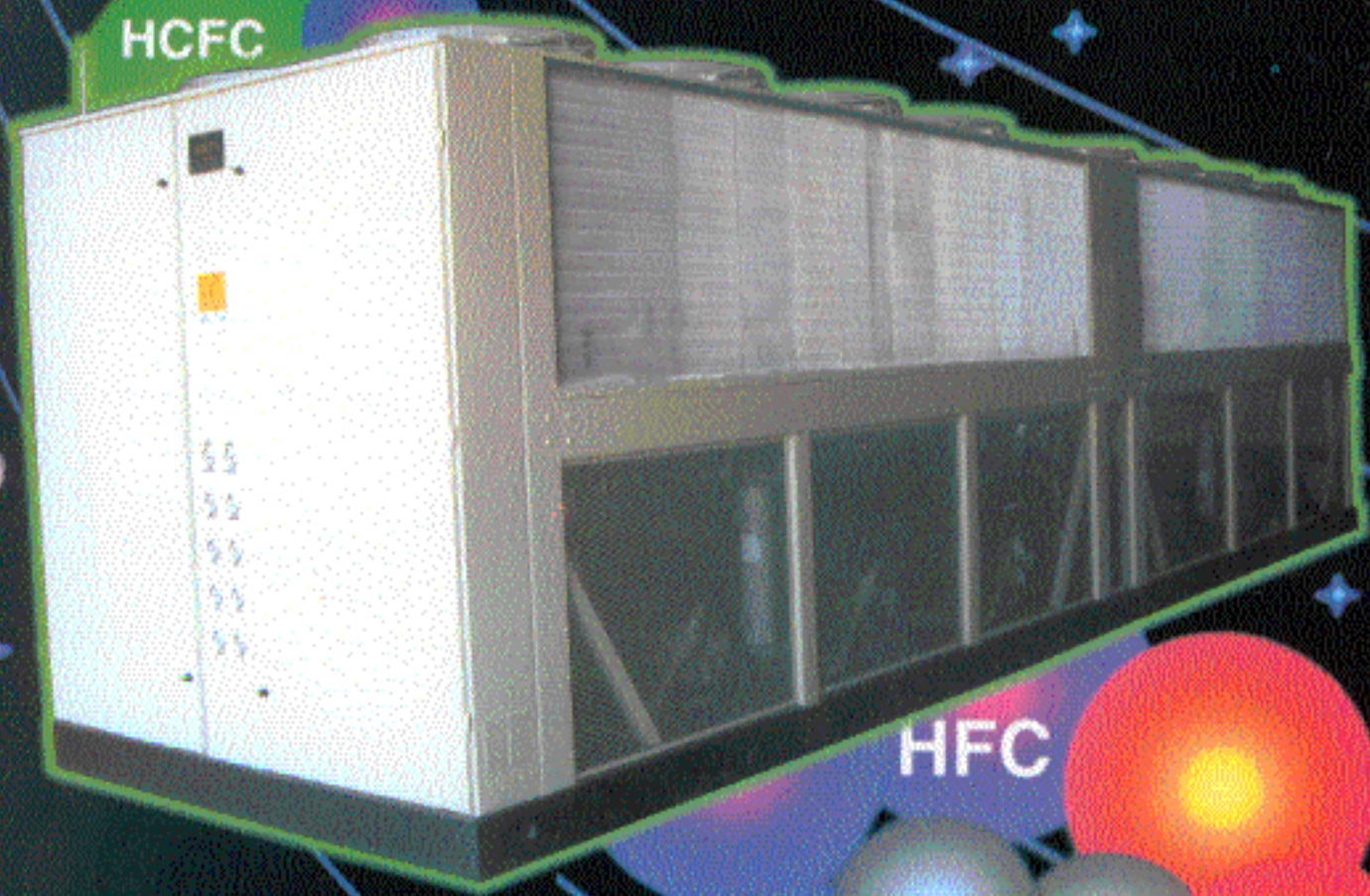
CFC

GOLDEN STAR®

HCFC



HFC

PACKAGED AIR COOLED CHILLERS

50 TO 400 TONS

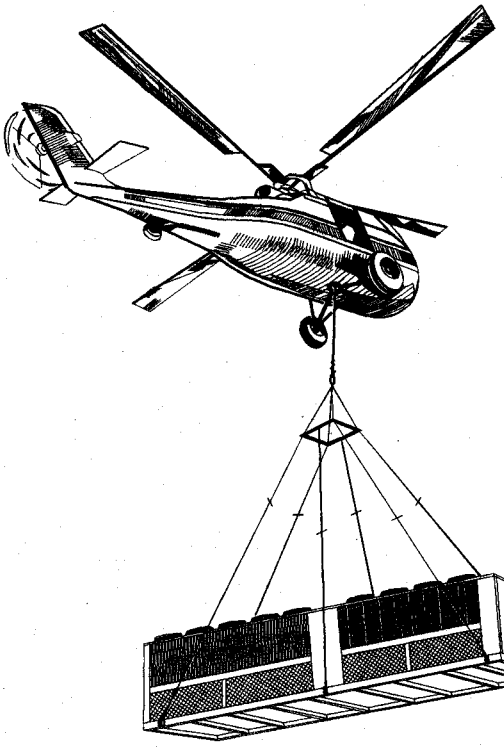
(50 & 60 Hz)

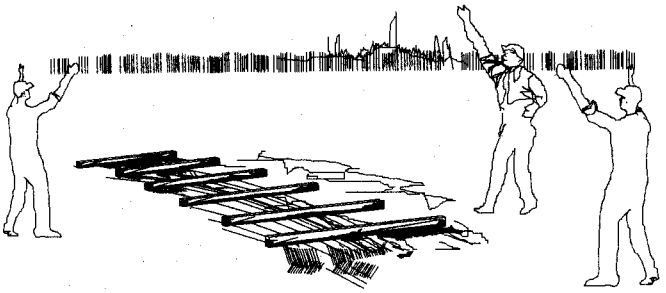
MICRO COMPUTER CONTROLLED

RECIPROCATING COMPRESSORS.

- Rated in Accordance to ARI standard 590.
- UL/CSA/ASME approved components.
- Uses HCFC-22 and compatible with new refrigerant R407c.

AIR COOLED CHILLER SAVINGS





REDUCED FIRST COST

- **Equipment Savings - The ACWC-RD is a packaged air cooled chiller eliminating the need for cooling towers, condenser water pumps and as well as associated controls and wiring.**
- **Installation Savings - Each ACWC-RD chiller is completely charged and factory tested in orderto reduce start-up problems. Unit sizes up to 400 tons reduce rigging plumbing and electrical installation costs. Labor saving options include single source power connection, control transformers and convenience outlets. All units include rigging holes, factory installed, micro computer controls and water temperature sensors.**
- **Increase Usable Space - The entire chiller is mounted outdoors which eliminates up to 400 square feet of equipment room space when you consider the size of a water cooled chiller, condenser water pumps and clearance requirements.**
- **Delay Equipment Purchase - Installation can conveniently occur late in the building schedule. Indoor chillers, in contrast, must be scheduled around interior finishing. The ACWC-RD is an ideal choice for fast track jobs.**

REDUCE MAINTENANCE COST

- **Eliminate Water Treatment - The cost of labour and chemicals required for cooling tower water treatment is eliminated with air cooled chillers.**
- **Condenser Water Loop Maintenance -Water cooled condensers, pumps and plumbing all require occational maintenance. Eventual water leaks and scaling of pipes cannot be avoided.**
- **Cooling Tower Water Requirements - Make-up water requirements can be very significant.**

AIR COOLED MAINTENANCE SAVINGS, COMBINED WITH INTEREST ON FIRST COST SAVINGS, GENERALLY EXCEED THE REDUCED ENERGY COSTS ASSOCIATED WITH WATER COOLED SYSTEMS.

NOMENCLATURE

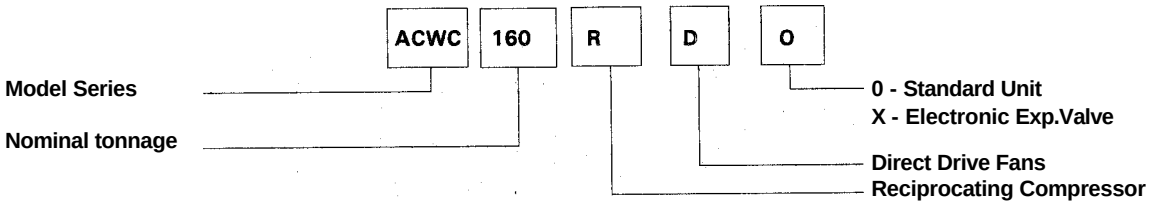
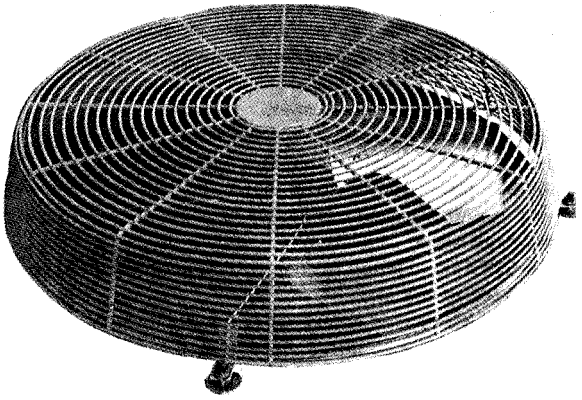


TABLE OF CONTENTS

Air Cooled Chiller	Page 2	Physical Data	Page 16-17
Air Cooled Chiller Components	Page 3	Dimensional Data	Page 18-19
Construction features	Page 4-5	Loading Points	Page 20
Optional Accessories	Page 6-7	Wiring Diagrams	Page 21-26
Microprocessor features	Page 8-9	Electrical Data	Page 27-28
Selection Guidelines	Page 10	Installation Clearance	Page 29
Cooler Pressure Drop/Sound Data	Page 11	Application Data	Page 30
Capacity Tables	Page 12-15	Engineering Guide Specs	Page 31

CONSTRUCTION FEATURES

CONDENSER FANS



DIRECT DRIVE FANS - Direct drive fans, as opposed to belt drive fans are practically a maintenance free design. Competitive belt drive designs involve continual belt tightening, belt replacement and bearing lubrication. Direct drive fans, offered by Goldenstar, eliminate shieves and belts.

3 PHASE MOTOR - 3 phase, 1140 RPM. 6 pole motors are provided and include inherent motor protection consisting of a thermal sensing overload safety. The permanently lubricated ball bearing design reduces maintenance requirements. The 3 phase motor design reduces energy costs, as compared to single phase motors, and also eliminates maintenance problems associated with backward running fans and start capacitors.

PROPELLER FAN - The fans have heavy gauge aluminum blades securely riveted to zinc plated, chromate treated steel center hub. A low tip speed design reduces vibration and sound levels to a minimum.

CASING

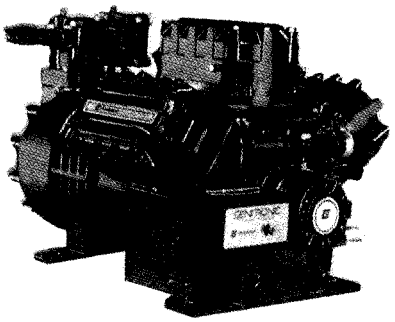
Goldenstar chillers are designed for 20 year life starting with a cabinet offering unsurpassed corrosion protection. The 18 gauge galvanized steel panels coated with 2 coat of polyurethane based paint after assembly is far superior to competitors painted construction especially since every punch, break, or scratch exposes raw steel to the atmosphere. The panels are mounted on galvanized steel frame with a structural 1/4" thick roll formed beam base. Due to the thickness of the galvanized frame, and the fact that it is painted after the welded assembly, corrosion poses no threat. Goldenstar fans are provided with galvanized steel baffles to prevent air bypass through non-operating fans.

OPTIONAL
GALVANIZED STEEL CABINET WITH POWDER COATED FINISH

CONDENSER COIL

The high efficiency condenser coil is constructed of 1/2" copper tubes mechanically expanded into aluminum fins. The die formed fins utilize a self-spacing collar design which completely covers the tube surface and are mechanically bonded to the tubes through the expansion process.

An integral sub -cooler circuits provides sufficient subcooling to effectively eliminate the possibility of liquid flashing and increase unit performance and efficiency. Goldenstar ACWC condenser coils are designed with increased surface area to operate in high ambient without nuisance high pressure trip. Also provide sufficient heat transfer area for new HFC refrigerant for retrofits.



ACCESSIBLE HERMETIC COMPRESSORS - Rugged compressors, specifically designed for air cooled condensing unit application, are field serviceable for ease of maintenance and long life. These are the most advanced and efficient reciprocating compressors in the industry: the Copland DISCUS™ valve compressors. These heavy-duty, industrial quality, semi-hermetic compressors are designed for Refrigerant 22 and high loading associated with air cooled applications.

Serviceable compressors offer reduced maintenance costs because if problems develop with components such as oil pumps, unloadars and pistons, they can be serviced in the field without replacing the compressor. Both suction and discharge service valves are provided to allow isolation of the compressor from the refrigerant circuit.

Discus compressors are designed to accept new HFC refrigerant. so future refrigerant conversion can be easily achieved with minimum alteration.

CONSTRUCTION FEATURES

COOLER

The Goldenstar direct expansion cooler is a shell and tube type with water on the shell side and refrigerant on the tube side. The coolers are circuited so that each refrigerant circuit is completely isolated. Construction includes:

SHELL - Seamless carbon steel. TUBES - Copper tubes having internal fins, that are roller- expanded into the tubes sheets. HEADS - Carbon steel with multi-pass baffles to insure oil return. Heads are field removable to allow access to the tubes from either end.

TUBE SHEETS - Flange quality carbon steel tube sheets are welded to the shell.

BAFFLES - Hot-rolled steel baffles control internal water flow to maximize internal heat transfer capability at minimum pressure loss. Goldenstar coolers are built in accordance with the ASME code for unflred pressure vessels and stamped accordingly. Shell side (water) design working pressure is 150 PSIG(10.5Kg/cm^2); and tube side (refrigerant) design working pressure is 235 PSIG(16.5Kg/cm^2).

The complete cooler is insulated with 3/4" (19mm) closed cell foam and vapour sealed. A thermostatically controlled electric resistance heater cable is wrapped around the shell for freeze protection to -20 ºF outdoor air temperature.

REFRIGERANT CIRCUIT

Unpressed back-up is provided with multiple compressors and dual refrigerant circuits. Each circuit includes the following:

THERMAL EXPANSION VALVE - Accurately regulates refrigerant flow to the cooler in response to the system requirements.

SIGHT GLASS/MOISTURE INDICATOR - Provides a convenient method of checking refrigerant charge and moisture content.

SOLENOID VALVE - Prevents migration of refrigerant to the cooler during the off-cycle.

REFRIGERANT FILTER/DRIER - Removes moisture and contaminants at a minimum pressure drop.

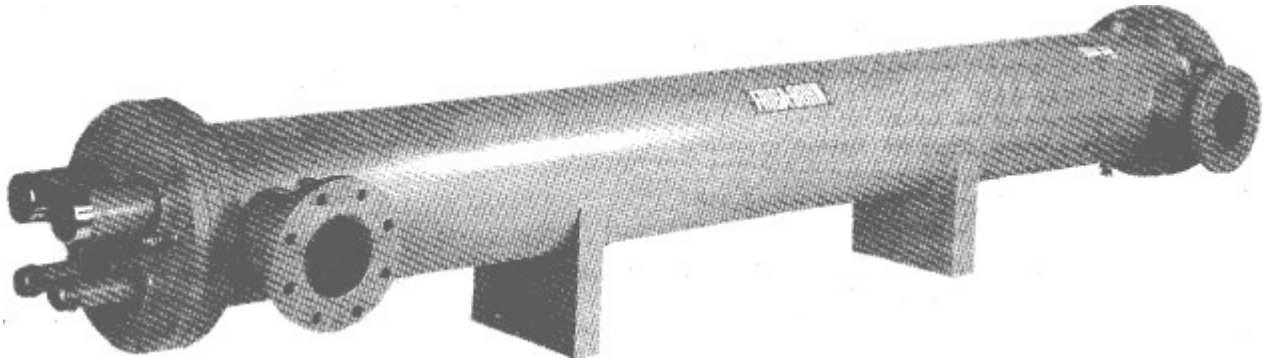
LIQUID LINE SHUT-OFF VALVES - Allows isolation of components during winter shutdown or servicing.

CHARGE VALVE - Allows easy refrigerant charging.

SUCTION INSULATION - 1/2" closed cell foamed with vapour seal.

COMPRESSOR SERVICE VALVES - Each compressor is furnished with a suction and discharge service valve equipped with a port for charging and reading of operating pressures.

HIGH PRESSURE RELIEF VALVE-Safety valve rated at 400 psig(28Kg/cm^2) installed on each refrigerant circuits to relieve the pressure incase system pressure exceed the rating, avoid costly maintenance.



OIL EQUALIZATION

Goldenstar ACWC chillers provide excellent back-up due to the multiple compressor and dual refrigerant circuit design. However, reliability is not compromised by the multiple compressor design because Goldenstar guarantees proper oil flow to each compressor in the following manner.

1. **All 2 compressor circuits are provided with a patented piping design which collects the oil near the compressor inlet and meters equal amounts to the suction of each compressor. An oil safety control is provided on each compressor.**

2. **On any circuit employing more than 2 compressors, an oil control system collects oil in the discharge line and meters it into the crankcase of each compressor. A float system controls the flow of oil such that an equal amount is present in each compressor.**

CONSTRUCTION FEATURES

CONTROL CENTER

Goldenstar has designed the chiller control panel to assure equipment reliability as well as full back-up and easy access in case maintenance is required.

RELIABILITY

Goldenstar has built into the ACWC more safety protection than is offered by any reciprocating chiller competitor.

- High pressure cutout, manual reset
- Low pressure cutout, automatic reset
- Compressor, solid state, thermal sensing overloads, auto reset
- Compressor oil pressure safety, manual reset
- Low water temperature freeze protection, manual reset
- Safety alarm contacts indicate high pressure failure, oil pressure failure, and optional low pressure freeze stat failure.

The following "power components provide greater unit reliability:

- Compressor Contactors
- Condenser fan contactors and short circuit protection
- Inherent condenser fan overload protection

All the above components are mounted in a weather-proofed, gasketed control panel designed for outdoor installation. Reliability is even further insured by the complete factory run testing of every unit which guarantees trouble free start-up and long term reliability.

EASY MAINTENANCE

Control panel design includes the following features:

- Hinged access doors with actual gasketing for weatherproof protection
- Separate power and safety control panel sections
- Complete labelling of all control components
- Numbered terminal strips for easier wire tracing

OPTIONAL

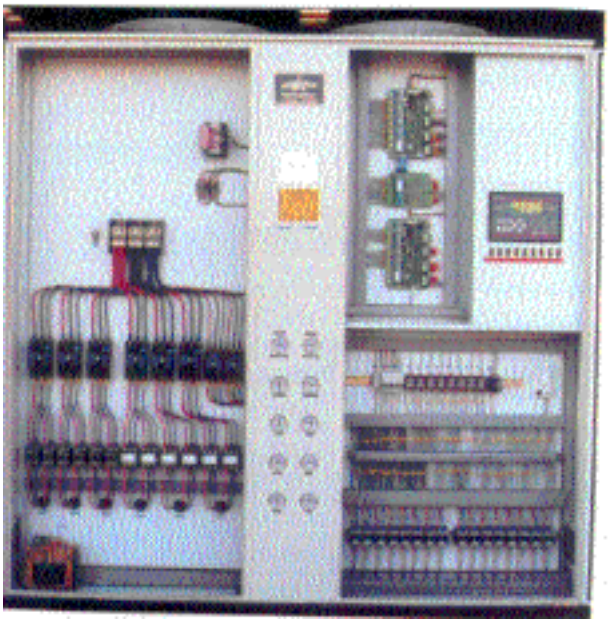
- Optional convenience outlet and warning lights
- Optional low pressure freeze protection, manual reset
- Optional compressor fusing or circuit breakers
- Phase failure protection against low voltage, phase imbalance, or reversal
- Power terminal block and optional control transformer for single or dual source power
- solid state earth current or overcurrent protection
- Thermostatic controlled panel ventilator
- A unit mounted disconnect switch with external handle in compliance with Article 440-140 NEC.

STANDARD FAN CYCLING CONTROL

On standard units, fans are cycled in response to head pressure to maintain adequate head pressure for the compressor to start down to +30ºF ambient. The Goldenstar method of fan cycling offers superior reliability to temperature controlled cycling since you directly control from head pressure. Head pressure controls for lower ambient temperatures are available as optional equipment.

LEAD LAG CONTROL

All ACWC units are provided with a Lead-Lag selection features in MACROPLUS to even-out compressor operating time.



OPTIONAL ACCESSORIES

COMPRESSOR CIRCUIT BREAKERS OR COMPRESSOR FUSE BLOCKS
Either companion trip, ambient compensated circuit breakers with built-in three leg overload protection; or three leg fuse blocks, with time delay (dual element) fuses, provides additional protection for each compressor.

PARALLEL/SERIES CHILLER CONTROL
The sequencer controls capacity staging of multiple chiller unloading installations and includes return water control logic and sensor. The control is mounted in the "master" unit and requires field installation of the common, return water sensor.

HOT GAS BY-PASS
Hot gas by-pass valve and hot gas solenoid valve are provided on the lead circuit to permit operation of the system down to 10% of full load capacity. Standard lead lag selection on Macroplus is omitted.

PART WINDING START
For applications where current in rush is limited by power company restrictions or local codes. Provides two step starting for each compressor.

PRESSURE GAUGES
Factory mounted and piped suction and discharge liquid filled pressure gauges for each refrigerant circuit and an oil pressure gauge for each compressor. Each gauge is supplied with its own manual shut-off valve.

CONVENIENCE OUTLET
A 15.0 amp, 115 volt duplex convenience outlet is available In two versions:
1. Power supply by others.
2. Transformer powered by factory.

AIR INLET GRILLE
Sectional grille work is attached to unit's inlet air perimeter to prevent damage to components and entry of debris to condenser coil face.

HAIL GUARD
Sectional louvered grille is attached to vertically placed condenser coil to prevent damage to condenser during hail storm.

HEATED RECEIVER TYPE LOW AMBIENT CONTROL TO 0ºF.
Utilizes heated and insulated oversized receivers in conjunction with standard fan cycling controls to assures compressor motor start in ambient temperatures down to 0ºF. Each heated receiver is equipped with a spring loaded relief valve, pressure control, thermostat and check valve.

LIMITIZER & HEATED RECEIVER TYPE LOW AMBIENT CONTROL TO -20ºF
Utilizes refrigerant pressure activated modulating valves in conjunction with heated receivers and standard fan cycling controls to assure unit operation and compressor start down to -20ºF.

FREEZE PROTECTION
The ACWC includes a temperature sensing freeze stat as standard. However, potentially damaging freeze conditions can occur even if average leaving water temperature Is in excess of 35 ºF. Malfunction of the temperature sensing control can also occur. Goldenstar offers additional freeze protection In the form of low pressure sensing freeze stats, and time delay, on each circuit for unsurpassed protection against a very expensive failure.

FIVE MINUTE LOCKOUT TIMER
A five minute lockout timer delays compressor restart after safety cutout or power interruption. Lockout timer is an integral part of macroplus controls.

WARNING LIGHTS(EXTERIOR TO UNIT)
Vapour-proof red lights, visible from exterior of unit, indicate high head and low pressure freeze(optional)
conditions for each circuit, plus low oil pressure for each compressor.

CONTROL CIRCUIT TRANSFORMER *
A factory mounted and wired control circuit transformer is furnished eliminating the need for running a separate 115 volt power line for the unit control circuit. Transformer reduces the main power voltage to the 115 volt control voltage.

*** CAUTION!**
Main power shutdown will interrupt power supply to freeze protection heater. ACWC Cooler will be subject to freeze-up at ambient temperatures below +32ºF.

PHASE LOSS MONITOR
Protects against Phase Loss (single phasing). Phase Reversal (improper phase sequence), and Low Voltage. Field adjustable for low voltage set point.

ELECTROTINNED CONDENSER COILS
Copper fin condenser coils electrotinned after production can prolong unit life considerably in corrosive atmospheres specially in costal area installations. Electrotinned process protect condenser coils corrosion and keep heat transfer efficiency practically constant in its entire life span.

COPPER FIN CONDENSER COILS
Copper fin condenser coils can prolong unit life in corrosive atmospheres since the galvanic reaction between copper and aluminum Is eliminated.

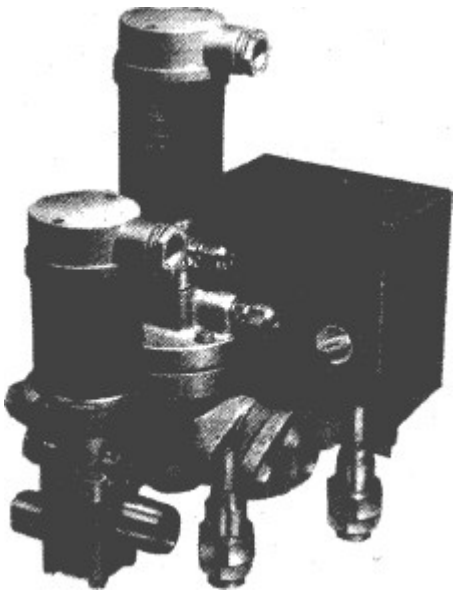
BACKED PHENOLIC COATED CONDENSER COILS
Aluminum fins with backed phenolic fin coating can improve the life of units.

LOAD LIMIT THERMOSTAT
Prevents the chiller from fully loading at start-up until the system chilled water has been sufficiently cooled to avoid nuisance trip out problems.

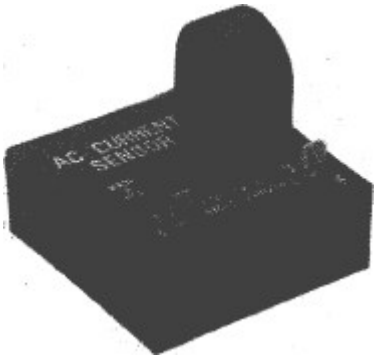
CONTROL PANEL COOLING FAN
A small propeller type ventilating fan, temperature activated, is installed so as to prevent excessive control panel temperatures in hot climates.

OVER CURRENT/EARTH CURRENT PROTECTOR
A solid state controller together with current transformer protects each compressor from overcurrent, earth current, single phase, voltage unbalance, improper starting etc., Once controller intervene, lockout the compressor from restarting until reset the system manually.

ELECTRONIC EXPANSION VALVE
Electronic expansion valves coupled with microprocessor based controller provides the most advanced refrigerant flow control available. Microprocessor Controller (PI) let the chiller operate at low pressure differentials, and accurately control refrigerant super heat during start-up and load changes. The result is energy saving, precise leaving water regulation and higher part-load efficiency.



GROUND CURRENT PROTECTION
Ground Current Protection for each compressor, shuts down compressor when more than 2.6 Amps are measured to prevent the formation of acids.



THERMAL STORAGE
Thermal storage is a technique for shifting all or part of a building's air conditioning requirements from on-peak to off-peak hours. Cooling energy is produced and stored during off-peak hours when utility rates are tower and utilized during on-peak hours. The benefits of Thermal storage obtained by the building owner are attractive rates schedules and in many cases rebates from the utility company. Another major advantage is that in thermal storage mode, machine operates with low condensing. Thus considerable savings on power consumption and achieve an overall efficiency in machine operation.
"Smart" Goldenstar MACROPLUS controller, rogrammable for dual set point provide easy and accurate automatic controls for thermal storage system.

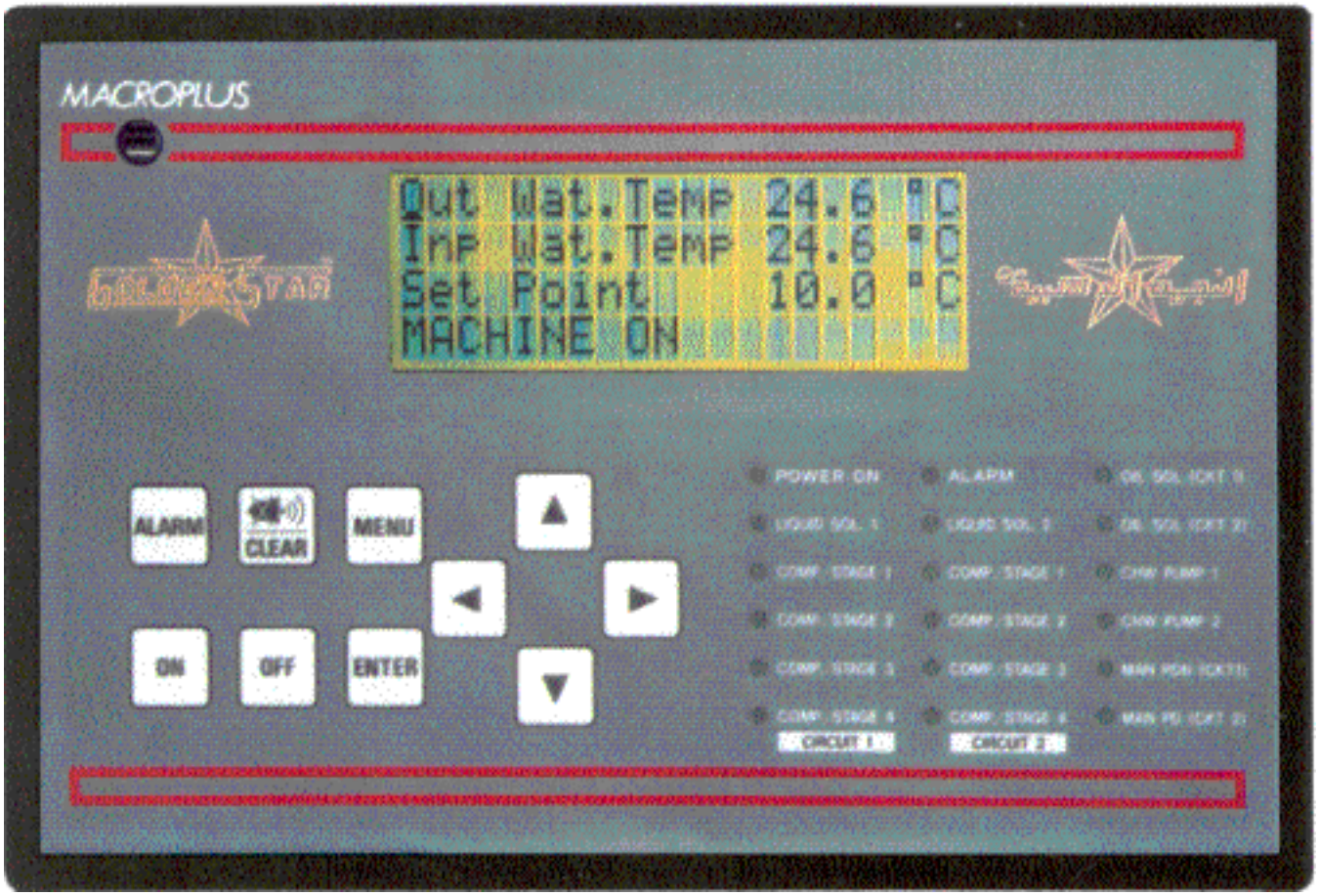
POWER SUPPLY OPTIONS
Single source power, to a unit mounted terminal block, is provided on the following units:

All 50-225 ton units - 380/460 volts
All 50-160 ton units - 230 volts

On all other units of larger ampacity (2) terminal blocks are provided to minimize wire sizes. Single source power is available on most units (consult factory).

A Chiller anyone can operate

Micro computer control
Efficiency and Reliability...



Goldenstar MACROPLUS Microcomputer control is a standard feature of all ACWC series Air Cooled Chillers monitoring analog and digital inputs to achieve precise control of the major operational and protective functions of the unit.

An easy-to-install, inexpensive modem options allows remote control of entire operation of Chiller insures its owner state of the art efficiency and reliability.

Fingertip Control:
Direct digital control (DDC) allows finger-tip user interaction. Its simple-to-use push button key board and menu driven software provide access to operating conditions, control set points and alarm history clearly displayed on a 4 line 20 character Crystal Liquid display.

Operator Friendly:
The attractive polycarbonate key pad, large easy to read, Crystal Liquid display and menu driven simple to use software allow for fast, easy retrieval of systems operating information at your finger tip.

Hard Copy Print:
Operating data and History fault data can be called up and print by using an optional ALFA PANEL printer.

MAIN FUNCTION OF THE SYSTEM

- Water temperature regulation according to the evaporator inlet/outlet temperature;
- Intervention of each single device of the unit;
- Protection of each refrigerant circuit with indication of any possible anomalous condition (LOCAL or REMOTE indication, via serial line);
- Protection of each compressor;
- Display of:
  Programming data (via DISPLAY)

  ON status of the devices (via LED indicators)

PROTECTIONS
Macroplus manages the following protections for each refrigeration group:

- High discharge pressure
- Low suction pressure
- Min. oil pressure differential for each compressor
- Max. absorption compressor engine (OVERLOAD)
- Max. absorption pumps engine (OVERLOAD)

The global protections are:

- Antifreeze protection
- Protection in case of pumps starting failure (FLOW DETECTORS for 2 pumps)
- Protection In case of serious optional alarm (Digital inputs to block the machine in case of alarms such as SMOKE/FIRE/FLOODING)

The controller Informs the User of any anomalous condition via:

- BUZZER (sounding for 10 minutes)
- Energization of the change-over relay "ALARM RELAY".

AUTO DIAGNOSIS
There is a continuous exchange of information between the controller and its I/O interfaces (the 'peripheral' parts of the system).

The connected I/O are constantly controlled so as to immediately block the machine in case one of the interfaces should fail and consequently cause the irregular functioning of the entire unit.

CONTROL ACTIONS
- Regulation of water temperature at evaporator INLET/OUTLET(P or P+I regulation)
- Regulation based on a CENTRAL SET-POINT or on a LATERAL ZONE
- Compressor Lead/Lag selection so as to balance the working hours of all the compressors
- Timed ON/OFF routines of the compressors
- Timed ON routines of the same compressor to limit the number of startings per hour
- Timed routines of different compressors so as to avoid simultaneous startings
- Possibility of selecting the minimum ON time of the compressors
- Display of the working hours of the compressors and indication of overshot limits (maintenance will then be required)
- No flow detector action at motor-driven pump starting
- No low pressure signal at the compressor starting
- Delay of the oil differential signal
- Optional compressors PUMPDOWN
- Optional Compressors PART-WINDING start
- Pumps hourly rotation (optional) and starting of the Stand-by pump in case the current pump should fail
- Weekly time-zones of the chiller start/stop routines
- Daily time-zones for the set-point variation (to save energy)
- Possibility of forcing the starting of each compressor or of ignoring each of them for an easy maintenance, without intervention on the electrical panel
- Control of the parameters ERRORS (overshot selected limits).
- Remote ON-OFF control of the system
- Load Limit Controls
  Prevents the chiller from fully loading at start-up until the system chilled water has been sufficiently cooled to avoid nuisance trip out problems.
- Chiller barrel heater controls
- Control of oil solenoid valve when system having more than 3 compressors per circuit.

OPTIONS
- CLOCKS board, necessary to display DATE and TIME, or to manage the chiller's time-zones(start-stop), or to manage daily time-zones with set-point variation:
- Serial output RS422 for connection to a remote supervisor;
- Serial output RS232 for hard copy print outs;
- Serial connection board to the printer, ALFAPANEL type;
- Serial output RS232C for the modem.
- Current sensing controller for overcurrent / earth current protection for each compressor.

SELECTION GUIDELINE

INSTRUCTIONS

1. Capacity ratings for ACWC-RD Air Cooled Chillers, shown on page-12, cover the majority of design applications for these units. For unusual applications please consult the nearest Goldenstar representative.

2. RATINGS - Ratings may be interpolated, but must not be extrapolated.

3. FOULING FACTOR - Ratings are based on 0.00025(0.000044) fouling factor for the cooler. For other fouling factor, apply correction factor shown in Table-2.

4. 50Hz OPERATION - Ratings are for 60 Hertz operation. For 50 Hertz operation apply the following correction factors:
   Total Capacity x 0.88
   Compressor KW x 0.83

5. COPPER FIN COILS - Apply the following correction factors for copper fin coils:

   Total Capacity x 1.010
   Compressor KW x 0.992

6. ALTITUDE CORRECTION FACTORS - Ratings are given for units operating at sea level. For operation at higher elevation apply the following correction factors shown in Table-1.

METHOD OF SELECTION IN ENGLISH UNITS(SI UNITS)
The following data must be determined.
1. Design Capacity in Tons (KW)
2. Entering and Leaving Liquid Temperatures ºF(ºC).
3. Outside ambient air temperature in ºF(ºC).
4. GPM(L/S) of chilled liquid.

Determine capacity requirements from the following formula:

$$GPM = \frac{\text{Tons x (24)}}{\text{EWT-LWT(ºF)}} \qquad L/S = \frac{\text{KW x 0.239}}{\text{EWT-LWT(ºC)}}$$

Table-1

ALTITUDE (ABOVE SEA LEVEL)		FACTORS	
		Cooling Capacity	Power
2000 Ft.	600 meter	0.99	1.00
4000 Ft.	1200 meter	0.98	1.01
6000 Ft.	1800 meter	0.96	1.02

Table-2

Fouling Factor		FACTOR	
(Ft2-hr-ºF/Btu)	(M^2. K/W)	Capacity	KW
0.00025	0.000044	1.000	1.000
0.00050	0.000088	0.980	0.990
0.00100	0.000176	0.950	0.980

SAMPLE SELECTION CRITERIA - Provide a unit with 90 Tons(316kw) capacity at the following conditions:

Leaving chilled water Temp.(LWT)	42ºF(5.6ºC)
Entering chilled water Temp.(EWT)	52°F(11.2ºC)
Ethylene glycol by weight	20%
Ambient	95°F(35°C)
Electrical power	460/3/60Hz.

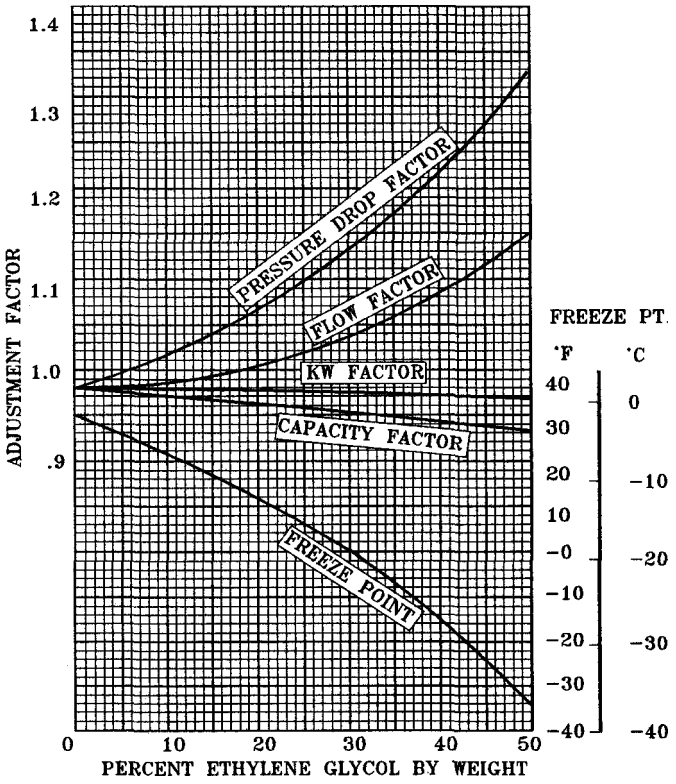
1. From the Capacity tables on page-12 indicates an ACWC-100RD provides 93.5 Tons (329KW) capacity and 103.9KW compressor power at design conditions without ethylene glycol.
2. Correct the capacity and compressor power with 20% ethylene glycol.
   Capacity correction factors 0.97, compressor power correction factor 0.99.
   Corrected cap. = 93.5(329) x 0.97
   = 90.7 Tons(319KW)
   Corrected Comp.Power = 103.9x0.99 = 102.9KW
3. Re**quired water flow**

$$GPM = \frac{\text{Tons x 24}}{\text{Temp. rise ºF}} = \frac{90.7 \times 24}{10ºF} = 217.68$$

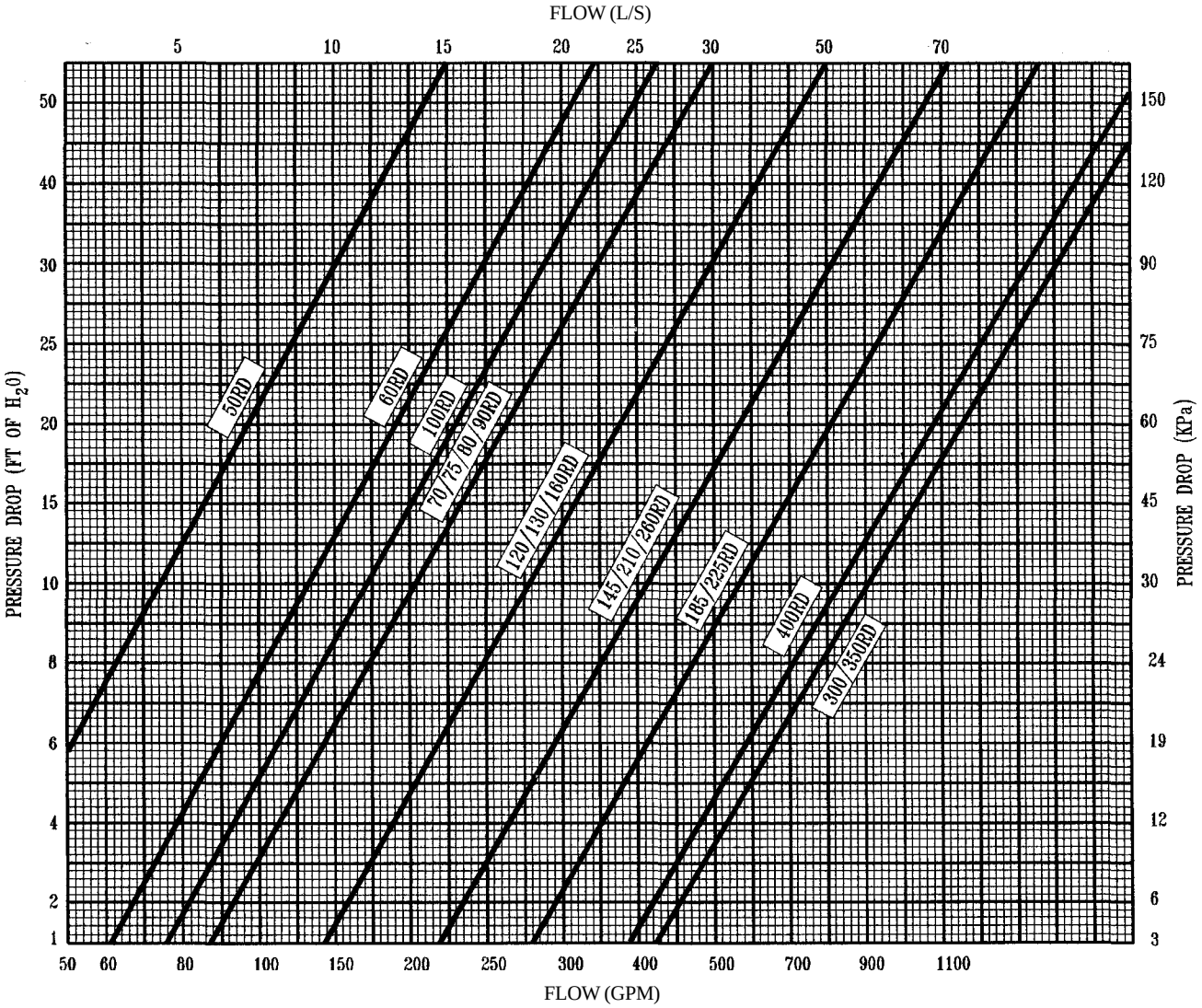
$$L/S = \frac{\text{KW x 0.239}}{\text{Temp. rise ºC}} = \frac{319 \times 0.239}{5.6} = 13.61$$

   The water flow correction factor for 20% ethylene glycol is 1.03.
   Corrected water flow GPM = 217.68x1.03 = 225
   L/S =13.61x1.03 =14
4. Cooler water pressure drop, without ethytene glycol, is found on page-4 for the model ACWC 100RO at 225GPM114L/S) the pressure drop is 17ft(5.2m). Correct the pressure drop for 20% ethylene glycol. From the Ethylene glycol graph the correction for pressure drop is 1.08.
   Corrected pressure drop = 17ft (5.2m) x 1.08
   = 18.36Ft. (5.6m)
5. Condenser fan KW is found on page-17.The ACWC 100RD requires 17.6 KW for the condenser fans.

ETHYLENE GLYCOL PERFORMANCE ADJUSTMENT FACTORS AND SOLUTION FREEZING POINTS-EVAPORATOR ONLY



COOLER PRESSURE DROP



SOUND DATA

ACWC series chillers manufactured from advanced engineered components to keep the noise level as low as possible. The issue of objectionable sound can no longer be treated lightly as manufacturers may have done in the past. Today to an owner sound levels are as important as unit efficiency.

ACWC series chiller engineered with Copeland latest low sound discuss compressors, unique low speed direct driven condenser fans and high rigidity in structural construction produce sound levels lower than competitive reciprocating or even screw compressor units in the market today.

Table-3

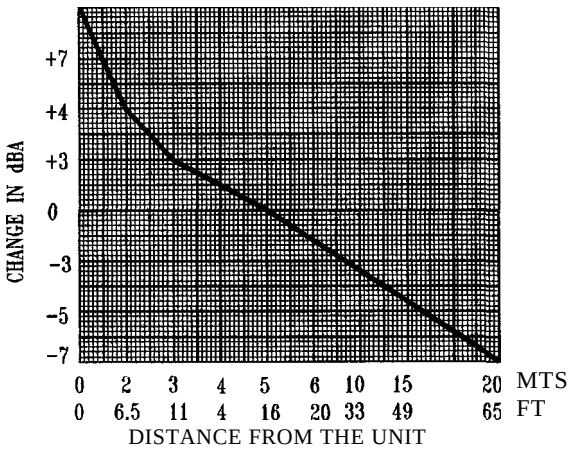
ACWC	SOUND PRESSURE LEVELS-dBA	
	60Hz	50Hz
50 thru 400	78	76

Note:

1. Overall 'A' weighted sound pressure level measured at 5 meters(16 feet) from side of the unit. For control box end deduct 3 dBA

2. Sound pressure level other than 5 meters (16 feet), correct the sound pressure level using correction factor found from sound attenuation due to distance.

SOUND ATTENUATION DUE TO DISTANCE



CAPACITY DATA
IP UNITS

MODEL ACWC	LWTºF	AMBIENT AIR TEMPERATURE ºF														
		85			95			105			115			122		
		TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
50RD	42	45.7	43.1	12.7	43.2	46.0	11.3	40.4	48.4	10.0	37.6	50.6	8.9	35.0	53.1	7.9
	44	47.6	43.9	13.0	44.8	46.9	11.5	42.0	49.3	10.2	39.1	51.9	9.0	36.4	54.5	8.0
	45	48.3	44.4	13.1	45.6	47.3	11,6	42.8	49.9	10.3	39.8	52.4	9.1	37.0	55.0	8.1
	46	49.4	44.7	13.3	46.5	47.8	11.7	43.6	50.4	10.4	40.6	53.0	9.2	37.8	55.7	8.2
	48	51.0	45.5	13.5	48.2	48.6	11.9	45.2	51.5	10.5	42.1	54.2	9.3	39.2	56.9	8.3
60RD	42	53.9	48.0	13.5	51.0	51.4	11.9	48.1	54.4	10.6	45.2	57.5	9.4	42.0	60.4	8.3
	44	56,0	48.8	13.8	53.0	52.3	12.2	50,0	55.4	10.8	46.8	58.6	9.6	43.5	61.5	8.5
	45	57.0	49.1	13.9	54.0	52.7	12.3	50.9	56.0	10.9	47.8	59.2	9.7	44,5	62.2	8.6
	46	58.1	49.6	14,1	55.0	53.2	12.4	51.8	56.4	11.0	49.4	59.8	9.9	46.0	62.8	8.8
	48	60.3	50.4	14.4	57.1	54.1	12.7	53.8	57.5	11.2	51.2	60.9	10.1	47.6	63.9	8.9
70RD	42	68.4	64.7	12.7	64.9	69.5	11.2	61.6	73.8	10.0	58.5	78.2	9.0	54.4	82.1	8.0
	44	70.9	66.0	12.9	67.2	70.9	11.4	63.9	75.2	10.2	60.7	79.8	9.1	56.5	83.8	8.1
	45	72.1	66.7	13.0	69.4	71.7	11.6	65.1	76.1	10.3	61.8	80.6	9.2	57.5	84.6	8.2
	46	73.5	67.4	13.1	70.7	72.4	11.7	66.4	76.8	10.4	63.0	81.4	9.3	58.6	85.5	8.2
	48	76.1	68.7	13.3	73.3	73.7	11.9	68.7	78,3	10.5	65.3	83.0	9.4	60.7	87.2	8.4
75RD	42	74.9	69.2	13.0	70.9	73.7	11.5	66.5	78.3	10.2	62.2	82.6	9.0	57.8	86.7	8.0
	44	77.9	70.4	13.3	73.7	75.1	11.8	69.1	79.7	10.4	64.4	84.1	9.2	59.9	88.3	8.1
	45	79.5	71.1	13.4	75.1	75.9	11.9	70.6	80.4	10.5	65.8	84.9	9.3	61.2	89.1	8.2
	46	81.2	71.7	13.6	76.4	76.6	12.0	71.7	81.2	10.6	67.0	85.4	9.4	62.3	89.7	8.3
	48	84.2	73.1	13.8	79.5	78.0	12.2	74.6	82.8	10.8	69.5	86.6	9.6	64.6	90.9	8.5
80RD	42	80.1	77.9	12.3	75.8	82.7	11.0	71.2	86.6	9.9	66.7	90.7	8.8	62.0	95.2	7.8
	44	83.2	79.1	12.6	78.5	83.9	11.2	73.9	88.4	10.0	69.1	92.7	8.9	64.3	97.3	7.9
	45	84.7	79.8	12.7	80.1	84.8	11.3	75.4	89.5	10.1	70.6	93.7	9.0	65.7	98.4	8.0
	46	86.4	80.5	12.9	81.7	85.7	11.4	76.8	90.3	10.2	71.7	94.5	9.1	66.7	99.2	8.1
	48	89.5	81.7	13.1	84.5	87.7	11.6	79.5	92.2	10.3	74.3	96.3	9.3	69.1	101.1	8.2
90RD	42	93.8	90.4	12,5	88.9	96.3	11,1	84.3	101.6	10.0	79.2	106.7	8.9	73.7	112.0	7.9
	44	97.4	92.1	12.7	92.4	98.2	11.3	87.5	103.6	10.1	82.1	108.9	9.0	76.4	114.3	8.0
	45	99.2	92.9	12.8	94.0	99.1	11.4	89.0	104.5	10.2	83.6	110.0	9.1	77.7	115.5	8.1
	46	101.1	93.8	12.9	95.9	99.9	11.5	90.6	105.6	10.3	85.1	111.1	9.2	79.1	116.7	8.1
	48	104.8	94.8	13.3	99.3	101.8	11.7	93.8	107.6	10.5	88.1	113.2	9.3	81.9	118.7	8.3
100RD	42	98.2	97.7	12.1	93.5	103.9	10.8	88.5	110.2	9.6	83.5	116.5	8.6	77.7	122.3	7.6
	44	102.2	99.6	12.3	97.2	106.1	11.0	92.0	112.6	9.8	86.9	118.9	8.8	80.7	124,8	7.8
	45	104.1	100.3	12.5	98.9	107.3	11.1	93.8	113.2	9.9	88.5	120.2	8.8	82.3	126.2	7.8
	46	106.1	101.4	12.6	100.8	108.3	11.2	95.3	115.2	9.9	90.2	121.4	8.9	83.9	127.5	7.9
	48	109.9	103.3	12.8	104.3	110.5	11.3	98.8	117.1	10.1	93.1	123.9	9.0	86.6	130.1	8.0
120RD	42	119.0	114.9	12.4	113.0	122.2	11.1	106.8	128.8	10.0	100.8	135.5	8.9	93.7	142.3	7.9
	44	123.2	116.7	12.7	117.1	123.3	11.4	110.9	131.4	10.1	104.6	137.3	9.1	97.3	144.2	8.1
	45	125.7	117.7	12.8	119.3	125.5	11.4	112.9	132.5	10.2	106.5	139.4	9.2	99.0	146.4	8.1
	46	127.9	118.8	12.9	121.5	126.7	11.5	114.9	133.8	10.3	108.3	140,8	9.2	100.7	147.8	8.2
	48	132.6	120.8	13.2	125.8	128.9	11.7	119.1	136.6	10.5	112.2	143.5	9.4	104.3	150.7	8.3
130RD	42	124.4	122.0	12.2	117.9	129.6	10.9	112.0	136.8	9.8	105.8	144.0	8.8	98.4	151,2	7.8
	44	128.8	123.9	12.5	122.5	131.9	11.1	116.2	139.5	10.0	109.7	145.2	9.1	102.0	152.5	8.0
	45	131.5	125.0	12.6	124.7	133.0	11.3	118.3	140.6	10.1	111.8	148.2	9.1	104.0	155.6	8.0
	46	133.7	126.2	12.7	127.1	134.5	11.3	120.4	142.1	10.2	113.6	149.7	9.1	105.6	157,2	8.1
	48	138.6	128.4	13.0	131.6	136.8	11.5	124.7	145.2	10.3	117.8	152.8	9.3	109.6	160.4	8.2
145RD	42	138.7	138.9	12.0	132.0	147.6	10.7	125.6	159.0	9.5	119.4	168.7	8.5	111.0	177.1	7.5
	44	143,3	141.7	12,1	136.5	152.1	10.8	130.0	161.9	9.6	123.6	172.2	8.6	114.9	180.8	7.6
	45	145.7	143.4	12.2	138.9	153.7	10.8	132.1	163.5	9.7	125.8	173.9	8.7	117.0	182.6	7.7
	46	148.1	144.6	12.3	141.3	155.1	10.9	134.3	165.1	9.8	127.9	175.8	8.7	118,9	184.6	7.7
	48	153,4	147.5	12.5	146.2	158.5	11.1	139.1	168.6	9.9	132.6	179.4	8.9	123.3	188.4	7.9

NOTES
1. Ratings based on 10ºF. Chilled water range and 0.00025 fouling factor
2. KW and EER for compressor motors only.
3. Ratings are lor 60 Hertz electrical service. For 50 Hertz service multiply tons by 0.88 and KW by 0.83
4. Capacity data applicable also for HFC refrigerant R407C, Consult factory for certified data.

CAPACITY DATA
IP UNITS

MODEL ACWC	LWTºF	AMBIENT AIR TEMPERATURE ºF														
		85			95			105			115			122		
		TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	ERR
160RD	42	157.9	153.1	12.4	150.0	162.9	11.0	141.9	171.7	9.9	133.5	179.9	8.9	124.2	188.7	7.9
	44	163.0	155.5	12.6	155.0	165.5	11,2	146.5	174.5	10.1	137.4	183.5	9.0	127.8	192.7	8.0
	45	165.5	156.7	12.7	157.4	166.8	11,3	148.8	175.9	10.2	139.5	184.4	9.1	129.7	193.6	8.0
	46	168.1	157.9	12.8	159.7	168.1	11.4	151.1	177.3	10.2	141.6	185.9	9.1	131.7	195.2	8.1
	48	173.2	160.3	13.0	164.7	170.7	11.6	155.7	180.2	10.4	145.8	188.9	9.3	135.6	198.3	8.2
185RD	42	184.8	188.8	11.7	174.7	201.5	10.4	163.7	213.7	9.2	152.1	225.6	8.1	141,5	236.9	7.2
	44	190.4	192.4	11,9	180.0	205.4	10.5	168.4	218.0	9.3	156.3	230.3	8.1	145.4	241.8	7.2
	45	193.1	194.1	11.9	182.4	207.4	10.6	170.8	220.2	9.3	158.4	232.7	8,2	147.3	244.3	7.2
	46	195.9	195.9	12,0	185,0	209.4	10.6	173.4	222.4	9.4	160.5	235.2	8.2	149.3	247.0	7.3
	48	201.5	199.6	12.1	190.3	213.4	10.7	178.2	226.8	9.4	165.1	240.1	8.3	153.5	252.1	7.3
210RD	42	207.4	204.9	12,1	196.6	218.4	10.8	185.1	231.0	9.6	172.6	243.1	8.5	160.5	255.3	7.5
	44	214,0	208.4	12.3	202,5	222.2	10.9	190.5	235.3	9.7	178.0	247.7	8.6	165.5	260.1	7.6
	45	217.1	210.2	12.4	205.4	224.2	11.0	193.6	237.4	9.8	180.8	250.0	8.7	168.1	262.5	7.7
	46	220.4	212.0	12.5	208.5	226.1	11.1	196.4	239,5	9.8	183.3	252.4	8.7	170.5	265.0	7.7
	48	227.0	215.5	12.6	214.8	230.1	11.2	202.1	243.9	9.9	188.4	257.1	8.8	175.2	270.0	7.8
225RD	42	221.8	226.6	11.7	209.6	241.8	10.4	196.4	256,4	9.2	182.5	270.7	8.1	169.7	284.2	7.2
	44	228.5	230.9	11.9	216.0	246.5	10.5	202.1	261.6	9.3	187.6	276.4	8.1	174.5	290.2	7.2
	45	231.7	232.9	11.9	218.9	248.9	10.6	205.0	264.2	9.3	190.1	279.2	8.2	176.8	293,2	7.2
	46	235.1	235.1	12.0	222.0	251.3	10.6	208.1	266.9	9.4	192.6	282.2	8.2	179.1	296.3	7.3
	48	241.8	239,5	12.1	228.4	256.1	10.7	213.8	272.2	9.4	198.1	288.1	8.3	184.2	302.5	7.3
260RD	42	258.7	264.3	11.7	244.6	282.1	10.4	229.2	299.2	9.2	212.9	315.8	8.1	198.0	331.6	7.2
	44	266.6	269.4	11.9	252.0	287.6	10.5	235.8	305.2	9.3	218.8	322.4	8.1	203.5	338.5	7.2
	45	270.3	271.7	11.9	255.4	290.4	10.6	239.1	308.3	9.3	221,8	325.8	8.2	206.3	342.1	7.2
	46	274.3	274.3	12,0	259.0	293.2	10,6	242.8	311.4	9.4	224.7	329.3	8.2	209.0	345.8	7.3
	48	282.1	279.4	12.1	266.4	298.8	10.7	249.5	317.5	9.4	231.1	336.1	8.3	214.9	352.9	7.3
300RD	42	297,8	275.2	13.0	279.0	299.3	11.2	261.7	322,8	9.7	242.9	346.6	8.4	225.9	363.9	7,4
	44	305.4	277,8	13.2	288,0	302.8	11.4	269.0	326.8	9.9	250,9	351.7	8.6	233.3	369.2	7.6
	45	309.2	279,0	13.3	291.0	304.6	11.5	274.0	329.6	10.0	253.6	354.2	8.6	235.8	371.9	7.6
	46	315.2	280.3	13.5	296.7	306.3	11.6	279.6	331.2	10.1	258.7	356.8	8.7	240.6	374.6	7.7
	48	327.9	282.7	13.9	307.4	309.4	11.9	287.4	334.9	10.3	268.7	361.6	8,9	249.9	379.7	7.9
350RD	42	327.2	307.5	12,8	307.2	332.0	11.1	284.9	356.8	9.6	268.7	382.4	8.4	249.9	401.5	7.5
	44	336.4	310.6	13.0	317.2	336.2	11.3	296.7	361.6	9.8	277.7	388.0	8.6	258.2	407,4	7.6
	45	342.2	311.8	13.2	321.7	337.2	11.4	299.4	363.8	9.9	280,7	390.8	8.6	260.1	410.3	7.6
	46	345.6	313.3	13.2	325.2	339.7	11,5	304.9	366.0	10.0	285,0	392.8	8.7	265.1	412.4	7.7
	48	359.6	316.2	13.6	338.7	343.2	11.8	317.8	370.4	10.3	297.0	398.0	8.9	276.2	417.9	7.9
400RD	42	353.7	340.0	12.5	336.2	365.4	11.0	314.0	391.2	9.6	295.0	419.0	85	274.8	439.9	7.5
	44	367.3	343.3	12.8	347.0	369.6	11.3	325.7	396.0	9.9	304.5	424.3	8.6	283.2	445.5	7.6
	45	370.2	344.8	12.9	350.0	371.8	11.3	329.0	399.2	9.9	307.8	427.4	8.6	286.2	448.7	7.6
	46	377.6	346.8	13.1	356.9	374,1	11.4	335.5	401.6	10.0	314.2	430.4	8.8	292.2	451,9	7.7
	48	392.6	350.0	13.5	370.6	377.6	11.8	349.2	406.2	10.3	327.9	435.8	9.0	304.9	457.6	8.0

NOTES

1. Ratings based on 10º F. Chilled water range and 0.00025 fouling factor
2. KW and EER for compressor motors only.
3. Ratings are for 60Hertz electrical service. For 50 Hertz service multiply tons by 0.88 and KW by 0.83
4. Capacity data applicable also for HFC refrigerant R407C, Consult factory for certified data.

CAPACITY DATA
SI UNITS

MODEL ACWC	LWTº	AMBIENT AIR TEMPERATURE ºC														
		30			35			40			45			50		
		KW	KWi	COP	KW	KWi	COP	KW	KWi	COP	KW	KWi	COP	KW	KWi	COP
50RD	6	162.1	43.7	3.7	154.0	46.3	3.3	145.2	48.4	3.0	136.1	50.6	2.7	124.8	53.6	2.3
	7	167.7	44.5	3,8	159.3	47.1	3.4	150.5	49.4	3.0	141.0	51.7	2.7	129.4	54.8	2.4
	8	173.7	45.2	3.8	164.5	47,9	3.4	155.4	50.3	3.1	145.9	52.7	2.8	132.9	55.7	2.4
	9	179.7	46.0	3.9	170,9	48.9	3.5	161.4	51.4	3.1	151,5	53.9	2.8	134.7	57.1	2.4
	10	181.5	46.5	3.9	172.0	49.1	3.5	162.5	51.7	3.1	153.0	54.2	2.8	136.0	57.4	2.4
60RD	6	191.3	48.7	3.9	181.8	51.7	3,5	172.6	54,5	3.2	163.1	57.3	2.8	149.4	60.8	2.5
	7	197.9	49.4	4.0	188.5	52.5	3.6	178.6	55.4	3.2	168.8	58.4	2.9	155.1	61.9	2.5
	8	204.6	50.1	4.1	194.8	53.4	3.6	184.6	56,3	3.3	176.5	59.3	3.0	162.8	63.0	2.6
	9	212.4	51.0	4.2	202.2	54.3	3.7	192.0	57.3	3.4	183.2	60.4	3.0	168,8	64.1	2.6
	10	214.5	51.3	4.2	204.2	54.6	3.7	193.9	57,6	3.4	185,0	60.7	3.0	170.5	64.4	2.6
70RD	6	242.3	65.7	3,7	231.0	70.0	3.3	220.8	73.8	3.0	210.6	77.9	2.7	194.1	82.7	2.3
	7	250.7	66.9	3.7	240.8	71.4	3.4	228.9	75.3	3.0	218.0	79.4	2.7	200.8	84.3	2.4
	8	259.1	68.2	3.8	250.3	72.7	3.4	236.6	76.6	3.1	225.4	80.8	2.8	207.4	85.8	2.4
	9	267.5	69.4	3.9	259,1	73.9	3.5	244.7	78.0	3.1	233.5	82.3	2.8	214.8	87.4	2.5
	10	270,2	69.7	3.9	261.7	74.3	3.5	247.1	78.4	3.1	235.8	82,7	2.8	216.9	87.8	2.5
75RD	6	265.8	70.1	3.8	252.8	74.2	3.4	238.7	78.3	3.0	224.7	82.2	2.7	206.0	87.3	2,4
	7	275,7	71.3	3.9	261.9	75.6	3.5	247.9	79.6	3.1	232.8	83.7	2.8	213,4	88.8	2.4
	8	285.5	72.4	3.9	270.7	76.9	3.5	255.6	81.0	3.2	245,4	84.9	2.9	220.5	89.9	2.5
	9	295.7	73.8	4.0	280.9	78.2	3.6	265.5	82.5	3.2	249.9	86.0	2,9	228.5	91.1	2.5
	10	298.7	74.2	4.0	283.7	78.6	3.6	268.2	82.9	3,2	252,4	86.4	2.9	230.8	91.6	2.5
80RD	6	283.7	78.5	3.6	270.5	83.1	3.2	255.6	86.8	2.9	240.8	90.6	2.7	220.8	95.9	2.3
	7	293.9	80.0	3.7	279.5	84.5	3.3	264.8	88.6	3.0	249.6	92.5	2.7	228.9	97.9	2.3
	8	304.1	81.3	3.7	289.0	86.1	3.4	273.5	90.2	3.0	257.4	94.0	2.7	235.9	99.5	2.4
	9	314.3	82.5	3.8	298.5	87.9	3.4	282.7	91.9	3.1	266.2	95.7	2,8	244.4	101.3	2.4
	10	317.4	82.9	3.8	301.5	88.3	3.4	285.5	94.4	3.1	268.9	96.2	2,8	246.8	101.8	2.4
90RD	6	332.6	91.7	3.6	317.1	97.0	3.3	302.4	101,8	3.0	285.8	106.5	2.7	262.6	112.9	2.3
	7	344.2	93.3	3.7	328.4	98.8	3.3	312.6	103.5	3.0	295.7	108.5	2.7	271.4	115.0	2.4
	8	355.8	94.7	3.8	339.3	100.2	3.4	322.8	105.4	3.1	304.8	110.4	2.8	279.9	117.1	2.4
	9	367.8	95.7	3.8	350.5	102.0	3.4	333.3	107.2	3.1	315.0	112.3	2.8	289.4	118.9	2.4
	10	371.5	96.2	3.8	354.0	102.5	3.4	336.6	107.7	3.1	318.2	112.9	2.8	292.3	119.5	2.4
100RD	6	348.8	99.1	3.5	333.3	104.7	3.2	317.5	110.4	2.9	301.3	116.0	2.6	277.1	123.2	2,2
	7	361.4	100.7	3.6	345.3	106.8	3.2	329.1	112.3	2.9	312.6	118.4	2.6	287.3	125.7	2.3
	8	373.4	102,5	3,6	356,5	108.7	3.3	339.3	114.8	3.0	322.4	120.6	2,7	296.7	128.0	2.3
	9	385.7	104.3	3.7	368.1	110.7	3,3	350.9	116.6	3.0	332.6	122.8	2,7	305.9	130.3	2.3
	10	389.6	104.8	3.7	371.8	111.3	3.3	354.4	117.2	3.0	335.9	123.4	2.7	308.9	130.9	2.3
120RD	6	421.6	116.3	3.6	402.6	122,5	3.3	383.2	129,9	3.0	363.6	134,9	2,7	334.0	143.0	2.3
	7	436.0	118.1	3.7	416.3	124.6	3.3	396.6	131.2	3.0	376.2	137.2	2.7	345.6	145.5	2.4
	8	450.4	120.0	3.8	430.0	127.1	3.4	409.3	133.5	3.1	387.8	139.9	2.8	356.5	148.4	2.4
	9	465.2	121.9	3.8	443.7	129.1	3.4	422.6	136.0	3.1	400.8	142,3	2.8	368.1	150.9	2.4
	10	469.8	122,5	3.8	448.1	129.7	3.4	426.8	136.7	3.1	404.8	143.0	2.8	371.8	151.6	2.4
130RD	6	440.6	123.5	3.6	420.5	130.5	3.2	401.5	137.0	2.9	381.5	143.1	2.7	350.5	151.7	2,3
	7	456.0	125.5	3.6	435.3	132.6	3.3	415.6	139.4	3.0	394.8	145.7	2.7	362.8	154.4	2.4
	8	470.8	127.5	3.7	449.7	134.9	3.3	428.6	141.9	3,0	407.1	148.8	2.7	373.7	157.8	2.4
	9	486.3	129.5	3.8	464.1	137.0	3.4	442.3	144.5	3.1	420.5	151.5	2.8	386.8	160.6	2.4
	10	491.2	130.1	3.8	468.7	137.7	3.4	446.7	145.2	3.1	427.7	152.3	2.8	390.7	161.4	2.4
145RD	6	491.2	140.9	3.5	469.7	149.2	3.1	449.7	158,9	2.8	429.7	168.0	2.6	395.2	178.4	2.2
	7	506.3	143.8	3.5	484.9	153.0	3,2	464.1	161.8	2.9	443.7	171.1	2.6	408.6	181.9	2.2
	8	521.4	146.2	3,6	500.0	155.7	3.2	478.2	164.7	2.9	457.4	174.4	2.6	420.9	185.3	2.3
	9	537.9	148.9	3.6	515.4	158.7	3.2	493.3	167.7	2.9	472.2	177.5	2.7	434.9	188.6	2.3
	10	543.3	149.6	3,6	520.6	159.5	3.3	498.2	168.5	2.9	476.9	178.3	2.7	439.2	189.5	2.3

NOTES

1. Ratings based on 5.56º C. Chilled water range and 0.000044 fouling factor
2. KWi and COP for compressor motors only.
3. Ratings are for 60 Hertz electrical service. For 50 Hertz service multiply tons by 0.88 and KW by 0.83
4. Capacity data applicable also for HFC refrigerant R407C, Consult factory for certified data.

CAPACITY DATA
SI UNITS

MODEL ACWC	LWT °C	AMBIENT AIR TEMPERATURE °C														
		30			35			40			45			50		
		KW	KWi	COP	KW	KWi	COP	KW	KWi	COP	KW	KWi	COP	KW	KWi	COP
160RD	6	558.7	155.0	3.6	533.7	163,8	3.3	508.1	171.7	3.0	480.6	179.5	2.7	441.3	190.1	2.3
	7	575.2	157.3	3.7	549.9	166.3	3.3	523.2	174.4	3.0	494.0	182.3	2.7	453.2	193.2	2.3
	8	591.0	159.4	3.7	564.7	168.6	3.3	537.6	176.9	3.0	507.4	184,8	2.7	465.5	195.8	2.4
	9	607.2	161.6	3.8	580.5	170.9	3.4	552.4	179.4	3.1	521.1	187.4	2.8	478.2	198.5	2.4
	10	613.3	162.4	3.8	586.3	171.5	3.4	557.9	180.3	3.1	526.3	188.3	2.8	483.0	199.5	2.4
185RD	6	652.9	191.5	3.4	620.9	202.9	3.1	585.8	213.9	2.7	548.5	224.9	2.4	502.4	238.7	2.1
	7	671.2	194.8	3.4	637.8	206.6	3.1	601.2	217.9	2.8	562.6	229.2	2.5	515.1	243.2	2.1
	8	688.1	198.0	3.5	654.0	210.2	3.1	617.1	221.8	2.8	576.3	233.5	2.5	527.7	248.0	2.1
	9	705.7	201.3	3.5	670.5	213.6	3.1	632.5	225.6	2.8	591.0	237.7	2.5	541.1	252.3	2.1
	10	712.7	202.3	3.5	677.2	214.7	3.1	638.8	226.7	2.8	596.1	238.9	2.5	546.5	253.6	2.1
210RD	6	733.4	207.6	35	697.6	219.8	3.2	662.1	231.2	2.9	622.7	242.4	2.6	570.6	257.0	2.2
	7	754.5	211.0	3.6	718.0	223.4	3.2	681.0	235,2	2.9	640.6	246.6	2.6	587.5	261.6	2.2
	8	774.6	214.2	3.6	736.9	226.8	3.2	699.0	238.9	2.9	656.8	250.6	2,6	602.6	266.0	2.3
	9	795.0	217.3	3.7	756.6	230.2	3.3	716.9	242.6	3.0	673.3	254.7	2.6	617.4	270.2	2.3
	10	802.9	218.4	3.7	764.2	231.4	3.3	724.1	243.8	3.0	680.0	256.0	2.6	623.5	271.5	2.3
225RD	6	783.7	229.8	3.4	745.0	243.5	3.1	702.8	256.7	2.7	658.2	269.8	2.4	602.6	286.3	2.1
	7	805.5	233.8	3.4	765.4	247.9	3.1	721.8	261.5	2.8	675.4	275.1	2.5	618.5	292.0	2.1
	8	825.9	237.6	3.5	784.8	252.2	3.1	740.8	266.2	2.8	691.6	280.2	2.5	632.9	297.4	2.1
	9	846.6	241.5	3.5	804.5	256.3	3.1	758.7	270.7	2.8	708.8	285.1	2.5	649.0	302.7	2.1
	10	855.1	242.7	3.5	812.5	257.6	3.1	766.3	272.1	2.8	715.9	286.5	2.5	655.5	304.2	2.1
260RD	6	914.2	268.0	3.4	869.5	284.1	3.1	820.3	299.5	2.7	767.5	314.8	2.4	703.2	334.1	2.1
	7	939.5	272.7	3.4	893.1	289.2	3.1	842.1	305.2	2.8	787.6	321.0	2.5	721.5	340.7	2.1
	8	963.7	277.2	3.5	915.2	294.2	3.1	863.9	310.5	2.8	806.9	325.4	2.5	728.7	347.1	2.1
	9	987.3	281.7	3.5	938.1	299.0	3.1	885.0	315.7	2.8	826.6	332.6	2.5	757.0	353.1	2.1
	10	997.2	283.1	3.5	947.5	300.5	3.1	893.8	317.3	2.8	834.9	334.3	2.5	764.6	354.9	2.1
300RD	6	1049.8	277.8	3.8	992.6	300.6	3.3	936.3	321.7	2.9	877.2	326.5	2.7	803.8	365.8	2.2
	7	1075.2	281.2	3.8	1018.9	303.9	3.4	963.0	325.8	2.9	901.5	330.8	2.7	825.5	670.8	2.2
	8	1109.2	283.6	3.9	1049.9	306.9	3.4	994.7	329.2	3.0	930.3	333,4	2.8	851.9	375.5	2.3
	9	1146.5	286.0	4.0	1082.2	309.4	3.5	1019.3	332.6	3.1	959.5	337.0	2.8	880.0	380.1	2.3
	10	1158.0	287.4	4.0	1093.0	310.9	3.5	1029.2	334.3	3.1	969.1	338.7	2,8	888.8	382.0	2.3
350RD	6	1154.6	312.2	3.7	1092.8	333.5	3.3	1024.9	355.8	2.9	968.6	361.0	2.7	889.2	403.6	2.2
	7	1187.3	314.0	3.8	1124.8	336.8	3.3	1056.9	360.1	2.9	996.1	365.4	2,7	911.7	409.1	2.2
	8	1216.2	316.6	3.8	1152.2	340.3	3.4	1087.8	364.0	3.0	1023.8	369.3	2.8	939.1	413.4	2.3
	9	1258.0	319.2	3.9	1192.3	343.6	3.5	1126.5	367.9	3.1	1060.1	373.5	2.8	972.5	418.4	2.3
	10	1270.6	320.8	4.0	1204.2	345.3	3.5	1137.8	369.7	3.1	1070.7	375.3	2.8	982.2	420.5	2.3
400RD	6	1253.8	343.9	3.6	1195.8	366.9	3.3	1127.9	390.1	2.9	1063.6	395.7	2.7	977.1	442.0	2.2
	7	1289.6	347.0	3.7	1226.4	270.9	3.3	1160.3	395.0	2.9	1092.4	400.6	2.7	1002.1	447.4	2.2
	8	1329.4	350.3	3,8	1263.6	374.7	3.4	1196.5	399.2	3.0	1128.6	405.2	2.8	1035.5	452.9	2.3
	9	1386.0	353.6	3.9	1304.4	378.1	3.4	1237.3	402.6	3.1	1169.4	409.5	2.8	1073.4	458.1	2.3
	10	1399.9	355.4	3.9	1317,4	380.0	3.5	1249.7	404.6	3.1	1181.1	411.5	2.8	1084.1	460.4	2.3

NOTES

1. Ratings based on 5.06º C Chilled water range and 0.000044 fouling factor
2. KWi and COP for compressor motors only.
3. Ratings are for 60 Hertz electrical service. For 50 Hertz service multiply tons by 0.88 and KW by 0.83
4. Capacity data applicable also for HFC refrigerant R407C, Consult factory for certified data.

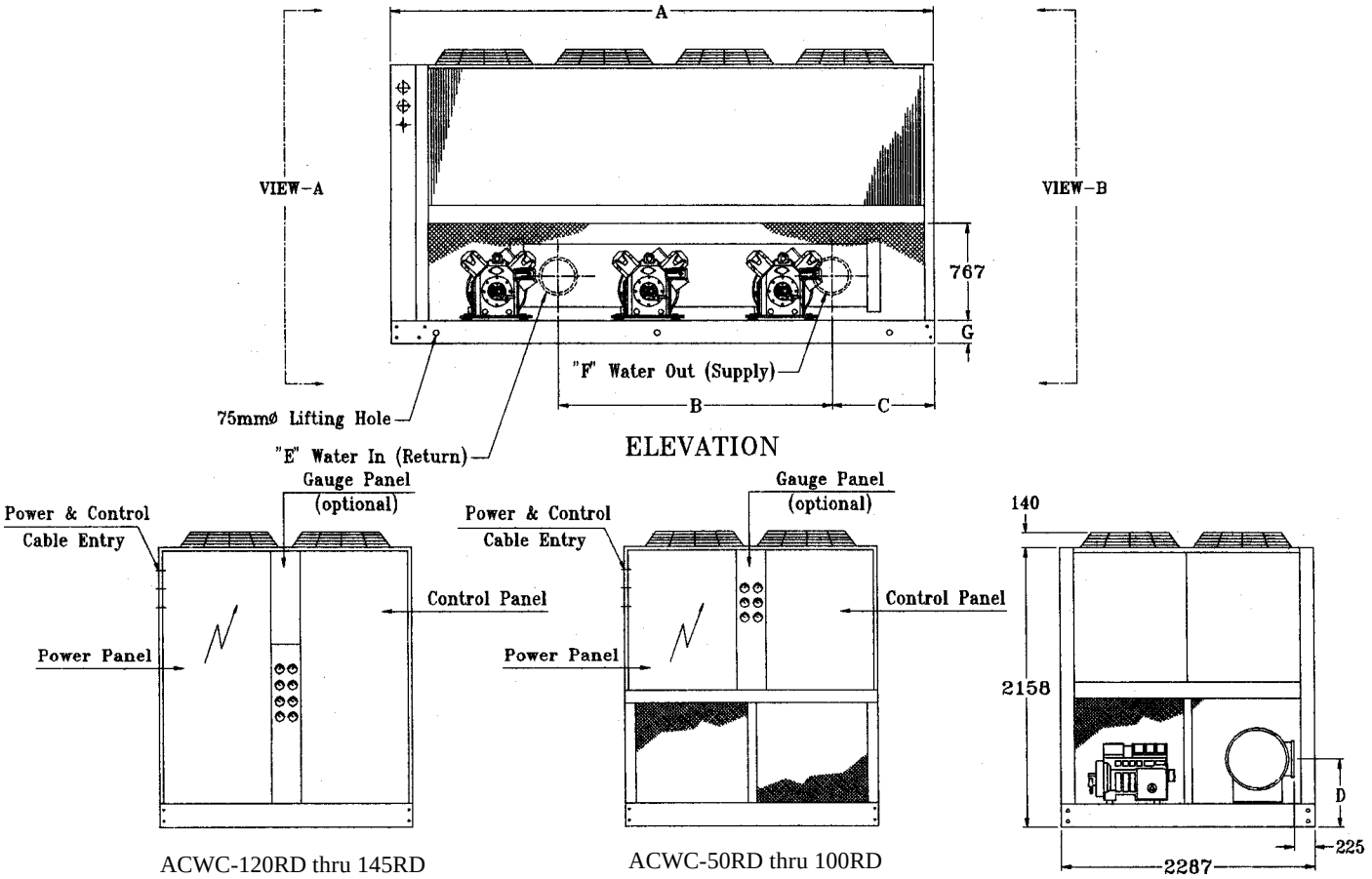
PHYSICAL DATA
MODELS ACWC-50RD THRU 145RD

Model ACWC	50RD	60RD	70RD	75RD	80RD	90RD	100RD	120RD	130RD	145RD
COMPRESSORS - Accessible Hermetic - 1750 RPM										
Quantity and Horsepower(Kw)Cir.#1	1-25(18.6)	1-25(18.6)	1-35(26.1)	1-35(26.1)	1-35(26.1)	1-35(26.1)	1-40(29.8)	1-30(22.3) 1-35(26.1)	2-35(26.1)	1-35(26.1) 1-40(29.8)
Quantity and Horsepower(Kw)Cir.#2	1-30(22.3)	1-35(26.1)	1-40(29.8)	2-25(18.6)	2-30(22.3)	2-35(26.1)	2-35(26.10	2-35(26.1)	2-35(26.1)	2-40(29.8)
Capacity Control Steps/Step Capacity(%)	4/23	4/19	4/32	4/14	4/15	4/22	4/21	4/22	4/25	4/23
Oil Charge Oz (L)/Compressor in Cir.#1	135(3.9)	135(3.9)	140(4.1)	140(4.1)	140(4.1)	140(4.1)	255(7.5)	140(4.1)	140(4.1)	255(7.5)
Oil Charge Oz (L)/Compressor in Cir.#2	135(3.9)	140(4.1)	255(7.5)	135(3.9)	135(3.9)	140(4.1)	140(4.1)	140(4.1)	140(4.1)	255(7.5)
Crankcase Heaters No.& Watts-115V	2-100	2-100	1-100, 1-200	3-100	3-100	3-100	1-200, 2-100	4-100	4-100	1-300, 3-200
CONDENSER COILS-Copper Tube/Aluminium Fin W/Subcooling Circuts										
Face Area Sq.Ft (Sq.M)	79.2(7.4)	118.8(11.0)	118.8(11.0)	118.8(11.0)	158.3(14.7)	158.3(14.7)	158.3(14.7)	197.9(18.4)	197.9(18.4)	218.8(20.3)
Rows Deep-Cir#1/Cir#2	3/3	2/2	2/3	2/4	2/3	2/4	2/4	3/3	3/3	4/4
CONDENSER FANS(Propeller & Direct Drive Type) AND MOTORS										
Fans-No.and Dia In (mm)	4-30(762)	6-30(762)	6-30(762)	6-30(762)	8-30(762)	8-30(762)	8-30(762)	10-30(762)	10-30(762)	10-30(762)
Motors No. & HP.	4-1.5	6-1.5	6-1.5	6-1.5	8-1.5	8-1.5	8-1.5	10-1.5	10-1.5	10-1.5
Total KW	8.8	13.2	13.2	13.2	17.6	17.6	17.6	22.0	22.0	22.0
CHILLER EVAPORATOR Direct Expansion Baffled Shell & Thru Tube										
Diameter & Tube Length In. (mm)	10 x 72 (250 x 1829)	10 x 96 (250 x 2438)	12 x 96 (300 x 2438)	12 x 96 (300 x 2438)	12 x 96 (300 x 2438)	12 x 120 (300 x 3048)	12 x 120 (300 x 3048)	16 x 96 (400 x 2438)	16 x 96 (400 x 2438)	16 x 120 (400 x 3039)
Water Conn. In. (mm)	4FLG(DN100)	4FLG(DN100)	5FLG(DN125)	5FLG(DN125)	5FLG(DN125)	5FLG(DN125)	6FLG(DN150)	6FLG(DN150)	6FLG(DN150	6FLG(DN150)
Net Water Volume Gal. (L)	18.9(71.7)	25.5(96.4)	34.5(130.6)	34.5(130.6)	34.5(130.6)	43.4(164.4)	43.4(164.4)	55.0(208.1)	55.0(208.1)	69.2(262.1)
Electric Heater Watts-115V	210	210	210	420	420	420	420	420	420	420
UNIT										
Refrig. Chg. R22 Lbs. (Kg) Cir.#1	33(15)	40(18)	53(24)	49(22)	53(24)	56(25.5)	62(28)	95(43)	95(43)	112(51)
Refrig. Chg. R22 Lbs. (Kg) Cir.#2	36(16.5)	45(20.5)	56(25.5)	66(30)	73(33)	88(40)	88(40)	97(44)	97(44)	113(51.5)
Approx. Oper. Wt Lbs. (Kg)	4800(2182)	5566(2530)	6217(2826)	7520(3418)	7612(3460)	8329(3786)	8475(3852)	10487(4767)	10560(4800)	12005(5457)
Length In. (mm)	112½(2855)	149½(3800)	149½(3800)	149½(3800)	192¼(4885)	192¼(4885)	192¼(4885)	222(5638)	222(5638)	243½(6187)
Width In. (mm)	90(2287)	90(2287)	90(2287)	90(2287)	90(2287)	90(2287)	90(2287)	90(2287)	90(2287)	90(2287)
Height In. (mm)	90½(2298)	90½(2298)	90½(2298)	90½(2298)	90½(2298)	90½(2298)	90½(2298)	90½(2298)	90½(2298)	90½(2298)

PHYSICAL DATA
MODELS ACWC-160RD THRU 400RD

Model ACWC	160RD	185RD	210RD	225RD	260RD	300RD	350RD	400RD
COMPRESSORS - Accessible Hermetic -1750 RPM								
Quantity and Horse power(Kw)Cir.#1	2-35(26.1)	2-40(29.8)	3-35(26.1)	3-40(29.8)	3-40(29.8)	4-40(29.8)	4-40(29.8)	4-50(37.3)
Quantity and Horse power(Kw)Cir.#2	3-35(26.1)	3-40(29.8)	3-40(29.8)	3-40(29.8)	4-40(29.8)	4-40(29.8)	4-50(37.3)	4-50(37.3)
Capacity Control Steps/Step Capacity(%)	5/20	5/20	6/16	6/17	7/14	8/12.5	8/12.5	8/12.5
Oil Charge Oz (L)/Compressor in Cir.#1	140(4.1)	255(7.5)	140(4.1)	255(7.5)	255(7.5)	255(7.5)	255(7.5)	260(7.7)
Oil Charge Oz (L)Compressor in *Cir.#2*	140(4.1)	255(7.5)	255(7.5)	255(7.5)	255(7.5)	255(7.5)	260(7.7)	260(7.7)
Crankcase Heaters No.& Watts-115V	5-100	5-200	3-100, 3-200	6-200	7-200	8-200	8-200	8-200
CONNDENSER COILS-Copper Tube/Aluminium Fin W/Subcooling Circuits								
Face Area Sq.Ft (Sq.M)	277.1(25.7)	277.1(25.7)	316.6(29.4)	316.6(29.4)	377.1(35.0)	437.5(40.6)	456.2(42.3)	475.0(44.1)
Rows Deep-Cir#1/Cir#2	3/4	3/4	4/4	4/4	4/4	4/4	4/4	4/4
CONDENSER FANS(Propeller & Direct Drive Type) AND MOTORS								
Fans No. and Dia.In.(mm)	14-30(762)	14-30(762)	16-30(762)	16-30(762)	18-30(762)	20-30(762)	22-30(762)	24-30(762)
Motors-No. & HP.	14-1.5	14-1.5	16-1.5	16-1.5	18-1.5	20-1.5	22-1.5	24-1.5
Total KW	30.8	30.8	26.4	26.4	39.6	44.0	44.0	52.8
CHILLER EVAPORATOR-Direct Expansion Baffled Shell & Thru Tube								
Diameter & Tube Length In.(mm)	16 x 120 (400 x 3039)	20x96 (500 x 2429)	20 x 120 (500 x 3039)	20 x 120 (500 x 3039)	20 x 120 (500 x 3039)	24 x 120 (600 x 3039)	24 x 120 (600 x 3039)	24 x 120 (600 x 3039)
Water Conn.In.(mm)	6FLG(DN150)	8FLG(DN200)	8FLG(DN200)	8FLG(DN200)	10FLG(DN250)	10FLG(DN250)	10FLG(DN250)	10FLG(DN250)
Net Water Volume Gal.(L)	69.2(262.1)	85.2(322.5)	107.3(406.1)	107.3(406.1)	107.3(406.1)	146.1(553)	146.1(553)	146.1(553)
Design Working Pressure	200 PSIG(14 Kg/Cm^2)-Refrig.Side/150 PSIG(10.5 Kg/Cm^2) Water Side							
Electric Heater Watts-115V	420	420	420	420	420	420	420	420
SUB-COOLING RECEIVERS(2 No's FOR EACH MODEL)								
Diameter x Length In.(mm)	6x30(150x750)	6x30(150x750)	6x30(150x750)	6x30(150x750)	6x30(150x750)	8x40(200x1000)	8x40(200x1000)	8x40(200x1000)
UNIT								
Refrig. Chg.R22 Lbs.(Kg) Cir.#1	159(72)	174(79)	230(104.5)	230(104.5)	232(105.5)	329(149.5)	330(150)	360(163.5)
Refrig. Chg.R22 Lbs.(Kg) Cir.#2	194(88)	208(94.5)	230(104.5)	230(104.5)	272(123.5)	329(149.5)	358(163)	360(163.5)
Approx. Oper. Wt Lbs.(Kg)	14142(6428)	15510(7050)	17734(8061)	17959(8163)	20739(9427)	24178(10990)	26317(11962)	27139(12336)
Length In. (mm)	313(7950)	313(7950)	351(8915)	351(8915)	421½(10710)	47914(12182)	497½(12640)	515½(13097)
Width In. (mm)	90(2287)	90(2287)	90(2287)	90(2287)	93½(2375)	93½(2375)	93½ (2375)	93½(2375)
Height In. (mm)	95(2415)	95(2415)	95(2415)	95(2415)	100½(2558)	100½ (2558)	100½ (2558)	100½(2558)

DIMENSIONAL DATA



ACWC-120RD thru 145RD

VIEW-A

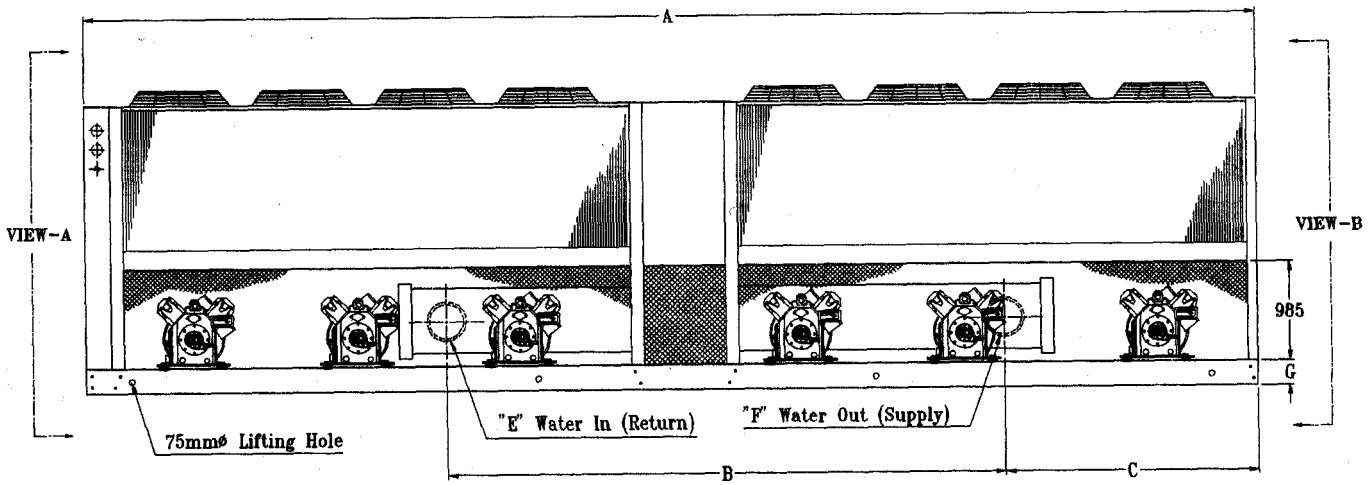
ACWC-50RD thru 100RD

VIEW-A

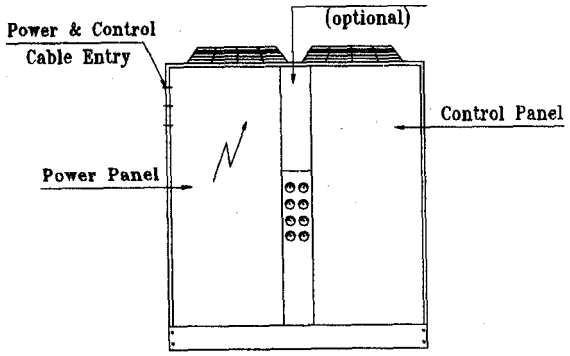
VIEW-B

MODEL ACWC	A INCH(MM)	B INCH(MM)	C INCH(MM)	D INCH(MM)	WATER IN E(FLG.) INCH(MM)	WATER OUT F(FLG.) INCH(MM)	G INCH(MM)
50RD	11½ (2855)	62½ (1589)	10½ (265)	15½ (394)	4 (100)	4 (100)	7¼ (182)
60RD	149 ½(3800)	86½ (2199)	10½ (265)	15½ (394)	4 (100)	4 (100)	7¼ (182)
70RD	149½(3800)	84¼ (2139)	11½ (295)	16½ (419)	5 (125)	5 (125)	7¼ (182)
75RD	149½ (3800)	84¼ (2139)	11½ (295)	16½ (419)	5 (125)	5 (125)	7¼ (182)
80RD	192¼ (4885)	84¼ (2139)	11½ (295)	16½ (419)	5 (125)	5 (125)	7¼ (182)
90RD	192¼ (4886)	108¼ (2749)	11½ (295)	16½ (419)	5 (125)	5 (125)	7¼ (182)
100RD	192¼ (4885)	108¼ (2749)	11½ (295)	16½ (419)	6 (150)	6 (150)	7¼ (182)
120RD	222 (5638)	81½ (2069)	29 (740)	18 (460)	6 (150)	6 (150)	7¼ (182)
130RD	222 (5638)	81½ (2069)	29 (740)	18 (460)	6 (150)	6 (150)	7¼ (182)
146RD	243½(6187)	105½ (2679)	17½ (450)	18 (460)	6 (150)	6 (150)	7¼ (182)

DIMENSIONAL DATA

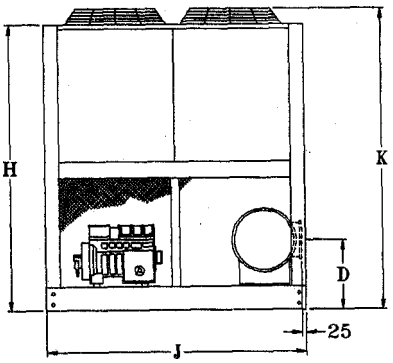


ELEVATION



ACWC-160RD thru 400RD

VIEW-A



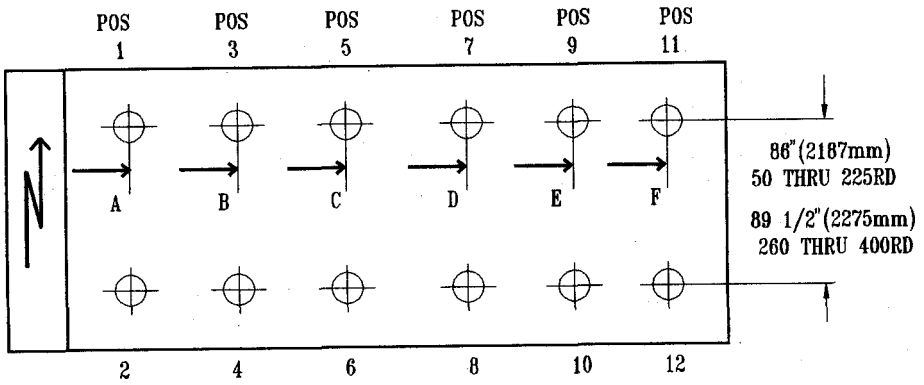
VIEW-B

MODEL ACWC	A INCH(MM)	B INCH(MM)	C INCH(MM)	D INCH(MM)	WATER IN E(FLG.) INCH(MM)	WATER OUT F(FLG.) INCH(MM)	G INCH(MM)	H INCH(MM)	J INCH(MM)	K INCH(MM)
160RD	**313(7950)**	**105½(2679)**	**116½(2963)**	**18(460)**	**6(150)**	**6(150)**	**7/4 (182)**	**93½ (2375)**	**90(2287)**	**95(2415)**
185RD	**313(7950)**	**78½ (1999)**	**130 ¼ (3308)**	**20(511)**	**8(200)**	**8(200)**	**7¼(182)**	**93½ (2375)**	**90(2287)**	**95(2415)**
210RD	**351(8915)**	**102½(2609)**	**119(3025)**	**20(511)**	**8(200)**	**8(200)**	**7¼ (182)**	**93½ (2375)**	**90(2287)**	**95(2415)**
225RD	**351(8915)**	**102½(2609)**	**119(3025)**	**20(511)**	**8(200)**	**8(200)**	**7¼(182)**	**93½ (2375)**	**90(2287)**	**95(2415)**
260RD	**421½(10710)**	**102½ (2609)**	**183½ (4658)**	**22(554)**	**10(250)**	**10(250)**	**9(225)**	**94¼(2418)**	**96% (2375)**	**100½(2558)**
300RD	**479½(12182)**	**101% (2579)**	**183 ½ (4658)**	**24(603)**	**10(250)**	**10(250)**	**9(225)**	**94¼(2418)**	**96½(2375)**	**100½(2558)**
350RD	**497 ½(1 2640)**	**10114(2579)**	**201¼ (5115)**	**24(603)**	**10(250)**	**10(250)**	**9(225)**	**94¼ (2418)**	**96% (2375)**	**100% (2558)**
400RD	**515½ (13097)**	**10114(2579)**	**201 % (5115)**	**24(603)**	**10(250)**	**10(250)**	**9(225)**	**94¼(2418)**	**96% (2375)**	**100% (2558)**

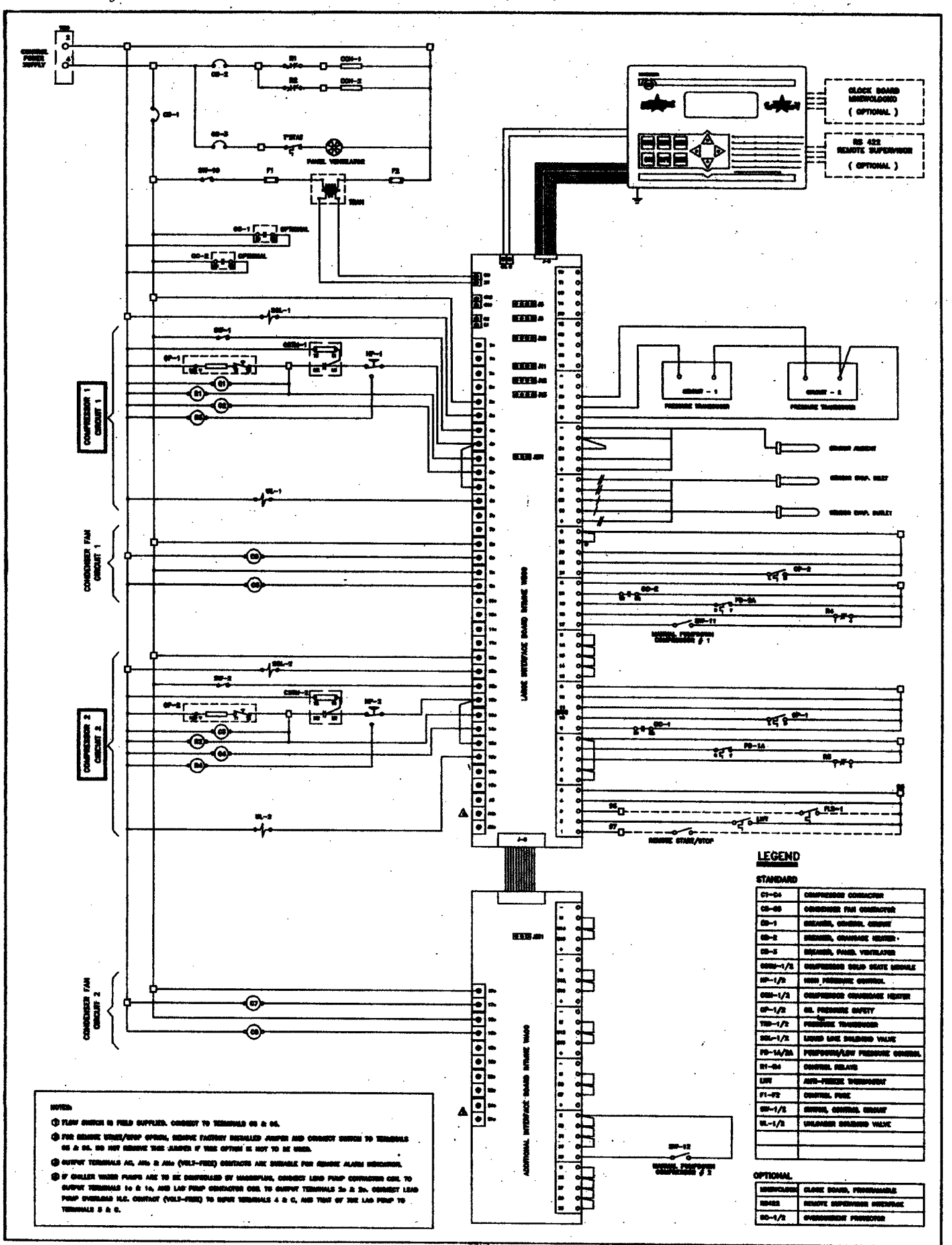
WEIGHT DISTRIBUTION

UNIT MODEL ACWC	ISOLATOR LOCATION DIMENSIONS INCHES(MILLIMETERS)						TOTAL OPER.WEIGHT LBS(KG)
	A	B	C	D	E	F	
50RD	13(325)	87(2205)					4800(2182)
60RD	13(325)	87½(2226)	137(3475)				5566(2530)
70RD	131325)	87½(2225)	137(3475)				6217(2826)
75RD	13(325)	87½ (2225)	137(3475)				7520(3418)
80RD	13(325)	9612442)	179½ (4560)				7612(3460)
90RD	13(325)	96(2442)	17914(4560)				8329(3786)
100RD	13(325)	9612442)	17914(4560)				8475(3852)
120RD	13(326)	78¼(1988)	143½(36501	209(5312)			10487(4767)
130RD	13(326)	78¼(1988)	143½(3650)	209(5312)			1056014800)
145RD	13(326)	85½(2171)	158(4016)	231(5861)			1200515457)
160RD	19½(501)	111(2817)	202(5133)	29374(7449)			14142(6428)
185RD	19½(501)	111(2817)	202(5133)	293¼(7449)			15510(7050)
210RD	19½(501)	123½(3139)	227½(5776)	331¼(8415)			17734(8061)
225RD	19½(501)	123½(3139)	227½(5776)	331¼(8415)			1795918163)
260RD	19½(801)	11574 (2928)	211(5335)	306¼(77821	402110209)		20739(9427)
300RD	19½(501)	108(2737)	196(4973)	28417209)	372(9445)	456(11681)	24178(10990)
350RD	19½(502)	111¼ (2828)	203(5155)	294½ (7482)	38619809)	478(12136)	26065111848)
400RD	19½(501)	11512920)	210¼(5339)	30514(7758)	40014(10177)	496(12596)	27139112336)

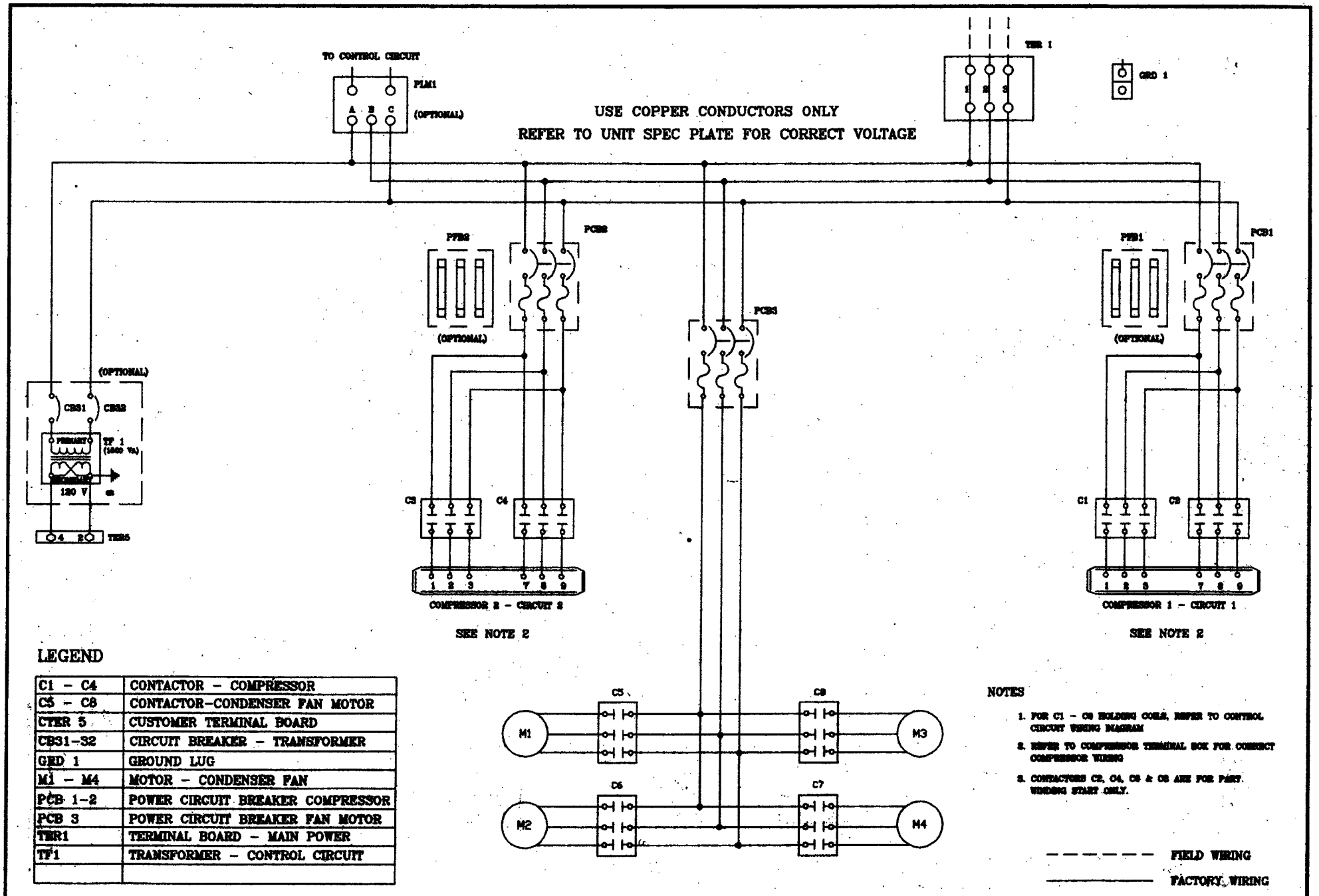
UNIT MODEL ACWC	POINT LOADING LOAD LBS(KG)											
	POS1	POS2	POS3	POS4	POS5	POS6	POS7	POS8	POS9	POS10	POS11	POS12
50RD	1201(546)	1201(546)	1201(546)	1201(546)								
60RD	992(451)	957(435)	992(451)	957(435)	726(330)	957(435)						
70RD	1162(528)	1016(462)	1162(528)	1016(462)	845(384)	1016(462)						
75RD	1340(609)	1289(586)	1340(609)	1289(586)	977(444)	1289(586)						
80RD	1355(616)	1304(593)	1355(616)	1304(593)	986(448)	1308(593)						
90RD	1498(681)	1415(643)	14981681)	1415(643)	1091(496)	1415(643)						
100RD	1516(689)	1448(658)	1516(689)	1448(658)	1102(501)	1448(658)						
120RD	1388(631)	1322(601)	1388(631)	1322(601)	1388(631)	1322(601)	1041(473)	13221601)				
130RD	1388(631)	1322(601)	1388(631)	1322(601)	1388(631)	1322(631)	1041(473)	1322(601)				
145RD	1573(715)	1527(694)	1573(715)	1527(694)	1573(715)	15271694)	1181(537)	1527(694)				
160RD	1439(654)	1841(837)	19461884)	1841(837)	1945(884)	1841(837)	1439(654)	1841(837)				
185RD	1700(773)	1927(876)	2242(1019)	1927(876)	2242(1019)	1927(876)	1700(773)	1927(876)				
210RD	1894(861)	2204(1002)	2561(1164)	2204(1002)	2561(1164)	2204(1002)	1894(861)	2204(861)				
225RD	1901(864)	2204(1002)	2561(1164)	2255(1025)	2570(1168)	2268(1025)	1901(864)	2255(1025)				
260RD	1705(775)	2143(974)	2204(1002)	2143(974)	2204(1002)	2143(974)	2204(1002)	2143(974)	1705(775)	2143(974)		
300RD	1738(790)	2013(915)	2176(989)	2013(915)	2176(989)	2013(915)	2176(989)	2013(915)	2176(989)	2013(915)	1738(790)	2013(915)
350RD	1830(832)	2215(1007)	2288(1040)	2215(1007)	2288(1040)	2215(1007)	2288(1040)	2215(1007)	2288(1040)	2215(1007)	1830(832)	2215(1007)
400RD	1852(842)	2365(1075)	2332(1060)	2365(1075)	2332(1060)	2365(1075)	2332(1060)	2365(1075)	2332(1060)	2365(1075)	1852(842)	2365(1075)



TYPICAL CONTROL WIRING DIAGRAM
(MICROPROCESSOR BASED)
MODEL: ACWC 50 – 70RD
SUPPLY:230–380–460V/3PH/50–60HZ



TYPICAL POWER WIRING DIAGRAM
MODEL: ACWC 50 – 70RD
SUPPLY:230–380–460V/3PH/50–60HZ



LEGEND

C1 – C4	CONTACTOR – COMPRESSOR
C5 – C8	CONTACTOR–CONDENSER FAN MOTOR
CTER 5	CUSTOMER TERMINAL BOARD
CB31–32	CIRCUIT BREAKER – TRANSFORMER
GRD 1	GROUND LUG
M1 – M4	MOTOR – CONDENSER FAN
PCB 1–2	POWER CIRCUIT BREAKER COMPRESSOR
PCB 3	POWER CIRCUIT BREAKER FAN MOTOR
TBR1	TERMINAL BOARD – MAIN POWER
TF1	TRANSFORMER – CONTROL CIRCUIT

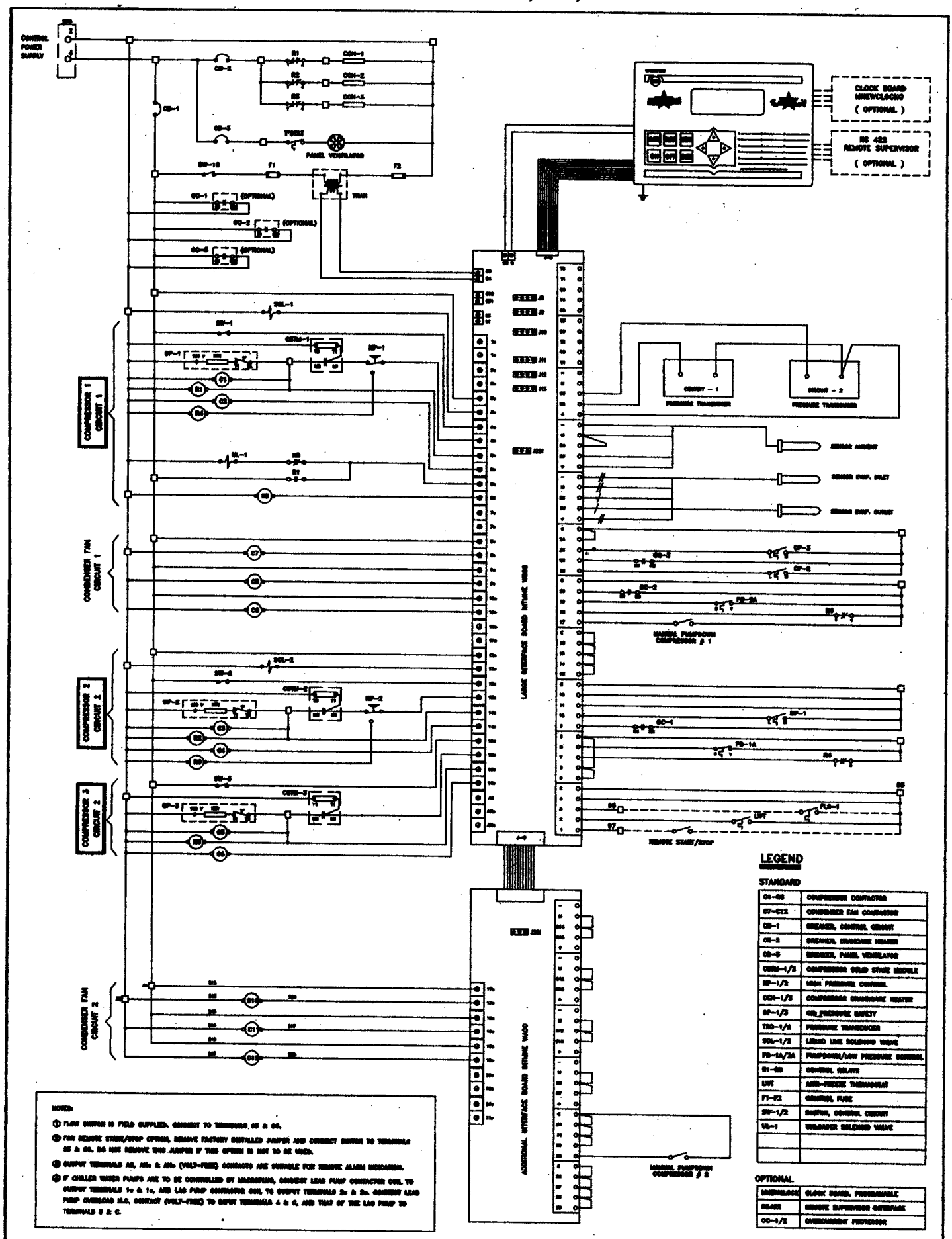
NOTES

1. FOR C1 – C8 HOLDING COILS, REFER TO CONTROL CIRCUIT WIRING DIAGRAM
2. REFER TO COMPRESSOR TERMINAL BOX FOR CORRECT COMPRESSOR WIRING
3. CONTACTORS C2, C4, C6 & C8 ARE FOR PART WINDING START ONLY.

– – – – – – – FIELD WIRING

——————— FACTORY WIRING

TYPICAL CONTROL WIRING DIAGRAM
(MICROPROCESSOR BASED)
MODEL: ACWC 75 – 100RD
SUPPLY:230–380–460V/3PH/50–60HZ



LEGEND

STANDARD

C1–C6	COMPRESSOR CONTACTOR
C7–C11	CONDENSER FAN CONTACTOR
CB–1	BREAKER, CONTROL CIRCUIT
CB–2	BREAKER, CRANKCASE HEATER
CB–5	BREAKER, PANEL VENTILATOR
CSSI–1/3	COMPRESSOR SOLID STATE MODULE
HP–1/2	HIGH PRESSURE CONTROL
CCH–1/3	COMPRESSOR CRANKCASE HEATER
OP–1/3	OIL PRESSURE SAFETY
TRD–1/2	PRESSURE TRANSDUCER
SOL–1/3	LIQUID LINE SOLENOID VALVE
FS–1A/2A	PUMPDOWN/LOW PRESSURE CONTROL
R1–R6	CONTROL RELAYS
LWT	ANTI–FREEZE THERMOSTAT
F1–F2	CONTROL FUSE
SW–1/2	SWITCH, CONTROL CIRCUIT
VA–1	ENGINEER SOLENOID VALVE

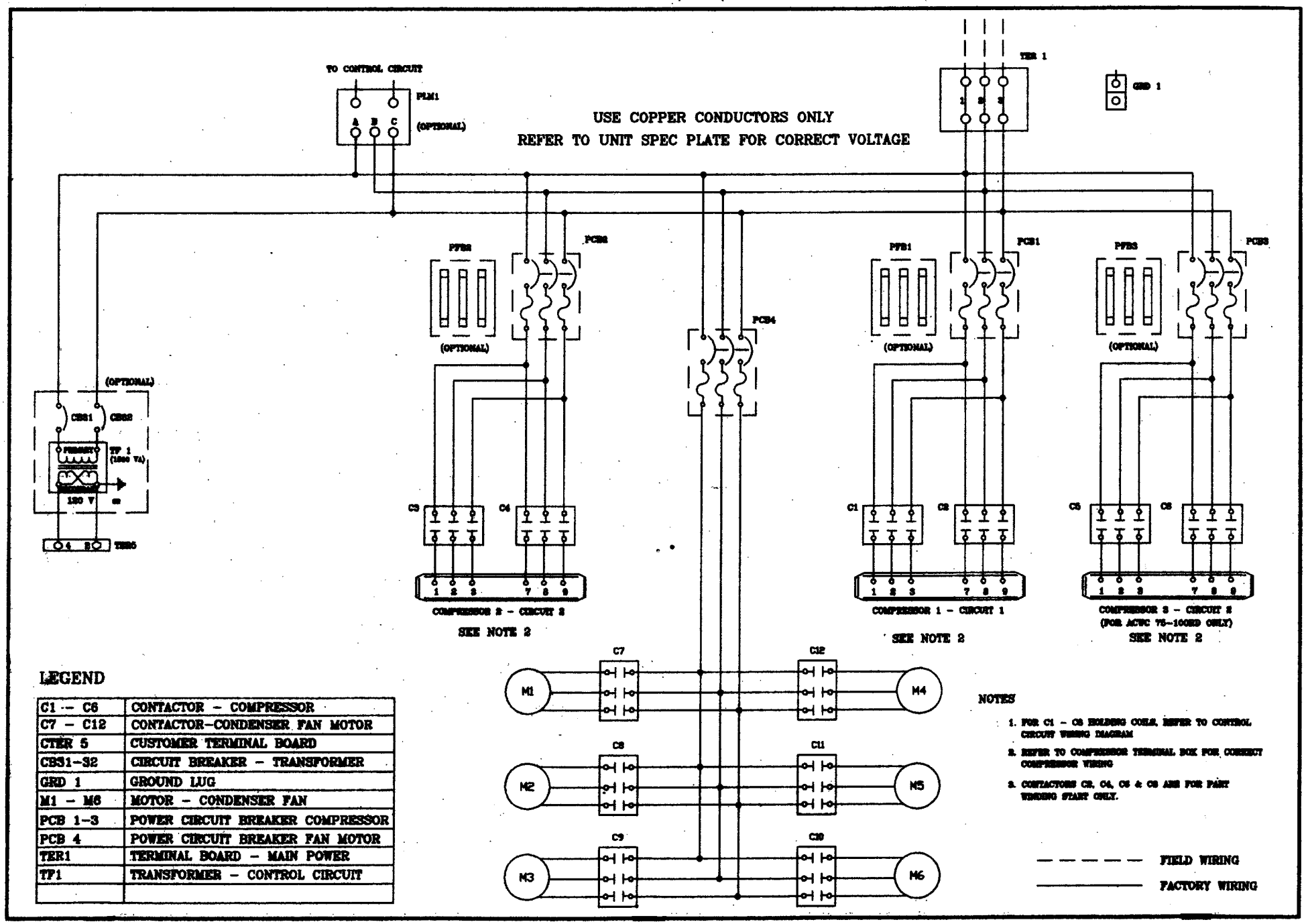
OPTIONAL

MICROLOGIC	CLOCK BOARD, PROGRAMMABLE
RS422	REMOTE SUPERVISOR INTERFACE
OC–1/3	OVERCURRENT PROTECTOR

NOTES:

1. FLOW SWITCH IS FIELD SUPPLIED. CONNECT TO TERMINALS 65 & 66.
2. FOR REMOTE START/STOP OPTION, REMOVE FACTORY INSTALLED JUMPER AND CONNECT SWITCH TO TERMINALS 85 & 86. DO NOT REMOVE THIS JUMPER IF THIS OPTION IS NOT TO BE USED.
3. OUTPUT TERMINALS A5, A9 & A10 (VOLT–FREE) CONTACTS ARE SUITABLE FOR REMOTE ALARM INDICATION.
4. IF CHILLER WATER PUMPS ARE TO BE CONTROLLED BY MICROPROCESSOR, CONNECT LEAD PUMP CONTACTOR COIL TO OUTPUT TERMINALS 1A & 1B, AND LAG PUMP CONTACTOR COIL TO OUTPUT TERMINALS 2A & 2B. CONNECT LEAD PUMP OVERLOAD N.C. CONTACT (VOLT–FREE) TO INPUT TERMINALS 4 & 6, AND THAT OF THE LAG PUMP TO TERMINALS 5 & 6.

TYPICAL POWER WIRING DIAGRAM
MODEL: ACWC 75 - 100RD
SUPPLY:230-380-460V/3PH/50-60HZ



LEGEND

C1 -- C6	CONTACTOR - COMPRESSOR
C7 - C12	CONTACTOR-CONDENSER FAN MOTOR
CTER 5	CUSTOMER TERMINAL BOARD
CB31-32	CIRCUIT BREAKER - TRANSFORMER
GRD 1	GROUND LUG
M1 - M6	MOTOR - CONDENSER FAN
PCB 1-3	POWER CIRCUIT BREAKER COMPRESSOR
PCB 4	POWER CIRCUIT BREAKER FAN MOTOR
TER1	TERMINAL BOARD - MAIN POWER
TF1	TRANSFORMER - CONTROL CIRCUIT

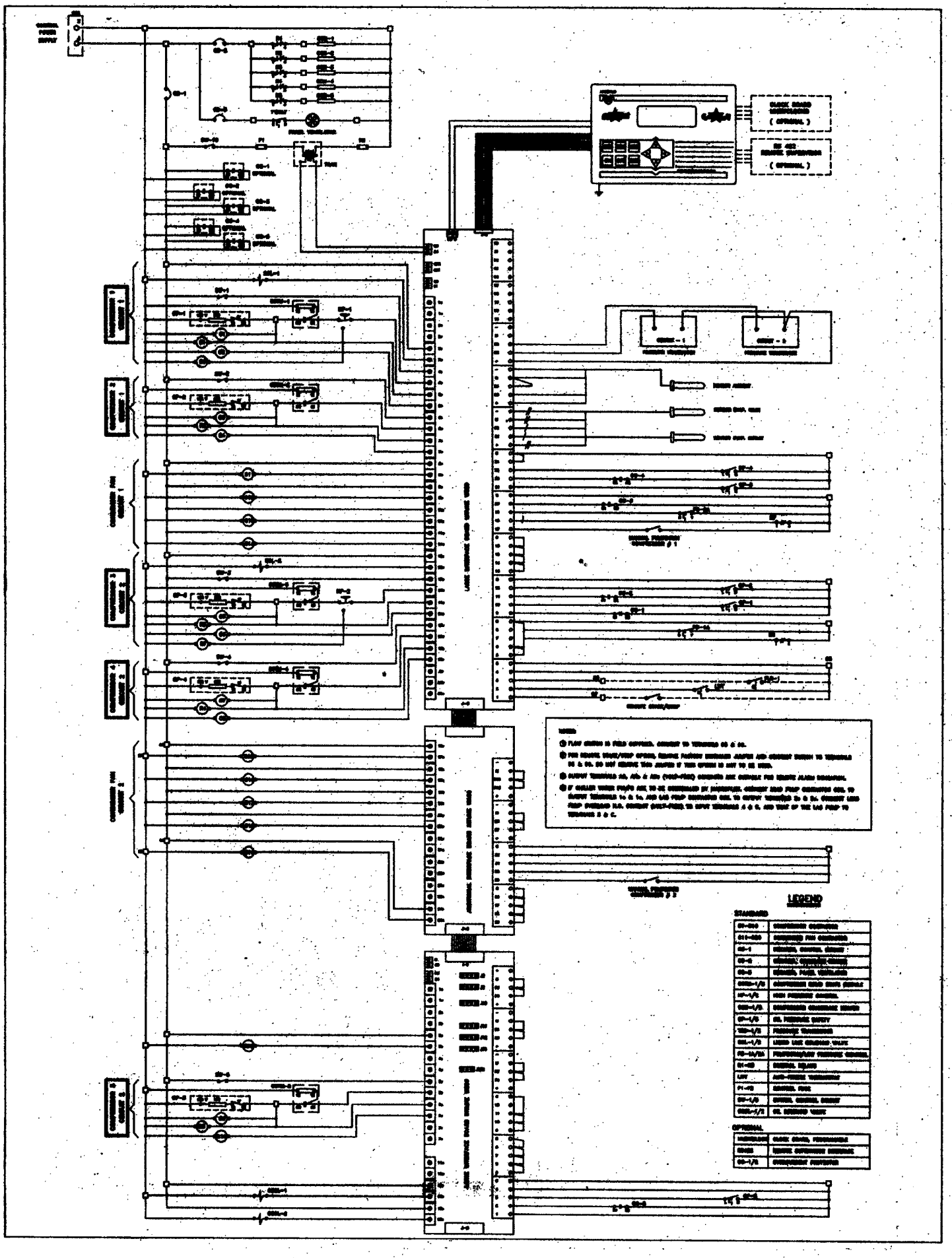
NOTES

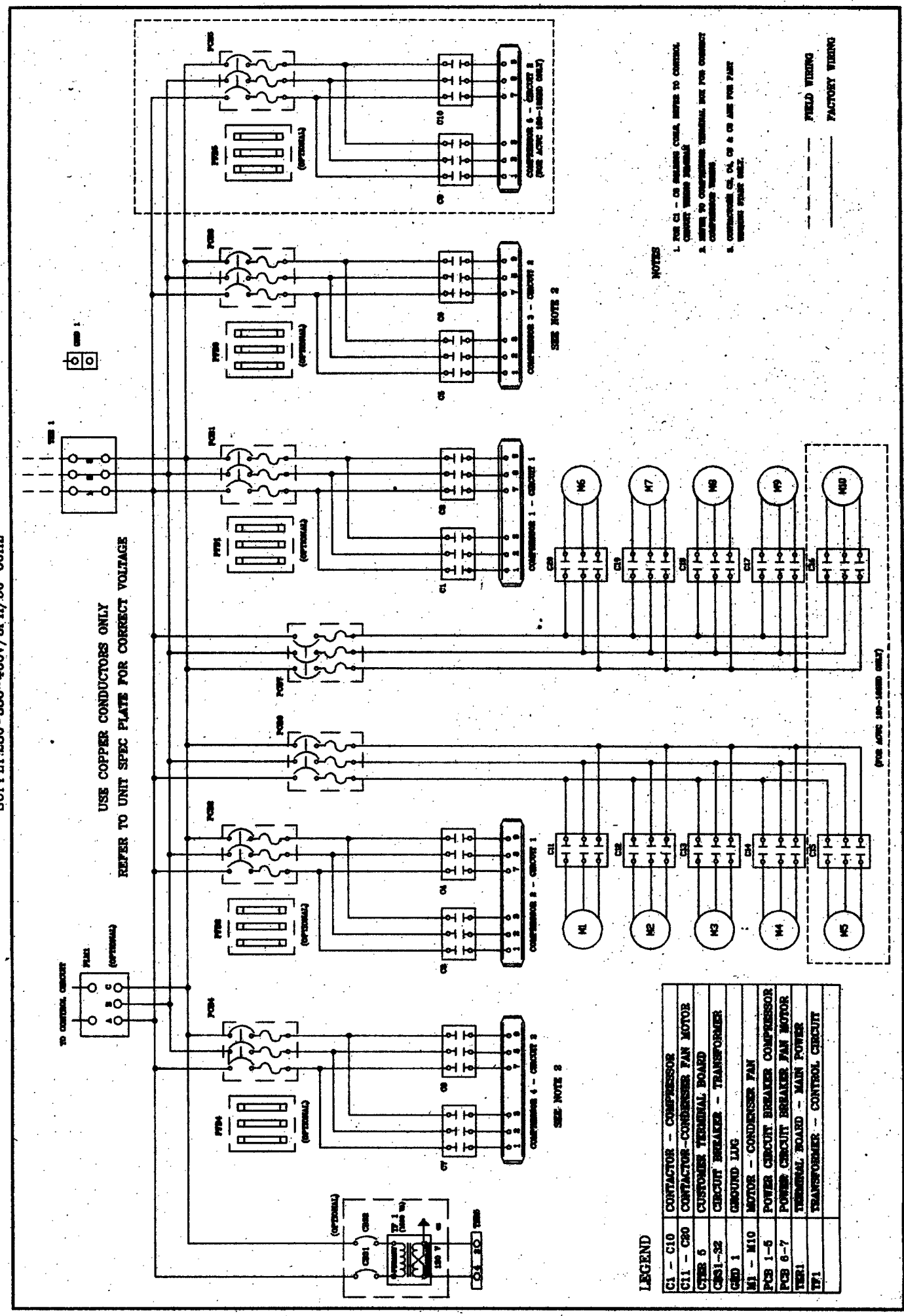
1. FOR C1 - C6 HOLDING COILS, REFER TO CONTROL CIRCUIT WIRING DIAGRAM
2. REFER TO COMPRESSOR TERMINAL BOX FOR CORRECT COMPRESSOR WIRING
3. CONTACTORS C2, C4, C5 & C6 ARE FOR PART WINDING START ONLY.

FIELD WIRING

FACTORY WIRING

TYPICAL CONTROL WIRING DIAGRAM
(MICROPROCESSOR BASED)
MODEL: ACWC 120 – 185RD
SUPPLY:230–380–460V/3PH/50–60HZ




TYPICAL POWER WIRING DIAGRAM
MODEL: ACWC 120 - 185RD
SUPPLY:230-380-460V/3PH/50-60HZ
USE COPPER CONDUCTORS ONLY
REFER TO UNIT SPEC PLATE FOR CORRECT VOLTAGE
NOTES
FIELD WIRING
FACTORY WIRING
LEGEND
C1 - C10 CONTACTOR - COMPRESSOR
C11 - C20 CONTACTOR-CONDENSER FAN MOTOR
CTB1 5 CUSTOMER TERMINAL BOARD
CB31-32 CIRCUIT BREAKER - TRANSFORMER
GRD 1 GROUND LUG
M1 - M10 MOTOR - CONDENSER FAN
PCB 1-5 POWER CIRCUIT BREAKER COMPRESSOR
PCB 6-7 POWER CIRCUIT BREAKER FAN MOTOR
TER1 TERMINAL BOARD - MAIN POWER
TF1 TRANSFORMER - CONTROL CIRCUIT
SEE NOTE 2
SEE NOTE 3

ELECTRICAL DATA

ACWC MODEL	SUPPLY VOLTAGE	HZ	COMPRESSOR MOTORS								CONDENSER FAN MOTORS		MINIMUM CIRCUIT AMPACITY		MAXIMUM FUSE SIZE
			RATED LOAD AMPERES				LOCKED ROTOR AMPERES								
			MOTOR NUMBER				MOTOR NUMBER				F.L.A. EACH	R.L.A. EACH	CKT-1	CKT-2	
			1	2	3	4	1	2	3	4					
50RD	208/230	60	82.2	95.6			428	470			(4)7.0	(4)38.0	229.7		350
	380/415	50	40.6	42.8			206	235			(4)3.3	(4)26.0	107.3		150
	380	60	58.6	71.4			251	289			(4)3.4	(4)26.0	161.4		250
	460	60	41.7	52.9			214	235			(4)3.5	(4)19.0	121.8		200
60RD	208/230	60	82.2	107.0			428	565			(6)7.0	(6)38.0	258.0		400
	380/415	50	40.6	55.0			206	260			(6)3.3	(6)26.0	129.2		200
	380	60	58.6	84.1			251	365			(6)3.4	(6)26.0	184.1		300
	460	60	41.7	53.5			214	283			(6)3.5	(6)19.0	129.6		200
70RD	208/230	60	107.0	142			565	594			(6)7.0	(6)38.0	326.5		500
	380/415	50	55.0	70			260	315			(6)3.3	(6)26.0	162.3		250
	380	60	84.1	96.9			365	365			(6)3.4	(6)26.0	225.6		350
	460	60	53.5	71			283	297			(6)3.5	(6)19.0	163.3		250
75RD	208/230	60	107	82.2	82.2		565	428	428		(6)7.0	(6)38.0	340.2		500
	380/415	50	55	40.6	40.6		260	206	206		(6)3.3	(6)26.0	169.8		250
	380	60	84.1	58.6	58.6		365	251	251		(6)3.4	(6)26.0	242.7		350
	460	60	53.5	41.1	41.1		283	214	214		(6)3.5	(6)19.0	170.1		250
80RD	208/230	60	107	95.6	95.6		565	470	470		(8)7.0	(8)38.0	380.9		500
	380/415	50	55	42.8	42.8		260	235	235		(8)3.3	(8)26.0	180.7		250
	380	60	84.1	71.4	71.4		365	289	289		(8)3.4	(8)26.0	275.1		400
	460	60	53.5	47.8	47.8		283	235	235		(8)3.5	(8)19.0	190.5		250
90RD	208/230	60	107	107	107		565	565	565		(8)7.0	(8)38.0	403.7		600
	380/415	50	55	55	55		260	260	260		(8)3.3	(8)26.0	205.1		300
	380	60	84.1	84.1	84.1		365	365	365		(8)3.4	(8)26.0	300.5		400
	460	60	53.5	53.5	53.5		283	283	283		(8)3.5	(8)19.0	201.8		300
100RD	208/230	60	142	107	107		594	565	565		(8)7.0	(8)38.0	447.5		600
	380/415	50	70	55	55		315	260	260		(8)3.3	(8)26.0	223.9		300
	380	60	96.9	84.1	84.1		365	365	365		(8)3.4	(8)26.0	316.5		456
	460	60	71.0	53.5	53.5		297.0	283	283		(8)3.5	(8)19.0	223.7		300
120RD	208/230	60	95.6	107	107	107	470	565	565	565	(10)7.0	(10)38.0	513.3		800
	380/415	50	42.8	55	55	55	235	260	260	260	(10)3.3	(10)26.0	254.5		350
	380	60	71.4	84.1	84.1	84.1	289	365	365	365	(10)3.4	(10)26.0	378.7		500
	460	60	47.8	53.5	53.5	53.5	235	283	283	283	(10)3.5	(10)19.0	256.6		350
130RD	208/230	60	107	107	107	107	565	565	565	565	(10)7.0	(10)38.0	524.7		*800*
	380/415	50	55	55	55	55	260	260	260	260	(10)3.3	(10)26.0	266.7		350
	380	60	84.1	84.1	84.1	84.1	365	365	365	365	(10)3.4	(10)26.0	391.4		500
	460	60	53.5	53.5	53.5	53.5	283	283	283	283	(10)3.5	(10)19.0	262.3		350
145RD	208/230	60	107	142	142	142	565	594	594	594	(10)7.0	(10)38.0	638.5		800
	380/415	50	55	70	70	70	260	315	315	315	(10)3.3	(10)26.0	315.5		400
	380	60	84.1	96.9	96.9	96.9	365	365	365	365	(10)3.4	(10)26.0	433.0		600
	460	60	53.5	71	71	71	283	297	297	297	(10)3.5	(10)19.0	319.2		400

NOTES: 1. Rated Load Amperes (RLA) is rated in accordance with ARI Standard 590.
2. Maximum fuse size is based on 225% of the rated load amps. of the largest motor plus 100% of the rated load amps. of the rest of the motors in the circuit. A smaller fuse size is often recommended based on unit application and ambient temperature.
3. Minimum circuit ampacity is based on 125% of the rated load amps. of the largest motor plus 100% of the rated load amps. Of the motors in the circuit.
4. Ratings applicable for both Part Winding and Across the Line start.

Voltage Tolerances: 208v (Min=187v,Max=229v) 230v (Min=209v,Max=253v) 380v (Min=342v,Max=415v) 460v (Min=414v,Max=506v)

ELECTRICAL DATA

ACWC MODEL	SUPPLY VOLTAGE	HZ	COMPRESSOR MOTORS			COND. FAN MOTORS		MIINIMUM CIRCUIT AMPACITY		MAXIMUM FUSE SIZE	
			QTY H.P.	R.LA. EACH	LR.A. EACH	F.L.A. EACH	L.R.A. EACH	CKT-1	CKT-2	CKT-1	CKT-2
160RD	208/230	60	(5)35	107	565	(14)7.0	(14)38.0	659.8		800	
	380/415	50		55	260	(14)3.3	(14)26.0	335.0		400	
	380	60		84.1	365	(14)3.4	(14)26.0	489.1		600	
	460	60		53.5	283	(14)3.5	(14)19.0	329.9		400	
185RD	208/230	60	(5)40	142	594	(14)7.0	(14)38.0	368.5	510.5	600	800
	380/415	50		70	315	(14)3.3	(14)26.0	413.7		500	
	380	60		96.9	365	(14)3.4	(14)26.0	556.3		800	
	460	60		71	297	(14)3.5	(14)19.0	421.8		500	
210RD	208/230	60	(3)35	107	565	(16)7.0	(16)38.0	403.8	517.5	600	800
			(3)40	142	594						
	380/415	50	(3)35	55	260	(16)3.3	(16)26.0	445.3		600	
			(3)40	70	315						
	380	60	(3)35	84.1	365	(16)3.4	(16)26.0	621.6		800	
			(3)40	96.9	365						
	460	60	(3)35	53.5	283	(16)3.5	(16)19.0	447.2		600	
			(3)40	71	297						
225RD	208/230	60	(6)40	142	594	(16)7.0	(16)38.0	517.5	517.5	800	800
	380/415	50		70	315	(16)3.3	(16)26.0	490.3		600	
	380	60		96.9	365	(16)3.4	(16)26.0	660.0		800	
	460	60		71	297	(16)3.5	(16)19.0	472.8		600	
260RD	208/230	60	(7)40	142	594	(18)7.0	(18)38.0	517.5	673.5	800	1088
	380/415	50		70	315	(18)3.3	(18)26.0	566.9		800	
	380	60		96.9	365	(18)3.4	(18)26.0	342.1	445.8	500	600
	460	60		71	297	(18)3.5	(18)19.0	577.8		800	
300RD	208/230	60	(8)40	142	594	(20)7.0	(20)38.0	673.5	673.5	1000	1000
	380/415	50		70	315	(20)3.3	(20)26.0	643.5		800	
	380	60		96.9	365	(20)3.4	(20)26.0	445.8	445.8	600	600
	460	60		71	297	(20)3.5	(20)19.0	655.8		800	
350RD	208/230	60	(4)40	142	594	(22)7.0	(22)38.0	680.5	842.0	1000	1000
			(4)50	180	1070						
	380/415	50	(4)40	70	315	(22)3.3	(22)26.0	333.8	423.0	500	600
			(4)50	91	510						
	380	60	(4)40	96.9	365	(22)3.4	(22)26.0	449.2	521.9	600	800
			(4)50	114	740						
	460	60	(4)40	71	297	(22)3.5	(22)19.0	340.3	421.0	500	600
			(4)50	90	535						
400RD	208/230	60	(8)50	180	1070	(24)7.0	(24)38.0	849.0	849.0	1100	1100
	380/415	50		91	510	(24)3.3	(24)26.0	426.3	426.3	600	600
	380	60		114	740	(24)3.4	(24)26.0	524.9	524.9	300	800
	460	60		90	535	(24)3.5	(24)19.0	424.5	424.5	600	800

NOTES: 1. Rated Load Amperes (RLA) is rated in accordance with ARI Standard 590.

2. Maximum fuse size is based on 225% of the rated load amps. of the largest motor plus 100% of the rated load amps. Of the rest of the motors in the circuit. A smaller fuse size is often recommended based on unit application and ambient temperature,
3. Minimum circuit ampacity is based on 125% of the rated load amps. of the largest motor plus 100% of the rated load amps. Of of the motors in the circuit.
4. Ratings applicable for both Part Winding and Accross the Line start.

Voltage Tolerances: 208v(Min=187v,Max=229v) 230v (Min=209v,Max=253v) 380v (Min=342v,Max=415v) 460v Min=414v, Max= 506v)

INSTALLATION CLEARANCE

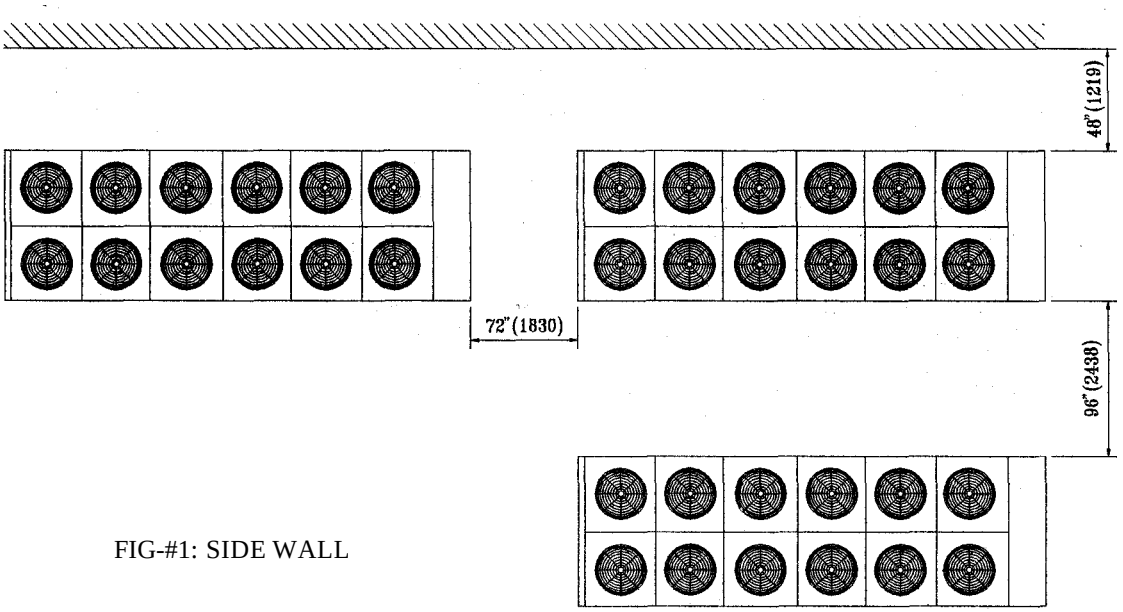


FIG-#1: SIDE WALL

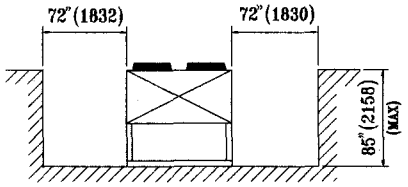


FIG #3: SINGLE PIT
(SEE NOTE-3)

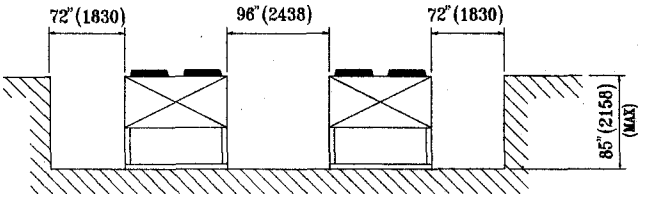


FIG *#2:* DOUBLE PIT
(SEE NOTE-3)

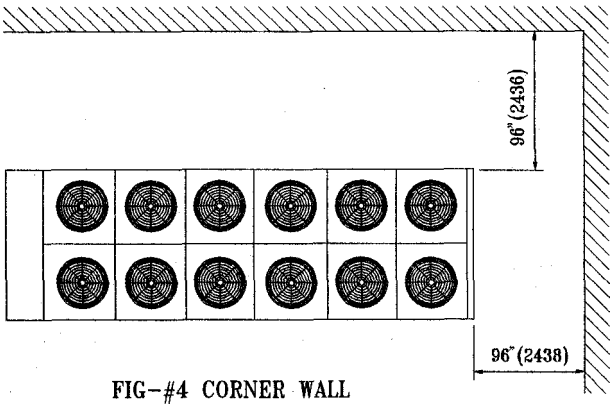


FIG-#4 CORNER WALL

Notes:

1. All dimensions are in inches(mm).
2. All dimensions are minimal, unless otherwise noted.
3. PIT installations are not recommended. Re-circulation of hot condenser air in combination with surface air turbulence cannot be predicted. Hot air re-circulation will severely affect unit efficiency (EER/COP) & can cause high pressure trips or fan motor temperature trips.

APPLICATION DATA

RIGGING
Models ACWC-RD units are factory mounted on two permanent angle beam, carbon steel skids, (see Physical Drawings) are provided in the skids to allow rigging. Spreader bars must be used between rigging lines to prevent damage to the unit. Rollers may be use under the skids to facilitate moving the unit a short distance.

PLACEMENT SUPPORT
The unit must be set on a solid and level foundation. On rooftop installations the unit should be mounted on support beams of minimum deflection, such as spanning load-bearing walls, to prevent excessive vibration. If cross beams are used, a sufficient number must be supplied to allow support at each rigging opening. On ground level installations, the unit should be mounted on a substantial base that will not settle. A one-piece concrete slab with footings extended below the frost line is recommended. A space should be left between the slab and the building to prevent the transmission of sound and vibration.

SERVICE CLEARANCE
See Figure on Page 16 for installation clearance. Units should be separated from each other by a sufficient distance to prevent warm air recirculation or coil starvation. Doubling the recommended single unit clearances is recommended. When the unit is placed in an enclosure or small depression, the top of the fans should be no lower than the top of the enclosure or depression. Overhead obstructions are not recommended and must be a minimum of 8 feet above the unit and should not be combined with any further obstructions which enclose the unit. Ductwork must not be applied to the condenser fans. Debris should not be allowed to accumulate in the in the vicinity of the chiller. Air movement may draw debris into the condenser coil blocking the coil air flow. Condenser coils and fan discharge must also be kept free of snow.

AMBIENT LIMITATIONS
The standard ACWC-RD units are designed to operate between 30ºF(-1.1 ºC) and 115ºF(46ºC) ambient. Low ambient options are detailed on page 7.

WATER TEMPERATURE LIMITATIONS
The ACWC-RD units are is designed to operate between 42ºF(5.5ºC) and 50ºF(10ºC) leaving water temperature. For temperature below 42ºF(5.5ºC) glycol must be added to water against freeze-up.
The unit controls (MACROPLUS) is designed for a 10ºF(5.5ºC) difference between EWT and LWT. Proper control will occur between 8º to 12ºF(4.4º to 6.6ºC) temperature drop.

CHILLER PIPING
The chiller inlet (return) water pipe should be connected to the water connection closest to the control panel end of the unit and the outlet(supply) water pipe connected to the water connection on the opposite end of the cooler(s). Piping should be flushed prior to chiller installation.

A flow switch must be installed in a straight horizontal section of the chilled water piping.

Guages should be installed in the piping to and from the chiller to measure the pressure drop and to insure the proper (GPM/LPS) flow rate in accordance with submittal data. A stainer should be installed in the piping on the inlet side of the chiller and vibration eliminators should be employed on both the inlet and outlet pipes. Air vents should be located at all high points in the piping system. Vents should be located to be accessible at servicing. Drain connections should be provided at all low points to permit complete drainage of chiller and piping system.

The chilled water piping should be insulated to reduce heat pickup and to prevent condensation. If the system is for year-round operation or if it will not be drained in the winter, the chilled water piping should be protected against freezing.

Upon completion of chiller piping start the system water pump and purge air from the system. Air purging should be done from the high points in the water circuit. Purging air from the chiller barrel may be accomplished through the vent pipe located on the top of the chiller compartment. Failure to purge air from the water circuit will result in inadequate water flow and may cause the unit to cutout on freeze protection.

COOLER FREEZE PROTECTION
Cooler freeze protection is a major concern with air cooled chillers. To protect against freeze-up a heater cable is provided as standard which protects the cooler to -20ºF (-29ºC). However, there is no freeze protection in the event of power failure of heater cable burnout, so the following should be considered for additional protection:

1. Drain the cooler and chilled water piping if the chiller is not to be operated over the winter months. Drain connections are provided on the coolers.
2. Add ethylene glycol to the chilled water system. Freeze point should be approximately 10ºF(5.5ºC) below minimum design ambient temperature. See page-10 for Glycol Performance.

The cooler heater is wired to the control panel and is operational from the factory offered control transformer or field supplied control power.

WARNING: Opening the unit disconnect may disconnect heater freeze protection and compressor crankcase heater!

WIRING
All necessary control interface wiring is shown on the typical schematic, page 19.
The actual range of line voltages at which the equipment on satisfactorily operate is given below:

Nameplate Voltage	Voltage Range
208	187-229
230	209-253
460	414-506
575	517-633

ENERGY MANAGEMENT
Energy management systems often cycle loads at regular intervals regardless of need. This may reduce electrical operation costs of a building by "fooling" demand indication devices. Duty cycling of compressors or fans is not recommended since motor winding and bearing life suffer from constant cycling.

MAIN POWER SUPPLY DISCONNECT SWITCH
Disconnects are addressed in Article 440 of the National Electrical Code (NEC) which requires "disconnection means capable of disconnecting air conditioning and refrigerating equipment including disconnect switch should be selected and located within the NEC guidelines such that the disconnect be located in a readily accessible position within sight (50ft/15m) of the unit. In general, the most cost effective installation involves single source power except on larger equipment where excessive wire sizes are involved. The G.S. ACWC-RD design follows this principle as shown in Electrical Data. As an option,G.S. offers either single source or dual source power on all unit sizes.

CONTROL CIRCUIT POWER
If the control transformer option is ordered, care use be taken when opening the main disconnect. This breaks power to compressor crankcase heaters and compressor failure can result if compressors start up immediately after restoring power. The same potential problems exist with cooler heaters when control transformers are used. The main unit disconnect can not be opened for an extended period of time in freezing weather unless all water is drained from the cooler.

ENGINEERING GUIDE SPECIFICATIONS

General

Furnish and install as shown on plans, a Goldenstar Model ACWC_____RD Air Cooled Package Chiller.

The unit is to be completely factory assembled and wired in a single package complete with compressor(s), cooler, air cooled condenser, starting control and safety and operating controls. It is to be given a complete factory operating and control sequence test under load conditions and is to be shipped with full operating charge of R-22 and full oil charge.

The overall dimension shall not exceed _____ inches (mm) in length, ___ inches(mm) in width, and ___inches(mm) in height.

The unit shall be build in accordance with all applicable national and local codes including the ANSI B9.1 safety code; the National Electrical Code and applicable ASME code for Unfired Pressure Vessels.

The unit shall be furnished for Operation on a _V, three phase __ Hertz power supply and to have an EER(COP) rating not to be less than ____.

Capacity

The air cooled package chiller shall have a capacity of not less than ___ Tons(KW) when cooling ___GPM(L/S) of water from ____ºF(ºC) to ____ºF(ºC). When operating in ambient temperature of _ºF(ºC). The foregoing capacity shall be based on 0.00025(0.000044) water side fouling factor for the cooler. Water pressure drop shall not exceed ____ feet (meters) of water through the cooler.

Construction

Unit will be designed for maximum corrosion protection with all panels being of Galvanized Steel construction. The base shall be welded design utilizing painted, 1/4" thick galvanized channels. Frame members are constructed of 10 gauge, galvanized channels. The base and frame members shall be painted.

Evaporator

Cooler shall be direct expansion, shell and tube type. The shell shall be fabricated from seamless carbon steel pipe, with finned copper, and tube sheets of heavy gauge carbon steel. The tubes shall be roller-expanded into the tube sheets. Water control baffles shall be of cold-rolled steel and coated to resist corrosion. The heads shall be constructed of carbon steel with multiple pass baffles and shall be removable to permit access to the tubes from either end. The cooler shall be insulated with not less than 3/4" (19mm) of closed cell foamed plastic with vapor seal. Cooler shall be designed, constructed and inspected to comply with current ASME code for unfired pressure vessels. Shell side (water) design working pressure is to be 150 PSIG(10.5Kg./Cm^2) and tube side (refrigerant) design working pressure is to be 235 PSIG(16.5 Kg/Cm^2). A thermostatically controlled electric resistance heater cable is to be wrapped around the shell to prevent freezing down to -20ºF(-29ºC) outdoor temperature.

Condenser

The condenser coil shall be constructed of copper tubes and die formed aluminum fins having self-spacing collars. Fins are to be mechanically bonded to the tubes.

A sub-cooling loop is to be incorporated into the coil. All coil surfaces exposed on the unit perimeter shall be provided with a coil guard to protect against hail and vandalism. Baffles shall separate each condenser fan.

Fans

ACWC-RD units are to have direct drive, heavy duty, aluminum bladed fans. Motors are to be 6 pole, slow speed type with internal Overloads and are to be permanently lubricated. 3 Phase motors are required. Belt driven designs are not acceptable due to excessive maintenance requirements.

Compressor

Compressor shall be accessible hermetic reciprocating type with suction and discharge service valves, oil crankcase heater, suction strainer, oil strainer, oil sightglass, and oil charging connection. Compressors shall have a force feed lubrication system with reversible oil pump and operating oil charge. Compressor motors shall be refrigerant gas cooled, high torque, hermetic induction type, 1750 rpm with inherent thermal protection in all three phases. Compressor shall be mounted on spring isolators to minimize noise and vibration transmissions. The cylinder heads, valve plates, crankcase heaters, unloaders, and oil pump shall all be removable for service or inspection. The suction strainer shall be removable and cleanable and oil can be added or drained from the compressor. Hermetic, nonserviceabie compressors are not acceptable.

Micro Computer Control

Unit shall be provided with factory installed micro computer controls capable for temperature regulation, (P or P +1) protection of compressors, soft start capability, Automatic Lead-Lag control, Display of compressor working hours, On status via LED indicators, Programming via digital display, Global protection such as antifreeze, pump failure, smoke/fire/flooding, AUTO DIAGNOSIS for I/O interfaces, /alarm status (Local and remote), clock board, Remote start/stop capability and BMS interface.

Capacity Control

Units are equipped with the following capacity control steps(on-line displacement) as standard:

ACWC-50RD	:100-73-45-23-0%
ACWC-60RD	:100-79-37-19-0%
ACWC-70RD	:100-83-47-32-0%
ACWC-75RD	:100-71-29-14-0%
ACWC-80RD	:100-69-31-15-0%
ACWC-90RD	:100-66-33-22-0%
ACWC-100RD	:100-68-32-21-0%
ACWC-120RD	:100-74-48-22-0%
ACWC-130RD	:100-75-50-25-0%
ACWC-145RD	:100-74-48-23-0%
ACWC-160RD	:100-80-60-40-20-0%
ACWC-185RD	:100-80-60-40-20-0%
ACWC-210RD	:100-82-67-49-33-16-0%
ACWC-225RD	:100-83-67-50-33-17-0%
ACWC-260RD	:100-86-71 -57-43-29-14-0%
ACWC-300RD	:100-87.5-75-62.5-50-37.5-25-12.5-0%
ACWC-350RD	:100-87.5-75-62.5-50-37.5-25-12.5-0%
ACWC-400RD	:100-87.5-7 5-62.5-50-37.5-25-12.5-0%

Refrigerant Circuit

Two refrigerant circuits shall be provided and each shall include expansion valve, sight glass, moisture indicator, solenoid valve, filter drier, liquid line shut off valves, charging and gauge connections and service valves.

Liquid Receivers (Models 160-400 only)

A carbon steel U.L. approved receiver, equipped with fusible plug, is to be supplied for each separate refrigerant circuit. The receivers are to be factory mounted between the condenser coil and sub- cooling loop.

Control Center

The control center is to be a fully enclosed steel cabinet with hinged access doors. Dual compartments separating safety and operating controls from the power controls is to be provided.

- High Pressure cutout, manual reset
- Low Pressure cutout, automatic reset
- Compressor, solid state, thermal sensing overloads, automatic reset
- Oil pressure sensing safety, manual reset
- Low water temperature freeze protection, manual reset Power terminal block
- Compressor contactors
- Condenser fan contactors and short circuit protection
- Inherent condenser fan overload protection
- Hinged control panel doors with actual gasketing for weatherproof protection
- Factory installed thermostat and water sensor
- Complete labelling of all control components
- Numbered terminal strips for easier wire tracing