



Air Cooled Chillers

OALC 010 thru OALC 240

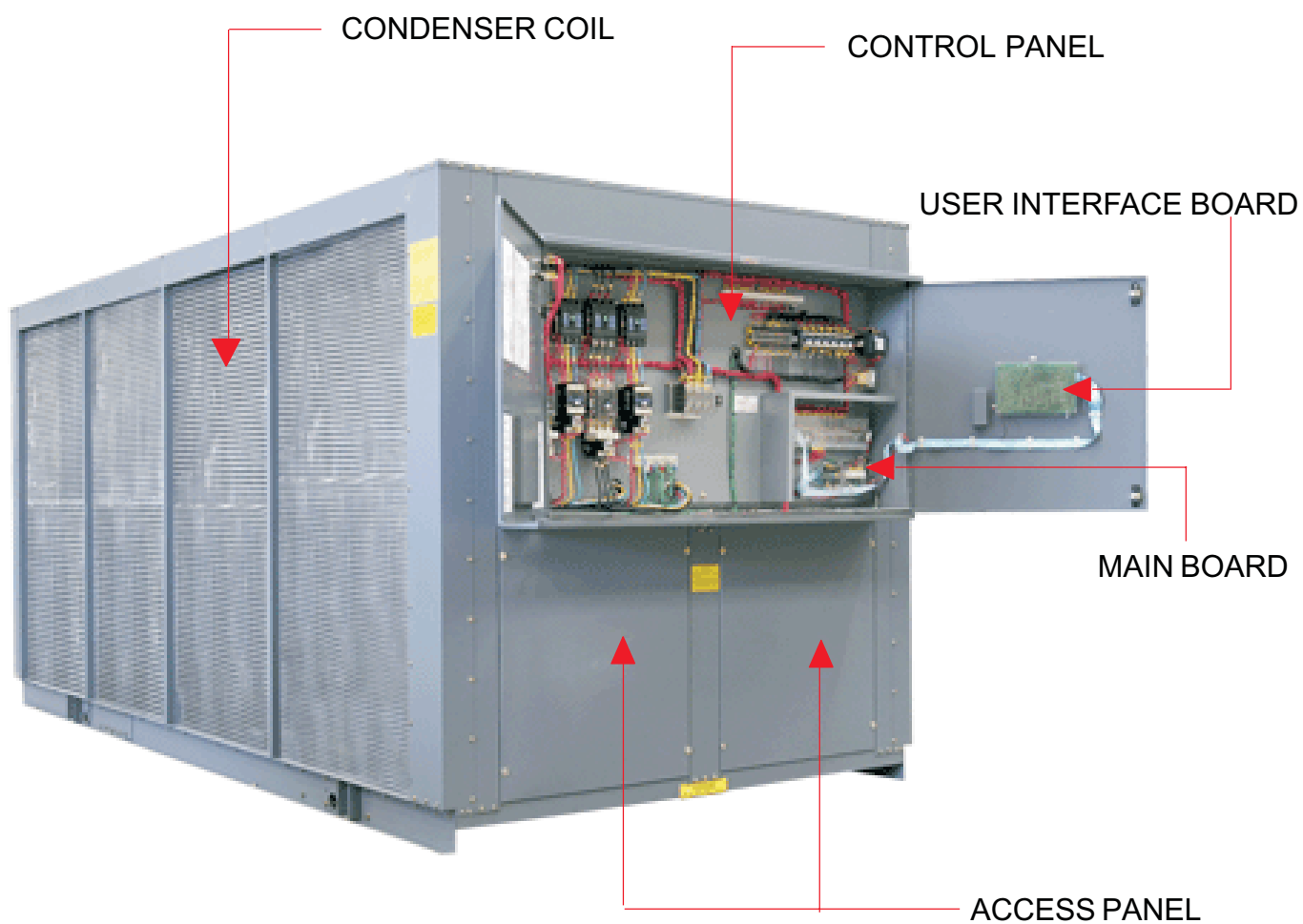
10 TR thru 240 TR

35 kW thru 844 kW





COMPONENTS





INDEX

Contents	Page
Model decoding	4
Features	4
Standard specifications	5-7
Standard safety devices, accessories & options	8
Physical data	9-10
Selection procedure	11-12
Ethylene glycol solution capacity correction	13
Performance data	14-17
Electrical data	18-19
Water side pressure drop	20
Dimensions	21-27
Typical schematic wiring diagram	28
Microprocessor controller	29
Troubleshooting guide	30-31
Application data	32-33
Rigging instructions	34
Installation clearance	35
Parts list	36-38

CONTINUING RESEARCH RESULTS IN STEADY IMPROVEMENTS.
THEREFORE, THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

MODEL DECODING

1, 2, 3 & 4 BASIC (SERIES)	5, 6 & 7 NOMINAL COOLING CAPACITY (TONS)	8 ELECTRICAL SUPPLY (V-Ph-Hz)	9 COMPRESSOR TYPE	10 CONDENSER COIL	11 CONTROLS	12 ACCESORIES	13 OPTIONS
OALC CLASSIC AIR COOLED WATER CHILLERS	010 015 025 030 035 040 050 060 070 080 100 120 140 160 180 200 220 240	H: 208/230-3-60 M: 380-3-60 (4 WIRE) F: 460-3-60 L: 380/415-3-50 (4 WIRE)	H: SEMI-HERMETIC RECIPROCATING S: SCREW	A: ALUMINUM FIN B: COATED ALUMINUM FIN C: COPPER FIN	A: STANDARD B: MICROPRO- CESSOR	A: STANDARD* B: WATER FLOW SWITCH C: SPRINGSOLATORS D: HOTGAS BYPASS E: B + C F: B + D G: C + D H: B + C + D	A: STANDARD* B: COMPRESSOR CIRCUIT BREAKER

*Please refer to accessories and options.

FEATURES

These OALC air cooled water chillers offer the ultimate combination of energy saving design, superior engineering features and flexibility of application as required by today'S market.

- * These chillers incorporate the newest advanced controller. This controller monitors analog and digital inputs to achieve precise control & protective functions of the air cooled water chiller units. This microprocessor controller is complete with all the hardware and software necessary to control the chiller unit and insures its efficiency and reliability.
- * Compact unit design and excellent serviceability.
- * All packaged chillers incorporate compact water coolers with low fin copper tubes and expanded into a steel tubular sheet which offer efficient water flow as well as heat transfer design resulting in optimal unit performance.
- * All units incorporate separate subcooler circuit which is integral to the condenser surface. This additional subcooling circuit provides superior system performance.
- * High Energy Efficiency Ratio (EER) semi-hermetic reciprocating compressors provided in these units.
- * Single point power connection to minimize job site installation cost and time.
- * Completely wired control panel provides all the necessary operating and safety controls.
- * All compressors are with independent refrigeration circuits.
- * Compressors are either with part winding or across-the-line start depending on the models.
- * Low noise condenser fans, direct Drive.
- * All fans are propeller type, top discharge, provided with protective grille mounted on top panel within the unit casing.
- * All condenser fan motors are totally enclosed air over type (TEAO) with class "F" winding insulation and ball bearings.

STANDARD SPECIFICATIONS

CAPACITY CONTROL

The Classic packaged chillers incorporate stepped load shedding as required by most energy management systems. Capacity control is achieved by cycling compressor ON/OFF and cylinder unloading. The use of unloading provides good part load capacities.

On multiple compressor units, capacity is controlled by a combination of cylinder unloading and compressor staging. See the following table for the standard and optional capacity control for each unit.

MODEL NUMBER	% FULL LOAD CAPACITY CONTROL	
	OPTIONAL	OPTIONAL
OALC 010	100-50-OFF	100-50-HGBP-OFF
OALC 015	100-50-OFF	100-50-HGBP-OFF
OALC 025	100-50-OFF	100-50-HGBP-OFF
OALC 030	100-66-OFF	100-66-HGBP-OFF
OALC 035	100-66-OFF	100-66-HGBP-OFF
OALC 040	100-75-50-25-OFF	100-75-50-25-HGBP-OFF
OALC 050	100-75-50-25-OFF	100-75-50-25-HGBP-OFF
OALC 060	100-83-50-33-OFF	100-83-50-33-HGBP-OFF
OALC 070	100-83-50-33-OFF	100-83-50-33-HGBP-OFF
OALC 080	100-83-50-33-OFF	100-83-50-33-HGBP-OFF
OALC 100	100-75-50-25-OFF	100-75-50-25-HGBP-OFF
OALC 120	100-75-50-25-OFF	100-75-50-25-HGBP-OFF
OALC 140	100-91-75-67-50-42-25-16-OFF	100-91-75-67-50-42-25-16-HGBP-OFF
OALC 160	100-91-75-67-50-42-25-16-OFF	100-91-75-67-50-42-25-16-HGBP-OFF
OALC 180	100-87-75-62-50-37-25-12-OFF	100-87-75-62-50-37-25-12-HGBP-OFF
OALC 200	100-87-75-62-50-37-25-12-OFF	100-87-75-62-50-37-25-12-HGBP-OFF
OALC 220	100-87-75-62-50-37-25-12-OFF	100-87-75-62-50-37-25-12-HGBP-OFF
OALC 240	100-87-75-62-50-37-25-12-OFF	100-87-75-62-50-37-25-12-HGBP-OFF

NOTES:

1. Cylinder unloading on lead compressor optional.
2. HGBP=Hot gas bypass available on lead compressor for all models.
3. HGBP modulates to approximately 50% of its unloaded capacity. Example: OALC 100 with HGBP(25% x 0.5=12.5% minimum capacity).

COMPRESSORS

All compressors are semi-hermetic reciprocating type and are conforming to ARI 520. These compressors are equipped with internal motor protection and also provided with vibration isolators. Each compressors has lock-out devices to protect it from short cycling when shutdown by the safety controls.

CONDENSERS COILS

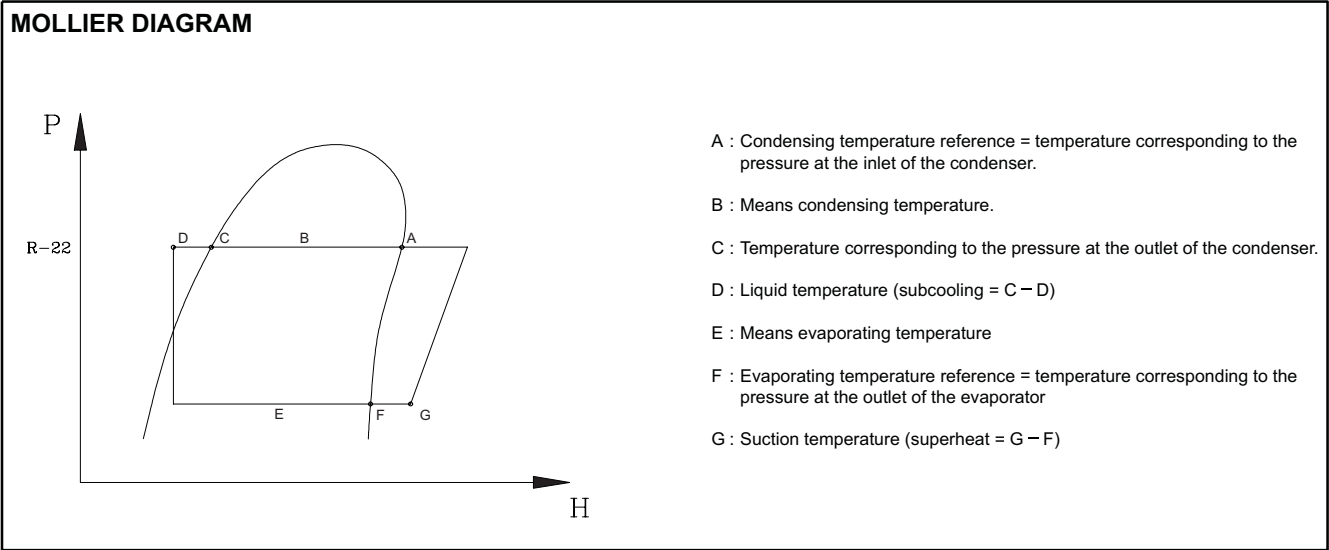
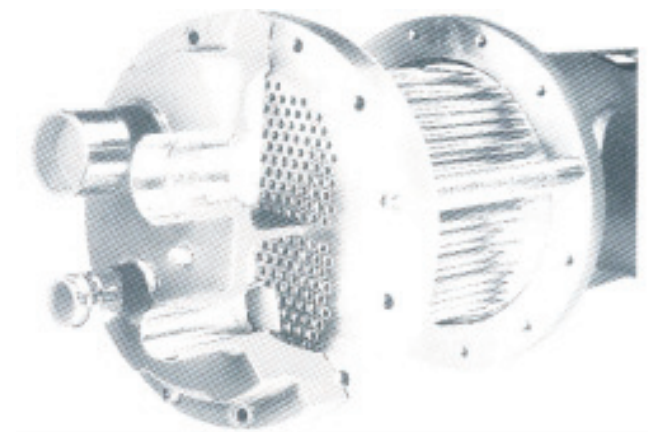
Coils are corrugated fin and tube type, constructed of seamless 3/8" dia copper tubes of thickness 0.016 inch, mechanically bonded to aluminum fins for maximum heat transfer efficiency. As an option, corrugated copper or coated aluminum fins may be provided. The fins have full self spacing collars which completely cover each tube. The staggered tube design improve the thermal efficiency. A separate sub-cooling circuit is provided to prevent flashing of liquid refrigerant. End plates and tube support sheets are 14 gauge galvanized steel, formed to provide structural strength. Each coil is pressure tested in the factory at not less than 450 psi air pressure.

STANDARD SPECIFICATIONS

COMPACT DESIGN SHELL AND TUBE WATER COOLERS

The DX shell & tube chillers made of low fin copper tubes expanded into a heavy steel tubular sheets.

The chiller shell & baffles are constructed of steel and brass respectively. The barrel is insulated with heavy closed cellular foam insulation. All chiller barrels are fitted with vent and drain connection.



SHELL & TUBE HEAT EXCHANGER (COOLER)	WATER SIDE		REFRIGERANT SIDE	
	DESIGN PRESSURE, PSIG	TEST PRESSURE, PSIG	DESIGN PRESSURE, PSIG	TEST PRESSURE, PSIG
	147	220	246.5	300

CABINET

All units are of heavy gauge (G-90) galvanized steel. Steel sheet panels are galvanized by hot dip process of lock-forming quality followed by backed on electrostatic polyester coating. Removable access panels are provided for easy maintenance purpose.



STANDARD SPECIFICATIONS

CONDENSER FANS

Condenser fans are constructed with aluminum or steel or PPG or PAG blades on steel hubs with direct driven motors. All fans are statically and dynamically balanced to operate at minimum noise and vibration. Fan blades are designed with appropriate pitch angle which result in maximum airflow through the condenser coil.

CONDENSER FANS MOTOR

All fan motors shall be three phase with " F " class winding insulation and ball or roller bearings for high ambient application.

Inherent thermal protection of automatic reset type. (optional)

MICROPROCESSOR CONTROLLER (optional)

The control works on the state of art microprocessor technology. This controller monitors analog and digital inputs to achieve precise control & safety functions of the unit.

The software works on the proportional Integral (PI) algorithm for precise control logic.

The simple to use push button keyboard allows to access the operating conditions, control set points & alarm history clearly displayed on a multi-line back illuminated LCD panel.

An easy to install **serial port/modem option** allows remote monitoring of the operating parameters. With corresponding windows software, the system allows data to be viewed in tabular or graphic format and as well interact with system set up.

Display Information:

In the normal operating mode the 20 x 4 characters LCD panel display the system status, the temperature of the water inlet & outlet, the set point, run time of the compressor & the alarm history.

Easily accessible measurements for each circuit include the following suction and discharge pressure

- oil pressure
- compressor status
- fan status
- liquid line solenoid status
- Unit/Compressor run time

The control temperature is continuously displayed on the 3 Digit 7 segments LED Display. The 3 LED lights indicate the Power ON, Menu adjustment and Fault .

System Protection:

- The following system protection is provided to ensure system reliability:
- Compressor winding overheating
- Low suction pressure
- High discharge pressure
- Freeze protection
- Low oil pressure
- Sensor error
- Time delay - Anti recycle time for compressor



STANDARD CONTROL & SAFETY DEVICES

MICROPROCESSOR CONTROLLER: This controller monitors analog and digital inputs to achieve precise control & safety functions of the unit.(optional)

COMPRESSOR MOTOR INTERNAL OVERLOAD: The internal overload protects the compressor and senses the motor winding temperature in case of overload.

STARTERS: The starter is operated by the control circuit and provides power to the compressor motors. These devices are rated to handle safely both RLA and LRA of motors.

UNDER VOLTAGE AND PHASE PROTECTION: Protects against low incoming voltage as well as single phasing, phase reversal and phase imbalance by de-energizing the control circuit. It is an automatic reset device, but it can be set up for manual reset.

CRANKCASE HEATERS: Each compressor has crankcase heater. The compressor crankcase heater is always on when the compressors are de-energized. This protect the system against refrigerant migration, oil dilution and potential compressor failure.

SAFETY VALVE: This valve protects the unit against high discharge pressure in the system due to malfunction of high pressure switches.

HIGH PRESSURE SWITCH: This switch provides an additional safety protection in the case of excessive discharge pressure.

ACCESSORIES

UNIT ON-OFF SWITCH: ON-OFF switch is provided for manually switching the unit control circuit.

INDICATOR LIGHTS: lights indicates power ON to the units .

THERMOSTATIC EXPANSION VALVE: Thermostatic expansion valve is used to regulate the refrigerant flow to the water cooler and maintain a constant superheat.

FILTER DRIER (REPLACEABLE CORE TYPE): Refrigerant circuits are kept free of harmful moisture, sludge, acids and oil contaminating particles by the filter drier.

CONTROL CIRCUIT TRANSFORMER (optional) : A factory mounted and wired control circuit transformer is furnished eliminating the need for running a separate 115 volt power supply to the unit control circuit.

SIGHT GLASS: A moisture indicating sight glass installed in the liquid line. An easy-to-read color indicator shows moisture contents and provides a mean for checking the system refrigerant charge.

LIQUID LINE SOLENOID VALVE: Closes when the compressor is off to prevent any liquid refrigerant from accumulating in the water cooler during the off cycle.

DISCHARGE LINE MUFFLER (optional) : Discharge line mufflers are installed to eliminate noise due to refrigerant pulsation.

VIBRATION ELIMINATOR: To eliminate the vibration transmitted from the compressor to the pipings and unit structure.

HOT GAS BYPASS SYSTEM (optional) : Hot gas bypass is provided on the lead circuit to permit operation of the system down to 50% of its unloaded capacity. Under low ambient condition, it controls temperature by eliminating the need to cycle the compressor on and off, ensuring narrow temperature swing and lengthen the life span of the compressor .

WATER FLOW SWITCH (optional) : Paddle type field adjustable flow switch for water cooler circuits. Interlock into unit safety circuits so that the unit will remain off until water flow is determine.

UNIT MOUNT SPRING ISOLATORS (optional): Designed for 1" deflection. This housed spring assemblies have a neoprene friction pad on the bottom to prevent vibration transmission.

CIRCUIT BREAKERS: Protects against compressor branch circuit fault. When tripped (manually or automatically), the breaker opens the power supply to the compressor and control circuit through auxiliary contacts.

PHYSICAL DATA

MODEL NUMBER		OALC 010	OALC 015	OALC 025	OALC 030	OALC 035	OALC 040	OALC 050	OALC 060	OALC 070
COMPRESSOR										
PART NUMBER	208/230V-3Ph-60Hz	800-677-44	800-677-50	800-677-62	800-677-68	800-677-71	800-677-59 (1) 800-677-19 (1)	800-677-62 (1) 800-677-22 (1)	800-677-68 (1) 800-677-28 (1)	800-677-71 (1) 800-677-31 (1)
	380V-3Ph-60Hz	800-677-45	800-677-51	800-677-63	800-677-69	800-677-72	800-677-60 (1) 800-677-20 (1)	800-677-63 (1) 800-677-23 (1)	800-677-69 (1) 800-677-29 (1)	800-677-72 (1) 800-677-32 (1)
	460V-3Ph-60Hz	800-677-46	800-677-52	800-677-64	800-677-70	800-677-73	800-677-61 (1) 800-677-21 (1)	800-677-64 (1) 800-677-24 (1)	800-677-70 (1) 800-677-30 (1)	800-677-73 (1) 800-677-33 (1)
	380/415V-3Ph-50Hz	800-677-49	800-677-55	800-677-70	800-677-73	800-677-76	800-677-64 (1) 800-677-24 (1)	800-677-70 (1) 800-677-30 (1)	800-677-73 (1) 800-677-33 (1)	800-677-76 (1) 800-677-36 (1)
NUMBER OF COMPRESSORS		1	1	1	1	1	2	2	2	2
TOTAL COMPRESSOR DISPLACEMENT, CFM		27.96	39.85	59.98	78.52	90.05	104.56	119.98	157.04	180.1
OIL CHARGE PER COMPRESSOR, Liters (Gallons)		3.2 (0.85)	3.2 (0.85)	4.7 (1.24)	5 (1.32)	5 (1.32)	4.7 (1.24)	4.7 (1.24)	5 (1.32)	5 (1.32)
% FULL LOAD CAPACITY CONTROL (optional)		100-50-0			100-66-0		100-75-50-25-0		100-83-50-33-0	
MOTOR OVERLOAD PROTECTION (INTERNAL)		ELECTRONIC								
OIL LUBRICATION		PUMP								
TOTAL CRANKCASE HEATER WATTS		100	100	140	140	140	280	280	280	280
REFRIGERANT		R-22								
EXPANSION DEVICE		EXPANSION VALVE								
CONTROL VOLTAGE		220V-1Ph-50/60Hz								
AIRCOOLED CONDENSER										
CONDENSER COIL	Tube Dia.-Rows- Fins per inch	3/8- 3	3/8- 4	3/8- 4	3/8- 3	3/8- 3	3/8- 3	3/8- 4	3/8- 3	3/8- 4
	Total face area, Sq. ft.	16.6	16.6	44.6	46.6	46.6	70	70	105	105
NUMBER OF FAN/FAN DIA.,Inches		2/30	2/30	3/30	4/30	4/30	6/30	6/30	6/30	6/30
FAN MOTOR HP/QUANTITY		1.5/2	1.5/2	1.5/3	1.5/4	1.5/4	1.5/6	1.5/6	1.5/6	1.5/6
FAN MOTOR RPM (60Hz/50Hz)		1140/950	1140/950	1140/950	1140/950	1140/950	1140/950	1140/950	1140/950	1140/950
COOLER										
COOLER PART NUMBER		800-515-35	800-515-36	800-515-37	800-515-38	800-515-39	800-515-40	800-515-41	800-515-42	800-515-43
SHELL DIAMETER, mm		140	168	168	193	193	193	220	220	273
TOTAL LENGTH, mm		1500	1500	1500	2000	2000	2000	2000	3000	3000
WATER VOLUME, Liters (Gallons)		10.8 (2.85)	15.6 (4.12)	21.2 (5.6)	29.3 (7.74)	29.3 (7.74)	37.2 (9.83)	47.2 (12.47)	55.8 (14.74)	68.7 (18.15)
THREADED/FLANGED WATER IN/OUT PIPE DIA.		2" MPT	2.5" MPT	2.5" MPT	3" MPT	3" MPT	3" MPT	100 mm	100 mm	125 mm
GENERAL										
NUMBER OF REFRIGERANT CIRCUITS		1	1	1	1	1	2	2	2	2
REFRIGERANT CHARGE PER COMPRESSOR, kg		7.7	11.4	22.7	27.3	29.5	25	28	32	34
SHIPPING/OPERATING WEIGHTS, kg		627/645	713/733	895/921	1045/1075	1302/1330	1609/1652	1614/1657	2120/2208	2180/2262

NOTES:

Compressor with cylinder unloader.

1. All compressors operate at 1750 RPM @ 60Hz and 1450 RPM @ 50Hz.
2. Cooler vent and drain size are 1/2" MPT.
3. All barrels are single face refrigerant connection.

PHYSICAL DATA

MODEL NUMBER		OALC 080	OALC 100	OALC 120	OALC 140	OALC 160	OALC 180	OALC 200	OALC 220	OALC 240
COMPRESSOR										
PART NUMBER	208/230V-3Ph-60Hz	800-677-74*(1) 800-677-34 (1)	800-674-42*(1) 800-674-39 (1)	800-674-48*(1) 800-674-45 (1)	800-677-71*(1) 800-677-31 (3)	800-677-74*(1) 800-677-34 (3)	800-674-42*(1) 800-674-39 (1) 800-674-51 (2)	800-674-42*(1) 800-674-39 (3)	800-674-48*(1) 800-674-45 (1) 800-674-39 (2)	800-674-48*(1) 800-674-45 (3)
	380V-3Ph-60Hz	800-677-75*(1) 800-677-35 (1)	800-674-43*(1) 800-674-40 (1)	800-674-49*(1) 800-674-46 (1)	800-677-72*(1) 800-677-32 (3)	800-677-75*(1) 800-677-35 (3)	800-674-43*(1) 800-674-40 (1) 800-674-61 (2)	800-674-43*(1) 800-674-40 (3)	800-674-49*(1) 800-674-46 (1) 800-674-43 (2)	800-674-49*(1) 800-674-46 (3)
	460V-3Ph-60Hz	800-677-76*(1) 800-677-36 (1)	800-674-44*(1) 800-674-41 (1)	800-674-50*(1) 800-674-47 (1)	800-677-73*(1) 800-677-33 (3)	800-677-76*(1) 800-677-36 (3)	800-674-44*(1) 800-674-41 (1) 800-674-53 (2)	800-674-44*(1) 800-674-41 (3)	800-674-50*(1) 800-674-47 (1) 800-674-41 (2)	800-674-50*(1) 800-674-47 (3)
	380/415V-3Ph-50Hz	800-674-44*(1) 800-674-41 (1)	800-674-50*(1) 800-674-47 (1)	800-680-20*(1) 800-680-21 (1)	800-677-76*(1) 800-677-36 (3)	800-674-44*(1) 800-674-41 (1) 800-674-53 (2)	800-674-44*(1) 800-674-41 (3)	800-674-50*(1) 800-674-47 (3)	800-680-20*(1) 800-680-21 (1) 800-680-15 (2)	800-680-20*(1) 800-680-21 (3)
NUMBER OF COMPRESSORS		2	2(4)	2(3)	4	4	4	4(5)	4(5)	4(6)
TOTAL COMPRESSOR DISPLACEMENT, CFM		215.4	255	296.5	360.2	430.4	468	511	552	593
OIL CHARGE PER COMPRESSOR, Liters (Gallons)		5 (1.32)	7.5 (1.98)	7.5 (1.98)	5 (1.32)	5 (1.32)	7.5 (1.98)	7.5 (1.98)	7.5 (1.98)	7.5 (1.98)
% FULL LOAD CAPACITY CONTROL (optional)		100-83-50-33-0	100-75-50-25-0		100-91-75-67-50-42-25-16-0		100-87-75-62-50-37-25-12-0			
MOTOR OVERLOAD PROTECTION (INTERNAL)		ELECTRONIC								
OIL LUBRICATION		PUMP								
TOTAL CRANKCASE HEATER WATTS		280	400	400	560	560	800	800	800	800
REFRIGERANT		R-22								
EXPANSION DEVICE		EXPANSION VALVE								
CONTROL VOLTAGE		220V-1Ph-50/60Hz								
AIRCOOLED CONDENSER										
CONDENSER COIL	Tube Dia.- Rows - Fins per inch	3/8- 3	3/8- 3	3/8- 4	3/8- 3	3/8- 4	3/8- 4	3/8- 4	3/8- 4	3/8- 4
	Total face area, Sq. ft.	201	201	201	232	232	280	322	322	360
NUMBER OF FAN/FAN DIA.,Inches		8/30	8/30	12/30	12/30	14/30	14/30	16/30	16/30	18/30
FAN MOTOR HP/QUANTITY		1.5/8	1.5/8	1.5/12	1.5/12	1.5/14	1.5/14	1.5/16	1.5/16	1.5/18
FAN MOTOR RPM (60Hz/50Hz)		1140/950	1140/950	1140/950	1140/950	1140/950	1140/950	1140/950	1140/950	1140/950
COOLER										
COOLER PART NUMBER		800-515-44	800-515-45	800-515-46	800-515-47	800-515-48	800-515-48	800-515-49	800-515-50	800-515-51
SHELL DIAMETER, mm		273	323	323	323	406	406	406	406	406
TOTAL LENGTH, mm		3000	3000	3000	3000	3000	3000	3000	3000	3000
WATER VOLUME, Liters (Gallons)		77.9 (20.58)	79.8 (21.08)	79.8 (21.08)	110 (29.06)	153.4 (40.53)	153.4 (40.53)	169.4 (44.76)	196.8 (52)	207.5 (54.82)
VICTAULIC WATER IN/OUT PIPE DIA.		125 mm	150 mm	150 mm	150 mm	200 mm	200 mm	200 mm	200 mm	200 mm
GENERAL										
NUMBER OF REFRIGERANT CIRCUITS		2	2	2	4	4	4	4	4	4
REFRIGERANT CHARGE PER COMPRESSOR, kg		42.5	45	50	42	42.5	45	45	50	50
SHIPPING/OPERATING WEIGHTS, kg		2522/2627	2522/2638	2522/2638	4120/4309	4409/4598	4943/5119	5232/5408	5354/5568	5477/5691

NOTES:

- * Compressor with cylinder unloader.
- 1. All compressors operate at 1750 RPM @ 60Hz and 1450 RPM @ 50Hz.
- 2. Cooler vent and drain size are 1/2" MPT.
- 3. All barrels are single face refrigerant connection.

SELECTION PROCEDURE (English units)

DESIGN REQUIREMENTS

The following design requirements must be known to select a package chiller

1. Required cooling capacity in tons
2. Leaving chilled water temperature in °F (LCWT)
3. Chilled water flow rate in PM
4. Chilled water cooling range in °F (water in temp. – water out temp.)
5. Design ambient temperature
6. Minimum ambient temperature
7. Altitude
8. Electrical power supply

ELEVATION ABOVE SEA LEVEL (FT.)	CAPACITY CORRECTION FACTOR
0	1.00
2000	0.99
4000	0.98
6000	0.97

TABLE - 1

SAMPLE SELECTION

Select an Air Cooled Packaged chiller for the following conditions:

Required system capacity is 90 tons at 54°F entering chilled water and 44°F leaving water. Design ambient temperature is 95°F.

Altitude is 2000 feet above sea level.

Water cooler fouling factor is 0.00010. Power supply: 380V-3Ph-60Hz.

EVAPORATOR FOULING FACTOR (HR-FT ² .°F/BTU)	CAPACITY CORRECTION FACTOR	POWER INPUT FACTOR	ARI STANDARDS
0.00010	1.000	1.000	ARI-550/590-98
0.00025	0.992	0.997	ARI-590-86
0.00050	0.978	0.990	ARI-590-81
0.00075	0.965	0.984	
0.00100	0.951	0.978	

TABLE - 2

STEP-1: UNIT SELECTION

Entering the capacity performance data at given LCWT and ambient temperature. OALC100 chiller unit at sea level will produce 100.3 tons and 113.5kW compressor power input at 44°F leaving chilled water temperature with 10°F water temperature difference and 95°F ambient temperature.

For the conditions required, the unit actual cooling capacity when corrected for altitude (0.99) and fouling factor (1.0).

Capacity = 100.3x0.99x1.0 = 99.2 Tons, which then exceeds the requirements. So the selection is correct.

STEP-2: CHILLED WATER FLOW (PM):

$$\text{Water PM} = \frac{\text{Required capacity (Tons)} \times 24}{\text{Cooling Range, } \Delta T} = \frac{90 \times 24}{10^\circ\text{F}} = 216 \text{ PM}$$

Referring to pressure drop chart, pressure drop at 216 PM = 11.5 ft. of water for selected model.

STEP-3: ELECTRICAL

Refer to electrical data at 380V-3Ph-60Hz, the main power wire size for OALC100 is to be sized for a minimum circuit ampacity (MCA) of 325.4 Amps and maximum over current protection (MOCP) of 450 Amps.

STEP-4: CHILLED WATER PUMP SELECTION

For chilled water pump selection, add all pressure drop in the closed chilled water loop piping to the pressure drop calculated in step 2.

STEP-5: LCWT CORRECTION

When a corrected LCWT is used, cooler pressure drop must also be corrected for new LCWT.

Refer to table-3. Add correction factor to design leaving chilled water temperature (LCWT) when chilled water temperature range is above 10°F and subtract correction from design leaving chilled water temperature (LCWT) when water temperature range is below 10°F.

EXAMPLE:

If LCWT rise is 12.5°F, enter correction curve at 12.5°F and read the correction factor of 0.2. The corrected LCWT is 44+0.2 = 44.2°F.

NOTE: 1. When the chilled water temperature rise is less than 5°F, the high water flow rate will result to excessive pressure drop. In such cases, contact factory for special selection of a cooler with wider baffle spacing.
2. Please refer to water pressure drop curves.

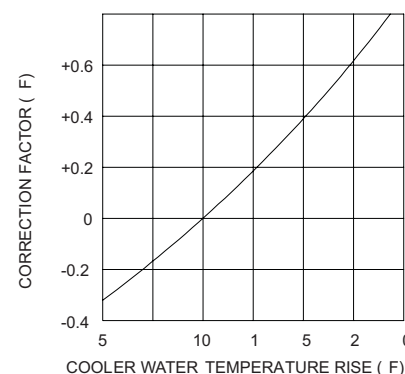


TABLE - 3

DESIGN REQUIREMENTS

The following design requirements must be known to select a proper package chiller

1. Required cooling capacity in kilowatt (kW)
2. Leaving chilled water temperature in °C (LCWT)
3. Chilled water flow rate in LPS
4. Chilled water cooling range in °C (water in temp. – water out temp.)
5. Design ambient temperature
6. Minimum ambient temperature
7. Altitude
8. Electrical power supply

ELEVATION ABOVE SEA LEVEL (Meter)	CAPACITY CORRECTION FACTOR
0	1.00
600	0.99
1200	0.98
1800	0.97

TABLE - 1

SAMPLE SELECTION

Select an Air Cooled Packaged chiller for the following conditions:

Required system capacity is 300 kW at 12 entering chilled water and 6°C leaving water. Design ambient temperature is 35°C.

Altitude is 600 meter above sea level.

Water cooler fouling factor is 0.000018. Power supply: 380V-3Ph-60Hz.

EVAPORATOR FOULING FACTOR (M ² .°C/W)	CAPACITY CORRECTION FACTOR	POWER INPUT FACTOR	ARI STANDARDS
0.000018	1.000	1.000	ARI-550/590-98
0.000044	0.992	0.997	ARI-590-86
0.000088	0.978	0.990	ARI-590-81
0.000132	0.965	0.984	
0.000176	0.951	0.978	

TABLE - 2

STEP-1: UNIT SELECTION

Entering the capacity performance data at given LCWT and ambient temperature. OALC100 chiller unit at sea level will produce 346.3 kW and 111.8 kW compressor power input at 6°C leaving chilled water temperature with 6°C water temperature difference and 35°C ambient temperature.

For the conditions required, the unit actual cooling capacity when corrected for altitude (0.99) and fouling factor (1.0).

Capacity = 346.3x0.99x1.0 = 342.84 kW, which then exceeds the requirements. So the selection is correct.

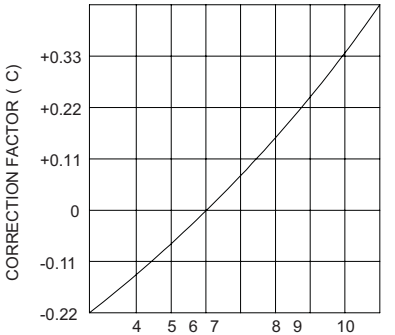


TABLE - 3

STEP-2: CHILLED WATER FLOW (LPM):

$$\text{Water LPS} = \frac{\text{Required capacity (kW)} \times 0.239}{\text{Cooling Range, } \Delta T} = \frac{300 \times 0.239}{6^\circ\text{C}} = 12 \text{ LPS}$$

Referring to pressure drop chart, pressure drop at 12 LPS with pressure drop of 27.5 kPa of water for selected model.

STEP-3: ELECTRICAL

Refer to electrical data at 380V-3Ph-60Hz, the main power wire size for OALC100 is to be sized for a minimum circuit ampacity (MCA) of 325.4 Amps and maximum over current protection (MOCP) of 450 Amps.

STEP-4: CHILLED WATER PUMP SELECTION

For chilled water pump selection, add all pressure drop in the closed chilled water loop piping to the pressure drop calculated in step 2.

STEP-5: LCWT CORRECTION

When a corrected LCWT is used, cooler pressure drop must also be corrected for new LCWT.

Refer to table-3. Add correction factor to design leaving chilled water temperature (LCWT) when chilled water temperature range is above 6°C and subtract correction from design leaving chilled water temperature (LCWT) when water temperature range is below 6°C.

EXAMPLE:

If LCWT rise is 7.4°C, enter correction curve at 7.4°C and read the correction factor of 0.11. The corrected LCWT is 6°C+0.11 = 6.11°C.

NOTE: 1. When the chilled water temperature rise is less than 3°C, the high water flow rate will result to excessive pressure drop. In such cases, contact factory for special selection of a cooler with wider baffle spacing.
2. Please refer to water pressure drop curves.

ETHYLENE GLYCOL SOLUTION CAPACITY CORRECTION (Antifreeze)

When operating in areas with temperatures below 32°F (0°C), cooler protection in the form of Ethylene glycol solution (brine solution) is required to protect cooler from low ambient freeze-up. This brine solution must be added to water loop to bring down the freezing point with a difference of 15°F (8°C) below minimum operating ambient temperature.

Ethylene glycol solution causes a variation in unit performance. To obtain the effective performance, it is necessary to multiply the water performance data by correction factors corresponding to the ambient temperature or Ethylene glycol percentage indicated in the following table.

ETHYLENE GLYCOL % BY WEIGHT	0%	12%	22%	30%	36%	41%	46%	50%
Freezing point of Ethylene glycol solution	0°C (32°F)	-5°C (23°F)	-10°C (14°F)	-15°C (5°F)	-20°C (-4°F)	-25°C (-13°F)	-30°C (-22°F)	-35°C (-31°F)
Ambient temperature	8.3°C (47°F)	3.3°C (38°F)	-1.7°C (29°F)	-6.7°C (20°F)	-11.7°C (11°F)	-16.7°C (2°F)	-21.7°C (-7°F)	-26.7°C (-16°F)
Cooling capacity correction factor	1.0	0.985	0.980	0.974	0.970	0.965	0.964	0.960
Water flow correction factor	1.0	1.02	1.04	1.075	1.11	1.14	1.17	1.20
Pressure drop correction factor	1.0	1.07	1.11	1.18	1.22	1.24	1.27	1.30

EXAMPLE: English system- Determine Ethylene glycol percentage by weight and correction factors at 38°F ambient temperature.

From the above table, Ethylene glycol water solution concentration (percentage by weight) corresponding to 38°F ambient temperature is 12% by weight.

Find the correction factors corresponding to 38°F ambient temperature from the table.

Cooling capacity correction factor is 0.985, Flow correction factor is 1.02, Pressure drop correction factor is 1.07.

Apply these correction factors for corrected system performance values.

TONS (E.G. SOLUTION) = Tons (water) x Cooling capacity correction factor.

BRINE (E.G. SOLUTION) FLOW (GPM) = Flow (water) x Flow correction factor.

BRINE (E.G. SOLUTION) PRESSURE DROP = Water pressure drop (Ft.) x Pressure drop correction factor.

EXAMPLE: Metric system- Determine Ethylene glycol percentage by weight and correction factors where 3.3°C ambient temperature.

From the above table, Ethylene glycol water solution concentration (percentage by weight) corresponding to 3.3°C ambient temperature is 12% by weight.

Find the correction factors corresponding to 3.3°C ambient temperature from the table.

Cooling capacity correction factor is 0.985, Flow correction factor is 1.02, Pressure drop correction factor is 1.07.

Apply these correction factors for corrected system performance values.

KW (E.G. SOLUTION) = KW (water) x Cooling capacity correction factor.

BRINE (E.G. SOLUTION) FLOW (L/S) = KW (water) x Flow correction factor.

BRINE (E.G. SOLUTION) PRESSURE DROP = Water pressure drop (kPa) x Pressure drop correction factor.

Note: Correction factors apply to published chilled water performance rating from 40°F to 50°F (4.4°C to 10°C) LCWT.

PERFORMANCE DATA, 60Hz (English units)

PERFORMANCE DATA, 60Hz (English units)

LEAVING CHILLED WATER TEMP. (LCWT)	MODEL No.	95°F AMBIENT TEMPERATURE				105°F AMBIENT TEMPERATURE				115°F AMBIENT TEMPERATURE				125°F AMBIENT TEMPERATURE			
		CAP. (Tons)	COMP. kW	EER	COOLER WATER FLOW (GPM)	CAP. (Tons)	COMP. kW	EER	COOLER WATER FLOW (GPM)	CAP. (Tons)	COMP. kW	EER	COOLER WATER FLOW (GPM)	CAP. (Tons)	COMP. kW	EER	COOLER WATER FLOW (GPM)
40 °F	OALC010	9.7	11.6	8.6	23.6	8.9	12.4	7.4	21.6	8.3	13.2	6.6	20.1	7.7	14.0	5.8	18.7
	OALC015	14.0	17.2	8.7	33.8	13.0	18.5	7.6	31.3	12.3	19.7	6.8	29.6	11.5	20.9	6.0	27.9
	OALC025	20.9	25.1	8.9	50.5	19.6	27.1	7.8	47.3	18.4	29.4	7.0	44.5	17.3	31.8	6.0	41.8
	OALC030	27.4	31.8	9.2	66.2	25.6	34.2	8.0	61.9	24.0	37.1	7.0	58.0	22.4	40.1	6.1	54.0
	OALC035	31.5	37.6	8.6	76.1	29.6	40.7	7.6	71.4	27.6	44.1	6.6	66.7	25.6	47.6	5.7	61.9
	OALC040	36.8	42.3	9.1	88.3	34.2	45.5	7.9	82.6	31.9	49.6	6.9	77.1	29.7	53.6	6.0	71.6
	OALC050	41.8	50.2	8.9	101.0	39.1	54.2	7.8	94.5	36.9	58.9	6.8	89.1	34.6	63.6	6.0	83.6
	OALC060	54.8	63.6	9.4	132.3	51.3	68.4	8.3	123.9	48.0	74.3	7.2	115.9	44.7	80.2	6.2	108.0
	OALC070	63.0	73.3	9.3	152.2	59.1	81.4	8.1	142.8	55.2	88.2	7.0	133.3	51.3	95.1	6.1	123.9
	OALC080	74.8	93.1	8.9	180.6	70.0	99.8	7.8	169.1	65.6	107.1	6.8	158.5	61.2	114.4	6.0	147.8
	OALC100	92.7	110.2	9.4	223.9	86.0	117.5	8.2	207.7	80.6	123.9	7.4	194.8	75.3	130.2	6.5	181.8
	OALC120	106.7	130.0	9.0	257.7	98.9	137.4	7.9	238.8	92.6	143.3	7.2	223.6	86.3	149.2	6.4	208.4
	OALC140	126.1	150.6	9.3	304.5	118.2	162.7	8.1	285.6	110.4	176.5	7.0	266.7	102.6	190.3	6.1	247.8
	OALC160	149.6	186.2	9.0	361.2	140.2	199.6	7.9	338.5	131.2	214.1	6.9	316.9	122.4	228.7	6.1	295.5
	OALC180	170.0	201.6	9.5	410.4	158.1	214.9	8.3	381.8	147.9	226.6	7.4	357.2	137.7	238.2	6.6	332.6
	OALC200	185.2	220.5	9.4	447.2	172.4	235.1	8.3	416.4	161.3	247.7	7.4	389.5	150.2	260.4	6.5	362.7
	OALC220	198.8	240.5	9.3	480.1	185.1	255.0	8.2	447.0	172.9	267.2	7.3	417.6	160.8	279.3	6.5	388.3
42 °F	OALC240	213.4	260.1	9.2	515.4	198.0	274.9	8.1	478.1	185.2	286.6	7.3	447.2	172.4	298.3	6.6	416.4
	OALC010	10.2	11.8	8.8	24.6	9.5	12.8	7.7	22.9	8.8	13.5	6.8	21.4	8.2	14.2	6.1	19.9
	OALC015	14.7	17.6	9.0	35.4	13.7	18.8	7.9	33.1	12.9	20.0	7.0	31.3	11.8	21.3	6.1	28.6
	OALC025	22.0	25.5	9.2	53.1	20.6	27.5	8.1	49.8	19.2	30.0	7.0	46.3	17.5	32.4	5.9	42.3
	OALC030	28.7	32.3	9.5	69.4	26.9	34.8	8.3	65.1	25.1	37.8	7.2	60.7	23.4	40.9	6.2	56.5
	OALC035	33.0	38.3	8.9	79.6	30.9	41.4	7.8	74.6	28.8	45.0	6.8	69.6	26.8	48.7	5.9	64.7
	OALC040	38.2	42.9	9.3	92.3	35.8	46.3	8.2	86.6	33.5	50.4	7.1	80.8	31.0	54.7	6.1	74.9
	OALC050	44.1	51.0	9.3	106.5	41.2	55.1	8.1	99.5	38.3	59.9	7.0	92.5	35.4	64.8	6.0	85.6
	OALC060	57.5	64.6	9.8	138.8	54.0	69.6	8.6	130.3	50.3	75.7	7.4	121.4	46.6	81.8	6.4	112.4
	OALC070	65.9	76.5	9.6	159.2	61.8	82.8	8.4	149.2	57.7	90.1	7.2	139.3	53.6	97.4	6.2	129.3
	OALC080	78.0	94.5	9.1	188.3	73.1	101.2	8.0	176.6	68.5	108.9	7.0	165.4	63.9	116.6	6.2	154.2
	OALC100	96.1	112.0	9.6	232.1	89.3	119.6	8.4	215.7	82.9	126.9	7.4	200.2	76.5	134.2	6.5	184.8
	OALC120	111.4	132.5	9.3	269.1	103.5	140.2	8.2	250.0	97.2	146.1	7.4	234.8	91.4	154.0	6.6	220.6
	OALC140	131.9	153.0	9.6	318.6	123.6	165.6	8.4	298.5	115.4	180.1	7.2	278.6	107.1	194.7	6.2	258.7
	OALC160	156.1	189.0	9.2	377.1	146.3	202.4	8.1	353.2	137.0	217.8	7.1	330.8	127.7	232.2	6.2	308.4
	OALC180	176.1	204.4	9.7	425.4	163.8	218.6	8.5	395.5	152.4	230.7	7.5	368.1	141.1	242.9	6.6	340.8
	OALC200	192.2	224.0	9.6	464.2	178.6	239.0	8.4	431.3	165.9	253.7	7.4	407.7	153.3	268.4	6.5	370.1
44 °F	OALC220	207.8	244.3	9.6	501.7	193.2	259.6	8.4	466.6	181.6	272.0	7.6	438.5	170	284.5	6.7	412.2
	OALC240	222.9	264.9	9.5	538.3	207.1	280.2	8.3	500.2	194.6	292.4	7.5	469.9	182	304.5	6.7	441.5
	OALC010	10.7	12.0	9.1	25.9	9.8	13.0	7.9	23.9	9.2	13.8	7.0	22.4	8.6	14.6	6.2	20.9
	OALC015	15.3	17.8	9.3	37.0	14.3	19.1	8.1	34.6	13.5	20.4	7.2	32.6	12.6	21.8	6.3	30.3
	OALC025	23.0	25.9	9.5	55.5	21.5	28.0	8.3	52.0	20.1	30.6	7.2	48.5	18.6	33.1	6.2	45.0
	OALC030	30.1	32.7	9.8	72.7	28.2	35.3	8.6	68.1	26.4	38.5	7.4	63.7	24.5	41.6	6.4	59.2
	OALC035	34.5	38.9	9.2	83.3	32.3	42.0	8.1	78.1	30.2	45.8	7.0	72.9	28.0	49.7	6.0	67.7
	OALC040	40.0	43.5	9.7	96.5	37.5	47.2	8.4	90.5	35.0	51.4	7.3	84.6	32.5	56.0	6.3	78.6
	OALC050	45.9	51.8	9.5	110.9	43.1	56.1	8.3	104.0	40.2	61.1	7.2	104.0	37.3	66.2	6.2	90.0
	OALC060	60.2	65.4	10.1	145.3	56.4	70.6	8.8	136.3	52.7	76.9	7.6	127.4	49.0	83.2	6.6	118.4
	OALC070	69.0	77.7	9.9	166.7	64.7	84.0	8.6	156.2	60.4	91.7	7.4	145.8	56.0	99.4	6.4	135.3
	OALC080	81.7	95.7	9.5	197.3	76.6	102.8	8.3	185.1	71.8	110.7	7.3	173.4	67.0	118.6	6.4	161.7
	OALC100	100.3	113.5	9.9	242.3	93.3	121.4	8.7	225.9	86.7	128.9	7.6	209.4	80.1	136.4	6.7	193.5
	OALC120	116.2	134.6	9.5	280.6	108.3	142.5	8.4	261.4	101.8	148.9	7.6	245.8	95.6	157.5	6.8	230.8
	OALC140	138.1	155.4	9.9	333.6	129.4	168.0	8.6	312.4	120.8	183.4	7.4	291.8	112.3	198.8	6.4	271.1
	OALC160	163.4	191.5	9.5	394.5	153.3	205.6	8.4	370.1	143.6	221.4	7.3	346.8	133.9	237.2	6.4	323.4
	OALC180	184.0	207.2	10.0	444.3	171.1	221.8	8.7	413.2	159.7	234.2	7.7	385.6	148.2	246.5	6.8	357.9
	OALC200	200.6	227.2	9.9	484.6	186.6	242.9	8.7	450.7	173.5	257.9	7.6	418.9	160.3	272.6	6.7	387.0
	OALC220	216.3	247.9	9.8	522.2	202.3	263.7	8.7	488.5	189.7	276.9	7.8	458.2	177.2	290.4	7.0	427.8
	OALC240	232.8	269.2	9.7	562.2	216.6	284.4	8.6	523.1	200.5	299.1	7.6	484.3	190.4	311.1	6.7	459.7

LEGEND:

- Compressor power input kW
- Pressure Drop PD
- Energy Efficiency Ratio EER

NOTES

- For 50Hz units, multiply capacity by 0.85 & power input by 0.83.
- Performance data are based on 10°F water range in evaporator.

- Ratings are based on 0.00010 (hr-ft³-°F/Btu) fouling factor for evaporator.
- Direct interpolation is permissible. Do not extrapolate.
- kW power input is for compressor only.
- EER for entire unit. Refer to physical data for fan kW.

PERFORMANCE DATA, 60Hz (English units)

PERFORMANCE DATA, 60Hz (English units)

LEAVING CHILLED WATER TEMP. (LCWT)	MODEL No.	95°F AMBIENT TEMPERATURE			105°F AMBIENT TEMPERATURE			115°F AMBIENT TEMPERATURE			125°F AMBIENT TEMPERATURE		
		CAP. (Tons)	COMP. kW	EER	COOLER WATER FLOW (PM)	COOLER WATER FLOW (PM)	EER	CAP. (Tons)	COMP. kW	EER	CAP. (Tons)	COMP. kW	EER
46 °F	OALC010	11.0	12.2	9.4	27.1	25.1	8.1	9.6	14.0	7.3	9.0	14.7	6.4
	OALC015	16.0	18.0	9.6	38.7	36.7	8.4	14.1	20.8	7.4	13.3	22.3	6.6
	OALC025	24.1	26.2	9.9	58.1	54.4	8.6	21.1	31.2	7.4	19.7	33.9	6.4
	OALC030	31.5	33.0	10.2	76.0	71.2	8.8	27.4	39.3	7.6	25.3	42.6	6.5
	OALC035	36.1	39.3	9.5	87.1	81.6	8.3	31.5	46.8	7.2	29.3	50.8	6.2
	OALC040	41.9	44.1	10.0	101.2	94.8	8.7	36.6	52.4	7.5	33.8	57.6	6.4
	OALC050	48.2	52.4	9.9	116.4	108.9	8.6	42.2	62.4	7.4	40.0	67.8	6.4
	OALC060	62.8	66.1	10.4	151.7	142.3	9.1	54.8	77.5	7.9	50.7	83.2	6.8
	OALC070	72.1	78.7	10.2	174.1	163.2	8.9	63.0	93.5	7.6	58.5	101.6	6.5
	OALC080	85.3	97.1	9.7	206.0	193.3	8.6	75.0	112.5	7.5	69.9	120.8	6.5
	OALC100	104.8	115.2	10.2	253.0	235.3	8.9	90.5	131.1	7.8	83.6	138.8	6.8
	OALC120	121.7	136.6	9.8	294.0	273.9	8.7	106.5	151.8	7.8	100.0	160.9	6.9
	OALC140	144.2	157.5	10.2	348.2	326.4	8.9	126.2	187.0	7.6	117.2	203.2	6.5
	OALC160	170.6	194.3	9.8	411.9	386.5	8.6	150.0	225.1	7.5	139.9	241.7	6.6
	OALC180	192.1	209.9	10.3	463.9	431.6	9.0	166.9	238.3	8.0	155.0	251.6	7.0
	OALC200	209.5	230.3	10.2	505.9	470.6	8.9	181.1	262.1	7.8	167.3	277.7	6.8
	OALC220	227.0	251.6	10.2	548.2	510.4	8.9	198.3	281.9	8.0	186.3	298.8	7.1
	OALC240	243.6	273.2	10.1	588.3	548.0	8.9	213.0	303.6	8.0	200.1	321.2	7.1
	OALC010	11.7	12.4	9.7	28.4	26.4	8.4	10.2	14.3	7.5	9.5	15.1	6.6
	OALC015	16.8	18.3	9.9	40.5	37.6	8.6	14.7	21.2	7.6	13.6	22.6	6.6
	OALC025	25.1	26.6	10.2	60.7	56.8	8.8	22.0	31.8	7.6	20.4	34.6	6.5
48 °F	OALC030	32.9	33.6	10.5	79.4	74.4	9.1	28.7	40.0	7.8	26.7	43.5	6.7
	OALC035	37.7	40.0	9.8	91.0	85.3	8.6	33.0	47.7	7.4	30.6	51.9	6.3
	OALC040	43.8	44.7	10.5	107.7	99.2	9.0	38.3	53.2	7.7	35.5	58.3	6.6
	OALC050	50.3	53.2	10.2	121.4	113.4	8.8	44.1	63.6	7.6	41.2	69.2	6.6
	OALC060	65.7	67.2	10.8	158.7	148.7	9.4	57.5	79.9	8.0	53.4	87.0	6.9
	OALC070	75.4	79.9	10.5	182.0	170.6	9.1	65.9	95.3	7.8	61.2	103.8	6.7
	OALC080	89.1	98.4	10.1	215.2	202.0	8.8	78.3	114.4	7.7	72.9	122.9	6.7
	OALC100	109.3	116.7	10.5	263.9	245.5	9.2	94.5	133.2	8.0	87.2	141.3	7.0
	OALC120	127.4	138.6	10.1	307.7	286.6	8.9	111.4	154.4	8.0	104.8	163.6	7.2
	OALC140	150.7	159.9	10.5	363.9	341.3	9.1	131.9	190.7	7.8	122.6	207.7	6.7
	OALC160	178.2	196.7	10.2	430.3	404.0	8.9	156.6	228.7	7.8	145.8	245.7	6.8
	OALC180	200.4	212.5	10.6	484.1	450.5	9.2	174.1	241.9	8.2	161.6	255.9	7.2
	OALC200	218.6	233.4	10.5	527.8	491.0	9.2	188.9	266.4	8.0	174.5	282.6	7.0
	OALC220	237.0	252.0	10.6	572.4	532.8	9.2	207.3	286.6	8.2	194.9	303.7	7.3
	OALC240	254.8	277.3	10.4	615.4	573.1	9.1	222.9	308.9	8.2	205.5	327.4	7.3
	OALC010	12.3	12.7	10.0	29.6	27.6	8.7	10.6	14.6	7.7	9.8	15.4	6.7
	OALC015	17.5	18.5	10.2	42.3	39.5	8.9	14.3	21.6	7.8	14.3	23.1	6.9
	OALC025	26.2	26.9	10.5	63.3	59.4	9.1	23.0	32.3	7.8	21.3	35.1	6.7
	OALC030	34.3	34.0	10.8	82.9	77.7	9.4	30.1	40.7	8.1	27.9	44.4	6.9
	OALC035	39.3	40.5	10.1	94.9	89.0	8.8	34.5	48.5	7.6	32.1	52.8	6.5
	OALC040	45.6	47.0	10.1	104.7	103.5	9.3	40.0	54.2	7.9	37.1	59.8	6.8
50 °F	OALC050	52.5	53.8	10.5	126.9	118.9	9.1	45.9	64.6	7.8	42.6	70.2	6.7
	OALC060	68.6	68.0	11.1	165.7	155.4	9.7	60.2	81.4	8.3	55.9	88.9	7.1
	OALC070	78.6	81.0	10.9	189.8	178.1	9.4	69.0	96.9	8.1	64.3	105.3	6.9
	OALC080	92.8	99.6	10.4	224.1	210.7	9.1	81.9	112.2	7.9	76.5	125.1	6.9
	OALC100	113.9	118.2	10.8	275.1	256.0	9.4	98.5	134.6	8.3	90.9	142.3	7.3
	OALC120	132.4	140.6	10.4	319.6	299.5	9.2	116.4	157.1	8.3	109.4	166.8	7.3
	OALC140	157.2	161.9	10.9	379.6	356.2	9.4	138.1	193.9	8.1	128.8	211.3	6.9
	OALC160	185.6	199.2	10.5	448.2	421.4	9.2	163.8	232.4	8.0	153.1	250.2	7.0
	OALC180	209.0	215.1	11.0	504.7	469.9	9.5	181.8	249.9	8.4	169.0	258.6	7.5
	OALC200	227.8	236.4	10.8	550.2	511.9	9.4	196.9	270.4	8.3	181.9	271.1	7.1
	OALC220	252.0	253.8	11.2	608.7	566.7	9.5	216.4	291.2	8.5	203.3	308.6	7.5
	OALC240	264.1	281.1	10.6	637.8	599.0	9.4	232.8	314.2	8.4	218.8	333.0	7.5

LEGEND:
 kW - Compressor power input
 PD - Pressure Drop
 EER - Energy Efficiency Ratio

NOTES
 1. For 50Hz units, multiply capacity by 0.85 & power input by 0.83.
 2. Performance data are based on 10°F water range in evaporator.
 3. Ratings are based on 0.00010 (hr-ft³-°F/Btu) fouling factor for evaporator.
 4. Direct interpolation is permissible. Do not extrapolate.
 5. kW power input is for compressor only.
 6. EER for entire unit. Refer to physical data for fan kW.

PERFORMANCE DATA, 60Hz (Metric units)

PERFORMANCE DATA, 60Hz (Metric units)

LEAVING CHILLED WATER TEMP. (LCWT)	MODEL No.	35°C AMBIENT TEMPERATURE			40°C AMBIENT TEMPERATURE			46°C AMBIENT TEMPERATURE			52°C AMBIENT TEMPERATURE		
		CAP. (kW)	COMP. kW	COP	COOLER WATER FLOW (LPS)	CAP. (kW)	COMP. kW	COP	COOLER WATER FLOW (LPS)	CAP. (kW)	COMP. kW	COP	COOLER WATER FLOW (LPS)
4°C	OALC010	33.8	11.5	2.5	1.35	31.0	12.3	2.1	1.23	28.8	13.0	1.9	1.15
	OALC015	45.7	17.0	2.4	1.82	44.8	18.3	2.2	1.79	42.4	19.2	2.2	1.69
	OALC025	72.3	24.8	2.6	2.88	67.6	26.9	2.2	2.69	63.7	29.2	2.0	2.54
	OALC030	94.7	31.5	2.6	3.77	88.6	33.9	2.3	3.53	82.9	36.8	2.0	3.30
	OALC035	108.9	37.3	2.5	4.34	102.2	40.3	2.2	4.07	95.4	43.7	1.9	3.80
	OALC040	126.4	41.9	2.6	5.03	118.2	45.1	2.3	4.71	110.3	49.1	2.0	4.39
	OALC050	144.5	49.7	2.6	5.76	135.3	53.7	2.2	5.39	127.4	58.3	2.0	5.08
	OALC060	189.4	62.9	2.7	7.54	177.3	67.7	2.4	7.06	165.9	73.5	2.1	6.61
	OALC070	217.8	74.5	2.7	8.68	204.3	80.6	2.3	8.14	190.8	87.4	2.0	7.60
	OALC080	298.4	92.2	2.6	10.29	242.0	98.8	2.3	9.64	226.7	106.0	2.0	9.03
	OALC100	320.3	109.1	2.7	12.76	297.2	116.3	2.4	11.84	278.7	122.6	2.1	11.10
	OALC120	368.7	128.7	2.6	14.69	341.7	136.1	2.3	13.61	320.0	141.9	2.1	12.74
	OALC140	435.7	149.1	2.7	17.35	408.6	161.1	2.3	16.27	381.6	174.7	2.0	15.20
	OALC160	516.8	184.3	2.6	20.58	484.4	197.6	2.3	19.29	453.5	212.0	2.0	18.06
	OALC180	587.3	199.6	2.7	23.39	546.4	212.8	2.4	21.76	511.1	224.3	2.1	20.36
	OALC200	640.0	218.3	2.7	25.49	595.8	232.7	2.4	25.48	557.4	245.3	2.1	22.20
	OALC220	686.9	238.0	2.7	27.36	639.6	252.5	2.4	27.33	597.6	264.5	2.1	23.80
	OALC240	737.5	257.5	2.7	29.37	684.1	272.1	2.3	27.25	640.0	283.7	2.1	25.49
	OALC010	35.2	11.7	2.5	1.40	32.7	12.6	2.2	1.30	30.6	13.3	2.0	1.22
	OALC015	50.7	17.4	2.6	2.02	47.3	18.6	2.3	1.88	44.5	19.8	2.0	1.77
5°C	OALC025	76.0	25.2	2.7	3.03	71.3	27.3	2.4	2.84	66.2	29.7	2.0	2.64
	OALC030	99.3	32.0	2.7	3.96	93.1	34.5	2.4	3.71	86.8	37.5	2.1	3.46
	OALC035	113.9	37.9	2.6	4.54	106.8	41.0	2.3	4.25	99.7	44.6	2.0	3.97
	OALC040	132.1	42.5	2.7	5.26	123.9	45.9	2.4	4.93	115.7	49.9	2.1	4.61
	OALC050	152.3	50.5	2.7	6.07	142.4	54.5	2.3	5.67	132.4	59.3	2.0	5.27
	OALC060	198.7	63.9	2.8	7.91	186.5	68.9	2.5	7.43	173.7	74.9	2.1	6.92
	OALC070	227.8	75.7	2.8	9.07	213.6	82.0	2.4	8.51	199.3	89.2	2.1	7.94
	OALC080	269.4	93.6	2.6	10.7	252.7	100.2	2.3	10.07	236.7	107.8	2.0	9.43
	OALC100	332.1	110.9	2.8	13.2	308.6	118.4	2.4	12.29	286.5	125.6	2.1	11.41
	OALC120	385.1	131.1	2.7	15.3	357.7	138.8	2.4	14.25	336.0	144.7	2.1	13.38
	OALC140	455.9	151.5	2.8	18.2	427.1	163.9	2.4	17.01	398.6	178.3	2.1	15.88
	OALC160	539.6	187.2	2.7	21.5	505.4	200.4	2.3	20.13	473.4	215.6	2.1	18.86
	OALC180	608.6	202.4	2.8	24.2	565.9	216.4	2.4	22.54	526.8	228.4	2.2	20.98
	OALC200	684.2	221.7	2.8	26.5	617.2	236.6	2.4	24.58	573.4	251.2	2.1	22.84
	OALC220	717.9	241.9	2.8	28.6	667.7	257.0	2.4	26.60	627.5	269.3	2.2	24.99
	OALC240	770.2	262.3	2.7	30.7	715.8	277.4	2.4	28.51	672.4	289.4	2.2	26.78
	OALC010	37.0	11.9	2.6	1.47	34.1	12.8	2.3	1.36	32.0	13.6	2.0	1.27
	OALC015	52.9	17.5	2.7	2.11	49.4	18.9	2.4	1.97	46.6	20.1	2.1	1.86
	OALC025	79.3	25.5	2.8	3.16	74.3	27.6	2.4	2.96	69.3	30.1	2.1	2.76
6°C	OALC030	103.9	32.2	2.8	4.14	97.4	34.8	2.5	3.88	91.0	37.9	2.2	3.63
	OALC035	119.1	38.3	2.7	4.74	111.6	41.4	2.3	4.45	104.2	45.2	2.0	4.15
	OALC040	138.0	42.9	2.8	5.49	129.4	46.5	2.4	5.16	120.9	50.6	2.1	4.82
	OALC050	158.6	51.0	2.8	6.32	148.7	55.2	2.4	5.92	138.7	60.2	2.1	5.52
	OALC060	207.7	64.4	2.9	8.27	194.8	69.6	2.6	7.76	182.1	75.8	2.2	7.25
	OALC070	238.2	76.6	2.9	9.49	223.3	82.7	2.5	8.89	208.4	90.3	2.2	8.30
	OALC080	282.0	94.3	2.7	11.2	264.5	101.3	2.4	10.54	247.8	109.1	2.1	9.87
	OALC100	346.3	111.8	2.9	13.8	322.1	119.6	2.5	12.83	299.4	127.0	2.2	11.9
	OALC120	401.1	132.6	2.8	16.0	373.7	140.4	2.4	14.88	351.3	146.6	2.2	14.0
	OALC140	476.8	153.1	2.9	19.0	446.6	165.5	2.5	17.79	417.1	180.6	2.2	16.6
	OALC160	563.9	188.6	2.8	22.5	529.1	202.6	2.4	21.07	495.7	218.1	2.1	19.7
	OALC180	635.0	204.0	2.9	25.3	590.6	218.5	2.5	23.52	551.7	230.7	2.2	22.0
	OALC200	692.6	223.8	2.9	27.6	644.3	239.2	2.5	25.66	598.8	254.0	2.2	23.8
	OALC220	746.7	244.2	2.9	29.7	698.3	259.8	2.5	27.81	655.0	272.7	2.3	26.1
	OALC240	803.6	265.2	2.8	32.0	747.8	280.1	2.5	29.78	692.3	294.6	2.2	27.6
	OALC010	39.0	12.1	2.7	1.54	35.8	13.4	2.4	1.43	33.4	14.0	2.1	1.32
	OALC015	54.9	18.1	2.8	2.22	50.4	19.7	2.5	2.11	47.4	20.4	2.2	1.91
	OALC025	81.9	26.1	2.9	3.34	76.4	28.2	2.6	3.22	71.4	30.4	2.3	2.81
	OALC030	105.9	32.8	2.9	4.28	99.4	35.3	2.7	4.17	93.4	37.9	2.4	3.70
	OALC035	121.9	38.9	2.8	4.98	115.4	41.5	2.6	4.87	108.4	44.1	2.3	4.59
	OALC040	142.9	45.1	2.9	5.82	136.4	48.1	2.7	5.71	128.4	50.7	2.4	5.48

LEGEND:

- Compressor power input
- Pressure Drop
- Coefficient of Performance

NOTES

- For 50Hz units, multiply capacity by 0.85 & power input by 0.83.
- Performance data are based on 6°C water range in evaporator.

- Ratings are based on 0.000018 (m²·°C/W) fouling factor for evaporator.

- Direct interpolation is permissible. Do not extrapolate.
- kW power input is for compressor only.
- COP for entire unit. Refer to physical data for fan kW.

PERFORMANCE DATA, 60Hz (Metric units)

PERFORMANCE DATA, 60Hz (Metric units)

LEAVING CHILLED WATER TEMP. (LCWT)	MODEL No.	35°C AMBIENT TEMPERATURE				40°C AMBIENT TEMPERATURE				46°C AMBIENT TEMPERATURE				52°C AMBIENT TEMPERATURE			
		CAP. (kW)	COMP. kW	COP	COOLER WATER FLOW (LPS)	CAP. (kW)	COMP. kW	COP	COOLER WATER FLOW (LPS)	CAP. (kW)	COMP. kW	COP	COOLER WATER FLOW (LPS)	CAP. (kW)	COMP. kW	COP	COOLER WATER FLOW (LPS)
7°C	OALC010	38.5	12.1	2.7	1.53	37.5	13.3	2.4	1.49	33.6	13.8	2.1	1.34	31.5	14.6	2.1	1.25
	OALC015	55.0	17.8	2.8	2.18	51.4	19.2	2.4	2.05	48.4	20.5	2.1	1.93	45.6	21.9	1.9	1.82
	OALC025	82.5	25.8	2.8	3.29	77.3	28.4	2.5	3.08	72.4	30.7	2.1	2.89	67.5	33.4	1.8	2.69
	OALC030	107.9	32.6	2.9	4.30	101.1	35.4	2.5	4.03	94.0	38.7	2.2	3.74	86.9	42.0	1.9	3.46
	OALC035	123.7	38.8	2.7	4.93	115.9	42.1	2.4	4.62	108.1	46.1	2.1	4.31	100.4	50.0	1.8	4.00
	OALC040	143.8	43.5	2.9	5.73	134.6	47.0	2.5	5.36	125.5	51.6	2.2	5.00	115.9	56.7	1.8	4.62
	OALC050	165.4	51.6	2.8	6.59	154.6	56.0	2.5	6.16	144.9	61.4	2.1	5.77	135.0	66.8	1.8	5.38
	OALC060	215.6	65.2	3.0	8.59	202.2	70.8	2.6	8.05	188.0	76.4	2.3	7.49	173.9	81.9	2.0	6.92
	OALC070	247.4	77.6	2.9	9.85	231.9	84.1	2.6	9.24	216.3	92.1	2.2	8.61	200.7	100.1	1.9	7.99
	OALC080	292.6	95.7	2.8	11.7	274.6	102.7	2.5	10.9	257.3	110.8	2.2	10.2	239.9	119.0	1.9	9.56
	OALC100	359.4	113.4	2.9	14.3	334.3	121.4	2.6	13.3	310.6	129.1	2.3	12.4	286.9	136.8	2.0	11.4
	OALC120	417.7	134.6	2.8	16.6	389.1	142.7	2.5	15.5	365.4	149.5	2.2	14.6	343.1	158.5	2.0	13.7
	OALC140	494.7	155.1	2.9	19.7	463.6	168.3	2.6	18.5	432.9	184.2	2.3	17.2	402.1	200.2	1.9	16.0
	OALC160	585.2	191.4	2.8	23.3	549.2	205.3	2.5	21.9	514.5	221.7	2.2	20.5	479.9	238.0	1.9	19.1
	OALC180	659.1	206.7	3.0	26.3	613.1	221.7	2.6	24.4	572.5	234.8	2.3	22.8	531.8	247.8	2.0	21.2
	OALC200	718.8	226.9	2.9	28.6	668.6	242.8	2.6	26.6	621.2	258.2	2.3	24.7	573.9	273.5	2.0	22.9
	OALC220	778.9	247.8	2.9	31.0	725.1	264.1	2.6	28.9	680.3	277.7	2.3	27.1	635.4	291.4	2.2	25.3
	OALC240	835.7	269.1	2.9	33.3	778.5	285.6	2.6	31.0	730.8	299.0	2.3	29.1	683.1	312.5	2.0	27.2
8°C	OALC010	39.9	12.3	2.77	1.59	34.6	14.1	2.1	1.38	34.6	14.1	2.1	1.38	32.5	14.9	1.9	1.30
	OALC015	56.9	18.0	2.82	2.27	53.2	20.2	2.5	2.12	50.0	20.8	2.2	1.99	46.2	22.2	1.9	1.84
	OALC025	85.4	26.2	2.90	3.40	79.9	28.5	2.5	3.18	74.8	31.3	2.2	2.98	69.2	34.1	1.9	2.76
	OALC030	111.7	33.1	2.99	4.45	104.7	35.9	2.6	4.17	97.6	39.4	2.2	3.89	90.6	42.9	1.9	3.61
	OALC035	127.9	39.4	2.79	5.10	120.0	42.8	2.4	4.78	111.9	47.0	2.1	4.46	103.9	51.1	1.8	4.14
	OALC040	148.6	44.1	3.00	5.91	139.5	47.8	2.6	5.56	130.1	52.4	2.2	5.18	120.7	57.4	1.9	4.81
	OALC050	170.7	52.4	2.90	6.80	159.5	57.0	2.5	6.35	149.7	62.6	2.2	5.96	139.9	68.2	1.9	5.57
	OALC060	223.1	66.2	3.07	8.89	209.1	71.8	2.7	8.33	195.2	78.7	2.3	7.77	181.2	85.7	2.0	7.22
	OALC070	255.9	78.7	3.00	10.19	239.9	85.5	2.6	9.56	223.8	93.9	2.2	8.92	207.7	102.3	1.9	8.27
	OALC080	302.5	98.9	2.87	12.05	284.0	104.3	2.5	11.31	265.8	112.6	2.2	10.59	247.6	121.0	1.9	9.86
	OALC100	371.1	114.9	3.00	14.78	345.2	123.2	2.6	13.75	320.7	131.2	2.3	12.77	296.2	139.2	2.0	11.80
	OALC120	432.6	136.6	2.89	17.23	402.9	145.1	2.5	16.05	378.4	152.1	2.3	15.07	355.7	161.2	2.0	14.17
	OALC140	511.7	157.5	3.00	20.38	479.8	171.1	2.6	19.11	448.0	187.8	2.2	17.84	416.2	204.5	1.9	16.58
	OALC160	605.0	193.8	2.90	24.10	568.0	208.5	2.5	22.62	531.6	225.3	2.2	21.17	495.2	242.0	1.9	19.73
	OALC180	680.6	209.3	3.03	27.11	633.4	225.3	2.6	25.23	591.1	238.2	2.3	23.54	548.7	252.1	2.1	21.86
	OALC200	742.1	229.9	3.00	29.56	690.4	246.4	2.6	27.50	641.4	262.4	2.3	25.55	592.5	278.3	2.0	23.60
	OALC220	804.7	248.2	3.03	32.05	749.1	268.3	2.6	29.84	704.0	282.3	2.4	28.04	658.9	296.3	2.1	26.20
	OALC240	865.3	273.1	2.96	34.46	805.8	290.4	2.6	32.09	756.8	304.2	2.3	30.14	707.5	318	2.1	28.10
10°C	OALC010	43.4	12.7	2.9	1.73	37.5	14.6	2.2	1.49	37.5	14.6	2.2	1.49	35.0	15.4	2.0	1.39
	OALC015	61.9	18.5	3.0	2.47	57.9	20.0	2.6	2.30	54.3	21.6	2.3	2.16	50.6	23.1	2.0	2.02
	OALC025	92.8	26.9	3.1	3.69	87.0	29.4	2.6	3.47	81.2	32.3	2.3	3.24	75.4	35.1	2.0	3.00
	OALC030	121.5	34.0	3.2	4.84	113.8	36.9	2.8	4.53	106.4	40.7	2.4	4.24	98.7	44.4	2.0	3.93
	OALC035	139.0	40.5	3.0	5.54	130.4	44.1	2.6	5.19	122.0	48.5	2.2	4.86	113.7	52.8	1.9	4.53
	OALC040	161.0	45.3	3.0	6.41	151.6	49.2	2.7	6.04	141.4	54.2	2.3	5.63	131.2	59.8	2.0	5.22
	OALC050	185.8	53.8	3.1	7.40	174.1	58.9	2.7	6.93	162.5	64.6	2.3	6.47	150.8	70.2	2.0	6.01
	OALC060	242.6	68.0	3.3	9.66	227.6	73.9	2.8	9.07	212.8	81.4	2.4	8.47	197.8	88.9	2.1	7.88
	OALC070	278.0	81.0	3.2	11.07	260.8	88.2	2.8	10.39	244.1	96.9	2.4	9.72	227.3	105.3	2.0	9.05
	OALC080	328.2	99.6	3.0	13.07	308.6	107.3	2.7	12.29	289.6	116.2	2.3	11.54	270.7	125.1	2.0	10.78
	OALC100	402.9	118.2	3.2	16.05	374.9	126.9	2.8	14.93	348.3	134.6	2.4	13.87	321.7	142.3	2.1	12.81
	OALC120	468.1	140.6	3.0	18.65	438.6	149.6	2.7	17.47	411.7	157.1	2.6	16.40	384.7	164.6	2.2	15.32
	OALC140	555.9	161.9	3.2	22.14	521.7	176.5	2.8	20.78	488.5	193.9	2.4	19.46	455.4	211.3	2.0	18.14
	OALC160	656.5	199.2	3.1	26.15	617.1	214.5	2.7	24.58	579.3	232.4	2.3	23.07	541.4	250.2	2.4	21.56
	OALC180	739.2	215.1	3.2	29.44	688.2	231.2	2.8	27.41	643.0	244.9	2.5	25.61	597.8	258.6	2.2	23.81
	OALC200	805.9	236.4	3.2	32.10	749.8	253.8	2.8	29.86	696.6	270.4	2.4	27.74	643.4	291.1	2.1	25.63
	OALC220	891.5	253.8	3.3	35.51	815.3	276.4	2.8	32.47	765.4	291.1	2.5	30.49	719.1	308.5	2.2	28.64
	OALC240	934.1	281.1	3.1	37.20	877.3	299.1	2.8	34.94	823.3	314.2	2.5	32.79	769.1	329.2	2.2	30.63

LEGEND:

- Compressor power input kW
- Pressure Drop PD
- Coefficient of Performance COP

NOTES

- For 50Hz units, multiply capacity by 0.85 & power input by 0.83.
- Performance data are based on 6°C water range in evaporator.

- Ratings are based on 0.000018 (m²·°C/W) fouling factor for evaporator.
- Direct interpolation is permissible. Do not extrapolate.
- kW power input is for compressor only.
- COP for entire unit. Refer to physical data for fan kW.

ELECTRICAL DATA

MODEL No.	SUPPLY VOLTAGE				COMPRESSOR						CONDENSER FAN MOTORS						CRANKCASE HEATER		
	Nominal(V-Ph-Hz)	Min.	Max.	MCA	MOCP	Qty.	RLA (each)	LRA (each)	CB Poles	CB MTA	Qty.	FLA (each)	HP (each)	FCA	Fuse Size	Qty. (each)	Volts	Total Watts	Total Amps
OALC010	208/230-3-60	187	253	63.3	100	1	42	198	3	70	1	5	1.5	10	20	3	115	100	0.83
	380-3-60	342	418	38.5	60	1	25.8	122	3	50	1	2.7	1.5	5.4	10	3	115	100	0.83
	460-3-60	414	506	32.1	50	1	21	99	3	40	1	2.5	1.5	5	9	3	115	100	0.83
	380/415-3-50	342	457	32.9	50	1	21	99	3	40	1	2.9	1.5	5.8	12	3	115	100	0.83
OALC015	208/230-3-60	187	253	103.3	175	1	74	316	3	60	2	5	1.5	10	12	3	115	100	0.83
	380-3-60	342	418	63.1	100	1	45.5	194	3	70	1	2.7	1.5	5.4	10	3	115	100	0.83
	460-3-60	414	506	52.1	80	1	37	158	3	60	1	2.5	1.5	5	9	3	115	100	0.83
	380/415-3-50	342	457	52.9	80	1	37	158	3	60	1	2.9	1.5	5.8	12	3	115	100	0.83
OALC025	208/230-3-60	187	253	148.7	250	1	106	440	3	90	2	5	1.5	15	30	3	115	140	1.17
	380-3-60	342	418	90.5	150	1	65	271	3	60	2	2.7	1.5	8.1	15	3	115	140	1.17
	460-3-60	414	506	74.9	125	1	53	220	3	90	1	2.5	1.5	7.5	14	3	115	140	1.17
	380/415-3-50	342	457	76.1	125	1	53	220	3	90	1	2.9	1.5	8.7	20	3	115	140	1.17
OALC030	208/230-3-60	187	253	173.7	250	1	122	524	3	100	2	5	1.5	10x2	20	6	115	140	1.17
	380-3-60	342	418	105.7	175	1	75	322	3	60	2	2.7	1.5	10.8	20	3	115	140	1.17
	460-3-60	414	506	87.4	150	1	61	262	3	100	1	2.5	1.5	10	20	3	115	140	1.17
	380/415-3-50	342	457	89.1	150	1	61	262	3	100	1	2.9	1.5	11.6	25	3	115	140	1.17
OALC035	208/230-3-60	187	253	226.2	350	1	156	646	3	125	2	5	1.5	15x2	30	6	115	140	1.17
	380-3-60	342	418	137.4	225	1	96	397	3	80	2	2.7	1.5	16.2	30	3	115	140	1.17
	460-3-60	414	506	113.7	175	1	78	323	3	70	2	2.5	1.5	15	30	3	115	140	1.17
	380/415-3-50	342	457	116.1	175	1	78	323	3	70	2	2.9	1.5	17.4	30	3	115	140	1.17
OALC040	208/230-3-60	187	253	232.5	300	2	90	386	3	80	2	5	1.5	15x2	30	6	115	280	2.33
	380-3-60	342	418	141.1	175	2	55.5	237	3	90	1	2.7	1.5	16.2	30	3	115	280	2.33
	460-3-60	414	506	116.3	150	2	45	193	3	80	1	2.5	1.5	15	30	3	115	280	2.33
	380/415-3-50	342	457	119.8	150	2	45	193	3	80	1	2.9	1.5	17.4	30	3	115	280	2.33
OALC050	208/230-3-60	187	253	270.8	350	2	106	440	3	90	2	5	1.5	15x2	30	6	115	280	2.33
	380-3-60	342	418	164.8	225	2	65	271	3	60	2	2.7	1.5	16.2	30	3	115	280	2.33
	460-3-60	414	506	136.6	175	2	53	220	3	90	1	2.5	1.5	15	30	3	115	280	2.33
	380/415-3-50	342	457	139	175	2	53	220	3	90	1	2.9	1.5	17.4	30	3	115	280	2.33
OALC060	208/230-3-60	187	253	306.8	400	2	122	524	3	100	2	5	1.5	15x2	30	6	115	280	2.33
	380-3-60	342	418	187.3	275	2	75	322	3	60	2	2.7	1.5	16.2	30	3	115	280	2.33
	460-3-60	414	506	154.6	200	2	61	262	3	100	2	2.5	1.5	15	30	3	115	280	2.33
	380/415-3-50	342	457	157	200	2	61	262	3	100	2	2.9	1.5	17.4	30	3	115	280	2.33
OALC070	208/230-3-60	187	253	383.3	500	2	156	646	3	125	4	5	1.5	15x2	30	6	115	280	2.33
	380-3-60	342	418	234.5	300	2	96	397	3	80	4	2.7	1.5	16.2	30	3	115	280	2.33
	460-3-60	414	506	192.8	250	2	78	323	3	70	4	2.5	1.5	15	30	3	115	280	2.33
	380/415-3-50	342	457	195.2	250	2	78	323	3	70	4	2.9	1.5	17.4	30	3	115	280	2.33

LEGEND:

- MCA - Minimum Circuit Ampacity
- MOCP - Maximum Over Current Protection
- RLA - Rated Load Amps
- LRA - Locked Rotor Amps
- CB - Circuit Breaker
- MTA - Must Trip Amps
- FLA - Full Load Amps
- HP - Horse Power
- FCA - Fan Circuit Amps

NOTES

1. Main power must be supplied from a single field supplied and mounted fused disconnects, using dual element time delay fuse or circuit breaker.
2. The maximum incoming wire size is 500 mcm. On units having MCA greater than 500 mcm wire, the factory supplied power terminal block will accept two parallel field wires per phase.
3. The compressor crankcase heaters must be energized for 12 hours before the unit is initially started or after a prolonged power disconnection.
4. Minimum and maximum unit supply voltages are shown in the tabulated data above.
5. **Neutralline** required on 380V-3Ph-60Hz & 380/415V-3Ph-50 Hz power supply only.

ELECTRICAL DATA

ELECTRICAL DATA

MODEL No.	SUPPLY VOLTAGE					COMPRESSOR TYPE-1						COMPRESSOR TYPE-2						CONDENSER FAN MOTORS					CRANKCASE HEATER			
	Nominal (V-Ph-Hz)	Min.	Max.	MCA	MOCP	Qty.	RLA (each)	LRA (each)	CB Poles	CB MTA	Qty.	RLA (each)	LRA (each)	CB Poles	CB MTA	Qty.	FLA (each)	HP (each)	FCA	Fuse Size	Qty. (each)	Volts	Total Watts	Total Amps		
OALC080	208/230-3-60	187	253	454	600	2	184	808	3	150	4	-	-	-	-	-	-	5	1.5	40	30/20	6/3	115	280	2.43	
	380-3-60	342	418	275.9	350	2	113	497	3	100	4	-	-	-	-	-	-	8	2.7	15	21.6	30/10	3/3	115	280	2.43
	460-3-60	414	506	227	300	2	92	404	3	80	4	-	-	-	-	-	-	8	2.5	15	20	30/9	3/3	115	280	2.43
	380/415-3-50	342	457	230.2	300	2	92	404	3	80	4	-	-	-	-	-	-	8	2.9	15	23.2	30/12	3/3	115	280	2.43
OALC100	208/230-3-60	187	253	544	700	2	224	1070	3	175	4	-	-	-	-	-	-	5	1.5	40	30/20	6/3	115	400	3.48	
	380-3-60	342	418	325.4	450	2	135	601	3	125	4	-	-	-	-	-	-	8	2.7	15	21.6	30/10	3/3	115	400	3.48
	460-3-60	414	506	272	350	2	112	535	3	90	4	-	-	-	-	-	-	8	2.5	15	20	30/9	3/3	115	400	3.48
	380/415-3-50	342	457	275.2	350	2	112	535	3	90	4	-	-	-	-	-	-	8	2.9	15	23.2	30/12	3/3	115	400	3.48
OALC120	208/230-3-60	187	253	694.8	1000	2	291	1190	3	225	4	-	-	-	-	-	-	5	1.5	40	30/20	6/3	115	400	3.48	
	380-3-60	342	418	381.6	500	2	160	650	3	150	4	-	-	-	-	-	-	8	2.7	15	21.6	30/10	3/3	115	400	3.48
	460-3-60	414	506	319.3	450	2	133	570	3	125	4	-	-	-	-	-	-	8	2.5	15	20	30/9	3/3	115	400	3.48
	380/415-3-50	342	457	322.5	450	2	133	600	3	125	4	-	-	-	-	-	-	8	2.9	15	23.2	30/12	3/3	115	400	3.48
OALC140	208/230-3-60	187	253	723	800	4	156	646	3	125	8	-	-	-	-	-	-	5	1.5	60	30	12	115	560	4.87	
	380-3-60	342	418	440.4	500	4	96	397	3	80	8	-	-	-	-	-	-	12	2.7	15	32.4	30	6	115	560	4.87
	460-3-60	414	506	361.5	400	4	78	323	3	70	8	-	-	-	-	-	-	12	2.5	15	30	30	6	115	560	4.87
	380/415-3-50	342	457	366.3	400	4	78	323	3	70	8	-	-	-	-	-	-	12	2.9	15	34.8	30	6	115	560	4.87
OALC160	208/230-3-60	187	253	852	1000	4	184	808	3	150	8	-	-	-	-	-	-	5	1.5	70	30/20	12/3	115	560	4.87	
	380-3-60	342	418	518.1	600	4	113	497	3	100	8	-	-	-	-	-	-	14	2.7	15	37.8	30/10	6/3	115	560	4.87
	460-3-60	414	506	426	500	4	92	404	3	80	8	-	-	-	-	-	-	14	2.5	15	35	30/9	6/3	115	560	4.87
	380/415-3-50	342	457	431.6	500	4	92	404	3	80	8	-	-	-	-	-	-	14	2.9	15	40.6	30/12	6/3	115	560	4.87
OALC180	208/230-3-60	187	253	945.2	1000	2	224	1070	3	175	4	2	180	1070	3	150	4	14	5.8	1.7	81.2	30/20	12/3	115	800	6.96
	380-3-60	342	418	527.2	600	2	135	601	3	125	4	2	90	535	3	80	4	14	3.1	1.7	43.4	30/25	6/3	115	800	6.96
	460-3-60	414	506	472.6	500	2	112	535	3	90	4	2	90	535	3	70	4	14	2.9	1.7	40.6	30/10	6/3	115	800	6.96
	380/415-3-50	342	457	479.6	500	2	112	535	3	90	4	2	90	535	3	80	4	14	3.4	1.7	47.6	30/25	6/3	115	800	6.96
OALC200	208/230-3-60	187	253	1032	1200	4	224	1070	3	175	8	-	-	-	-	-	-	5	1.5	80	30/20	12/6	115	800	6.96	
	380-3-60	342	418	617	700	4	135	601	3	125	8	-	-	-	-	-	-	16	2.7	1.5	43.2	30/10	6/6	115	800	6.96
	460-3-60	414	506	516	600	4	112	535	3	90	8	-	-	-	-	-	-	16	2.5	1.5	40	30/9	6/6	115	800	6.96
	380/415-3-50	342	457	522.4	600	4	112	535	3	90	8	-	-	-	-	-	-	16	2.9	1.5	46.4	30/12	6/6	115	800	6.96
OALC220	208/230-3-60	187	253	1182.8	1200	2	291	1190	3	225	4	2	224	1070	3	175	4	16	5	1.5	80	30/20	12/6	115	800	6.96
	380-3-60	342	418	673.2	800	2	160	650	3	150	4	2	135	601	3	125	4	16	2.7	1.5	43.2	30/10	6/6	115	800	6.96
	460-3-60	414	506	563.3	600	2	133	570	3	125	4	2	112	535	3	90	4	16	2.5	1.5	40	30/9	6/6	115	800	6.96
	380/415-3-50	342	457	569.7	700	2	133	600	3	125	4	2	112	535	3	90	4	16	2.9	1.5	46.4	30/12	6/6	115	800	6.96
OALC240	208/230-3-60	187	253	1326.8	1600	4	291	1190	3	225	8	-	-	-	-	-	-	5	1.5	90	30	18	115	800	6.96	
	380-3-60	342	418	728.6	800	4	160	650	3	150	8	-	-	-	-	-	-	18	2.7	1.5	48.6	30	9	115	800	6.96
	460-3-60	414	506	610.3	700	4	133	570	3	125	8	-	-	-	-	-	-	18	2.5	1.5	45	30	9	115	800	6.96
	380/415-3-50	342	457	617.5	700	4	133	600	3	125	8	-	-	-	-	-	-	18	2.9	1.5	52.2	30	9	115	800	6.96

NOTES

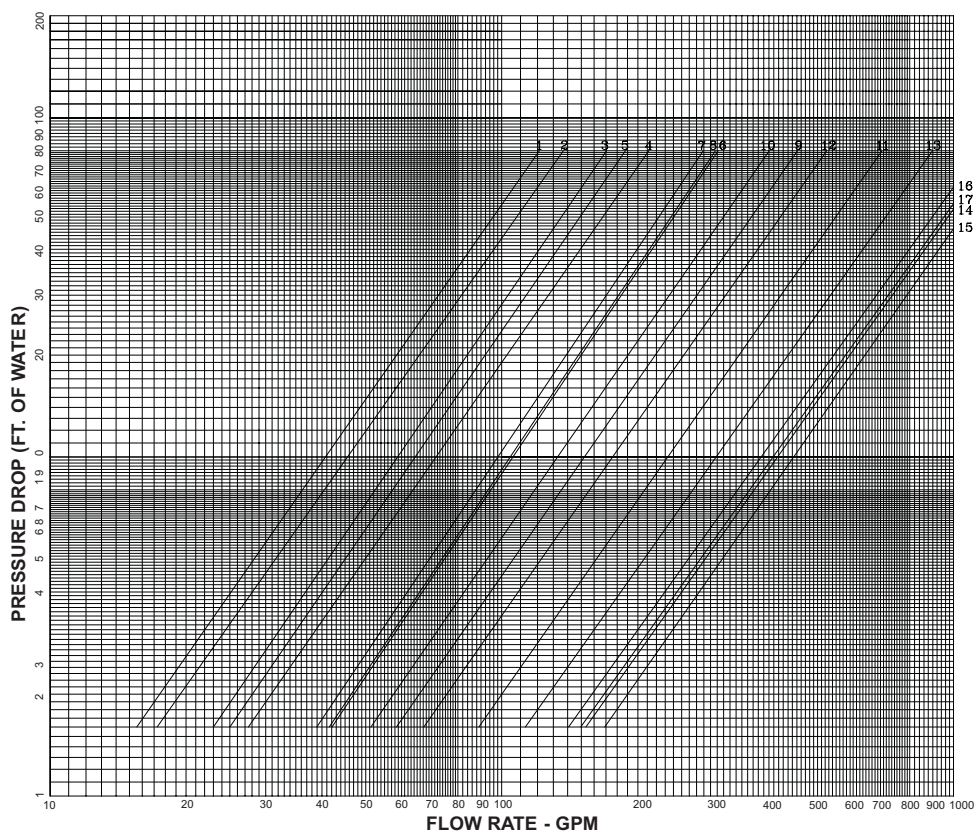
- Main power must be supplied from a single field supplied and mounted fused disconnects, using dual element time delay fuse or circuit breaker.
- The maximum incoming wire size is 500 mcm. On units having MCA greater than 500 mcm wire, the factory supplied power terminal block will accept two parallel field wires per phase.
- The compressor crankcase heaters must be energized for 12 hours before the unit is initially started or after a prolonged power disconnection.
- Minimum and maximum unit supply voltages are shown in the tabulated data above.
- Neutral line required on 380V-3Ph-60Hz & 380/415V-3Ph-50 Hz power supply only.

LEGEND:

- MCA - Minimum Circuit Ampacity
- MOCP - Maximum Over Current Protection
- RLA - Rated Load Amps
- LRA - Locked Rotor Amps
- CB - Circuit Breaker
- MTA - Must Trip Amps
- FLA - Full Load Amps
- HP - Horse Power
- FCA - Fan Circuit Amps



WATER SIDE PRESSURE DROP

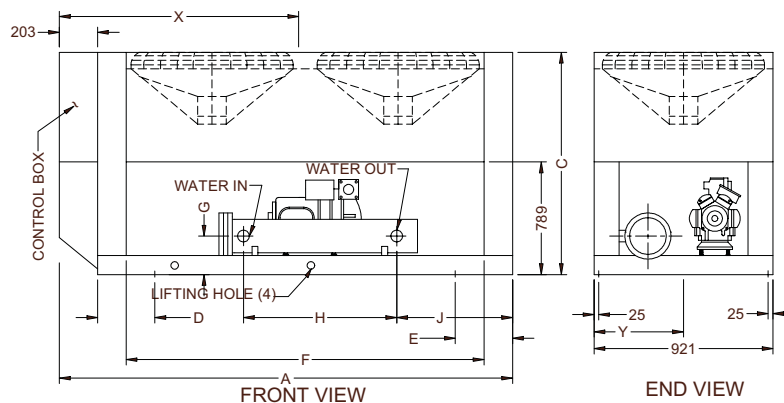


MODEL NUMBER	CURVE No.	Minimum GPM	Maximum GPM
OALC 010	1	20.7	101.7
OALC 015	2	20.7	101.7
OALC 025	3	20.7	101.7
OALC 030	4	20.7	101.7
OALC 035	5	20.7	101.7
OALC 040	6	34.3	171.2
OALC 050	6	34.3	171.2
OALC 060	7	78.8	393.1
OALC 070	8	78.8	393.1
OALC 080	9	78.8	675.8
OALC 100	10	135.6	675.8
OALC 120	10	135.6	675.8
OALC 140	11	135.6	675.8
OALC 160	11	135.6	675.8
OALC 180	12	135.6	675.8
OALC 200	11	135.6	675.8
OALC 220	13	135.6	675.8
OALC 240	13	135.6	675.8

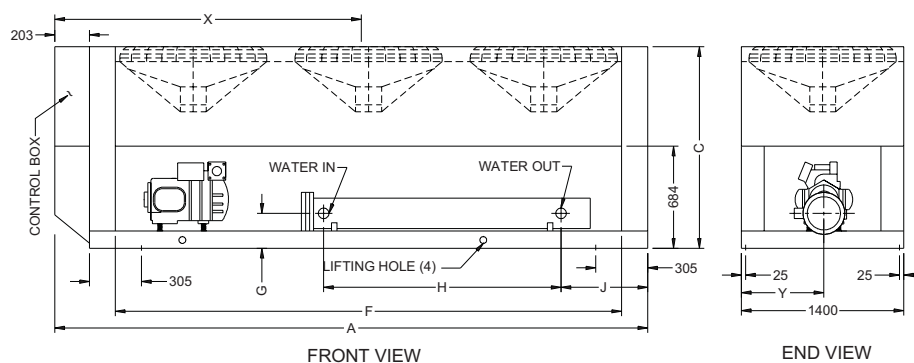
CONVERSION FACTOR: GPM = 0.063 Liters per second.
Feet of water = 2.989 Kilo Pascal (kPa) of water.

DIMENSIONS

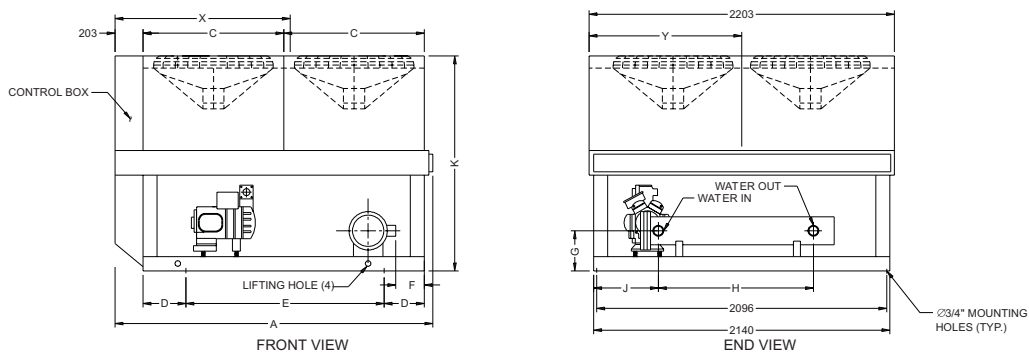
OALC010 & OALC015



OALC025



OALC030 & OALC035



DIMENSIONS

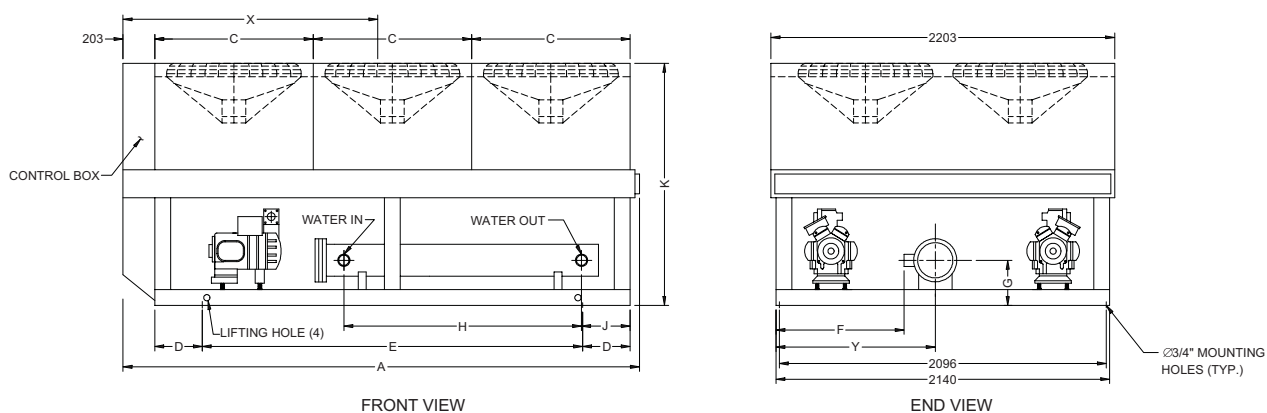
MODEL NUMBER	FAN QTY.	A	C	D	E	F	G	H	J	K	WATER CONN.	CENTER OF GRAVITY	
												X	Y
OALC 010	2	2466	1368	276	225	1908	283	-	219	-	2" MPT	1274	484
OALC 015	2	2466	1368	225	225	1908	297	-	219	-	2.5" MPT	1274	484
OALC 025	3	3607	1368	-	-	3048	297	-	508	-	2.5" MPT	1799	484
OALC 030	4	2300	1016	305	1422	454	321	-	595	1448	3" MPT	1266	1102
OALC 035	4	2300	1016	305	2438	454	321	-	651	1448	3" MPT	1266	1102

NOTES:

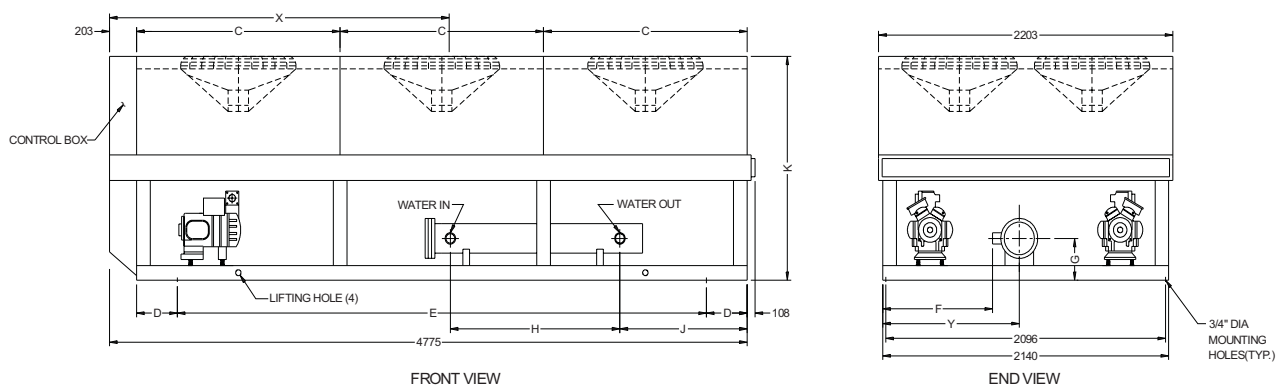
1. ALL DIMENSIONS ARE IN MILLIMETERS, mm.
2. ALL CONTROL PANEL DOORS REQUIRE 1 METER CLEARANCE TO OPEN.
3. ALLOW 2 METER CLEARANCE ON BOTH SIDES OF A SINGLE UNIT.
4. WATER PIPING TO BE SUPPORTED TO MINIMIZE LOAD ON UNIT.
5. USE MINIMUM ONE (1) METER FLEXIBLE ELECTRICAL CONDUIT TO CONTROL BOX TO ISOLATE UNIT.
6. PIPE CONNECTIONS: FLANGES WITH COMPANION FLANGE, GASKETS, NUTS & BOLTS FOR FLANGED CONNECTION AND MPT COUPLING FOR THREADED CONNECTION.
7. VENT & DRAIN CONNECTIONS PROVIDED ON COOLER BARREL.

DIMENSIONS

OALC 040 & OALC 050



OALC 060 & OALC 070



DIMENSIONS

MODEL NUMBER	FAN QTY.	A	C	D	E	F	G	H	J	K	WATER CONN.	CENTER OF GRAVITY	
												X	Y
OALC 040	6	3316	1016	305	2438	748	321	-	656	1448	3" MPT	1634	1021
OALC 050	6	3316	1016	305	2438	748	334	-	656	1448	100 mm	1634	1021
OALC 060	6	4840	1524	305	3962	683	334	-	1104	1524	100 mm	2543	1021
OALC 070	6	4840	1524	305	3962	683	389	-	1055	1524	125 mm	2543	1021

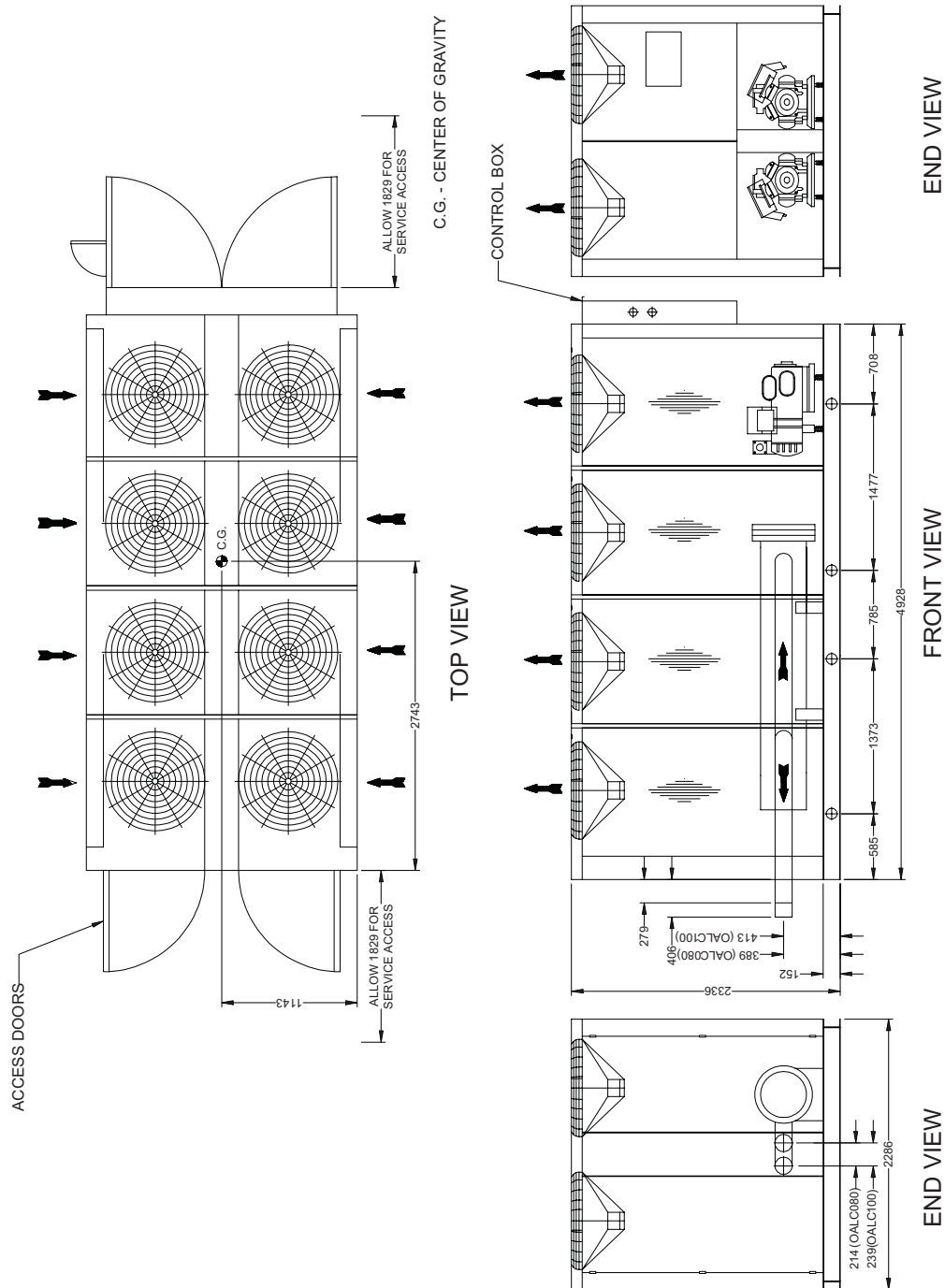
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, mm.
2. ALL CONTROL PANEL DOORS REQUIRE 1 METER CLEARANCE TO OPEN.
3. ALLOW 2 METER CLEARANCE ON BOTH SIDES OF A SINGLE UNIT.
4. WATER PIPING TO BE SUPPORTED TO MINIMIZE LOAD ON UNIT.
5. USE MINIMUM ONE (1) METER FLEXIBLE ELECTRICAL CONDUIT TO CONTROL BOX TO ISOLATE UNIT.
6. PIPE CONNECTIONS: FLANGES WITH COMPANION FLANGE, GASKETS, NUTS & BOLTS FOR FLANGED CONNECTION AND MPT COUPLING FOR THREADED CONNECTION.
7. VENT & DRAIN CONNECTIONS PROVIDED ON COOLER BARREL.

DIMENSIONS

DIMENSIONS

OALC 080 & OALC 100



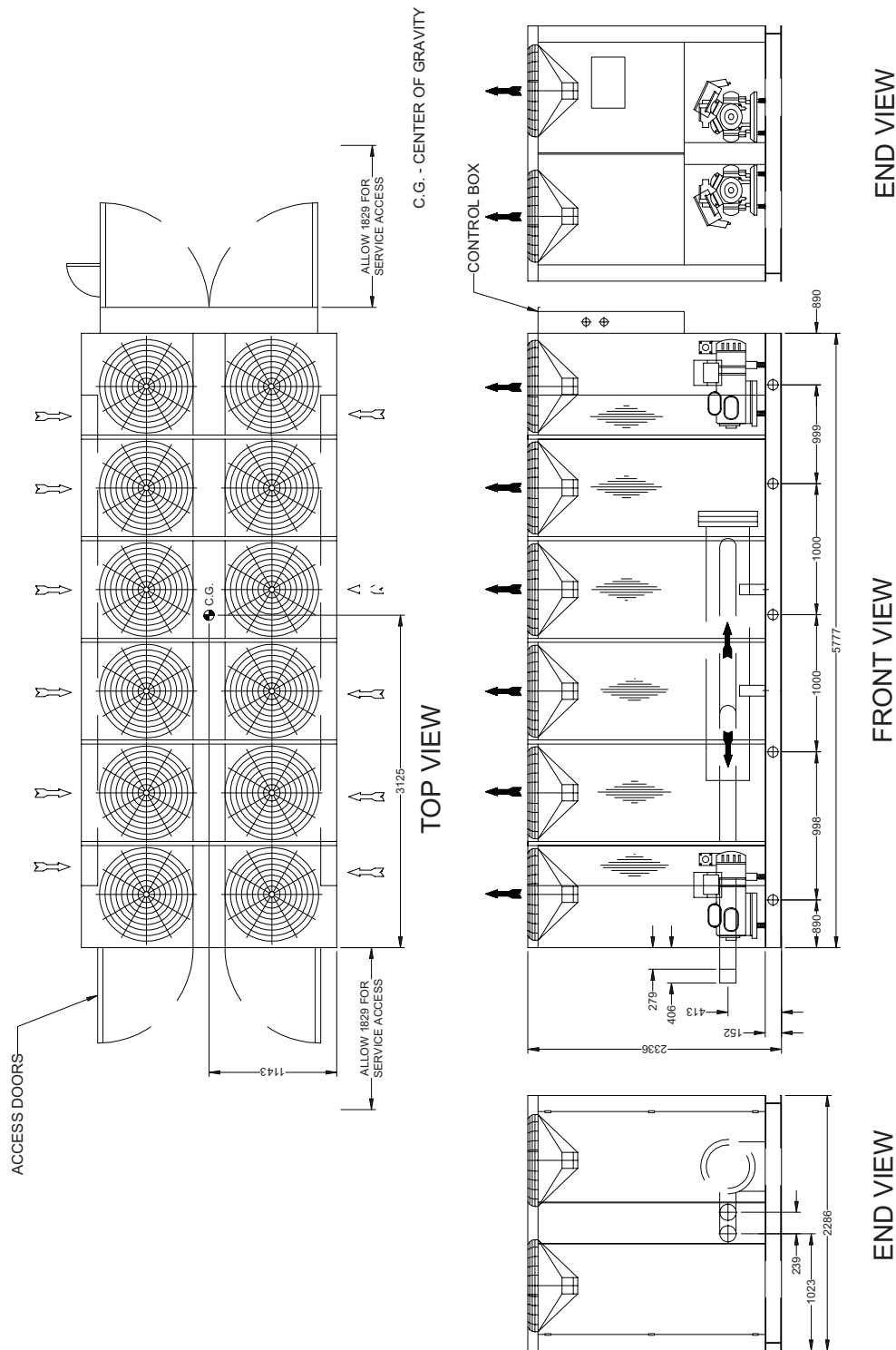
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, mm.
2. ALLOW 2 METER CLEARANCE ON BOTH SIDE OF A SINGLE UNIT.
3. WATER PIPING TO BE SUPPORTED TO MINIMIZE LOAD ON UNIT.
4. USE MINIMUM ONE (1) METER FLEXIBLE ELECTRICAL CONDUIT TO CONTROL BOX TO ISOLATE UNIT.
5. VICTAULIC WATER CONNECTIONS.
6. VENT & DRAIN CONNECTIONS PROVIDED ON COOLER BARREL.

DIMENSIONS

DIMENSIONS

OALC 120 & OALC 140

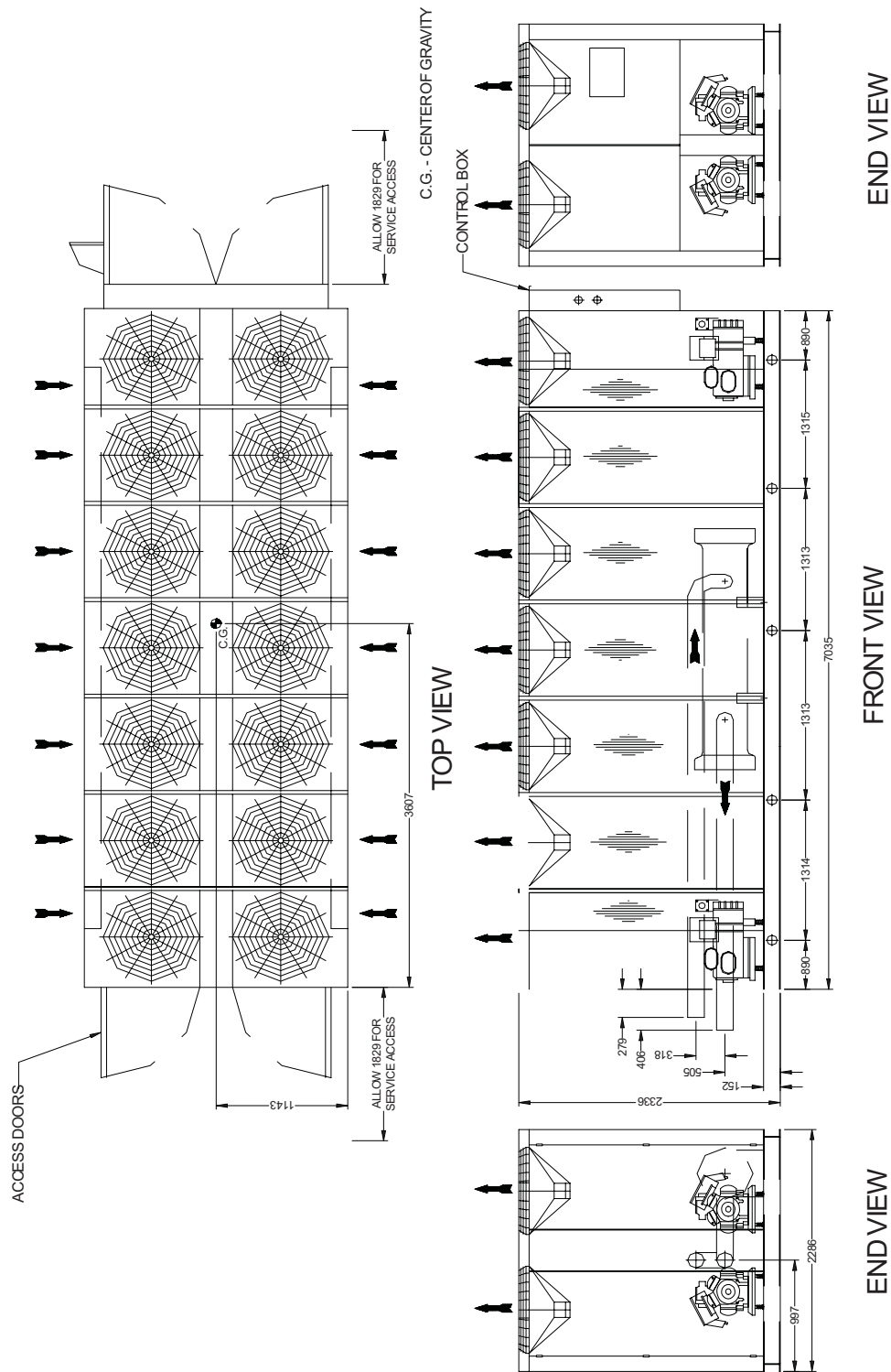


NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, mm.
2. ALLOW 2 METER CLEARANCE ON BOTH SIDE OF A SINGLE UNIT.
3. WATER PIPING TO BE SUPPORTED TO MINIMIZE LOAD ON UNIT.
4. USE MINIMUM ONE (1) METER FLEXIBLE ELECTRICAL CONDUIT TO CONTROL BOX TO ISOLATE UNIT.
5. VICTAULIC WATER CONNECTION.
6. VENT & DRAIN CONNECTIONS PROVIDED ON COOLER BARREL.

DIMENSIONS

OALC 160 & OALC 180



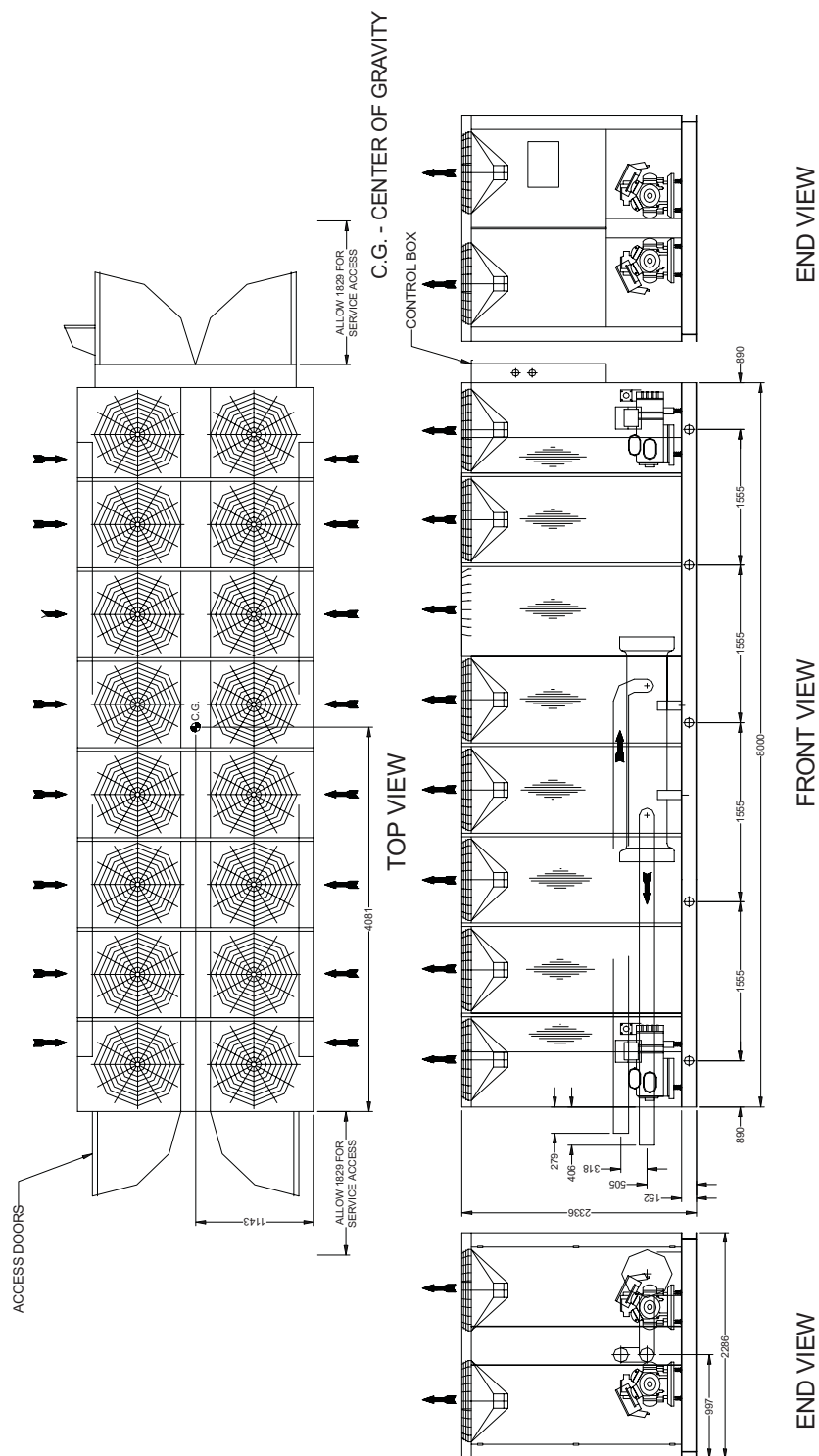
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, mm.
2. ALLOW 2 METER CLEARANCE ON BOTH SIDE OF A SINGLE UNIT.
3. WATER PIPING TO BE SUPPORTED TO MINIMIZE LOAD ON UNIT.
4. USE MINIMUM ONE (1) METER FLEXIBLE ELECTRICAL CONDUIT TO CONTROL BOX TO ISOLATE UNIT.
5. VICTAULIC WATER CONNECTION.
6. VENT & DRAIN CONNECTIONS PROVIDED ON COOLER BARREL.

DIMENSIONS

DIMENSIONS

OALC 200 & OALC 220



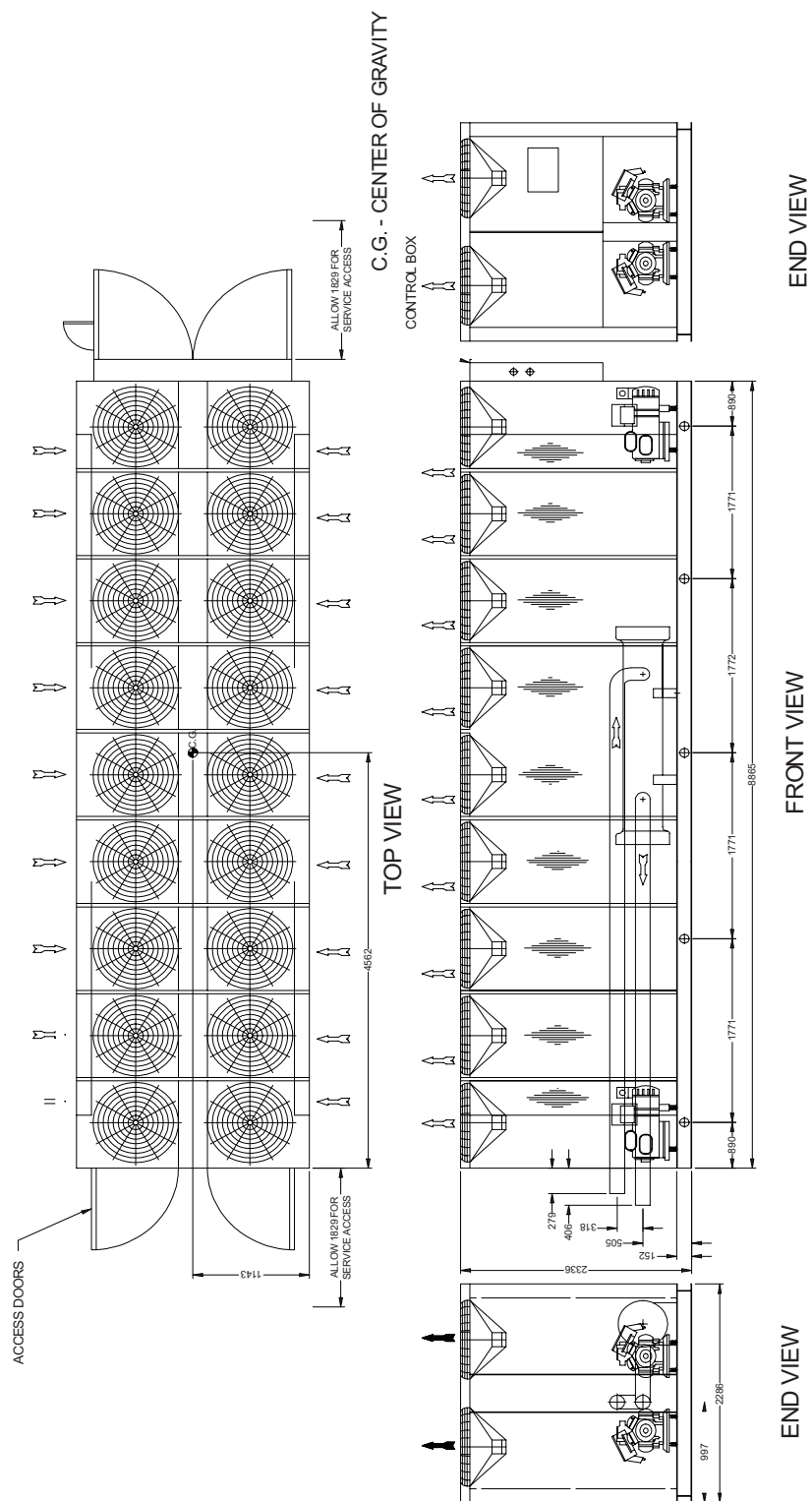
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, mm.
2. ALLOW 2 METER CLEARANCE ON BOTH SIDE OF A SINGLE UNIT.
3. WATER PIPING TO BE SUPPORTED TO MINIMIZE LOAD ON UNIT.
4. USE MINIMUM ONE (1) METER FLEXIBLE ELECTRICAL CONDUIT TO CONTROL BOX TO ISOLATE UNIT.
5. VICTAULIC WATER CONNECTION.
6. VENT & DRAIN CONNECTIONS PROVIDED ON COOLER BARREL.

DIMENSIONS

DIMENSIONS

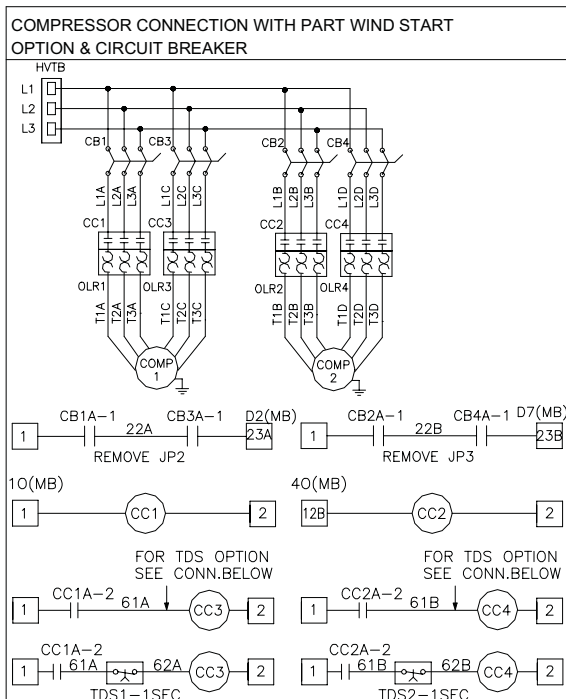
OALC 240



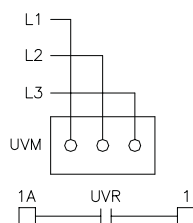
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, mm.
2. ALLOW 2 METER CLEARANCE ON BOTH SIDE OF A SINGLE UNIT.
3. WATER PIPING TO BE SUPPORTED TO MINIMIZE LOAD ON UNIT.
4. USE MINIMUM ONE (1) METER FLEXIBLE ELECTRICAL CONDUIT TO CONTROL BOX TO ISOLATE UNIT.
5. VICTAULIC WATER CONNECTION.
6. VENT & DRAIN CONNECTIONS PROVIDED ON COOLER BARREL.

TYPICAL SCHEMATIC WIRING DIAGRAM

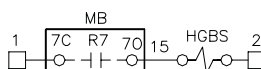


UVM CONNECTION

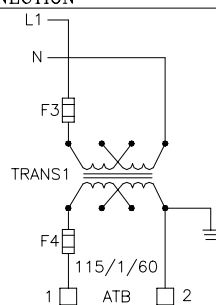


HOT GAS BYPASS OPTION

- ☐ FURNISHED
☐ NOT FURNISHED



CONTROL TRANSFORMER CONNECTION



VOLT	F3	F4	F5
380	5A	7A	-

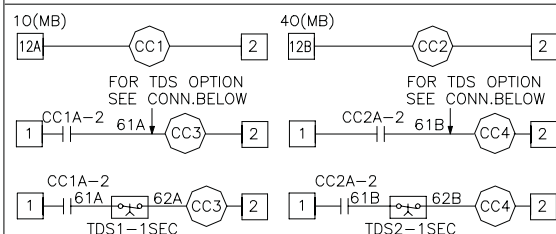
LEGEND

AI	ANALOG INPUT
CB	CIRCUIT BREAKER
COMP	COMPRESSOR
CC	COMPRESSOR CONTACTOR
CCA	COMPRESSOR CONTACTOR AUXILIARY
CWP	CHILLED WATER PUMP INTERLOCK
FLS	FLOW SWITCH
FM	FAN MOTOR
FU	FUSE
HGBS	HOT GAS BYPASS SOLENOID
HVTB	HIGH VOLTAGE TERMINAL BLOCK
I/O	INPUT/OUTPUT
MB	MAIN BOARD
OLR	OVER LOAD RELAY
PT	PRESSURE TRANSDUCER
R	CHILLER RANGE F
S1	CONTROL SWITCH
SSPS	SOLID STATE PROTECTION SYSTEM
TRANS	TRANSFORMER
TS	TEMPERATURE SENSOR
UVM	UNDER VOLTAGE MONITOR
	TERMINAL BLOCK

NOTES

- POWER SUPPLY, REFER TO UNIT NAMEPLATE.
- COPPER CONDUCTORS ONLY.
- FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER TO BE PROVIDED BY END USER WITH RATING AS RECOMMENDED BY MANUFACTURER.
- POWER MUST BE SUPPLIED TO CRANKCASE HEATER FOR MINIMUM OF 12 HOURS PRIOR TO SYSTEM START UP.
IF POWER IS OFF 6 HOURS OR MORE, CRANKCASE HEATER MUST BE ON FOR 12 HOURS BEFORE OPERATING THE SYSTEM.
FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN COMPRESSOR DAMAGE.
- NEUTRAL LINE** REQUIRED ON 380V-3Ph-60Hz & 380/415V-3Ph-50Hz POWER SUPPLY ONLY.

COMPRESSOR CONTACTOR CONNECTION APPLICABLE FOR PART WIND START



TYPICAL MICROPROCESSOR CONTROLLER (OPTIONAL)

Sequence of Operation

The following describes the sequence of operation for a two compressor reciprocating chiller unit. Operation is similar for a one or four compressor unit.

For initial start-up, the following conditions must be met:

- All power supplied to the unit shall be energized for 12 hours.
- Control power switch on for at least 5 minutes.
- All safety conditions satisfied.
- Press ESC on the microcomputer keypad.
- Chilled water pump running and chilled water flow switch contact closed.
- Customer control contact closed, if any.

STAGE - ON SEQUENCE

Staging ON & OFF sequence, shall be accomplished by the Leaving water temperature control selection.

Stage #1:

If the leaving water temperature is greater than the stage 1- ON water temperature set point value, the compressor #1, liquid line solenoid & unloader solenoid (lead compressor only) shall be switched ON.

The first stage of capacity is now on-line. **The unit is now at 25% capacity .**

As discharge pressure of compressor #1 rises, the corresponding fans energized according to the fans stage-ON set point. If the discharge pressure falls below the fan stage-OFF set point value, the corresponding fans will turn off.

Stage #2:

After a minimum interval, if the leaving water temperature is greater than the stage 2- ON water temperature set point value, compressor #1 unloader shall be de-energized.

Compressor #1 will now be fully loaded. **The unit is now at 50% capacity .**

Stage #3:

After a minimum time delay and if the leaving water temperature is greater than the stage 3 - ON water temperature set point value, compressor #2 & the liquid line solenoid of the circuit #2 is switched on. Also the compressor #1 will be unloaded.

The third stage of capacity is now achieved. **The unit is now at 75% capacity .**

As the discharge pressure of compressor #2 rises, the corresponding fans energized according to the fan stage-ON set point.

Stage #4:

If the leaving water temperature is greater than the stage 4 - ON water temperature set point value, the compressor #1 unloader shall be de-energized. **The unit is now operating at 100% capacity .**

STAGE - OFF SEQUENCE

During the staging OFF, the first-in last-out sequence is adopted, if equalization of compressor timing is not selected. Else the more used is switched off.

As the applied load decreases and when the leaving water temperature falls below the stage 4 -OFF water temperature set point value, stage 4 is turned off. Compressor #1 unloads.

If the leaving water temperature falls below the stage 3-OFF water temperature set point value, the stage 3 is turned off. The liquid line solenoid #2 is turned off and compressor #1 is loaded up to 100%.

When compressor #2 suction pressure falls below the pump down set point value, compressor #2 and the corresponding fans are turned off. The unit is now at 50% capacity.

Stage 2 and 1 are turned off in a similar manner to stages 4 & 3 mentioned above.

When the compressors are in the standby or OFF mode, pump down of the chiller is maintained. If the suction pressure rises above the pump down set point value the compressor will turn on with the liquid line solenoid closed. When the suction pressure falls below the pump down set point value, the compressor will be turned off.

Compressor and Unloader Staging

A one compressor unit has 2 stages, two compressor unit has 4 stages and a four compressor unit has 8 stages. The odd numbered stages turn compressors #1 ON or OFF while the even numbered stages de-energized the unloader. The staging of a standard unit is shown in the following chart:

Number of Compressors			
Stage	1	2	4
1	1*	1*	1*
2	1	1	1
3		1*, 2	1*, 2
4		1, 2	1, 2
5			1*, 2, 3
6			1, 2, 3
7			1*, 2, 3, 4
8			1, 2, 3, 4

*Indicates that compressor #1 is unloaded

TROUBLESHOOTING GUIDE

1) No LED display lit or erratic display behavior

- Check serial cable integrity.
- Check serial cable connections on both the User Interface Board and the Main Board.
- Check correct and tight insertion of jumpers JU1 and JU2 on the Main Board.
- Check correct and tight insertion of jumpers TU1 and TD1 on the User Interface Board and on the last board of the network.

2) Controller does not respond to keypad

- Check serial cable integrity.
- Check serial cable connections on both the User Interface Board and the Main Board.
- Check correct and tight insertion of jumpers TU1 and TD1 on the User Interface Board, main and/or auxiliary board.
- Check dip switches and integrity on the User Interface Board.

3) Several analog values reading incorrectly

- Check correct and tight connection of the probes to the board.
- Check the probe cable: test for short-circuit.
- The pressure transducer probe is a 4-20mA transmitter check the polarity of the connection on the Board.
- Check if the power supply voltage is into the specified limits: 24Vac +/- 10%.
- The temperature probe is a PTC sensor disconnect it from the board and measure its resistance that is 1000 ohm at 25°C or 1200 ohm at 50°C.

4) Digital input reading incorrectly

- Check if the auxiliary 115 Vac voltage is present in the electrical box.
- Check if the AC input on the Board is correctly connected to one of the 115 Vac terminals in the electrical box.
- Check if A1/A14 inputs are correctly connected with respect to the cabling diagram of the electrical box.

5) No LCD display lit or erratic display behavior

- Check serial cable integrity.
- Check serial cable connections on both the User Interface Board and the Main Board.
- Check correct and tight insertion of jumpers JU1 and JU2 on the Main Board.
- Check correct and tight insertion of jumpers TU1 and TD1 on the User Interface Board, main and/or auxiliary board.
- Adjust display intensity by rotating trimmer RV1 counter-clockwise (from the back side of the board).

TROUBLESHOOTING GUIDE

6) No LED H1 blinking light on NG3 Board

- a) Check power supply cable an connection.
- b) Check if the power supply voltage is into the specified limits: 24Vac +/- 10%.
- c) Check for fuse F1, replace with 1AT/250V if blown.

7) No display of leds on User Interface Board

- a) Check serial cable integrity.
- b) Check serial cable connections on both the User Interface Board and the Main Board.
- c) Check correct and tight insertion of jumpers JU1 and JU2 on the Main Board.
- d) Check correct and tight insertion of jumpers TU1 and TD1 on the User Interface Board, main and/or auxiliary board.

8) Auxilliary board not responding to commands

- a) Check if LED H1 on Auxilliary board is blinking , if not go to point (6).
- b) Check serial cable integrity.
- c) Check serial cable connections on both the Main and the Auxilliary boards.
- d) Check that jumpers JU1 and JU2 on the Auxilliary boards are not installed.
- e) Check correct and tight insertion of jumpers TU1 and TD1 on the User Interface Board, main and/or auxiliary board.

9) Analog Outputs not responding

- a) Check Analog Output cables integrity (for short-circuit).
- b) Check Analog Output cabling and connections.
- c) Check if the power supply voltage is into the specified limits: 24VAC +/- 10%.
- d) Check the fuse F1, replace with 1AT/250V if blown.

10) Digital Outputs not responding

- a) Check Digital Output cables integrity (no short-circuit, no open-circuit).
- b) Check digits Output cabling and connections.
- c) Check if the power supply voltage is into the specified limits: 24VAC +/- 10%.
- d) Check the fuse F1, replace with 1AT/250V if blown.

11) Serial Communication with Remote Monitoring Control not Functioning

- a) Check the serial cable connected on plug-in board IS-485 mounted on the Main Board.
- b) Check if the plug-in board is correctly mounted on the Main Board.
- c) Check if jumpers X5 and X6 on the plug-in board IS-485 are correctly installed.
- d) Check if jumpers X17 and X18 on the GATEWAY board are correctly installed.

APPLICATION DATA

UNIT PLACEMENT: Prior to unit installation, please check the following points. Strength, level of the base or foundation. Please refer unit installation clearance dimensional drawings for proper unit installation.

CONDENSER AIRFLOW: Obstructed flow of condenser air will effect the unit capacity and operating efficiency. It is essential to install the units where sufficient airflow available to eliminate condenser discharge air recirculation.

WATER (FLUID STRAINERS): It is recommended to install 20-mesh strainers in the fluid piping.

COOLER ENTERING WATER TEMPERATURE: Unit can start and pull down from 95°F (35°C) entering water temperature for sustained operation conditions. If entering water temperature is expected to be higher, contact engineering dept. for design modification.

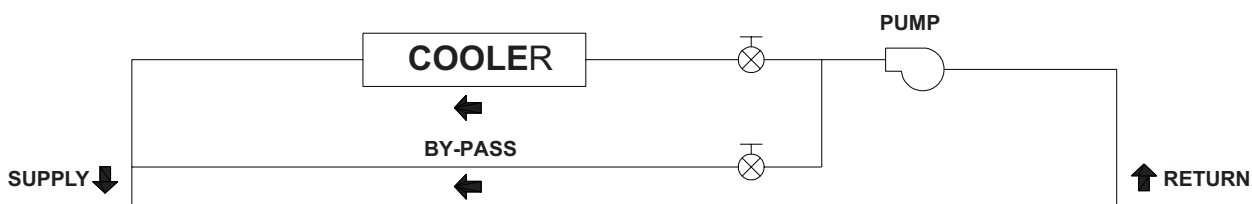
HIGH AMBIENT TEMPERATURE: Chillers can start and operate satisfactorily at 125 F (52°C) ambient temperature at nominal voltage.

COOLER TEMPERATURE RISE: Rating and performance data are for a cooling rise of 10°F. It is recommended that the cooler temperature rise not exceed 16°F (8.8°C).

It is recommended to recirculate the chilled water to increase the flow rate. Ensure to maintain the mixed fluid temperature entering to the cooler at least 5°F (2.°C) above the leaving chilled water temperature.



It is recommended to maintain the pressure drop through the cooler within the limit by bypassing return water as shown on diagram below. This permits a higher temperature difference with lower water flow through the cooler and mixing after the cooler. However the flow rate through the cooler should not be lower than the minimum flow rates indicated in this catalog.



OVERSIZING OF CHILLER: It is not recommended to oversize the chiller more than 5 - 10% of the load for future requirement. Over sizing of chiller cause system inefficiency due to excessive compressor cycling which will reduce the compressor life. It is recommended to select the chiller for present load requirement and add another unit for future expansion. Units operate more efficient with fully loaded than larger equipment operates at minimum capacity.

MINIMUM CHILLED WATER VOLUME: As the compressor may alter between stating ,loading, unloading and stopping in a closed coupled system, the leaving water temperature may vary by 2°F - 5°F (1°C - 2.5°C) per step of capacity control. The anti recycle timer will prevent the compressor from starting for 3 minutes and that influence the leaving water temperature variation. Therefore, in case where precise control of leaving temperature is absolutely required, it will be necessary to install a water tank in the chilled water loop. Table on next page indicate minimum tank volume for air conditioning and process application.



APPLICATION DATA

UNIT MODEL	AIR CONDITIONING APPLICATIONS		PROCESS APPLICATIONS	
	GALLONS	LITERS	GALLONS	LITERS
OALC 010	32	117	63	233
OALC 015	45	167	90	334
OALC 025	67	250	134	500
OALC 030	88	327	175	655
OALC 035	100	375	200	751
OALC 040	116	435	232	870
OALC 050	133	500	266	1000
OALC 060	175	655	350	1310
OALC 070	201	751	402	1503
OALC 080	237	890	475	1780
OALC 100	292	1092	584	2185
OALC 120	338	1265	676	2531
OALC 140	402	1504	804	3008
OALC 160	475	1780	950	3560
OALC 180	535	2003	1070	4006
OALC 200	584	2185	1168	4370
OALC 220	630	2355	1260	4710
OALC 240	678	2535	1356	5070

Minimum loop volumes: Normal air conditioning: 3 gal/Ton or 3.25 liters/KW.
Process cooling: 6 gal/ton or 6.5 liters/KW.

RIGGING INSTRUCTIONS

ATTENTION TO RIGGERS

Hook rigging sling thru holes in base rail, as shown below.

Holes in base rail are centered around the unit center of gravity.

Center of gravity is not unit center line.

Ensure center of gravity aligns with the main lifting point before lifting.

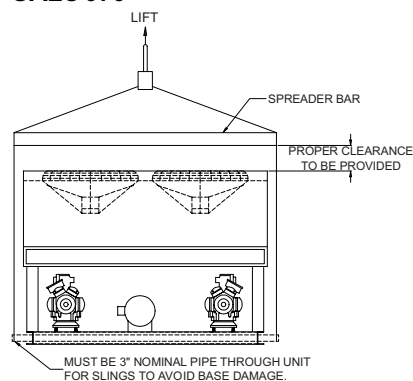
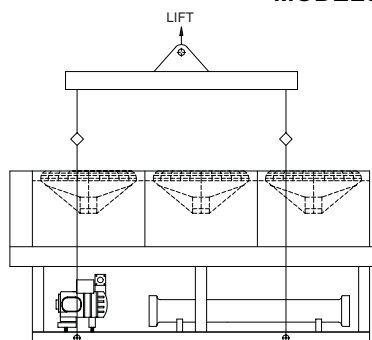
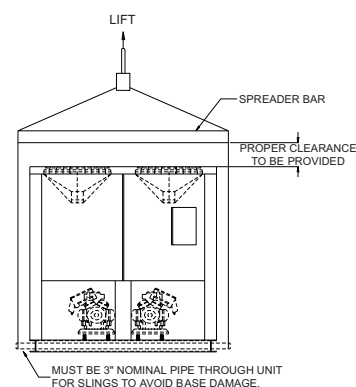
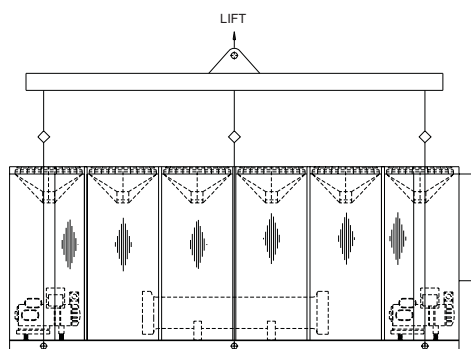
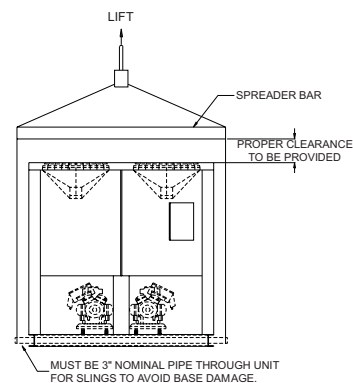
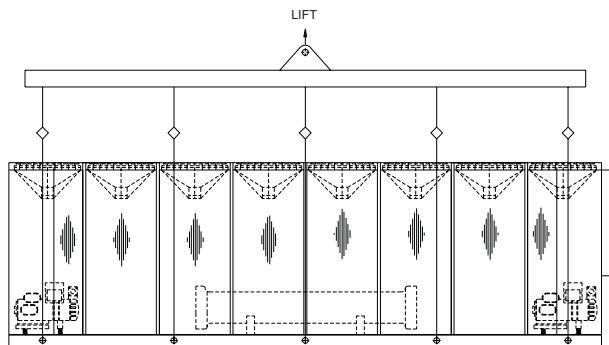
Use spreader bar when rigging, to prevent the slings from damaging the unit.

CAUTION

All panels should be in place when rigging.

Care must be taken to avoid damage to the coils during handling.

Insert packing material between coils & slings as necessary.

MODELS: OALC 010 - OALC 070**MODELS: OALC 080 - OALC 180****MODELS: OALC 200 - OALC 240**

INSTALLATION CLEARANCE

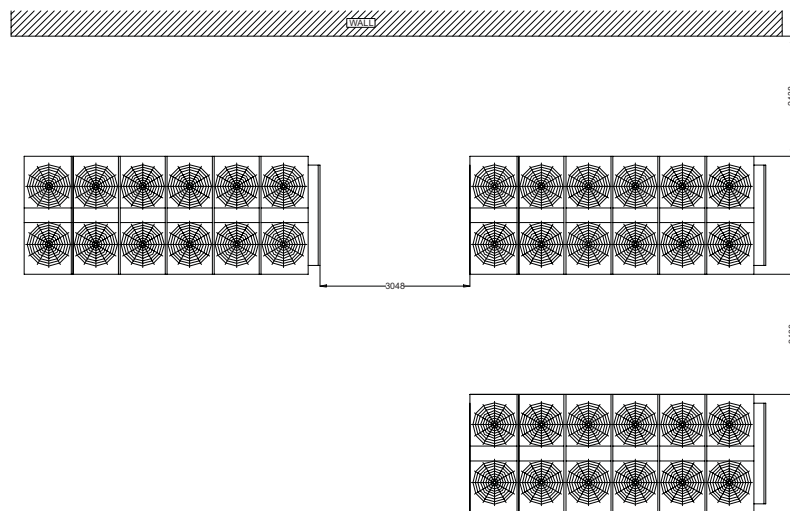


FIGURE - 1

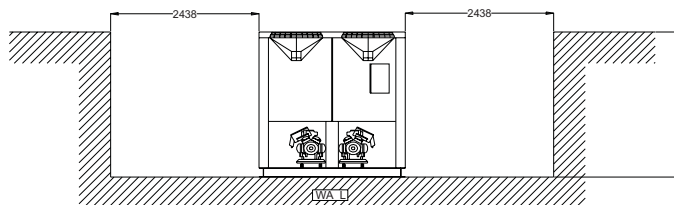


FIGURE - 2
SINGLE UNIT IN PIT

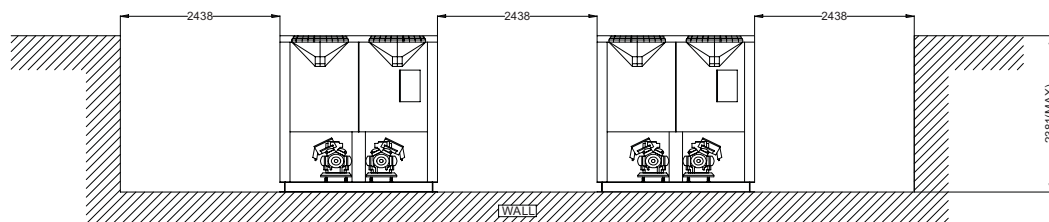


FIGURE - 3
DOUBLE UNITS IN PIT

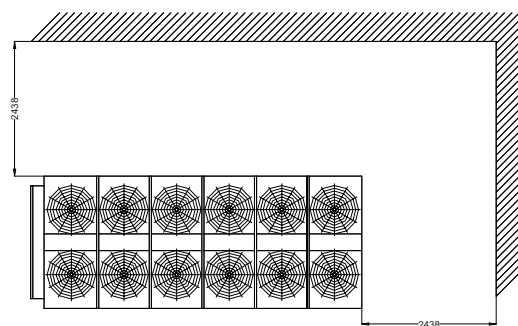


FIGURE - 4
CORNER WALL

PARTS LIST

MODEL NUMBER	OALC 010H	OALC 010F	OALC 010M	OALC 010L	OALC 015H	OALC 015F	OALC 015M	OALC 015L	OALC 025H	OALC 025F	OALC 025M	OALC 025L
COMPRESSOR STARTER	800-097-42	800-097-36	800-097-36	800-097-36	800-097-45	800-097-36	800-097-39	800-097-39	800-097-42(2) 800-097-12(2)	800-097-42	800-097-45	800-097-45
FAN MOTOR CONTACTOR/FUSE	800-095-56(2)	800-095-56(2)	800-095-56(2)	800-095-56(2)	800-095-56(2)	800-095-56(2)	800-095-56(2)	800-095-56(2)	800-095-56(3)	800-095-56 (3)	800-095-56(3)	800-095-56(3)
TEMPERATURE SENSOR	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55
CONDENSER FAN MOTOR	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06
CONDENSER FAN GUARD	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38
CONDENSER FAN	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32
MOTOR MOUNT	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20
MICROPROCESSOR USER INTERFACE BOARD	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50
MICROPROCESSOR MAIN BOARD	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51
EXPANSION VALVE	800-181-58	800-181-58	800-181-58	800-181-58	800-181-50	800-181-50	800-181-50	800-181-50	800-181-52	800-181-52	800-181-52	800-181-52
EXPANSION VALVE BOARD	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66
FILTER DRYER	800-531-41	800-531-41	800-531-41	800-531-41	800-531-42	800-531-42	800-531-42	800-531-42	800-531-42	800-531-42	800-531-42	800-531-42
DRYER CORE	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65
SIGHT GLASS	800-200-00	800-200-00	800-200-00	800-200-00	800-200-01	800-200-01	800-200-01	800-200-01	800-200-01	800-200-01	800-200-01	800-200-01
PRESSURE RELIEF VALVE	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01
PUMP DOWN SOLENOID VALVE	800-706-58	800-706-58	800-706-58	800-706-58	800-706-59	800-706-59	800-706-59	800-706-59	800-706-59	800-706-59	800-706-59	800-706-59
UNDER VOLTAGE MONITOR	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42
TRANSFORMER (24V)	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00
HOT GAS BYPASS VALVE	800-533-05	800-533-05	800-533-05	800-533-05	800-533-05	800-533-05	800-533-05	800-533-05	800-533-07	800-533-07	800-533-07	800-533-07
HOT GAS BYPASS SOLENOID	800-705-94	800-705-94	800-705-94	800-706-57	800-705-95	800-705-95	800-705-95	800-706-58	800-705-96	800-705-96	800-705-96	800-706-59
WATER FLOW SWITCH	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41
SPRING ISOLATORS	800-047-20(4)	800-047-20(4)	800-047-20(4)	800-047-20(4)	800-047-20(4)	800-047-20(4)	800-047-20(4)	800-047-20(4)	800-047-20(6)	800-047-20(6)	800-047-20(6)	800-047-20(6)
COMPRESSOR CIRCUIT BREAKER	800-607-38	800-607-36	800-607-36	800-607-36	800-607-40	800-607-36	800-607-37	800-607-37	800-607-38(2)	800-607-38	800-607-39	800-607-40

MODEL NUMBER	OALC 030H	OALC 030F	OALC 030M	OALC 030L	OALC 035H	OALC 035F	OALC 035M	OALC 035L	OALC 040H	OALC 040F	OALC 040M	OALC 040L
COMPRESSOR STARTER	800-097-45(2) 800-097-14(2)	800-097-45	800-097-48	800-097-48	800-097-48(2) 800-097-15(2)	800-097-48	800-097-42(2) 800-097-12(2)	800-097-42(2) 800-097-13(2)	800-097-48(2)	800-097-39(2)	800-097-42(2)	800-097-42(2)
FAN MOTOR CONTACTOR/FUSE	800-095-56(4)	800-095-56(4)	800-095-56(4)	800-095-56(4)	800-095-56(4)	800-095-56(4)	800-095-56(4)	800-095-56(4)	800-095-56(6)	800-095-56 (6)	800-095-56(6)	800-095-56(6)
TEMPERATURE SENSOR	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-54 800-646-55	800-646-55	800-646-55	800-646-55	800-646-55
CONDENSER FAN MOTOR	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06
CONDENSER FAN GUARD	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38
CONDENSER FAN	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32
MOTOR MOUNT	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20
MICROPROCESSOR USER INTERFACE BOARD	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50
MICROPROCESSOR MAIN BOARD	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51
EXPANSION VALVE	800-181-52	800-181-52	800-181-52	800-181-52	800-181-54	800-181-54	800-181-54	800-181-54	800-181-52	800-181-52	800-181-52	800-181-52
EXPANSION VALVE BOARD	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66
FILTER DRYER	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-42	800-531-42	800-531-42	800-531-42
DRYER CORE	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65
SIGHT GLASS	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-01	800-200-01	800-200-01	800-200-01
PRESSURE RELIEF VALVE	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01
PUMP DOWN SOLENOID VALVE	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60	800-706-59	800-706-59	800-706-59	800-706-59
UNDER VOLTAGE MONITOR	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42
TRANSFORMER (24V)	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00
HOT GAS BYPASS VALVE	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-05	800-533-05	800-533-05	800-533-05
HOT GAS BYPASS SOLENOID	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60	800-705-95	800-705-95	800-705-95	800-706-58
WATER FLOW SWITCH	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41
SPRING ISOLATORS	800-047-25(4)	800-047-25(4)	800-047-25(4)	800-047-25(4)	800-047-26(4)	800-047-26(4)	800-047-26(4)	800-047-26(4)	800-047-28(4) 800-047-16(2)	800-047-28(4) 800-047-16(2)	800-047-28(4) 800-047-16(2)	800-047-28(4) 800-047-16(2)
COMPRESSOR CIRCUIT BREAKER	800-607-39(2)	800-607-39	800-607-40	800-607-40	800-607-40(2)	800-607-40	800-607-38(2)	800-607-39(2)	800-607-37(2)	800-607-37(2)	800-607-38(2)	800-607-39(2)

NOTE: 1. REFER TO PHYSICAL SPECIFICATION DATA FOR COMPRESSOR & CHILLER BARREL PART NUMBERS. 2. DATA ENCLOSED BY PARENTHESIS MEANS QUANTITY.



AIR COOLED CHILLERS

OMRAN TAHVIEH

PARTS LIST

MODEL NUMBER	OALC 050H	OALC 050F	OALC 050M	OALC 050L	OALC 060H	OALC 060F	OALC 060M	OALC 060L	OALC 070H	OALC 070F	OALC 070M	OALC 070L
COMPRESSOR STARTER	800-097-42(4) 800-097-12(4)	800-097-42(2)	800-097-45(2)	800-097-45(2)	800-097-45(4) 800-097-14(4)	800-097-45(2)	800-097-48(2)	800-097-48(2)	800-097-48(4) 800-097-15(4)	800-097-48(2)	800-097-42(4) 800-097-12(4)	800-097-42(4) 800-097-13(4)
FAN MOT OR CONTACTOR/FUSE	800-095-56(6)	800-095-56(6)	800-095-56(6)	800-095-56(6)	800-095-56(6)	800-095-56(6)	800-095-56(6)	800-095-56(6)	800-095-56(6)	800-095-56 (6)	800-095-56(6)	800-095-56(6)
TEMPERATURE SENSOR	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55
CONDENSER FAN MOTOR	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06
CONDENSER FAN GUARD	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38
CONDENSER FAN	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32
MOTOR MOUNT	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20
MICROPROCESSOR USER INTERFACE BOARD	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50
MICROPROCESSOR MAIN BOARD	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51
EXPANSION VALVE	800-181-52	800-181-52	800-181-52	800-181-52	800-181-52	800-181-52	800-181-52	800-181-52	800-181-54	800-181-54	800-181-54	800-181-54
EXPANSION VALVE BOARD	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66
FILTER DRYER	800-531-42	800-531-42	800-531-42	800-531-42	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17
DRYER CORE	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65
SIGHT GLASS	800-200-01	800-200-01	800-200-01	800-200-01	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04
PRESSURE RELIEF VALVE	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01
PUMP DOWN SOLENOID VALVE	800-706-59	800-706-59	800-706-59	800-706-59	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60	800-706-60
UNDER VOLTAGE MONITOR	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42
TRANSFORMER (24V)	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00
HOT GAS BYPASS VALVE	800-533-07	800-533-07	800-533-07	800-533-07	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08
HOT GAS BYPASS SOLENOID	800-705-96	800-705-96	800-705-96	800-706-59	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60
WATER FLOW SWITCH	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41
SPRING ISOLATORS	800-047-28(4) 800-047-16(2)	800-047-28(4) 800-047-16(2)	800-047-28(4) 800-047-16(2)	800-047-28(4) 800-047-16(2)	800-047-30(4)	800-047-30(4)	800-047-30(4)	800-047-30(4)	800-047-30(4)	800-047-30(4)	800-047-30(4)	800-047-30(4)
COMPRESSOR CIRCUIT BREAKER	800-607-38(4)	800-607-38(2)	800-607-39(2)	800-607-40(2)	800-607-39(4)	800-607-39(2)	800-607-40(2)	800-607-40(2)	800-607-40(4)	800-607-40 (2)	800-607-38(4)	800-607-39(4)
MODEL NUMBER	OALC 080H	OALC 080F	OALC 080M	OALC 080L	OALC 100H	OALC 100F	OALC 100M	OALC 100L	OALC 120H	OALC 120F	OALC 120M	OALC 120L
COMPRESSOR STARTER	800-097-51(4) 800-097-17(4)	800-097-42(4) 800-097-12(4)	800-097-45(4) 800-097-13(2)	800-097-48(2) 800-097-42(2) 800-097-15(2) 800-097-12(2)	800-097-57(2) 800-097-54(2) 800-097-15(2) 800-097-12(2)	800-097-48(2) 800-097-45(2) 800-097-17(2) 800-097-13(2)	800-097-51(2) 800-097-45(2) 800-097-17(2) 800-097-13(2)	800-097-51(2) 800-097-42(2) 800-097-17(2) 800-097-18(2)	800-097-60(2) 800-097-54(2) 800-097-20(2) 800-097-18(2)	800-097-51(2) 800-097-42(2) 800-097-17(2) 800-097-13(2)	800-097-54(2) 800-097-45(2) 800-097-18(2) 800-097-15(2)	800-097-48(4) 800-097-16(4)
FAN MOT OR CONTACTOR/FUSE	800-095-56(8)	800-095-56(8)	800-095-56(8)	800-095-56(8)	800-095-56(8)	800-095-56(8)	800-095-56(8)	800-095-56(8)	800-095-56(12)	800-095-56(12)	800-095-56(12)	800-095-56(12)
TEMPERATURE SENSOR	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55
CONDENSER FAN MOTOR	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06
CONDENSER FAN GUARD	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38
CONDENSER FAN	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32
MOTOR MOUNT	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20
MICROPROCESSOR USER INTERFACE BOARD	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50
MICROPROCESSOR MAIN BOARD	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51	800-646-51
EXPANSION VALVE	800-181-54	800-181-54	800-181-54	800-181-54	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55
EXPANSION VALVE BOARD	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66
FILTER DRYER	800-531-17	800-531-17	800-531-17	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13
DRYER CORE	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65
SIGHT GLASS	800-200-04	800-200-04	800-200-04	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05
PRESSURE RELIEF VALVE	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01
PUMP DOWN SOLENOID VALVE	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62
UNDER VOLTAGE MONITOR	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42
TRANSFORMER (24V)	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00
HOT GAS BYPASS VALVE	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08
HOT GAS BYPASS SOLENOID	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60
WATER FLOW SWITCH	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41
SPRING ISOLATORS	800-047-28(6) 800-047-16(4)	800-047-28(6) 800-047-16(4)	800-047-28(6) 800-047-16(4)	800-047-28(6) 800-047-16(4)	800-047-28(6) 800-047-16(4)	800-047-28(6) 800-047-16(4)	800-047-28(6) 800-047-16(4)	800-047-28(6) 800-047-16(4)	800-047-10(4) 800-047-1 (2)	800-047-10(4) 800-047-1 (2)	800-047-10(4) 800-047-1 (2)	800-047-10(4) 800-047-1 (2)
COMPRESSOR CIRCUIT BREAKER	800-607-30(4)	800-607-38(4)	800-607-39(4)	800-607-40(2) 800-607-38(2)	800-607-33(2) 800-607-31(2)	800-607-40(2) 800-607-38(2)	800-607-39(2) 800-607-30(2)	800-607-39(2) 800-607-30(2)	800-607-41(2) 800-607-32(2)	800-607-39(2) 800-607-30(2)	800-607-40(2) 800-607-30(2)	800-607-30(4)

NOTE: 1. REFER TO PHYSICAL SPECIFICATION DATA FOR COMPRESSOR & CHILLER BARREL PART NUMBERS. 2. DATA ENCLOSED BY PARENTHESIS MEANS QUANTITY.

PARTS LIST

MODEL NUMBER	OALC 140H	OALC 140F	OALC 140M	OALC 140L	OALC 160H	OALC 160F	OALC 160M	OALC 160L	OALC 180H	OALC 180F	OALC 180M	OALC 180L
COMPRESSOR STARTER	800-097-48(8) 800-097-15(8)	800-097-48(4) 800-097-15(4)	800-097-42(8) 800-097-12(8)	800-097-45(8) 800-097-13(8)	800-097-51(8) 800-097-17(8)	800-097-42(8) 800-097-12(8)	800-097-45(8) 800-097-13(8)	800-097-48(2) 800-097-45(2) 800-097-42(4) 800-097-15(2) 800-097-12(4) 800-097-14(2)	800-097-57(4) 800-097-54(2) 800-097-51(2) 800-097-20(4) 800-097-18(4)	800-097-48(2) 800-097-42(4) 800-097-45(2) 800-097-15(4) 800-097-12(4)	800-097-51(2) 800-097-45(2) 800-097-48(2) 800-097-42(2) 800-097-17(2) 800-097-13(4) 1 2	800-097-48(4) 800-097-42(4) 800-097-15(4) 800-097-12(4)
FAN MOTOR CONTACTOR/FUSE	800-095-56(12)	800-095-56(12)	800-095-56(12)	800-095-56(12)	800-095-56(14)	800-095-56(14)	800-095-56(14)	800-095-56(14)	800-095-56(14)	800-095-56(14)	800-095-56(14)	800-095-56(14)
TEMPERATURE SENSOR	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55
CONDENSER FAN MOTOR	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06
CONDENSER FAN GUARD	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38
CONDENSER FAN	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28	800-224-28
MOTOR MOUNT	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20
MICROPROCESSOR USER INTERFACE BOARD	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50
MICROPROCESSOR MAIN BOARD	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)
EXPANSION VALVE	800-181-54	800-181-54	800-181-54	800-181-54	800-181-54	800-181-54	800-181-54	800-181-54	800-181-55	800-181-55	800-181-55	800-181-55
EXPANSION VALVE BOARD	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66
FILTER DRYER	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-17	800-531-13	800-531-13/17	800-531-13/17	800-531-13/17	800-531-13
DRYER CORE	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65
SIGHT GLASS	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-04	800-200-05	800-200-05/04	800-200-05/04	800-200-05/04	800-200-05
PRESSURE RELIEF VALVE	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01
PUMP DOWN SOLENOID VALVE	800-706-61	800-706-61	800-706-61	800-706-61	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62
UNDER VOLTAGE MONITOR	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42
TRANSFORMER (24V)	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00
HOT GAS BYPASS VALVE	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08
HOT GAS BYPASS SOLENOID	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60
WATER FLOW SWITCH	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41
SPRING ISOLATORS	800-047-10(4) 800-047-11(2)	800-047-10(4) 800-047-11(2)	800-047-10(4) 800-047-11(2)	800-047-10(4) 800-047-11(2)	800-047-12(6)	800-047-12(6)	800-047-12(6)	800-047-12(6)	800-047-11(6) 800-047-12(2)	800-047-11(6) 800-047-12(2)	800-047-11(6) 800-047-12(2)	800-047-11(6) 800-047-12(2)
COMPRESSOR CIRCUIT BREAKER	800-607-40(8) 800-607-38(4)	800-607-40(4) 800-607-38(4)	800-607-38(8) 800-607-39(8)	800-607-38(8) 800-607-39(8)	800-607-30(8) 800-607-38(8)	800-607-38(8) 800-607-39(8)	800-607-38(8) 800-607-39(8)	800-607-40(4) 800-607-38(4)	800-607-33(4) 800-607-31(2) 800-607-30(2)	800-607-20(4) 800-607-38(4)	800-607-30(2) 800-607-39(4) 800-607-40(2)	800-607-40(4) 800-607-38(4)
MODEL NUMBER	OALC 200H	OALC 200F	OALC 200M	OALC 200L	OALC 220H	OALC 220F	OALC 220M	OALC 220L	OALC 240H	OALC 240F	OALC 240M	OALC 240L
COMPRESSOR STARTER	800-097-57(4) 800-097-54(4) 800-097-20(4) 800-097-18(4)	800-097-48(4) 800-097-42(4) 800-097-15(4) 800-097-12(4)	800-097-51(4) 800-097-45(4) 800-097-17(4) 800-097-13(4)	800-097-48(4) 800-097-42(4) 800-097-16(4) 800-097-13(4)	800-097-60(2) 800-097-54(4) 800-097-57(2) 800-097-20(4) 800-097-18(4)	800-097-51(2) 800-097-42(4) 800-097-17(2) 800-097-13(2) 800-097-15(2) 800-097-12(2)	800-097-54(2) 800-097-45(4) 800-097-51(2) 800-097-18(2) 800-097-15(2) 800-097-17(2) 800-097-13(2)	800-097-48(8) 800-097-16(4) 800-097-15(4) 800-097-20(4) 800-097-18(4)	800-097-60(4) 800-097-54(4) 800-097-20(4) 800-097-13(4)	800-097-51(4) 800-097-42(4) 800-097-17(4) 800-097-13(4)	800-097-54(4) 800-097-45(4) 800-097-18(4) 800-097-15(4)	800-097-48(8) 800-097-16(8) 800-097-18(4) 800-097-15(4)
FAN MOTOR CONTACTOR/FUSE	800-095-56(16)	800-095-56(16)	800-095-56(16)	800-095-56(16)	800-095-56(16)	800-095-56(16)	800-095-56(16)	800-095-56(16)	800-095-56(18)	800-095-56(18)	800-095-56(18)	800-095-56(18)
TEMPERATURE SENSOR	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55	800-646-55
CONDENSER FAN MOTOR	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06	800-555-05	800-555-06	800-555-06	800-555-06
CONDENSER FAN GUARD	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38	800-625-38
CONDENSER FAN	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32	800-224-28	800-224-28	800-224-28	800-224-32
MOTOR MOUNT	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20	800-154-20
MICROPROCESSOR USER INTERFACE BOARD	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50	800-646-50
MICROPROCESSOR MAIN BOARD	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)	800-646-51(2)
EXPANSION VALVE	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55	800-181-55
EXPANSION VALVE BOARD	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66	800-646-66
FILTER DRYER	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13	800-531-13
DRYER CORE	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65	800-027-65
SIGHT GLASS	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05	800-200-05
PRESSURE RELIEF VALVE	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01	800-706-01
PUMP DOWN SOLENOID VALVE	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62	800-706-62
UNDER VOLTAGE MONITOR	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42	800-013-41	800-013-44	800-013-42	800-013-42
TRANSFORMER (24V)	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00	800-012-00
HOT GAS BYPASS VALVE	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08	800-533-08
HOT GAS BYPASS SOLENOID	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60	800-705-97	800-705-97	800-705-97	800-706-60
WATER FLOW SWITCH	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41	800-557-41
SPRING ISOLATORS	800-047-13(4) 800-047-15(4)	800-047-13(4) 800-047-15(4)	800-047-13(4) 800-047-15(4)	800-047-13(4) 800-047-15(4)	800-047-14(4) 800-047-15(4)	800-047-14(4) 800-047-15(4)	800-047-14(4) 800-047-15(4)	800-047-14(4) 800-047-15(4)	800-047-14(2) 800-047-15(4) 800-047-33(2)	800-047-14(2) 800-047-15(4) 800-047-33(2)	800-047-14(2) 800-047-15(4) 800-047-33(2)	800-047-14(2) 800-047-15(4) 800-047-33(2)
COMPRESSOR CIRCUIT BREAKER	800-607-33(4) 800-607-31(4)	800-607-40(4) 800-607-38(4)	800-607-30(4) 800-607-39(4)	800-607-30(4) 800-607-39(4)	800-607-41(2) 800-607-32(2) 800-607-33(2) 1 2	800-607-30(2) 800-607-38(2) 800-607-40(2) 800-607-39(2)	800-607-30(4) 800-607-38(4) 800-607-40(4)	800-607-30(4) 800-607-38(4) 800-607-40(4)	800-607-41(4) 800-607-32(4) 800-607-39(4)	800-607-30(4) 800-607-38(4) 800-607-39(4)	800-607-30(4) 800-607-40(4)	800-607-30(8)

NOTE: 1. REFER TO PHYSICAL SPECIFICATION DATA FOR COMPRESSOR & CHILLER BARREL PART NUMBERS. 2. DATA ENCLOSED BY PARENTHESIS MEANS QUANTITY.