	575V/3/60
INFRARED	4.8	13.3	12.1	7.3	6.0	N/A
NORTEC	3.4	16.3	14.8	9.8	7.7	6.2

NOTES:

1. **LRA**=Locked Rotor Amps, **RLA**=Rated Load Amps, **FLA**=Full Load Amp, **MCA**=Minimum Circuit Ampacity, **MFS**=Maximum recommended fuse size
2. Full load amps and minimum circuit ampacity is not the total sum of full load amps of all the components. It is the sum of components operating in the dehumidification mode. Humidifier and Reheat do not operate simultaneously.
3. All applicable portions of, NATIONAL, STATE, LOCAL, electrical codes, OSHA standards, and FIRE MARSHALL requirements must be consulted and complied with prior to installation of this equipment.
4. **N/A**: Not Applicable

INSTALLATION

Prior to placing the unit make sure proper clearances are available:

Front	36"
Right Side	36"
Left Side	36"
Rear	1"

UTILITY CONNECTIONS

Electrical and piping supply could be brought in two ways.

1. Rear right hand side
2. Bottom Right hand side

Bring connections where ever suitable.

Provide isolation shut off valves for all pipes external to the unit.

SETTING OF THE UNIT

Locate the unit so the desired clearances are provided, paying special attention to floor height for downflow units.

Make sure that piping under floor does not interfere with the discharge air of the unit.

UPFLOW: The most desirable location to maintain appearances is against a wall. All incoming pipes and wires can be fed to the unit directly through the wall. If the room is equipped with a raised floor, the unit can be located anywhere.

DOWNFLOW: The unit can be located anywhere on the raised floor.

AIR FLOW: The standard unit is supplied as ordered upflow or downflow. The return air is drawn through the front of the unit and discharged into the room through the top of the unit for the upflow version. The return air is drawn through the top of the unit and discharged into the room underneath the floor.

CONNECTIONS

In connecting the unit, five items must be addressed. They are:

1. Structural Support
2. Electrical Supply
3. Humidifier Connection
4. Condensate Drain Connection
5. Condenser Connections for
   a. Water Cooled/Glycol Cooled
   b. Air Cooled hot gas and liquid line piping

1. **STRUCTURAL SUPPORT:** The unit can be installed directly on the floor or on the raised floor without the need for any special support. The floor should be level. Gasket material should be placed between the bottom perimeter of the unit and the floor on the downflow unit to act as vibration isolator. The gasket should be foam, 1/2" x 3/8". No gasket is needed on the upflow unit.

2. **ELECTRICAL SUPPORT:** A fused disconnect or a HVAC approved circuit breaker must be field provided and installed per the National Electric Code. There is access to the unit for electrical connection through the unit bottom or the lower portion of the unit back. Be sure unit is properly grounded.

   A fused disconnect must be provided for the air cooled condenser for air cooled units and dry fluid cooler for the glycol cooled units.

3. **HUMIDIFIER CONNECTION:** The humidifier is to be provided with a 1/2" O.D. feed line and shut off valve. To connect the humidifier, bring in a 1/4" O.D. copper line and connect to the humidifier shut off valve with compression fitting. Access to this line is through the back or through the unit bottom. Water pressure must not exceed 50 psig.

4. **CONDENSATE DRAIN CONNECTION:** This must be equipped with 3/4" O.D. drain line. The contractor must provide and install a P-trap in this line at the lowest point in the unit or below the unit. A minimum slope of 1/4" per foot must be provided on the horizontal run.

5a. **WATER CONNECTIONS:** For water cooled units where water supply shall be either city water or cooling tower. Provide a shut off valve in supply and return line for isolation.

FOR GLYCOL UNITS:

A close circuit dry fluid cooler is to be used. Provide shut off valves for isolation at supply and return at the unit and at the dry fluid cooler.

Note: Glycol and water cooled units are designed for maximum of 150 psig water pressure. Higher pressure units are available; refer to unit nameplate.

5b. AIR COOLED UNITS: These units are designed to be used with a remote air cooled condensers. Standard units are designed for ambient controls down to 0°F. Air cooled condensers are provided with variable speed fan motor.

Condensers are dropped shipped from another source. Control panels for the condenser are shipped with the air conditioners. This control panel is to be wired and connected in the field. Provide a rain tight fused disconnect switch. Single fan units are generally single phase.

Two 18 gauge wires are required between the air conditioner and the condenser to interlock indoor unit with the outdoor unit. Run wires in conduit. The connection is 24 VAC.

Suggested pipe sizes are: Refer to the ASHRAE guide for proper sizing and layout. **A CHECK VALVE MUST BE INSTALLED IN THE DISCHARGE LINE.**

FOR UNITS REQUIRING AMBIENT BELOW 70°F.
An optional head pressure control is provided. It is shipped with the air conditioner for field mounting; refer to the brochure enclosed in the box.

Receivers are installed inside the air conditioners.

Suggested pipe sizes are:
Hot gas - 7/8" - 50 Ft. TEL
Liquid Drain - 1 1/8" - 50 ft TEL (refer to ASHRAE guide for details)
(Liquid drain line should be sized based on 100 FPM velocity)

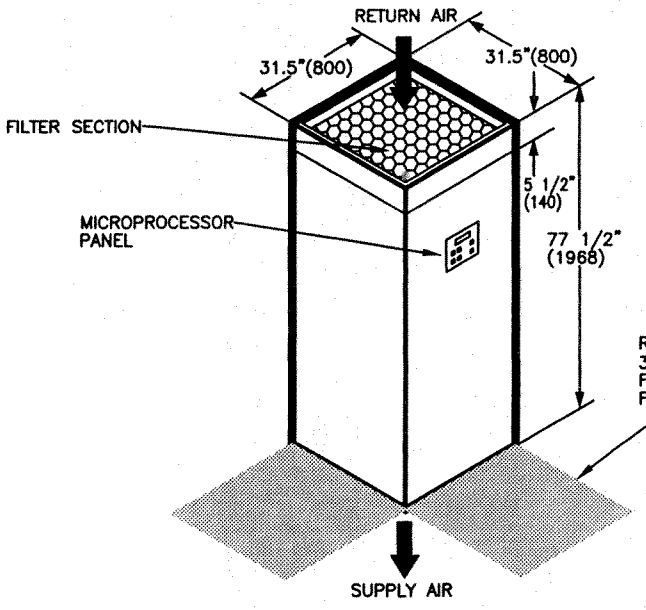
* Once it is ascertained as to what kind of low ambient the unit is provided with, install proper size pipes and evacuate using triple evacuation method.
* Charge units based on superheat, set superheat not lower than 10°F and not greater than 15°F.
* Units provided with head pressure control valve and ambient below -10°F will require additional charge.
* Check valve - provide a check valve for the discharge line at the air cooled condenser.

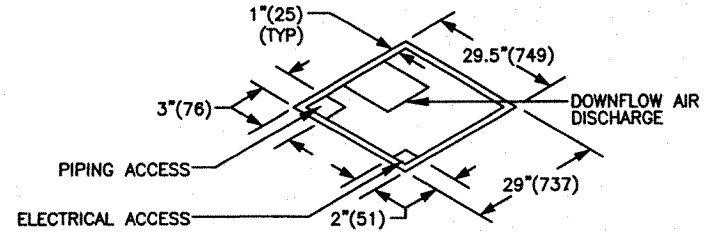
ELECTRICAL CONNECTIONS: The power supply to the air cooled condenser must be brought through a fused disconnect of a proper size, to be supplied by the installing contractor to adequately handle the electrical requirements of the condenser. Control panel is factory supplied and is packaged separately. This panel is to be field mounted.

DIMENSIONAL DATA

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	NEW RELEASE	1/26/01	BF

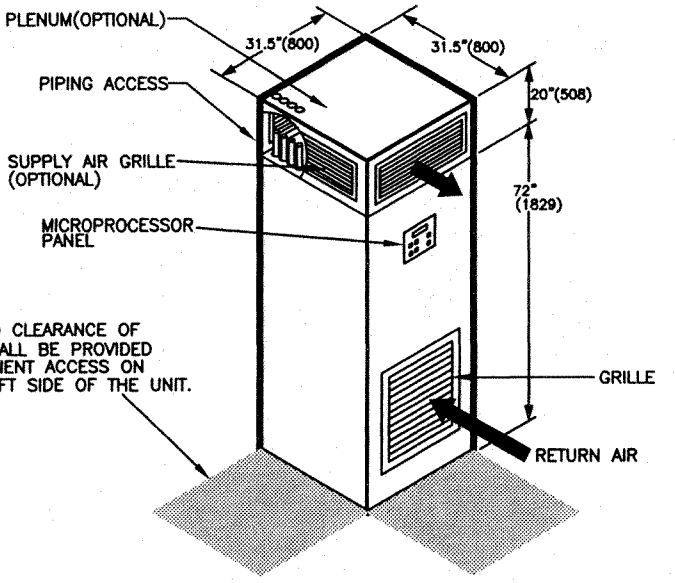
DOWNFLOW UNIT

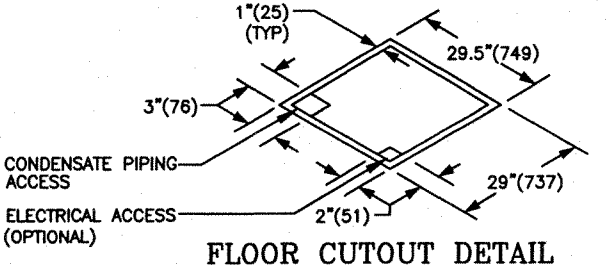




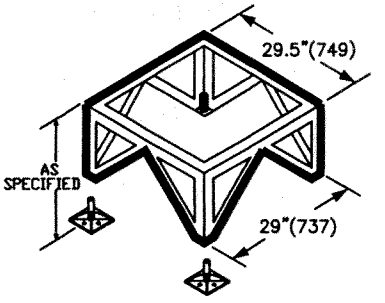
FLOOR CUTOUT DETAIL

UPFLOW UNIT





FLOOR CUTOUT DETAIL



(OPTIONAL) FLOOR STAND DETAIL

CKA/CKW/CKC-III

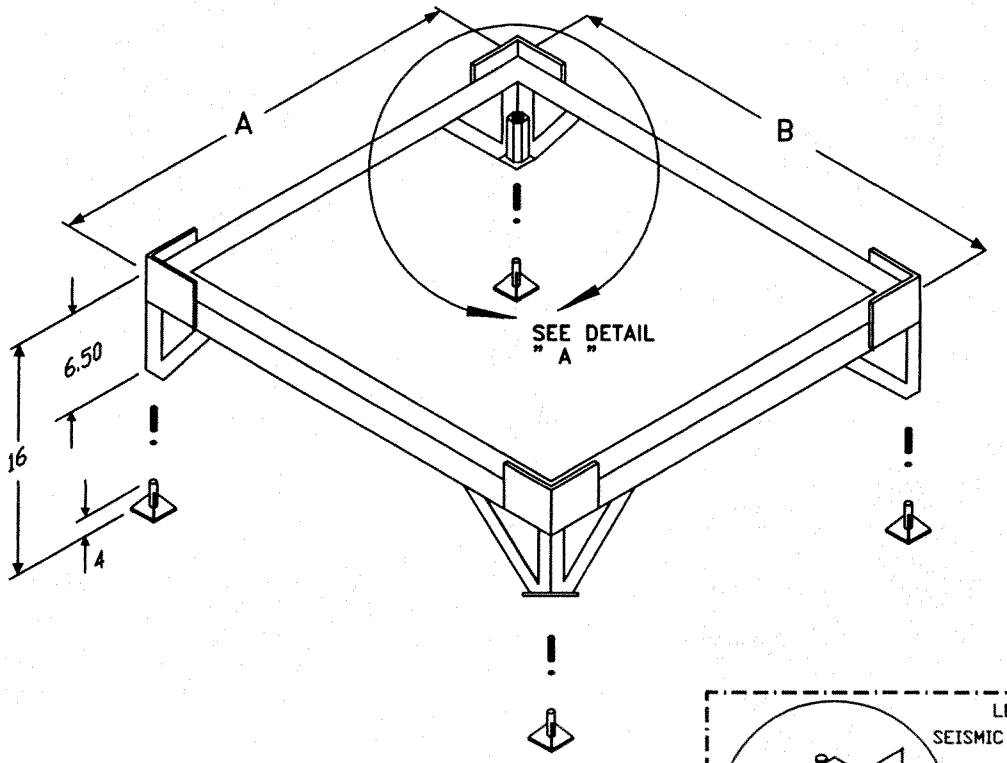
COMPU-AIRE,inc.

COMPU-KOOL III
DIMENSIONAL DETAIL

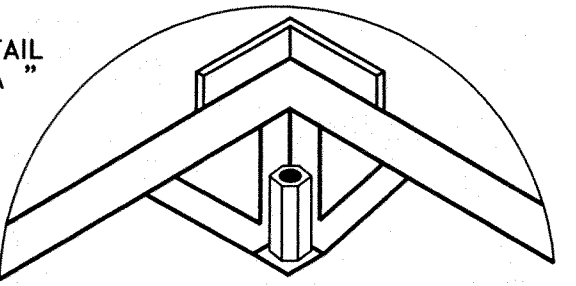
DRAWN BY B.FUNDERWHITE	DATE 1/26/01
APPROVED BY: CJB	REVISED
JOB NO.	DWG NO. 626-900-038

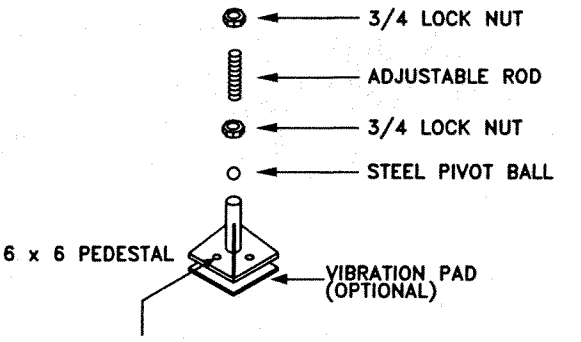
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
B	SEE ECO	11/5/93	BF

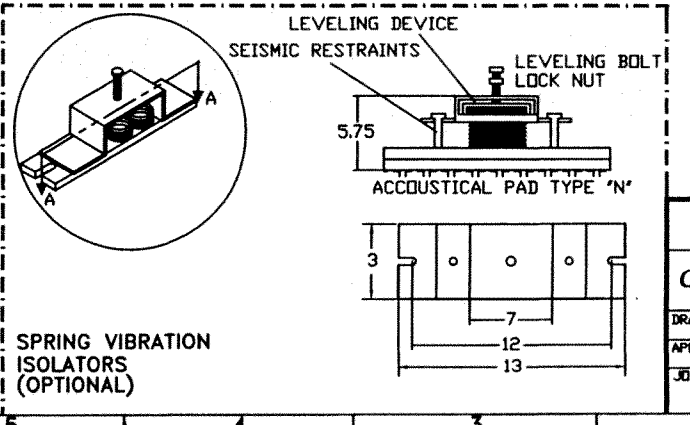
UNIT	A	B
CK-III	29	29.5



DETAIL
" A "







SPRING VIBRATION
ISOLATORS
(OPTIONAL)

COMPU-AIRE,inc.

COMPU-KOOL FLOOR STAND

DRAWN BY B.FUNDERWHITE	DATE 10/5/86
APPROVED BY:	REVISED 11/5/93(B)
JOB NO. C-13.	DWG NO. 620-900-006

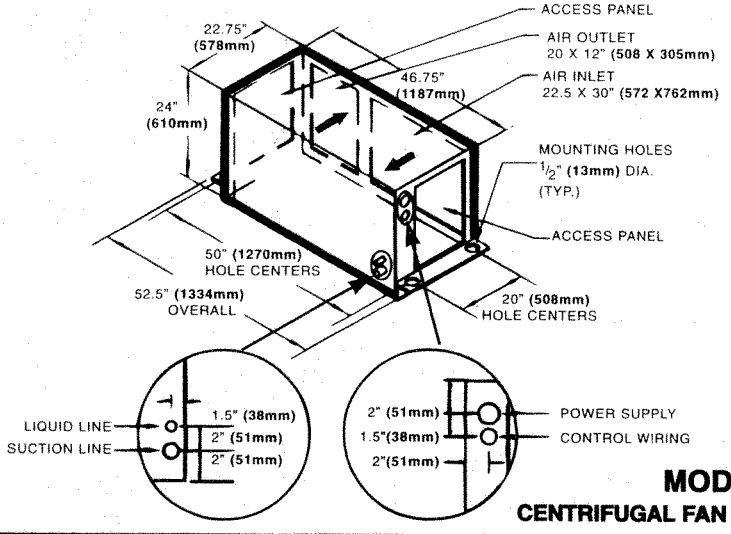
bill fun, compu-aire 3/1/01 9:59 AM 620-900-006.dwg

13

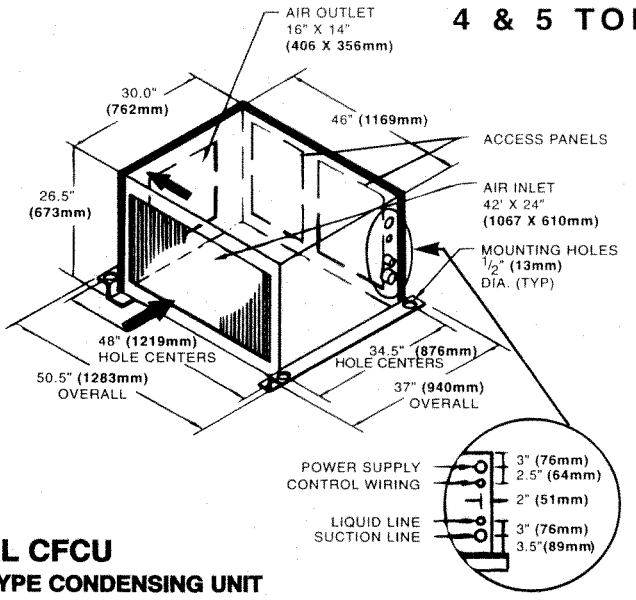
DIMENSIONAL DATA

FOR CONDENSING UNITS

2 & 3 TON



4 & 5 TON



MODEL CFCU

CENTRIFUGAL FAN TYPE CONDENSING UNIT

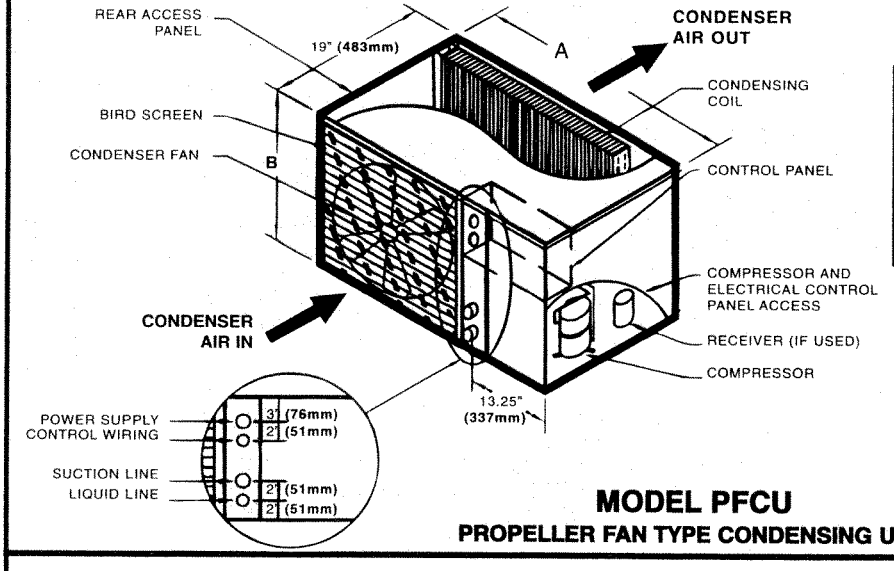
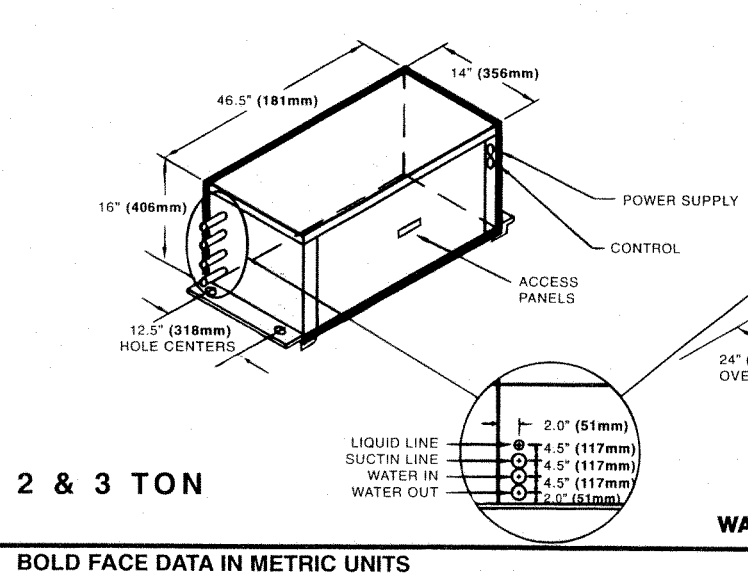


TABLE NO. 12				
PFCU	NOMINAL	A	B	WEIGHT
MODEL	TONNAGE	in. (mm)	in. (mm)	lbs (kg)
02	2	40" (1016)	23" (584)	300 (136)
03	3	48" (1219)	31" (787)	325 (147)
04	4	54" (1372)	37" (940)	340 (154)
05	5	54" (1372)	37" (940)	340 (154)

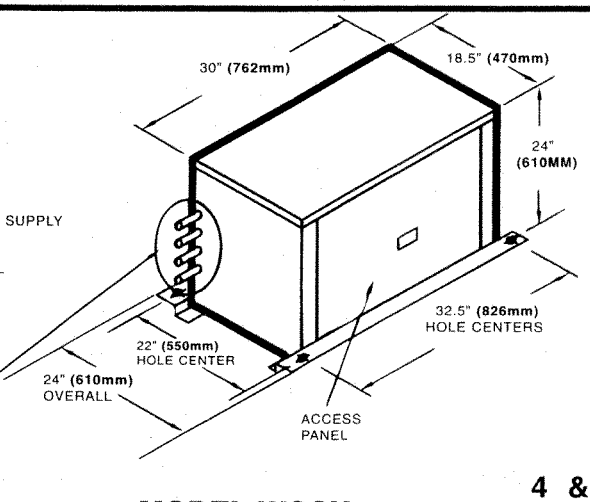
MODEL PFCU

PROPELLER FAN TYPE CONDENSING UNIT

2 & 3 TON



4 & 5 TON



MODEL WCCU

WATER COOLED CONDENSING UNIT

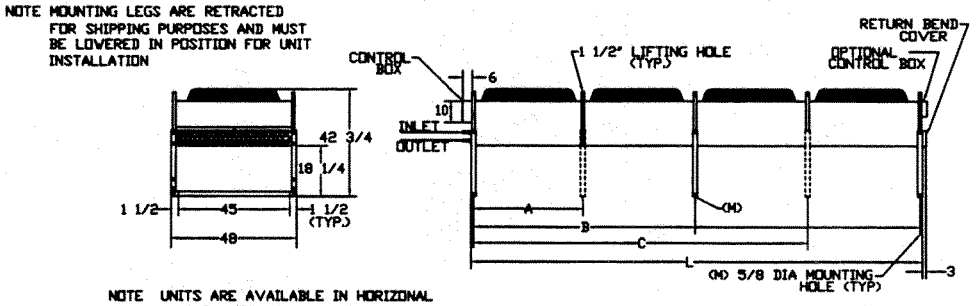
BOLD FACE DATA IN METRIC UNITS

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	NEW RELEASE	11/24/99	BF

AIR COOLED CONDENSER SELECTIONS AT VARIOUS AMBIENTS

		95°F AMBIENT 120°F COND ALTITUDE			105°F AMBIENT 125°F COND ALTITUDE			115°F AMBIENT 130°F COND ALTITUDE		
UNIT MODEL	CIRCUITS	SEA LEVEL	2500 FT	5000 FT	SEA LEVEL	2500 FT	5000 FT	SEA LEVEL	2500 FT	5000 FT
CKA-02	1	ACC-2	ACC-3	ACC-3	ACC-3	ACC-3	ACC-3	ACC-5	ACC-5	ACC-5
CKA-03	1	ACC-5	ACC-5	ACC-5	ACC-5	ACC-5	ACC-6	ACC-7	ACC-7	ACC-7
CKA-04	1	ACC-5	ACC-6	ACC-7	ACC-7	ACC-7	ACC-7	ACC-8	ACC-9	ACC-11
CKA-05	1	ACC-6	ACC-7	ACC-7	ACC-8	ACC-9	ACC-9	ACC-11	ACC-13	ACC-13
CKA-06	1	ACC-07	ACC-9	ACC-9	ACC-11	ACC-11	ACC-11	ACC-13	ACC-13	ACC-13
CAA-08	2	ACC-09	ACC-13	ACC-13	ACC-13	ACC-15	ACC-17	ACC-19	ACC-21	ACC-21
CAA-10	2	ACC-11	ACC-13	ACC-15	ACC-17	ACC-17	ACC-17	ACC-21	ACC-24	ACC-24
CAA-15	2	ACC-17	ACC-19	ACC-21	ACC-24	ACC-24	ACC-28	ACC-30	ACC-37	ACC-37
CAA-20	2	ACC-24	ACC-24	ACC-28	ACC-30	ACC-30	ACC-37	ACC-40	ACC-45	ACC-50
CAA-25	2	ACC-28	ACC-30	ACC-30	ACC-37	ACC-37	ACC-40	ACC-50	ACC-56	ACC-56
CAA-30	2	ACC-37	ACC-40	ACC-40	ACC-50	ACC-50	ACC-56	ACC-62	ACC-67	ACC-67

Physical Data



NOTE UNITS ARE AVAILABLE IN HORIZONAL AIRFLOW ARRANGEMENTS CONTACT COMPU-AIRE FOR DETAILS

FIGURE 1

TABLE 1

MODEL NUMBER	CONDENSER CAPACITIES (MBH) R-22 REFRIGERANT					
	1 TD	10 TD	15 TD	20 TD	25 TD	30 TD
ACC-5	2.7	27.1	40.7	54.2	67.8	81.3
ACC-6	3.0	29.7	44.6	59.4	74.3	89.1
ACC-7	3.7	37.1	55.7	74.2	92.8	111.3
ACC-8	4.4	44.2	66.3	88.4	110.5	132.6
ACC-9	4.8	47.6	71.4	95.2	119.0	142.8
ACC-11	5.7	87.0	85.5	114.0	142.5	171.0
ACC-13	7.5	75.0	112.5	150.0	187.5	225.0
ACC-15	7.9	79.0	118.5	158.0	197.5	237.0
ACC-17	9.3	93.0	139.5	186.0	232.5	279.0
ACC-19	9.8	98.0	147.0	196.0	245.0	294.0
ACC-21	11.2	112.0	168.0	224.0	280.0	336.0
ACC-24	12.8	128.0	192.0	256.0	320.0	384.0
ACC-28	14.3	143.0	214.0	286.0	357.5	429.0
ACC-30	15.5	155.0	232.5	310.0	387.5	465.0
ACC-37	18.3	183.0	274.5	366.0	457.5	549.0
ACC-40	20.0	200.0	300.0	400.0	500.0	600.0
ACC-45	22.0	220.0	330.0	440.0	550.0	660.0
ACC-50	23.7	237.0	356.5	474.0	529.5	711.0
ACC-56	26.5	265.0	397.5	530.0	622.5	795.0
ACC-60	28.9	289.0	438.5	578.0	722.5	867.0
ACC-62	30.5	305.0	457.5	610.0	762.5	915.0
ACC-67	33.8	338.0	507.0	676.0	845.0	1014.0
ACC-72	35.7	357.0	535.5	714.0	892.5	1071.0

TABLE 2

MODEL NUMBER	DIMENSIONS (IN.)					FAN AND MOTOR DATA							APPROX. NT WT. (LBS)
	A	B	C	D	L	CFM	QTY	DIAM.	MOTOR HP	QTY	DIAM.	MOTOR HP	
ACC-5	30				32-1/4	5200	1	24	3/4				220
ACC-6	30				32-1/4	5100	1	24	3/4				234
ACC-7	30				32-1/4	5000	1	24	3/4				270
ACC-8	30				32-1/4	4900	1	24	3/4				295
ACC-9	30				32-1/4	4800	1	24	3/4				305
ACC-11		60			62-1/4	10400	2	24	3/4				340
ACC-13		60			62-1/4	10200	2	24	3/4				355
ACC-15		60			62-1/4	1000	2	24	3/4				370
ACC-17		60			62-1/4	9800	2	24	3/4				400
ACC-19		60			62-1/4	9600	2	24	3/4				420
ACC-21		60	90		92-1/2	15000	3	24	3/4				510
ACC-24		60	90		92-1/2	14750	3	24	3/4				560
ACC-28		60	90		92-1/2	14550	3	24	3/4				630
ACC-30		60		120	122-1/4	2000	4	24	3/4				680
ACC-37		60		120	122-1/4	19500	4	24	3/4				740
ACC-40		60		120	122-1/4	19000	4	24	3/4				800
ACC-45		78	126		128-1/4	24850	1	24	3/4	2	30	1-1/2	820
ACC-50		78		174	176-1/4	37000	1	24	3/4	3	30	1-1/2	985
ACC-56		78		174	176-1/4	36400	1	24	3/4	3	30	1-1/2	1020
ACC-60		78		174	176-1/4	35850	1	24	3/4	3	30	1-1/2	1060
ACC-62		96		192	194-1/4	41000				4	30	1-1/2	1100
ACC-67		96		192	194-1/4	40500				4	30	1-1/2	1150
ACC-72		96		192	194-1/4	4000				4	30	1-1/2	1200

COMPU-AIRE,inc.

AIR COOLED CONDENSERS

DRAWN BY B.FUNDERWHITE	DATE 11/24/99
APPROVED BY:	REVISED
JOB NO.	DWG NO. 720-900-004

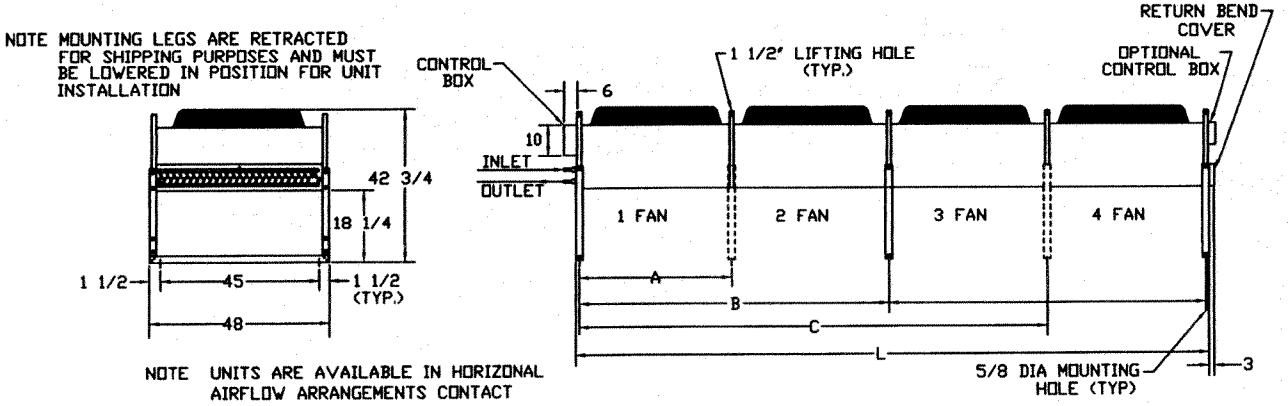
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	NEW RELEASE	11/24/99	BF

DRY FLUID COOLER (S)

95° AMBIENT TEMP 120°F ENTERING BRINE TEMP/110°F LEAVING BRINE @ SEA LEVEL. 40% GLYCOL/WATER MIXTURE

UNIT SIZE	REQ'D THR TD 25	COOLER MODEL NO. -CIRCUIT-	GPM U.S. (GAL.)	VOL GAL	PRES DROP FT.	CFM	MOTOR HP/QTY	APP NET TW/LBS	MOTOR AMP. SINGLE PHASE 208/230	460	MOTOR AMP. THREE PHASE 208/230	460	DIMENSIONAL DATA A	B	C	L	PIPE SIZE OD (INCH) IN	OUT
2 TON	27,900	DFC-3	8	1.5	4.8	2,400	3/4 (1)	146	2.9	N/A	N/A	N/A	23	N/A	N/A	25.25	1 1/2	1 1/2
3 TON	46,850	DFC-6-10	12	2.2	2.0	5,100	3/4 (1)	245	4.2	2.1	4.0	2	30	N/A	N/A	32.25	1 1/2	1 1/2
4 TON	56,06	DFC-8-15	15	3.8	1.6	4,900	3/4 (1)	295	4.2	2.1	1.0	2	30	N/A	N/A	32.25	1 1/2	1 1/2
5 TON	70,760	DFC-11-15	18.5	3.6	3.7	10,400	3/4 (2)	340	8.4	4.2	4.2	8	30	60	N/A	62.25	1 1/2	1 1/2
6 TON	79,250	DFC-11-15	30	3.6	3.7	10,400	3/4 (2)	340	8.4	4.2	8.0	4	30	60	N/A	62.25	1 1/2	1 1/2
8 TON	134,650	DFC-13-15	32	5.1	7.0	10,200	3/4 (2)	355	8.4	4.2	8.0	4	30	60	N/A	62.25	1 1/2	1 1/2
10 TON	146,625	DFC-17-20	40	6.7	5.7	9,600	3/4 (2)	400	8.4	4.2	8.0	4	30	60	N/A	62.25	1 1/2	1 1/2
15 TON	215,600	DFC-22-22	55	7.7	8.1	22,000	1 1/2 (2)	465	N/A	N/A	12.8	6.4	48	96	N/A	96.25	2	2
20 TON	274,000	DFC-31-30	70	10.0	8.4	20,500	1 1/2 (2)	550	N/A	N/A	12.8	6.4	48	96	N/A	96.25	2	2
25 TON	316,000	DFC-35-37	70	12.4	8.3	20,000	1 1/2 (2)	600	N/A	N/A	12.8	6.4	48	96	N/A	96.25	2 1/2	2 1/2
30 TON	450,000	DFC-42-45	100	11.1	5.2	32,000	1 1/2 (3)	800	N/A	N/A	19.2	9.6	N/A	96	144	146.25	3	3

1. ALL CONNECTIONS ARE MALE PIPE THREAD
2. SUPPLY AND RETURN CONNECTIONS ARE THE SAME
3. CONTROL PANEL & SURGE TANK SHALL BE SHIPPED FROM COMPU-AIRE FOR FIELD INSTALLATION
4. PIPE SIZES SHOWN ARE NOT NECESSARILY FIELD RUNS BETWEEN THE UNIT & THE DRY FLUID COOLER. INTERCONNECTING PIPING MUST BE PROPERLY SIZED, BASED ON ASHRAE & UNIFORM PLUMBING CODES.



COMPU-AIRE,inc.

DRY FLUID COOLERS

DRAWN BY B.FUNDERWHITE	DATE 11/24/99
APPROVED BY:	REVISED
JOB NO.	DWG NO. 720-900-003

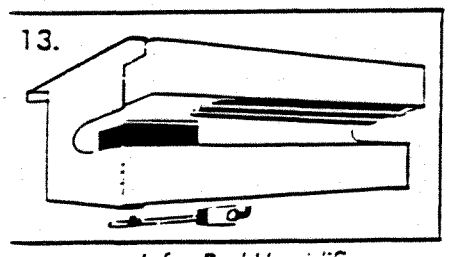
HUMIDIFIER PIPING CONNECTION

The standard humidifier supplied with COMPU-AIRE units is a disposable generator type humidifier. A 1/4" compression fitting is provided for the water supply, a 1/4" O.D. copper tubing should be used for make-up water.

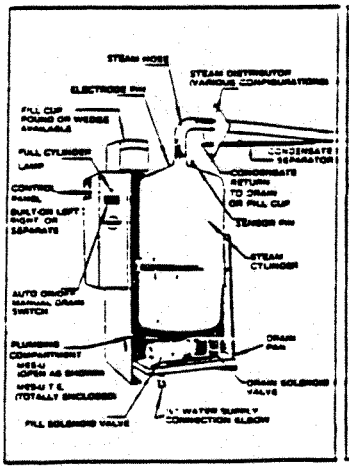
For the optional infra-red humidifier or the electric immersion, piping connections are identical to the standard humidifier. All require a 1/4" tubing.

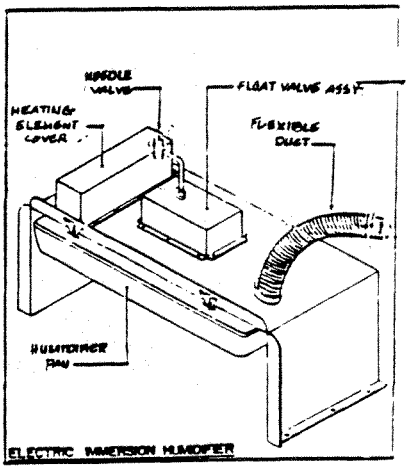
A water line shut off valve MUST be provided outside the air conditioner for future disconnection and service. In addition, an in line water pressure regulator and a strainer should be installed in the make-up water line. Water pressure should be set between 30 and 50 psig.

For infra-red and electric immersion the float is factory adjusted to maintain minimum water in the humidifier where the elements are just submersed in water. For field adjustment, loosen the float arm, or slightly bend.



Infra-Red Humidifier





LEAK TESTING

No installation is complete until the entire system has been thoroughly checked for leaks. This includes water tubing, humidifier make-up water and condensate drain lines and refrigeration lines.

STEAM GENERATOR TYPE HUMIDIFIER

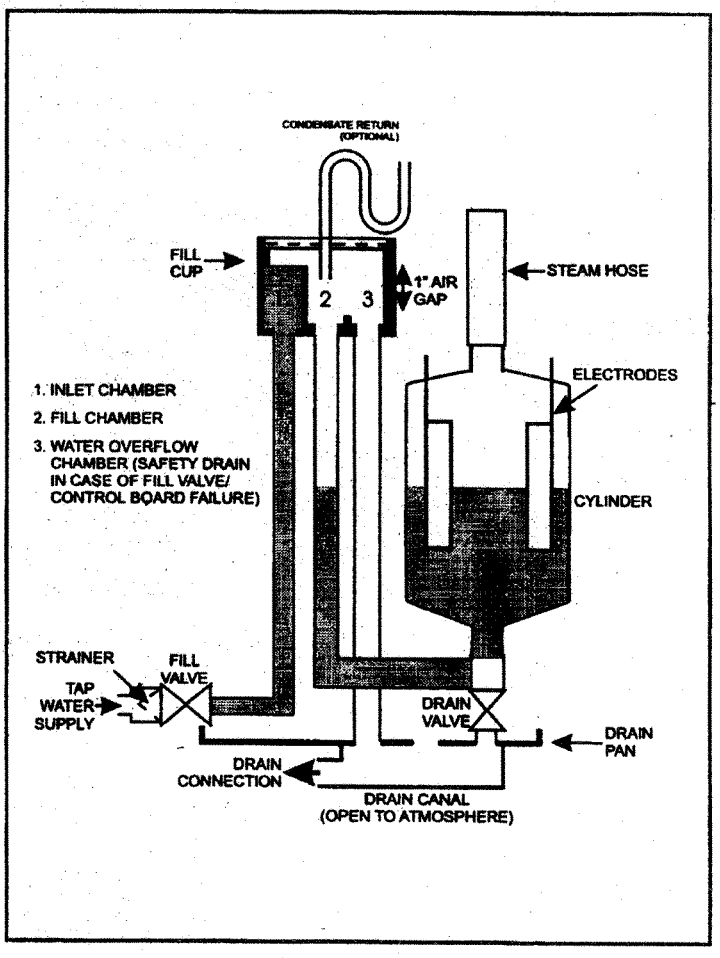
PRINCIPLE OF OPERATION:

When the humidistat calls, the cylinder fills to 110% of the Full Load Amperage (F.L.A.) or to the top of the cylinder, whichever comes first.

If it reaches 110% F.L.A. the water heats and boils away to a level giving only 90% F.L.A.

An electronic timer uses the rate of fall to determine the water level. The objective is to concentrate current-carrying minerals in the cylinder so that a smaller volume of water is required to produce the rated steam output.

This achieve the longest life for the disposable cylinder because of minimum electrode coverage and uses less energy because the high concentration allows minimal drain rate.



When it reaches 90% F.L.A. the fill valve will open refilling cylinder to 110% FLA. On occasion, the drain valve will also come on if water level is too high a concentration and the requirement for a dilution of the water in the cylinder.

If the water reaches top of cylinder before 110% F.L.A. the fill valve shuts off via the sensor and fill-boil-fill-boil cycle continues, cycling off the red full cylinder light until the concentration becomes high enough to reach 100% F.L.A. Then the following described control process takes over.

WATER SUPPLY AND PLUMBING

1) The orifice in the fill valve(s) is sized for an extended water pressure range of 30 to 85 psi.

2) For water pressure between 15 and 30 psi, notify the factory and the next larger size of fill valve will be supplied.

3) For cases below 15 psi, notify the factory and fill valve with largely oversized orifice will be supplied.

4) For cases above 85 psi, install a pressure reducing valve in the water feed line to the unit. Otherwise insufficient cylinder water will drain when fill and drain mix during the automatic dilution cycle.

5) With extremely dirty or muddy water sources, e.g. some well sources, ensure proper filtration by adding and external filter to the water line entering the unit. (Consult factory for accessories such as filters).

6) DO NOT soften water with this humidifier unit because it is much too conductive.

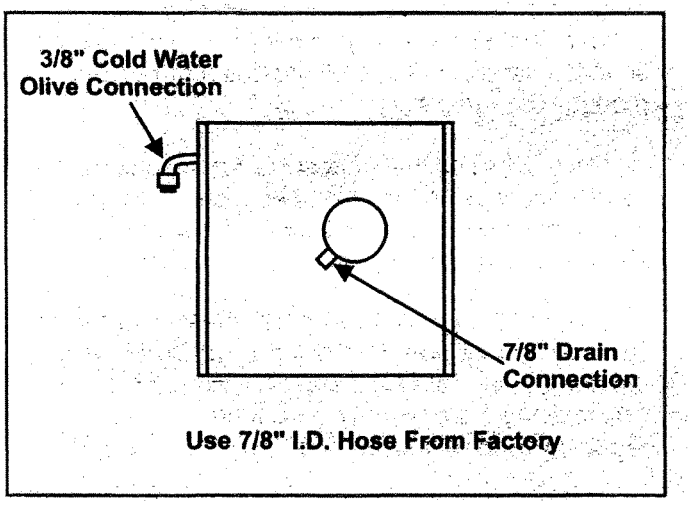
7) DO NOT use completely demineralized water with the this humidifier unit as it is the minerals that allow the electrode principle to work.

8) DO NOT use a hot water source as it will cause deposits to eventually block the fill valve orifice.

Water Connection

1) A copper compression olive type coupling for 1/4" soft copper tubing is provided with unit and requires no soldering for the water connection to the unit.

2) An isolating gate valve should ALWAYS be placed in feed water line allowing service of the fill valve.



Bottom view of MES-U unit

3) Each unit is fitted with a fill solenoid valve located on the base drain pan. Flow orifices are designed for water pressures from 30-85 psi and are protected by the built-in strainer.

4) For inlet water pressure outside this range, the factory should be contacted. (See also water supply section)

HUMIDIFIER START-UP:

Check to see that the unit is securely mounted on a level surface with the proper drain and water supply. Check for correct voltage with appropriately sized service. Check that the steam distributor, steam supply hose and condensate line are correctly installed and routed back to the unit. Ensure that the external control humidistat is located in an area to properly sense the relative humidity to be maintained by the humidifier, and that the inter-connecting low voltage wires between the humidistat and unit's control terminal strip are in accordance with the wiring diagram.

Check **all electrical connections** for wires which may have become **loose in shipping**. Components burnt due to loose connection are NOT under warranty.

Check electrode plugs to ensure they are pressed firmly onto the electrode pins.
Important: Loose connections will cause overheating of the cylinder plugs and probably melting of the plugs and/or cylinder.

Open the isolating gate valve in the feed water line to the unit.

Make sure the humidistat is set high enough to call for humidification.

Turn on the main disconnect in the primary service feeding the unit and check that unit has power at the primary terminal block.
"PUSH THE AUTO ON/OFF/DRAIN SWITCH TO "ON".

Water will start to enter the cylinder through its bottom port and rise in the cylinder to a point determined by the solid state control circuitry.

It is not unusual upon initial start-up for the water to fill the cylinder an cycle on the red high water sensor light.

The red light simply acts as a safety to shut off the fill valve and prevent over fitting. With the red light on, the water in the cylinder will continue to heat an after a few minutes start to boil. After the boiling action of the water has lowered the water level below the sensor at the top of the cylinder, the red light will go out and the fill solenoid will again open until the cylinder is again full.

This cycling of the red light and fill valve will continue until the unit's full output capacity is reached after which the water level will automatically lower itself in the cylinder. (The increased concentration allows for lower electrode coverage while maintaining the same output). When a stabilized condition is reached the water will be boiling close to the cylinder seam level. The solid state circuitry will maintain the proper concentration in the cylinder by introducing short drains only when necessary.

If the cylinder is manually drained, the above process will repeat itself.

LOW WATER CONDUCTIVITY

Should normalization of the unit be required immediately after start-up, the installer may speed up the process by artificially increasing water conductivity. The installer should dissolve half a teaspoon of table salt (no more) in a cup of water and add it to the cylinder by means of the fill cup attached to the plumbing section.

Open the plumbing compartment and add salt solution through cylinder outlet. Excessive amounts of salt will result in erratic operation of the unit, however, normalization of the unit will occur automatically through the solid-state control sequence.

CAPACITY ADJUSTMENT

The M.E.S. series of humidifiers are factory set to cover most normal conditions. If an extreme situation is encountered notify the factory for instructions.

CYLINDER REPLACEMENT

After an extended period of operation in accordance with life expectancy information, the cylinder is completely used as indicated by a red light illuminated on the face of the cabinet. When this condition is reached, a new replacement cylinder is to be installed.

NOTE: Red light may come on during initial start-up but does not mean cylinder replacement. See "Humidifier Start-up" Section

Consult factory or agent for replacement. Quote the cylinder model form the white 3-digit label on the cylinder or quote model, voltage and serial number from unit specification label.

When to replace the stem cylinder:
The steam cylinder is disposable and must be replaced at the end of cylinder life. Cylinder life is dependent on water supply conditions and humidifier usage. Failure to replace the cylinder at the end of cylinder life may result in unit damage.

Extended Shutdown:
Any time that the unit is going to be shut down for an extended period of time, including summer shutdown, **ALWAYS drain** down the cylinder before disconnecting power. Otherwise, the electrodes are subject to harmful corrosion which drastically shortens the cylinder life. Do not leave the switch in the DRAIN position indefinitely as the drain coil could burn out. Leave the switch in the OFF position and

REMOVING THE CYLINDER

1) Turn off the water supply to the unit

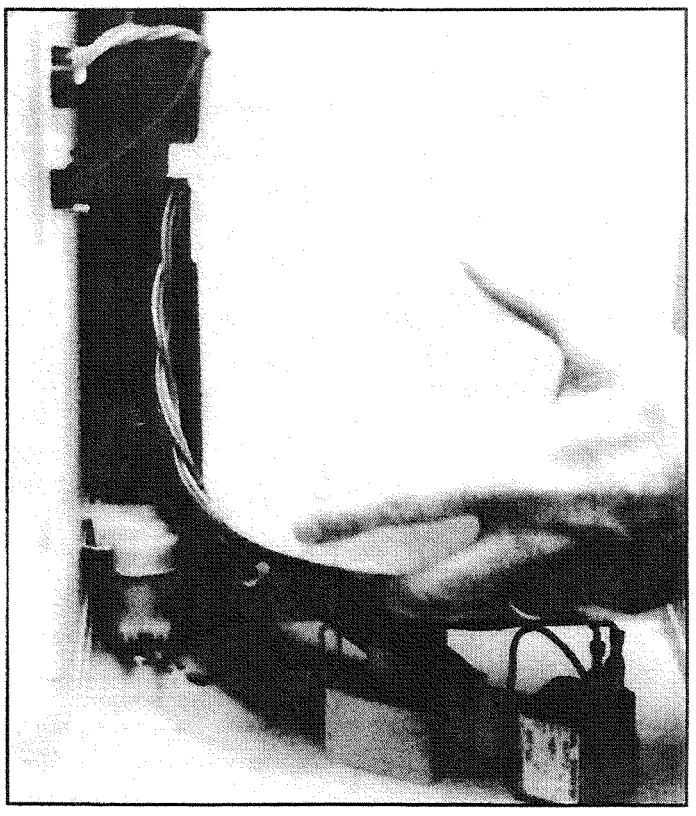
2) The old cylinder must be drained completely before removing. This is done by pushing the auto on/off drain switch to the "drain" position.

3) When completely drained, push the auto/on/off drain switch to the "off" position.

4) Open the main disconnect during the entire cylinder change operation.

5) The power wires to the cylinder are attached by cylinder plugs to the electrode pins on top of the cylinder. Pull these plugs vertically off the pins.

6) Using slot screw driver, loosen the steam hose clamp(s) and pull steam hose off vertically.



Cylinder Removal

7) The cylinder is now ready to be lifted out of the unit.

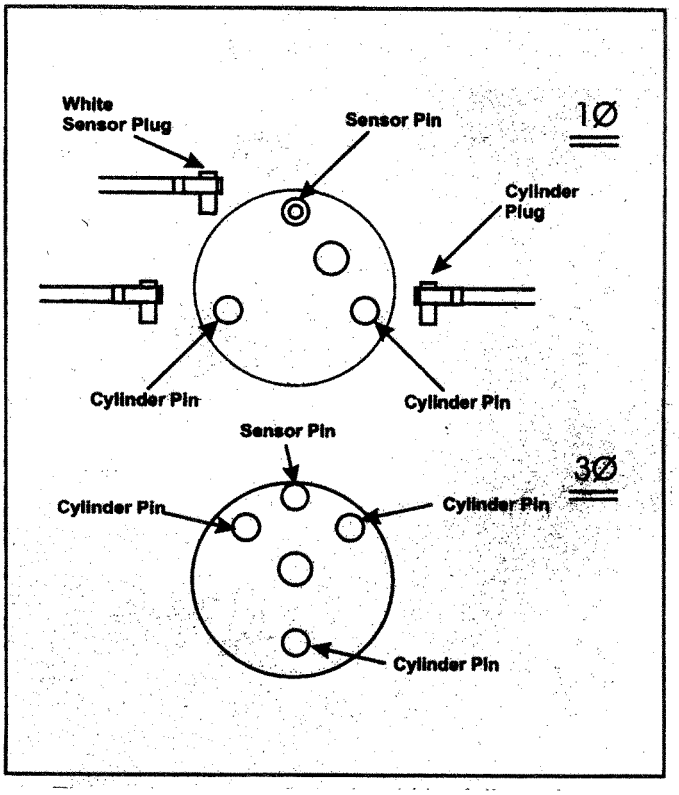
INSTALLING THE NEW CYLINDER

1) The reverse procedure should be followed to install a new cylinder. The main disconnect is to be left open until the cylinder is completely installed and reconnected.

2) Ensure that the cylinder mounting stubs are seated properly in the allotted side mounting slots within the unit.

3) The white cylinder plug on all units is for the sensor electrode which always goes on the single pin offset from the others.

4) Ensure that cylinder plugs are very snug on the pins.



Cylinder Plugs

5) For loose fitting plugs, a temporary solution is to squeeze plugs with a pair of pliers before installing. Since loose plugs may generate enough heat to melt and destroy the plug and cylinder new plugs must be ordered.

TROUBLE-SHOOTING HUMIDIFIER

Auto on/off/drain switch in "on" position-unit will not fill:

When the on/off control circuit is made and the "auto on/off/drain" switch is pushed to "on", the 24 volt holding coil of the primary contactor should energize. The resulting magnetic pull closes the high voltage contacts with a distinct and audible "clunk". If the contactor will not make, then inspect the following while referring to the wiring diagram.

1) Check for 24VAC across pins 18 and 26.
2) Jumper the humidistat on external control terminal strip. If contactor operates then control system is at fault.
3) The low voltage 3 amp fuse located in the control box could be blown.

4) The contactor holding coil could be open of shorted.
5) The switch could be defective.

Recheck that the "auto/on/off drain" switch is still at "on". If it is, then shut off the main disconnect and check fuses or breaker of the main disconnect. If they are serviceable, turn power back on.

To test for a defective "auto/on/off drain" switch, connect a wire from the fuse directly to terminal 6 on the external control strip. If the contactor activates, the "on" side of the switch is defective. If the contactor does not activate, then the basic unit p.c. board could be defective.

If the 3 amp control fuse blows when the wire from the fuse touches terminal 6 on the external controls strip, contactor holding coil could be shorted. Replace the contactor if necessary.

Return wires to normal.

After the necessary components have been replaced and the contactors pull in, there is high voltage to the cylinder and the control sequence can begin.

Approximately 30 seconds after the contactor pulls in, the fill valve coil should energize. There is also a visible fill relay on the basic printed circuit board. It is the one located farthest from the C.T. core. The points on this relay must be touching in order for the fill valve could be energized.

If the points will not touch after the built-in time delay, then the sensor input may be interfering. To confirm, remove the red and black sensor wires from the terminal 6 and 10 on the PC board. Wait 30 seconds and if the fill relay point now touch, then sensor should be replaced. If they do not touch, then the PC board could be faulty. To confirm, disconnect the red wire from terminal 18 and touch it to terminal 14. If the fill valve coil activates then the basic PC board should be replaced. If it still does not activate then the fill valve coil should be replaced.

Having changed the necessary components, water starts filling the cylinder and begins to submerge the electrodes. Because of the high voltage across the electrodes, the water can now conduct electricity.

Red "Change Cylinder" light on - Water at top of cylinder:

- Common occurrence on start-up - See "Humidifier start up and Operation" section.
- If cylinder is old, it indicates replacement time (can be ordered from factory). See "When to replace steam cylinder" section..

Red "Change Cylinder" light on - water NOT at top of cylinder:

- Water foaming to top of cylinder to activate red light, also may be accompanied by arcing (flashing) inside cylinder

Water remains at high level and won't concentrate:

- Normal on cold start-up, can be accelerated by adding maximum 1 tsp. of salt to the cylinder (thorough the plastic fill cup) on fill cycle. "See Low Water Conductivity" section.
- If the unit has been operating extensively, observe for normal fill-boil-fill-boil cycle; no drain should be occurring. Check for leaking drain valve or back pressure.

Water beyond top of cylinder up into spout:

- Red light not on and fill still activated; jumper across connection of sensor on basic unit PC board, if fill remains on when connection is jumped, then basic PC board is faulty.
- If fill shuts off, then verify primary voltage to cylinder (contactor energized). If primary voltage is present, the high water sensor PCB is defective.

Unit drains continually:

- May be caused by foaming and/or back pressure, or leaking drain valve.
- Cylinder is almost empty, check for magnetic pull on drain solenoid indicating miswiring. If no pull, drain actuator is blocked open, remove, disassemble and clean.
- If drain is occurring through activated drain valve, valve is miswired or electronics are faulty – consult factory.
- If drain is occurring through the overflow on the fill cup, this is due to abnormal restriction on the steam line and back pressure forces water out of the cylinder, therefore, water cannot concentrate and level must stay high, review installation of steam line to ensure no blockages or excessive static pressure in air system.

INFRA-RED HUMIDIFIER

INFRA-RED HUMIDIFIER

This is type humidifier will probably require the most maintenance. During normal operation, deposits of mineral solids will be collected in the humidifier pan. It is necessary to thoroughly clean out the humidifier pan at regular intervals to ensure efficient operation. The frequency for this depends entirely on the nature of the water used, and the frequency at which the humidifier is called into operation. To begin with, it is recommended that the humidifier be checked every two weeks. When excessive scale has formed in the lower pan and on the heating elements, it will be necessary to thoroughly clean this pan.

To inspect the humidifier, de-energizes the power to the unit at the disconnect switch. Open the left and front access door. The humidifier is now fully exposed. Visually inspect the pan and the heating elements.

AUTO FLUSH SYSTEM

Compu-Aire Infra-Red Humidifier comes standard with an auto flush cleaning system. Every twenty-four (24) hours the auto flush system drains out the used (dirty) water for twenty (20) minutes. As the water drains, the flow (needle valve) opens valve and fills the pan with new water. An auto flush system can greatly increase the time between cleanings, but highly recommended that periodic checks and maintenance be taken.

CLEANING INFRA RED HUMIDIFIER

If cleaning of the humidifier is required, shut off the water supply at the valve located on the side of humidifier assembly. Disconnect the humidifier electrical plug, release the front pan latch, disconnect the auto flush hose (if used) and overflow drain connections. Remove the whole humidifier assembly to a nearby sink for thorough cleaning.

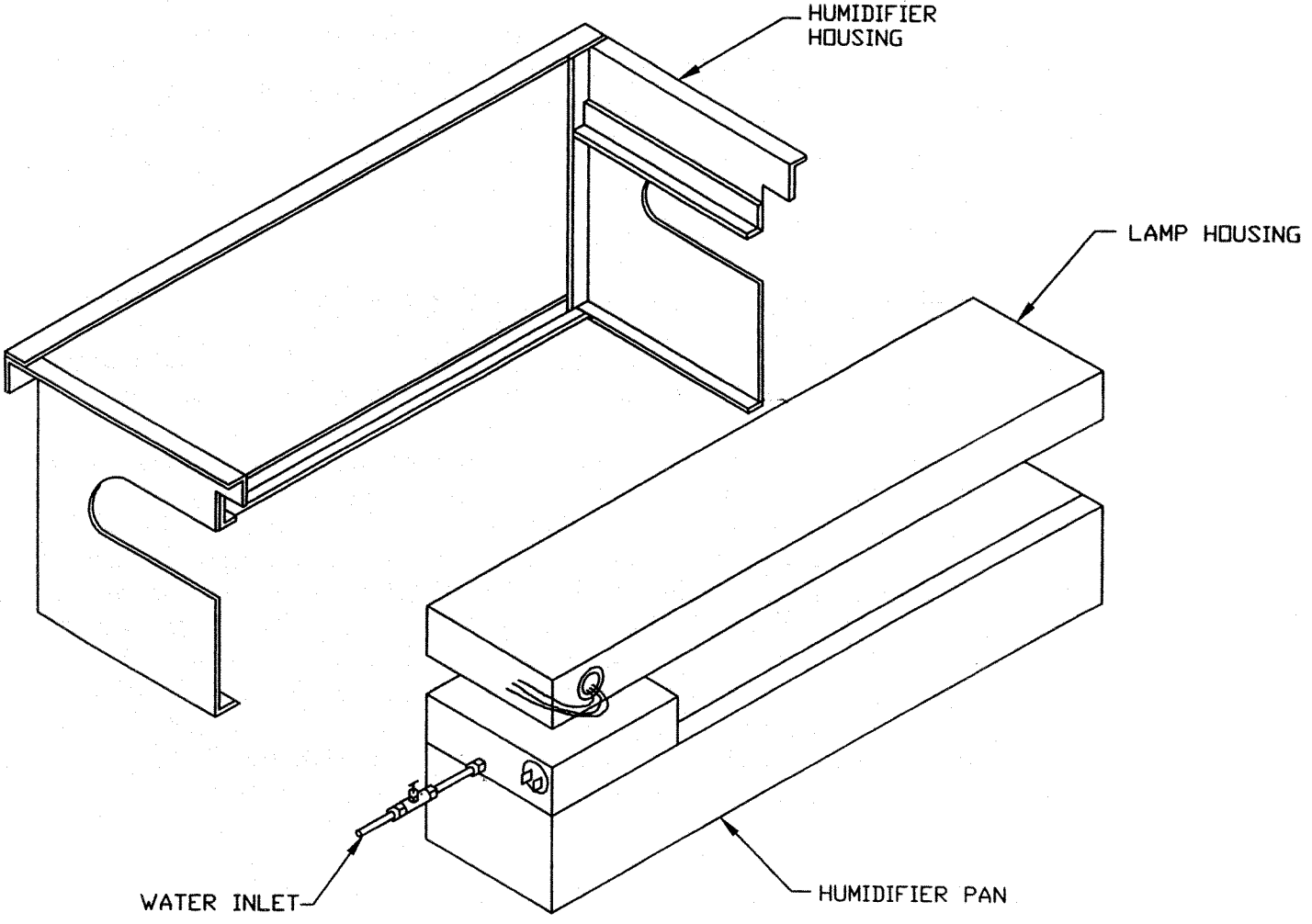
To remove the scale, sulfamic acid scale remover is recommended (check with your local supply house). Flush out all free scale, then add scale remover as noted by the manufacturer of the scale remover to the humidifier pan filled with water. Empty the pan and rinse. If necessary, repeat the de-scaling procedure until the pan is clean. **NOTE: DO NOT EMPTY THE RESIDUE FROM EITHER OF THESE OPERATIONS INTO THE UNIT DRAIN SYSTEM.** After cleaning, re-install the humidifier. Check to ensure that the drain valve is shut, push the humidifier assembly back into place firmly, engage the latch, re-connect the electric plug and piping hoses, then open the water supply valve. Draining the humidifier can be accomplished by moving the lever on the flush valve to the manual position. Make sure that the lever is returned to the auto position when the cleaning operation is completed.

HUMIDIFIER LAMPS

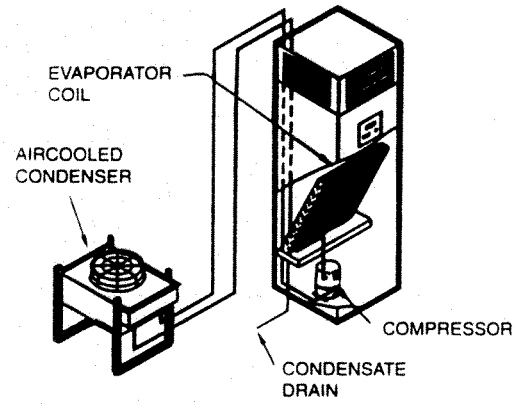
Please note that Infra-Red bulbs are very sensitive and should be handled with extreme care. To ensure the life of the bulbs it is recommended not to touch the quartz lamps with your bare hands. Only deposits such as fingerprints will severely shorten bulb life. If possible use cotton gloves when handling lamps.

CHANGING INFRA RED LAMPS

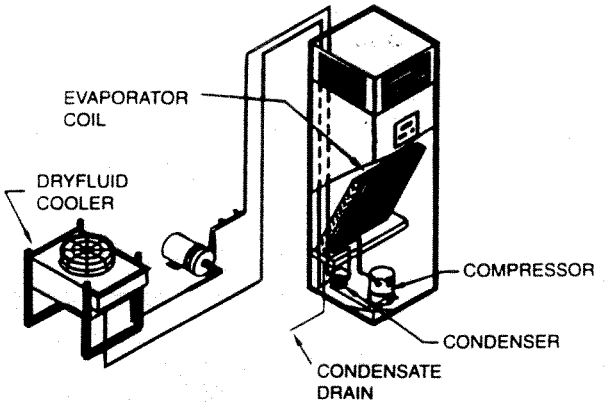
Cut high voltage wires. Remove two (2) ¼" nuts on front humidifier and the (2) brackets. Slide lamp housing out. Remove (6) sheet metal screws (3 front and 3 at the rear). Remove cover. Each lamp has lead wire each end. Losen screws and remove wires. Then remove lamp. Before replacing the lamps, wipe off all grease, oil, etc. Any grease or oil may cause a hot spot and lamp failure. Remember, lamps are not covered in the unit warranty. When installing lamps use cotton gloves. Do not touch them with bare hands. Reinstall assembly back into unit, splice wires back together.



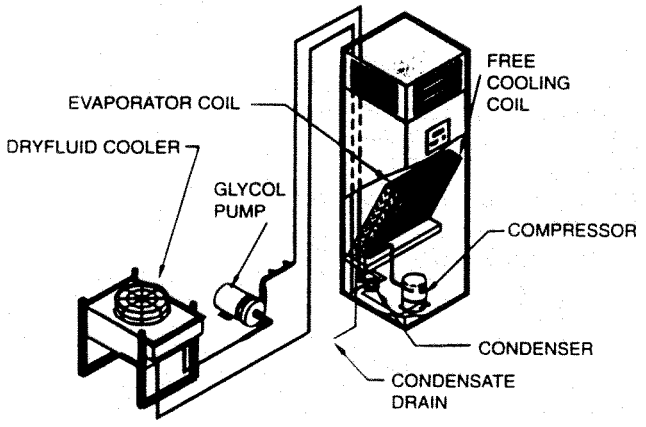
AVAILABLE SYSTEMS



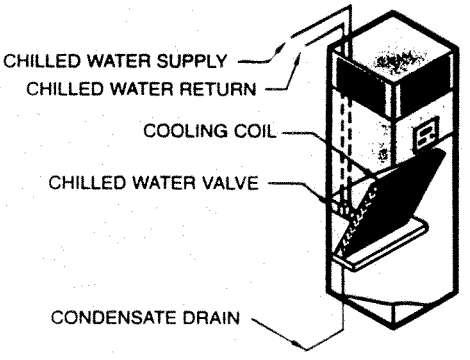
SELF CONTAINED AIR COOLED SYSTEM CKA WITH OUTDOOR CONDENSER



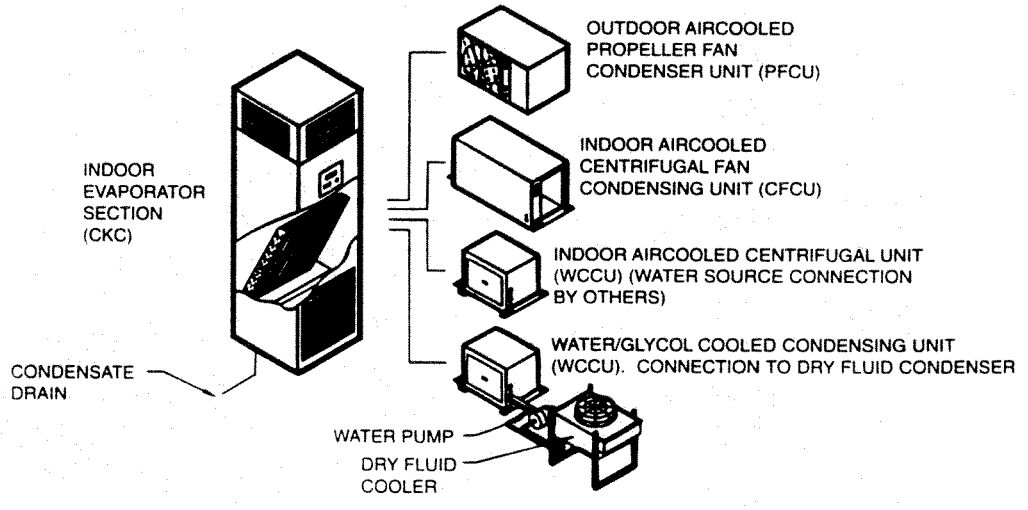
SELF CONTAINED GLYCOL COOLED SYSTEM CKG WITH OUTDOOR DRYFLUID COOLER



SELF CONTAINED GLYCOL COOLED WITH ENERGY-MISER SYSTEM CKG-EM WITH OUTDOOR DRY FLUID COOLER

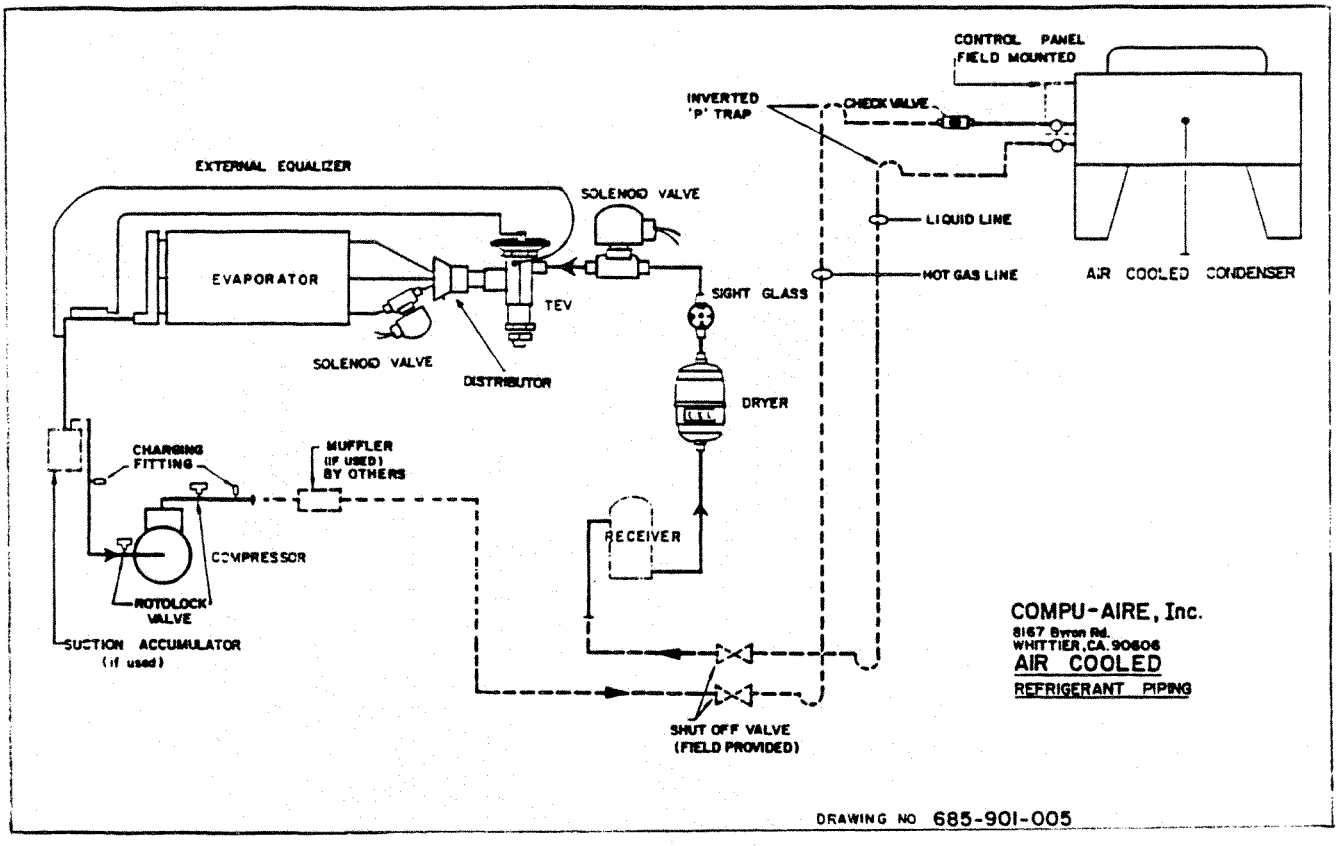


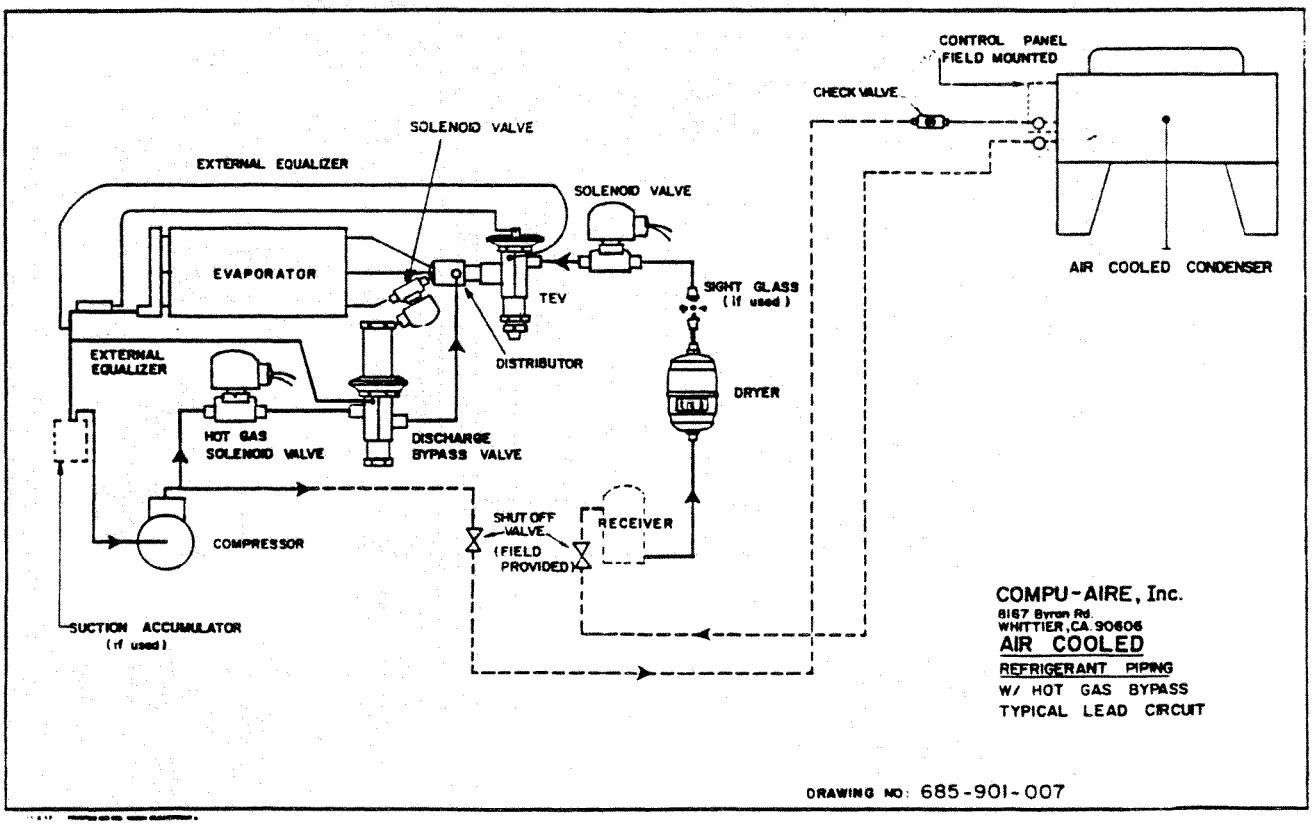
SELF CONTAINED CHILLED WATER SYSTEM CKC

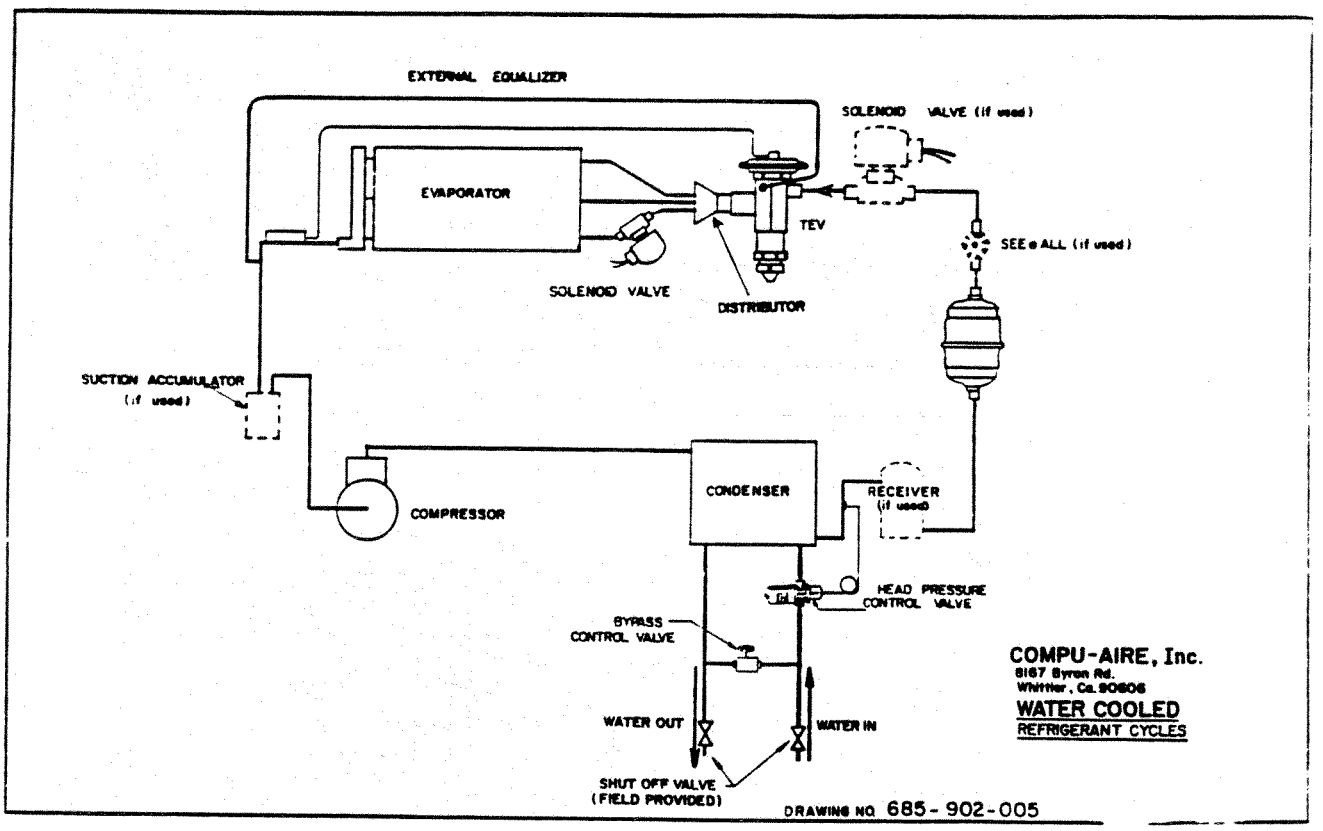


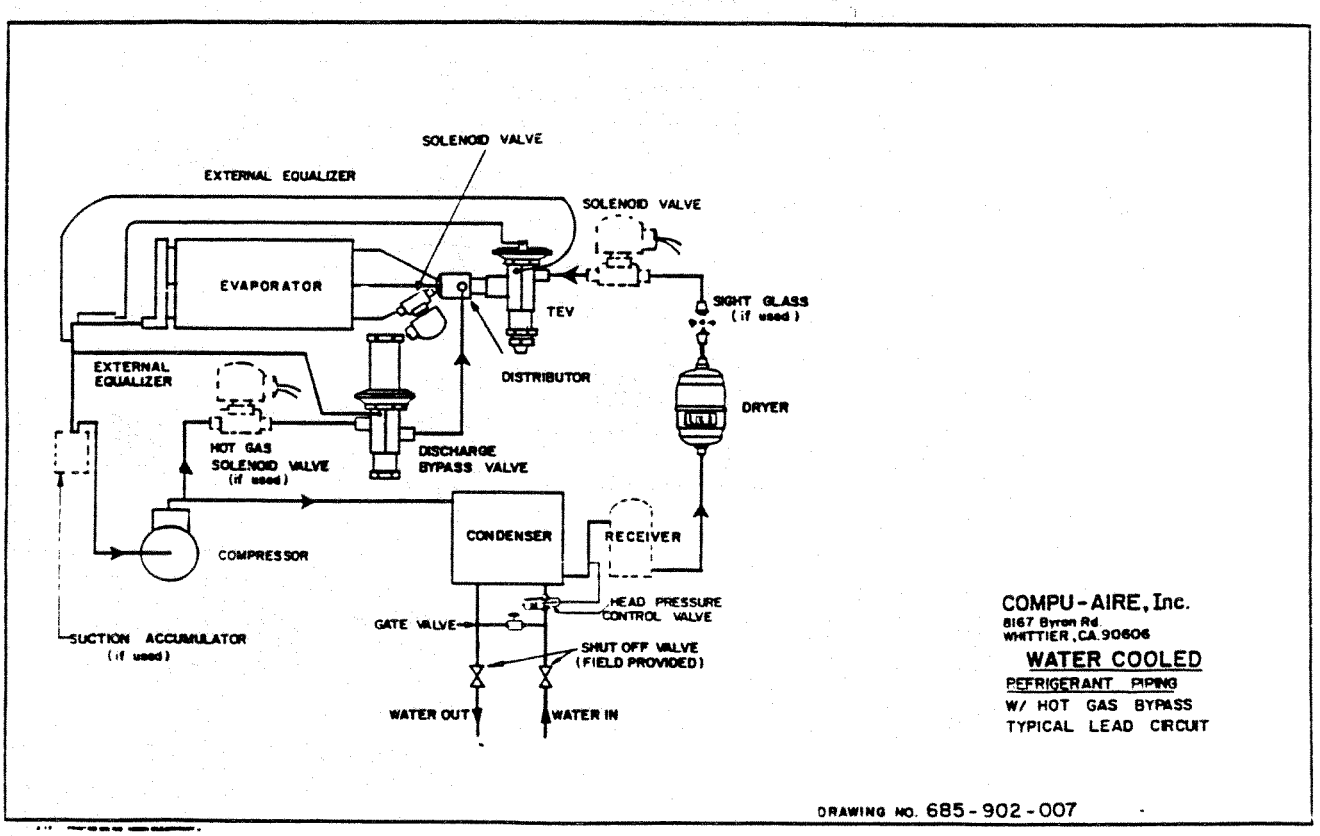
SPLIT SYSTEM-ANY COMBINATION

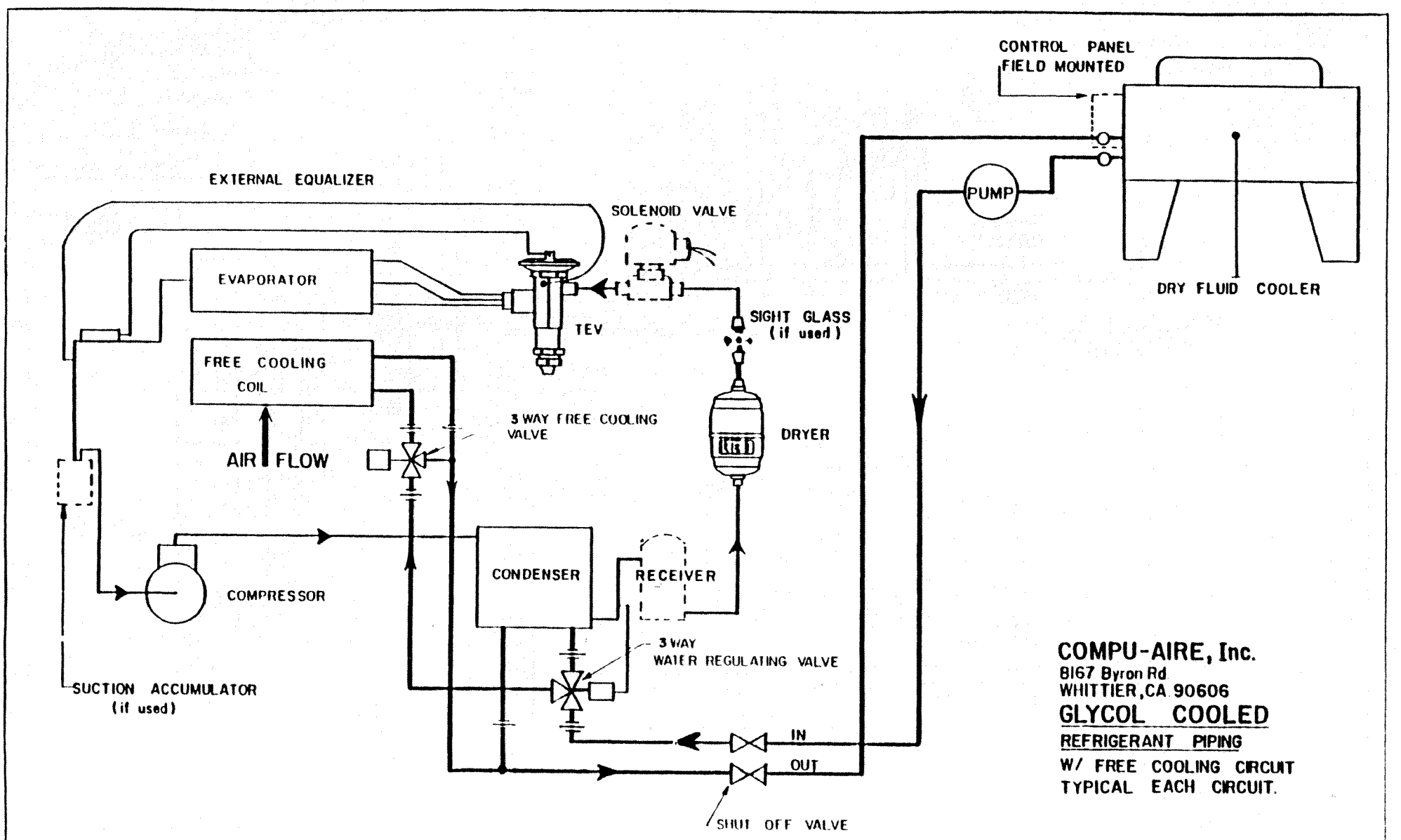
ALL UNITS SHOWN ARE UPFLOW. DOWN FLOW UNITS PIPING & ELECTRICAL TERMINATE AT BOTTOM LEFT HAND SIDE


CONTROL PANEL
FIELD MOUNTED
INVERTED
'P' TRAP
CHECK VALVE
EXTERNAL EQUALIZER
SOLENOID VALVE
LIQUID LINE
EVAPORATOR
HOT GAS LINE
AIR COOLED CONDENSER
TEV
SIGHT GLASS
SOLENOID VALVE
DISTRIBUTOR
DRYER
CHARGING
FITTING
MUFFLER
(IF USED)
BY OTHERS
RECEIVER
COMPRESSOR
ROTOLOCK
VALVE
SUCTION ACCUMULATOR
(if used)
SHUT OFF VALVE
(FIELD PROVIDED)
COMPU-AIRE, Inc.
8167 Byron Rd.
WHITTIER, CA. 90606
AIR COOLED
REFRIGERANT PIPING
DRAWING NO 685-901-005


CONTROL PANEL
FIELD MOUNTED
CHECK VALVE
SOLENOID VALVE
EXTERNAL EQUALIZER
SOLENOID VALVE
EVAPORATOR
AIR COOLED CONDENSER
TEV
SIGHT GLASS
(if used)
EXTERNAL
EQUALIZER
DISTRIBUTOR
DRYER
HOT GAS
SOLENOID VALVE
DISCHARGE
BYPASS VALVE
SHUT OFF
VALVE
(FIELD
PROVIDED)
RECEIVER
COMPRESSOR
SUCTION ACCUMULATOR
(if used)
COMPU-AIRE, Inc.
8167 Byron Rd.
WHITTIER, CA. 90606
AIR COOLED
REFRIGERANT PIPING
W/ HOT GAS BYPASS
TYPICAL LEAD CIRCUIT
DRAWING NO: 685-901-007


EXTERNAL EQUALIZER
SOLENOID VALVE (if used)
EVAPORATOR
TEV
SEE ALL (if used)
SOLENOID VALVE
DISTRIBUTOR
SUCTION ACCUMULATOR (if used)
COMPRESSOR
CONDENSER
RECEIVER (if used)
HEAD PRESSURE CONTROL VALVE
BYPASS CONTROL VALVE
WATER OUT
WATER IN
SHUT OFF VALVE (FIELD PROVIDED)
COMPU-AIRE, Inc.
8167 Byron Rd.
Whittier, Ca. 90606
WATER COOLED
REFRIGERANT CYCLES
DRAWING NO. 685-902-005


SOLENOID VALVE
EXTERNAL EQUALIZER
SOLENOID VALVE
EVAPORATOR
TEV
SIGHT GLASS (if used)
DISTRIBUTOR
EXTERNAL EQUALIZER
DRYER
HOT GAS SOLENOID VALVE (if used)
DISCHARGE BYPASS VALVE
CONDENSER
RECEIVER
COMPRESSOR
HEAD PRESSURE CONTROL VALVE
GATE VALVE
SUCTION ACCUMULATOR (if used)
SHUT OFF VALVE (FIELD PROVIDED)
WATER OUT
WATER IN
COMPU-AIRE, Inc.
8167 Byron Rd.
WHITTIER, CA. 90606
WATER COOLED
REFRIGERANT PIPING
W/ HOT GAS BYPASS
TYPICAL LEAD CIRCUIT
DRAWING NO. 685-902-007



COMPU-AIRE, Inc.
8167 Byron Rd
WHITTIER, CA 90606

GLYCOL COOLED

REFRIGERANT PIPING

W/ FREE COOLING CIRCUIT
TYPICAL EACH CIRCUIT.

DRAWING NO. 685-902-022

START-UP AND TEST PROCEDURE

A. With all power to unit off - Check that ALL WIRING IS CORRECT.

Check that properly sized fuses are installed in the disconnect switch. Correct fuse size and minimum circuit ampacity are listed on the unit nameplate. Now, check the wiring connections in the Main Control Panel to see if they are tight. It is best that this be checked prior to operating the machine. After checking, close the Main Control Panel cover and proceed as follows:

Microprocessor Control Panel - With the system switch in the "OFF" position, apply power to the unit. The "Power ON" light should illuminate.

B. Check for Correct Phasing

The equipment should now be checked for correct phasing required to make the blower motor turn in the correct directions. For this test it is necessary to open the right side doors of the unit to observe the blower and blower motor. Now, momentarily switch the system switch to the "ON" position and then back to "OFF". The blower motor will have started and it is therefore possible to determine rotation. On Compu-Aire units, the blower should be rotating in a CLOCKWISE direction in downflow units and COUNTERCLOCKWISE direction in upflow units, looking in the right side of the unit. Heaters and humidifiers are not affected by phasing.

C. Blower Speed Adjustment

Adjustment of the air flow maybe desired. The air flow can be readily adjusted with the variable pitch pulley provided on the blower motors. After the unit has been started and the air flow properly adjusted, check the blower motor current to ensure that motor is not overloaded. Any time the blower speed is increased, the blower motor current should be checked. If a field adjustment is made, the motor should run for at least one hour at maximum design room temperature to see if motor trips on internal overload. For proper motors amps refer to the name plate.

SPARE PARTS LIST
COMPU-KOOL UNITS

PART NUMBER	DESCRIPTION	2	3	4	5	7.5	10
REFRIGERATION COMPONENTS							
201-020-032	COMPRESSOR 2-TON 208/3	1					
201-020-034	COMPRESSOR 2-TON 460/3	1					
201-030-032	COMPRESSOR 3-TON 208/3		1				
201-030-034	COMPRESSOR 3-TON 460/3		1				
201-040-032	COMPRESSOR 4-TON 208/3			1			
201-040-034	COMPRESSOR 4-TON 460/3			1			
201-050-032	COMPRESSOR 5-TON 208/3				1		
201-050-034	COMPRESSOR 5-TON 460/3				1		
201-075-032	COMPRESSOR 7.5 TON 208/3					1	
201-075-034	COMPRESSOR 7.5 TON 460/3					1	
201-100-032	COMPRESSOR 10 TON 208/3						1
201-100-034	COMPRESSOR 10-TON 460/3						1
201-120-032	COMPRESSOR 12 TON 208/3						
201-120-034	COMPRESSOR 12-TON 460/3						
217-002-350	EXPANSION VALVE SVE-2	1					
217-003-350	EXPANSION VALVE SVE-3		1				
217-004-350	EXPANSION VALVE SVE-4			1			
217-005-350	EXPANSION VALVE SVE-5				1		
217-010-570	EXPANSION VALVE SVE-10					1	
256-040-001	HP SWITCH MG-201229	1	1	1	1	1	
256-050-001	LP SWITCH MG-212060	1	1	1	1	1	
229-053-040	DRIER 3/8"	1	1	1	1		
229-165-010	DRIER 5/8"					1	1
AIR MOVING PARTS							
270-010-001	BLOWER 10 X 10	1	1				
270-012-001	BLOWER 12 X 12			1	1		
270-012-009	BLOWER 12 X 9						
270-015-002	BLOWER 15 X 15						

PART NUMBER	DESCRIPTION	2	3	4	5	7.5	10
202-007-430	MOTOR 3/4 HP 56T	1					
202-010-430	MOTOR 1.0 HP 56T		1				
202-015-430	MOTOR 1.5 HP 56T			1	1		
202-020-430	MOTOR 2.0 HP 56T					1	
202-030-430	MOTOR 3.0 HP 182T						1
202-050-430	MOTOR 5.0 HP 184T 7.5						
279-010-084	PULLEY BLOWER AK-84						
279-034-044	PULLEY MOTOR IVL-44						
279-060-084	PULLEY BLOWER 2AK84						
279-040-003	PULLEY MOTOR 2VP-50						
278-010-054	BELT A54						
279-070-002	BUSHING H-1	1	1	1	1	1	1
273-001-022	SHAFT						
273-001-042	SHAFT						
273-001-045	SHAFT						
273-001-066	SHAFT						
273-001-072	SHAFT						
294-001-002	BEARING	2	2				
294-001-004	BEARING			2	2	2	2
253-025-001	AIR FLOW SWITCH	1	1	1	1	1	1
REHEAT							
250-010-009	REHEAT ELEMENT 2/220	3	3	3	3	6	6
250-010-002	REHEAT ELEMENT 2/277	3	3	3	3	6	6
250-010-010	REHEAT ELEMENT 2.5/220						
250-010-005	REHEAT ELEMENT 2.5/277						
256-010-004	TEMP. LIMIT 10H11-21081	1	1	1	1	1	1
256-010-001	FUSABLE LINK	3	3	3	3	6	6
HUMIDIFIER - CYLINDER							
250-001-005	NORTEC MESU-5 208/1/60	1	1				
250-002-005	NORTEC MESU-5 460/1/60						
250-001-010	NORTEC MESU-10 3.4-208/3/60			1	1	1	1
250-002-010	NORTEC MESU-10 3.4-440/3/60			1	1	1	1
ELECTRICAL							
249-010-025	CONTACTOR 18A/2	1	1	1	1		
249-010-031	CONTACTOR 30A/3P	2	2	2	2		

PART NUMBER	DESCRIPTION	2	3	4	5	7.5	10
240-030-010	FUSE FRN-10	3	3				
240-030-015	FUSE FRN-15	3		3	3		
240-030-020	FUSE FRN-20	2	5	2	2		
240-030-025	FUSE FRN-25	3	3	6	3		12
240-030-030	FUSE FRN-30				3		6
240-031-010	FUSE KTKR-10	5	5	3	3		
240-031-015	FUSE KTKR-15	6	6	3	3		12
240-031-020	FUSE KTKR-20						6
268-020-007	TRANSFORMER 75VA-208V	2	2	2	2	2	2
268-020-006	TRANSFORMER 75VA-460V	1	1	1	1	1	2
268-020-010	TRANSFORMER 75VA-575V	1	1	1	1	1	2
241-010-001	CIRCUIT BREAKER 3.2	1	1	1	1	1	2
WATER CIRCUIT							
222-040-005	WATER VALVE 3/8"	1					
222-040-006	WATER VALVE 3/4 V46ACI		1				
222-040-007	WATER VALVE 1 V46ADI						
222-040-	WATER VALVE 1.25						
231-010-002	CO-AXIAL CONDENSER-2	1					
231-010-004	CO-AXIAL CONDENSER-3		1			1	
231-010-006	CO-AXIAL CONDENSER-5			1	1	1	2
FILTERS							
283-002-002	2" 30% 16 X 25						
283-002-006	2" 30% 25 X 20						
283-002-004	2" 30% 25 X 25						
253-025-001	CLOG FILTER SWITCH	1	1	1	1	1	1
MICROPROCESSOR CONTROLS							
298-100-011	MICROPROCESSOR PANEL	1	1	1	1	1	1
298-100-013	TEMP. BOARD	1	1	1	1	1	1

COMPU-AIRE INC.
8167 Byron Rd., Whittier, CA 90606
PH (562) 945-8971 FAX (562) 696-0724

STANDARD ONE YEAR WARRANTY

Job Name_____ Job No._____ Date_____

We warranty this Compu-Aire, Inc. computer room unit to be free from defects in material and workmanship; our obligation being limited to repairing or replacing at our factory any part (except as noted below) within one year from the date of start-up and not exceeding _____ months from the date of shipment to the original purchaser. Parts to be returned to us PREPAID. Proof of start-up date must be submitted to the factory.

This warranty is effective only if the unit has been installed in accordance with our instructions and connected to proper and adequate electric, water and drain services, correctly dehydrated and placed into operation by a competent service representative.

Fan motor compressor warranty is covered by original manufacturer's warranty and any repair or replacement should be made by the local authorized service facility as listed the telephone book.

Maintenance and service such as replacing filters, humidifier cylinder, infra-red lamps, float valve assemblies, belts, cleaning, lubrication, calibration and adjusting are NOT INCLUDED in this warranty.

Replacement or repair parts shall be shipped from the factory pre-paid and invoiced for the full amount. Upon receipt of warranteed parts within 30 days with prepayment of the component and which our inspection discloses the parts are defective, and show no signs of misuse, alterations, or abuse, full credit will be issued.

Compu-Aire, Inc. does not assume any responsibility for the labor expense for changing defective parts or replacement of any refrigerant or other cooling medium such as glycol etc.

All parts and goods are thoroughly inspected and packed to meet the requirements of railroad freight classifications bureaus, and under standard shippers risk, when they leave our factory. SHOULD GOODS ARRIVE DAMAGED, call the agents attention to damage, and have same noted on freight bill. For concealed damage, demand immediate inspection from agent of the shipping company and insist on a notation being made on freight bill.

Purchaser-User	Model Number	Serial Number
		Serial Number
		Serial Number
		Serial Number
		Serial Number

Company Seal must be affixed for validation

Authorized by _____
QUALITY MANAGER