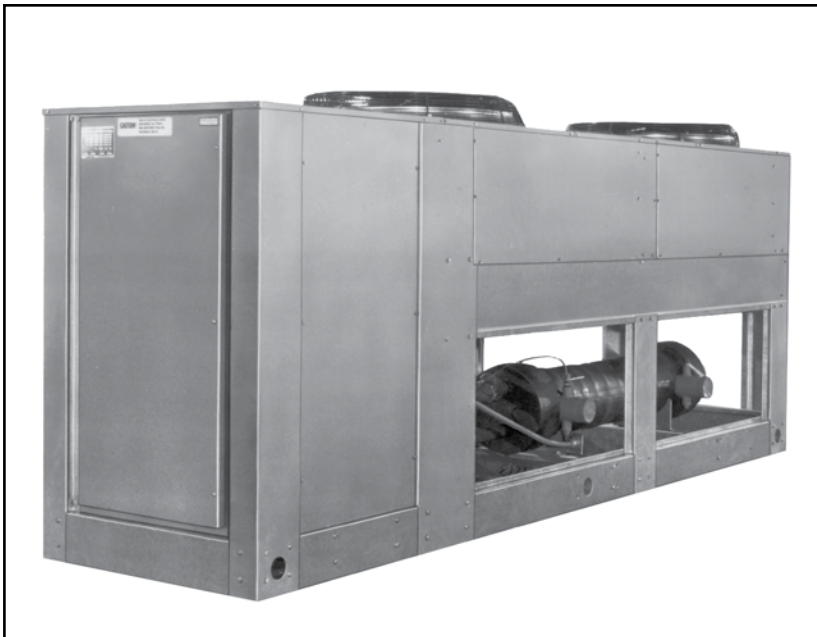




# Product Chillers

## APPLICATIONS

- Wineries
- Bottling
- Product Storage
- Product Ripening
- Meat Processing
- Florist Boxes
- Packaging Rooms
- Walk-in Coolers
- Beverage Boxes



# CENTURY PRODUCT CHILLERS

## STANDARD FEATURES

### Unit Configuration

- Low Profile
- Base Rail Configuration
- Multiple Rigging Points
- Removable Access Panels
- Hinged Control Panel Access
- Closed Cell Polyvinyl Evaporator Insulation
- Evaporator Heater Cable with Ambient Stat
- Insulated Suction Lines
- ETL Certified Unit

### Refrigerant Circuit

- Liquid Line Shut Off Valve with Charging Port
- Liquid Line Drier
- Liquid Line Sight Glass / Moisture Indicator
- "MOP" Type" Thermostatic Expansion Valve
- Oil Failure Switch on each Compressor (CS, CD, & CM units)
- High Pressure Safety Control
- Low Pressure Operating Control
- Freeze / Low Charge Control with Time Delay Circuit
- Refrigerant Operating Charge

### Condenser

- Direct Drive Condenser Fans
- Epoxy Powder Coated Fan Guards
- Three Phase Motors with Permanently Lubricated Ball Bearings
- Fan Staging Head Pressure Control to +20° F
- Sub-Circuit Fan Motor Fusing with Internal Overload Motor Protector
- Fan Motor Contactor
- Plate Fin / Full Tube Collar Condenser Coils
- Baffled Condenser Plenum

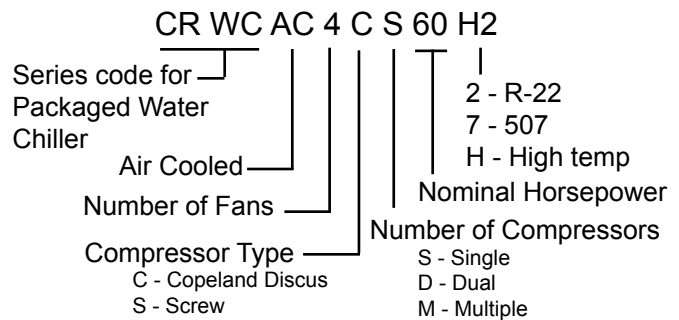
### Electrical Components

- Leaving Water Temperature Control
- Fused Control Circuit
- Prewired Controls
- Flow Switch for Field Installation
- Auto / Demand Pumpdown Switch
- UL 508 Certified

### Compressors

- Energy Efficient Copeland Discus Compressors
- Compressor Service Valves
- Internal Compressor Overload Protection
- Compressor Fusing (CD & CM units)
- Compressor Contactors
- Compressor Time Delay (CD & CM units)
- Compressor Isolator Pads
- Oil Equalization System each Circuit (CM units)

## NOMENCLATURE



Product Chillers are designed and rated in accordance with ARI standard 590. All refrigerant containing vessels are constructed in accordance with ANSI B9.1. Electrical components are UL approved and applied in accordance with their approved usage. Wiring and electrical construction is in accordance with the National Electric Code. Units are ETL certified and labeled. The control panels meet UL 508 standards and are so labeled.

"CS" chillers offer a tonnage range of 5 to 47 tons with unmatched versatility in design. Century product chillers make it possible to design a system with smaller tonnage requirements knowing that a chiller with such features as semi-hermetic compressors, single circuit simplicity, and base rail configuration is available with a full compliment of accessories ranging from gauge panels to service indication lights; phase failure monitors to unit disconnects; and copper fin condenser coils to special surface coatings.

"CD" packaged chillers combine many of the features and benefits of the "CM" chillers with capacities from 10 to 93 tons, offering one of the finest mid-range dual circuit air-cooled packaged chillers available. Independent circuits offer redundancy in operation and allow for a more dependable chiller. Each circuit is protected by an independent set of safeties which assures proper circuit protection. Each compressor is protected by an inherent thermistor embedded in each of the three windings providing proper thermal protection. Each "CD" chiller is fabricated on a formed steel base for ease of handling and installation.

"CM" Chillers offer a capacity range of 102 to 148 tons with part load EERs as high as 16.6. These excellent efficiencies are accomplished with dependable components such as dual ported thermostatic expansion valves, high efficiency Discus compressors, shell and tube type evaporators with removable heads and condensers with 1/2" copper tubes and a maximum fin spacing of 14 fins per inch. Add to the excellent efficiencies and dependable components the structural integrity of a welded steel base and the accessibility of removable side screens and you have a package chiller designed to operate with reliability not only for the first year, but for years to come.

# AVAILABLE OPTIONS

**TOTALLY ENCLOSED FAN MOTOR** - Totally enclosed non-ventilated motors are available for corrosive or hazardous environments.

**GAUGES\*\***- Oil, high, and low pressure gauges are optional on all Century' chillers. Gauges may also be supplied with manual shut off valves.

**CYLINDER UNLOADING\***- Additional steps of cylinder unloading are available to meet today's part load design requirements.

**HOT GAS BYPASS** - Standard hot gas bypass, includes hand isolation valve, regulator and solenoid mounted, wired, and piped.

**CONTROL CIRCUIT TRANSFORMER** - A factory mounted control transformer allows 115-volt control where a separate power source is not available. 115-volt convenience outlet is also available upon request.

**ALARM CIRCUIT WITH HORN** - Allows for audible alarm on oil, high, or low pressure failure. Dry contacts for remote control are available.

**GUARANTEED OFF TIMER** - 3 to 30 minute timers are available to insure against compressor short cycling.

**PART WINDING START\*** - Factory wired part winding start to reduce power requirements at start-up.

**INDICATING LIGHTS** - When required, indicating lights can be factory installed for visual confirmation of system operation.

**PHASE FAILURE / UNDER VOLTAGE PROTECTION** - Optional factory mounted in control panel to protect against "Brown out" and phase failure conditions.

**LOW AMBIENT HEAD PRESSURE CONTROL** - Low ambient head pressure control is standard to 20° on all chillers. However, additional control by condenser flooding to -20° is available.

**PRESSURE RELIEF** - Pressure relief valves and/ or bull's-eye sight glasses are available for factory mounting.

**PAINT** - Enamel or Epoxy paint systems are available. Gray color is standard; however, color selection to match surrounding decor is available.

**PUMP PACKAGES** - Complete factory mounted, piped and wired pump packages designed for the specific application.

**COATED CONDENSER COILS** - Available as an option for corrosive environments. We offer options for copper fins, acrylic fins, or phenolic coated fins.

**THREE-VALVE BYPASS** - May be factory installed to allow for drier bypass and change-out during unit operation.

**DISCONNECT SWITCH** - Fused and non-fused disconnects may be factory installed for single point connections.

**REFRIGERATION SPECIALTIES** - A full line of refrigeration specialties such as suction accumulators, suction/discharge vibrasorbers, hot gas mufflers, etc. are optional for factory mounting and piping.

**LOW AMBIENT LOCKOUT** - Available as an option to prevent unit operation below an adjustable set point. This protects a system from being inadvertently started in ambients for which it was not designed.

**AUTOMATIC LEAD LAG** - Automatic lead lag switch available to sequence starting of compressors on every system cycle.

**CIRCUIT BREAKER** - Optional on all chillers. Circuit breaker may be installed in lieu of system fusing.

**LOAD LIMITING PRESSURE STAT** - Available as an option to prevent nuisance safety trips on a "Hot" start. The Pressure Stat monitors head pressure, as a direct result of water temperature and unloads the system when water temperature becomes too high. This allows the unit to gradually satisfy the load conditions without the usual nuisance trips associated with "Hot" starts.

**ELAPSED TIME METERS** - Meters give a visual display of the accumulative hours that a compressor has operated. Allows for easier scheduling of preventive maintenance.

**HYDRONIC ACCESSORIES** - A full line of options are available for hydronic systems. Tanks, valves, heat exchangers, and many other items are available.

**MICROPROCESSOR CONTROLS** - Full PLC capabilities for all internal control functions. Controls can also have open protocol interface with building systems via BACnet or LonWorks®.

**ACOUSTIC OPTIONS** - Units can be equipped with various options such as compressor wraps, acoustic boxes, low speed prop fans, centrifical fans, and attenuating louvers to meet specific sound requirements.

\* - These options available only on units with type "C" compressors.

\*\* - High and Low Pressure Gauges are available on all units. Oil Pressure Gauge not available on "L" Series compressors.

# GENERAL SPECIFICATIONS

Product Chillers are designed for easy handling and reduced installation costs. All Product Chillers are factory tested prior to shipment. Units are ready for field installation.

## CABINET

Product Chillers are constructed of heavy duty mill galvanized steel panels and formed structural members. Units are base rail configured for distributed roof loadings, convenient handling and easier installation. Lifting points and mounting holes are provided on each unit.

## COMPRESSORS

Product Chillers with type "C" compressors are equipped with Copeland Discus semi-hermetic compressors. These high efficiency, industrial grade semi-hermetic compressors are designed to provide field serviceability for easier maintenance and optimum system performance. Copeland compressor utilize blocked suction unloading which allows for reduced power consumption during un-loaded conditions and reduces total yearly power usage. Suction and dis-charge service valves, suction strainer, charging port and oil pumps are all standard with type "C" compressor.



## COOLER

Direct expansion shell and tube coolers are utilized on product chillers. Water flows through the baffled shell and multiple compressor arrangements are provided with two independent refrigerant circuits. The shell is seamless carbon steel; internal tubes are copper with extended internal surfaces. Tubes are roller expanded into grooved tube sheets. Coolers are insulated with a 3/4" closed cell foam with a "K" factor of 0.26. Cooler heater cables with ambient thermostat for freeze protection is standard on all Century Product Chillers. All coolers are ASME constructed and stamped accordingly.

## CONDENSER

The casing is heavy duty, corrosion resistant steel. Each fan section is separated by baffles to prevent air bypass.

The condenser coils are constructed with seamless copper tubes arranged in a staggered row pattern and mechanically expanded into plated type configured aluminum fins with full fin collars.

Quiet and efficient direct driven, multiple propeller fans with steel hubs and Enamel Powder coated blades discharge vertically from formed venturis to provide maximum static efficiency and minimize noise generation. Condenser fans are driven by three-phase motors that are specifically designed for vertical shaft direct drive applications. They feature permanently lubricated ball bearings and have inherent thermal protection. Fan guards are of heavy gauge, close meshed steel wire construction with a Epoxy Powder coating.

## ELECTRICAL CONTROL CENTER

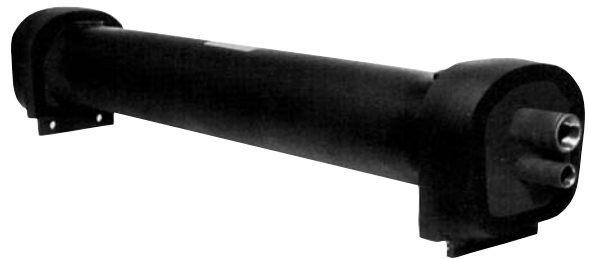
The Century air cooled water chiller is shipped with operating and safety controls including:

- Circuit Pump Down Switch
- Adjustable Oil Pressure Control-Manual Reset ("C" type Compressor only)
- Adjustable High Pressure Control - Manual Reset
- Pumpdown Pressure Control - Auto Reset
- Thermostat - Chiller Water Modulation
- Adjustable Freeze stat - Low Evaporator Pressure
- Fan Staging Controls - Pressure Actuated
- Compressor Lead / Lag Switch - Manual

## POWER CONTROLS INCLUDE:

- Compressor Motor Contactors
- Fan Motor Contactors
- Compressor Motor Fuses
- Fan Motor Fuses
- Control Circuit Fuses
- Power Terminal Blocks
- Separate 115-Volt Control Circuit Terminal Blocks
- Staging Relays
- Compressors Crankcase Heater Relays
- Field Auxiliary Control Terminals

\*Fuses are not provided on "CS" units.



# PHYSICAL DATA

<b>Product Chiller</b>		<b>CS5</b>	<b>CS8</b>	<b>CS10</b>	<b>CS15</b>	<b>CS20</b>
Nominal Tons		5.30	7.49	10.61	14.04	15.81
L" x W" x H" (± 1/2")		76" x 34" x 46"	87" x 34" x 46"	87" x 34" x 46"	120" x 34" x 46"	120" x 34" x 46"
Shipping Weight		990 lbs.	930 lbs.	1155 lbs.	1320 lbs.	1480 lbs.
Refrigerant Circuits		1	1	1	1	1
<b>COMPRESSOR(s)</b>						
Nominal Horsepower		5	7.5	10	15	20
<b>CONDENSER</b>						
Rows / Fins Per Inch (FPI)		3 / 14	2 / 14	4 / 14	2 / 14	3 / 14
<b>CONDENSER FAN(s)</b>						
Qty. / Diameter		1 / 24"	1 / 28"	1 / 28"	2 / 28"	2 / 28"
Horsepower - Ea.		1/2	1	1	1	1
RPM		1,100	1,100	1,100	1,100	1,100
<b>DIRECT EXPANSION COOLER</b>						
Water Volume		1.6 gal.	1.4 gal.	1.2 gal.	3.4 gal.	3.2 gal.
Maximum Water Pressure		250 PSIG	250 PSIG	250 PSIG	250 PSIG	250 PSIG
<b>CAPACITY (Tons)</b>						
95° Ambient	42° LWT**	5.10	7.28	10.30	13.62	15.29
	45° LWT**	5.41	7.59	10.82	14.25	16.12
105° Ambient	42° LWT**	4.89	6.86	9.67	12.79	14.25
	45° LWT**	5.10	7.18	10.19	13.42	15.08

\* Based on ARI standard 590 (95° ambient and 44° leaving water temperature).

\*\* Based on a 10° TD ~ for Glycol ratings please contact the factory.

<b>Product Chiller</b>		<b>CS25</b>	<b>CS30</b>	<b>CS35</b>	<b>CS40</b>	<b>CS50</b>
Nominal Tons		20.18	23.61	29.8	35.26	41.70
L" x W" x H"		143" x 34" x 53"	143" x 34" x 53"	180" x 44" x 53"	180" x 44" x 53"	143" x 68" x 63"
Shipping Weight		1810 lbs.	1990 lbs.	2430 lbs.	2835 lbs.	3595 lbs.
Refrigerant Circuits		1	1	1	1	1
<b>COMPRESSOR(s)</b>						
Nominal Horsepower		25	30	35	40	50
<b>CONDENSER</b>						
Rows / Fins Per Inch (FPI)		3 / 14	4 / 14	3 / 14	4 / 14	3 / 14
<b>CONDENSER FAN(s)</b>						
Qty. / Diameter		2 / 28"	3 / 28"	3 / 28"	3 / 28"	4 / 28"
Horsepower - Ea.		1	1	1	1	1
RPM		1,100	1,100	1,100	1,100	1,100
<b>DIRECT EXPANSION COOLER</b>						
Water Volume		2.9 gal.	2.6 gal.	15.6 gal.	15.6 gal.	15.6 gal.
Maximum Water Pressure		250 PSIG	250 PSIG	150 PSIG	150 PSIG	150 PSIG
<b>CAPACITY (Tons)</b>						
95° Ambient	42° LWT**	19.55	22.88	28.80	33.90	40.35
	45° LWT**	20.49	23.92	30.30	35.78	42.43
105° Ambient	42° LWT**	18.41	21.53	27.00	31.72	37.86
	45° LWT**	19.34	22.46	28.50	33.49	39.83

\* Based on ARI standard 590 (95° ambient and 44° leaving water temperature).

\*\* Based on a 10° TD ~ for Glycol ratings please contact the factory.

# PHYSICAL DATA

Product Chiller		CS60	CD10	CD15	CD20	CD30				
Nominal Tons		46.80	10.92	14.56	21.94	28.60				
L" x W" x H" ( $\pm 1/2$ " )		143" x 68" x 63"	87" x 68" x 53"	87" x 68" x 53"	120" x 68" x 53"	143" x 68" x 63"				
Shipping Weight		3830 lbs.	2360 lbs.	2555 lbs.	2665 lbs.	2860 lbs.				
Refrigerant Circuits		1	2	2	2	2				
<b>COMPRESSOR(s)</b>										
Nominal Horsepower		60	5	5	7 1/2	7 1/2	10	10	15	15
<b>CONDENSER</b>										
Rows / Fins Per Inch (FPI)		4 / 14	2 / 14	2 / 14	2 / 14	2 / 14				
<b>CONDENSER FAN(s)</b>										
Qty. / Diameter		4 / 28"	2 / 24"	2 / 28"	4 / 24"	4 / 28"				
Horsepower - Ea.		1	1/2	1	1/2	1				
RPM		1,100	1,100	1,100	1,100	1,100				
<b>DIRECT EXPANSION COOLER</b>										
Water Volume		15.6 gal.	1.2 gal.	3.4 gal.	2.9 gal.	2.6 gal.				
Maximum Water Pressure		150 PSIG	250 PSIG	250 PSIG	250 PSIG	250 PSIG				
<b>CAPACITY (Tons)</b>										
95° Ambient	42° LWT**	45.34	10.50	14.14	21.22	27.77				
	45° LWT**	47.53	11.02	14.77	22.26	29.02				
105° Ambient	42° LWT**	41.91	9.88	13.31	19.97	26.21				
	45° LWT**	43.89	10.40	13.94	20.90	27.35				

\* Based on ARI standard 590 (95° ambient and 44° leaving water temperature).

\*\* Based on a 10° TD ~ for Glycol ratings please contact the factory.

Product Chiller		CD40	CD45	CD50	CD55	CD60					
Nominal Tons		32.45	37.44	40.87	44.10	47.22					
L" x W" x H"		143" x 68" x 63"	143" x 68" x 63"	143" x 68" x 63"	143" x 68" x 63"	143" x 68" x 63"					
Shipping Weight		3010 lbs.	3310 lbs.	3700 lbs.	3850 lbs.	4020 lbs.					
Refrigerant Circuits		2	2	2	2	2					
<b>COMPRESSOR(s)</b>											
Nominal Horsepower		20	20	20	25	25	25	25	30	30	30
<b>CONDENSER</b>											
Rows / Fins Per Inch (FPI)		2 / 14	3 / 14	3 / 14	4 / 14	4 / 14					
<b>CONDENSER FAN(s)</b>											
Qty. / Diameter		4 / 28"	4 / 28"	4 / 28"	4 / 28"	6 / 28"					
Horsepower - Ea.		1	1	1	1	1					
RPM		1,100	1,100	1,100	1,100	1,100					
<b>DIRECT EXPANSION COOLER</b>											
Water Volume		15.6 gal.	15.6 gal.	15.6 gal.	15.6 gal.	15.6 gal.					
Maximum Water Pressure		150 PSIG	150 PSIG	150 PSIG	150 PSIG	150 PSIG					
<b>CAPACITY (Tons)</b>											
95° Ambient	42° LWT**	31.30	36.09	39.52	42.54	45.66					
	45° LWT**	33.07	38.06	41.60	44.82	48.05					
105° Ambient	42° LWT**	28.91	33.70	37.02	39.83	42.74					
	45° LWT**	30.58	35.57	38.90	41.91	45.03					

\* Based on ARI standard 590 (95° ambient and 44° leaving water temperature).

\*\* Based on a 10° TD ~ for Glycol ratings please contact the factory.



# PHYSICAL DATA

<b>Product Chiller</b>		<b>CD65</b>	<b>CD70</b>	<b>CD75</b>	<b>CD80</b>	<b>CD90</b>					
Nominal Tons		51.10	58.10	62.70	68.22	75.71					
L" x W" x H" (± 1/2")		143" x 68" x 63"	180" x 88" x 63"	180" x 88" x 63"	180" x 88" x 63"	180" x 88" x 63"					
Shipping Weight		4175 lbs.	5045 lbs.	5170 lbs.	5330 lbs.	5247 lbs.					
Refrigerant Circuits		2	2	2	2	2					
<b>COMPRESSOR(s)</b>											
Nominal Horsepower		30	35	35	35	40	40	40	40	40	50
<b>CONDENSER</b>											
Rows / Fins Per Inch (FPI)		4 / 14	3 / 14	3 / 14	4 / 14	4 / 14					
<b>CONDENSER FAN(s)</b>											
Qty. / Diameter		6 / 28"	6 / 28"	6 / 28"	6 / 28"	8 / 28"					
Horsepower - Ea.		1	1	1	1	1					
RPM		1,100	1,100	1,100	1,100	1,100					
<b>DIRECT EXPANSION COOLER</b>											
Water Volume		13.7 gal.	13.7 gal.	13.7 gal.	13.7 gal.	22.0 gal.					
Maximum Water Pressure		150 PSIG	150 PSIG	150 PSIG	150 PSIG	150 PSIG					
<b>CAPACITY (Tons)</b>											
95° Ambient	42° LWT**	49.40	56.20	60.70	65.83	73.11					
	45° LWT**	52.00	59.00	63.80	69.37	76.96					
105° Ambient	42° LWT**	46.30	52.90	57.10	61.78	68.74					
	45° LWT**	48.70	55.60	59.90	65.00	72.38					

\* Based on ARI standard 590 (95° ambient and 44° leaving water temperature).

\*\* Based on a 10° TD ~ for Glycol ratings please contact the factory.

<b>Product Chiller</b>		<b>CD100</b>	<b>CD110</b>	<b>CD120</b>	<b>CM130</b>	<b>CM140</b>						
Nominal Tons		82.47	89.02	92.87	102.20	115.90						
L" x W" x H"		180" x 88" x 63"	180" x 88" x 63"	180" x 88" x 63"	264" x 96" x 63"	264" x 96" x 63"						
Shipping Weight		6560 lbs.	6790 lbs.	6650 lbs.	8310 lbs.	8480 lbs.						
Refrigerant Circuits		2	2	2	2	2						
<b>COMPRESSOR(s)</b>												
Nominal Horsepower		50	50	50	60	60	60	60	30/35	30/35	35/35	35/35
<b>CONDENSER</b>												
Rows / Fins Per Inch (FPI)		3 / 14	4 / 14	4 / 14	3 / 14	3 / 14						
<b>CONDENSER FAN(s)</b>												
Qty. / Diameter		8 / 28"	8 / 28"	8 / 28"	8 / 28"	12 / 28"						
Horsepower - Ea.		1	1	1	1	1						
RPM		1,100	1,100	1,100	1,100	1,100						
<b>DIRECT EXPANSION COOLER</b>												
Water Volume		22.0 gal.	25.7 gal.	25.7 gal.	25.7 gal.	34.5 gal.						
Maximum Water Pressure		150 PSIG	150 PSIG	150 PSIG	150 PSIG	150 PSIG						
<b>CAPACITY (Tons)</b>												
95° Ambient	42° LWT**	79.98	86.22	89.96	98.90	112.20						
	45° LWT**	83.82	90.27	94.33	103.90	117.80						
105° Ambient	42° LWT**	75.40	80.60	83.41	93.00	105.80						
	45° LWT**	79.04	84.34	87.36	97.70	111.10						

\* Based on ARI standard 590 (95° ambient and 44° leaving water temperature).

\*\* Based on a 10° TD ~ for Glycol ratings please contact the factory.

# PHYSICAL DATA

Product Chiller	CM150	CM160	CM180	
Nominal Tons	126.80	135.41	147.58	
L" x W" x H" (± 1/2")	264" x 96" x 63"	264" x 96" x 63"	264" x 96" x 63"	
Shipping Weight	8700 lbs.	8830 lbs.	9570 lbs.	
Refrigerant Circuits	2	2	2	
<b>COMPRESSOR(s)</b>				
Nominal Horsepower	35/40	35/40	40/40	
<b>CONDENSER</b>				
Rows / Fins Per Inch (FPI)	4 / 14	4 / 14	4 / 14	
<b>CONDENSER FAN(s)</b>				
Qty. / Diameter	12 / 28"	12 / 28"	16 / 28"	
Horsepower - Ea.	1	1	1	
RPM	1,100	1,100	1,100	
<b>DIRECT EXPANSION COOLER</b>				
Water Volume	34.5 gal.	34.5 gal.	34.5 gal.	
Maximum Water Pressure	150 PSIG	150 PSIG	150 PSIG	
<b>CAPACITY (Tons)</b>				
95° Ambient	42° LWT**	122.90	131.04	143.10
	45° LWT**	128.80	137.70	149.97
105° Ambient	42° LWT**	115.80	123.14	134.78
	45° LWT**	121.50	129.38	141.44

\* Based on ARI standard 590 (95° ambient and 44° leaving water temperature).

\*\* Based on a 10° TD ~ for Glycol ratings please contact the factory.

# ELECTRICAL DATA

Product Chiller Models	Electrical Supply	Compressor								Fan Motors Supply		Single Power Supply			Dual Power Supply			Control Amps 115V	
		RLA				LRA				Qty.	HP (ea.)	Amps (ea.)	Unit MCA	Rec. Fuse	Max. Fuse	Unit MCA	Rec. Fuse		Max. Fuse
		#1	#2	#3	#4	#1	#2	#3	#4										
CS5	208-230/3	20	--	--	--	115	--	--	--	1	1/2	2.2	27.5	35	45	--	--	--	2
	460/3	10	--	--	--	53	--	--	--			1	15	20	20	--	--	--	2
CS8	208-230/3	28.7	--	--	--	175	--	--	--	1	1	4.6	40.5	50	60	--	--	--	2
	460/3	13.3	--	--	--	75	--	--	--			2.3	18.9	25	30	--	--	--	2
CS10	208-230/3	39.1	--	--	--	215	--	--	--	1	1	4.6	53.5	60	90	--	--	--	2
	460/3	18	--	--	--	106	--	--	--			2.3	24.8	25	40	--	--	--	2
CS15	208-230/3	53.5	--	--	--	275	--	--	--	2	1	4.6	76	90	125	--	--	--	2
	460/3	26.5	--	--	--	138	--	--	--			2.3	37.7	40	60	--	--	--	2
CS20	208-230/3	60	--	--	--	308	--	--	--	2	1	4.6	84.2	100	125	--	--	--	2.5
	460/3	30	--	--	--	154	--	--	--			2.3	42.1	50	70	--	--	--	2.5
CS25	208-230/3	74	--	--	--	428	--	--	--	2	1	4.6	101.7	125	175	--	--	--	2.5
	460/3	37	--	--	--	214	--	--	--			2.3	50.9	60	80	--	--	--	2.5
CS30	208-230/3	84	--	--	--	470	--	--	--	3	1	4.6	118.8	150	200	--	--	--	2.5
	460/3	42	--	--	--	235	--	--	--			2.3	59.4	70	100	--	--	--	2.5
CS35	208-230/3	107	--	--	--	565	--	--	--	3	1	4.6	148	175	250	--	--	--	2.5
	460/3	53.5	--	--	--	283	--	--	--			2.3	74	100	125	--	--	--	2.5
CS40	208/3	153	--	--	--	660	--	--	--	3	1	4.6	205	225	350	--	--	--	3.6
	230/3	136	--	--	--	594	--	--	--			4.6	183.8	200	300	--	--	--	3.6
	460/3	68	--	--	--	297	--	--	--			2.3	91.9	100	150	--	--	--	3.6
CS50	208-230/3	162	--	--	--	1070	--	--	--	4	1	4.6	220.9	250	400	--	--	--	3.6
	460/3	81	--	--	--	535	--	--	--			2.3	110.5	125	200	--	--	--	3.6
CS60	208-230/3	202	--	--	--	1070	--	--	--	4	1	4.6	270.9	300	500	--	--	--	3.6
	460/3	101	--	--	--	535	--	--	--			2.3	135.5	150	250	--	--	--	3.6



# ELECTRICAL DATA

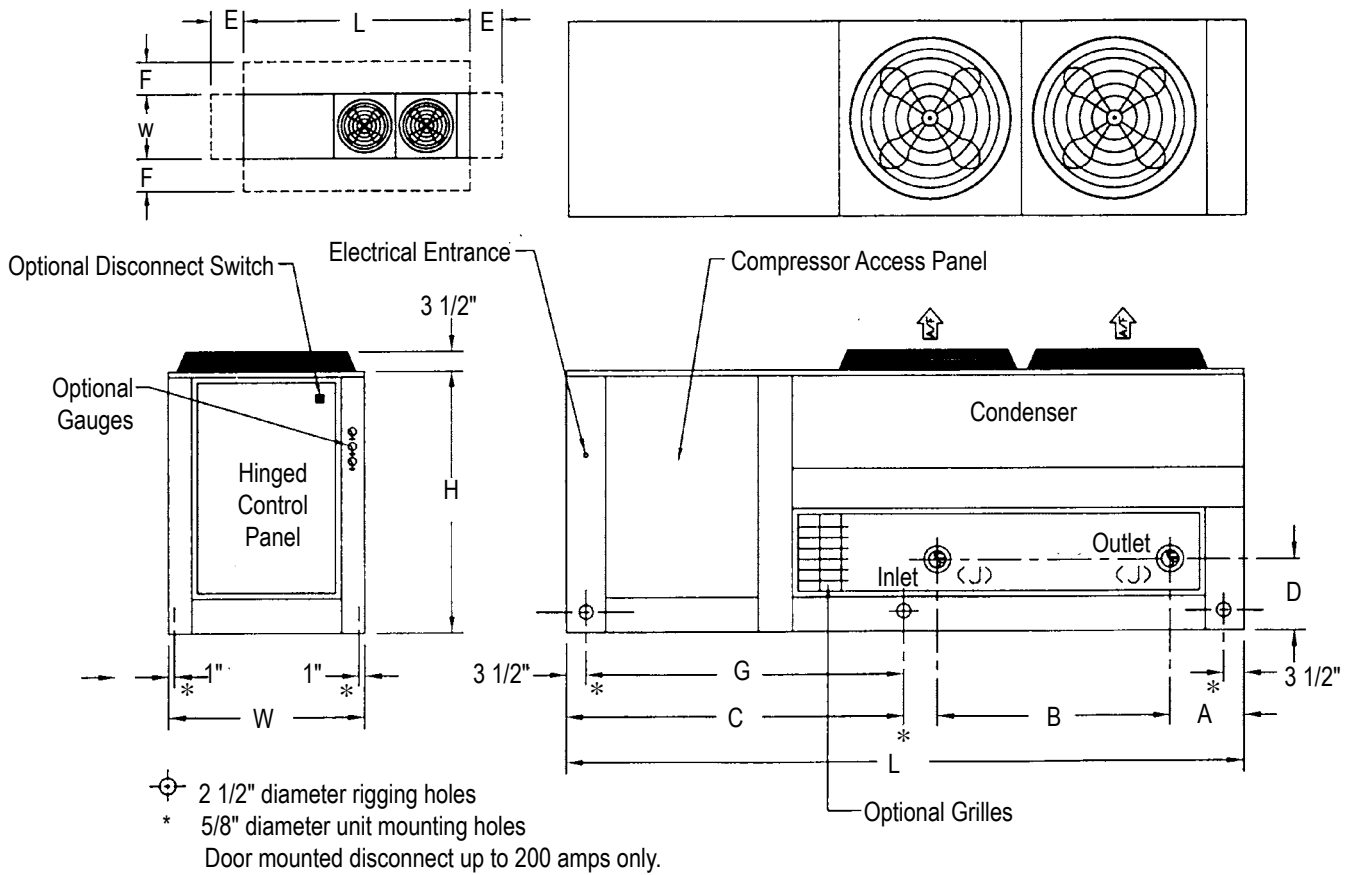
Product Chiller Models	Electrical Supply	Compressor								Fan Motors Supply			Single Power Supply			Dual Power Supply			Control Amps 115V
		RLA				LRA				Qty.	HP (ea.)	Amps (ea.)	Unit MCA	Rec. Fuse	Max. Fuse	Unit MCA	Rec. Fuse	Max. Fuse	
		#1	#2	#3	#4	#1	#2	#3	#4										
CD10	208-230/3	20	20	--	--	115	115	--	--	2	1/2	2.2	49.4	60	70	--	--	--	2.6
	460/3	10	10	--	--	53	53	--	--			1.0	24.7	30	35	--	--	--	2.6
CD15	208-230/3	28.7	28.7	--	--	175	175	--	--	2	1	4.6	73.8	90	100	--	--	--	2.6
	460/3	13.3	13.3	--	--	75	75	--	--			2.3	34.5	40	45	--	--	--	2.6
CD20	208-230/3	39	39	--	--	215	215	--	--	4	1/2	2.2	96.6	110	125	--	--	--	2.6
	460/3	18	18	--	--	106	106	--	--			1.1	45.0	50	60	--	--	--	2.6
CD30	208-230/3	53.5	53.5	--	--	275	275	--	--	4	1	4.6	138.8	150	175	--	--	--	2.6
	460/3	26.5	26.5	--	--	138	138	--	--			2.3	68.8	75	90	--	--	--	2.6
CD40	208-230/3	60	60	--	--	308	308	--	--	4	1	4.6	153.4	175	200	--	--	--	3.8
	460/3	30	30	--	--	154	154	--	--			2.3	76.7	90	100	--	--	--	3.8
CD45	208-230/3	74	60	--	--	428	308	--	--	4	1	4.6	170.9	200	225	--	--	--	3.8
	460/3	37	30	--	--	214	154	--	--			2.3	85.5	100	110	--	--	--	3.8
CD50	208-230/3	74	74	--	--	428	428	--	--	4	1	4.6	184.9	225	250	--	--	--	3.8
	460/3	37	37	--	--	214	214	--	--			2.3	92.5	110	125	--	--	--	3.8
CD55	208-230/3	84	74	--	--	470	428	--	--	4	1	4.6	197.4	225	250	--	--	--	3.8
	460/3	42	37	--	--	235	214	--	--			2.3	98.7	110	125	--	--	--	3.8
CD60	208-230/3	84	84	--	--	470	470	--	--	6	1	4.6	216.6	250	300	--	--	--	3.8
	460/3	42	42	--	--	235	235	--	--			2.3	108.3	125	150	--	--	--	3.8
CD65	208-230/3	107	84	--	--	565	470	--	--	6	1	4.6	245	250	350	--	--	--	3.8
	460/3	53.5	42	--	--	283	235	--	--			2.3	123	150	175	--	--	--	3.8
CD70	208-230/3	107	107	--	--	565	565	--	--	6	1	4.6	268	300	350	--	--	--	3.8
	460/3	53.5	53.5	--	--	283	283	--	--			2.3	134	150	175	--	--	--	3.8
CD75	208/3	153	107	--	--	660	565	--	--	6	1	4.6	326	350	450	--	--	--	5
	230/3	136	107	--	--	594	565	--	--			4.6	305	350	400	--	--	--	5
	460/3	68	53.5	--	--	297	283	--	--			2.3	152	175	200	--	--	--	5
CD80	208/3	153	153	--	--	660	660	--	--	6	1	4.6	371.9	400	500	--	--	--	6
	230/3	136	136	--	--	594	594	--	--			4.6	333.6	350	450	--	--	--	6
	460/3	68	68	--	--	297	297	--	--			2.3	166.8	175	225	--	--	--	6
CD90	208/3	153	162	--	--	660	1070	--	--	8	1	4.6	392.3	400	600	209.6	225	350	6.3
	230/3	136	162	--	--	594	1070	--	--			4.6	275.3	400	550	188.4	200	300	6.3
	460/3	68	81	--	--	297	535	--	--			2.3	187.7	200	300	94.2	100	150	6.3
CD100	208-230/3	162	162	--	--	1070	1070	--	--	8	1	4.6	401.3	450	600	220.9	250	400	6.3
	460/3	81	81	--	--	535	535	--	--			2.3	200.7	225	300	110.5	125	200	6.3
CD110	208-230/3	162	202	--	--	1070	1070	--	--	8	1	4.6	451.3	500	700	220.9	250	400	6.4
	460/3	81	101	--	--	535	535	--	--			2.3	225.6	250	350	110.5	125	200	6.4
CD120	208-230/3	202	202	--	--	1070	1070	--	--	8	1	4.6	491.3	500	700	270.9	300	500	6.4
	460/3	101	101	--	--	535	535	--	--			2.3	245.6	250	350	135.5	150	250	6.4
CM130	208-230/3	107	107	84	84	565	565	470	470	8	1	4.6	--	--	--	237	300	300	6.5
	460/3	53.5	53.5	42	42	283	283	235	235			2.3	223	250	250	118.1	150	150	6.5
CM140	208-230/3	107	107	107	107	565	565	565	565	12	1	4.6	--	--	--	269	300	350	6.8
	460/3	53.5	53.5	53.5	53.5	283	283	283	283			2.3	255	300	300	135	150	175	6.8
CM150	208/3	153	153	107	107	660	660	565	565	12	1	4.6	--	--	--	326	350	450	9
	230/3	136	136	107	107	594	594	565	565			4.6	--	--	--	305	350	400	9
	460/3	68	68	53.5	53.5	297	297	283	283			2.3	288	300	350	153	175	200	9
CM160	208/3	153	153	153	153	660	660	660	660	12	1	4.6	--	--	--	372	400	500	12
	230/3	136	136	136	136	594	594	594	594			4.6	--	--	--	334	350	450	12
	460/3	68	68	68	68	297	297	297	297			2.3	317	350	350	167	200	225	12
CM180	208/3	162	162	153	153	1070	1070	660	660	16	1	4.6	--	--	--	392.3	400	550	12
	230/3	162	162	136	136	1070	1070	594	594			4.6	--	--	--	375.3	400	500	12
	460/3	81	81	68	68	535	535	297	297			2.3	355	400	450	187.7	200	250	12

**NOTES:** 1 - Voltage limits are as follows: 

Normal Voltage	Min.	Max.
208	187	229
230	208	253
460	414	506

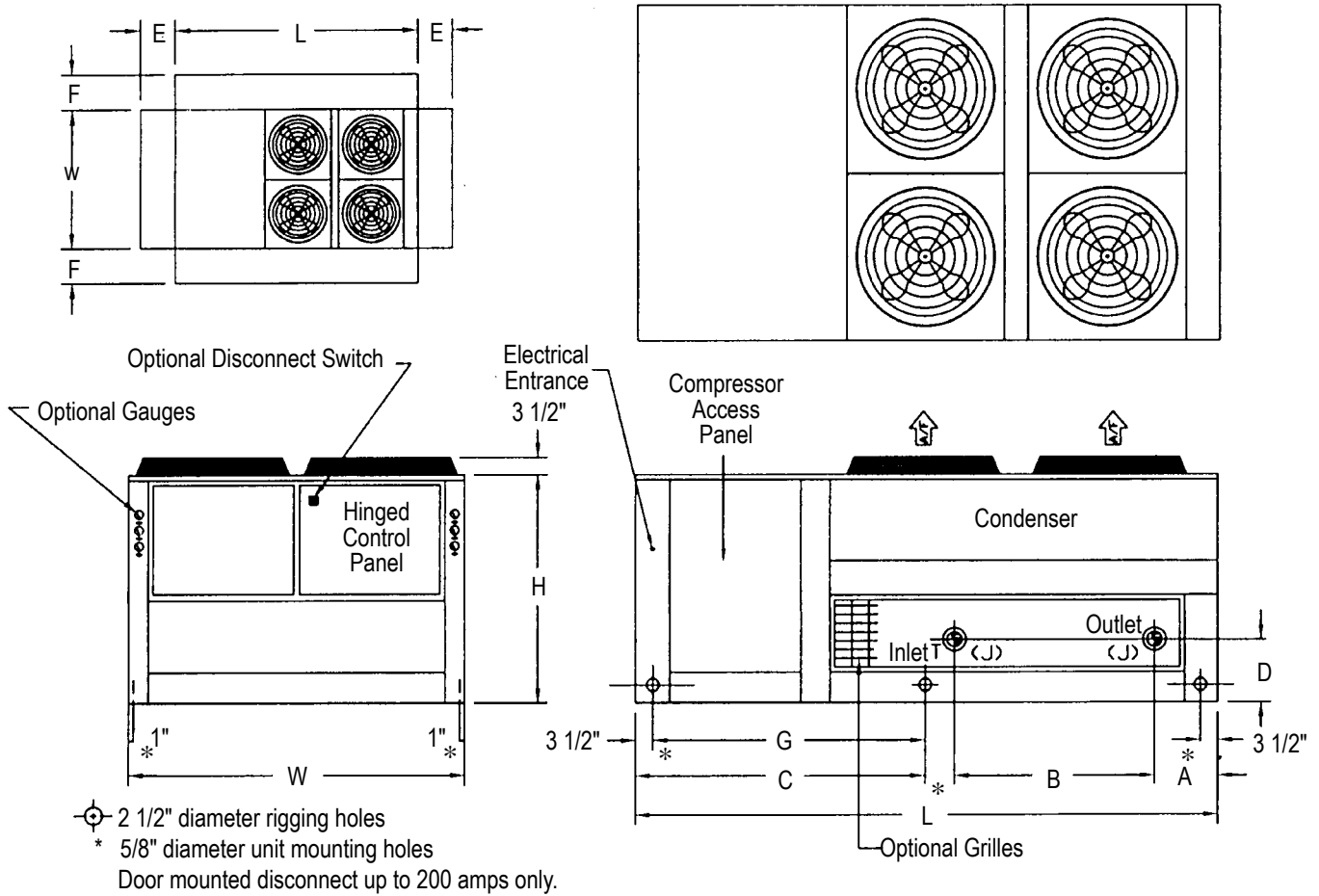
 2 - MCA (Minimum Circuit Ampacity) is calculated based on all concurrent loads applied to the circuit. (Largest load x 1.25 + 100% of all other loads excluding the control circuit). Use copper conductors only. 3 - "Max Fuse" refers to the maximum size dual element fuse allowed. Fuse clips should be provided based on this rating. (Largest load x 2.25 + 100% of all other loads)

# DIMENSIONAL DATA



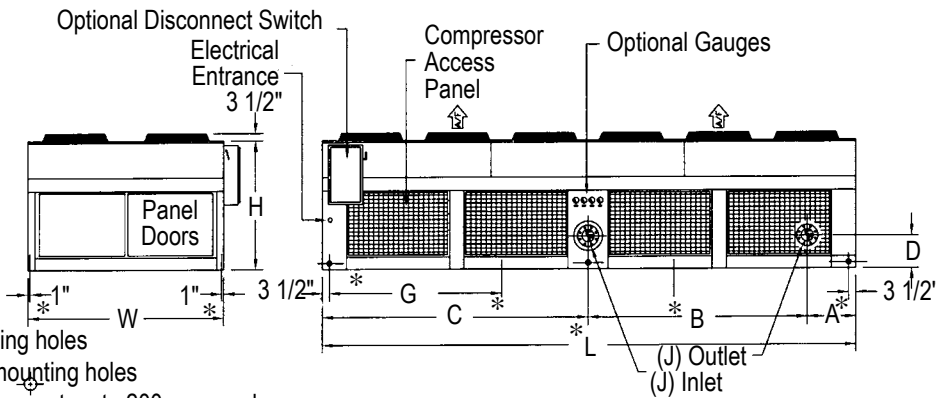
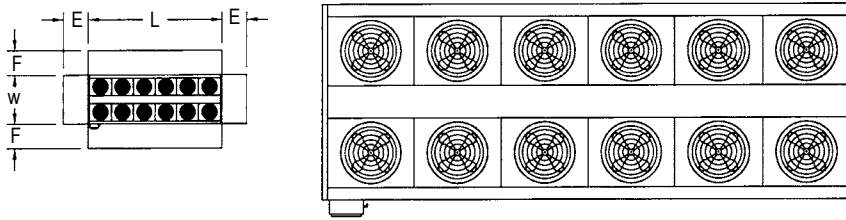
Model	Unit Dimensions (± 1/2")										
	"W"	"L"	"H"	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"
CS5	34"	76"	46"	13 7/8"	31 3/4"	--	11"	36"	18"	--	1 1/4" FPT
CS8	34"	87"	46"	19 3/8"	31 1/4"	--	11"	36"	18"	--	1 1/2" FPT
CS10	34"	87"	46"	19 3/8"	31 1/4"	--	11"	36"	18"	--	2" FPT
CS15	34"	120"	46"	25 1/2"	30 3/4"	60"	12"	36"	18"	56 1/2"	2" FPT
CS20	34"	120"	46"	26 1/16"	29 5/8"	60"	12"	36"	18"	56 1/2"	2 1/2" FPT
CS25	34"	143"	53"	36 3/16"	29 5/8"	71 1/2"	12"	36"	24"	68"	3" FPT
CS30	34"	143"	53"	36 3/16"	29 5/8"	71 1/2"	12"	36"	24"	68"	3" FPT
CS35	44"	180"	53"	43 1/4"	50"	90"	14 3/8"	36"	24"	86 1/2"	4" FLG
CS40	44"	180"	53"	43 1/4"	50"	90"	14 3/8"	36"	24"	86 1/2"	4" FLG
CS50	68"	143"	63"	30 1/4"	50"	71 1/2"	14 3/8"	36"	24"	68"	4" FLG
CS60	68"	143"	63"	30 1/4"	50"	71 1/2"	14 3/8"	36"	24"	68"	4" FLG

# DIMENSIONAL DATA



Model	Unit Dimensions (± 1/2")										
	"W"	"L"	"H"	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"
CD10	68"	87"	53"	19 3/8"	31 1/4"	--	11"	36"	24"	--	2" FPT
CD15	68"	87"	53"	19 7/8"	30 3/4"	--	12"	36"	24"	--	2" FPT
CD20	68"	120"	53"	26 3/16"	29 5/8"	60"	12"	36"	24"	56 1/2"	3" FPT
CD30	68"	143"	63"	42 1/16"	29 5/8"	71 1/2"	12"	36"	36"	68"	3" FPT
CD40	68"	143"	63"	36 1/8"	50"	71 1/2"	14 3/8"	36"	36"	68"	4" FLG
CD45	68"	143"	63"	30 1/4"	50"	71 1/2"	14 3/8"	36"	36"	68"	4" FLG
CD50	68"	143"	63"	30 1/4"	50"	71 1/2"	14 3/8"	36"	36"	68"	4" FLG
CD55	68"	143"	63"	30 1/4"	50"	71 1/2"	14 3/8"	36"	36"	68"	4" FLG
CD60	68"	143"	63"	30 1/4"	50"	71 1/2"	14 3/8"	36"	36"	68"	4" FLG
CD65	68"	143"	63"	31 3/16"	48 3/16"	71 1/2"	14 3/8"	36"	36"	68"	5" FLG
CD70	88"	180"	63"	38 3/16"	48 3/16"	90"	14 3/8"	40"	36"	86 1/2"	5" FLG
CD75	88"	180"	63"	38 3/16"	48 3/16"	90"	14 3/8"	40"	36"	86 1/2"	5" FLG
CD80	88"	180"	63"	38 3/16"	48 3/16"	90"	14 3/8"	40"	36"	86 1/2"	5" FLG
CD90	88"	180"	63"	38 3/16"	48 3/16"	90"	15 3/8"	40"	36"	86 1/2"	5" FLG

# DIMENSIONAL DATA



- ⊕ 2 1/2" diameter rigging holes
- \* 5/8" diameter unit mounting holes
- Door mounted disconnect up to 200 amps only.

Model	Unit Dimensions (± 1/2")										
	"W"	"L"	"H"	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"
CD100	88"	180"	63"	53 7/8"	48 1/8"	90"	15 3/8"	40"	36"	57 2/3"	5" FLG
CD110	88"	180"	63"	53 7/8"	48 1/8"	90"	16 7/8"	40"	36"	57 2/3"	5" FLG
CD120	88"	180"	63"	53 7/8"	48 1/8"	90"	16 7/8"	40"	36"	57 2/3"	5" FLG
CM130	96"	264"	63"	36"	48 1/8"	132"	16 7/8"	44"	36"	85 2/3"	5" FLG
CM140	96"	264"	63"	54 9/16"	47"	132"	17 7/8"	44"	36"	85 2/3"	6" FLG
CM150	96"	264"	63"	54 9/16"	47"	132"	17 7/8"	44"	36"	85 2/3"	6" FLG
CM160	96"	264"	63"	54 9/16"	47"	132"	17 7/8"	44"	36"	85 2/3"	6" FLG
CM180	96"	264"	63"	55 7/8"	47"	132"	17 7/8"	44"	36"	85 2/3"	6" FLG

# SEQUENCE OF OPERATION

Product Chillers as standard include basic safety and operating controls consisting of the following:

- A. Adj. High Pressure Failure Control (Manual Reset)
- B. Adj. Oil Failure Ctrl. (Manual Reset)-C Series Only
- C. Low Pressure Control (Auto Reset)
- D. Adj. Freeze/ Low Pressure Failure (Manual Reset)
- E. Compressor Inherent Overload Protection
- F. Fan Motor Inherent Overload Protection
- G. Compressor and Fan Motor Contactors
- H. Compressor Crankcase Heaters
- I. Return Water Temperature Control
- J. Liquid Line Solenoid & Thermal Expansion Valve
- K. Control Circuit Fusing
- L. Motor Fusing (Compressor and Fan Motor)
- M. Flow Switch (Field Installation)

The following sequence of operation is typical for a dual compressor unit. The sequence for other units are similar in operation, but may have variations which require individual interpretations. Refer to wiring diagram furnished with unit for specific information.

With power supply and control voltage to unit, and all safety controls satisfied, a call for cooling (CST-1) will energize liquid line solenoid (LLS-1) and refrigerant will flow into evaporator circuit. R-3 relay is in parallel to the liquid line solenoid, and will shunt around the low pressure operating (pump-out) control and energize compressor contactors. If additional cooling is required, the second step of return water thermostat (CST-2) will energize the second circuit in like manner.

With cooling demand satisfied, return water stat will open and de-energize liquid line solenoid and shunt relay. Refrigerant flow will stop and compressor will pumpdown and be de-energized by low pressure (pumpdown) control.

Each circuit is protected by safety controls for high pressure, low pressure and oil pressure in addition to motor overload protection. If any of these devices should open due to abnormal conditions, the compressor is de-energized and requires a manual reset.

# ENGINEERING SPECIFICATIONS

## **CABINET**

Shall be constructed of mill galvanized sheet steel having formed frame members and removable access panels. All units except "CM" units will have formed steel perimeter base rail. All "CM" units shall have structural steel welded bases. All refrigerant containing vessels are to be constructed in accordance with ANSI B9.1 code. Each electrical component is to be U.L. Approved, and applied in accordance with its appropriate usage. All wiring and electrical construction shall be in accordance with the NEC. Units shall be ETL certified and labeled.

Each unit shall be given a complete factory run test. Units shall be completely charged with refrigerant 22 at the factory. The unit shall include the following:

## **COMPRESSOR(S)**

Shall be accessible hermetic design motor/compressor unit having all rotating parts statically and dynamically balanced, full pressure lubrication, automatically reversible oil pump, oil charge, suction and oil strainer, and sight glass for visual oil check. Compressor to have crankcase heater, suction and discharge service valve. Compressor shall be rated in accordance with ASHRAE 23. Motor shall be suction gas cooled. Compressor shall contain inherent overload and overheat protector, consisting of winding embedded sensors. Four and six cylinder compressors shall be connected to a solid state protection module. Protection module shall open all 3 phases in the event of overload in one phase. External thermal protection shall not be acceptable.

## **COOLER**

Shall be thru-tube direct expansion type with refrigerant in tubes and water to be cooled within the shell. Refrigerant heads shall be removable and tubes shall be seamless copper, 5/8" O.D. having extended internal area and roller expanded into grooved tube sheets. Entire cooler to be insulated with 3/4" closed cell foam plastic having a "K" factor of 0.26. Cooler heater cable to be provided and wired to provide low ambient freeze protection during off cycle. Cooler to be constructed in accordance with section VIII of ASME code for unfired pressure vessels and stamped accordingly.

## **CONDENSER(S)**

The condenser coil shall be constructed of 1" O.D. copper tube, with die formed tempered aluminum plate fins. Fins are formed with full collars and tubes are mechanically expanded for full contact and optimum heat transfer. Fin collar to completely cover tube surface. Condenser coils shall be tested to 425 PSIG air.

Casings are mill galvanized 16 gauge steel. Tube sheets are die formed and full collared for the tube support. Condenser coils shall be circuited to match refrigerant circuits and baffled to prevent crossover flow. Headers are constructed of heavy wall seamless copper tubing.

## **SUB COOLING COIL**

Sub-cooling is integral with the main condenser coil and shall be provided for each circuit.

## **CONDENSER FANS**

Fans are direct drive propeller type with Enamel Powder coated blades. Air discharge to be vertical to minimize noise generation and air recirculation. Fan to rotate within a formed (spun) venturi and shall be protected with Epoxy Powder coated fan guard. Condenser plenum shall be compartmentalized to prevent air crossover. Unit shall be equipped with multi-stage fan cycle control to allow mechanical cooling operation at ambient as low as +20° F. Motors are three phase, 1100 RPM specifically designed for vertical shaft, direct drive fan application and utilize permanently lubricated ball bearings. Motor to contain inherent, overload protection. Fan/motor assembly to be mounted in steel rod mounting bracket to reduce air turbulence and vibration.

## **REFRIGERATION CIRCUIT**

Shall be complete with thermostatic expansion valve, liquid line solenoid valve, sightglass/moisture indicator, filter/drier, and liquid line shut-off with charging connection. Single or dual compressor models shall have totally independent refrigeration circuits. On multiple compressor machines, an oil equalization system utilizing an oil reservoir, an oil level regulator and regulating valve shall be employed.

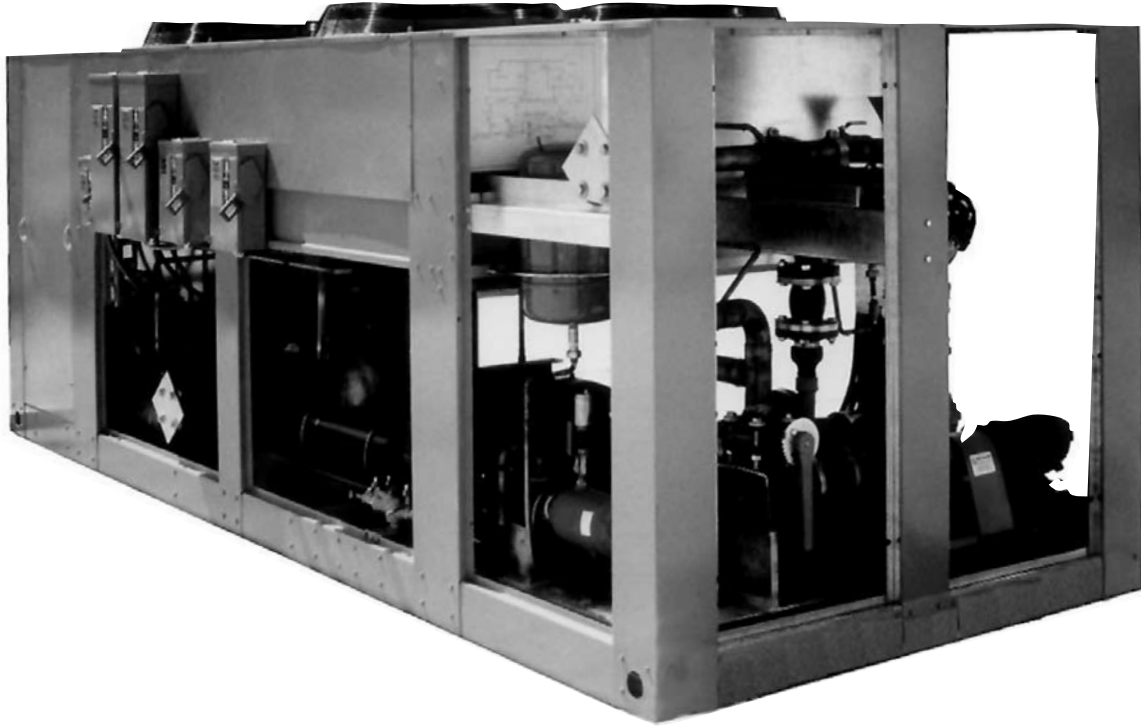
## **CONTROL CIRCUIT AND PANEL**

Shall include all safety and operating controls required to meet ARI, UL and NEC requirements. Controls to include branch and sub-circuit fusing, contactors, relays and pressure controls. Unit to operate on demand cycle pumpdown control and have freeze/low chart protection through a pressure sensing device with a time delay circuit to prevent nuisance trip on unit start. All safety controls to be manual reset. Panel to be constructed to NEMA 3R requirements and UL 508 listed and labeled.



# Optional Pump Package Information

Century offers standard single and dual pump packages with many different hydronic options to create a package that suits your needs. Century pump packages are selected based on a combination of keeping minimum size pumps and motors, maximizing efficiencies, and allowing a sufficient safety cushion for system head loss.



## **CONTROL THE DESIGN**

Century allows you to package a pumping system with your chiller. For too long, engineers and contractors have had to spend countless hours surveying existing systems to decide whether or not the building pump can handle the additional flow on expansions. Or, in new construction, they have to install large hydronic systems in closet-size mechanical rooms. Century wants to put the design back in the hands of those who specify and install the mechanical systems. Providing an independent pumping system on a chiller allows you to keep the entire system on one electrical service with a disconnect, operate it on its own schedule, and operate the system at a temperature range different from the rest of the building.

## **GUARANTEE QUALITY**

Packaging your system together also provides reassurance to the contractor, engineer, and owner through single source responsibility. Conflict between the pump manufacturer, chiller manufacturer, and installing contractor are avoided since entire package is supplied by a single source.

## **PROVIDE FLEXIBILITY**

Being a manufacturer of customized equipment, Century must be as flexible as possible to meet customer needs. Although we use certain brands of pumps and hydronic accessories in standard packages, we will consider any application that requires a specific component or vendor to meet your needs.

## **MAINTAIN HIGH LEVEL OF ENGINEERING**

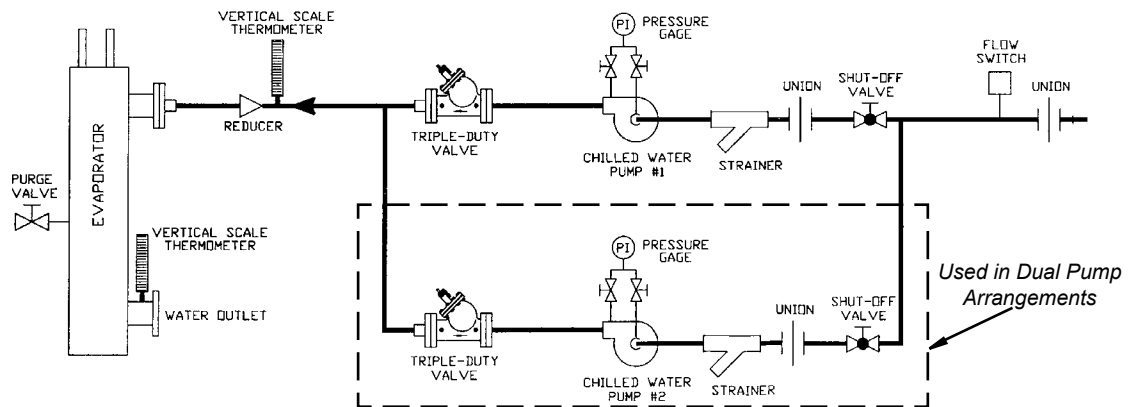
Combining the mechanical refrigeration and pumping systems requires good engineering supervision. Where most manufacturers of pumping systems fail to look beyond their equipment, Century works to make sure the equipment built for you can be easily integrated with your system. One of the biggest problems in a chilled water pump package is the issue of volume. Too many engineers assume that a long run of piping provides sufficient volume for the system. When it does not, the anti-recycle timers and temperature controllers do not function properly and efficiently. As a solution, Century will package storage tanks, either open or pressurized, to provide sufficient volume. These tanks can serve as a buffer, or serve as an intermediate blending tank when dealing with water temperatures higher than the normal ranges of chillers.



**Pump Packages are designed based on the following criteria:**

- Type L copper pipe shall be utilized through 4” pipe size with dielectric breaks at dissimilar joints. The connections will be brazed and pressure tested. The 6” pipe and above will be Schedule 40 black steel with welded joints.
- Discharge water lines will be sized for velocities between 8 and 12 fps; 10 fps being an optimum design.
- Suction water lines will be sized for velocities between 4 and 7 fps; 6 fps being an optimum design. Customer connections shall be based on a velocity not to exceed 6 fps.
- Vents and drains at the high and low points in the system will be the manual type.
- The air separators will be supplied without a strainer unless specified otherwise.
- Insulation of chilled water piping is not standard because of the risk of damage to the insulation during shipping or installation. It is available as an added option.
- Storage tanks will be carbon steel, open or closed, unless otherwise specified. When a tank is utilized, a structural steel base will be used instead of sheet metal.
- All tanks will be insulated with 1/2” Armaflex. Because of the location of the mounting, field insulation would be next to impossible.
- If an expansion tank is requested, we will supply a diaphragm tank with the smallest acceptance volume available unless:
  - 1) The acceptance volume is specified otherwise.
  - 2) The total water system volume is known.

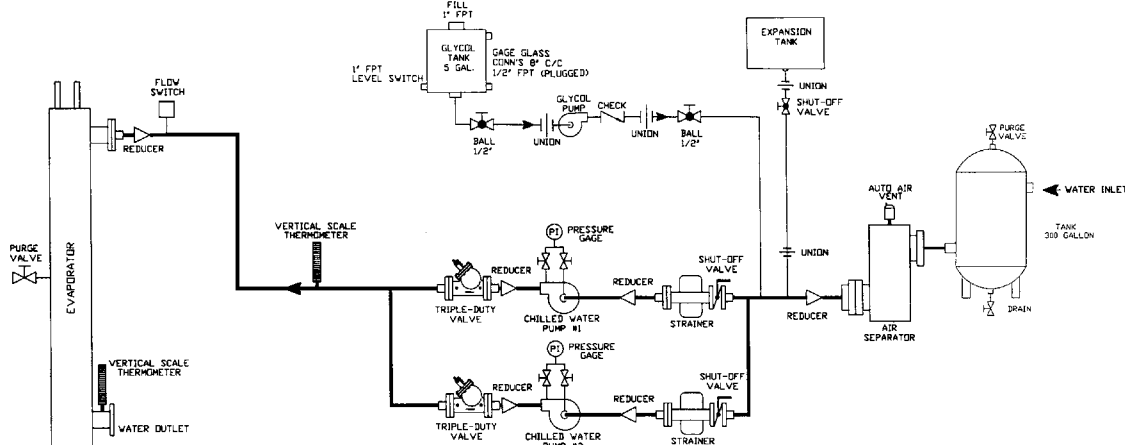
**Typical Standard Pump Package**



**The following are included as standard items in the typical pump package:**

- Mounted paddle type flow switch.
- Shut-off valves on the suction side of the pumps. Up through 2” pipe, ball valves will be used. For 3” pipe and larger, butterfly valves will be used.
- Strainers on the suction side of the pump. (Depending on the size of the pipe, the strainers may be “wye” type or basket type).
- Close-coupled end suction centrifugal pump (3500rpm or 1750 rpm).
- Triple duty valve on the discharge side of the pump, serving as a shut-off, balance, and check valve.
- Vertical scale thermometers on the inlet and outlet sides of the evaporator.
- Differential pressure gauge across the pump with “” service valves on each line.
- Sheet metal cabinet with removable access panels. Larger walk-in enclosures have hinged access doors with Vent-Lok handles.
- Dielectric unions at each dissimilar metal connection.

**Typical Dual Pump Package With Options**



## Available Options:

<b>Pumps:</b>	Close-coupled or base mounted end-suction centrifugal, vertical in-line, turbine, ANSI rated.	<b>Storage Tanks:</b>	Vented or Pressurized Tanks (pressurized tanks rated to 75 lbs. or 150 lbs.), ASME code type, Triple-Duty (volume, air separation, and expansion) tanks.
<b>Piping:</b>	Copper, Black Steel, or PVC.	<b>Bypass Lines:</b>	Differential pressure bypass or 3-way diverting valves.
<b>Air Separators:</b>	In-line, tangential, with manual or automatic air vents	<b>Glycol Systems:</b>	Gravity feed systems or high pressure pump injected.
<b>Expansion Tanks:</b>	Compression tanks with air fittings, diaphragm tanks.	<b>Pipe Insulation:</b>	1/2", 3/4", or 1" Armaflex, PVC, or aluminum jacketed.
<b>Hydronic Accessories:</b>	Tanks, Valves, Heat Exchanges, Flexible Connectors, Flow Meters, and Gauges		

