APSa Air Cooled Water Chiller Catalog

Petra Engineering Industries Co.

www.petra-eng.com

These marks apply to different products manufactured by Petra Engineering Industries Co. The inclusion of these marks does not mean they apply to all the products within this publication

PETRA CELEBRATING 30 YEARS

APSa Catalog

Air Cooled Water Chiller

50/60 Hz - SI/IMP

Air Cooled Water Chiller
with Semi-Hermetic Screw Compressor

162 - 1,800 Nominal kW @ 50 Hz
(46 - 512 Nominal Tons)
183 - 2,072 Nominal kW @ 60 Hz
(52 - 589 Nominal Tons)

AHRI CERTIFIED
www.ahridirectory.org
Air-Cooled Chillers
AHRI Standard 550/590

Table of Contents

Introduction

Petra Engineering Industries Company is a highly established HVAC manufacturing company that produces a wide range of sophisticated, high quality commercial and industrial HVAC equipment. Petra's products meet the requirements of globally recognized standards and procedures

To ensure the highest level of quality all procedures are carried out according to ISO 9001:2015, Quality management systems ISO 14001:2015 environmental management system. Also, all Petra's major products are UL and ETL listed. Petra's air cooled chillers are rated and certified in compliance to standard AHRI 550/590

Petra's air cooled liquid chillers (APSa) with a wide range of capacities and exceptionally high efficiencies, were designed to meet customer requirements for a variety of applications. Petra APSa chillers offer state of the art low sound, high quality and reliability, optimized performance and a compact physical footprint

Petra APSa chillers with semi-hermetic screw compressors, microchannel condenser coil and R-134a HFC refrigerant are 100% factory tested and commissioned to ensure efficient performance at specified operating conditions

Outstanding Features

Superior Efficiency

The APSa series meets or exceeds the new ASHRAE 90.1 efficiency levels at both full and part load efficiency

Low Noise Chillers

The APSa chillers offer low sound power levels, measured in accordance with the BS ISO 3744 standard. The low sound power levels make the APSa ideal for sound sensitive applications such as schools, hospitals, and sites located in residential neighborhoods

Compact Physical Footprint

The APSa chillers feature compact footprints and are suitable for close-spacing installation to serve the areas that have space constraints

Quality Assurance

To ensure the best performance, all the chillers in the APSa series are factory-run tested, produced in an ISO 2015-9001 listed manufacturing facility & certified according to AHRI standard 590/550

Easy Installation

Installation is made quick and easy with complete factory wiring, easy lifting provisions, factory installed options and start-up. To eliminate potential start-up problems, a complete factory- test run is performed on each unit

Large Capacity Compact Footprint

Petra introduces the APSa chillers with nominal kW of 2110, 2040 & 1935 (nominal tons of 550, 580 & 600), with a length of 14400 mm (567 inch) as a single piece unit with single power entry

This unique single unit design provides the largest capacity in one chiller model with a compact footprint

Outstanding Finishing

APSa chillers are designed with Microchannel (MCHE) condenser coils which are cost effective compared with traditional coil design. Copper tubes aluminum fins and copper tubes copper fins condenser coils are also available with your choice of corrosion resistance coating finish

Suction lines are insulated with closed cell foam insulation, then wrapped with a special protective material and finally epoxy coated. This gives further protection for the insulation against weather and other factors

Other exposed copper pipes and headers are epoxy coated after being cleaned, to maintain pipe material and brazing protected against external conditions Petra paint is certified according to ASTM 117 A&B 5000 hours salt spray test

Nomenclature

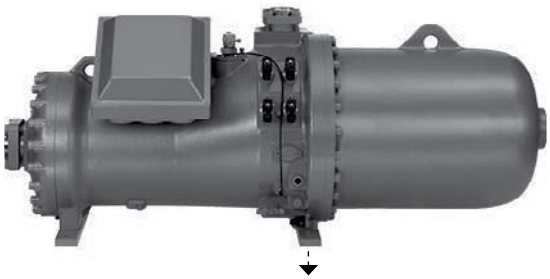
AP	S	a	300	2
Series	**Compressor**	**Refrigerant**	**Nominal Capacity (Tons)**	**No. of Compressors**
Air Cooled **P**ackage Chiller	**S**emi Hermetic	R-134**a**	50 60 65 70 75 80 95 100 110 120 125 135 140 145 160 165 175 190 195 200 205 210 220 235 250 275 280 285 300 315 335 350 360 375 400 415 430 450 465 475 485 500 510 550 580 600	1 2 3 4

Standard Features & Benefits

Construction

- Welded structural C-channel base painted with mono component catalyzed primer sprayed paint
- Base is equipped with welded brackets for heavy duty lifting lugs
- Easily accessible system components
- Structural members are made from gauge 15 [1.8 mm (0.07 inch)] tubular cross members that are semi welded with stainless steel fasteners. All members & panels (side & roof) are painted with oven baked polyester electrostatic powder paint
- Petra paint is certified up to 5000 hours salt spray test as per ASTM 117 A&B
- Condenser coils are covered with protective panels, to ensure uniform air distribution across the coil face area & provide additional protection forcoil from weather elements

Compressor

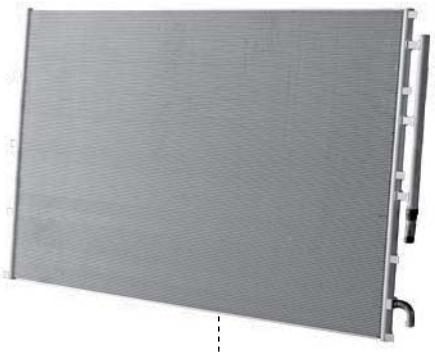

Screw Compressor

- Suction gas-cooled semi-hermetic twin screw compressor
- Variable slide valves allow the chillers to match actual load conditions, delivering exceptional part load performance
- Rain-tight terminal box
- Double walled pressure compensated rotor housing, which is extremely stable and results in additional sound attenuation
- Proven, long life bearings with pressure unloading
- Optimized oil management with built-in directly flanged on oil separator
- Long life fine filter mesh and magnets on oil circuit
- Pressure relieved bearing chamber ensures minimum refrigerant dilution in the oil
- Large volume motor suitable for part winding or Star-Delta starting with integrated embedded sensors in each winding
- Intelligent electronics including thermal motor temperature monitoring, phase sequence monitoring, manual reset lock-out and discharge temperature
- Compressor starts unloading
- Rubber-in-shear vibration isolation
- Oil level switch, high efficiency suction strainer, crank case heater
- Compressor shall be equipped with a built-in low pressure protection by a pressure transmitter connected to unit controller
- VSD option for compressor is available

Condenser Coils

- Petra's air-cooled condenser coils are designed to deliver their duties with optimum performance for all design conditions. Coils are highly efficient microchannel type (MCHE)
- Compact design aluminum microchannel coils have reduced refrigerant charge, and the unit weight
- High corrosion resistance
- All coils are air pressure tested by dry air up to 3,100 kPa (450 Psi) under water. They also undergo dry cleaning after manufacturing for optimum system cleanness

(Microchannel coils are standard feature for APSa 60-1 ~ APSa 600-4)



Condenser Coils

Condenser Fans & Motors

- Condenser fans shall be of the external rotor type
- External rotor motor with many attractive features such as space saving, compact design, optimum cooling, full speed controllability and low starting currents
- Sealed-for-life ball bearings fitted throughout the range with an L10 life expectancy of approximately 40,000 hours depending upon conditions of operation
- Thermal contacts are fitted with external rotor motors
- Embedded deep in the windings of the motors, the contacts are bi-metal cutout design which are temperature-dependent. Should the temperature of the motor rise to the limit, the bi-metal cutouts activate and cut off the power, thereby providing full protection to the motor

Condenser fan & motor assembly

Coolers (Barrels)

- High efficiency direct expansion (DX) shell and tube type coolers with inner grooved tubes to optimize the cooler's efficiency
- Coolers are tested and stamped for refrigerant side design pressure of 1,000 kPa (145 Psi) and for a maxmum water side working pressure of 1,500 kPa (220 Psi)
- These working pressures comply with applicable sections of the ASME standard, and the European codes of ISPESL and TUV
- Coolers are equipped with internal water baffles in the shell. They are fabricated from brass for maximum corrosion resistance
- Coolers are provided with water vents and drain connection plugs and are insulated with 19 mm (3/4 inch) closed cell foam insulation
- Cooler shall be tested & stamped in accordance with ASME code

Barrels (Coolers)

Standard Features & Benefits

Refrigeration

- Independent refrigeration circuit per compressor
- Liquid, discharge and suction pipes are all hard copper pipes. They are formed using automated CNC pipe bending machines in order to minimize pipe-brazed joints which in turn increases system reliability
- Epoxy paint for all exposed copper piping system
- of the refrigeration circuit
- Components of each refrigeration circuit:
    - Liquid line solenoid valve
    - Liquid line shut off valve
    - Liquid line moisture indicator sight glass
    - Replaceable core type filter
    - Fully charged unit with R-134a refrigerant
    - High safety pressure switch (capsule Type; factory pre-set)


Electronic expansion valve

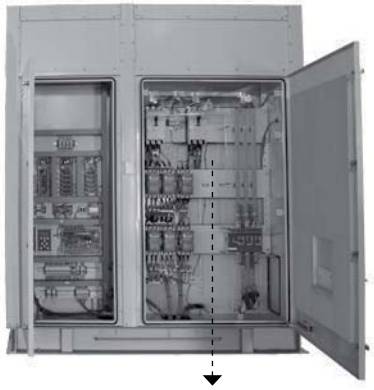
- Electronic expansion valve: Electronically Operated Step Motor flow control valves, intended for the precise control of liquid refrigerant flow. Synchronized signals to the motor provide discrete angular movement, which translates into precise linear positioning of the valve piston. Easily interfaced with microprocessor based controllers

Electrical

- Compressor electronic current monitor and overload protection through controller
- Free terminal for remote ON/OFF connection
- Free terminal for general alarm output
- Control voltage is 220-240V for all components
- Single point power connection for each electrical panel
- Circuit breaker for each compressor
- Starting contactors for compressors and condenser fan motors
- ON/OFF switch for each compressor
- Control circuit breaker for short circuit protection
- Short cycling protection for compressors (time delay)
- Control transformer mounted & wired that shall supply all unit control voltage from main unit power supply to internal components such as (not limited to) solenoid valves, compressor motor protector, compressor crank case heater and microprocessor controller
- Microprocessor controller for full management of chiller operation and safety circuits
- Power supply monitor (phase failure relay) used to protect the power circuit against over or under voltage conditions and against phase loss or loss reversing conditions

Electrical Panels

- Nema 3X with IP54 minimum enclosure standard electrical panel
- Two separate panels, one for power & the other for control
- Electrical panel is equipped with a heavy gauge galvanized steel access door
- Panel is painted with oven baked polyester electrostatic powder paint
- Each door is equipped with external handle with key & tooled latch with sealing heavy duty clip on bulb gasket between the door and the panel provides effective sealing
- All doors have multiple hinges
- Each door has a door retainer to keep door open during service
- Each door has a built-in pocket to accommodate a laminated wiring diagrams & IOM (Installation & Operation Manual) documents
- Separate electrical box for condenser fan motors located on condenser side


Electrical and control panel

Optional Features

External VFD Screw Compressor

Suction gas-cooled semi-hermetic twin screw compressor with external variable frequency drive integrated with an advanced control system that allows the chillers to match actual load conditions, while delivering exceptional part load performance

This compressor gives higher volumetric efficiency resulting from a higher rotation speed and reduces the vibration and noise levels with fewer moving parts (no sliding valve)

VFD Screw Compressor

Coil corrosion protection

- **Copper tubes Aluminum fins coil**

  Coils are manufactured from seamless copper tubes mechanically expanded into aluminum fins, with type-L, heavy wall, seamless copper tubes for the coil headers. The condenser coils are hydrostatic pressure tested in accordance with the UL 2000 -1995 standard. All coils are air pressure tested by dry air up to 3,100 kPa (450 Psi) under water. They also undergo dry cleaning after manufacturing for optimum system cleanness (Standard feature for APSa 50-1 only)

Condenser Coils

- **Copper tubes Copper fins coil**

  Coils are manufactured from seamless copper tubes mechanically expanded into copper fins, with type-L, heavy wall, seamless copper tubes for the coil headers. The condenser coils are hydrostatic pressure tested in accordance with the UL 1995 -2000 standard. All coils are air pressure tested by dry air up to 3,100 kPa (450 Psi) under water. They also undergo dry cleaning after manufacturing for optimum system cleanness

- **Polyurethane Pre-coating (for aluminum fins)**

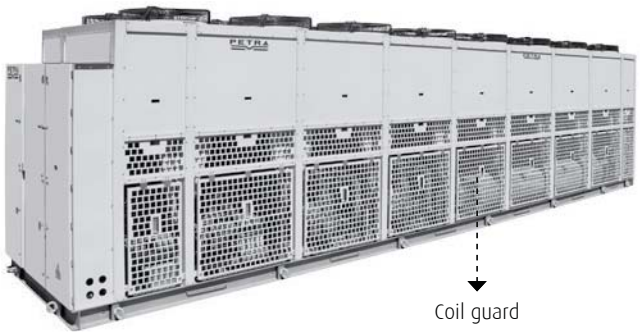
  A water based organic type pre-coated fin designed to give better retained performances compared to typical organic type. The topcoat is made of hydrophilic resin of polyvinyl Alcohol mix with hydrophilic lubricants. It provides a better level of retained as well as improvement in the area of surface friction to help lengthen the life span of a punch dies Paint is certified as per ASTM 117 A&B up to 3000 hours salt spray test

- **Polyurethane Post-coating (for aluminum & copper fins)**

  Aliphatic Acrylic Polyurethane type, with high gloss finish with exceptional weathering performance characteristics. Used extensively in virtually all industrial markets, 134 VOC provides a smooth, durable finish that has superior resistance to corrosion, abrasion and chemical exposure Paint is certified as per ASTM 117 A&B up to 3000 hours salt spray test

Coil guard

A coil guard is placed on the lower part of the unit all over the perimeter to provide protection for unit components. It is fabricated from gauge 18 [1.25 mm (0.05 inch)] galvanized steel sheet metal & painted with Petra electrostatic powder paint. Coil guard is fitted in place by spring load quick turn latch and is supported upon opening by stainless steel hinges

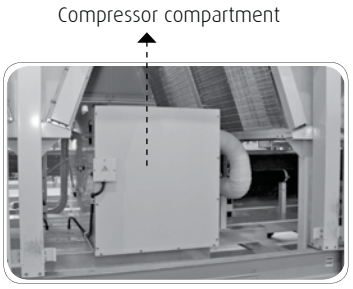


Coil guard

Optional Features

Sound reduction options

a - Low rpm condenser fan
b - Compressor jacket
c - Standard compressor compartment
d - Advanced compressor compartment



- **Low rpm condenser fan**

  Same construction and specifications as the standard fans, but with lower speed (700/900 rpm @50/60 Hz power supply)

- **Compressor jacket**

  Compressor jacket shall consists of a 9.5 mm (3/8 inch) thick closed cell rubber sound insulation material inside a sound deflecting vinyl cover to provide superior sound reduction for screw compressors

- **Standard compressor compartment**

  Compartment shall be constructed from gauge 16 [1.5 mm (0.06 inch)] thick galvanized steel sheet metal insulated with 9.5 mm (3/8 inch) thick closed cell rubber insulation. All sheet metal are painted with Petra powder paint

(Compartment installation might change unit dimensions. Please refer to the nearest Petra sales office for more information about sound & dimensional data)

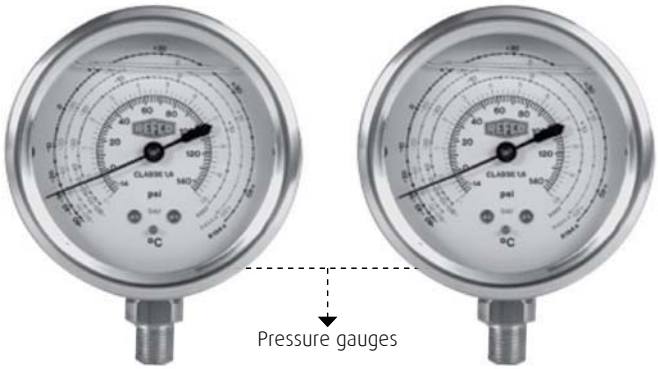
- **Advanced compressor compartment**

  Compartment shall be constructed from double wall, heavy gauge galvanized steel, gauge 14 [2 mm (0.08 inch)] thick solid outer skin and gauge 22 [0.7 mm (0.03 inch)] thick perforated inner skin with 50 mm (2 inch) thick fiberglass insulation with a density of 48 kg/m3 (3 lb/ft3). All sheet metal are painted with Petra powder paint

(Compartment installation might change unit dimensions. Please refer to the nearest Petra sales office for more information about sound & dimensional data)
(Available combination for sound reduction options shall be: a, b, a&b, c, a&c, d, a&d)

High and low Pressure gauges

Optional pressure gauges for monitoring of refrigeration discharge and suction pressure. Additionally, the gauges are used to verify suitable refrigerant charge and proper system performance. The gauges shall be Bourdon type, stainless steel housing oil filled. Oil filled pressure gauges provide greater protection of the gauge internals from corrosive atmospheres. The gauges are provided with a dual scale of both PSI and BAR



Hot gas bypass

The hot gas bypass consists of a mechanical valve capacity regulator used to adapt compressor capacity to actual evaporator load. It is installed in a bypass line between the high and low pressure sides of the refrigeration system and is designed for hot gas injection into the evaporator just after the expansion valve

The hot gas bypass valve is UL listed, file SA7200. The hot gas bypass valve allows additional capacity reduction for units operating below the minimum step of unloading for the compressor. If the hot gas bypass is installed on the lead compressor only, the "lead/lag" function (for the compressor) will be eliminated. (for hot gas by pass typical piping schematic, please refer to page 87)

Pressure relief valve

Pressure relief valves is comply with the requirements of the ASME (Boiler and Pressure Vessel Code Section VIII, Division 1)

The relief valve is designed or set to open at a predetermined set pressure to protect pressure vessels and other equipment from being subjected to pressures that exceed their design limits

Water flow switch

CE & UL approved safety interlock to prevent operation of unit without evaporator water flow (available for field installation only) The water flow switch is used to ensure water flow rate of suitable amount is flowing to the Barrel (cooler), by establishing contact in an electric circuit when flow starts or stop It is a paddle type, and the paddle consists of three segments that can be removed or trimmed and sized to match the water pipe size. The paddle is made of copper alloy. Water flow switch is supplied as a loose item for field installation

Cooler cladding

Cooler cladding can be aluminum, stainless steel or painted galvanized steel {made from gauge 22 [0.7 mm (0.03 inch)}. Cladding shall be applied above barrel (cooler) insulation

Cooler insulation thickness materials

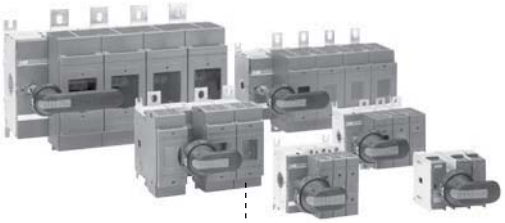
Cooler can be insulated with closed cell foam insulation of 25 mm (1 inch), 38 mm (1.5 inch) & 50 mm (2 inch) The insulation density is 48 kg/m3 (3 lb/ft3) with a K-factor of 0.035 W/(m.°K) [0.0203 BTUH/(ft.°F)]

Optional Features

Main disconnect switch

This is used to de energize the power supply to the chiller during servicing or repairing works because of the door interlock. It has an external handle that is installed on the electric panel door. Switch has to be de-energized to open electric panel

(This disconnect switch can be supplied with built in fuse or a non fuse type)



Disconnect switch

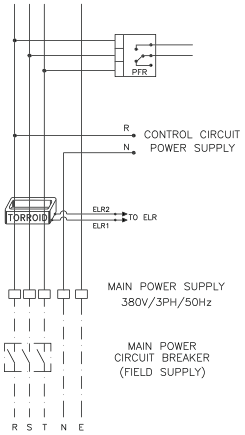
Power factor correction capacitor

Power factor correction is used to improve the power factor level . Maximizing power factor improves system reliability , minimizes voltage drops and gives better power quality. Advanced safety capacitors with harmonic filters and a main microprocessor controller are provided to manage the required capacity for the capacitor stages. Only one capacitor panel is needed for the chiller regardless the number of compressors or fans. Power factor is usually installed on a separate electrical box depending on unit size (refer to the nearest Petra sales office for more details)

Power factor capacitor

Earth leakage relay

A safety device used in electrical installations with high earth impedance to prevent shock. It detects small stray voltages on the metal enclosures of electrical equipment, and interrupts the circuit if a dangerous voltage is detected earth leakage relay can be supplied for the whole unit power supply or for each compressor (refer to the nearest Petra sales office for more details)



Bulk head light for the electrical panel

IP 54 protection, class I electric safety bulk head light enclosure shall be used in electrical panel for inspection purposes. Light fixture shall be supplied without a bulb

Bulk head light

Bulk head light (for USA)

Control transformer

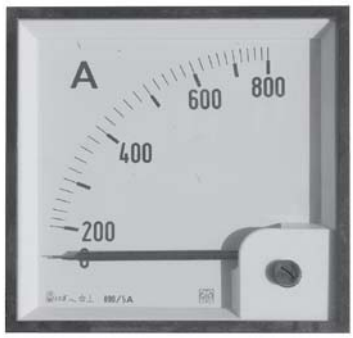
Control transformer to supply power input to auxiliary compo nents at 120 or 220 volts, such as (not limited to) bulk head light and GFI outlet

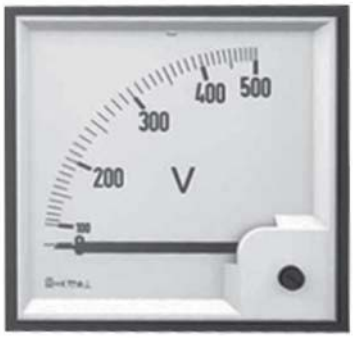
Control transformer

Ampere-meter & volt-meter

Ampere-meter & volt-meter are used to measure the power current & voltage consumption Ampere-meter is used for each phase. Voltmeter device is used to measure the voltage of the power supply between each phase and the another one and between each phase and the neutral

Ampere-meter & volt-meter



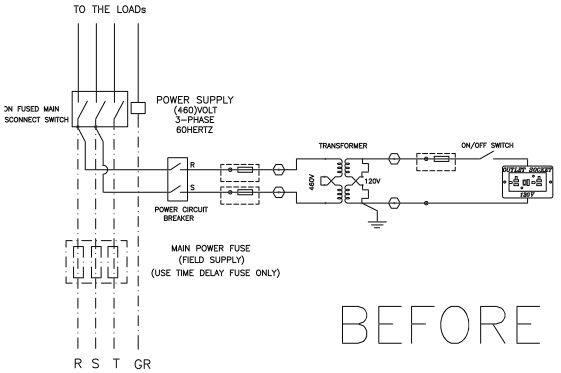


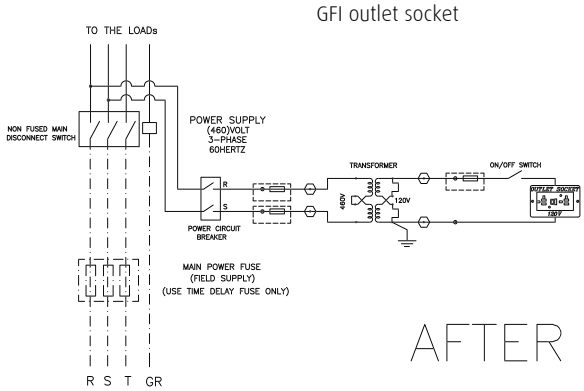
120V power supply with transformer & GFI outlet socket

The 120 volt power supply shall be connected through the trans- former to provide a 120 volt single phase circuit It can be connected before or after the disconnect

GFI socket is used to operate the electric appliances at site such as laptops, tablets and cell phones

GFI outlet socket

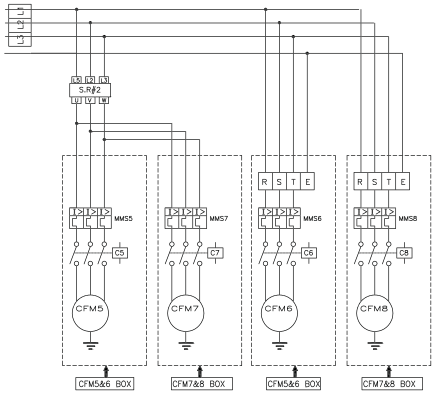




Optional Features

Speed regulator for condenser fan motors

As described in the low ambient control option, these devices are used to permit the unit to operate in low ambient temperature. Head pressure control can be controlled by varying the speed for condenser fan motors



Note

- Sample wiring diagram for speed regulator on condenser fan motor

Dual power connection

Unit shall be supplied with a dual power connection. One power entry for compressors & the second for the rest of the unit. Each power connection can be equipped with a separate main disconnect switch

Electrical component options

- External over load for each compressor
- External over load for each condenser fan motor
- Circuit breaker for each condenser fan motor
- Nema 4x electrical panels made from galvanized steel
- Nema 4x electrical panels made from stainless steel

Cooler tape heater protection down to 0°C (32°F), -18°C (0°F) & -29°C (-20°F)

Electrical resistance heating tape is wrapped around the barrel (cooler) shell to help protect the evaporator fluid contents from freezing down to 0°C (32°F) -18°C (0°F) & -29°C (-20°F) ambient temperature. The heater has to be maintained "ON" 24/7, so the power supply to chiller has to be "ON" 24/7. This device will not protect external water pipe work connected to the unit and additional frost protection measures are required at field

Low ambient control down to 0°C (32°F)

Unit shall be capable to operate down to 0°C (32°F) using a combination of on/off sequencing of condenser fans plus speed varying. This shall be controlled through pressure transmitter of each refrigerant circuit via unit controller with a speed regulator device

Low ambient control down to -17°C (0°F)

In addition to the condenser fans combination of on/off sequencing & speed varying, a flooded condenser control design is used as well to enable unit to operate to this ambient. Multiple on/off solenoid valves on each condenser with a suitable liquid receiver shall be added to control the amount of liquid flooding the condenser & maintain condenser head pressure in the allowable operating range

Microprocessor Controller

Microprocessor controller system enhances the air-cooled screw chiller by providing the intelligent chiller control technology. The microprocessor control helps in accurate control of various chiller operating parameters. Windows based support system to provide complete status on all operation both locally and remotely. History, static and dynamic graphing to help in commissioning, troubleshooting and evaluation. It will interface locally with a null Modem serial cable, remotely through an Ethernet connection, and also through building management systems

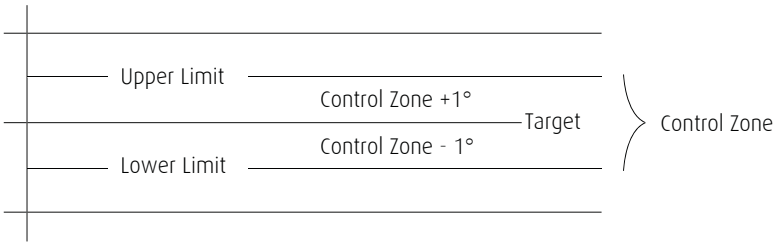
The Microprocessor control offers a great deal of flexibility with adjustable set points and control options that can be set prior to activating a system or even when the unit is operational. The Microprocessor controller is designed to safeguard the system being controlled, minimize the need for manual intervention, and to provide a simple but meaningful user interface

Sequence Of Control

Start up

- For initial startup, the following must be met:
- Control circuit breaker switched on
- Energize the microprocessor control through keypad, remote start/stop, schedu or BMS command
- Chilled Water pump running
- Flow has been proven
- All safeties condition satisfied

When the water out temperature is above the target set point, the first compressor will start after the call for cooling. The control strategy is designed to modulate the compressor(s) capacity to maintain the control sensor reading within the specified control zone. To accomplish this, the Microprocessor controller will constantly monitor the control value, its rate of change and position in relationship to the control zone and make adjustments accordingly



Capacity control

The Capacity control logic will increase or decrease the compressors capacity as followings:

A. If the Chilled Water Out temperature is above the target setpoint and the Chilled Water Rate Of Change does not indicate that the water temperature is decreasing at a Sufficient rate, the chiller's capacity control logic will ask for more capacity by adding a cooling step. Once the step control has increased, the capacity control logic has a time delay before allowing the new step to increase again. The time delay is based on how far the temperature is from the target set point

B. If the chilled water out temperature is in the control zone, special logic functions will keep the chille with in the control zone

C. If the chilled water out temperature is below the control zone and if the Chilled Water Rate of Change does not indicate that the water temperature is increasing at a sufficient rate, the chiller's capacity control logic will ask for less capacity by subtracting from the steps. Once the step has been decreased the capacity control logic has a time delay before allowing more steps to be decreased again

Microprocessor Controller

Low Suction Unloading & Holding

This protection is activated when the setpoint (LOW SUCTION UNLOAD is active). The purpose of this Protection is to take corrective action to prior to a safety being tripped

High Discharge Pressure Unloading & Holding

This protection is activated when the setpoint (HIGH DISCHARGE UNLOAD) is active. The purpose of this Protection is to take corrective action prior to a safety being tripped: The system will begin unloading that compressor until the discharge pressure drops below a calculated value

Low water out Temperature Unload

The chiller water out temperature could cause the system to unload. When the water out temperature gets near the Freeze Set Point, the unload occurs before triggering the freeze protect safety

Chilled Water Reset

This is a function of a signal from the building management system. This value is used to adjust the control setpoint. The amount of the actual adjustment is proportionally based upon the associated analog input value. The analog value can be between 0 and 5 volts

Operating Schedules

Two operating schedules per each day of the week and 8 holidays are supported by the microprocessor controller software. Each schedule contains a start and end time. If the time and day of the Microprocessor controller clock is within these limits then the schedule is true and the system will be allowed to run. If not, the system will be off due to schedule

Soft Load Function

The compressors will start un-loaded to ensure soft start function, and then it will start loading gradually and according to load request, to prevent sudden load changing and save energy

System Protection

Petra provides special advanced software designed to be proactive; that is, to take corrective action to keep a safety condition from occurring. If a safety does occur, the software attempts to restart the unit when the system returns to normal. This approach eliminates most, if not all of the nuisance alarms that occur

Displayed Data

- Leaving/Entering water temperature
- Ambient temperature
- Compressor discharge pressure/temperature
- Compressor suction pressure/temperature
- Compressor drawn current
- Suction/Discharge super heat
- Compressor load percentage
- Saturated suction/discharge
- Compressor oil diff
- Compressor timers
- Digital input status
- Output relays status
- Protections status
- Historical alarm
- Schedule
- Adjustable setpoint

Safeties and Alarms

- Cutout and Un-loading
- High discharge pressure
- High discharge temperature
- Low suction pressure
- Low suction temperature
- Freeze state
- High ampere state
- Low discharge pressure
- Unsafe suction pressure
- Unsafe discharge pressure
- Flow switch (No flow protection)
- Phase loss protection
- Low differential oil pressure
- Unsafe oil pressure
- Low oil level
- Motor temperature
- Low motor amps
- Probe error alarm

PC Support Software for Smart Link II

MCS- Connect program provides both local and remote Communications to the controller independent of the type of software. Through this program, the status of the controller can be viewed and proper authorization changes can be made to the system. The controller automatically performs history logging; this program has complete graphic functions

Ethernet Port

Communications can be through the 100 MBPS Ethernet Communications port on the Controller. It is necessary to use a crossover cable when connected directly to this port from a PC BMS Communication Protocols

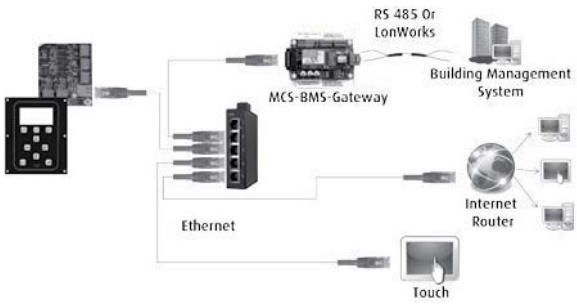
RS 485 Network

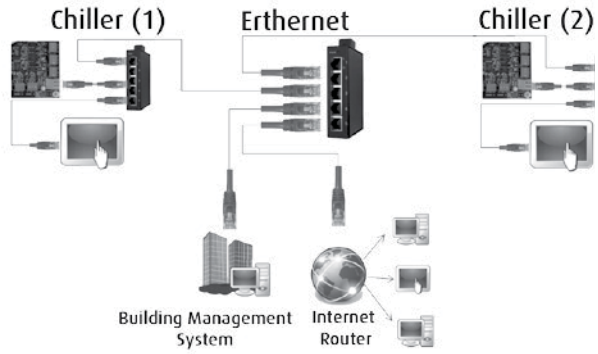
The controller RS 485 Network can support up to 20 chiller controllers and their associated I/O's. Access to this network can be local, via RS 232 connection, or remote via 14.4K Baud modem

When using the dial up through the modem, there will be no degradation in the performance of the network. Each controller in the network must be assigned to a unique address . This address will be the key in establishing communications with the appropriate Controller system. This address can be changed from the LCD/keypad of the unit. The current address of controller can be viewed or changed with factory authorization. RS 232 transmission should not exceed 9 mtr. in length and RS 485 transmission should not exceed 1000 mtr without repeater

Smart Link II controller supports the following protocols

1. Bacnet IP
2. Modbus IP
3. Modbus RTU
4. Bacnet MS/TP (need BMS gateway module)
5. Johnson N2 (need BMS gateway module)
6. Lontalk (need BMS gateway module)





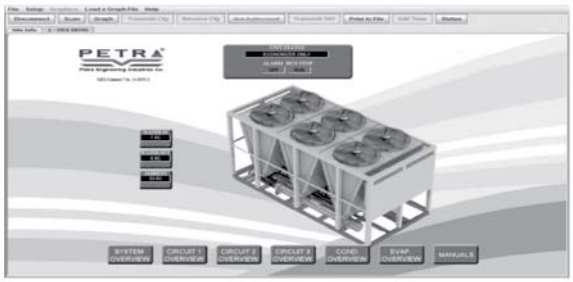
BMS Hard wired

Within the hard wire structure there are six features as follows:

1. RUN / STOP - (BMS to controller)
2. EMER. STOP - (BMS to controller)
3. CHILLED WATER RESET - (BMS to controller)
4. DEMAND LIMITING - (BMS to controller)
5. COMPRESSOR RUN - (controller to BMS)
6. ALARM - (controller to BMS)

Graphic Touch Screen (Optional)

Petra provides attractive graphical touch screen which present the status for the chiller components



Graphic Touch Screen

Physical Data - SI

APSa		50-1	60-1	65-1	70-1	70-2	75-1	80-1	95-2
COMPRESSOR									
Type		Semi Hermetic Twin Rotary Screw							
Qty		1	1	1	1	2	1	1	2
Oil charge (Ckt1/Ckt2)	Liter	16	16	16	16	8/8	15.0	18	14/14
Nominal speed (50/60 Hz)	rpm	2,950/3,550							
WEIGHT									
Microchannel operating weight	kg	-	2,398	2,426	2,458	2,752	2,772	2,862	3,182
AL/Cu operating weight	kg	1,950	2,776	2,804	2,835	3,130	3,150	3,239	3,560
Cu/Cu operating weight	kg	2,182	3,179	3,207	3,239	3,534	3,553	3,643	3,961
Microchannel shipping weight	kg	-	2,288	2,317	2,348	2,648	2,621	2,711	3,045
AL/Cu shipping weight	kg	1,840	2,666	2,694	2,726	3,083	2,998	3,088	3,496
Cu/Cu shipping weight	kg	2,073	3,069	3,098	3,129	3,486	3,401	3,491	3,899
REFRIGERANT									
Refrigerant type		R-134a							
No. of independent circuits		1	1	1	1	2	1	1	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	kg	19	20	22	24	27/27	27	29	36/36
Refrigerant charge @60Hz (Ckt1/Ckt2)	kg	21	23	25	27	31/31	31	34	41/41
COOLER									
Type		DX Shell & Tube							
Qty		1	1	1	1	1	1	1	1
Net fluid volume	Liter	110	110	110	110	110	151	151	137
Designed refrigeration pressure	kPa	1,000							
Max water pressure	kPa	1,500							
Water connection size	mm	125	125	125	125	125	150	150	150
Water connection type		Victaulic Coupling							
Drain connection size	mm	12.5							
CONDENSER COIL									
Qty (Ckt1/Ckt2)		2	4	4	4	2/2	4	4	2/2
Fins per inch		472							
No. of rows		4							
Total face area	m^2	6.4	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Max working refrigeration pressure	kPa	2,100							
CONDENSER FAN									
Type		Direct Drive External Rotor							
Qty (Ckt1/Ckt2)		2	4	4	4	2/2	4	4	2/2
Nominal speed (50/60Hz)	rpm	900/1,100							
No of blades		5							
Nominal Diameter	mm	900							
Total air flow rate (50Hz)	L/s	16,208	24,026	24,026	32,416	32,416	32,416	32,416	32,416
Total air flow rate (60Hz)	L/s	18,420	29,119	29,119	36,840	36,840	36,840	36,840	36,840
Motor power (60/50Hz)	kW	2.30/1.45							
GENERAL									
Capacity control		Modulating							
Minimum ambient temperature	°C	7							
Length	mm	3295	3160	3160	3160	3360	3160	3160	3360
Width	mm	1800	2230	2230	2230	2230	2230	2230	2230
Height	mm	2490	2530	2530	2530	2530	2530	2530	2530

Legend
- Cu : Copper
- Al : Aluminum
- Ckt : Refrigeration circuit

Note
- Shipping & operating weights are based on standard design components, selected options may add weight on the unit
- Minimum ambient temperature operation shall be based on standard components. Unit shall be able to operate down to (0°C, -18°C & -29°C) with additional accessories

APSa		95-1	100-1	100-2	110-2	120-2	125-2	135-2	140-2
COMPRESSOR									
Type		Semi Hermetic Twin Rotary Screw							
Qty		1	1	2	2	1+1	2	2	2
Oil charge (Ckt1/Ckt2)	Liter	20	20	16/16	16/16	16/16	16/16	16/16	15/15
Nominal speed (50/60 Hz)	rpm	2,950/3,550							
WEIGHT									
Microchannel operating weight	kg	2,871	2,947	3,345	4,078	4,118	4,037	4,338	4,562
AL/Cu operating weight	kg	3,249	3,325	3,760	4,640	4,680	4,599	4,900	5,180
Cu/Cu operating weight	kg	3,652	3,728	4,231	5,260	5,340	5,204	5,505	5,886
Microchannel shipping weight	kg	2,734	2,810	3,208	3,941	3,981	3,900	4,098	4,322
AL/Cu shipping weight	kg	3,113	3,189	3,698	4,580	4,615	4,462	4,660	5,071
Cu/Cu shipping weight	kg	3,516	3,593	4,169	5,190	5,280	5,067	5,265	5,777
REFRIGERANT									
Refrigerant type		R-134a							
No. of independent circuits		1	1	2	2	2	2	2	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	kg	32	36	40/40	43/43	43/46	46/46	51/51	55/55
Refrigerant charge @60Hz (Ckt1/Ckt2)	kg	37	41	46/46	49/49	49/53	53/53	59/59	63/63
COOLER									
Type		DX Shell & Tube							
Qty		1	1	1	1	1	1	1	1
Net fluid volume	Liter	137	137	137	137	137	137	240	240
Designed refrigeration pressure	kPa	1,000							
Max water pressure	kPa	1,500							
Water connection size	mm	150	150	150	150	150	150	200	200
Water connection type		Victaulic Coupling							
Drain connection size	mm	12.5							
CONDENSER COIL									
Qty (Ckt1/Ckt2)		4	4	2/2	3/3	3/3	3/3	3/3	3/3
Fins per inch		472							
No. of rows		4							
Total face area	m^2	11.2	11.2	11.2	16.8	16.8	16.8	16.8	16.8
Max working refrigeration pressure	kPa	2,100							
CONDENSER FAN									
Type		Direct Drive External Rotor							
Qty (Ckt1/Ckt2)		4	4	2/2	3/3	3/3	3/3	3/3	3/3
Nominal speed (50/60Hz)	rpm	900/1,100							
No of blades		5							
Nominal Diameter	mm	900							
Total air flow rate (50Hz)	L/s	32,416	32,416	32,416	48,624	48,624	48,624	48,624	48,624
Total air flow rate (60Hz)	L/s	36,840	36,840	36,840	55,260	55,260	55,260	55,260	55,260
Motor power (60/50Hz)	kW	2.30/1.45							
GENERAL									
Capacity control		Modulating							
Minimum ambient temperature	°C	7							
Length	mm	3160	3160	3360	4740	4740	4740	5140	5140
Width	mm	2230	2230	2230	2230	2230	2230	2230	2230
Height	mm	2530	2530	2530	2530	2530	2530	2530	2530

Legend
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Physical Data - SI

	APSa	145-2	160-2	165-2	175-2	190-2	195-2	200-2
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2	1+1	2	2	2	2	2
Oil charge (Ckt1/Ckt2)	Liter	15/15	15/18	18/18	20/20	20/20	23/23	23/23
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	kg	5,420	5,518	5,604	5,536	6,096	5,680	6,304
AL/Cu operating weight	kg	6,166	6,263	6,349	6,281	7,025	6,500	7,234
Cu/Cu operating weight	kg	6,972	7,072	7,156	7,092	8,034	7,442	8,244
Microchannel shipping weight	kg	5,180	5,284	5,370	5,302	5,862	5,439	6,063
AL/Cu shipping weight	kg	5,926	6,159	6,115	6,179	6,791	6,391	7,126
Cu/Cu shipping weight	kg	6,732	6,966	6,922	6,985	7,800	7,332	8,134
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		2	2	2	2	2	2	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	kg	57/57	63/67	63/63	67/67	69/69	73/73	75/75
Refrigerant charge @60Hz (Ckt1/Ckt2)	kg	65/65	65/71	72/72	75/75	78/78	83/83	85/85
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	Liter	240	234	234	234	234	241	241
Designed refrigeration pressure	kPa	1,000						
Max water pressure	kPa	1,500						
Water connection size	mm	200	200	200	200	200	200	200
Water connection type		Victaulic Coupling						
Drain connection size	mm	12.5						
CONDENSER COIL								
Qty (Ckt1/Ckt2)		4/4	4/4	4/4	4/4	5/5	4/4	5/5
Fins per inch		472						
No. of rows		4						
Total face area	m^2	22.4	22.4	22.4	22.4	28.0	22.4	28.0
Max working refrigeration pressure	kPa	2,100						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2)		4/4	4/4	4/4	4/4	5/5	4/4	5/5
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	mm	900						
Total air flow rate (50Hz)	L/s	64,832	64,832	64,832	64,832	81,041	64,832	81,041
Total air flow rate (60Hz)	L/s	73,680	73,680	73,680	73,680	92,100	73,680	92,100
Motor power (60/50Hz)	kW	2.30/1.45						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°C	7						
Length	mm	6120	6120	6120	6120	7300	6120	7300
Width	mm	2230	2230	2230	2230	2230	2230	2230
Height	mm	2570	2570	2570	2570	2570	2570	2570

Legend
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APSa		205-2	210-2	220-2	235-2	250-2	275-2	280-2
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2	2	2	1+1	2	1+1	2
Oil charge (Ckt1/Ckt2)	Liter	23/23	20/20	20/20	28/20	28/28	28/28	28/28
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	kg	6,361	5,768	6,334	6,641	6,953	7,622	8,166
AL/Cu operating weight	kg	7,290	6,513	7,263	7,570	7,882	8,551	9,279
Cu/Cu operating weight	kg	8,299	7,320	8,272	8,579	8,892	9,560	10,489
Microchannel shipping weight	kg	6,122	5,529	6,095	6,402	6,714	7,140	7,684
AL/Cu shipping weight	kg	7,051	6,405	7,024	7,462	7,775	8,332	8,797
Cu/Cu shipping weight	kg	8,060	7,211	8,033	8,470	8,783	9,341	10,007
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		2	2	2	2	2	2	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	kg	81/81	83/83	86/86	103/82	103/103	103/114	109/109
Refrigerant charge @60Hz (Ckt1/Ckt2)	kg	99/99	95/95	99/99	118/95	118/118	118/131	125/125
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	Liter	239	239	239	239	239	482	482
Designed refrigeration pressure	kPa	1,000						
Max water pressure	kPa	1,500						
Water connection size	mm	150	150	150	150	150	200	200
Water connection type		Victaulic Coupling						
Drain connection size	mm	12.5						
CONDENSER COIL								
Qty (Ckt1/Ckt2)		5/5	4/4	5/5	5/5	5/5	5/5	6/6
Fins per inch		472						
No. of rows		4						
Total face area	m^2	28.0	22.4	28.0	28.0	28.0	28.0	33.6
Max working refrigeration pressure	kPa	2,100						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2)		5/5	4/4	5/5	5/5	5/5	5/5	6/6
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	mm	900						
Total air flow rate (50Hz)	L/s	81,041	64,832	81,041	81,041	81,041	81,041	97,249
Total air flow rate (60Hz)	L/s	92,100	73,680	92,100	92,100	92,100	92,100	110,520
Motor power (60/50Hz)	kW	2.30/1.45						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°C	7						
Length	mm	7500	6520	7500	7700	7700	7700	8780
Width	mm	2230	2230	2230	2230	2230	2230	2230
Height	mm	2570	2570	2570	2570	2570	2570	2570

Legend
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- Al : Aluminum
- Ckt : Refrigeration circuit

Note
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Physical Data - SI

	APSa	285-2	300-2	315-3	315-2	335-2	350-2	350-3
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2	2	1+2	1+1	2	2	2+1
Oil charge (Ckt1/Ckt2 /Ckt3)	Liter	28/28	28/28	23/20/20	28/28	28/28	28/28	20/20/28
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	kg	7,731	8,532	8,776	8,607	8,778	9,380	9,262
AL/Cu operating weight	kg	8,660	9,645	9,888	9,720	9,891	10,676	10,559
Cu/Cu operating weight	kg	9,668	10,855	11,099	10,931	11,102	12,088	11,971
Microchannel shipping weight	kg	7,249	7,997	8,240	8,072	8,261	8,863	8,745
AL/Cu shipping weight	kg	8,441	9,402	9,353	9,478	9,657	10,442	10,042
Cu/Cu shipping weight	kg	9,450	10,613	10,564	10,688	10,867	11,854	11,454
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		2	2	3	2	2	2	3
Refrigerant charge @50Hz (Ckt1/ Ckt2/Ckt3)	kg	113/113	118/118	81/86/86	118/136	136/136	140/140	86/86 /113
Refrigerant charge @60Hz (Ckt1/ Ckt2/Ckt3)	kg	129/129	136/136	94/99/99	136/155	155/155	161/161	99/99 /129
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	Liter	482	535	535	535	517	517	517
Designed refrigeration pressure	kPa	1,000						
Max water pressure	kPa	1,500						
Water connection size	mm	200	200	200	200	200	200	200
Water connection type		Victaulic Coupling						
Drain connection size	mm	12.5						
CONDENSER COIL								
Qty (Ckt1/Ckt2/Ckt3)		5/5	6/6	4/4/4	6/6	6/6	7/7	4/5/5
Fins per inch		472						
No. of rows		4						
Total face area	m^2	27.9	33.5	33.6	33.5	33.5	39.1	39.2
Max working refrigeration pressure	kPa	2,100						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2/Ckt3)		5/5	6/6	4/4/4	6/6	6/6	7/7	5/5/4
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	mm	900						
Total air flow rate (50Hz)	L/s	81,041	97,249	97,249	97,249	97,249	113,457	113,457
Total air flow rate (60Hz)	L/s	92,100	110,520	110,520	110,520	110,520	128,940	128,940
Motor power (60/50Hz)	kW	2.30/1.45						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°C	7						
Length	mm	7700	8780	8980	8780	9180	10160	10560
Width	mm	2230	2230	2230	2230	2230	2230	2230
Height	mm	2570	2570	2570	2570	2570	2570	2570

Legend
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- Al : Aluminum
- Ckt : Refrigeration circuit

Note
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- Minimum ambient temperature operation shall be based on standard components. Unit shall be able to operate down to (0°C, -18°C & -29°C) with additional accessories

	APSa	360-3	375-3	400-3	415-3	430-3	450-3	465-3
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2+1	1+2	3	3	3	2+1	2+1
Oil charge (Ckt1/Ckt2 /Ckt3)	Liter	20/20/28	20/28/28	28/28/28	28/28/28	28/28/28	28/28/28	28/28/28
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	kg	10,272	9,893	10,909	11,169	12,137	11,289	12,275
AL/Cu operating weight	kg	11,752	11,190	12,390	12,650	13,801	12,770	13,939
Cu/Cu operating weight	kg	13,366	12,602	14,004	14,263	15,617	14,384	15,755
Microchannel shipping weight	kg	9,755	9,376	10,392	10,652	11,620	10,783	11,769
AL/Cu shipping weight	kg	11,235	10,956	12,201	12,415	13,284	12,541	13,433
Cu/Cu shipping weight	kg	12,849	12,367	13,769	14,029	15,100	14,154	15,249
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		3	3	3	3	3	3	3
Refrigerant charge @50Hz (Ckt1/ Ckt2/Ckt3)	kg	86/86 /118	90/103 /103	103/103 /111	113/113 /115	116/116 /116	113/113 /136	113/113 /136
Refrigerant charge @60Hz (Ckt1/ Ckt2/Ckt3)	kg	99/99 /136	104/118 /118	118/118 /128	129/129 /132	132/132 /132	129/129 /155	129/129 /155
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	Liter	517	517	517	517	517	506	506
Designed refrigeration pressure	kPa	1,000						
Max water pressure	kPa	1,500						
Water connection size	mm	200	200	200	200	200	200	200
Water connection type		Victaulic Coupling						
Drain connection size	mm	12.5						
CONDENSER COIL								
Qty (Ckt1/Ckt2/Ckt3)		5/5/6	5/5/4	6/5/5	6/5/5	6/6/6	6/5/5	6/6/6
Fins per inch		472						
No. of rows		4						
Total face area	m^2	44.8	39.1	44.8	44.8	50.4	44.8	50.4
Max working refrigeration pressure	kPa	2,100						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2/Ckt3)		5/5/6	4/5/5	5/5/6	5/5/6	6/6/6	5/5/6	6/6/6
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	mm	900						
Total air flow rate (50Hz)	L/s	129,665	113,457	129,665	129,665	145,873	129,665	145,873
Total air flow rate (60Hz)	L/s	147,360	128,940	147,360	147,360	165,780	147,360	165,780
Motor power (60/50Hz)	kW	2.30/1.45						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°C	7						
Length	mm	11540	10660	11640	11640	13020	11640	13020
Width	mm	2230	2230	2230	2230	2230	2230	2230
Height	mm	2570	2570	2570	2570	2570	2570	2570

Legend
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- Al : Aluminum
- Ckt : Refrigeration circuit

Note
- Shipping & operating weights are based on standard design components, selected options may add weight on the unit
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Physical Data - SI

	APSa	475-3	485-3	500-3	510-3	550-4	580-4	600-4
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		1+2	1+2	3	3	4	4	4
Oil charge (Ckt1/Ckt2 /Ckt3/Ckt4)	Liter	28/28 /28	28/28 /28	28/28 /28	28/28 /28	28/28 /28/28	28/28 /28/28	28/28 /28/28
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	kg	12,343	13,401	12,623	13,381	15,277	15,630	15,862
AL/Cu operating weight	kg	14,192	15,065	14,287	15,230	17,125	17,478	17,897
Cu/Cu operating weight	kg	17,083	16,007	16,102	17,244	19,142	19,492	20,250
Microchannel shipping weight	kg	12,754	11,697	11,976	12,735	14,313	14,666	14,828
AL/Cu shipping weight	kg	14,418	13,898	13,994	14,934	16,688	17,038	17,428
Cu/Cu shipping weight	kg	16,435	15,714	15,809	16,951	18,705	19,055	19,781
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		3	3	3	3	4	4	4
Refrigerant charge @50Hz (Ckt1/ Ckt2/Ckt3/Ckt4)	kg	118/118 /136	118/118 /136	136/136 /136	136/140 /140	105/105 /105/105	113/113 /113/113	118/118 /118/118
Refrigerant charge @60Hz (Ckt1/ Ckt2/Ckt3/Ckt4)	kg	136/136 /155	136/136 /155	155/155 /155	155/160 /160	121/121 /121/121	129/129 /129/129	136/136 /136/136
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	2	2	2
Net fluid volume	Liter	647	647	647	647	2x482	2x482	2x517
Designed refrigeration pressure	kPa	1,000						
Max water pressure	kPa	1,500						
Water connection size	mm	250	250	250	250	2x200	2x200	2x200
Water connection type		Victaulic Coupling						
Drain connection size	mm	12.5						
CONDENSER COIL								
Qty (Ckt1/Ckt2/Ckt3/Ckt4)		6/6/6	7/7/6	6/6/6	7/7/6	5/5/5/5	5/5/5/5	5/5/5/5
Fins per inch		472						
No. of rows		4						
Total face area	m^2	50.4	56.0	50.4	55.9	55.9	55.9	55.9
Max working refrigeration pressure	kPa	2,100						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2/Ckt3/Ckt4)		6/6/6	6/7/7	6/6/6	6/7/7	5/5/5/5	5/5/5/5	5/5/5/5
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	mm	900						
Total air flow rate (50Hz)	L/s	145,873	162,081	145,873	162,081	162,081	162,081	162,081
Total air flow rate (60Hz)	L/s	165,780	184,200	165,780	184,200	184,200	184,200	184,200
Motor power (60/50Hz)	kW	2.30/1.45						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°C	7						
Length	mm	13020	14400	13020	14400	14400	14400	14400
Width	mm	2230	2230	2230	2230	2230	2230	2230
Height	mm	2570	2570	2570	2570	2870	2870	2870

Legend
- Cu : Copper
- Al : Aluminum
- Ckt : Refrigeration circuit

Note
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Physical Data - IMP

APSa		50-1	60-1	65-1	70-1	70-2	75-1	80-1	95-2
COMPRESSOR									
Type		Semi Hermetic Twin Rotary Screw							
Qty		1	1	1	1	2	1	1	2
Oil charge (Ckt1/Ckt2)	gal	4.2	4.2	4.2	4.2	2.1/2.1	4.0	4.8	3.7/3.7
Nominal speed (50/60 Hz)	rpm	2,950/3,550							
WEIGHT									
Microchannel operating weight	lb	-	5,287	5,350	5,419	6,069	6,112	6,310	7,017
AL/Cu operating weight	lb	4,300	6,120	6,183	6,252	6,902	6,945	7,143	7,850
Cu/Cu operating weight	lb	4,812	7,009	7,072	7,141	7,792	7,834	8,032	8,735
Microchannel shipping weight	lb	-	5,045	5,108	5,177	5,838	5,779	5,977	6,715
AL/Cu shipping weight	lb	4,058	5,878	5,941	6,010	6,797	6,611	6,809	7,708
Cu/Cu shipping weight	lb	4,570	6,767	6,830	6,899	7,687	7,500	7,698	8,598
REFRIGERANT									
Refrigerant type		R-134a							
No. of independent circuits		1	1	1	1	2	1	1	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	lb	41	43	48	52	59/59	59	65	79/79
Refrigerant charge @60Hz (Ckt1/Ckt2)	lb	46	50	55	59	67/67	68	74	89/89
COOLER									
Type		DX Shell & Tube							
Qty		1	1	1	1	1	1	1	1
Net fluid volume	gal	29	29	29	29	29	40	40	36
Designed refrigeration pressure	psig	145							
Max water pressure	psig	220							
Water connection size	inch	5	5	5	5	5	6	6	6
Water connection type		Victaulic Coupling							
Drain connection size	inch	1/2							
CONDENSER COIL									
Qty (Ckt1/Ckt2)		2	4	4	4	2/2	4	4	2/2
Fins per inch		12							
No. of rows		4							
Total face area	ft^2	69.2	120.3	120.3	120.3	120.3	120.3	120.3	120.3
Max working refrigeration pressure	psig	320							
CONDENSER FAN									
Type		Direct Drive External Rotor							
Qty (Ckt1/Ckt2)		2	4	4	4	2/2	4	4	2/2
Nominal speed (50/60Hz)	rpm	900/1,100							
No of blades		5							
Nominal Diameter	inch	36							
Total air flow rate (50Hz)	cfm	34,347	50,913	50,913	68,693	68,693	68,693	68,693	68,693
Total air flow rate (60Hz)	cfm	39,034	61,707	61,707	78,068	78,068	78,068	78,068	78,068
Motor power (60/50Hz)	HP	3.0/2.0							
GENERAL									
Capacity control		Modulating							
Minimum ambient temperature	°F	45							
Length	inch	130	124	124	124	132	124	124	132
Width	inch	71	88	88	88	88	88	88	88
Height	inch	98	100	100	100	100	100	100	100

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Physical Data - IMP

	APSa	95-1	100-1	100-2	110-2	120-2	125-2	135-2	140-2
COMPRESSOR									
Type		Semi Hermetic Twin Rotary Screw							
Qty		1	1	2	2	1+1	2	2	2
Oil charge (Ckt1/Ckt2)	gal	5.3	5.3	4.2/4.2	4.2/4.2	4.2/4.2	4.2/4.2	4.2/4.2	4.0/4.0
Nominal speed (50/60 Hz)	rpm	2,950/3,550							
WEIGHT									
Microchannel operating weight	lb	6,331	6,499	7,376	8,993	9,081	8,902	9,566	10,060
AL/Cu operating weight	lb	7,164	7,332	8,291	10,231	10,319	10,140	10,804	11,422
Cu/Cu operating weight	lb	8,053	8,221	9,329	11,598	11,774	11,474	12,138	12,979
Microchannel shipping weight	lb	6,029	6,197	7,074	8,691	8,779	8,600	9,037	9,531
AL/Cu shipping weight	lb	6,864	7,032	8,154	10,100	10,176	9,838	10,275	11,182
Cu/Cu shipping weight	lb	7,753	7,922	9,192	11,444	11,642	11,172	11,609	12,739
REFRIGERANT									
Refrigerant type		R-134a							
No. of independent circuits		1	1	2	2	2	2	2	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	lb	71	80	89/89	94/94	94/102	102/102	112/112	122/122
Refrigerant charge @60Hz (Ckt1/Ckt2)	lb	81	90	100/100	107/107	107/117	117/117	129/129	138/138
COOLER									
Type		DX Shell & Tube							
Qty		1	1	1	1	1	1	1	1
Net fluid volume	gal	36	36	36	36	36	36	63	63
Designed refrigeration pressure	psig	145							
Max water pressure	psig	220							
Water connection size	inch	6	6	6	6	6	6	8	8
Water connection type		Victaulic Coupling							
Drain connection size	inch	1/2							
CONDENSER COIL									
Qty (Ckt1/Ckt2)		4	4	2/2	3/3	3/3	3/3	3/3	3/3
Fins per inch		12							
No. of rows		4							
Total face area	ft²	120.3	120.3	120.3	180.5	180.5	180.5	180.5	180.5
Max working refrigeration pressure	psig	320							
CONDENSER FAN									
Type		Direct Drive External Rotor							
Qty (Ckt1/Ckt2)		4	4	2/2	3/3	3/3	3/3	3/3	3/3
Nominal speed (50/60Hz)	rpm	900/1,100							
No of blades		5							
Nominal Diameter	inch	36							
Total air flow rate (50Hz)	cfm	68,693	68,693	68,693	103,040	103,040	103,040	103,040	103,040
Total air flow rate (60Hz)	cfm	78,068	78,068	78,068	117,101	117,101	117,101	117,101	117,101
Motor power (60/50Hz)	HP	3.0/2.0							
GENERAL									
Capacity control		Modulating							
Minimum ambient temperature	°F	45							
Length	inch	124	124	132	187	187	187	202	202
Width	inch	88	88	88	88	88	88	88	88
Height	inch	100	100	100	100	100	100	100	100

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	APSa	145-2	160-2	165-2	175-2	190-2	195-2	200-2
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2	1+1	2	2	2	2	2
Oil charge (Ckt1/Ckt2)	gal	4.0/4.0	4.0/4.8	4.8/4.8	5.3/5.3	5.3/5.3	6.1/6.1	6.1/6.1
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	lb	11,952	12,167	12,357	12,207	13,441	12,525	13,901
AL/Cu operating weight	lb	13,595	13,810	14,000	13,850	15,490	14,333	15,950
Cu/Cu operating weight	lb	15,374	15,593	15,779	15,637	17,714	16,409	18,177
Microchannel shipping weight	lb	11,422	11,651	11,841	11,691	12,925	11,993	13,370
AL/Cu shipping weight	lb	13,066	13,580	13,484	13,624	14,974	14,092	15,712
Cu/Cu shipping weight	lb	14,845	15,359	15,263	15,403	17,198	16,168	17,936
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		2	2	2	2	2	2	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	lb	125/125	140/148	138/138	147/147	151/151	161/161	165/165
Refrigerant charge @60Hz (Ckt1/Ckt2)	lb	144/144	147/156	157/157	165/147	171/171	182/182	188/187
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	gal	63	62	62	62	62	64	64
Designed refrigeration pressure	psig	145						
Max water pressure	psig	220						
Water connection size	inch	8	8	8	8	8	8	8
Water connection type		Victaulic Coupling						
Drain connection size	inch	1/2						
CONDENSER COIL								
Qty (Ckt1/Ckt2)		4/4	4/4	4/4	4/4	5/5	4/4	5/5
Fins per inch		12						
No. of rows		4						
Total face area	ft^2	240.7	240.7	240.7	240.7	300.8	240.7	300.8
Max working refrigeration pressure	psig	320						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2)		4/4	4/4	4/4	4/4	5/5	4/4	5/5
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	inch	36						
Total air flow rate (50Hz)	cfm	137,386	137,386	137,386	137,386	171,733	137,386	171,733
Total air flow rate (60Hz)	cfm	156,135	156,135	156,135	156,135	195,169	156,135	195,169
Motor power (60/50Hz)	HP	3.0/2.0						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°F	45						
Length	inch	241	241	241	241	287	241	287
Width	inch	88	88	88	88	88	88	88
Height	inch	101	101	101	101	101	101	101

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Physical Data - IMP

	APSa	205-2	210-2	220-2	235-2	250-2	275-2	280-2
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2	2	2	1+1	2	1+1	2
Oil charge (Ckt1/Ckt2)	gal	6.1/6.1	5.3/5.3	5.3/5.3	7.4/5.3	7.4/7.4	7.4/7.4	7.4/7.4
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	lb	14,026	12,718	13,966	14,643	15,331	16,806	18,006
AL/Cu operating weight	lb	16,075	14,361	16,015	16,692	17,380	18,855	20,460
Cu/Cu operating weight	lb	18,299	16,140	18,239	18,916	19,606	21,079	23,129
Microchannel shipping weight	lb	13,499	12,191	13,439	14,116	14,804	15,743	16,943
AL/Cu shipping weight	lb	15,548	14,122	15,488	16,453	17,143	18,373	19,397
Cu/Cu shipping weight	lb	17,772	15,901	17,712	18,677	19,367	20,597	22,066
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		2	2	2	2	2	2	2
Refrigerant charge @50Hz (Ckt1/Ckt2)	lb	179/179	182/182	189/189	228/181	228/228	228/252	240/240
Refrigerant charge @60Hz (Ckt1/Ckt2)	lb	207/207	208/208	218/218	260/209	260/260	260/289	275/275
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	gal	63	63	63	63	63	128	128
Designed refrigeration pressure	psig	145						
Max water pressure	psig	220						
Water connection size	inch	6	6	6	6	6	8	8
Water connection type		Victaulic Coupling						
Drain connection size	inch	1/2						
CONDENSER COIL								
Qty (Ckt1/Ckt2)		5/5	4/4	5/5	5/5	5/5	5/5	6/6
Fins per inch		12						
No. of rows		4						
Total face area	ft^2	300.8	240.7	300.8	300.8	300.8	300.8	361.0
Max working refrigeration pressure	psig	320						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2)		5/5	4/4	5/5	5/5	5/5	5/5	6/6
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	inch	36						
Total air flow rate (50Hz)	cfm	171,733	137,386	171,733	171,733	171,733	171,733	206,080
Total air flow rate (60Hz)	cfm	195,169	156,135	195,169	195,169	195,169	195,169	234,203
Motor power (60/50Hz)	HP	3.0/2.0						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°F	45						
Length	inch	295	257	295	303	303	303	346
Width	inch	88	88	88	88	88	88	88
Height	inch	101	101	101	101	101	101	101

Legend
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	APSa	285-2	300-2	315-3	315-2	335-2	350-2	350-3
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2	2	1+2	1+1	2	2	2+1
Oil charge (Ckt1/Ckt2 /Ckt3)	gal	7.4/7.4	7.4/7.4	6.1/5.3 /5.3	7.4/7.4	7.4/7.4	7.4/7.4	5.3/5.3 /7.4
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	lb	17,046	18,813	19,350	18,979	19,356	20,682	20,423
AL/Cu operating weight	lb	19,095	21,267	21,804	21,433	21,810	23,541	23,282
Cu/Cu operating weight	lb	21,319	23,936	24,473	24,102	24,479	26,654	26,395
Microchannel shipping weight	lb	15,983	17,633	18,170	17,799	18,216	19,542	19,283
AL/Cu shipping weight	lb	18,613	20,732	20,624	20,898	21,293	23,024	22,142
Cu/Cu shipping weight	lb	20,837	23,401	23,293	23,567	23,962	26,137	25,256
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		2	2	3	2	2	2	3
Refrigerant charge @50Hz (Ckt1/ Ckt2/Ckt3)	lb	249/249	261/261	189/189 /179	261/299	300/300	309/309	179/179 /266
Refrigerant charge @60Hz (Ckt1/ Ckt2/Ckt3)	lb	283/283	299/299	218/207 /207	260/209	342/342	354/354	207/207 /303
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	gal	127	142	142	142	137	137	137
Designed refrigeration pressure	psig	145						
Max water pressure	psig	220						
Water connection size	inch	8	8	8	8	8	8	8
Water connection type		Victaulic Coupling						
Drain connection size	inch	1/2						
CONDENSER COIL								
Qty (Ckt1/Ckt2/Ckt3)		5/5	6/6	4/4/4	6/6	6/6	7/7	4/5/5
Fins per inch		12						
No. of rows		4						
Total face area	ft^2	300.8	361.0	361.0	361.0	361.0	421.2	421.2
Max working refrigeration pressure	psig	320						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2/Ckt3)		5/5	6/6	4/4/4	6/6	6/6	7/7	5/5/4
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	inch	36						
Total air flow rate (50Hz)	cfm	171,733	206,080	206,080	206,080	206,080	240,426	240,426
Total air flow rate (60Hz)	cfm	195,169	234,203	234,203	234,203	234,203	273,237	273,237
Motor power (60/50Hz)	HP	3.0/2.0						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°F	45						
Length	inch	303	346	354	346	346	400	416
Width	inch	88	88	88	88	88	88	88
Height	inch	101	101	101	101	101	101	101

Legend
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Physical Data - IMP

	APSa	360-3	375-3	400-3	415-3	430-3	450-3	465-3
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		2+1	1+2	3	3	3	2+1	2+1
Oil charge (Ckt1/Ckt2 /Ckt3)	gal	5.3/5.3 /7.4	5.3/7.4 /7.4	7.4/7.4 /7.4	7.4/7.4 /7.4	7.4/7.4 /7.4	7.4/7.4 /7.4	7.4/7.4 /7.4
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	lb	22,649	21,815	24,055	24,628	26,762	24,893	27,066
AL/Cu operating weight	lb	25,914	24,674	27,320	27,893	30,432	28,158	30,736
Cu/Cu operating weight	lb	29,472	27,787	30,878	31,451	34,435	31,716	34,739
Microchannel shipping weight	lb	21,509	20,675	22,915	23,488	25,622	23,777	25,950
AL/Cu shipping weight	lb	24,774	24,157	26,903	27,376	29,292	27,652	29,620
Cu/Cu shipping weight	lb	28,332	27,270	30,361	30,934	33,295	31,210	33,623
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		3	3	3	3	3	3	3
Refrigerant charge @50Hz (Ckt1/ Ckt2/Ckt3)	lb	188/188 /262	199/228 /228	228/228 /245	249/249 /254	256/256 /256	249/249 /300	251/251 /302
Refrigerant charge @60Hz (Ckt1/ Ckt2/Ckt3)	lb	216/216 /302	228/26 0/260	260/260 /283	283/283 /290	292/292 /292	283/283 /342	285/285 /344
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	1	1	1
Net fluid volume	gal	137	137	137	137	137	134	134
Designed refrigeration pressure	psig	145						
Max water pressure	psig	220						
Water connection size	inch	8	8	8	8	8	8	8
Water connection type		Victaulic Coupling						
Drain connection size	inch	1/2						
CONDENSER COIL								
Qty (Ckt1/Ckt2/Ckt3)		5/5/6	5/5/4	6/5/5	6/5/5	6/6/6	6/5/5	6/6/6
Fins per inch		12						
No. of rows		4						
Total face area	ft^2	481.3	421.2	481.3	481.3	541.5	481.3	541.5
Max working refrigeration pressure	psig	320						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2/Ckt3)		5/5/6	4/5/5	5/5/6	5/5/6	6/6/6	5/5/6	6/6/6
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	inch	36						
Total air flow rate (50Hz)	cfm	274,773	240,426	274,773	274,773	309,119	274,773	309,119
Total air flow rate (60Hz)	cfm	312,271	273,237	312,271	312,271	351,304	312,271	351,304
Motor power (60/50Hz)	HP	3.0/2.0						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°F	45						
Length	inch	454	420	458	458	513	458	513
Width	inch	88	88	88	88	88	88	88
Height	inch	101	101	101	101	101	101	101

Legend
- Cu : Copper
- Al : Aluminum
- Ckt : Refrigeration circuit

Note
- Shipping & operating weights are based on standard design components, selected options may add weight on the unit
- Minimum ambient temperature operation shall be based on standard components. Unit shall be able to operate down to (32°F, 0°F & -20°F) with additional accessories

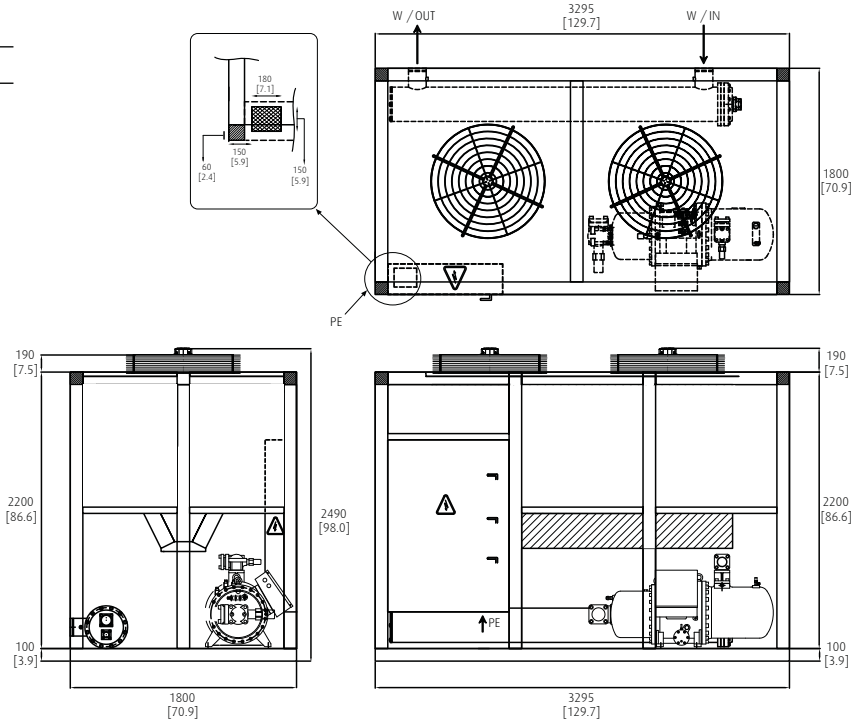
APSa		475-3	485-3	500-3	510-3	550-4	580-4	600-4
COMPRESSOR								
Type		Semi Hermetic Twin Rotary Screw						
Qty		1+2	1+2	3	3	4	4	4
Oil charge (Ckt1/Ckt2 /Ckt3/Ckt4)	gal	7.4/7.4 /7.4	7.4/7.4 /7.4	7.4/7.4 /7.4	7.4/7.4 /7.4	7.4/7.4 /7.4/7.4	7.4/7.4 /7.4/7.4	7.4/7.4 /7.4/7.4
Nominal speed (50/60 Hz)	rpm	2,950/3,550						
WEIGHT								
Microchannel operating weight	lb	27,217	29,549	27,833	29,506	33,685	34,464	34,976
AL/Cu operating weight	lb	31,293	33,219	31,503	33,582	37,761	38,540	39,463
Cu/Cu operating weight	lb	35,296	37,667	35,506	38,024	42,209	42,980	44,652
Microchannel shipping weight	lb	25,791	28,122	26,406	28,080	31,560	32,339	32,696
AL/Cu shipping weight	lb	30,646	31,792	30,856	32,929	36,797	37,568	38,429
Cu/Cu shipping weight	lb	34,649	36,240	34,859	37,377	41,245	42,016	43,618
REFRIGERANT								
Refrigerant type		R-134a						
No. of independent circuits		3	3	3	3	4	4	4
Refrigerant charge @50Hz (Ckt1/ Ckt2/Ckt3/Ckt4)	lb	257/29 /296	257/296 /296	300/300 /300	300/309 /309	232/232 /232/232	249/249 /249/249	261/261 /261/261
Refrigerant charge @60Hz (Ckt1/ Ckt2/Ckt3/Ckt4)	lb	255/337 /337	255/337 /337	342/342 /342	342/354 /354	266/266 /266/266	283/283 /283/283	300/300 /300/300
COOLER								
Type		DX Shell & Tube						
Qty		1	1	1	1	2	2	2
Net fluid volume	gal	171	171	171	171	2x127	2x127	2x137
Designed refrigeration pressure	psig	145						
Max water pressure	psig	220						
Water connection size	inch	10	10	10	10	2x8	2x8	2x8
Water connection type		Victaulic Coupling						
Drain connection size	inch	1/2						
CONDENSER COIL								
Qty (Ckt1/Ckt2/Ckt3/Ckt4)		6/6/6	7/7/6	6/6/6	7/7/6	5/5/5/5	5/5/5/5	5/5/5/5
Fins per inch		12						
No. of rows		4						
Total face area	ft^2	601.7	541.5	541.5	601.7	601.7	601.7	601.7
Max working refrigeration pressure	psig	320						
CONDENSER FAN								
Type		Direct Drive External Rotor						
Qty (Ckt1/Ckt2/Ckt3/Ckt4)		6/6/6	6/7/7	6/6/6	6/7/7	5/5/5/5	5/5/5/5	5/5/5/5
Nominal speed (50/60Hz)	rpm	900/1,100						
No of blades		5						
Nominal Diameter	inch	36						
Total air flow rate (50Hz)	cfm	309,119	343,466	309,119	343,466	343,466	343,466	343,466
Total air flow rate (60Hz)	cfm	351,304	390,338	351,304	390,338	390,338	390,338	390,338
Motor power (60/50Hz)	HP	3.0/2.0						
GENERAL								
Capacity control		Modulating						
Minimum ambient temperature	°F	45						
Length	inch	513	567	513	567	567	567	567
Width	inch	88	88	88	88	88	88	88
Height	inch	101	101	101	101	101	101	101

Legend
- Cu : Copper
- Al : Aluminum
- Ckt : Refrigeration circuit

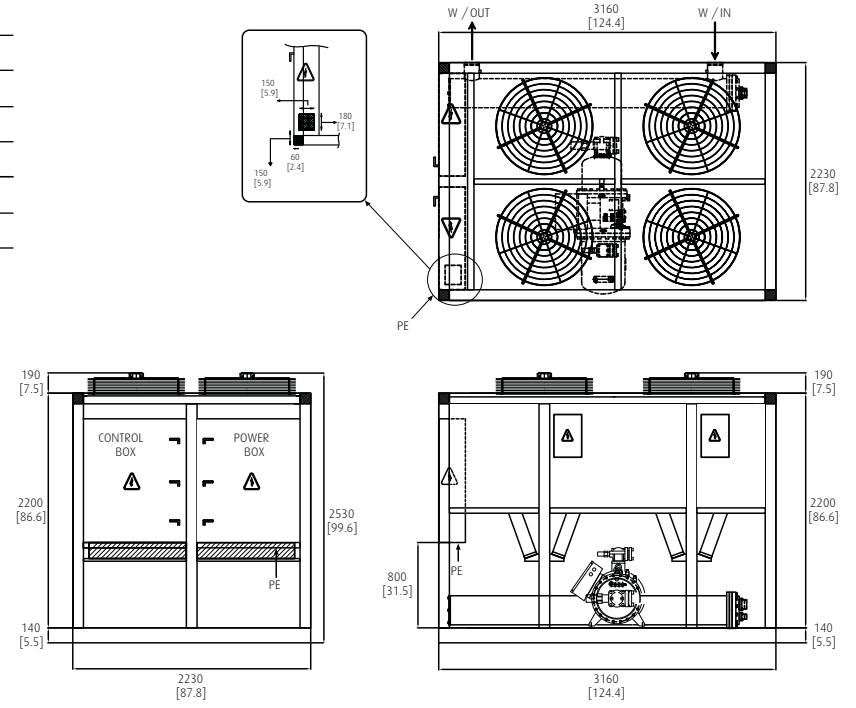
Note
- Shipping & operating weights are based on standard design components, selected options may add weight on the unit
- Minimum ambient temperature operation shall be based on standard components. Unit shall be able to operate down to (32°F, 0°F & -20°F) with additional accessories

Model Layout

Model
APSa 50-1



Model
APSa 60-1
APSa 65-1
APSa 70-1
APSa 75-1
APSa 80-1
APSa 95-1
APSa 100-1



Note

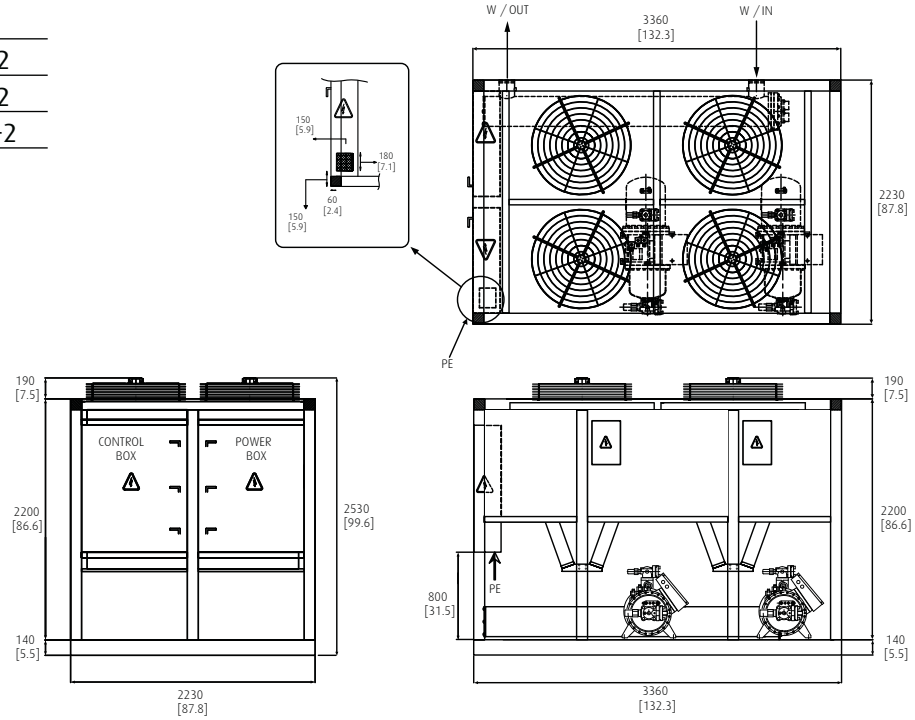
- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.4 m (4.5 ft)
- Barrel (cooler) end side for core removal: 4.0 m (13.1 ft)

Legend

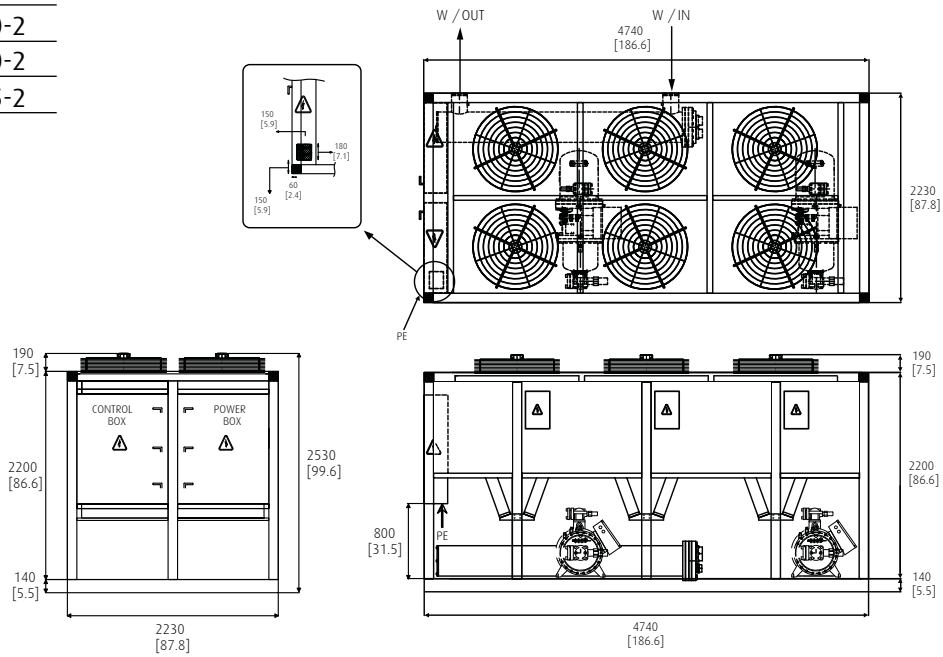
- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

Model
APSa 70-2
APSa 95-2
APSa 100-2



Model
APSa 110-2
APSa 120-2
APSa 125-2



Note

- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.4 m (4.5 ft)
- Barrel (cooler) end side for core removal: 4.0 m (13.1 ft)

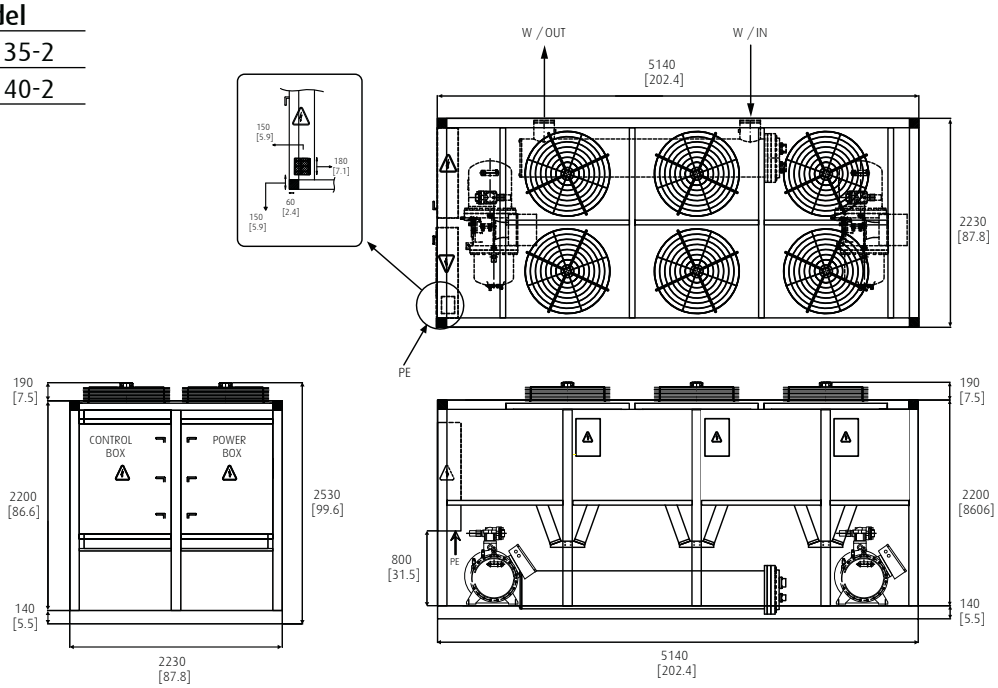
Legend

- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

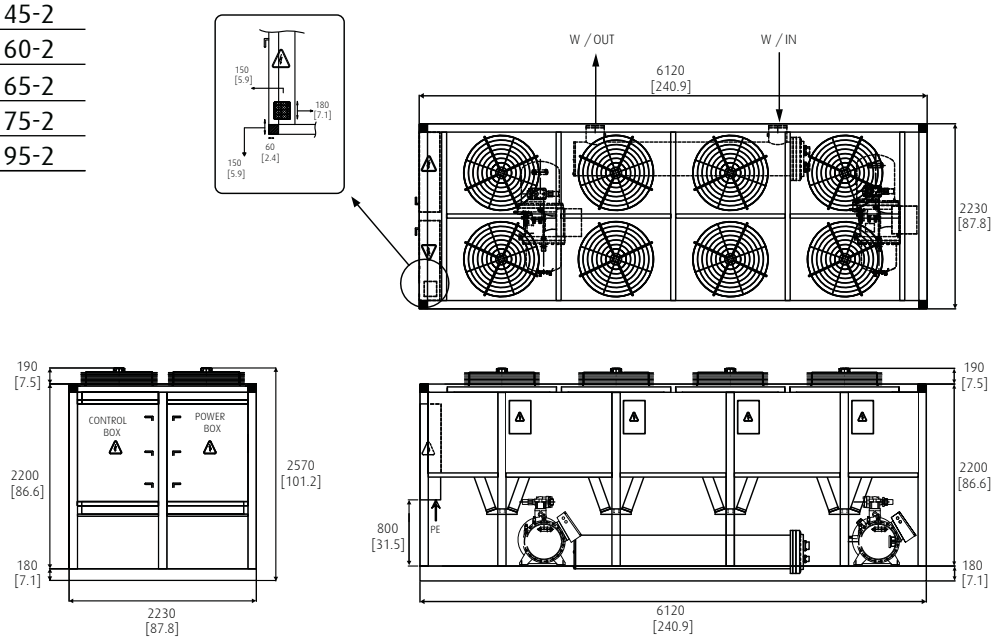
- All dimensions are in mm [inch]

Model Layout

Model
APSa 135-2
APSa 140-2



Model
APSa 145-2
APSa 160-2
APSa 165-2
APSa 175-2
APSa 195-2



Note

- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.4 m (4.5 ft)
- Barrel (cooler) end side for core removal: 4.0 m (13.1 ft)

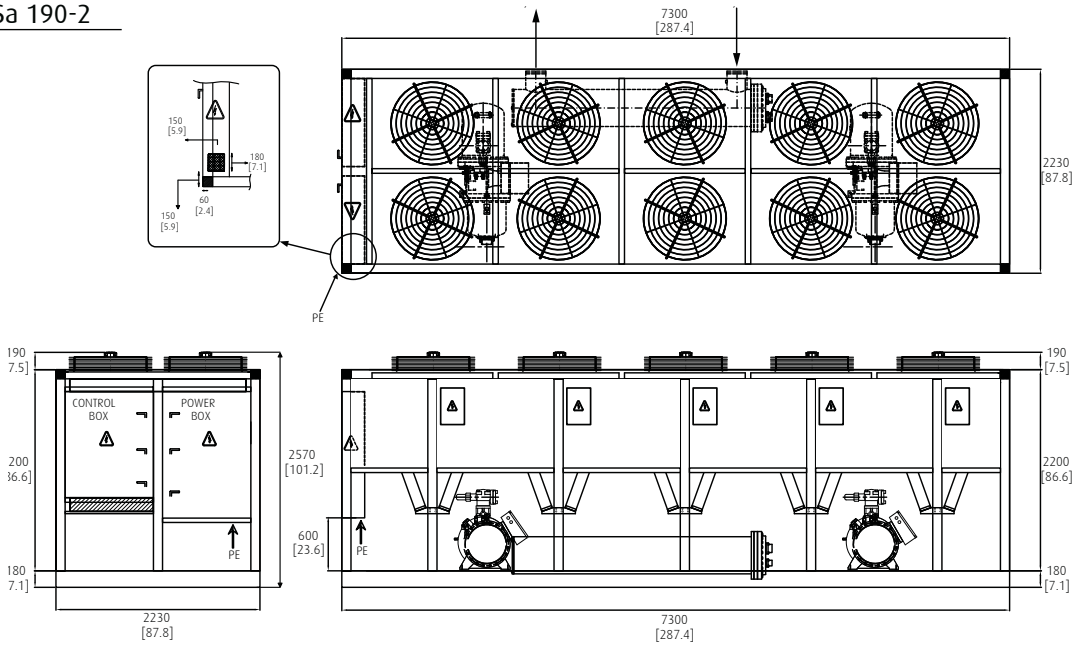
Legend

- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

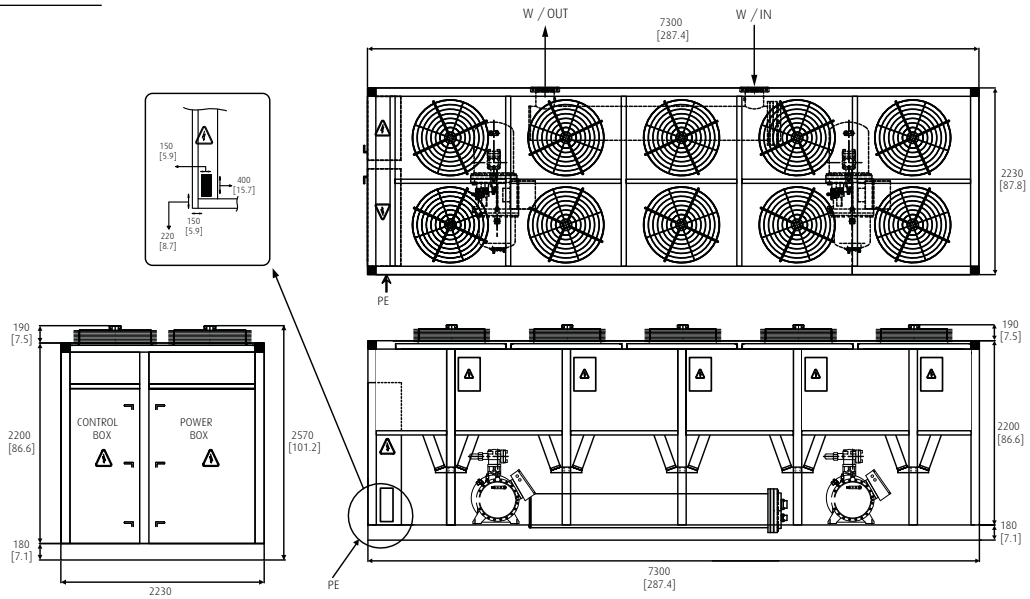
Model

APSa 190-2



Model

APSa 200-2



Note

- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.4 m (4.5 ft)
- Barrel (cooler) end side for core removal: 4.0 m (13.1 ft)

Legend

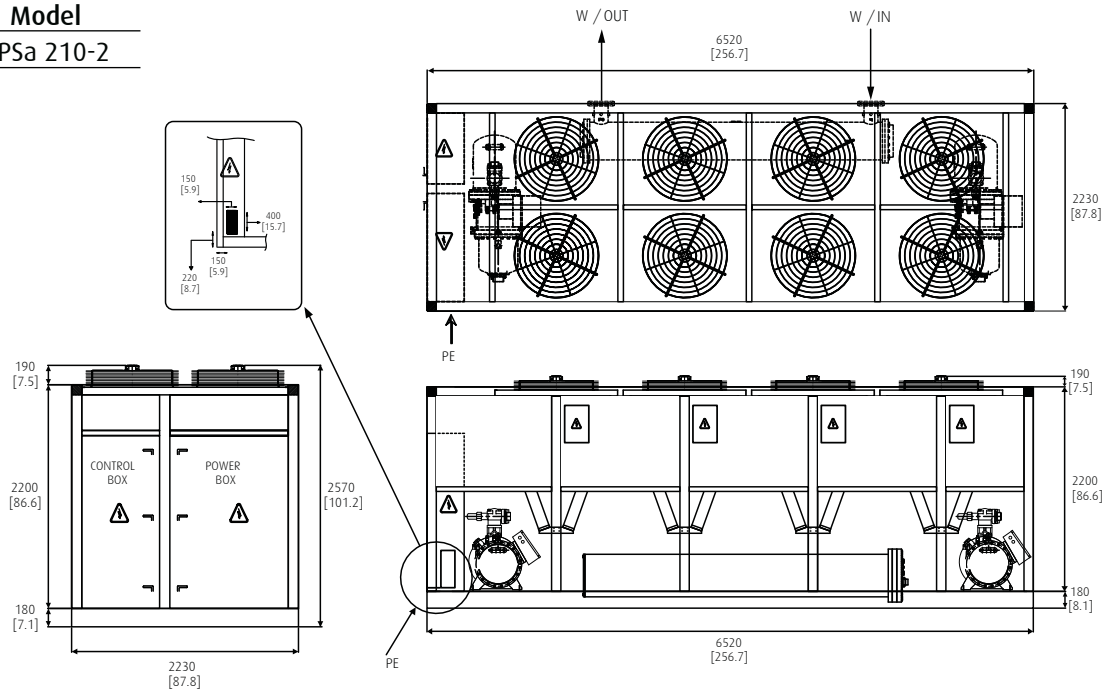
- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

Model Layout

Model

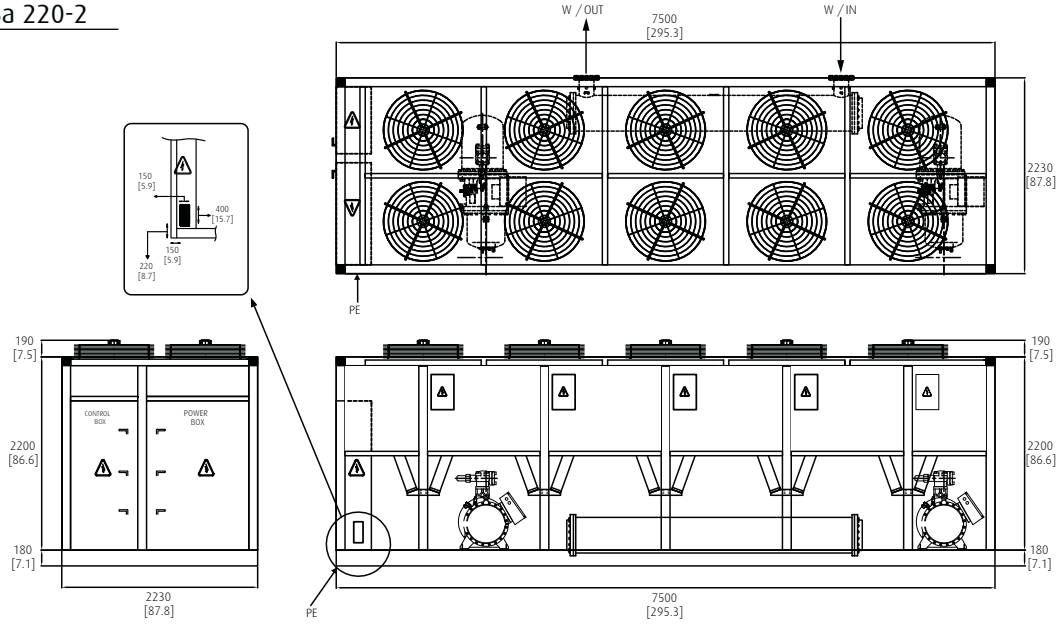
APSa 210-2



Model

APSa 205-2

APSa 220-2



Note

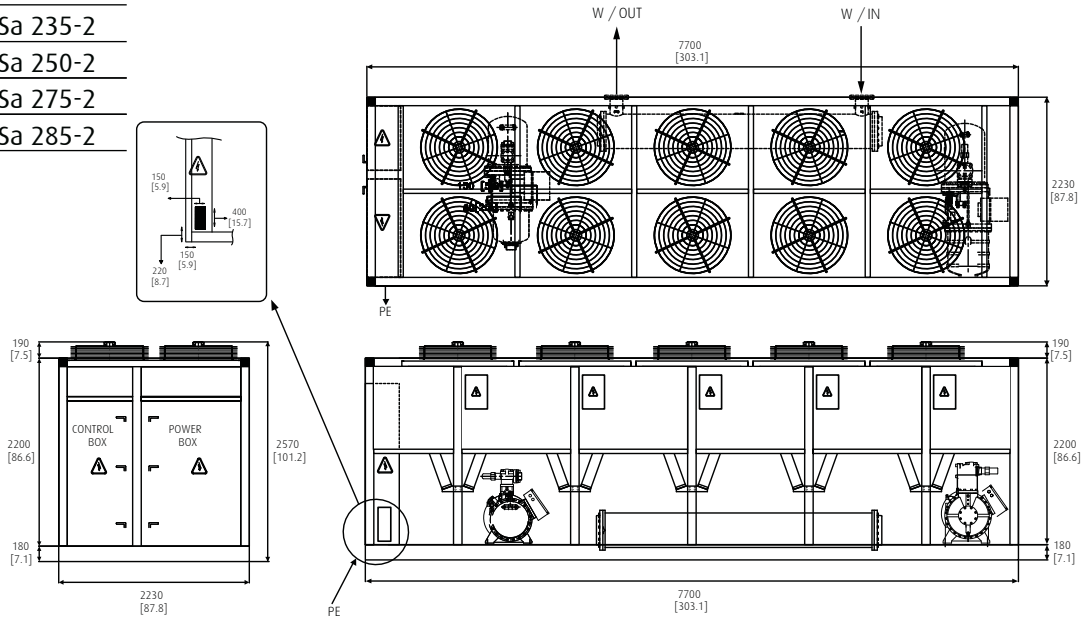
- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.5 m (5.0 ft)
- Barrel (cooler) end side for core removal: 4.5 m (14.8 ft)

Legend

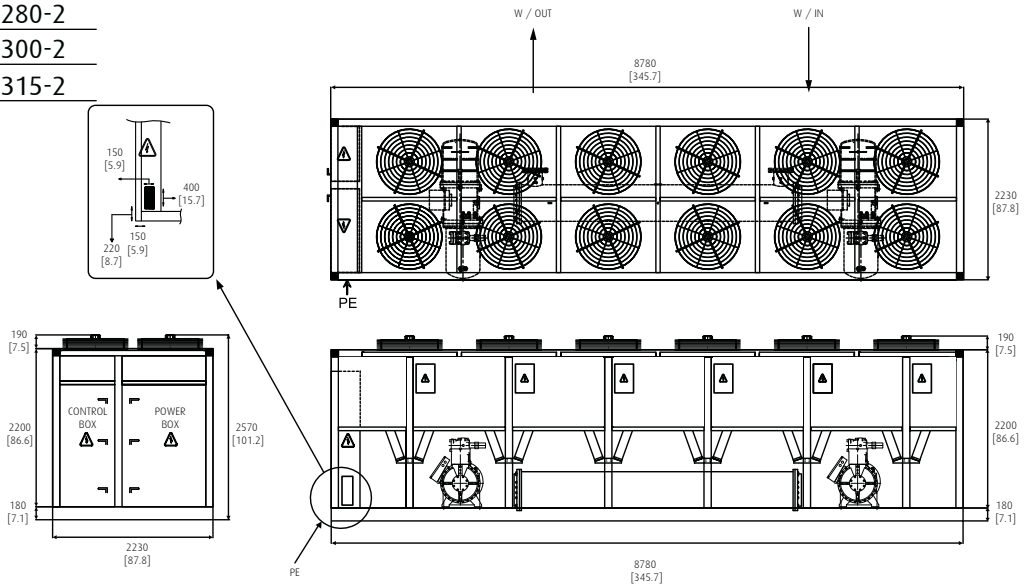
- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

Model
APSa 235-2
APSa 250-2
APSa 275-2
APSa 285-2



Model
APSa 280-2
APSa 300-2
APSa 315-2



Note

- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.4 m (4.5 ft)
- Barrel (cooler) end side for core removal:
  APSa 235-2, 250-2, 275-2 & 285-2 = 4.5 m (14.8 ft)
  APSa 280-2, 300-2 & 315-2 = 5.0 m (16.4 ft)

Legend

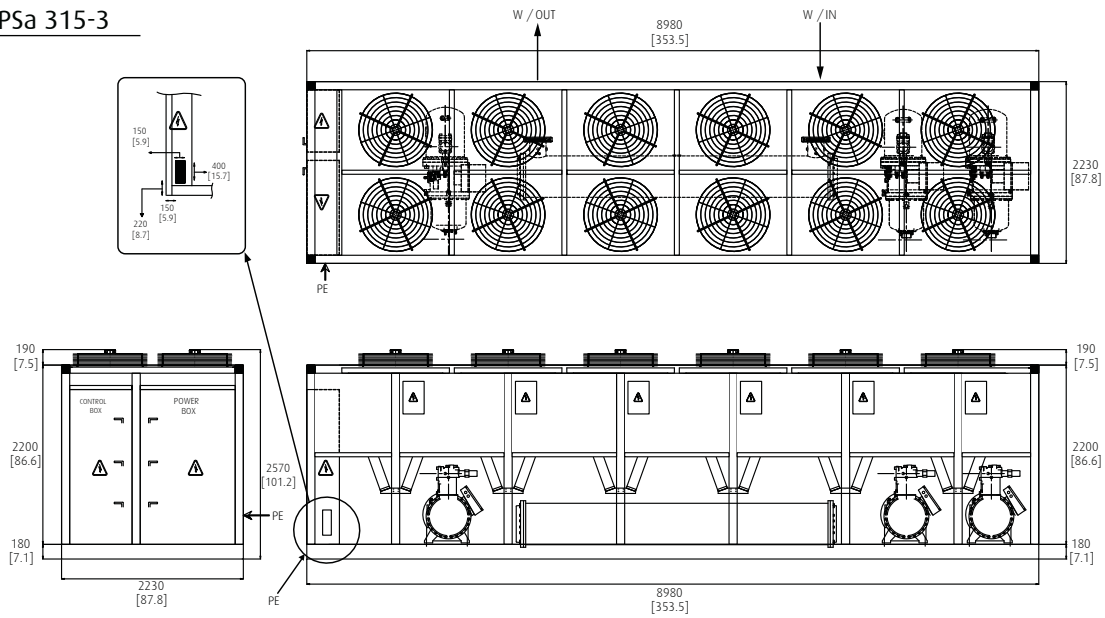
- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

Model Layout

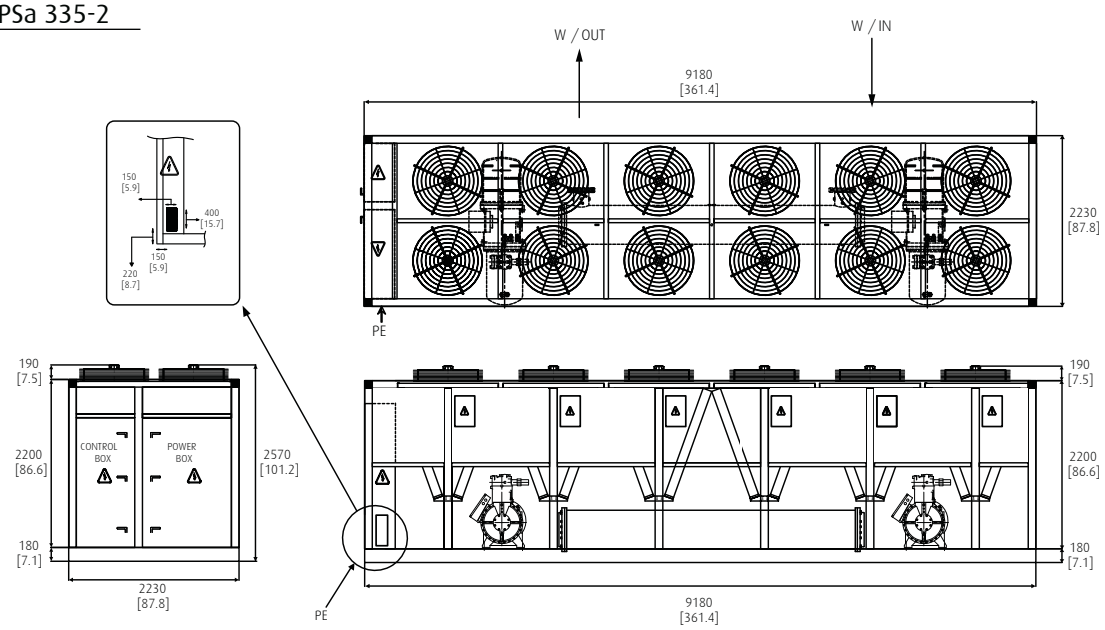
Model

APSa 315-3



Model

APSa 335-2



Note

- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.5 m (5.0 ft)
- Barrel (cooler) end side for core removal: 5.0 m (16.4 ft)

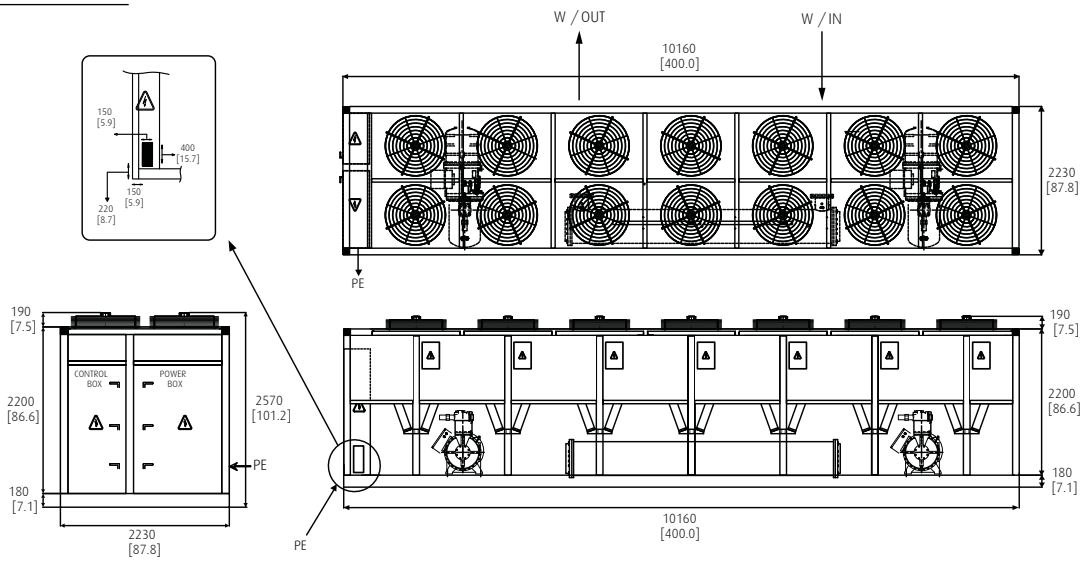
Legend

- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

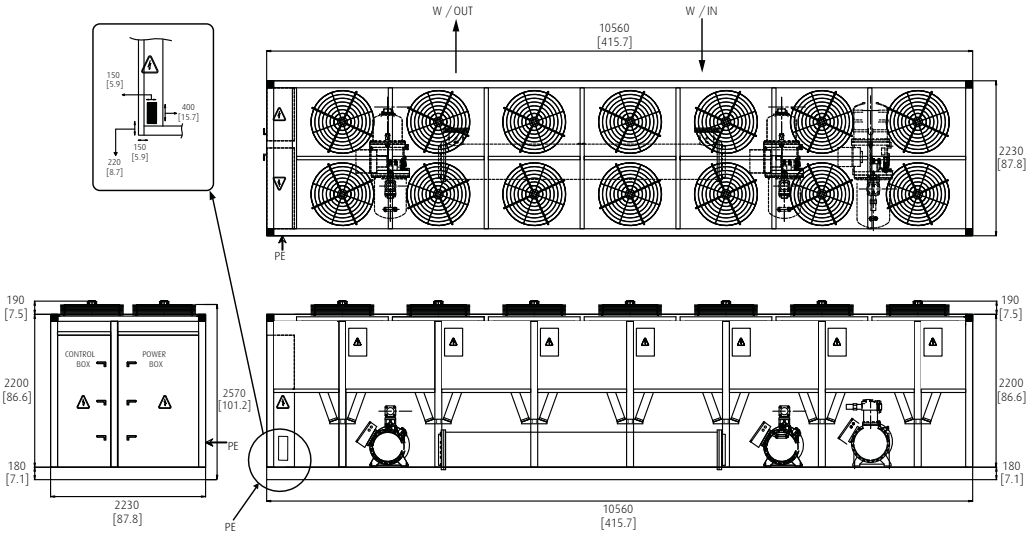
Model

APSa 350-2



Model

APSa 350-3



Note

- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.5 m (5.0 ft)
- Barrel (cooler) end side for core removal: 5.0 m (16.4 ft)

Legend

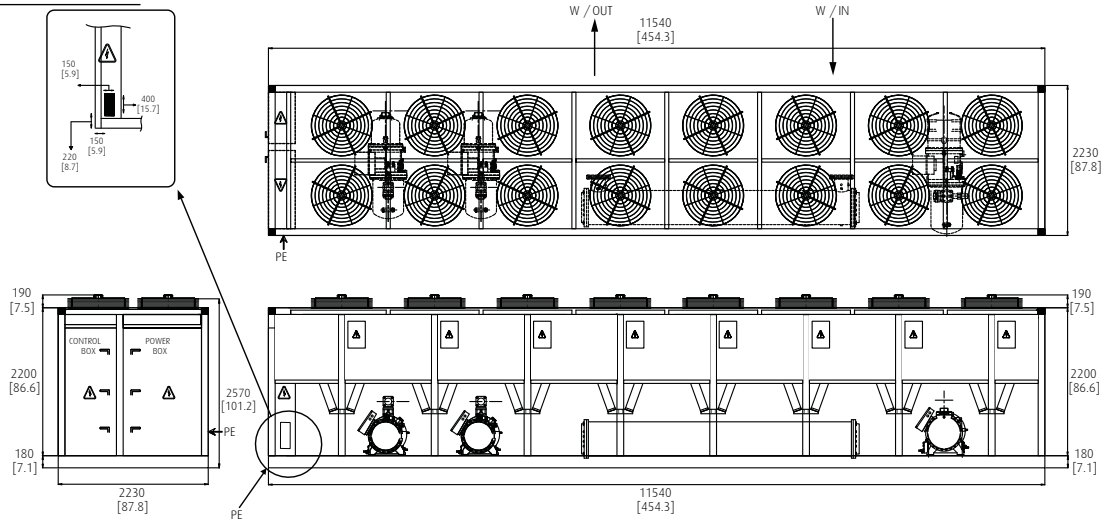
- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

Model Layout

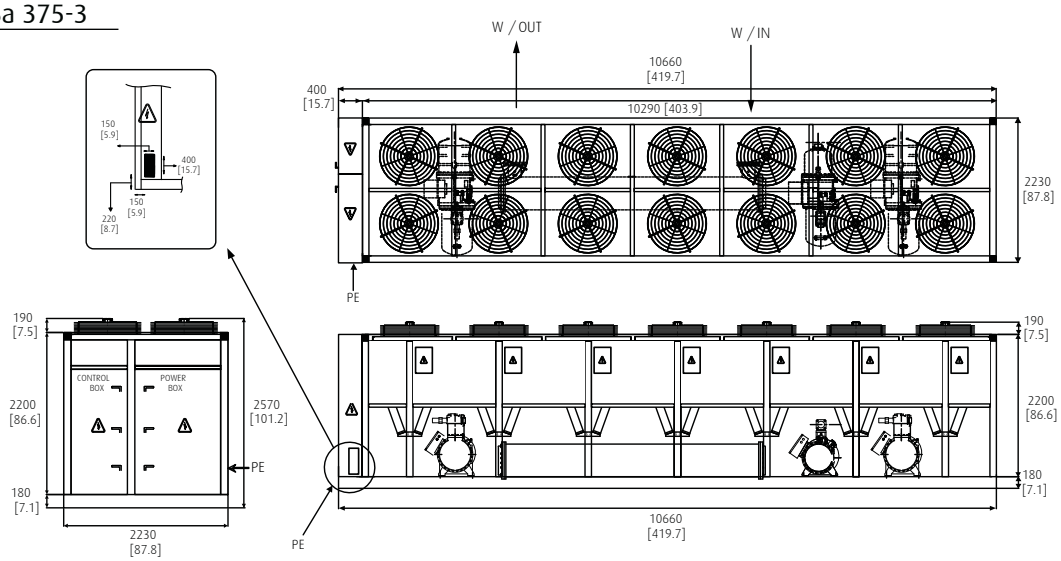
Model

APSa 360-3



Model

APSa 375-3



Note

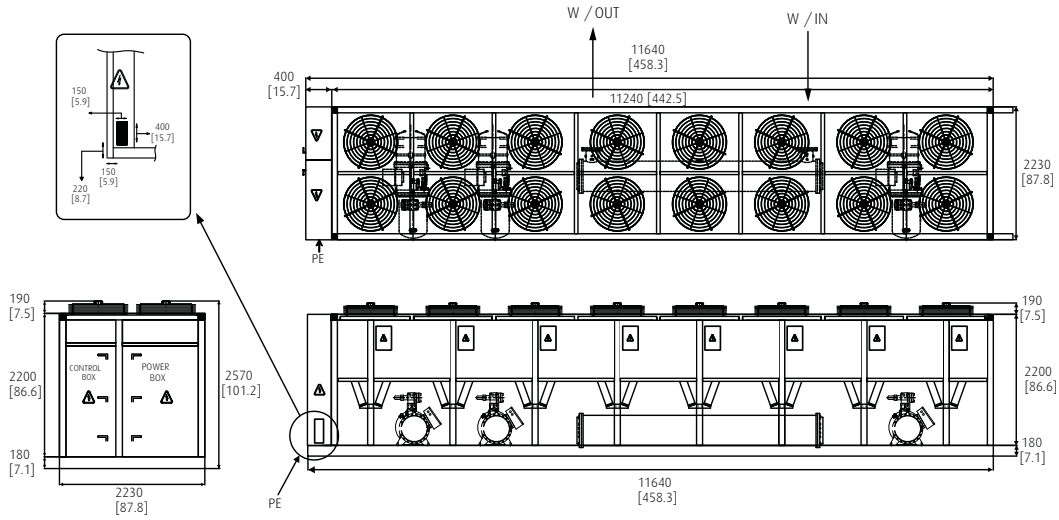
- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.5 m (5.0 ft)
- Barrel (cooler) end side for core removal: 5.0 m (16.4 ft)

Legend

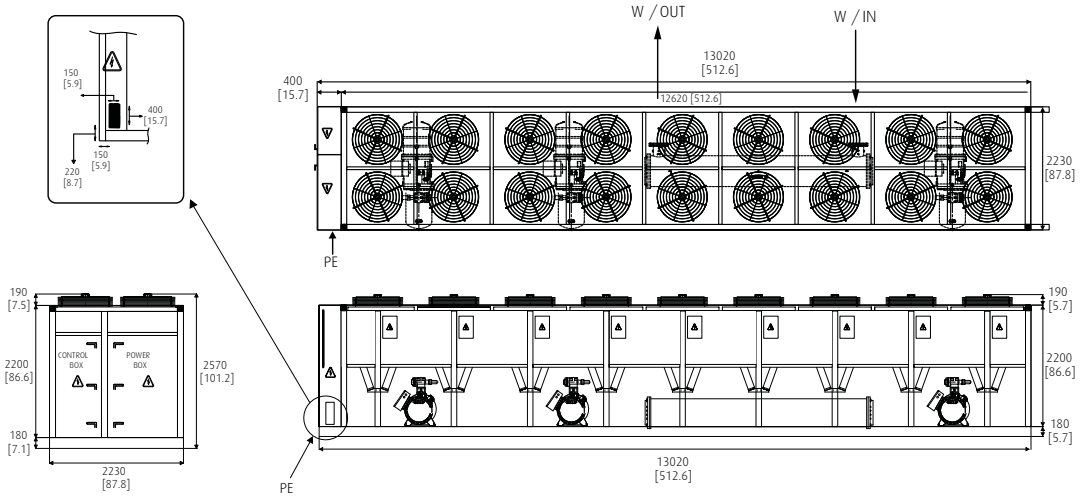
- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

Model
APSa 400-3
APSa 415-3
APSa 450-3



Model
APSa 430-3
APSa 465-3
APSa 475-3
APSa 500-3



Note

- Unit clearance
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.5 m (5.0 ft)
- Barrel (cooler) end side for core removal: 5.0 m (16.4 ft)

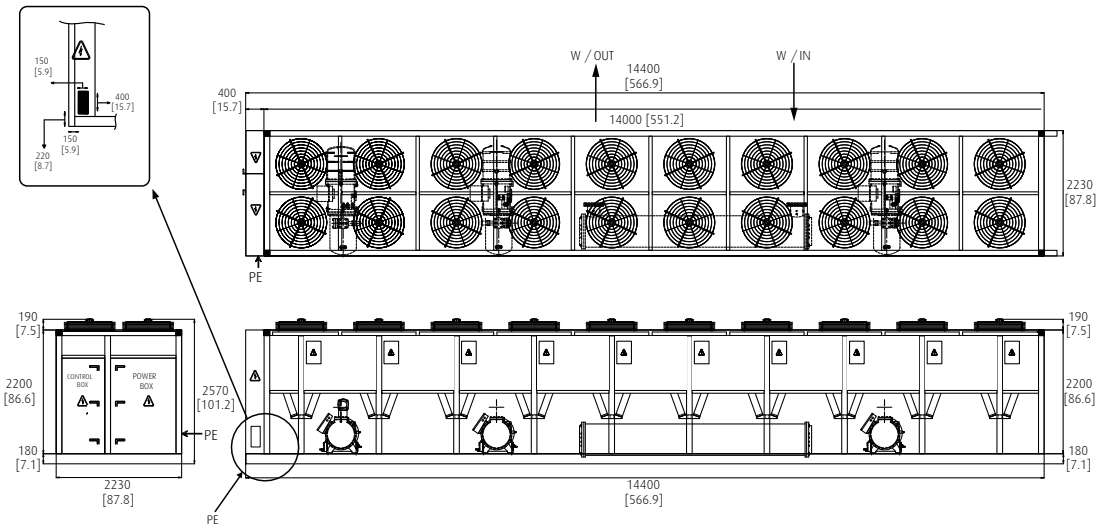
Legend

- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

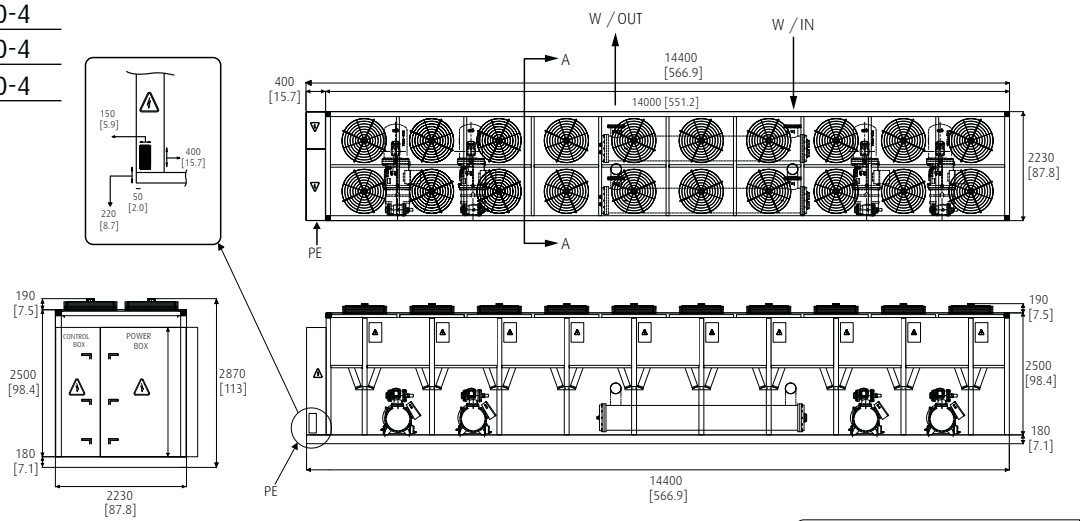
- All dimensions are in mm [inch]

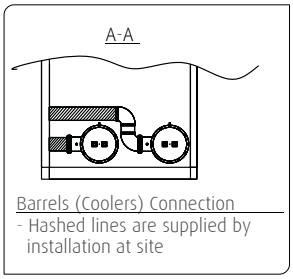
Model Layout

Model
APSa 485-3
APSa 510-3



Model
APSa 550-4
APSa 580-4
APSa 600-4





Note

Unit clearance

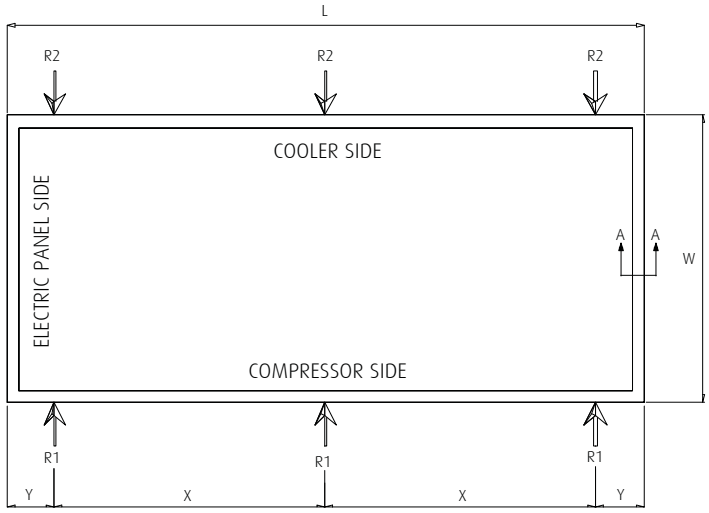
- Top: no obstacles
- Sides: 2.5 m (8.0 ft)
- Electric panel end side: 1.5 m (5.0 ft) for APSa 485-3 & 510-3
- Barrel (cooler) end side for core removal: 5.0 m (16.4 ft) for APSa 485-3 & 510-3
- Electric panel end side and opposite side: 1.7 m (5.5 ft) for APSa 550-4, 580-4 & 600-4
- Chiller unit can be shipped ONLY on flat racks (not in closed container)

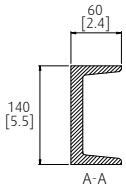
Legend

- W / OUT : Cooler (Barrel) water outlet
- W / IN : Cooler (Barrel) water inlet
- PE : Power entry

- All dimensions are in mm [inch]

Load Distribution





MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
50-1	3295	[129.7]	1800	[70.8]	1408	[55.4]	240	[9.4]
60-1	3160	[124.4]	2230	[87.7]	1340	[52.7]	240	[9.4]
65-1	3160	[124.4]	2230	[87.7]	1340	[52.7]	240	[9.4]
70-1	3160	[124.4]	2230	[87.7]	1340	[52.7]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
50-1	-	-	-	-	-	-	338	[745]	312	[688]	1950	[4300]
60-1	415	[916]	384	[846]	2398	[5287]	481	[1061]	444	[979]	2776	[6120]
65-1	421	[927]	389	[857]	2426	[5350]	486	[1072]	449	[989]	2804	[6183]
70-1	427	[940]	394	[868]	2458	[5419]	492	[1084]	454	[1000]	2835	[6252]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
50-1	378	[834]	349	[770]	2182	[4812]
60-1	551	[1215]	509	[1121]	3179	[7009]
65-1	556	[1226]	513	[1131]	3207	[7072]
70-1	562	[1238]	518	[1142]	3239	[7141]

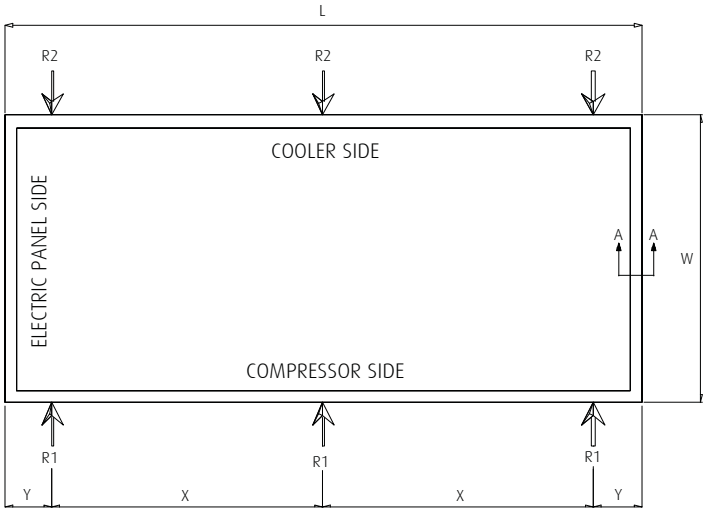
Legend

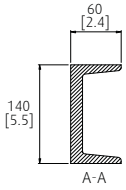
L: BASE LENGTH
W: BASE WIDTH
X: DISTANCE BETWEEN SUPPORTS
Y: DISTANCE BETWEEN SUPPORTS
R1: LOADS ON COMPRESSOR SIDE
R2: LOADS ON COOLER SIDE

Note

- load points & total weights are operating point including barrel (cooler) fluid content

Load Distribution





MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
70-2	3360	[132.3]	2230	[87.8]	1440	[56.7]	240	[9.4]
75-1	3160	[124.1]	2230	[87.8]	1340	[52.8]	240	[9.4]
80-1	3160	[124.1]	2230	[87.8]	1340	[52.8]	240	[9.4]
95-2	3360	[132.3]	2230	[87.8]	1440	[56.7]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
70-2	477	[1051]	441	[971]	2752	[6069]	542	[1196]	501	[1104]	3130	[6902]
75-1	480	[1059]	444	[978]	2772	[6112]	546	[1204]	504	[1111]	3150	[6945]
80-1	496	[1093]	458	[1009]	2862	[6310]	561	[1238]	518	[1143]	3239	[7143]
95-2	552	[1216]	509	[1122]	3182	[7017]	617	[1360]	569	[1255]	3560	[7850]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
70-2	611	[1348]	565	[1246]	3530	[7792]
75-1	616	[1358]	568	[1253]	3553	[7834]
80-1	631	[1392]	583	[1285]	3643	[8032]
95-2	686	[1513]	633	[1396]	3960	[8735]

Legend

L: BASE LENGTH
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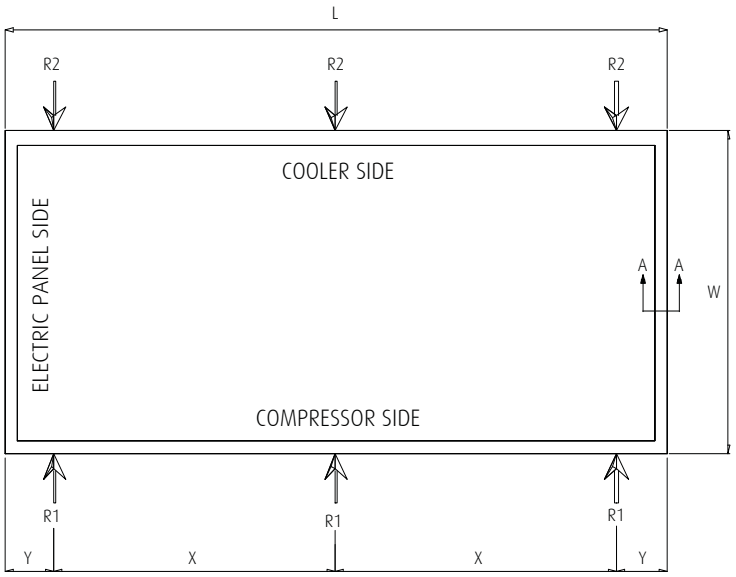
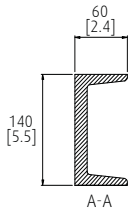
X: DISTANCE BETWEEN SUPPORTS
Y: DISTANCE BETWEEN SUPPORTS
R1: LOADS ON COMPRESSOR SIDE
R2: LOADS ON COOLER SIDE

Note

- load points & total weights are operating point including barrel (cooler) fluid content





MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
95-1	3160	[124.1]	2230	[87.8]	1340	[52.8]	240	[9.4]
100-1	3160	[124.1]	2230	[87.8]	1340	[52.8]	240	[9.4]
100-2	3360	[132.3]	2230	[87.8]	1440	[56.7]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
95-1	498	[1097]	460	[1013]	2871	[6331]	563	[1242]	520	[1146]	3249	[7164]
100-1	511	[1126]	472	[1040]	2948	[6499]	576	[1271]	532	[1173]	3325	[7332]
100-2	580	[1279]	535	[1179]	3345	[7376]	652	[1437]	601	[1326]	3760	[8291]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
95-1	633	[1396]	584	[1288]	3652	[8053]
100-1	646	[1425]	597	[1315]	3729	[8221]
100-2	734	[1617]	676	[1491]	4230	[9329]

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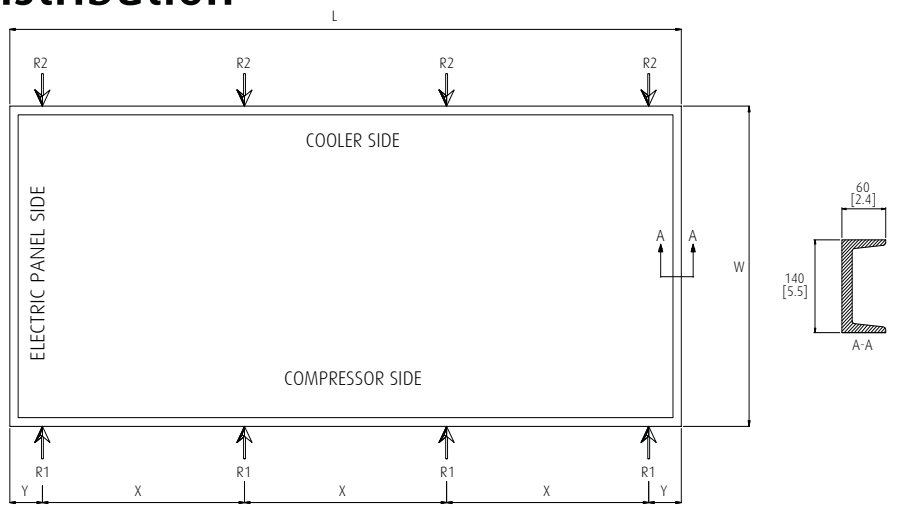
Note

- load points & total weights are operating point including barrel (cooler) fluid content

Load Distribution



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
110-2	4740	[186.6]	2230	[87.8]	1420	[55.9]	240	[9.4]
120-2	4740	[186.6]	2230	[87.8]	1420	[55.9]	240	[9.4]
125-2	4740	[186.6]	2230	[87.8]	1420	[55.9]	240	[9.4]
135-2	5140	[202.4]	2230	[87.8]	1553	[61.1]	240	[9.4]
140-2	5140	[202.4]	2230	[87.8]	1553	[61.1]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
110-2	527	[1163]	492	[1085]	4078	[8993]	600	[1330]	560	[1236]	4640	[10232]
120-2	537	[1184]	493	[1087]	4118	[9081]	610	[1340]	560	[1236]	4680	[10304]
125-2	525	[1157]	485	[1068]	4037	[8902]	598	[1318]	552	[1217]	4599	[10140]
135-2	564	[1244]	521	[1148]	4338	[9566]	637	[1404]	588	[1297]	4900	[10804]
140-2	594	[1309]	547	[1206]	4563	[10060]	674	[1485]	621	[1370]	5180	[11422]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
110-2	680	[1499]	635	[1402]	5260	[11604]
120-2	695	[1535]	640	[1431]	5340	[11788]
125-2	676	[1491]	625	[1377]	5204	[11474]
135-2	715	[1577]	661	[1457]	5505	[12138]
140-2	705	[1555]	762	[1680]	5890	[12979]

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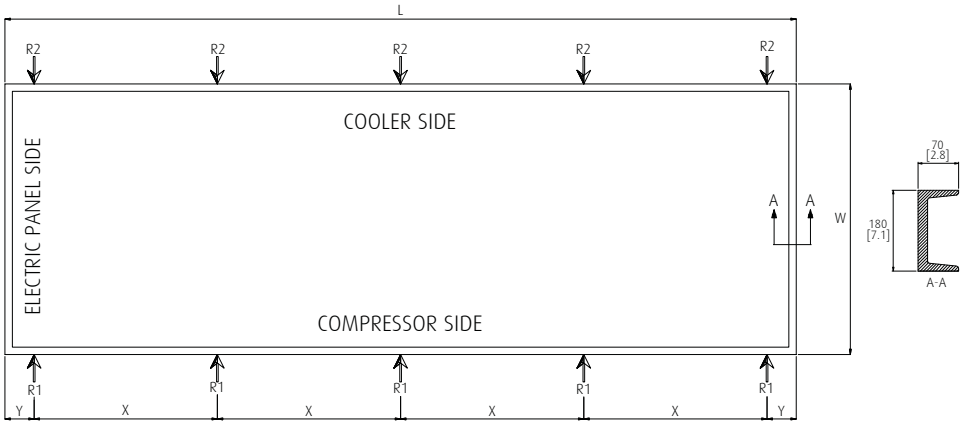
Note

- load points & total weights are operating point including barrel (cooler) fluid content



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
145-2	6120	[240.9]	2230	[87.8]	1410	[55.5]	240	[9.4]
160-2	6120	[240.9]	2230	[87.8]	1410	[55.5]	240	[9.4]
165-2	6120	[240.9]	2230	[87.8]	1410	[55.5]	240	[9.4]
175-2	6120	[240.9]	2230	[87.8]	1410	[55.5]	240	[9.4]
190-2	7300	[287.4]	2230	[87.8]	1705	[67.1]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
145-2	563	[1242]	520	[1147]	5420	[11952]	641	[1414]	592	[1305]	6166	[13595]
160-2	574	[1265]	530	[1168]	5518	[12167]	651	[1436]	601	[1326]	6260	[13810]
165-2	583	[1285]	538	[1187]	5604	[12357]	660	[1456]	610	[1344]	6349	[14000]
175-2	577	[1271]	532	[1172]	5536	[12207]	654	[1441]	603	[1330]	6280	[13850]
190-2	634	[1399]	585	[1290]	6096	[13441]	731	[1611]	674	[1487]	7025	[15490]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
145-2	725	[1599]	669	[1476]	6972	[15374]
160-2	735	[1621]	679	[1497]	7070	[15593]
165-2	744	[1641]	687	[1515]	7156	[15779]
175-2	738	[1628]	681	[1501]	7090	[15637]
190-2	836	[1842]	771	[1700]	8034	[17714]

Legend

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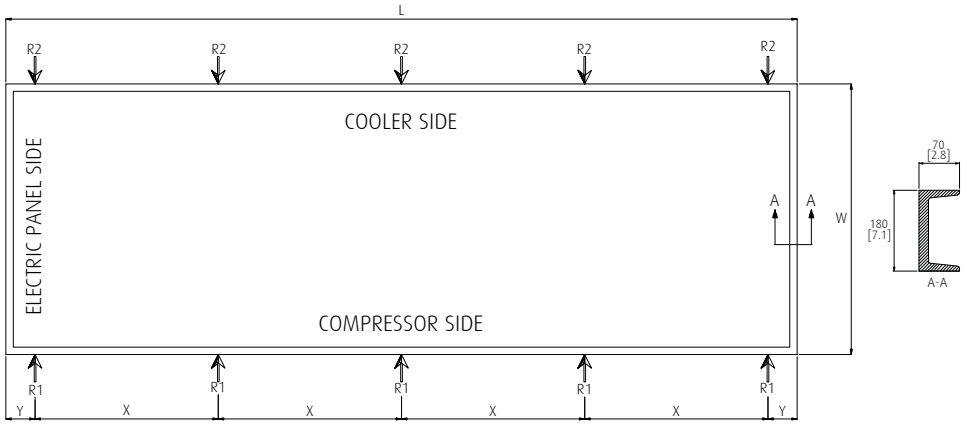
Note

- load points & total weights are operating point including barrel (cooler) fluid content

Load Distribution



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
195-2	6120	[240.9]	2230	[87.8]	1410	[55.5]	240	[9.4]
200-2	7300	[287.4]	2230	[87.8]	1705	[67.1]	240	[9.4]
205-2	7500	[295.2]	2230	[87.8]	1755	[69.1]	240	[9.4]
210-2	6520	[256.7]	2230	[87.8]	1510	[59.4]	240	[9.4]
220-2	7500	[295.2]	2230	[87.8]	1755	[69.1]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
195-2	591	[1303]	545	[1202]	5680	[12525]	676	[1490]	624	[1376]	6500	[14333]
200-2	656	[1446]	605	[1334]	6304	[13901]	752	[1659]	694	[1531]	7230	[15950]
205-2	661	[1458]	611	[1347]	6361	[14026]	758	[1672]	700	[1543]	7290	[16075]
210-2	600	[1323]	554	[1221]	5768	[12718]	677	[1493]	625	[1379]	6510	[14361]
220-2	659	[1454]	608	[1340]	6334	[13966]	756	[1666]	697	[1537]	7263	[16015]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
195-2	774	[1706]	714	[1574]	7440	[16409]
200-2	857	[1890]	791	[1744]	8240	[18177]
205-2	863	[1903]	797	[1756]	8299	[18299]
210-2	761	[1679]	703	[1550]	7320	[16140]
220-2	860	[1897]	794	[1750]	8272	[18239]

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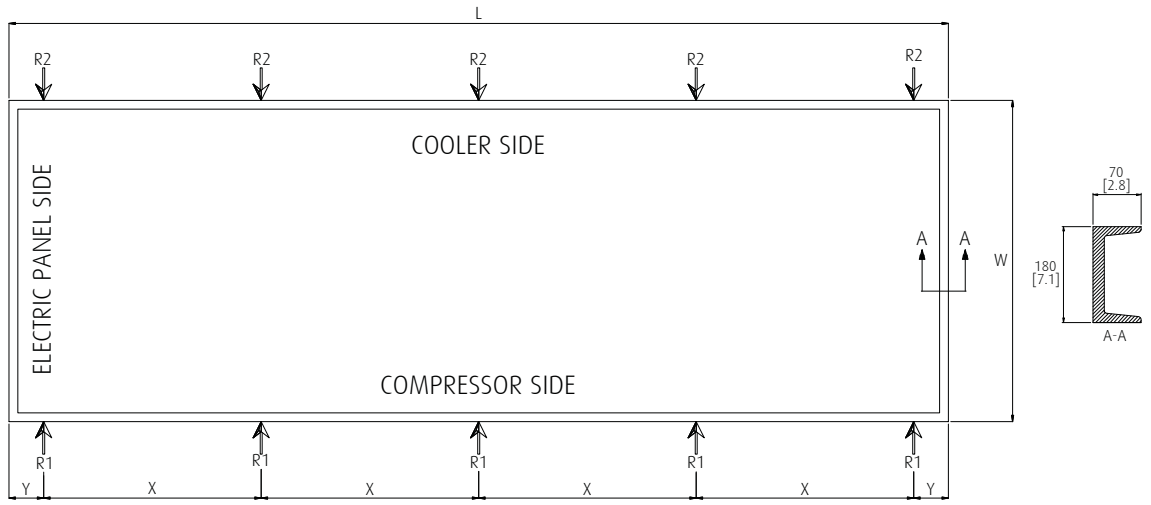
Note

- load points & total weights are operating point including barrel (cooler) fluid content



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
235-2	7700	[303.1]	2230	[87.8]	1805	[71.1]	240	[9.4]
250-2	7700	[303.1]	2230	[87.8]	1805	[71.1]	240	[9.4]
275-2	7700	[303.1]	2230	[87.8]	1805	[71.1]	240	[9.4]
285-2	7700	[303.1]	2230	[87.8]	1805	[71.1]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
235-2	690	[1522]	638	[1406]	6641	[14643]	787	[1736]	727	[1602]	7570	[16692]
250-2	724	[1595]	667	[1471]	6953	[15331]	820	[1808]	756	[1668]	7880	[17380]
275-2	792	[1747]	732	[1614]	7622	[16806]	89	[1961]	821	[1810]	8550	[18855]
285-2	850	[1873]	784	[1728]	8166	[18006]	901	[1986]	831	[1833]	8660	[19095]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
235-2	892	[1967]	824	[1817]	8580	[18916]
250-2	925	[2040]	854	[1883]	8890	[19606]
275-2	994	[2192]	918	[2024]	9560	[21079]
285-2	1006	[2218]	928	[2046]	9670	[21319]

Legend

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Note

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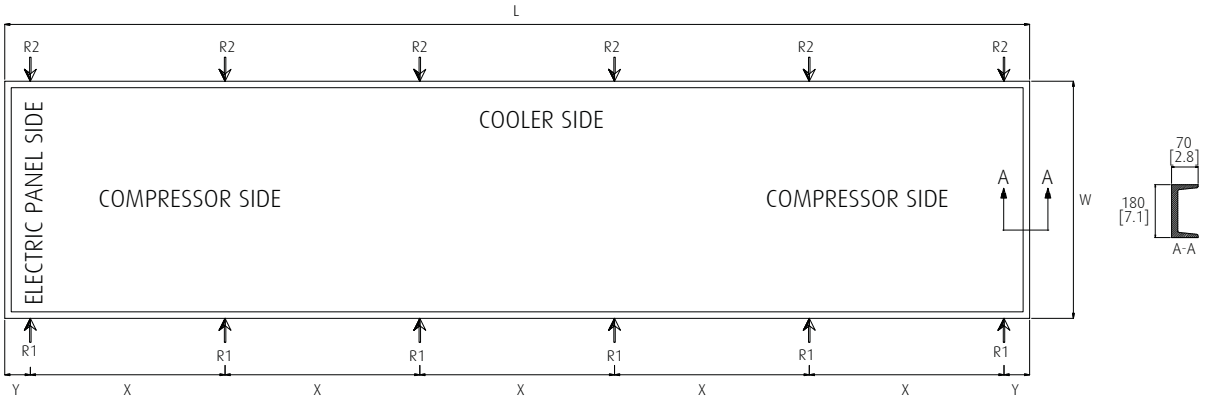
Load Distribution



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
280-2	8780	[345.7]	2230	[87.8]	1660	[65.4]	240	[9.4]
300-2	8780	[345.7]	2230	[87.8]	1660	[65.4]	240	[9.4]
315-2	8780	[345.7]	2230	[87.8]	1660	[65.4]	240	[9.4]
315-3	8980	[353.5]	2230	[87.8]	1700	[66.9]	240	[9.4]
335-2	9180	[361.4]	2230	[87.8]	1740	[68.5]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
280-2	670	[1477]	618	[1363]	7731	[17046]	804	[1773]	742	[1637]	9279	[20460]
300-2	740	[1631]	682	[1505]	8532	[18813]	836	[1843]	771	[1701]	9640	[21267]
315-2	761	[1677]	702	[1548]	8775	[19350]	842	[1857]	778	[1701]	9720	[21433]
315-3	746	[1644]	689	[1519]	8607	[18979]	857	[1890]	791	[1744]	9888	[21804]
335-2	761	[1677]	702	[1548]	8778	[19356]	857	[1890]	791	[1744]	9888	[21804]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
280-2	909	[2004]	839	[1851]	10489	[23129]
300-2	942	[2077]	869	[1915]	10860	[23936]
315-2	947	[2088]	875	[1929]	10930	[24102]
315-3	962	[2121]	888	[1957]	11099	[24473]
335-2	962	[2121]	888	[1957]	11099	[24473]

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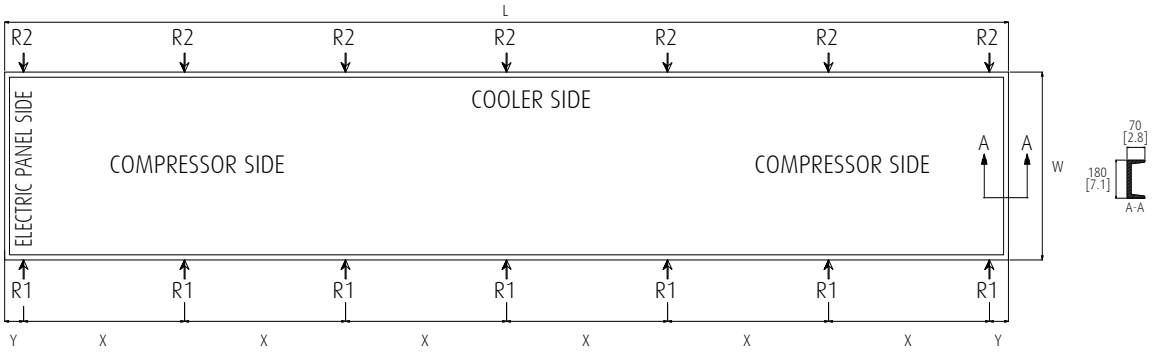

MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
350-2	10160	[400.0]	2230	[87.8]	1613	[63.5]	240	[9.4]
350-3	10560	[415.7]	2230	[87.8]	1680	[66.1]	240	[9.4]
360-3	11540	[454.3]	2230	[87.8]	1844	[72.5]	240	[9.4]
375-3	10660	[419.7]	2230	[87.8]	1697	[66.8]	240	[9.4]
400-3	11640	[458.3]	2230	[87.8]	1860	[73.2]	240	[9.4]
415-3	11640	[458.3]	2230	[87.8]	1860	[73.2]	240	[9.4]
450-3	11640	[458.3]	2230	[87.8]	1860	[73.2]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
350-2	696	[1536]	643	[1417]	9379	[20682]	793	[1749]	732	[1614]	10680	[23541]
350-3	688	[1516]	635	[1400]	9262	[20423]	784	[1729]	724	[1597]	10559	[23282]
360-3	763	[1682]	704	[1553]	10272	[22649]	873	[1925]	806	[1777]	11752	[25914]
375-3	735	[1620]	678	[1495]	9893	[21815]	831	[1833]	767	[1692]	11190	[24674]
400-3	810	[1786]	748	[1648]	10909	[24055]	920	[2029]	849	[1873]	12390	[27320]
415-3	830	[1830]	766	[1688]	11169	[24628]	940	[2072]	867	[1912]	12650	[27893]
450-3	902	[1989]	832	[1834]	12137	[26762]	949	[2092]	875	[1930]	12770	[28158]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
350-2	898	[1979]	829	[1827]	12090	[26654]
350-3	889	[1960]	821	[1811]	11971	[26395]
360-3	993	[2189]	917	[2021]	13366	[29472]
375-3	736	[2063]	864	[1904]	12600	[27787]
400-3	1040	[2292]	959	[2115]	14000	[30878]
415-3	1060	[2336]	977	[2155]	14260	[31451]
450-3	1069	[2356]	985	[2173]	14380	[31716]

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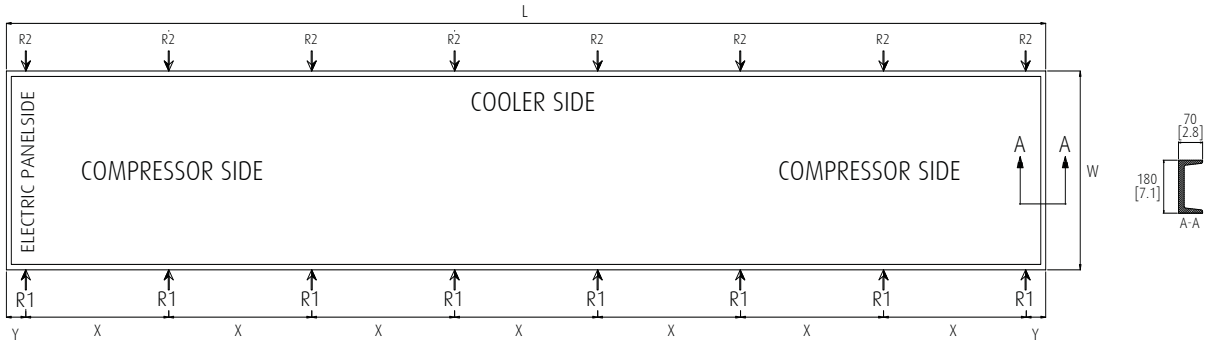
Load Distribution



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
430-3	13020	[512.6]	2230	[87.8]	1791	[70.5]	240	[9.4]
465-3	13020	[512.6]	2230	[87.8]	1791	[70.5]	240	[9.4]
475-3	13020	[512.6]	2230	[87.8]	1791	[70.5]	240	[9.4]
500-3	13020	[512.6]	2230	[87.8]	1791	[70.5]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
430-3	734	[1618]	677	[1493]	11289	[24893]	897	[1978]	828	[1826]	13801	[30432]
465-3	798	[1759]	736	[1623]	12275	[27066]	906	[1998]	836	[1844]	13939	[30736]
475-3	871	[1920]	804	[1772]	13401	[29549]	922	[2034]	851	[1877]	14190	[31293]
500-3	802	[1768]	740	[1632]	12344	[27217]	928	[2047]	857	[1890]	14290	[31503]

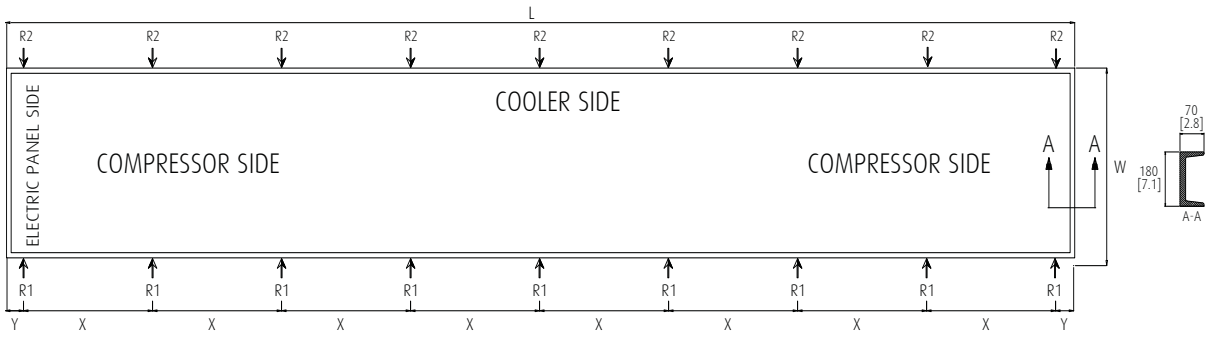
MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
430-3	1015	[2238]	937	[2066]	15617	[34435]
465-3	1024	[2258]	945	[2084]	15755	[34739]
475-3	1040	[2294]	960	[2117]	16010	[35296]
500-3	1046	[2305]	966	[2129]	16100	[35506]

Legend

L: BASE LENGTH
W: BASE WIDTH
X: DISTANCE BETWEEN SUPPORTS
Y: DISTANCE BETWEEN SUPPORTS
R1: LOADS ON COMPRESSOR SIDE
R2: LOADS ON COOLER SIDE

Note

- load points & total weights are operating point including barrel (cooler) fluid content



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
485-3	14400	[556.9]	2230	[87.8]	1740	[68.5]	240	[9.4]
510-3	14400	[556.9]	2230	[87.8]	1740	[68.5]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
485-3	729	[1607]	674	[1485]	12623	[27833]	870	[1919]	804	[1772]	15065	[33219]
510-3	773	[1705]	713	[1573]	13382	[29506]	880	[1940]	812	[1791]	15230	[33582]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
485-3	987	[2176]	911	[2009]	17082	[37667]
510-3	996	[2196]	919	[2027]	17240	[38024]

Legend

L: BASE LENGTH
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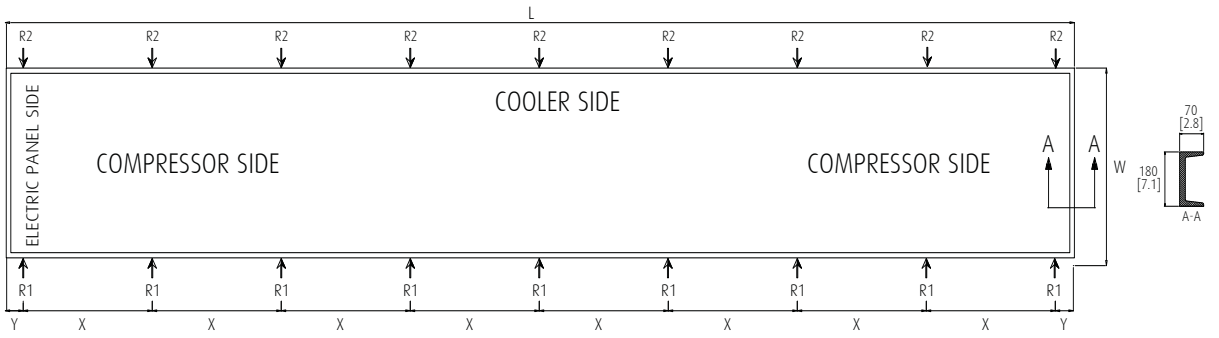
X: DISTANCE BETWEEN SUPPORTS
Y: DISTANCE BETWEEN SUPPORTS
R1: LOADS ON COMPRESSOR SIDE
R2: LOADS ON COOLER SIDE

Note

- load points & total weights are operating point including barrel (cooler) fluid content

Load Distribution



MODEL (APSa)	L		W		X		Y	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
550-4	14400	[556.9]	2230	[87.8]	1740	[68.5]	240	[9.4]
580-4	14400	[556.9]	2230	[87.8]	1740	[68.5]	240	[9.4]
600-4	14400	[556.9]	2230	[87.8]	1740	[68.5]	240	[9.4]

MODEL (APSa)	Microchannel coil						Copper tubes Aluminum fins coil					
	R1		R2		Total		R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]	kg	[lb]
550-4	883	[1947]	814	[1795]	15277	[33685]	990	[2182]	913	[2014]	17130	[37761]
580-4	903	[1991]	833	[1838]	15630	[34464]	1010	[2226]	932	[2055]	17480	[38540]
600-4	916	[2020]	845	[1864]	15862	[34976]	1034	[2280]	954	[2104]	17900	[39963]

MODEL (APSa)	Copper tubes Copper fins coil					
	R1		R2		Total	
	kg	[lb]	kg	[lb]	kg	[lb]
550-4	1106	[2439]	1020	[2249]	19140	[42209]
580-4	1126	[2483]	1039	[2291]	19490	[42980]
600-4	1170	[2579]	1079	[2380]	20250	[44652]

Legend

L: BASE LENGTH
W: BASE WIDTH
X: DISTANCE BETWEEN SUPPORTS
Y: DISTANCE BETWEEN SUPPORTS
R1: LOADS ON COMPRESSOR SIDE
R2: LOADS ON COOLER SIDE

Note

- load points & total weights are operating point including barrel (cooler) fluid content

Selection Procedure

Before you proceed with unit selection, the capacity should be corrected according to the location where the chiller will be installed

Altitude Correction Factors:

Since air density decreases at elevations above sea level, the fans provide less air mass over the condenser so unit performance should be corrected when operated substantially above sea level

Selection:

To select any chiller from the APSa series, the following should be provided:

- Design capacity in kW (Tons) of refrigeration
- Entering and leaving water temperature in ºC (ºF)
- Entering condenser air temperature in ºC (ºF)
- Altitude of space where chiller is to be installed

Example:

Design capacity	950 kW (270.1 Tons)
EWT/LWT	12.2/6.7 ºC (54/44 ºF)
Entering condenser air	35 ºC (95 ºF)
Altitude	610 m (2000 ft)
Power supply	380V/3Ph/60Hz
Fouling factor (Cooler)	0.00010 ft^2.hr.ºF/BTU (0.000018 m^2.ºC/W)

Altitude Meter [ft]	Correction Factor	Compressor Power Factor
Sea Level	1.000	1.000
305 (1000)	0.995	1.005
610 (2000)	0.990	1.010
915 (3000)	0.985	1.015
1220 (4000)	0.980	1.020
1525 (5000)	0.973	1.025
1830 (6000)	0.976	1.030
2135 (7000)	0.960	1.035
2440 (8000)	0.950	1.040

Selection Procedure:

The capacity should be corrected at 610 m (2000 ft)
Correction of capacity: 950.0 (270.1) / 0.990
= 959.6 kW (272.8 Tons)

Result of selection:

From the performance table on page 75 and the pressure drop curves on page 83, the operating data for the selected unit:

Unit:	APSa 275-2
Capacity:	961.9 kW (273.5 Tons)
Power input:	303.0x1.01 = 306.0 kW
Barrel (Cooler) flow rate:	41.2 L/s (653.0 GPM)
Barrel (Cooler) pressure drop:	55.8 kPa (8.1 psi)

Performance - 50 Hz - SI

Leaving Water Temperature = 4 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	156.9	6.7	44.8	146.7	6.3	48.9	140.3	6.0	51.0	132.9	5.7	53.4	121.0	5.2	59.1
60-1	166.7	7.2	41.4	157.2	6.8	44.6	151.2	6.5	46.1	144.2	6.2	48.1	132.6	5.7	53.0
65-1	184.3	7.9	47.8	173.4	7.5	51.6	166.7	7.2	53.5	158.3	6.8	55.9	146.0	6.3	61.7
70-1	199.1	8.6	50.7	187.5	8.1	54.7	180.1	7.7	56.5	171.6	7.4	59.0	158.3	6.8	65.1
70-2	202.6	8.7	54.7	191.0	8.2	59.0	183.2	7.9	61.0	174.1	7.5	63.8	160.7	6.9	70.5
75-1	226.5	9.7	58.5	213.5	9.2	63.3	205.0	8.8	65.5	194.8	8.4	68.4	179.4	7.7	75.5
80-1	249.7	10.7	66.3	234.9	10.1	71.9	225.8	9.7	74.6	214.2	9.2	77.9	196.6	8.5	86.1
95-2	273.3	11.7	76.7	256.7	11.0	83.4	245.8	10.6	86.7	232.8	10.0	90.8	213.5	9.2	100.3
95-1	274.0	11.8	74.6	258.1	11.1	80.8	247.6	10.6	84.0	234.6	10.1	88.0	214.5	9.2	97.4
100-2	308.1	13.2	89.0	288.4	12.4	97.1	276.1	11.9	101.0	261.0	11.2	106.1	238.5	10.3	117.4
100-1	308.8	13.3	86.1	289.8	12.5	93.9	276.8	11.9	98.0	261.7	11.2	102.9	238.8	10.3	113.9
110-2	324.3	13.9	83.3	304.9	13.1	90.1	293.3	12.6	93.2	279.2	12.0	97.2	257.1	11.1	107.3
120-2	340.4	14.6	89.8	320.4	13.8	97.1	307.7	13.2	100.5	292.6	12.6	105.0	268.7	11.6	116.1
125-2	355.2	15.3	96.2	334.5	14.4	104.1	321.1	13.8	107.9	304.6	13.1	113.0	279.6	12.0	124.9
135-2	395.7	17.0	106.3	371.7	16.0	115.4	356.6	15.3	119.9	338.0	14.5	125.4	310.2	13.3	138.5
140-2	422.7	18.2	120.7	397.1	17.1	131.1	379.8	16.3	136.5	359.8	15.5	143.0	328.8	14.1	158.3
145-2	437.2	18.8	115.7	411.5	17.7	124.8	395.7	17.0	129.3	375.6	16.2	135.0	345.7	14.9	149.2
160-2	462.5	19.9	123.5	435.1	18.7	133.4	417.5	18.0	138.4	396.4	17.0	144.8	364.7	15.7	159.8
165-2	482.5	20.8	130.9	454.0	19.5	141.7	435.4	18.7	146.9	413.2	17.8	153.8	378.8	16.3	170.1
175-2	509.3	21.9	144.6	478.7	20.6	156.8	457.6	19.7	163.3	433.6	18.6	171.2	397.8	17.1	189.3
190-2	522.3	22.5	140.3	491.0	21.1	151.5	472.0	20.3	156.6	448.8	19.3	163.6	412.9	17.8	180.8
195-2	557.8	24.0	159.1	523.7	22.5	173.2	500.8	21.5	180.3	474.1	20.4	189.1	434.3	18.7	209.4
200-2	573.3	24.7	153.9	538.5	23.2	166.5	517.7	22.3	172.5	492.0	21.2	180.3	451.9	19.4	199.4
205-2	628.1	27.0	158.8	590.9	25.4	172.0	567.3	24.4	178.6	537.7	23.1	186.8	494.5	21.3	206.0
210-2	643.6	27.7	175.8	604.6	26.0	191.5	577.8	24.9	199.6	545.1	23.4	209.3	497.0	21.4	231.5
220-2	664.4	28.6	168.6	625.0	26.9	183.0	599.6	25.8	190.0	568.7	24.5	198.5	521.9	22.5	219.0
235-2	719.2	30.9	189.2	674.9	29.0	206.0	647.5	27.8	213.7	613.4	26.4	223.6	561.3	24.2	246.9
250-2	771.6	33.2	210.2	723.8	31.1	229.1	691.1	29.7	238.8	654.5	28.2	249.5	597.5	25.7	275.9
275-2	819.1	35.2	225.4	768.5	33.0	245.9	732.9	31.5	256.8	692.8	29.8	268.7	632.0	27.2	296.9
280-2	807.5	34.7	205.1	759.3	32.7	222.8	727.7	31.3	231.4	690.4	29.7	241.9	633.8	27.3	267.0
285-2	849.4	36.5	239.2	793.8	34.1	262.0	758.3	32.6	272.9	714.3	30.7	286.7	652.1	28.0	316.0
300-2	882.4	37.9	231.7	829.7	35.7	251.8	794.5	34.2	261.9	751.9	32.3	274.2	688.3	29.6	302.9
315-3	934.5	40.2	256.5	877.1	37.7	279.5	837.4	36.0	291.5	791.0	34.0	305.8	724.9	31.2	336.7
315-2	938.3	40.4	253.2	880.7	37.9	275.9	840.9	36.2	287.8	794.1	34.2	301.8	727.7	31.3	332.3
335-2	1,023.1	44.0	279.3	959.1	41.2	305.2	914.1	39.3	319.0	863.4	37.1	333.8	786.8	33.8	369.1
350-3	1,058.6	45.5	278.5	992.8	42.7	303.7	952.1	41.0	315.3	901.1	38.8	330.2	824.0	35.4	364.8
350-2	1,047.7	45.1	270.6	983.0	42.3	294.9	940.1	40.4	307.2	892.6	38.4	320.3	817.4	35.1	353.9
360-3	1,078.7	46.4	271.7	1,014.7	43.6	295.0	972.8	41.8	306.3	922.9	39.7	320.1	846.5	36.4	353.8
375-3	1,111.4	47.8	300.0	1,041.4	44.8	327.8	996.0	42.9	341.4	942.6	40.5	357.4	859.2	37.0	395.2
400-3	1,187.3	51.1	313.0	1,114.9	48.0	340.8	1,066.4	45.9	354.9	1,008.7	43.4	371.7	922.9	39.7	410.9
415-3	1,277.4	54.9	352.9	1,198.2	51.5	384.9	1,145.5	49.3	401.3	1,079.7	46.4	421.0	987.9	42.5	463.9
430-3	1,299.9	55.9	344.9	1,222.5	52.6	374.4	1,170.1	50.3	389.7	1,107.9	47.6	408.2	1,012.9	43.6	451.0
450-3	1,337.9	57.5	376.0	1,252.8	53.9	411.2	1,193.7	51.3	429.6	1,127.2	48.5	449.6	1,025.6	44.1	498.0
465-3	1,362.1	58.6	367.0	1,277.0	54.9	400.3	1,222.9	52.6	416.3	1,157.1	49.8	435.8	1,056.5	45.4	481.8
475-3	1,417.0	60.9	388.7	1,326.6	57.1	424.5	1,269.3	54.6	441.7	1,198.9	51.6	463.1	1,092.7	47.0	512.4
485-3	1,438.8	61.9	380.9	1,352.6	58.2	413.7	1,293.9	55.7	430.4	1,225.0	52.7	450.8	1,120.5	48.2	498.2
500-3	1,467.6	63.1	410.5	1,372.0	59.0	448.9	1,311.8	56.4	467.2	1,237.6	53.2	490.7	1,127.6	48.5	542.6
510-3	1,491.2	64.1	401.9	1,400.1	60.2	437.3	1,337.2	57.5	455.5	1,264.7	54.4	477.6	1,155.3	49.7	528.3
550-4	1,573.5	67.7	424.5	1,477.8	63.6	462.2	1,411.7	60.7	482.2	1,336.1	57.5	504.4	1,221.5	52.5	556.7
580-4	1,698.7	73.1	478.3	1,587.6	68.3	523.9	1,516.5	65.2	545.9	1,428.6	61.5	573.4	1,303.8	56.1	632.0
600-4	1,766.2	76.0	487.0	1,654.4	71.2	532.9	1,574.9	67.7	557.5	1,487.7	64.0	583.1	1,357.2	58.4	642.9

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 5 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	161.8	7.0	45.5	151.9	6.5	49.6	144.9	6.2	51.8	137.5	5.9	54.2	125.6	5.4	59.9
60-1	172.7	7.4	41.9	162.8	7.0	45.1	156.9	6.7	46.6	149.5	6.4	48.6	137.9	5.9	53.7
65-1	191.0	8.2	48.3	180.1	7.7	52.3	172.7	7.4	54.2	164.6	7.1	56.6	151.2	6.5	62.5
70-1	206.8	8.9	51.4	194.8	8.4	55.4	187.5	8.0	57.3	178.3	7.7	59.8	164.6	7.1	66.0
70-2	210.3	9.0	55.5	198.7	8.5	59.8	190.6	8.2	62.0	181.5	7.8	64.8	167.1	7.2	71.4
75-1	234.6	10.1	59.2	220.5	9.5	64.1	212.1	9.1	66.4	201.9	8.7	69.3	186.0	8.0	76.5
80-1	258.5	11.1	67.1	243.0	10.4	72.8	233.5	10.0	75.6	221.9	9.5	79.0	203.6	8.8	87.2
95-2	282.8	12.1	77.7	265.5	11.4	84.5	254.3	10.9	88.0	241.3	10.4	92.1	220.9	9.5	101.7
95-1	283.5	12.2	75.6	266.6	11.4	82.2	256.0	11.0	85.2	242.7	10.4	89.2	222.6	9.6	98.6
100-2	318.6	13.7	90.2	298.9	12.8	98.6	285.6	12.3	102.8	270.5	11.6	107.6	246.5	10.6	119.0
100-1	319.3	13.7	87.5	299.6	12.9	95.4	286.6	12.3	99.5	270.8	11.6	104.4	246.9	10.6	115.5
110-2	335.9	14.4	84.4	316.2	13.6	91.3	303.9	13.0	94.5	289.4	12.4	98.5	266.6	11.5	108.7
120-2	353.5	15.2	90.9	332.4	14.3	98.4	319.3	13.7	102.0	303.9	13.0	106.4	279.6	12.0	117.6
125-2	370.0	15.9	97.6	347.8	14.9	105.7	334.1	14.3	109.6	317.2	13.6	114.6	291.6	12.5	126.7
135-2	409.4	17.6	107.7	384.8	16.5	117.0	368.6	15.8	121.6	349.9	15.0	127.2	321.1	13.8	140.4
140-2	437.9	18.8	122.6	411.5	17.7	133.3	392.8	16.9	139.1	372.8	16.0	145.2	341.1	14.6	160.5
145-2	453.3	19.5	117.1	427.3	18.3	126.7	410.4	17.6	131.0	390.4	16.8	136.9	359.1	15.4	151.1
160-2	479.7	20.6	125.1	451.9	19.4	135.4	433.6	18.6	140.3	412.2	17.7	146.8	378.4	16.3	162.2
165-2	501.9	21.6	132.8	472.3	20.3	144.0	453.3	19.5	149.4	430.5	18.5	156.0	395.3	17.0	172.5
175-2	530.4	22.8	146.8	498.7	21.4	159.4	478.0	20.5	165.8	452.6	19.4	173.8	414.7	17.8	192.5
190-2	544.4	23.4	142.3	511.4	22.0	153.9	492.0	21.1	159.2	468.5	20.1	166.1	431.5	18.5	183.4
195-2	581.0	24.9	161.6	545.5	23.4	176.0	522.3	22.4	183.5	493.8	21.2	192.3	452.3	19.4	212.8
200-2	597.5	25.7	155.9	562.0	24.1	169.0	539.2	23.1	175.4	513.1	22.0	183.2	472.0	20.3	202.3
205-2	649.6	27.9	160.8	611.6	26.3	174.4	587.3	25.2	180.8	557.8	23.9	189.2	512.1	22.0	208.9
210-2	664.7	28.5	178.5	623.9	26.8	194.9	597.2	25.6	202.7	564.5	24.2	212.4	514.5	22.1	234.8
220-2	687.6	29.5	170.7	646.4	27.8	185.5	620.0	26.6	192.7	588.7	25.3	201.4	540.6	23.2	222.1
235-2	743.8	31.9	191.7	698.5	30.0	208.9	668.2	28.7	217.5	634.8	27.3	226.8	581.4	25.0	250.5
250-2	796.6	34.2	213.4	748.1	32.1	232.4	715.0	30.7	242.4	676.0	29.0	253.9	618.6	26.6	279.8
275-2	845.5	36.3	229.1	793.4	34.1	249.9	758.6	32.6	260.6	715.0	30.7	273.4	653.8	28.1	301.4
280-2	835.3	35.9	207.8	785.3	33.7	225.8	753.3	32.3	234.7	714.7	30.7	245.4	655.9	28.2	270.5
285-2	877.8	37.7	242.7	821.9	35.3	265.7	782.5	33.6	277.9	739.3	31.7	290.8	674.9	29.0	320.4
300-2	913.0	39.2	234.8	856.4	36.8	256.0	821.6	35.3	265.8	778.7	33.4	278.2	712.5	30.6	307.3
315-3	965.4	41.5	260.3	906.3	38.9	283.9	867.3	37.2	295.8	818.8	35.1	310.2	750.2	32.2	341.6
315-2	969.3	41.6	256.9	909.8	39.1	280.2	870.8	37.4	292.0	821.9	35.3	306.2	753.3	32.3	337.1
335-2	1,056.5	45.4	283.9	990.7	42.5	310.1	946.4	40.6	323.7	891.2	38.3	339.8	814.5	35.0	374.3
350-3	1,093.8	47.0	282.6	1,027.7	44.1	308.0	982.6	42.2	321.0	932.4	40.0	334.9	853.6	36.6	370.0
350-2	1,083.6	46.5	274.1	1,017.1	43.7	299.1	973.5	41.8	311.7	924.6	39.7	325.1	845.8	36.3	358.9
360-3	1,116.3	47.9	275.2	1,049.1	45.0	299.0	1,006.6	43.2	310.7	955.9	41.0	324.9	877.5	37.7	358.2
375-3	1,147.6	49.3	304.8	1,077.3	46.3	332.5	1,028.7	44.2	347.1	974.9	41.9	362.5	890.5	38.2	400.9
400-3	1,226.0	52.6	318.0	1,152.9	49.5	345.6	1,103.6	47.4	360.1	1,044.5	44.9	377.2	955.6	41.0	416.7
415-3	1,321.3	56.7	357.7	1,236.9	53.1	391.2	1,183.5	50.8	407.4	1,118.1	48.0	427.2	1,019.6	43.8	472.3
430-3	1,344.2	57.7	349.6	1,262.3	54.2	380.7	1,210.6	52.0	395.3	1,145.8	49.2	414.0	1,049.8	45.1	457.5
450-3	1,380.8	59.3	382.1	1,294.6	55.6	417.3	1,234.8	53.0	436.1	1,167.6	50.1	456.2	1,062.1	45.6	505.0
465-3	1,409.6	60.5	371.9	1,321.0	56.7	406.0	1,262.3	54.2	423.4	1,197.2	51.4	442.0	1,094.8	47.0	488.7
475-3	1,463.8	62.9	394.5	1,373.4	59.0	430.6	1,310.1	56.2	449.5	1,240.4	53.3	469.9	1,132.5	48.6	519.7
485-3	1,487.0	63.9	386.3	1,397.3	60.0	420.2	1,339.6	57.5	436.7	1,267.5	54.4	457.3	1,161.0	49.8	505.3
500-3	1,516.2	65.1	416.3	1,419.8	61.0	455.3	1,353.7	58.1	475.6	1,280.2	55.0	497.6	1,166.2	50.1	551.1
510-3	1,540.1	66.1	407.7	1,446.5	62.1	443.9	1,384.3	59.4	462.1	1,308.3	56.2	484.4	1,196.1	51.4	535.7
550-4	1,627.7	69.9	430.4	1,526.0	65.5	470.0	1,461.0	62.7	489.2	1,379.7	59.2	513.0	1,264.4	54.3	564.5
580-4	1,755.3	75.4	485.4	1,643.5	70.6	531.5	1,565.4	67.2	555.8	1,478.5	63.5	581.6	1,349.8	58.0	640.9
600-4	1,823.2	78.3	495.1	1,709.3	73.4	541.4	1,631.2	70.0	565.8	1,541.1	66.2	591.7	1,400.8	60.2	654.5

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 50 Hz - SI

Leaving Water Temperature = 6 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	167.4	7.2	46.1	156.9	6.7	50.4	150.2	6.4	52.6	141.7	6.1	55.2	129.8	5.6	60.8
60-1	178.3	7.7	42.4	168.5	7.2	45.7	162.5	7.0	47.2	154.7	6.6	49.2	143.1	6.1	54.3
65-1	197.7	8.5	48.9	186.4	8.0	52.9	179.0	7.7	54.8	170.2	7.3	57.3	156.9	6.7	63.3
70-1	213.8	9.2	52.0	201.9	8.6	56.1	193.8	8.3	58.1	185.0	7.9	60.6	170.6	7.3	66.8
70-2	218.1	9.3	56.1	205.4	8.8	60.6	197.3	8.5	62.8	187.8	8.1	65.5	173.4	7.4	72.3
75-1	242.7	10.4	59.9	228.6	9.8	64.9	219.5	9.4	67.3	208.9	9.0	70.2	192.7	8.3	77.4
80-1	267.3	11.5	68.0	251.5	10.8	73.8	241.6	10.4	76.7	229.3	9.8	80.1	211.0	9.0	88.4
95-2	292.3	12.5	78.7	274.7	11.8	85.7	263.1	11.3	89.2	249.4	10.7	93.4	229.0	9.8	103.2
95-1	293.3	12.6	76.5	275.7	11.8	83.4	264.1	11.3	86.7	251.1	10.8	90.5	230.4	9.9	99.9
100-2	328.8	14.1	91.7	308.8	13.2	100.0	295.1	12.7	104.4	279.2	12.0	109.5	255.3	11.0	120.7
100-1	329.5	14.1	88.9	309.1	13.3	97.0	296.5	12.7	100.9	280.3	12.0	105.9	255.7	11.0	117.1
110-2	347.1	14.9	85.4	327.4	14.0	92.4	314.4	13.5	95.8	299.6	12.8	100.0	276.4	11.8	110.0
120-2	365.8	15.7	91.9	344.3	14.8	99.6	330.2	14.2	103.4	314.4	13.5	108.0	289.4	12.4	119.0
125-2	382.3	16.4	98.8	360.1	15.4	107.2	345.4	14.8	111.2	328.5	14.1	116.2	302.1	13.0	128.3
135-2	423.1	18.1	109.1	397.8	17.1	118.6	381.6	16.4	123.3	361.9	15.5	129.0	332.4	14.2	142.4
140-2	452.6	19.4	124.2	424.5	18.2	135.4	406.6	17.4	141.2	386.2	16.5	147.3	353.1	15.1	162.8
145-2	469.5	20.1	118.5	441.7	18.9	128.3	424.9	18.2	132.9	404.5	17.3	138.6	372.5	16.0	153.0
160-2	496.2	21.3	126.7	467.1	20.0	137.3	449.1	19.2	142.3	427.0	18.3	148.6	392.5	16.8	164.2
165-2	519.5	22.3	134.5	488.2	20.9	145.9	468.5	20.1	151.4	445.6	19.1	158.3	409.4	17.5	174.6
175-2	548.7	23.5	149.2	516.6	22.2	161.7	495.5	21.2	168.1	469.9	20.2	176.2	430.5	18.4	195.0
190-2	564.1	24.2	144.1	531.4	22.8	155.9	510.0	21.9	161.5	486.0	20.8	168.5	448.4	19.2	185.8
195-2	600.4	25.7	164.1	564.1	24.2	178.5	539.9	23.1	186.0	511.4	21.9	195.1	467.8	20.1	215.7
200-2	618.6	26.5	157.9	582.1	25.0	171.0	558.5	23.9	177.6	530.7	22.7	185.8	488.5	20.9	204.9
205-2	671.7	28.8	162.8	632.4	27.1	176.7	607.7	26.1	183.4	577.5	24.8	191.5	531.1	22.8	211.5
210-2	687.6	29.5	180.9	643.6	27.6	198.1	616.2	26.4	206.2	583.5	25.0	215.6	533.2	22.9	238.2
220-2	710.8	30.5	172.9	668.6	28.7	188.0	641.5	27.5	195.5	608.8	26.1	204.3	559.6	24.0	225.3
235-2	769.2	33.0	194.2	722.0	31.0	211.8	691.4	29.6	220.7	657.0	28.2	230.1	601.8	25.8	254.0
250-2	824.0	35.3	216.3	771.6	33.1	236.4	739.3	31.7	245.9	698.8	30.0	257.9	640.8	27.5	283.8
275-2	872.6	37.4	232.8	818.8	35.1	254.3	783.6	33.6	264.8	740.3	31.7	277.5	674.6	28.9	306.8
280-2	863.8	37.0	210.5	812.4	34.8	229.0	778.7	33.4	238.0	739.3	31.7	249.0	680.5	29.2	273.9
285-2	905.6	38.8	246.7	849.0	36.4	269.7	810.0	34.7	282.0	765.3	32.8	295.0	696.4	29.9	326.2
300-2	942.9	40.4	238.3	886.3	38.0	259.6	847.6	36.3	270.5	805.4	34.5	282.2	737.9	31.6	311.7
315-3	998.5	42.8	263.7	935.5	40.1	288.5	895.8	38.4	300.4	847.6	36.3	314.7	774.1	33.2	347.7
315-2	1,002.7	43.0	260.3	939.4	40.3	284.7	899.3	38.6	296.5	850.8	36.5	310.6	776.9	33.3	343.2
335-2	1,089.9	46.7	288.6	1,022.4	43.8	315.6	977.7	41.9	328.9	922.9	39.6	344.8	844.1	36.2	379.7
350-3	1,129.3	48.4	286.8	1,061.4	45.5	312.7	1,016.8	43.6	325.7	962.3	41.2	341.1	883.1	37.9	375.2
350-2	1,118.4	47.9	278.5	1,051.9	45.1	303.3	1,006.6	43.2	316.1	954.9	40.9	330.3	876.1	37.6	364.1
360-3	1,153.2	49.4	279.0	1,085.3	46.5	303.2	1,041.0	44.6	315.2	988.6	42.4	329.5	908.8	39.0	363.4
375-3	1,186.3	50.9	309.2	1,112.4	47.7	338.0	1,064.6	45.6	352.2	1,009.4	43.3	367.8	921.5	39.5	406.5
400-3	1,268.2	54.4	322.2	1,189.4	51.0	351.6	1,141.3	48.9	365.2	1,080.8	46.3	382.7	989.7	42.4	422.8
415-3	1,365.3	58.5	363.2	1,280.5	54.9	396.9	1,221.5	52.4	414.6	1,156.7	49.6	433.3	1,055.8	45.3	479.4
430-3	1,389.9	59.6	354.3	1,304.8	55.9	386.4	1,249.9	53.6	402.0	1,186.3	50.9	420.1	1,086.0	46.6	463.9
450-3	1,424.7	61.1	388.4	1,335.8	57.3	424.5	1,277.0	54.7	442.5	1,207.4	51.8	462.8	1,100.5	47.2	512.2
465-3	1,457.1	62.5	376.8	1,366.7	58.6	411.7	1,306.6	56.0	429.6	1,239.4	53.1	448.4	1,132.8	48.6	495.5
475-3	1,511.3	64.8	400.3	1,417.7	60.8	437.2	1,355.5	58.1	456.0	1,279.1	54.8	478.4	1,171.9	50.2	526.9
485-3	1,537.3	65.9	391.3	1,442.7	61.8	426.7	1,383.2	59.3	443.6	1,312.2	56.3	463.9	1,201.1	51.5	512.4
500-3	1,564.7	67.1	423.1	1,467.6	62.9	462.0	1,400.8	60.1	482.8	1,321.3	56.6	506.6	1,207.4	51.8	558.7
510-3	1,593.2	68.3	413.2	1,493.0	64.0	451.2	1,430.7	61.3	469.1	1,354.7	58.1	491.5	1,238.0	53.1	543.2
550-4	1,682.5	72.1	436.1	1,577.0	67.6	477.1	1,508.4	64.7	497.4	1,427.9	61.2	520.4	1,309.4	56.1	572.6
580-4	1,811.3	77.6	493.4	1,698.0	72.8	539.4	1,619.6	69.4	564.1	1,531.0	65.6	590.1	1,392.7	59.7	652.5
600-4	1,881.2	80.6	503.4	1,763.4	75.6	551.0	1,685.0	72.2	574.6	1,592.5	68.3	601.1	1,451.5	62.2	663.9

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 7 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	173.0	7.4	46.8	162.1	6.9	51.2	155.1	6.6	53.4	146.7	6.3	56.0	134.0	5.7	61.9
60-1	184.6	7.9	42.8	174.1	7.5	46.3	168.1	7.2	47.8	160.4	6.9	49.8	148.1	6.3	54.9
65-1	204.3	8.7	49.5	192.7	8.2	53.6	185.3	7.9	55.5	176.6	7.6	58.0	162.5	7.0	64.0
70-1	221.6	9.5	52.5	208.6	8.9	56.8	200.8	8.6	58.8	191.3	8.2	61.3	176.9	7.6	67.5
70-2	225.4	9.7	56.7	212.4	9.1	61.4	204.3	8.7	63.6	194.5	8.3	66.4	179.4	7.7	73.2
75-1	250.8	10.7	60.6	236.3	10.1	65.7	227.2	9.7	68.2	216.3	9.2	71.2	199.8	8.5	78.4
80-1	276.4	11.8	68.9	259.9	11.1	74.8	249.7	10.7	77.8	237.4	10.2	81.3	218.1	9.3	89.6
95-2	302.1	12.9	79.7	283.8	12.2	86.9	272.2	11.6	90.5	258.1	11.1	94.8	242.3	11.4	105.6
95-1	303.2	13.0	77.5	284.9	12.2	84.5	272.9	11.7	88.0	259.9	11.1	91.8	238.8	10.2	101.3
100-2	340.1	14.6	92.9	318.6	13.6	101.7	305.3	13.1	105.9	288.4	12.3	111.2	263.8	11.3	122.8
100-1	340.8	14.6	90.2	319.0	13.7	98.7	305.6	13.1	102.7	289.8	12.4	107.4	264.8	11.3	118.8
110-2	359.1	15.4	86.5	338.3	14.5	93.5	325.7	13.9	97.0	309.8	13.3	101.3	286.6	12.3	111.4
120-2	378.1	16.2	93.1	356.3	15.2	100.8	342.2	14.6	104.7	325.0	13.9	109.5	299.6	12.8	120.7
125-2	395.3	16.9	100.1	372.1	15.9	108.6	357.3	15.3	112.8	339.7	14.5	117.8	312.7	13.4	130.0
135-2	437.9	18.7	110.5	411.1	17.6	120.2	394.6	16.9	125.1	374.6	16.0	130.9	343.6	14.7	144.4
140-2	467.4	20.0	126.0	439.3	18.8	137.3	419.9	18.0	143.1	398.8	17.1	149.5	365.8	15.7	165.1
145-2	485.3	20.8	119.8	457.2	19.6	129.8	438.9	18.8	134.7	418.2	17.9	140.5	385.8	16.5	154.9
160-2	513.1	22.0	128.3	483.2	20.7	139.1	463.9	19.9	144.3	441.7	18.9	150.7	406.9	17.4	166.3
165-2	536.7	23.0	136.2	505.0	21.6	147.9	484.6	20.7	153.6	460.4	19.7	160.5	423.8	18.1	177.1
175-2	567.6	24.3	151.2	533.2	22.8	164.4	512.1	21.9	170.5	486.0	20.8	178.4	446.3	19.1	197.4
190-2	583.5	25.0	145.9	549.7	23.5	157.7	528.3	22.6	163.5	502.2	21.5	170.8	463.9	19.9	188.3
195-2	620.8	26.6	166.4	582.8	24.9	181.4	558.9	23.9	188.7	529.0	22.6	197.8	484.6	20.8	218.8
200-2	639.4	27.4	159.9	602.1	25.8	173.3	578.5	24.8	179.9	549.7	23.5	188.2	505.7	21.7	207.9
205-2	694.6	29.7	164.9	653.8	28.0	179.2	628.1	26.9	186.0	597.5	25.6	194.3	550.1	23.6	214.1
210-2	710.1	30.4	183.7	665.8	28.5	201.0	637.6	27.3	209.2	601.8	25.8	219.5	551.5	23.6	241.5
220-2	735.1	31.5	175.2	691.1	29.6	190.6	663.3	28.4	198.2	630.2	27.0	207.3	578.9	24.8	228.5
235-2	794.1	34.0	197.2	746.7	32.0	214.7	714.7	30.6	223.8	678.8	29.1	233.5	622.9	26.7	257.7
250-2	851.1	36.4	219.4	798.4	34.2	239.8	762.5	32.6	250.3	722.7	30.9	261.5	663.0	28.4	287.7
275-2	900.4	38.5	236.4	844.8	36.2	258.4	807.9	34.6	269.5	764.9	32.7	281.8	698.5	29.9	311.2
280-2	893.0	38.2	213.1	839.5	35.9	232.1	805.4	34.5	241.5	764.2	32.7	252.5	704.8	30.2	277.3
285-2	933.8	40.0	250.8	875.4	37.5	274.4	836.7	35.8	286.1	791.0	33.9	299.3	720.6	30.9	331.0
300-2	973.5	41.7	241.7	915.1	39.2	263.6	877.1	37.5	274.5	833.5	35.7	286.3	763.5	32.7	316.1
315-3	1,031.2	44.1	267.9	967.9	41.4	292.6	924.3	39.6	305.6	875.7	37.5	319.5	801.2	34.3	352.8
315-2	1,035.1	44.3	264.4	971.7	41.6	288.8	928.1	39.7	301.6	879.6	37.7	315.3	804.3	34.4	348.2
335-2	1,124.4	48.1	293.4	1,054.4	45.1	321.1	1,008.0	43.2	334.8	953.5	40.8	350.2	872.2	37.3	385.5
350-3	1,168.0	50.0	290.7	1,095.5	46.9	317.9	1,050.9	45.0	330.3	995.3	42.6	346.3	914.4	39.1	380.6
350-2	1,156.4	49.5	282.4	1,085.3	46.5	308.3	1,041.0	44.6	320.7	985.5	42.2	335.9	906.3	38.8	369.2
360-3	1,190.2	50.9	283.2	1,121.6	48.0	307.6	1,076.9	46.1	319.7	1,022.7	43.8	334.3	939.7	40.2	368.5
375-3	1,226.0	52.5	313.3	1,149.0	49.2	343.2	1,100.8	47.1	357.2	1,042.1	44.6	374.0	954.5	40.9	412.4
400-3	1,310.1	56.1	326.7	1,230.2	52.7	356.6	1,177.5	50.4	371.6	1,117.7	47.8	388.1	1,023.4	43.8	428.6
415-3	1,407.9	60.3	369.0	1,321.7	56.6	403.0	1,263.7	54.1	420.6	1,197.5	51.3	439.6	1,092.0	46.7	486.0
430-3	1,433.5	61.4	359.8	1,348.4	57.7	391.7	1,290.7	55.2	408.4	1,226.7	52.5	426.1	1,124.7	48.1	470.6
450-3	1,469.8	62.9	394.8	1,377.6	59.0	431.9	1,316.8	56.4	450.3	1,245.0	53.3	471.2	1,138.5	48.7	519.2
465-3	1,502.8	64.3	382.8	1,412.1	60.4	417.3	1,350.2	57.8	435.6	1,279.8	54.8	455.7	1,173.3	50.2	502.7
475-3	1,563.0	66.9	405.7	1,463.1	62.6	444.3	1,400.1	59.9	462.9	1,323.8	56.7	485.4	1,213.4	51.9	534.4
485-3	1,587.2	67.9	397.3	1,491.9	63.9	432.7	1,427.6	61.1	451.0	1,355.5	58.0	471.0	1,243.6	53.2	519.7
500-3	1,614.0	69.1	430.0	1,513.4	64.8	469.9	1,447.6	62.0	489.6	1,366.4	58.5	514.4	1,249.9	53.5	566.6
510-3	1,644.9	70.4	419.3	1,544.3	66.1	457.5	1,475.4	63.2	477.3	1,400.1	59.9	498.5	1,281.9	54.9	551.0
550-4	1,735.6	74.3	443.2	1,630.1	69.8	483.8	1,557.7	66.7	505.4	1,476.8	63.2	527.9	1,352.3	57.9	582.0
580-4	1,867.9	80.0	501.5	1,750.8	74.9	548.8	1,673.4	71.6	572.3	1,581.9	67.7	598.7	1,441.6	61.7	662.1
600-4	1,940.7	83.1	511.8	1,818.6	77.9	560.7	1,737.7	74.4	585.0	1,642.1	70.3	612.0	1,500.4	64.2	673.9

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 50 Hz - SI

Leaving Water Temperature = 8 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	178.7	7.6	47.5	167.4	7.2	52.0	160.0	6.8	54.3	151.6	6.5	56.8	138.6	5.9	62.8
60-1	191.3	8.2	43.3	180.4	7.7	46.9	173.7	7.4	48.5	166.0	7.1	50.5	153.3	6.6	55.6
65-1	211.4	9.0	50.1	199.1	8.5	54.3	191.7	8.2	56.3	182.5	7.8	58.8	168.5	7.2	64.8
70-1	229.0	9.8	53.1	215.9	9.2	57.4	207.9	8.9	59.5	198.0	8.5	62.1	183.6	7.8	68.3
70-2	233.2	10.0	57.4	220.2	9.4	62.1	211.4	9.0	64.3	201.5	8.6	67.2	186.0	7.9	74.1
75-1	259.2	11.1	61.4	244.4	10.5	66.5	235.3	10.1	69.0	223.7	9.6	72.1	206.8	8.8	79.3
80-1	285.6	12.2	69.7	268.7	11.5	75.9	258.1	11.0	78.9	245.5	10.5	82.4	225.8	9.7	90.9
95-2	312.0	13.3	80.8	293.7	12.5	88.1	281.4	12.0	91.8	266.9	11.4	96.1	245.1	10.5	106.1
95-1	313.0	13.4	78.6	294.4	12.6	85.7	282.1	12.1	89.3	268.7	11.5	93.1	246.9	10.5	102.7
100-2	351.3	15.0	94.2	329.5	14.1	103.2	314.8	13.5	107.8	298.2	12.7	112.7	272.6	11.6	124.7
100-1	351.7	15.0	91.4	329.9	14.1	100.1	316.2	13.5	104.2	298.6	12.8	109.3	274.0	11.7	120.4
110-2	371.0	15.9	87.5	349.9	15.0	94.8	336.6	14.4	98.2	320.8	13.7	102.5	296.5	12.7	112.7
120-2	390.7	16.7	94.2	368.2	15.7	102.2	353.8	15.1	106.0	336.9	14.4	110.9	309.8	13.2	122.4
125-2	409.0	17.5	101.3	384.8	16.4	110.1	369.3	15.8	114.3	351.3	15.0	119.5	323.6	13.8	131.8
135-2	451.9	19.3	112.0	425.2	18.2	121.9	407.6	17.4	126.8	386.9	16.5	132.7	355.9	15.2	146.5
140-2	482.5	20.6	127.8	453.3	19.4	139.4	434.3	18.6	145.2	411.1	17.6	152.1	377.7	16.2	167.4
145-2	502.2	21.5	121.3	473.0	20.2	131.3	454.4	19.4	136.3	432.2	18.5	142.5	399.5	17.1	156.7
160-2	530.4	22.7	129.9	499.1	21.3	141.0	479.7	20.5	146.3	456.5	19.5	152.8	421.0	18.0	168.4
165-2	555.0	23.7	137.9	521.6	22.3	149.9	501.2	21.4	155.7	476.6	20.4	162.8	438.2	18.7	179.6
175-2	586.6	25.1	153.1	551.1	23.6	166.8	528.6	22.6	173.4	502.6	21.5	181.0	461.8	19.7	199.9
190-2	603.2	25.8	147.7	568.7	24.3	159.8	546.9	23.4	165.6	520.2	22.2	173.0	479.4	20.5	190.9
195-2	640.8	27.4	168.5	601.4	25.7	184.1	576.8	24.7	191.8	547.2	23.4	200.7	501.2	21.4	221.8
200-2	661.2	28.3	161.9	622.2	26.6	175.6	598.2	25.6	182.2	569.4	24.3	190.6	523.7	22.4	210.5
205-2	717.5	30.7	167.0	675.6	28.9	181.6	649.6	27.8	188.7	617.6	26.4	197.0	569.4	24.3	217.0
210-2	732.2	31.3	186.7	687.6	29.4	204.0	658.4	28.1	212.5	622.9	26.6	222.7	570.8	24.4	244.9
220-2	759.0	32.5	177.6	714.7	30.5	193.3	685.5	29.3	201.0	651.3	27.8	210.2	600.0	25.6	231.3
235-2	820.2	35.1	200.0	770.6	32.9	218.1	739.3	31.6	227.0	699.9	29.9	237.7	644.0	27.5	261.2
250-2	877.5	37.5	222.9	824.4	35.2	243.3	788.2	33.7	254.0	747.4	32.0	265.3	683.7	29.2	292.9
275-2	930.9	39.8	239.6	873.6	37.3	262.1	832.8	35.6	274.2	788.5	33.7	286.6	722.0	30.9	315.4
280-2	921.5	39.4	216.4	868.0	37.1	235.3	832.5	35.6	244.9	790.6	33.8	256.2	729.4	31.2	281.2
285-2	963.3	41.2	254.9	902.8	38.6	279.2	862.7	36.9	291.3	815.2	34.9	304.7	745.3	31.9	335.6
300-2	1,006.6	43.0	244.9	944.3	40.4	267.8	906.3	38.7	278.3	860.6	36.8	290.7	790.3	33.8	320.6
315-3	1,063.5	45.5	272.2	998.8	42.7	297.2	955.9	40.9	310.0	902.8	38.6	325.2	828.6	35.4	357.7
315-2	1,067.8	45.6	268.7	1,003.0	42.9	293.3	959.8	41.0	306.0	906.7	38.8	320.9	831.8	35.6	353.1
335-2	1,159.9	49.6	298.2	1,087.5	46.5	326.7	1,039.6	44.4	340.7	983.4	42.0	356.3	899.6	38.5	392.2
350-3	1,205.6	51.5	295.0	1,132.8	48.4	322.4	1,087.1	46.5	335.1	1,028.7	44.0	351.2	946.1	40.4	386.0
350-2	1,194.7	51.1	286.1	1,121.6	47.9	313.0	1,074.4	45.9	326.1	1,019.6	43.6	340.8	938.0	40.1	374.5
360-3	1,230.6	52.6	286.9	1,156.4	49.4	312.7	1,112.4	47.6	324.2	1,057.6	45.2	339.1	972.5	41.6	373.8
375-3	1,265.1	54.1	318.4	1,187.7	50.8	348.0	1,137.7	48.6	362.3	1,075.1	46.0	380.0	986.9	42.2	418.0
400-3	1,351.6	57.8	331.9	1,271.0	54.3	361.7	1,216.9	52.0	377.3	1,156.0	49.4	393.7	1,059.3	45.3	434.7
415-3	1,452.2	62.1	375.1	1,362.8	58.3	410.0	1,304.8	55.8	427.1	1,235.9	52.8	446.4	1,130.7	48.3	492.9
430-3	1,482.4	63.4	364.8	1,391.3	59.5	398.3	1,334.7	57.1	414.2	1,268.6	54.2	432.1	1,162.7	49.7	477.1
450-3	1,519.3	65.0	400.4	1,424.4	60.9	438.3	1,361.8	58.2	457.1	1,284.1	54.9	479.8	1,173.6	50.2	528.5
465-3	1,551.0	66.3	389.0	1,457.4	62.3	424.4	1,396.2	59.7	441.9	1,320.6	56.5	463.3	1,212.7	51.8	509.5
475-3	1,613.2	69.0	411.9	1,513.4	64.7	450.6	1,443.7	61.7	471.0	1,368.5	58.5	492.3	1,254.2	53.6	542.2
485-3	1,639.3	70.1	402.9	1,539.7	65.8	439.6	1,476.4	63.1	457.5	1,397.7	59.7	479.3	1,285.8	55.0	526.9
500-3	1,664.6	71.2	437.0	1,560.8	66.7	478.1	1,492.6	63.8	498.4	1,412.1	60.4	521.5	1,292.5	55.3	574.3
510-3	1,696.2	72.5	426.0	1,593.9	68.1	464.4	1,526.0	65.2	484.2	1,443.0	61.7	507.4	1,325.2	56.7	558.5
550-4	1,790.5	76.5	450.4	1,681.5	71.9	492.0	1,610.4	68.8	512.6	1,527.1	65.3	535.4	1,395.9	59.7	591.5
580-4	1,926.6	82.4	509.8	1,805.3	77.2	558.4	1,725.1	73.8	582.5	1,630.8	69.7	609.5	1,490.5	63.7	671.3
600-4	2,001.5	85.6	520.5	1,875.3	80.2	570.7	1,791.6	76.6	595.6	1,693.8	72.4	623.1	1,547.5	66.2	685.8

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 10 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	189.6	8.1	49.1	178.3	7.6	53.7	170.6	7.3	56.0	161.4	6.9	58.7	148.4	6.3	64.6
60-1	204.0	8.7	44.3	192.7	8.2	48.0	185.7	7.9	49.7	177.3	7.6	51.9	164.6	7.0	57.0
65-1	225.4	9.6	51.4	212.4	9.1	55.8	204.7	8.7	57.9	195.2	8.3	60.4	180.4	7.7	66.5
70-1	244.4	10.4	54.4	231.1	9.8	58.8	222.6	9.5	61.0	212.1	9.0	63.6	196.2	8.4	70.1
70-2	249.0	10.6	58.8	234.9	10.0	63.7	226.1	9.6	66.0	215.9	9.2	68.9	199.4	8.5	75.9
75-1	276.8	11.8	62.9	261.0	11.1	68.3	251.1	10.7	70.9	239.5	10.2	74.0	221.2	9.4	81.5
80-1	304.6	13.0	71.6	287.0	12.2	77.9	275.4	11.7	81.1	262.0	11.2	84.8	242.0	10.3	93.3
95-2	332.7	14.2	83.1	312.3	13.3	90.9	300.0	12.8	94.4	285.2	12.2	98.9	262.0	11.2	109.1
95-1	333.8	14.2	80.9	313.4	13.4	88.4	301.4	12.9	91.8	286.3	12.2	96.2	263.8	11.3	105.6
100-2	373.5	15.9	97.3	350.6	15.0	106.4	335.9	14.3	110.9	317.6	13.5	116.5	291.2	12.4	128.2
100-1	374.2	16.0	94.4	351.3	15.0	103.3	336.2	14.3	107.6	319.0	13.6	112.5	293.0	12.5	123.8
110-2	396.7	16.9	89.6	373.5	15.9	97.3	359.8	15.3	100.8	343.6	14.7	105.1	316.9	13.5	115.9
120-2	417.1	17.8	96.6	393.2	16.8	105.0	377.7	16.1	108.9	360.1	15.4	113.8	332.4	14.2	125.4
125-2	436.5	18.6	103.9	410.4	17.5	113.1	394.3	16.8	117.5	375.6	16.0	122.7	347.1	14.8	135.1
135-2	481.8	20.5	115.1	452.3	19.3	125.7	435.1	18.6	130.4	413.2	17.6	136.5	380.2	16.2	150.6
140-2	514.2	21.9	131.4	483.2	20.6	143.6	462.1	19.7	149.9	438.9	18.7	156.4	402.7	17.2	172.8
145-2	535.6	22.9	124.2	504.7	21.5	134.8	485.7	20.7	139.8	462.8	19.7	146.0	427.7	18.2	160.6
160-2	565.9	24.1	133.1	532.8	22.7	144.8	512.4	21.9	150.4	489.2	20.9	156.6	450.2	19.2	172.9
165-2	592.3	25.3	141.4	557.1	23.8	153.9	534.9	22.8	160.1	508.6	21.7	167.4	468.5	20.0	184.5
175-2	625.7	26.7	157.2	588.4	25.1	171.3	563.8	24.0	178.5	536.7	22.9	186.1	493.8	21.1	205.5
190-2	643.6	27.5	151.3	607.0	25.9	164.1	583.5	24.9	170.0	556.4	23.7	177.4	514.2	21.9	195.7
195-2	682.3	29.1	174.0	641.5	27.4	189.7	615.1	26.2	197.7	582.1	24.8	207.2	536.0	22.9	228.0
200-2	706.2	30.1	166.0	664.4	28.3	180.3	639.0	27.3	187.4	608.4	26.0	195.7	561.0	23.9	215.7
205-2	764.6	32.6	171.8	719.9	30.7	187.0	693.2	29.6	194.0	659.8	28.1	202.7	608.4	26.0	223.2
210-2	778.0	33.2	192.8	730.1	31.1	211.1	699.2	29.8	220.1	662.6	28.3	230.0	607.7	25.9	252.9
220-2	809.3	34.5	182.6	760.4	32.4	199.3	731.5	31.2	206.7	695.7	29.7	216.2	642.6	27.4	237.3
235-2	873.6	37.3	205.7	821.6	35.0	224.6	788.9	33.6	233.4	747.7	31.9	244.5	688.6	29.4	268.6
250-2	935.2	39.9	229.5	875.7	37.4	251.7	838.8	35.8	262.2	795.5	33.9	273.9	730.1	31.1	301.3
275-2	990.0	42.2	247.2	928.8	39.6	270.8	888.7	37.9	282.4	841.6	35.9	295.2	771.3	32.9	324.8
280-2	982.6	41.9	222.2	923.9	39.4	242.7	888.7	37.9	251.8	844.4	36.0	263.5	779.7	33.3	289.2
285-2	1,023.8	43.7	263.5	959.1	40.9	289.0	916.2	39.1	301.8	868.3	37.0	314.9	794.1	33.9	346.5
300-2	1,071.6	45.7	252.3	1,006.9	43.0	275.8	966.8	41.2	286.9	917.6	39.1	300.1	845.1	36.0	329.6
315-3	1,130.4	48.2	280.9	1,061.4	45.3	307.3	1,017.1	43.4	320.1	964.0	41.1	334.8	885.2	37.8	368.2
315-2	1,134.9	48.4	277.3	1,065.7	45.5	303.3	1,020.6	43.5	316.2	968.2	41.3	330.4	888.7	37.9	363.4
335-2	1,237.3	52.8	306.7	1,159.9	49.5	336.3	1,109.3	47.3	350.9	1,049.8	44.8	367.0	961.2	41.0	403.8
350-3	1,281.9	54.7	304.4	1,205.3	51.4	332.6	1,156.4	49.3	346.1	1,098.0	46.8	361.6	1,010.1	43.1	397.4
350-2	1,270.0	54.2	295.4	1,194.4	50.9	322.6	1,145.5	48.9	336.0	1,088.9	46.5	350.6	1,002.3	42.8	385.0
360-3	1,310.1	55.9	295.2	1,234.5	52.7	321.4	1,187.3	50.6	333.7	1,129.7	48.2	348.8	1,039.3	44.3	384.4
375-3	1,344.9	57.4	328.9	1,262.6	53.9	360.0	1,209.5	51.6	375.1	1,147.2	48.9	392.0	1,053.0	44.9	431.1
400-3	1,439.5	61.4	341.7	1,353.7	57.7	373.1	1,295.3	55.3	389.3	1,231.0	52.5	406.4	1,132.1	48.3	446.8
415-3	1,547.8	66.0	386.3	1,452.5	62.0	422.8	1,390.6	59.3	440.7	1,312.5	56.0	462.5	1,203.2	51.3	508.8
430-3	1,578.1	67.3	375.5	1,483.8	63.3	409.7	1,424.4	60.8	426.0	1,350.5	57.6	446.4	1,243.3	53.0	490.5
450-3	1,617.1	69.0	412.5	1,515.8	64.6	452.2	1,449.0	61.8	471.9	1,370.6	58.5	493.8	1,254.2	53.5	543.6
465-3	1,653.7	70.5	399.7	1,549.9	66.1	438.3	1,485.9	63.4	456.3	1,408.9	60.1	477.6	1,294.6	55.2	525.2
475-3	1,713.8	73.1	425.3	1,608.7	68.6	465.3	1,540.4	65.7	484.9	1,460.3	62.3	506.9	1,336.8	57.0	559.5
485-3	1,745.8	74.5	414.4	1,641.0	70.0	452.5	1,575.3	67.2	470.4	1,492.6	63.7	492.9	1,374.4	58.6	541.6
500-3	1,771.9	75.6	450.7	1,661.1	70.9	493.8	1,588.6	67.8	515.1	1,503.9	64.1	538.8	1,377.6	58.8	593.1
510-3	1,808.1	77.1	438.2	1,699.1	72.5	478.6	1,623.1	69.2	499.9	1,540.8	65.7	522.1	1,416.6	60.4	574.1
550-4	1,909.4	81.4	462.9	1,788.7	76.3	508.3	1,713.8	73.1	529.5	1,625.6	69.3	553.1	1,492.6	63.7	608.1
580-4	2,047.6	87.3	526.9	1,918.2	81.8	578.1	1,832.4	78.2	603.6	1,736.3	74.1	629.7	1,588.3	67.7	693.1
600-4	2,127.4	90.7	538.2	1,992.7	85.0	591.0	1,908.3	81.4	615.5	1,808.4	77.1	641.6	1,654.0	70.5	706.0

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 50 Hz - IMP

Leaving Water Temperature = 40 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	45.6	109.1	44.6	42.4	101.6	49.3	40.3	96.4	51.7	37.7	90.4	54.5	33.8	80.9	61.8
60-1	48.4	115.9	41.3	45.4	108.8	44.8	43.5	104.2	46.5	41.1	98.5	48.8	37.2	89.1	55.4
65-1	53.7	128.6	47.6	50.2	120.2	51.9	48.0	114.9	54.0	45.3	108.5	56.7	40.9	97.9	64.5
70-1	57.9	138.8	50.7	54.2	129.9	55.0	51.9	124.5	57.0	49.2	117.8	59.9	44.4	106.4	68.1
70-2	59.0	141.4	54.7	55.2	132.4	59.3	52.9	126.7	61.7	49.9	119.6	64.8	45.1	108.1	73.7
75-1	65.8	157.7	58.3	61.5	147.5	63.7	58.9	141.1	66.2	55.5	133.1	69.6	50.2	120.2	78.9
80-1	72.6	174.0	66.1	67.9	162.6	72.3	64.7	155.1	75.4	61.0	146.1	79.4	54.9	131.4	90.2
95-2	79.4	190.2	76.4	74.1	177.5	83.9	70.8	169.5	87.4	66.5	159.2	92.1	59.7	142.9	104.8
95-1	79.7	190.9	74.3	74.4	178.4	81.4	71.0	170.1	85.0	66.7	159.8	89.6	59.9	143.4	101.9
100-2	89.6	214.8	88.7	83.3	199.7	97.8	79.2	189.9	102.4	74.2	177.8	108.2	66.5	159.3	122.7
100-1	89.8	215.1	86.0	83.7	200.6	94.5	79.4	190.3	99.3	74.5	178.4	104.6	66.6	159.5	119.1
110-2	94.3	225.8	83.2	88.1	211.1	90.7	84.4	202.2	94.1	79.6	190.7	98.9	71.8	172.0	112.5
120-2	99.1	237.5	89.7	92.7	222.0	97.8	88.6	212.2	101.8	83.6	200.2	107.0	75.3	180.5	121.4
125-2	103.6	248.3	96.0	96.9	232.1	104.8	92.4	221.4	109.2	87.2	208.9	115.0	78.5	188.0	130.7
135-2	115.0	275.6	106.0	107.4	257.3	116.1	102.3	245.1	121.3	96.2	230.4	127.8	86.5	207.3	145.0
140-2	123.0	294.6	120.5	114.8	275.2	132.0	109.3	261.8	138.3	102.4	245.4	145.9	91.6	219.4	166.2
145-2	127.3	305.0	115.5	119.2	285.5	125.7	113.9	273.0	130.8	107.3	257.1	137.5	97.0	232.3	155.9
160-2	134.7	322.6	123.2	125.9	301.7	134.3	120.4	288.4	139.9	113.4	271.8	147.0	102.2	244.8	167.4
165-2	140.7	337.2	130.7	131.3	314.7	142.7	125.3	300.3	148.8	118.1	283.0	156.6	106.3	254.6	178.1
175-2	148.1	354.9	144.7	138.5	331.8	157.9	132.1	316.4	165.0	124.2	297.5	173.9	111.5	267.2	198.1
190-2	152.1	364.3	140.3	142.3	340.9	152.6	135.9	325.7	158.4	128.4	307.6	166.7	115.7	277.1	189.7
195-2	162.4	389.0	159.1	151.5	363.0	174.4	144.2	345.4	182.8	135.4	324.3	193.1	121.6	291.3	219.3
200-2	166.9	399.9	153.8	156.0	373.8	167.6	149.1	357.2	174.7	140.5	336.7	183.7	126.8	303.8	208.9
205-2	182.4	437.1	158.3	170.6	408.8	173.0	162.9	390.3	180.6	153.6	367.9	189.5	138.1	330.9	215.5
210-2	186.9	447.9	175.3	174.3	417.5	193.0	165.7	396.9	202.1	154.9	371.1	213.5	138.6	332.1	241.9
220-2	193.1	462.7	168.0	180.4	432.2	184.1	172.0	412.0	192.2	161.9	387.8	202.1	145.7	349.0	229.3
235-2	209.0	500.8	188.6	194.9	466.9	207.3	185.9	445.4	216.2	174.4	417.9	227.9	156.7	375.5	258.2
250-2	224.1	536.9	209.6	208.9	500.4	230.5	198.2	474.8	241.9	186.0	445.7	254.4	166.5	398.8	288.8
275-2	237.9	570.0	224.8	221.6	531.0	247.5	210.2	503.6	260.1	197.0	472.0	273.7	175.6	420.6	311.4
280-2	234.8	562.5	204.5	219.2	525.1	224.1	208.8	500.4	234.2	197.0	472.0	245.4	177.1	424.3	278.8
285-2	246.4	590.3	238.9	229.2	549.2	263.6	217.6	521.3	276.4	203.6	487.7	291.1	181.1	434.0	331.2
300-2	256.6	614.8	230.9	239.2	573.2	253.8	228.0	546.3	265.1	213.8	512.3	279.5	192.2	460.5	316.5
315-3	271.4	650.2	255.8	253.1	606.4	281.2	240.3	575.7	295.2	225.6	540.6	310.4	201.4	482.5	353.5
315-2	272.4	652.6	252.5	254.1	608.7	277.5	241.3	578.0	291.4	226.5	542.8	306.4	202.2	484.4	348.9
335-2	297.3	712.2	278.5	276.8	663.1	307.1	262.9	629.9	321.7	245.5	588.2	340.2	219.3	525.4	385.7
350-3	307.7	737.2	277.5	286.7	686.8	305.6	273.3	654.7	319.1	256.2	613.9	336.6	230.2	551.4	381.1
350-2	304.7	730.1	269.7	283.8	679.9	296.8	270.6	648.4	309.8	253.9	608.3	326.6	228.2	546.7	369.7
360-3	313.2	750.5	271.3	292.9	701.8	296.8	279.1	668.7	310.0	262.7	629.5	326.2	236.7	567.0	369.6
375-3	323.0	773.8	299.2	300.7	720.4	329.9	286.2	685.7	345.0	267.7	641.4	364.1	239.7	574.2	412.9
400-3	344.7	825.9	312.7	321.9	771.3	342.9	305.9	732.9	359.3	287.7	689.2	377.6	257.7	617.4	429.3
415-3	370.7	888.2	352.4	345.4	827.6	387.8	328.3	786.4	406.3	307.9	737.7	427.5	274.4	657.5	487.1
430-3	377.7	904.9	343.8	352.6	844.8	377.1	335.7	804.3	394.5	314.8	754.1	416.0	282.8	677.7	471.2
450-3	388.6	931.2	374.9	361.5	866.0	413.7	343.3	822.4	433.5	320.1	767.0	458.6	285.8	684.7	520.5
465-3	395.8	948.3	365.9	368.6	883.2	402.8	351.1	841.3	420.8	328.7	787.6	444.2	294.9	706.5	503.4
475-3	411.8	986.7	387.2	383.1	917.8	427.2	364.4	873.2	446.9	341.0	817.1	471.4	304.9	730.6	535.5
485-3	417.9	1,001.2	379.9	390.3	935.1	416.2	371.4	889.8	435.8	348.3	834.5	459.6	312.9	749.7	520.9
500-3	425.4	1,019.3	410.0	396.1	948.9	451.7	376.3	901.6	473.0	352.1	843.6	499.3	314.0	752.4	568.1
510-3	432.9	1,037.1	401.0	403.9	967.7	439.9	383.6	919.1	461.2	360.6	864.0	484.7	322.6	772.8	552.1
550-4	457.2	1,095.4	423.4	426.4	1,021.5	465.5	405.0	970.4	488.3	380.2	910.8	513.3	339.3	812.9	583.9
580-4	492.8	1,180.6	477.9	458.4	1,098.4	527.3	435.2	1,042.6	552.7	407.1	975.4	582.1	362.3	867.9	662.3
600-4	513.0	1,229.0	485.6	477.3	1,143.6	536.2	453.1	1,085.5	562.2	424.0	1,015.9	592.0	376.8	902.8	674.4

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 42 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	47.2	112.9	45.4	44.0	105.2	50.0	41.8	99.9	52.6	39.2	93.8	55.3	35.0	83.7	63.0
60-1	50.3	120.3	41.9	47.2	112.9	45.4	45.2	108.2	47.2	42.8	102.3	49.5	38.7	92.6	56.2
65-1	55.8	133.3	48.3	52.2	124.8	52.6	49.9	119.2	54.8	47.2	112.8	57.5	42.5	101.7	65.3
70-1	60.3	144.2	51.3	56.5	135.0	55.8	54.1	129.5	57.9	51.1	122.3	60.7	46.3	110.7	69.0
70-2	61.4	146.9	55.4	57.5	137.6	60.3	55.1	131.7	62.6	52.0	124.5	65.8	47.0	112.4	74.7
75-1	68.4	163.6	59.1	64.0	153.0	64.5	61.3	146.5	67.1	57.8	138.1	70.6	52.3	125.0	80.0
80-1	75.4	180.3	67.0	70.5	168.5	73.4	67.3	160.8	76.6	63.3	151.4	80.6	57.0	136.4	91.5
95-2	82.4	197.2	77.5	76.9	183.9	85.2	73.4	175.5	88.9	69.1	165.2	93.6	62.0	148.3	106.4
95-1	82.7	197.9	75.4	77.2	184.6	82.9	73.7	176.3	86.4	69.3	165.8	91.0	62.2	148.8	103.5
100-2	92.9	222.2	90.2	86.6	207.0	99.3	82.1	196.4	104.4	77.1	184.3	109.9	69.0	165.0	124.9
100-1	93.1	222.5	87.5	86.8	207.5	96.3	82.5	197.3	100.9	77.2	184.6	106.6	69.2	165.5	120.9
110-2	97.9	234.1	84.3	91.6	219.1	91.9	87.7	209.8	95.4	82.8	198.0	100.3	74.7	178.7	114.0
120-2	102.9	246.1	90.9	96.4	230.4	99.1	91.9	219.9	103.3	86.9	207.8	108.5	78.4	187.5	123.3
125-2	107.8	257.9	97.4	100.8	241.1	106.5	96.2	230.2	111.1	90.7	216.8	116.8	81.8	195.7	132.5
135-2	119.4	285.6	107.5	111.4	266.5	117.9	106.3	254.1	123.3	99.9	238.8	129.8	90.0	215.3	146.9
140-2	127.8	305.6	122.3	119.0	284.5	134.5	113.4	271.2	140.5	106.4	254.5	148.2	95.3	227.8	168.8
145-2	132.4	316.5	116.9	123.7	295.8	127.6	118.4	283.1	132.6	111.7	267.1	139.5	100.9	241.2	158.0
160-2	140.0	334.8	125.0	130.9	312.9	136.4	125.0	298.9	142.2	118.0	282.1	149.4	106.3	254.2	169.7
165-2	146.4	350.2	132.6	136.8	327.2	145.0	130.4	312.0	151.3	123.0	294.1	159.3	110.7	264.7	181.0
175-2	154.9	370.5	147.1	144.8	346.4	160.8	137.9	329.8	168.0	129.7	310.2	177.1	116.4	278.4	201.5
190-2	159.1	380.6	142.3	148.8	355.7	155.1	142.4	340.5	161.1	134.2	320.9	169.3	121.2	289.8	192.6
195-2	169.4	405.0	161.8	158.2	378.2	177.5	150.3	359.4	186.0	141.0	337.2	196.4	126.8	303.3	222.7
200-2	174.3	416.8	156.0	163.1	390.1	170.2	155.5	371.8	177.6	146.9	351.2	186.5	132.1	315.9	212.3
205-2	189.0	452.0	160.9	177.1	423.6	175.7	169.2	404.7	183.2	159.6	381.7	192.6	143.8	343.8	218.4
210-2	194.0	464.0	178.1	180.5	431.6	196.7	171.7	410.5	206.0	160.9	384.8	216.9	144.1	344.7	245.7
220-2	200.5	479.6	170.4	187.3	447.8	186.9	178.6	427.2	195.3	168.5	403.0	205.0	151.7	362.7	232.4
235-2	217.1	519.2	191.3	202.3	483.7	210.5	193.0	461.5	219.6	181.2	433.3	231.5	163.0	389.9	262.0
250-2	232.1	555.1	213.3	216.4	517.6	234.7	205.8	492.2	245.8	193.3	462.3	258.4	172.6	412.7	294.2
275-2	246.4	589.3	228.8	229.5	548.9	252.3	218.2	521.8	264.2	204.5	489.1	278.1	182.4	436.2	316.6
280-2	243.7	582.7	207.4	227.5	544.2	227.6	216.9	518.7	237.9	204.7	489.6	249.4	184.0	440.1	283.2
285-2	255.7	611.6	242.5	238.0	569.1	267.8	225.9	540.3	280.8	211.5	505.7	295.7	188.1	449.7	336.9
300-2	266.2	636.6	234.3	248.2	593.6	258.0	236.8	566.3	269.3	222.2	531.4	284.0	199.9	478.0	321.5
315-3	281.1	672.1	260.4	262.1	626.8	286.6	249.5	596.6	299.9	234.3	560.4	315.3	209.4	500.8	359.0
315-2	282.2	674.9	257.0	263.2	629.3	282.8	250.5	599.0	296.0	235.3	562.7	311.2	210.3	502.8	354.4
335-2	307.9	736.2	283.5	286.6	685.4	313.1	272.3	651.1	328.3	255.0	609.9	345.7	227.9	545.0	391.9
350-3	318.7	762.1	282.3	297.5	711.5	310.3	283.7	678.5	324.2	266.2	636.5	342.0	239.2	572.1	387.1
350-2	315.9	755.6	274.0	294.8	705.0	301.4	280.2	670.0	316.0	263.7	630.7	331.8	237.2	567.2	375.5
360-3	324.7	776.5	275.5	304.0	726.9	301.4	290.0	693.5	315.0	272.8	652.4	331.4	246.3	589.1	374.6
375-3	334.5	799.9	304.5	311.9	745.8	335.3	296.9	710.0	350.9	278.1	665.2	370.2	249.4	596.3	419.4
400-3	357.4	854.8	317.8	333.8	798.2	349.0	317.8	760.1	365.1	297.9	712.5	385.0	267.8	640.5	436.0
415-3	384.8	920.3	358.0	358.6	857.5	394.4	341.1	815.7	412.9	319.0	762.8	435.8	285.4	682.4	494.6
430-3	392.3	938.2	348.9	365.4	873.8	384.0	348.5	833.5	400.8	327.1	782.3	422.7	294.3	703.9	478.7
450-3	402.7	962.9	381.7	374.7	896.0	421.4	355.8	850.8	441.8	332.7	795.7	465.9	297.2	710.8	528.5
465-3	410.2	980.9	372.2	382.7	915.1	409.1	364.4	871.4	427.8	341.7	817.0	451.4	306.8	733.6	511.4
475-3	426.6	1,020.1	394.1	397.5	950.6	433.8	378.2	904.4	453.9	354.0	846.5	479.8	317.1	758.4	543.9
485-3	434.1	1,038.1	385.5	404.1	966.4	424.1	385.4	921.7	442.6	361.9	865.3	466.9	325.5	778.4	528.7
500-3	441.8	1,056.5	416.2	411.3	983.6	458.8	390.9	934.7	480.6	365.0	872.8	508.3	326.4	780.6	576.8
510-3	448.5	1,072.6	407.8	418.5	1,000.7	448.1	398.4	952.8	468.6	374.5	895.7	492.4	335.2	801.7	560.6
550-4	473.7	1,132.8	430.6	441.7	1,056.3	474.2	420.5	1,005.5	496.0	394.9	944.3	521.5	352.7	843.5	593.5
580-4	511.5	1,223.2	485.0	475.9	1,138.1	535.6	451.9	1,080.6	561.5	422.9	1,011.4	591.3	376.1	899.4	673.9
600-4	531.4	1,270.9	494.4	494.4	1,182.3	546.7	469.3	1,122.2	573.6	439.0	1,049.9	604.1	391.9	937.2	684.9

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 50 Hz - IMP

Leaving Water Temperature = 44 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	48.9	116.7	46.2	45.6	108.7	51.0	43.4	103.5	53.4	40.7	97.2	56.2	36.4	86.8	64.0
60-1	52.3	124.8	42.3	49.0	117.0	46.1	47.0	112.2	47.8	44.5	106.2	50.2	40.3	96.2	57.0
65-1	57.8	138.1	48.9	54.2	129.3	53.4	51.8	123.8	55.6	49.0	117.0	58.3	44.3	105.7	66.2
70-1	62.6	149.5	52.0	58.7	140.1	56.6	56.2	134.2	58.7	53.2	127.1	61.6	48.1	114.9	69.9
70-2	63.9	152.5	56.1	59.7	142.6	61.1	57.2	136.5	63.6	54.1	129.1	66.7	48.9	116.8	75.7
75-1	71.0	169.5	59.8	66.5	158.7	65.4	63.6	151.9	68.1	60.1	143.5	71.6	54.4	129.8	81.0
80-1	78.3	186.9	68.0	73.1	174.6	74.5	69.8	166.6	77.8	65.9	157.2	81.8	59.4	141.9	92.8
95-2	85.6	204.3	78.6	79.8	190.6	86.5	76.0	181.5	90.6	71.7	171.2	95.1	64.5	153.9	108.1
95-1	85.9	205.0	76.5	80.1	191.3	84.1	76.5	182.7	87.8	72.0	171.8	92.5	64.7	154.4	105.1
100-2	96.2	229.8	91.8	89.7	214.2	101.1	85.3	203.6	106.1	80.1	191.2	111.6	71.5	170.7	127.1
100-1	96.5	230.5	88.9	89.8	214.5	98.1	85.5	204.1	102.8	80.2	191.5	108.3	71.9	171.7	122.8
110-2	101.7	242.7	85.4	95.2	227.2	93.1	91.1	217.6	96.9	86.1	205.6	101.7	77.8	185.7	115.6
120-2	107.0	255.4	92.0	100.1	239.0	100.4	95.6	228.2	104.8	90.4	215.8	110.0	81.5	194.5	125.1
125-2	112.0	267.4	98.8	104.6	249.7	108.1	100.0	238.7	112.7	94.4	225.4	118.4	85.2	203.4	134.3
135-2	123.7	295.4	109.2	115.7	276.2	119.7	110.2	263.2	125.2	103.9	248.0	131.7	93.6	223.6	149.2
140-2	132.5	316.2	124.2	123.5	294.9	136.7	117.4	280.4	143.2	110.5	263.7	150.6	99.0	236.3	171.4
145-2	137.5	328.2	118.3	128.6	306.9	129.3	123.1	293.9	134.5	116.1	277.1	141.4	105.1	250.8	160.2
160-2	145.2	346.7	126.6	135.8	324.3	138.5	129.8	309.8	144.4	122.5	292.3	151.7	110.7	264.3	172.0
165-2	151.9	362.8	134.4	142.0	339.0	147.2	135.6	323.6	153.7	127.6	304.6	161.7	115.2	274.9	183.6
175-2	160.7	383.7	149.2	150.1	358.4	163.5	143.3	342.1	170.7	134.7	321.5	179.9	121.1	289.0	204.7
190-2	165.2	394.4	144.1	154.6	369.2	157.2	147.8	353.0	163.2	139.7	333.5	171.7	126.0	300.8	195.2
195-2	175.6	419.1	164.3	163.9	391.4	180.3	156.1	372.7	189.0	146.4	349.4	199.4	131.7	314.5	226.1
200-2	181.0	432.2	157.9	169.3	404.1	172.5	161.7	386.1	180.1	152.6	364.4	189.1	137.6	328.6	215.3
205-2	196.2	468.4	163.2	183.9	439.0	178.4	175.6	419.3	186.1	165.7	395.5	195.7	149.7	357.5	221.5
210-2	201.2	480.4	180.8	187.2	446.9	200.0	178.1	425.2	209.5	167.2	399.1	220.4	149.9	357.8	249.6
220-2	207.8	496.1	173.2	194.4	464.1	189.8	185.4	442.5	198.4	175.1	418.0	207.9	157.7	376.5	236.0
235-2	225.1	537.3	194.3	210.0	501.4	213.8	199.8	477.0	223.9	188.1	449.1	235.2	169.4	404.3	266.1
250-2	240.7	574.6	216.7	224.4	535.8	238.7	213.7	510.1	249.7	200.7	479.2	262.5	179.4	428.3	298.8
275-2	255.1	609.1	232.9	237.6	567.2	257.2	225.8	539.1	269.6	211.7	505.4	283.7	189.5	452.4	321.4
280-2	252.9	603.8	210.3	236.0	563.5	231.0	225.1	537.4	241.7	212.6	507.5	253.4	191.2	456.5	287.6
285-2	264.9	632.4	246.8	246.4	588.3	272.9	233.9	558.5	286.3	218.9	522.7	301.6	195.4	466.5	342.1
300-2	275.8	658.3	238.4	257.5	614.8	262.1	245.7	586.6	273.8	230.8	550.9	288.6	207.7	496.0	326.5
315-3	291.8	696.6	264.3	272.1	649.6	291.2	259.1	618.6	304.8	242.5	579.1	321.7	217.6	519.4	364.5
315-2	292.9	699.4	260.9	273.2	652.2	287.4	260.2	621.1	300.8	243.5	581.4	317.5	218.4	521.5	359.8
335-2	318.7	761.0	288.7	296.7	708.2	319.2	281.8	672.7	334.9	263.9	630.1	352.7	236.0	563.4	399.7
350-3	330.8	789.8	286.6	308.1	735.6	316.2	293.7	701.2	330.6	276.3	659.7	347.4	248.6	593.5	393.1
350-2	327.1	780.9	278.8	305.5	729.3	306.6	291.0	694.7	321.1	274.1	654.3	337.2	246.7	588.9	381.5
360-3	337.0	804.6	279.4	315.5	753.2	306.0	300.9	718.3	319.9	283.4	676.6	336.8	256.1	611.5	380.7
375-3	346.5	827.3	309.8	323.1	771.3	341.6	307.5	734.1	357.7	288.8	689.4	376.1	259.1	618.6	425.9
400-3	370.5	884.5	322.9	345.9	825.9	355.0	329.9	787.6	370.9	309.7	739.3	391.3	278.5	664.9	442.9
415-3	399.1	952.9	363.3	371.9	887.8	400.7	353.8	844.6	419.6	331.2	790.6	443.3	296.8	708.5	502.4
430-3	406.5	970.5	354.6	379.4	905.7	390.0	361.9	864.1	407.2	339.6	810.8	429.4	305.7	729.9	486.1
450-3	416.9	995.3	388.7	387.8	925.9	429.5	368.3	879.2	450.7	345.7	825.3	473.4	309.2	738.1	536.8
465-3	425.9	1,016.8	377.7	397.3	948.6	415.5	377.2	900.5	436.1	354.7	846.7	458.5	318.7	760.8	519.3
475-3	441.6	1,054.2	401.1	411.5	982.3	442.1	391.5	934.6	463.0	367.4	877.1	487.2	329.5	786.6	552.2
485-3	449.8	1,073.9	391.5	419.6	1,001.8	430.8	400.4	956.0	449.8	375.5	896.6	474.2	338.1	807.1	536.8
500-3	457.7	1,092.7	423.4	426.0	1,017.1	467.3	404.8	966.5	489.9	379.1	905.0	516.4	339.1	809.6	585.5
510-3	465.4	1,111.1	414.1	434.2	1,036.7	455.4	413.8	987.9	476.1	387.9	926.0	502.0	348.2	831.3	569.2
550-4	491.7	1,173.8	437.0	458.5	1,094.7	481.6	436.6	1,042.3	504.0	410.2	979.4	529.8	366.5	874.9	602.6
580-4	529.8	1,264.8	493.6	492.8	1,176.6	545.7	467.9	1,116.9	572.6	437.9	1,045.3	603.1	390.8	933.1	684.1
600-4	550.3	1,313.7	503.6	511.8	1,221.9	557.5	485.8	1,159.8	585.2	454.5	1,085.1	616.5	407.7	973.3	695.7

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 45 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	49.8	118.8	46.6	46.4	110.7	51.4	44.2	105.4	53.8	41.4	98.8	56.8	37.1	88.5	64.5
60-1	53.3	127.1	42.6	49.9	119.0	46.4	47.9	114.3	48.2	45.4	108.2	50.6	41.1	98.0	57.4
65-1	58.9	140.6	49.2	55.2	131.7	53.8	52.8	125.9	56.0	49.9	119.2	58.8	45.2	107.8	66.7
70-1	63.8	152.2	52.3	59.8	142.6	56.9	57.3	136.7	59.1	54.2	129.4	62.0	49.1	117.1	70.4
70-2	65.0	155.1	56.4	60.9	145.3	61.5	58.2	138.9	64.1	55.2	131.6	67.1	49.9	119.1	76.2
75-1	72.3	172.5	60.2	67.7	161.5	65.8	64.8	154.6	68.6	61.3	146.1	72.1	55.4	132.2	81.6
80-1	79.7	190.2	68.4	74.5	177.6	75.1	71.1	169.6	78.4	67.2	160.2	82.3	60.6	144.5	93.4
95-2	87.2	207.9	79.2	81.3	193.9	87.2	77.5	184.8	91.3	73.1	174.4	95.8	65.7	156.7	108.9
95-1	87.5	208.7	77.0	81.6	194.6	84.8	77.9	185.9	88.5	73.3	175.0	93.2	65.9	157.2	105.9
100-2	97.9	233.5	92.5	91.3	217.7	102.0	86.9	207.2	106.9	81.5	194.5	112.6	72.9	173.9	128.1
100-1	98.3	234.6	89.5	91.4	218.0	99.0	87.0	207.5	103.7	81.7	194.9	109.1	73.3	174.9	123.7
110-2	103.5	246.9	86.0	97.0	231.3	93.8	92.8	221.5	97.7	87.8	209.4	102.4	79.4	189.4	116.4
120-2	109.0	260.0	92.6	102.0	243.3	101.1	97.5	232.6	105.6	92.1	219.7	110.7	83.1	198.3	125.9
125-2	114.0	272.0	99.5	106.6	254.3	108.9	101.9	243.2	113.5	96.3	229.6	119.3	86.8	207.2	135.3
135-2	125.9	300.3	110.1	117.8	281.0	120.6	112.3	268.0	126.2	105.9	252.7	132.6	95.4	227.5	150.4
140-2	134.7	321.4	125.2	125.8	300.0	137.7	119.6	285.3	144.4	112.6	268.6	151.8	100.9	240.8	172.7
145-2	140.0	334.1	119.1	131.1	312.6	130.2	125.4	299.2	135.4	118.4	282.4	142.4	107.2	255.7	161.3
160-2	148.0	353.0	127.5	138.4	330.1	139.5	132.2	315.3	145.4	124.9	298.0	152.7	113.0	269.5	173.2
165-2	154.8	369.3	135.4	144.7	345.2	148.4	138.0	329.2	154.9	130.2	310.5	162.8	117.5	280.3	184.8
175-2	163.8	390.8	150.2	152.6	364.1	165.0	145.8	347.8	172.0	137.3	327.5	181.3	123.3	294.2	206.2
190-2	168.3	401.6	145.1	157.4	375.6	158.1	150.7	359.5	164.5	142.5	339.8	172.9	128.6	306.8	196.5
195-2	178.6	426.1	165.7	166.8	397.9	182.0	159.0	379.2	190.4	149.2	355.8	201.0	134.3	320.5	227.9
200-2	184.3	439.7	159.1	172.5	411.6	173.8	164.8	393.1	181.3	155.6	371.1	190.5	140.5	335.1	216.7
205-2	199.8	476.6	164.4	187.3	446.7	179.7	178.9	426.8	187.6	168.8	402.8	197.2	152.8	364.4	223.0
210-2	204.7	488.4	182.4	190.7	454.9	201.6	181.4	432.8	211.2	170.3	406.3	222.1	152.7	364.3	251.5
220-2	211.4	504.4	174.5	197.9	472.2	191.2	188.9	450.5	200.0	178.5	425.7	209.6	160.7	383.3	237.8
235-2	228.9	546.2	195.9	213.8	510.1	215.4	203.5	485.4	225.8	191.7	457.3	237.1	172.7	411.9	268.2
250-2	245.2	585.0	218.3	228.7	545.5	240.5	217.7	519.4	251.7	204.6	488.0	264.6	182.8	436.0	301.0
275-2	259.6	619.4	235.1	242.0	577.4	259.2	230.1	548.9	271.7	215.8	514.8	286.0	193.2	461.0	324.0
280-2	257.5	614.2	211.8	240.5	573.7	232.8	229.3	547.1	243.6	216.6	516.7	255.4	194.8	464.8	289.8
285-2	269.5	642.9	249.1	250.7	598.0	275.5	238.0	567.7	289.1	222.7	531.3	304.6	199.3	475.4	344.7
300-2	281.0	670.2	240.1	262.1	625.2	264.6	250.0	596.4	276.5	235.2	561.1	290.9	211.7	505.1	329.1
315-3	297.1	708.8	266.2	277.1	661.0	293.4	263.9	629.5	307.1	247.1	589.5	324.4	221.9	529.3	367.4
315-2	298.3	711.6	262.8	278.2	663.6	289.6	264.9	632.0	303.1	248.1	591.9	320.1	222.8	531.4	362.6
335-2	324.4	773.8	291.4	301.9	720.1	322.4	287.1	684.8	337.6	269.0	641.8	355.5	240.7	574.1	402.8
350-3	336.9	803.7	288.6	313.8	748.5	318.8	299.2	713.7	333.4	281.6	671.8	350.2	253.5	604.7	396.2
350-2	332.7	793.7	281.2	310.7	741.2	309.4	296.3	706.8	323.6	279.0	665.6	339.8	251.2	599.4	384.3
360-3	343.3	818.9	281.4	321.1	766.0	308.7	306.6	731.5	322.5	288.6	688.5	339.4	260.8	622.2	383.5
375-3	353.1	842.3	312.1	329.2	785.2	344.3	313.4	747.5	360.5	294.4	702.3	379.1	264.2	630.3	429.3
400-3	377.5	900.6	325.2	352.5	840.9	357.8	336.2	802.1	373.9	315.3	752.0	394.3	283.7	676.9	446.2
415-3	406.3	969.2	366.7	378.5	903.0	404.6	360.0	858.7	423.9	337.4	804.9	446.8	302.4	721.5	506.2
430-3	413.7	986.8	357.5	386.2	921.4	393.1	368.5	879.1	410.6	346.2	825.8	432.9	311.8	743.7	489.9
450-3	424.1	1,011.7	392.2	394.5	941.2	433.5	374.6	893.7	454.9	352.3	840.4	477.1	315.1	751.7	540.8
465-3	433.6	1,034.3	380.4	404.5	965.0	418.7	384.5	917.3	439.7	361.5	862.5	462.2	325.0	775.2	523.4
475-3	449.8	1,073.0	404.1	419.1	999.9	445.7	398.8	951.3	466.8	374.5	893.4	491.1	336.0	801.5	556.5
485-3	457.5	1,091.4	394.8	427.2	1,019.0	433.9	407.6	972.2	453.2	382.8	913.2	478.0	354.1	940.4	547.0
500-3	465.6	1,110.7	427.1	433.4	1,033.8	471.8	411.8	982.3	494.7	385.8	920.4	521.1	345.3	823.6	591.2
510-3	474.0	1,130.8	417.0	442.3	1,055.0	458.9	421.4	1,005.4	479.8	394.9	942.0	506.4	355.0	846.8	573.6
550-4	500.5	1,194.1	440.3	466.8	1,113.5	485.4	444.5	1,060.3	508.1	417.6	996.2	534.3	373.7	891.5	607.4
580-4	539.0	1,285.8	498.1	501.4	1,196.0	551.0	475.9	1,135.4	578.3	445.5	1,062.7	609.2	398.6	950.8	689.5
600-4	559.9	1,335.7	508.3	520.7	1,242.2	563.0	494.7	1,180.2	590.3	463.1	1,104.7	621.6	415.3	990.8	700.9

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 50 Hz - IMP

Leaving Water Temperature = 46 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	50.7	120.9	46.9	47.3	112.8	51.8	45.0	107.3	54.3	42.1	100.4	57.4	37.8	90.1	65.0
60-1	54.3	129.4	42.9	50.9	121.3	46.7	48.8	116.4	48.5	46.2	110.2	50.9	41.9	99.9	57.7
65-1	60.1	143.2	49.6	56.2	134.0	54.2	53.8	128.2	56.4	50.9	121.3	59.2	46.0	109.8	67.1
70-1	65.0	154.8	52.6	60.9	145.3	57.3	58.4	139.2	59.6	55.3	131.8	62.4	50.1	119.4	70.9
70-2	66.3	158.0	56.8	62.1	148.0	61.9	59.4	141.5	64.5	56.3	134.1	67.6	50.9	121.3	76.8
75-1	73.6	175.5	60.7	69.0	164.4	66.3	66.0	157.4	69.1	62.4	148.8	72.6	56.5	134.7	82.3
80-1	81.2	193.5	68.9	75.9	180.8	75.6	72.4	172.6	79.1	68.5	163.2	82.9	61.8	147.2	94.0
95-2	88.7	211.5	79.8	82.9	197.5	87.9	78.9	188.1	92.1	74.5	177.5	96.6	68.7	182.7	110.9
95-1	89.1	212.3	77.6	83.1	198.2	85.4	79.3	189.0	89.4	74.7	178.1	94.0	67.2	160.2	106.7
100-2	99.7	237.7	93.2	93.0	221.6	102.8	88.5	211.0	107.8	82.9	197.7	113.7	74.3	177.1	129.1
100-1	100.1	238.6	90.2	93.1	221.9	99.8	88.6	211.3	104.5	83.3	198.5	110.0	74.8	178.2	124.7
110-2	105.4	251.3	86.6	98.8	235.5	94.5	94.5	225.3	98.4	89.5	213.4	103.1	80.9	192.9	117.2
120-2	111.0	264.6	93.2	103.9	247.7	101.9	99.3	236.8	106.3	93.8	223.7	111.6	84.8	202.2	126.8
125-2	116.2	276.9	100.1	108.6	258.9	109.8	103.9	247.8	114.3	98.0	233.7	120.0	88.5	211.1	136.3
135-2	128.3	305.7	110.9	120.0	286.1	121.5	114.4	272.7	127.2	108.0	257.4	133.5	97.2	231.7	151.5
140-2	137.2	327.0	126.2	128.0	305.1	138.9	121.9	290.5	145.6	114.7	273.5	153.0	102.8	245.0	174.0
145-2	142.7	340.1	119.9	133.5	318.3	131.0	127.7	304.5	136.3	120.7	287.7	143.4	109.2	260.4	162.3
160-2	150.8	359.4	128.4	140.9	335.9	140.6	134.8	321.3	146.5	127.4	303.7	153.8	115.1	274.4	174.3
165-2	157.7	376.0	136.3	147.3	351.0	149.4	140.6	335.1	156.1	132.8	316.5	164.0	119.9	285.7	186.0
175-2	166.7	397.4	151.2	155.6	370.8	166.3	148.6	354.3	173.4	139.9	333.5	182.8	125.7	299.6	207.8
190-2	171.3	408.4	146.0	160.4	382.5	159.3	153.6	366.1	165.8	145.0	345.8	174.0	131.2	312.8	197.9
195-2	181.9	433.5	167.0	169.8	404.7	183.6	161.8	385.7	192.1	152.1	362.5	202.6	137.0	326.6	229.7
200-2	187.6	447.2	160.4	175.7	418.9	175.1	167.9	400.2	182.6	158.6	378.0	192.1	143.1	341.0	218.1
205-2	203.5	485.1	165.5	190.7	454.7	181.0	182.3	434.6	189.1	171.9	409.8	198.8	155.7	371.2	224.4
210-2	208.3	496.4	184.0	194.1	462.7	203.2	184.7	440.2	212.9	173.4	413.3	224.0	155.5	370.6	253.7
220-2	215.4	513.5	175.8	201.6	480.7	192.7	192.4	458.6	201.6	181.8	433.3	211.2	163.7	390.2	239.7
235-2	232.9	555.3	197.7	217.6	518.8	217.3	207.3	494.2	227.6	195.4	465.7	239.0	176.0	419.6	270.3
250-2	249.6	595.0	219.8	232.8	554.8	242.3	221.6	528.3	253.7	208.3	496.4	266.7	186.4	444.2	303.4
275-2	264.1	629.5	237.2	246.6	587.9	261.3	234.5	558.9	273.9	219.9	524.3	288.3	197.0	469.6	326.5
280-2	262.0	624.6	213.6	245.0	584.0	234.6	233.5	556.6	245.5	220.5	525.7	257.3	198.6	473.4	292.1
285-2	274.1	653.5	251.3	255.0	607.8	278.2	242.0	576.9	292.0	226.5	539.9	307.6	203.2	484.4	347.4
300-2	286.2	682.2	241.8	266.5	635.2	267.0	254.2	606.0	279.1	239.5	570.9	293.1	215.7	514.3	331.6
315-3	302.4	720.8	268.4	282.0	672.2	296.0	268.5	640.2	310.0	251.9	600.4	327.0	226.2	539.3	370.3
315-2	303.6	723.8	264.9	283.1	674.9	292.2	269.6	642.7	305.9	252.9	602.8	322.7	227.1	541.4	365.5
335-2	329.9	786.5	294.1	306.9	731.7	325.4	292.5	697.2	340.4	274.2	653.6	358.3	245.4	584.9	405.9
350-3	342.9	817.4	291.0	319.7	762.0	321.3	304.8	726.7	336.1	287.0	684.1	353.0	258.4	615.9	399.3
350-2	338.8	807.6	283.3	316.4	754.1	312.0	301.8	719.4	326.1	284.3	677.7	342.5	256.2	610.6	387.4
360-3	349.7	833.7	283.4	326.6	778.5	311.6	312.2	744.3	325.0	294.0	700.9	342.1	265.8	633.7	386.5
375-3	359.6	857.3	314.4	335.3	799.3	347.0	319.2	760.9	363.4	299.9	715.0	382.1	269.3	641.9	432.6
400-3	384.2	915.8	327.5	358.7	855.2	360.4	342.2	815.7	376.7	321.3	766.0	397.5	289.3	689.6	449.7
415-3	413.1	984.8	369.9	384.9	917.4	408.4	366.1	872.6	428.0	343.6	819.1	450.1	308.2	734.6	510.0
430-3	421.4	1,004.6	360.2	393.0	936.9	396.9	374.9	893.8	414.7	352.7	840.8	436.3	317.7	757.3	493.7
450-3	431.5	1,028.7	395.8	401.9	958.1	437.0	381.8	910.0	458.6	358.7	855.0	481.0	320.8	764.7	545.4
465-3	441.2	1,051.8	383.8	411.6	981.2	422.8	391.8	933.9	443.2	368.5	878.4	465.9	331.2	789.4	527.4
475-3	458.3	1,092.4	407.2	427.1	1,018.0	449.2	406.4	968.8	470.6	381.8	910.0	495.1	342.5	816.5	560.8
485-3	465.6	1,109.9	398.3	434.8	1,036.4	437.9	414.8	988.8	457.5	390.2	930.1	481.9	351.4	837.7	545.3
500-3	473.7	1,129.3	431.0	440.9	1,051.0	476.3	418.8	998.4	499.7	392.4	935.4	526.2	351.0	836.8	596.9
510-3	482.5	1,150.3	420.3	450.2	1,073.2	462.7	428.9	1,022.5	483.9	402.5	959.5	510.5	361.9	862.7	578.1
550-4	509.4	1,214.2	444.3	475.0	1,132.2	490.1	452.2	1,077.9	513.3	424.8	1,012.7	539.7	380.8	907.9	612.0
580-4	548.3	1,307.0	502.6	510.0	1,215.6	556.3	484.0	1,153.8	584.0	453.0	1,079.8	615.3	406.4	968.8	694.8
600-4	569.6	1,357.7	513.0	529.6	1,262.6	568.4	504.1	1,201.8	595.1	472.0	1,125.1	626.6	422.7	1,007.7	707.8

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 48 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	52.6	125.1	47.7	49.0	116.6	52.7	46.6	111.0	55.2	43.7	104.1	58.3	39.3	93.5	66.0
60-1	56.3	134.1	43.4	52.8	125.8	47.4	50.7	120.7	49.2	48.0	114.4	51.6	43.6	103.7	58.5
65-1	62.3	148.2	50.2	58.3	138.8	55.0	55.8	132.8	57.3	52.8	125.7	60.1	47.9	114.0	68.1
70-1	67.5	160.6	53.3	63.3	150.7	58.0	60.6	144.2	60.4	57.5	136.8	63.3	52.1	123.9	71.8
70-2	68.7	163.6	57.5	64.4	153.3	62.8	61.7	146.9	65.4	58.4	139.1	68.5	52.9	126.0	77.8
75-1	76.4	181.9	61.5	71.5	170.3	67.3	68.5	163.0	70.2	64.8	154.2	73.7	58.6	139.6	83.5
80-1	84.2	200.5	69.9	78.7	187.2	76.8	75.1	178.8	80.3	71.1	169.2	84.1	64.1	152.6	95.5
95-2	91.8	218.6	81.1	85.9	204.4	89.2	81.9	194.9	93.5	77.3	184.0	98.1	69.5	165.4	111.5
95-1	92.2	219.4	78.9	86.2	205.1	86.8	82.2	195.6	91.0	77.6	184.6	95.5	69.9	166.5	108.1
100-2	103.4	246.2	94.6	96.4	229.5	104.4	91.8	218.4	109.4	86.0	204.7	115.7	77.2	183.7	131.1
100-1	103.6	246.6	91.8	96.5	229.8	101.3	91.9	218.8	106.2	86.4	205.6	111.7	77.5	184.6	126.7
110-2	109.3	260.3	87.7	102.4	243.8	95.9	98.2	233.8	99.7	93.1	221.5	104.6	84.2	200.3	118.7
120-2	115.2	274.3	94.4	107.8	256.5	103.4	103.1	245.4	107.9	97.4	231.8	113.3	88.1	209.8	128.5
125-2	120.4	286.7	101.5	112.6	268.0	111.4	107.8	256.7	115.9	101.8	242.4	122.0	91.8	218.6	138.4
135-2	132.9	316.5	112.4	124.4	296.1	123.4	118.6	282.5	129.2	111.8	266.2	135.9	100.9	240.2	153.9
140-2	142.2	338.6	128.0	132.4	315.2	141.4	126.3	300.7	147.8	119.0	283.2	155.3	106.8	254.2	176.7
145-2	147.9	352.0	121.5	138.5	329.7	132.9	132.5	315.4	138.5	125.3	298.2	145.4	113.4	270.1	164.8
160-2	156.3	372.2	130.2	146.2	348.1	142.7	140.1	333.4	148.5	132.3	314.8	155.9	119.6	284.7	176.9
165-2	163.5	389.2	138.2	152.8	363.7	151.7	145.8	347.0	158.5	137.9	328.2	166.2	124.5	296.3	188.7
175-2	173.0	411.9	153.4	161.3	383.9	168.8	154.1	366.8	176.0	145.1	345.4	185.6	130.6	310.9	211.1
190-2	177.9	423.4	148.0	166.3	396.0	161.6	159.2	378.9	168.4	150.7	358.7	176.8	136.3	324.4	200.4
195-2	188.7	449.2	169.4	176.2	419.4	186.4	167.5	398.7	195.7	157.8	375.6	205.8	142.1	338.3	233.1
200-2	194.5	463.0	162.7	182.3	433.9	177.7	174.2	414.7	185.5	164.4	391.4	195.0	148.9	354.4	221.0
205-2	211.1	502.4	167.8	197.8	470.9	183.8	189.0	450.0	192.1	178.4	424.8	202.0	161.8	385.1	227.9
210-2	215.5	513.0	187.4	200.8	477.9	207.1	191.0	454.8	217.1	179.4	427.0	228.4	160.9	383.0	258.5
220-2	223.3	531.7	178.2	209.0	497.6	195.6	199.5	475.0	204.7	188.6	449.0	214.6	170.0	404.6	243.4
235-2	241.1	574.1	200.9	225.2	536.2	221.2	215.0	511.8	231.2	202.6	482.4	242.7	182.7	434.9	274.4
250-2	258.3	614.9	223.8	240.8	573.2	247.0	229.2	545.7	258.7	215.4	512.7	272.0	193.4	460.4	308.0
275-2	273.9	652.0	240.8	255.4	608.1	265.7	242.9	578.2	278.7	227.8	542.4	293.3	204.1	486.0	332.2
280-2	271.4	646.2	217.0	253.7	604.0	238.6	242.3	576.9	249.4	229.0	545.0	261.5	206.1	490.7	296.6
285-2	283.6	675.1	255.9	263.7	627.8	283.5	250.9	597.3	296.9	235.0	559.4	312.7	210.6	501.5	353.2
300-2	296.4	705.7	245.7	276.6	658.4	271.2	263.9	628.2	283.6	248.6	591.9	297.8	224.1	533.5	336.8
315-3	312.9	744.8	273.2	291.7	694.4	301.7	277.7	661.2	316.1	261.3	622.0	332.0	234.8	558.8	375.9
315-2	314.1	747.8	269.7	292.9	697.2	297.8	278.9	663.8	312.0	262.3	624.4	327.7	235.7	561.1	371.0
335-2	341.4	812.7	299.5	318.4	758.0	330.8	303.0	721.4	346.2	284.0	676.2	364.5	254.7	606.4	412.1
350-3	354.8	844.7	296.2	331.2	788.6	326.6	315.9	752.0	341.8	297.4	708.0	359.1	267.8	637.4	406.2
350-2	351.4	836.6	287.5	328.2	781.3	316.8	313.1	745.4	331.3	295.0	702.2	347.9	265.9	632.9	393.3
360-3	362.4	862.8	287.6	338.7	806.3	316.6	324.0	771.3	330.2	305.1	726.4	347.6	275.9	656.9	392.5
375-3	372.5	886.7	319.7	347.2	826.6	353.2	330.5	786.9	370.1	310.5	739.2	389.2	278.8	663.6	440.6
400-3	397.6	946.6	333.2	371.2	883.6	367.2	354.0	842.7	384.1	333.3	793.4	403.7	300.2	714.7	456.6
415-3	427.4	1,017.5	376.5	398.1	947.6	416.2	378.5	901.1	436.4	356.9	849.6	457.4	320.2	762.2	517.9
430-3	436.9	1,040.0	365.3	407.1	969.1	403.6	388.3	924.5	421.9	366.0	871.2	443.2	329.9	785.4	501.3
450-3	446.5	1,063.0	403.0	416.8	992.2	443.7	395.8	942.3	465.7	370.8	882.8	490.5	332.0	790.3	555.8
465-3	456.6	1,087.0	390.7	425.9	1,013.8	430.9	405.7	965.8	451.1	381.5	908.2	474.3	343.0	816.6	537.0
475-3	474.7	1,130.1	413.5	442.4	1,053.1	456.6	421.0	1,002.1	478.5	395.4	941.2	503.6	354.9	844.8	570.6
485-3	482.0	1,147.4	404.8	450.0	1,071.3	445.6	429.3	1,022.0	465.9	404.5	963.0	489.3	364.7	868.2	553.6
500-3	490.2	1,167.1	438.9	456.1	1,085.9	485.6	434.2	1,033.6	508.3	407.1	969.1	535.2	364.5	867.8	606.5
510-3	499.2	1,188.4	427.7	465.7	1,108.7	471.3	443.8	1,056.4	493.2	417.5	994.0	518.4	375.5	894.0	586.8
550-4	527.1	1,254.7	452.3	491.3	1,169.7	499.6	468.4	1,115.1	522.3	440.2	1,048.0	549.1	395.4	941.3	621.4
580-4	567.2	1,350.2	511.8	527.4	1,255.6	567.1	501.8	1,194.5	593.9	469.9	1,118.7	625.5	421.3	1,002.9	706.4
600-4	589.3	1,402.8	522.5	547.9	1,304.2	579.6	522.4	1,243.6	605.1	489.2	1,164.5	637.3	438.0	1,042.6	720.6

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 50 Hz - IMP

Leaving Water Temperature = 50 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	54.4	129.2	48.6	50.7	120.4	53.7	48.2	114.7	56.3	45.3	107.7	59.3	40.8	96.9	67.0
60-1	58.4	138.8	44.0	54.8	130.3	48.0	52.6	125.1	49.9	49.9	118.6	52.3	45.3	107.7	59.3
65-1	64.5	153.5	50.9	60.4	143.7	55.8	57.9	137.6	58.2	54.9	130.5	60.9	49.8	118.3	68.9
70-1	70.0	166.4	53.9	65.7	156.1	58.8	62.9	149.7	61.3	59.6	141.8	64.2	54.1	128.7	72.8
70-2	71.3	169.5	58.3	66.8	158.7	63.7	64.0	152.1	66.3	60.6	144.2	69.6	55.0	130.7	78.8
75-1	79.2	188.3	62.3	74.2	176.4	68.3	71.0	168.8	71.3	67.2	159.8	74.8	61.0	145.0	84.7
80-1	87.2	207.4	70.9	81.6	194.0	77.9	77.9	185.1	81.5	73.7	175.2	85.4	66.5	158.2	97.0
95-2	95.3	226.5	82.3	88.8	211.2	90.9	84.9	201.8	95.0	80.1	190.5	99.7	72.2	171.6	113.2
95-1	95.6	227.3	80.1	89.1	211.9	88.4	85.2	202.5	92.4	80.4	191.2	96.9	72.6	172.7	109.7
100-2	107.0	254.4	96.3	99.7	237.1	106.4	94.9	225.6	111.6	89.1	211.9	117.5	80.1	190.4	133.0
100-1	107.1	254.8	93.4	99.9	237.4	103.3	95.0	226.0	108.3	89.3	212.3	114.0	80.2	190.7	129.1
110-2	113.4	269.7	88.9	106.2	252.5	97.3	101.9	242.4	101.1	96.5	229.5	106.1	87.5	208.1	120.3
120-2	119.3	283.6	95.9	111.8	265.8	105.0	106.8	254.1	109.5	101.0	240.3	115.1	91.7	217.9	130.2
125-2	124.9	297.1	102.9	116.7	277.5	113.1	111.8	265.8	117.7	105.5	250.9	123.8	95.4	226.9	140.6
135-2	137.5	327.0	114.4	128.6	305.8	125.7	123.0	292.4	131.2	115.8	275.4	138.2	104.7	249.0	156.2
140-2	147.2	350.1	130.1	137.4	326.6	143.6	131.0	311.5	150.2	123.4	293.5	157.8	110.8	263.4	179.3
145-2	153.4	364.7	123.1	143.5	341.2	134.8	137.4	326.6	140.6	129.9	308.9	147.7	117.6	279.7	167.2
160-2	162.0	385.2	131.9	151.5	360.3	144.8	145.2	345.3	150.6	137.2	326.3	158.4	124.1	295.0	179.5
165-2	169.6	403.2	140.1	158.4	376.5	153.9	151.2	359.6	161.0	143.1	340.2	168.8	129.1	307.0	191.6
175-2	179.2	426.0	155.7	167.3	397.8	171.3	159.4	379.0	179.4	150.4	357.7	188.4	135.6	322.4	214.0
190-2	184.3	438.1	150.0	172.6	410.3	164.1	165.0	392.4	170.9	156.2	371.4	179.4	141.8	337.1	203.2
195-2	195.4	464.6	172.2	182.4	433.7	189.7	173.8	413.2	198.8	163.7	389.3	209.0	147.5	350.8	236.7
200-2	201.6	479.4	164.9	188.9	449.2	180.3	180.7	429.6	188.4	170.6	405.7	198.1	154.8	368.0	224.0
205-2	218.8	520.3	170.2	204.7	486.7	187.0	196.0	466.0	195.1	185.1	440.0	205.0	167.8	398.9	231.4
210-2	222.9	529.9	190.8	207.6	493.6	211.1	198.2	471.3	220.6	186.2	442.7	232.0	167.1	397.3	262.5
220-2	231.7	550.8	180.8	216.2	514.0	199.3	206.8	491.8	207.9	195.5	465.0	217.9	176.4	419.4	247.2
235-2	250.0	594.5	203.8	233.6	555.3	224.6	222.9	530.1	234.8	210.2	499.7	246.5	189.6	450.8	278.6
250-2	267.2	635.2	227.8	249.0	592.0	251.7	237.8	565.4	262.9	223.6	531.6	276.4	200.9	477.7	312.8
275-2	283.6	674.4	244.6	264.1	627.9	270.8	251.1	597.0	284.2	235.8	560.6	298.6	211.4	502.5	338.0
280-2	281.3	668.9	220.0	262.7	624.5	242.7	251.2	597.2	253.3	237.4	564.5	265.5	214.4	509.8	300.6
285-2	293.3	697.4	260.6	272.7	648.4	289.0	260.0	618.1	301.7	243.5	578.9	317.8	217.9	518.2	359.6
300-2	306.6	729.1	250.1	286.3	680.9	275.8	273.2	649.6	288.6	257.5	612.2	303.2	232.0	551.7	342.8
315-3	323.7	769.6	278.2	301.8	717.6	307.3	287.3	683.2	322.1	271.1	644.5	337.3	243.7	579.4	381.6
315-2	325.0	772.7	274.5	303.0	720.5	303.3	288.5	685.9	317.9	272.2	647.3	332.9	244.7	581.7	376.7
335-2	353.1	839.6	305.0	329.8	784.3	336.3	313.4	745.1	353.2	294.0	699.0	371.3	264.4	628.6	418.3
350-3	367.0	872.6	301.5	342.7	814.8	332.6	326.8	777.0	348.2	307.7	731.7	365.8	277.2	659.0	413.6
350-2	363.7	864.7	292.4	339.6	807.4	322.6	323.9	770.2	337.7	305.2	725.7	354.7	274.9	653.7	401.0
360-3	375.1	891.8	292.4	351.0	834.6	321.4	335.6	798.0	335.7	316.6	752.8	353.1	286.5	681.2	398.7
375-3	385.2	916.0	325.5	359.0	853.6	360.0	342.2	813.8	376.6	321.7	765.0	396.0	289.1	687.3	448.1
400-3	412.3	980.3	338.2	384.9	915.1	373.1	367.1	872.9	390.4	345.9	822.5	410.1	311.8	741.5	463.8
415-3	442.1	1,051.3	383.4	413.0	982.1	422.8	392.9	934.2	443.5	369.5	878.5	465.6	331.5	788.2	527.3
430-3	451.9	1,074.6	371.7	421.9	1,003.2	409.7	402.6	957.2	428.5	379.4	902.1	450.0	342.0	813.3	509.0
450-3	461.7	1,097.9	410.4	431.0	1,024.7	452.2	409.2	973.0	474.9	383.4	911.6	500.3	344.9	820.0	564.4
465-3	472.6	1,123.7	397.0	440.7	1,047.9	438.3	419.9	998.3	459.1	395.0	939.3	482.7	355.3	844.9	546.1
475-3	491.0	1,167.4	420.9	457.4	1,087.5	465.3	435.2	1,034.7	488.0	409.1	972.6	512.8	367.3	873.4	580.6
485-3	499.8	1,188.3	410.7	466.6	1,109.5	452.5	445.2	1,058.6	473.2	419.6	997.7	496.9	378.3	899.6	562.0
500-3	507.0	1,205.5	446.8	472.3	1,123.0	493.8	449.9	1,069.6	516.2	421.9	1,003.1	543.6	378.2	899.3	615.6
510-3	516.3	1,227.6	435.1	483.1	1,148.7	478.6	460.4	1,094.7	501.0	433.4	1,030.4	526.6	390.0	927.3	595.9
550-4	545.1	1,296.1	460.4	508.6	1,209.3	508.3	485.6	1,154.6	530.5	456.5	1,085.5	557.7	410.2	975.4	631.0
580-4	586.6	1,394.8	521.2	545.4	1,296.7	578.1	519.9	1,236.2	603.5	486.9	1,157.8	635.6	435.9	1,036.4	719.2
600-4	609.6	1,449.3	532.3	566.6	1,347.2	591.0	540.2	1,284.3	617.3	505.7	1,202.4	650.1	454.7	1,081.2	731.6

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - SI

Leaving Water Temperature = 4 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	179.0	7.7	52.6	167.8	7.2	57.4	160.4	6.9	62.3	151.2	6.5	65.5	137.2	5.9	72.6
60-1	193.1	8.3	49.7	181.8	7.8	53.6	174.8	7.5	55.4	166.4	7.2	57.8	153.3	6.6	63.8
65-1	211.4	9.1	57.2	199.1	8.6	61.8	191.3	8.2	64.0	181.8	7.8	66.9	167.1	7.2	74.0
70-1	226.1	9.7	60.9	212.8	9.2	65.8	204.3	8.8	68.1	194.5	8.4	71.2	178.7	7.7	78.7
70-2	229.7	9.9	65.7	215.9	9.3	71.0	207.5	8.9	73.6	197.0	8.5	77.0	181.5	7.8	85.2
75-1	262.0	11.3	70.7	246.2	10.6	76.6	236.0	10.1	79.7	224.0	9.6	83.3	206.1	8.9	92.0
80-1	286.3	12.3	80.1	269.1	11.6	87.1	257.4	11.1	90.5	244.1	10.5	94.8	223.3	9.6	104.9
95-2	314.8	13.5	89.4	295.1	12.7	97.5	282.1	12.1	105.7	266.9	11.5	110.9	243.7	10.5	122.7
95-1	315.8	13.6	90.4	296.1	12.7	98.6	283.1	12.2	102.8	267.6	11.5	107.9	244.4	10.5	119.4
100-2	349.9	15.1	102.9	327.8	14.1	112.3	313.0	13.5	123.2	294.4	12.7	129.6	268.0	11.5	143.9
100-1	350.6	15.1	99.7	328.5	14.1	109.0	313.4	13.5	119.6	294.7	12.7	125.8	269.1	11.6	138.9
110-2	370.3	15.9	100.5	348.2	15.0	108.6	334.1	14.4	112.7	316.9	13.6	117.9	291.6	12.5	130.5
120-2	387.2	16.7	107.9	363.0	15.6	117.2	348.5	15.0	121.6	330.9	14.2	127.2	303.9	13.1	140.5
125-2	402.3	17.3	115.7	378.1	16.3	125.5	361.9	15.6	130.4	343.6	14.8	136.6	315.1	13.6	151.1
135-2	452.3	19.5	128.8	425.2	18.3	139.9	406.2	17.5	145.6	384.8	16.5	152.7	351.7	15.1	168.9
140-2	480.4	20.7	140.3	450.2	19.4	153.2	429.8	18.5	166.3	405.2	17.4	174.6	370.0	15.9	193.7
145-2	499.4	21.5	139.2	468.8	20.2	150.7	449.8	19.4	156.3	427.0	18.4	163.3	392.5	16.9	180.7
160-2	524.7	22.6	148.6	493.4	21.2	161.0	473.4	20.4	167.2	448.8	19.3	174.9	411.8	17.7	193.8
165-2	545.5	23.5	157.4	511.7	22.0	170.7	490.3	21.1	177.5	464.9	20.0	186.0	425.9	18.3	206.5
175-2	570.5	24.5	165.6	536.0	23.1	179.6	512.8	22.1	196.7	483.9	20.8	207.0	443.5	19.1	229.7
190-2	587.0	25.2	168.1	551.5	23.7	181.8	528.3	22.7	188.5	502.2	21.6	197.5	461.1	19.8	218.8
195-2	626.7	27.0	184.3	585.6	25.2	201.3	560.6	24.1	217.9	531.1	22.8	229.0	483.9	20.8	254.0
200-2	646.1	27.8	184.4	607.0	26.1	199.8	580.7	25.0	208.0	550.8	23.7	217.7	506.8	21.8	241.1
205-2	728.7	31.4	193.3	686.2	29.5	209.6	657.0	28.3	217.8	622.5	26.8	228.2	569.1	24.5	252.4
210-2	744.5	32.0	208.6	696.4	30.0	228.4	662.6	28.5	246.0	625.0	26.9	257.6	569.4	24.5	284.0
220-2	769.5	33.1	205.4	723.8	31.1	222.9	692.5	29.8	232.0	655.9	28.2	243.0	599.3	25.8	268.4
235-2	831.4	35.8	230.3	780.1	33.5	251.0	744.2	32.0	261.8	702.3	30.2	274.7	641.1	27.6	303.5
250-2	886.6	38.1	250.8	829.7	35.7	274.5	791.0	34.0	292.2	746.3	32.1	306.2	678.4	29.2	339.3
275-2	941.5	40.5	265.8	881.4	37.9	290.7	840.9	36.2	315.3	790.6	34.0	331.5	719.9	31.0	365.8
280-2	936.6	40.3	249.2	878.5	37.8	271.4	840.9	36.2	282.6	794.8	34.2	296.0	727.0	31.3	327.1
285-2	996.0	42.8	278.7	931.3	40.1	305.3	866.6	37.3	336.3	815.6	35.1	352.5	738.9	31.8	390.3
300-2	1,018.2	43.8	282.4	955.6	41.1	307.8	913.0	39.3	321.1	861.7	37.1	336.6	787.8	33.9	371.1
315-3	1,075.5	46.3	303.4	1,003.8	43.2	332.9	959.1	41.3	357.2	906.0	39.0	373.9	824.0	35.4	414.3
315-2	1,078.3	46.4	303.0	1,007.6	43.3	331.8	963.0	41.4	352.5	909.5	39.1	369.0	827.6	35.6	408.9
335-2	1,177.5	50.6	329.8	1,101.5	47.4	361.1	1,049.8	45.2	391.9	989.0	42.5	410.7	896.8	38.6	454.9
350-3	1,223.9	52.6	339.8	1,144.8	49.2	371.6	1,094.8	47.1	386.7	1,032.9	44.4	405.9	941.5	40.5	448.6
350-2	1,209.8	52.0	330.7	1,135.6	48.8	360.3	1,085.7	46.7	375.4	1,023.8	44.0	393.9	935.9	40.3	434.3
360-3	1,247.1	53.7	331.0	1,170.8	50.4	360.6	1,121.2	48.2	374.8	1,063.2	45.7	391.7	972.5	41.8	432.7
375-3	1,281.9	55.1	362.4	1,198.2	51.5	397.2	1,143.4	49.2	418.5	1,077.6	46.3	439.2	983.4	42.3	484.4
400-3	1,367.8	58.8	381.0	1,281.6	55.1	416.4	1,222.9	52.6	434.8	1,157.1	49.8	454.5	1,054.0	45.3	502.9
415-3	1,461.3	62.9	417.0	1,368.8	58.9	455.5	1,303.8	56.1	490.7	1,227.4	52.8	515.6	1,118.8	48.1	570.0
430-3	1,489.8	64.1	418.7	1,397.3	60.1	456.4	1,332.9	57.3	476.2	1,261.9	54.3	498.2	1,153.6	49.6	551.4
450-3	1,541.1	66.3	437.4	1,441.3	62.0	478.8	1,359.3	58.5	524.9	1,279.5	55.0	551.3	1,159.2	49.9	611.9
465-3	1,559.4	67.1	446.1	1,457.1	62.7	487.9	1,393.1	59.9	508.1	1,313.6	56.5	533.9	1,196.5	51.5	591.0
475-3	1,612.5	69.4	459.7	1,510.6	65.0	502.0	1,442.7	62.1	539.0	1,358.3	58.4	567.1	1,236.2	53.2	627.9
485-3	1,643.8	70.7	461.6	1,541.1	66.3	503.5	1,470.5	63.2	525.4	1,388.5	59.7	551.7	1,272.1	54.7	608.4
500-3	1,682.5	72.4	475.0	1,574.6	67.7	519.3	1,484.9	63.9	570.0	1,394.8	60.0	600.0	1,270.0	54.6	664.5
510-3	1,696.6	73.0	481.6	1,587.9	68.3	526.4	1,516.2	65.2	554.5	1,432.8	61.6	581.2	1,304.8	56.1	644.2
550-4	1,819.0	78.2	517.9	1,704.3	73.3	565.8	1,623.4	69.8	591.8	1,531.0	65.9	620.3	1,393.8	59.9	685.9
580-4	1,992.0	85.7	557.5	1,862.6	80.1	610.6	1,733.5	74.6	672.5	1,631.5	70.2	705.0	1,477.5	63.6	780.6
600-4	2,038.5	87.7	593.3	1,905.9	82.0	650.4	1,815.1	78.1	686.1	1,707.9	73.5	719.0	1,546.4	66.5	796.4

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - SI

Leaving Water Temperature = 5 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	186.0	8.0	53.4	173.7	7.5	58.5	166.0	7.1	63.5	156.5	6.7	66.5	142.4	6.1	73.7
60-1	200.5	8.6	50.3	188.9	8.1	54.3	181.5	7.8	56.1	173.0	7.4	58.6	159.3	6.8	64.6
65-1	220.5	9.5	58.0	207.2	8.9	62.8	199.4	8.6	65.0	189.6	8.1	67.9	174.4	7.5	75.1
70-1	236.0	10.1	61.8	221.9	9.5	66.7	213.1	9.2	69.2	202.6	8.7	72.3	186.8	8.0	79.9
70-2	239.5	10.3	66.6	225.4	9.7	72.1	216.3	9.3	74.7	205.7	8.8	78.2	189.2	8.1	86.4
75-1	271.2	11.6	71.7	255.3	11.0	77.7	244.4	10.5	80.9	232.1	10.0	84.6	213.5	9.2	93.3
80-1	297.5	12.8	81.3	279.6	12.0	88.5	267.6	11.5	92.0	253.6	10.9	96.4	232.5	10.0	106.5
95-2	326.0	14.0	90.7	305.3	13.1	99.2	292.3	12.6	107.3	276.4	11.9	112.5	252.5	10.8	124.5
95-1	327.1	14.0	91.7	307.0	13.2	100.0	293.3	12.6	104.3	277.1	11.9	109.4	253.6	10.9	121.1
100-2	363.7	15.6	104.7	340.4	14.6	114.6	325.3	14.0	125.6	307.0	13.2	131.8	278.9	12.0	146.1
100-1	365.1	15.7	101.3	341.1	14.7	111.0	326.0	14.0	121.9	307.4	13.2	127.9	280.7	12.0	141.2
110-2	385.5	16.5	102.0	363.0	15.6	110.4	348.2	15.0	114.4	330.9	14.2	119.7	303.9	13.0	132.3
120-2	403.4	17.3	109.6	379.5	16.3	119.0	363.0	15.6	123.7	345.0	14.8	129.4	317.2	13.6	143.0
125-2	419.2	18.0	117.5	393.9	16.9	127.6	377.7	16.2	132.7	358.0	15.4	138.9	329.2	14.1	153.7
135-2	469.9	20.2	130.9	441.4	19.0	142.4	422.7	18.2	148.1	399.9	17.2	155.1	365.8	15.7	171.6
140-2	499.1	21.4	143.0	468.5	20.1	155.8	447.7	19.2	169.1	422.4	18.1	177.7	385.1	16.5	196.9
145-2	520.2	22.3	141.2	489.2	21.0	152.9	468.5	20.1	159.0	445.3	19.1	166.1	409.0	17.6	183.4
160-2	547.2	23.5	151.0	513.8	22.1	163.7	492.7	21.2	170.0	468.5	20.1	178.0	429.8	18.5	196.6
165-2	568.7	24.4	159.9	534.2	22.9	173.7	511.4	21.9	180.6	485.3	20.8	189.2	444.9	19.1	209.5
175-2	595.8	25.6	168.4	558.5	24.0	183.2	534.2	22.9	200.7	505.7	21.7	210.7	462.5	19.9	233.4
190-2	613.4	26.3	170.8	576.4	24.7	184.5	552.9	23.7	191.6	524.4	22.5	200.5	482.5	20.7	222.1
195-2	652.8	28.0	187.5	611.6	26.3	204.8	583.8	25.1	222.5	553.2	23.7	233.4	506.1	21.7	258.5
200-2	673.2	28.9	187.2	633.1	27.2	203.0	605.3	26.0	211.5	575.4	24.7	221.6	528.3	22.7	245.1
205-2	753.3	32.3	196.1	709.0	30.4	212.9	680.5	29.2	221.0	644.7	27.7	231.0	590.5	25.4	255.6
210-2	768.5	33.0	212.0	719.6	30.9	231.8	685.8	29.4	249.7	645.0	27.7	262.3	587.7	25.2	289.2
220-2	796.2	34.2	208.2	747.4	32.1	226.6	716.8	30.8	235.4	678.4	29.1	246.5	621.1	26.7	272.3
235-2	858.1	36.9	234.0	805.7	34.6	254.8	770.6	33.1	265.6	727.0	31.2	278.6	663.0	28.5	308.3
250-2	916.9	39.4	255.1	859.6	36.9	278.5	819.1	35.2	297.0	772.0	33.1	311.6	703.4	30.2	344.2
275-2	972.1	41.7	270.3	909.5	39.1	295.9	867.6	37.2	321.0	817.7	35.1	336.3	744.5	32.0	371.0
280-2	967.2	41.5	253.0	909.1	39.0	275.2	869.4	37.3	286.6	823.0	35.3	300.3	752.6	32.3	331.8
285-2	1,028.7	44.2	283.5	961.9	41.3	310.7	896.8	38.5	341.1	844.4	36.3	357.5	764.2	32.8	396.4
300-2	1,054.0	45.3	286.2	986.5	42.4	313.0	944.0	40.5	325.8	891.6	38.3	341.8	813.8	34.9	377.7
315-3	1,111.0	47.7	308.5	1,039.6	44.6	337.9	990.0	42.5	363.7	934.8	40.1	380.7	853.2	36.6	420.0
315-2	1,115.2	47.9	307.4	1,043.5	44.8	336.8	994.3	42.7	358.9	938.7	40.3	375.7	856.7	36.8	414.6
335-2	1,215.1	52.2	335.3	1,136.7	48.8	367.5	1,083.6	46.5	399.1	1,020.6	43.8	418.2	928.5	39.9	461.4
350-3	1,264.4	54.3	344.8	1,184.5	50.9	376.9	1,129.7	48.5	393.7	1,068.8	45.9	411.7	974.6	41.8	455.7
350-2	1,249.9	53.7	335.6	1,173.3	50.4	366.0	1,121.6	48.2	381.5	1,060.4	45.5	399.7	966.5	41.5	442.1
360-3	1,290.7	55.4	335.5	1,210.9	52.0	365.6	1,158.5	49.7	380.9	1,100.1	47.2	397.3	1,008.0	43.3	439.0
375-3	1,324.2	56.9	368.2	1,240.1	53.2	402.9	1,180.7	50.7	425.7	1,114.2	47.8	446.0	1,016.8	43.7	491.8
400-3	1,412.4	60.6	387.2	1,325.2	56.9	422.1	1,264.7	54.3	441.0	1,195.8	51.3	462.1	1,092.4	46.9	510.2
415-3	1,512.0	64.9	424.4	1,415.9	60.8	464.1	1,351.6	58.0	498.2	1,272.5	54.6	524.1	1,156.7	49.7	580.2
430-3	1,543.6	66.3	425.3	1,447.6	62.2	464.2	1,384.3	59.4	483.7	1,305.5	56.1	507.6	1,194.7	51.3	559.7
450-3	1,594.6	68.5	445.3	1,491.2	64.0	487.9	1,406.4	60.4	535.2	1,324.5	56.9	561.2	1,203.2	51.7	620.8
465-3	1,615.4	69.4	453.2	1,513.0	65.0	495.5	1,440.9	61.9	517.9	1,362.5	58.5	541.9	1,240.8	53.3	600.4
475-3	1,675.5	71.9	467.1	1,565.4	67.2	511.9	1,494.4	64.2	549.5	1,409.6	60.5	575.8	1,281.6	55.0	638.4
485-3	1,704.7	73.2	469.6	1,599.2	68.7	511.8	1,528.5	65.6	533.9	1,442.0	61.9	560.4	1,319.9	56.7	617.4
500-3	1,747.2	75.0	484.4	1,635.1	70.2	530.1	1,542.6	66.2	581.0	1,452.9	62.4	610.1	1,316.8	56.5	676.6
510-3	1,761.7	75.6	490.8	1,652.3	70.9	535.1	1,576.7	67.7	564.8	1,487.7	63.9	592.5	1,358.3	58.3	654.5
550-4	1,877.7	80.6	526.5	1,759.9	75.6	575.3	1,680.1	72.1	600.4	1,580.9	67.9	630.9	1,441.3	61.9	696.4
580-4	2,057.4	88.3	567.0	1,923.4	82.6	621.4	1,794.0	77.0	682.2	1,688.9	72.5	715.0	1,528.5	65.6	792.8
600-4	2,103.9	90.3	603.3	1,966.7	84.4	662.0	1,873.2	80.4	698.6	1,762.7	75.7	732.2	1,601.6	68.8	807.9

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 6 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	192.0	8.2	54.1	179.7	7.7	59.4	171.3	7.3	64.6	161.4	6.9	67.7	147.4	6.3	74.7
60-1	207.5	8.9	50.9	195.5	8.4	54.9	188.2	8.1	56.8	179.0	7.7	59.3	165.3	7.1	65.4
65-1	228.6	9.8	58.7	214.9	9.2	63.7	206.4	8.8	66.0	196.2	8.4	68.9	180.8	7.7	76.0
70-1	245.5	10.5	62.6	230.7	9.9	67.8	221.9	9.5	70.2	211.0	9.1	73.3	194.1	8.3	81.0
70-2	249.7	10.7	67.6	234.9	10.1	73.1	225.4	9.7	76.0	214.2	9.2	79.3	197.3	8.5	87.7
75-1	280.7	12.0	72.6	264.1	11.3	78.7	253.2	10.9	81.9	240.2	10.3	85.8	221.2	9.5	94.5
80-1	308.1	13.2	82.4	289.1	12.4	89.7	277.1	11.9	93.3	262.7	11.3	97.8	240.6	10.3	108.0
95-2	336.6	14.4	92.1	315.5	13.5	100.7	302.1	12.9	109.1	286.3	12.3	114.2	261.3	11.2	126.2
95-1	337.6	14.5	93.2	317.2	13.6	101.4	303.5	13.0	105.8	287.0	12.3	111.0	262.4	11.2	122.8
100-2	376.7	16.1	106.2	351.7	15.1	116.5	335.5	14.4	127.8	317.2	13.6	133.9	289.1	12.4	148.2
100-1	377.4	16.2	103.0	353.5	15.1	112.6	336.6	14.4	123.9	317.6	13.6	129.9	289.8	12.4	143.5
110-2	399.2	17.1	103.3	375.6	16.1	111.9	360.8	15.5	116.0	342.9	14.7	121.2	315.1	13.5	134.0
120-2	419.2	18.0	111.1	393.9	16.9	120.5	377.4	16.2	125.4	357.7	15.3	131.4	329.2	14.1	145.1
125-2	437.2	18.7	119.4	410.1	17.6	129.7	393.2	16.9	134.9	373.2	16.0	141.3	342.2	14.7	156.1
135-2	486.0	20.8	132.6	455.8	19.5	144.6	436.8	18.7	150.4	414.0	17.7	157.4	378.4	16.2	174.0
140-2	518.1	22.2	145.1	484.6	20.8	158.7	463.9	19.9	171.6	437.9	18.8	180.3	399.5	17.1	199.7
145-2	539.2	23.1	143.0	507.5	21.8	155.0	485.3	20.8	161.4	461.4	19.8	168.6	424.5	18.2	186.1
160-2	568.0	24.4	153.1	534.2	22.9	166.3	511.7	21.9	172.7	485.7	20.8	180.7	446.7	19.1	199.7
165-2	591.9	25.4	162.3	556.4	23.8	176.6	533.5	22.9	183.8	505.0	21.7	192.4	463.5	19.9	212.8
175-2	620.8	26.6	171.1	582.8	25.0	186.6	556.7	23.9	204.1	527.2	22.6	214.3	483.2	20.7	237.5
190-2	638.7	27.4	173.3	601.4	25.8	187.6	576.8	24.7	194.5	548.7	23.5	203.7	504.0	21.6	225.3
195-2	680.2	29.2	190.6	636.6	27.3	208.9	609.1	26.1	226.4	575.4	24.7	238.0	526.5	22.6	263.5
200-2	703.0	30.1	190.2	659.8	28.3	206.3	633.4	27.2	214.9	600.0	25.7	225.3	552.2	23.7	249.5
205-2	779.0	33.4	198.6	731.9	31.4	216.2	703.0	30.1	224.4	667.5	28.6	234.4	612.3	26.2	258.7
210-2	792.7	34.0	215.5	742.4	31.8	235.9	708.7	30.4	253.3	667.2	28.6	266.3	608.4	26.1	293.5
220-2	823.0	35.3	210.9	772.3	33.1	230.0	741.4	31.8	238.7	702.0	30.1	250.0	642.6	27.5	276.1
235-2	885.9	38.0	237.6	831.8	35.7	259.0	795.9	34.1	269.6	752.6	32.3	282.7	686.5	29.4	312.6
250-2	946.4	40.6	259.3	887.0	38.0	283.4	846.9	36.3	301.3	797.7	34.2	316.6	727.0	31.2	349.9
275-2	1,005.5	43.1	274.1	941.1	40.3	300.2	895.1	38.4	326.8	843.7	36.2	342.4	768.5	32.9	377.7
280-2	999.5	42.8	256.6	939.0	40.3	279.5	900.0	38.6	290.8	851.1	36.5	304.5	779.0	33.4	336.5
285-2	1,061.4	45.5	288.3	992.1	42.5	316.2	925.7	39.7	347.0	871.5	37.4	363.8	791.7	33.9	401.9
300-2	1,088.5	46.7	290.4	1,020.6	43.8	317.5	973.9	41.7	331.6	922.2	39.5	346.7	841.6	36.1	383.6
315-3	1,146.2	49.1	313.5	1,074.4	46.1	342.8	1,024.2	43.9	369.3	967.9	41.5	386.5	880.7	37.8	427.5
315-2	1,150.8	49.3	312.5	1,078.7	46.2	341.6	1,028.4	44.1	364.5	971.4	41.6	381.4	884.2	37.9	421.9
335-2	1,254.2	53.8	341.0	1,172.9	50.3	374.0	1,117.7	47.9	406.3	1,053.0	45.1	425.8	958.0	41.1	469.7
350-3	1,304.8	55.9	350.4	1,224.3	52.5	382.6	1,169.1	50.1	399.6	1,103.3	47.3	419.2	1,008.7	43.2	462.0
350-2	1,292.5	55.4	340.1	1,213.4	52.0	371.1	1,158.1	49.6	387.8	1,095.5	47.0	406.0	1,000.9	42.9	448.4
360-3	1,333.6	57.2	340.0	1,252.4	53.7	370.8	1,198.2	51.4	386.4	1,138.5	48.8	403.0	1,042.8	44.7	445.1
375-3	1,366.7	58.6	374.3	1,280.9	54.9	409.4	1,222.2	52.4	431.9	1,149.7	49.3	453.9	1,049.5	45.0	500.3
400-3	1,457.8	62.5	393.5	1,367.8	58.6	429.4	1,308.3	56.1	447.3	1,234.5	52.9	469.6	1,129.0	48.4	518.3
415-3	1,560.5	66.9	431.4	1,461.3	62.6	472.2	1,394.8	59.8	507.2	1,316.1	56.4	531.5	1,196.5	51.3	589.1
430-3	1,596.0	68.4	430.9	1,494.0	64.1	471.4	1,429.3	61.3	491.3	1,351.6	57.9	515.0	1,232.4	52.8	569.8
450-3	1,645.3	70.5	452.7	1,538.3	65.9	496.4	1,450.8	62.2	544.7	1,366.4	58.6	571.2	1,243.3	53.3	631.0
465-3	1,666.7	71.4	460.5	1,562.6	67.0	502.9	1,491.6	63.9	525.5	1,410.7	60.5	549.8	1,284.1	55.0	608.6
475-3	1,731.8	74.2	473.5	1,618.9	69.4	519.7	1,542.2	66.1	559.4	1,455.7	62.4	586.0	1,327.0	56.9	647.2
485-3	1,763.8	75.6	475.9	1,650.5	70.8	520.5	1,579.5	67.7	541.6	1,492.6	64.0	568.5	1,362.8	58.4	628.4
500-3	1,802.5	77.3	492.3	1,686.0	72.3	539.2	1,591.4	68.2	591.4	1,501.1	64.3	620.2	1,364.9	58.5	686.2
510-3	1,818.3	77.9	498.8	1,705.0	73.1	544.4	1,629.4	69.9	572.7	1,537.6	65.9	601.9	1,403.3	60.2	665.5
550-4	1,938.2	83.1	535.2	1,816.2	77.9	585.4	1,734.9	74.4	610.4	1,636.8	70.2	640.0	1,487.0	63.7	708.3
580-4	2,122.9	91.0	576.5	1,984.3	85.1	632.4	1,851.7	79.4	693.9	1,743.4	74.7	727.6	1,583.0	67.9	803.8
600-4	2,171.4	93.1	613.7	2,029.3	87.0	673.9	1,932.6	82.8	711.3	1,819.0	78.0	745.7	1,652.3	70.8	822.4

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - SI

Leaving Water Temperature = 7 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	198.4	8.5	55.0	185.7	7.9	60.2	176.9	7.6	65.6	166.7	7.1	68.9	151.9	6.5	76.0
60-1	214.5	9.2	51.5	202.2	8.7	55.6	194.8	8.3	57.6	185.7	7.9	60.1	171.3	7.3	66.3
65-1	236.3	10.1	59.4	222.3	9.5	64.5	213.5	9.1	66.9	202.9	8.7	69.9	187.1	8.0	77.1
70-1	253.9	10.9	63.3	238.8	10.2	68.6	229.7	9.8	71.2	218.4	9.4	74.2	201.5	8.6	82.0
70-2	258.1	11.0	68.4	243.0	10.4	74.1	233.2	10.0	77.0	221.9	9.5	80.5	204.3	8.7	88.7
75-1	290.2	12.4	73.5	272.9	11.7	79.8	262.0	11.2	82.9	249.0	10.6	86.8	229.3	9.8	95.7
80-1	318.3	13.6	83.5	298.9	12.8	90.9	286.3	12.3	94.7	271.5	11.6	99.1	249.4	10.7	109.6
95-2	347.1	14.9	93.6	326.0	14.0	102.1	311.6	13.3	110.8	295.4	12.6	116.0	277.5	13.0	129.3
95-1	349.2	14.9	94.4	327.4	14.0	103.2	313.7	13.4	107.3	296.8	12.7	112.6	271.9	11.6	124.5
100-2	389.0	16.6	107.8	364.0	15.6	118.2	346.4	14.8	130.0	327.1	14.0	136.3	298.6	12.8	150.5
100-1	389.3	16.7	104.7	364.7	15.6	114.5	348.2	14.9	125.7	327.8	14.0	132.2	299.3	12.8	145.8
110-2	412.5	17.7	104.6	388.6	16.6	113.4	372.8	16.0	117.6	354.9	15.2	122.9	326.7	14.0	135.6
120-2	432.9	18.5	112.6	407.6	17.4	122.2	390.7	16.7	127.0	370.7	15.9	133.0	340.1	14.6	147.1
125-2	451.6	19.3	120.9	424.5	18.2	131.5	406.6	17.4	136.8	385.8	16.5	143.3	354.5	15.2	158.4
135-2	501.5	21.5	134.6	471.3	20.2	146.6	450.5	19.3	152.9	427.7	18.3	159.8	392.1	16.8	176.5
140-2	534.9	22.9	147.1	501.2	21.5	160.9	478.7	20.5	174.7	453.0	19.4	182.8	413.2	17.7	202.5
145-2	557.8	23.9	144.8	524.7	22.5	157.1	502.9	21.5	163.4	477.3	20.4	171.0	439.3	18.8	188.5
160-2	587.7	25.2	155.1	552.2	23.6	168.5	529.7	22.7	175.2	502.6	21.5	183.3	461.4	19.8	202.4
165-2	613.0	26.2	164.5	575.4	24.6	179.0	551.1	23.6	186.3	523.0	22.4	195.2	479.4	20.5	215.7
175-2	645.4	27.6	173.7	604.9	25.9	189.4	578.9	24.8	207.5	547.2	23.4	217.6	501.2	21.5	241.0
190-2	664.0	28.4	175.8	624.6	26.7	190.4	600.0	25.7	197.6	569.8	24.4	206.4	524.4	22.5	228.4
195-2	703.8	30.1	193.9	659.4	28.2	212.3	629.9	27.0	230.4	595.8	25.5	241.5	544.1	23.3	267.7
200-2	727.7	31.1	193.1	685.1	29.3	209.5	656.3	28.1	217.6	622.9	26.7	228.3	570.8	24.4	252.7
205-2	805.4	34.5	201.2	756.9	32.4	219.2	724.9	31.0	228.2	690.0	29.5	237.7	633.8	27.1	262.3
210-2	817.7	35.0	219.1	765.7	32.8	240.0	731.2	31.3	257.9	690.0	29.5	270.0	629.5	26.9	297.5
220-2	851.1	36.4	213.7	798.4	34.2	233.2	766.4	32.8	242.1	725.9	31.1	253.6	665.4	28.5	280.1
235-2	916.2	39.2	240.8	860.3	36.8	262.7	820.9	35.1	274.3	777.6	33.3	286.7	710.4	30.4	317.0
250-2	976.3	41.8	263.6	914.8	39.2	288.3	874.0	37.4	306.5	825.1	35.3	321.1	750.5	32.1	355.5
275-2	1,038.6	44.5	277.9	972.1	41.6	304.5	925.3	39.6	331.8	872.9	37.4	347.5	795.9	34.1	383.1
280-2	1,032.9	44.2	259.9	969.3	41.5	283.9	929.2	39.8	295.3	881.0	37.7	309.0	806.1	34.5	341.2
285-2	1,095.2	46.9	293.1	1,023.4	43.8	321.8	954.9	40.9	353.3	898.9	38.5	370.4	817.0	35.0	408.6
300-2	1,123.0	48.1	295.1	1,054.0	45.1	322.2	1,007.3	43.1	336.5	954.5	40.9	351.7	870.8	37.3	388.9
315-3	1,182.4	50.6	318.7	1,107.9	47.4	348.7	1,058.6	45.3	374.5	1,000.6	42.8	391.9	911.3	39.0	434.0
315-2	1,187.0	50.8	317.6	1,112.4	47.6	347.5	1,062.8	45.5	369.6	1,004.5	43.0	386.8	914.8	39.2	428.3
335-2	1,294.3	55.4	346.8	1,210.2	51.8	380.7	1,153.2	49.4	413.7	1,089.6	46.6	432.2	992.1	42.5	476.5
350-3	1,346.0	57.6	356.1	1,263.0	54.1	389.2	1,208.4	51.7	405.5	1,140.9	48.8	425.6	1,044.5	44.7	468.6
350-2	1,334.3	57.1	345.4	1,252.8	53.6	377.3	1,197.9	51.3	393.5	1,130.4	48.4	413.0	1,035.8	44.3	454.6
360-3	1,376.2	58.9	345.4	1,294.6	55.4	376.0	1,239.7	53.1	392.0	1,175.0	50.3	410.0	1,079.4	46.2	451.5
375-3	1,409.6	60.3	380.5	1,320.6	56.5	416.6	1,261.5	54.0	438.7	1,190.2	50.9	460.5	1,087.5	46.5	507.4
400-3	1,504.2	64.4	399.9	1,411.4	60.4	436.9	1,350.5	57.8	455.0	1,277.7	54.7	476.4	1,165.2	49.9	527.0
415-3	1,610.4	68.9	438.7	1,507.7	64.5	480.5	1,439.2	61.6	516.4	1,358.3	58.1	541.0	1,238.0	53.0	597.1
430-3	1,647.7	70.5	437.7	1,545.7	66.2	478.1	1,474.7	63.1	499.6	1,397.3	59.8	522.2	1,276.3	54.6	577.9
450-3	1,696.6	72.6	460.2	1,586.9	67.9	504.8	1,496.5	64.1	554.1	1,410.3	60.4	580.9	1,283.4	54.9	640.9
465-3	1,719.1	73.6	468.0	1,611.8	69.0	511.6	1,541.1	66.0	533.2	1,457.8	62.4	558.0	1,330.1	56.9	617.3
475-3	1,785.9	76.5	481.2	1,672.7	71.6	526.8	1,593.2	68.2	568.3	1,504.6	64.4	595.1	1,370.2	58.7	658.3
485-3	1,821.1	78.0	482.8	1,707.5	73.1	527.8	1,628.7	69.7	551.2	1,542.9	66.1	576.4	1,410.0	60.3	638.0
500-3	1,859.1	79.6	500.5	1,739.2	74.4	548.7	1,641.0	70.3	601.9	1,547.1	66.2	631.1	1,409.6	60.3	696.9
510-3	1,876.3	80.3	507.0	1,759.2	75.3	553.9	1,682.2	72.0	582.8	1,590.4	68.1	610.4	1,449.0	62.0	675.9
550-4	1,999.1	85.6	544.0	1,872.8	80.2	595.6	1,789.1	76.6	621.3	1,690.3	72.4	650.2	1,540.8	65.9	718.4
580-4	2,190.0	93.7	586.3	2,046.9	87.6	643.6	1,910.1	81.8	706.5	1,797.9	77.0	740.7	1,634.3	70.0	817.3
600-4	2,240.3	95.9	624.2	2,093.7	89.6	686.0	1,993.8	85.3	724.4	1,876.3	80.3	759.4	1,704.7	73.0	837.3

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 8 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	204.3	8.7	55.9	191.3	8.2	61.3	182.9	7.8	66.5	172.3	7.4	70.0	157.6	6.7	77.2
60-1	221.9	9.5	52.1	208.9	8.9	56.4	201.5	8.6	58.3	192.0	8.2	60.8	177.3	7.6	67.1
65-1	244.4	10.4	60.1	230.0	9.8	65.3	220.5	9.4	67.8	210.0	9.0	70.9	193.4	8.3	78.1
70-1	262.4	11.2	64.1	247.2	10.6	69.5	237.4	10.1	72.1	226.1	9.7	75.3	208.6	8.9	83.0
70-2	266.9	11.4	69.3	251.1	10.7	75.1	241.3	10.3	78.0	229.3	9.8	81.5	211.4	9.0	90.0
75-1	299.6	12.8	74.4	282.1	12.1	80.9	270.8	11.6	84.0	257.8	11.0	87.9	237.4	10.1	96.9
80-1	328.1	14.0	84.8	308.8	13.2	92.2	296.1	12.7	96.0	280.7	12.0	100.6	257.4	11.0	111.1
95-2	358.7	15.3	94.9	336.6	14.4	103.8	322.5	13.8	112.4	304.9	13.0	117.9	280.0	12.0	129.8
95-1	360.8	15.4	95.7	338.3	14.5	104.7	323.9	13.8	109.2	307.0	13.1	114.2	281.0	12.0	126.2
100-2	400.9	17.1	109.6	375.6	16.1	120.1	358.4	15.3	131.9	337.3	14.4	138.7	308.1	13.2	153.0
100-1	401.6	17.2	106.4	376.3	16.1	116.5	359.4	15.4	127.7	339.0	14.5	134.1	310.2	13.3	147.8
110-2	426.3	18.2	105.9	401.3	17.2	114.9	385.8	16.5	119.3	366.8	15.7	124.6	338.0	14.5	137.4
120-2	446.7	19.1	114.3	421.0	18.0	123.8	404.5	17.3	128.7	384.1	16.4	134.7	352.8	15.1	149.0
125-2	467.1	20.0	122.4	438.6	18.7	133.3	420.6	18.0	138.8	398.8	17.1	145.3	366.5	15.7	160.5
135-2	518.1	22.1	136.5	486.4	20.8	149.0	466.0	19.9	155.1	440.7	18.8	162.6	405.2	17.3	178.9
140-2	551.5	23.6	149.5	517.7	22.1	163.2	494.5	21.1	177.3	467.1	20.0	186.0	427.7	18.3	205.2
145-2	576.1	24.6	146.6	542.3	23.2	159.2	520.5	22.2	165.4	493.8	21.1	173.2	455.5	19.5	190.9
160-2	607.4	26.0	157.0	571.2	24.4	170.8	547.2	23.4	177.6	519.8	22.2	185.9	478.0	20.4	205.3
165-2	633.4	27.1	166.6	595.1	25.4	181.5	570.1	24.4	189.0	540.2	23.1	197.9	496.2	21.2	218.7
175-2	666.5	28.5	176.3	625.7	26.7	192.1	597.9	25.6	210.3	566.6	24.2	220.8	518.1	22.2	244.3
190-2	686.9	29.4	178.0	645.7	27.6	193.0	619.7	26.5	200.3	589.8	25.2	209.3	543.0	23.2	231.1
195-2	726.3	31.0	197.0	681.2	29.1	215.2	650.3	27.8	234.0	616.5	26.4	244.9	563.1	24.1	271.4
200-2	751.2	32.1	195.8	707.3	30.2	212.6	679.5	29.0	220.8	644.3	27.5	231.0	592.3	25.3	255.8
205-2	832.1	35.6	203.7	782.2	33.4	222.2	749.8	32.1	231.5	714.0	30.5	241.2	655.2	28.0	266.0
210-2	843.4	36.1	222.8	789.6	33.8	244.2	753.7	32.2	262.5	711.5	30.4	274.9	649.2	27.7	302.9
220-2	878.9	37.6	216.6	825.4	35.3	236.4	790.6	33.8	246.3	750.9	32.1	257.2	687.9	29.4	284.0
235-2	945.7	40.4	244.3	888.0	38.0	266.7	849.4	36.3	278.3	801.9	34.3	291.9	734.7	31.4	321.3
250-2	1,007.3	43.1	267.9	943.6	40.3	293.4	901.4	38.5	312.0	851.5	36.4	326.6	776.9	33.2	360.4
275-2	1,070.9	45.8	282.5	1,002.3	42.9	309.8	956.3	40.9	336.4	902.1	38.6	352.4	822.6	35.2	388.4
280-2	1,066.0	45.6	263.9	1,001.6	42.8	287.8	958.0	41.0	300.2	910.2	38.9	313.3	834.2	35.7	346.0
285-2	1,129.0	48.3	298.0	1,055.1	45.1	327.4	984.4	42.1	359.5	926.7	39.6	377.0	842.7	36.0	415.9
300-2	1,158.1	49.5	299.9	1,087.1	46.5	327.8	1,040.7	44.5	341.4	986.2	42.2	356.9	901.4	38.5	394.4
315-3	1,219.3	52.1	324.0	1,142.7	48.8	354.8	1,091.7	46.7	381.2	1,031.5	44.1	399.0	942.6	40.3	439.9
315-2	1,224.3	52.3	322.8	1,147.2	49.0	353.6	1,095.9	46.8	376.1	1,035.8	44.3	393.8	946.1	40.4	434.1
335-2	1,334.7	57.1	352.7	1,247.8	53.4	387.5	1,190.9	50.9	420.2	1,126.1	48.1	438.4	1,025.9	43.9	483.3
350-3	1,387.8	59.3	361.9	1,301.6	55.7	395.9	1,245.4	53.2	412.7	1,179.3	50.4	431.6	1,079.7	46.2	475.1
350-2	1,376.6	58.9	351.1	1,291.8	55.2	383.9	1,236.6	52.9	400.0	1,169.8	50.0	419.0	1,072.3	45.8	461.1
360-3	1,423.0	60.8	349.9	1,334.7	57.1	382.4	1,280.5	54.7	397.4	1,213.7	51.9	416.5	1,116.6	47.7	457.8
375-3	1,453.6	62.1	386.8	1,361.8	58.2	423.8	1,300.9	55.6	446.6	1,229.2	52.5	467.5	1,123.0	48.0	515.1
400-3	1,552.8	66.4	405.8	1,456.7	62.3	443.6	1,393.1	59.5	463.2	1,318.9	56.4	484.3	1,206.7	51.6	534.5
415-3	1,661.4	71.0	446.0	1,555.2	66.5	489.0	1,484.2	63.5	525.8	1,400.8	59.9	550.8	1,277.7	54.6	607.4
430-3	1,700.1	72.7	444.8	1,595.7	68.2	485.8	1,525.7	65.2	506.8	1,446.2	61.8	529.8	1,319.9	56.4	585.8
450-3	1,749.7	74.8	468.0	1,641.7	70.2	512.2	1,548.9	66.2	562.2	1,459.9	62.4	589.3	1,329.1	56.8	649.9
465-3	1,772.9	75.8	475.6	1,661.8	71.0	520.4	1,588.6	67.9	542.7	1,502.5	64.2	567.9	1,374.8	58.8	626.1
475-3	1,842.6	78.8	489.2	1,725.8	73.8	535.9	1,646.7	70.4	576.3	1,555.6	66.5	603.4	1,415.6	60.5	668.4
485-3	1,878.1	80.3	490.6	1,762.7	75.4	535.6	1,684.6	72.0	559.3	1,591.1	68.0	586.7	1,457.4	62.3	646.6
500-3	1,917.1	82.0	508.7	1,792.6	76.6	558.2	1,691.7	72.3	612.6	1,596.0	68.2	642.0	1,454.3	62.2	708.2
510-3	1,937.9	82.8	514.3	1,816.9	77.7	562.3	1,734.9	74.2	593.2	1,641.4	70.2	620.8	1,500.0	64.1	685.3
550-4	2,061.0	88.1	553.0	1,930.5	82.5	605.9	1,845.0	78.9	631.8	1,743.4	74.5	661.1	1,593.2	68.1	728.2
580-4	2,257.9	96.5	596.1	2,110.2	90.2	654.8	1,968.8	84.2	719.1	1,853.5	79.2	754.0	1,685.3	72.1	831.8
600-4	2,310.7	98.8	635.0	2,159.1	92.3	698.3	2,055.7	87.9	737.6	1,934.7	82.7	773.2	1,763.4	75.4	849.8

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - SI

Leaving Water Temperature = 10 °C

Model (APSa)	Ambient Temperature (°C)														
	30			35			40			45			50		
	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)	T. CAP (kW)	WFR (L/s)	PI (kW)
50-1	217.4	9.3	57.8	203.6	8.7	63.5	194.5	8.3	68.9	183.6	7.8	72.2	167.8	7.2	79.6
60-1	237.0	10.1	53.2	223.7	9.5	57.7	215.2	9.2	59.9	205.4	8.8	62.5	189.9	8.1	68.7
65-1	260.6	11.1	61.7	245.8	10.5	66.9	236.0	10.1	69.5	224.7	9.6	72.7	207.9	8.9	80.1
70-1	280.3	12.0	65.7	264.1	11.3	71.3	253.9	10.8	73.8	242.0	10.3	77.3	223.7	9.5	85.0
70-2	284.9	12.2	71.0	268.3	11.4	77.1	258.1	11.0	80.0	245.5	10.5	83.5	226.5	9.7	92.3
75-1	319.3	13.6	76.5	301.1	12.8	83.2	289.4	12.3	86.4	275.0	11.7	90.3	253.6	10.8	99.6
80-1	350.3	14.9	87.0	329.2	14.0	95.1	315.5	13.5	99.0	300.0	12.8	103.4	275.4	11.7	114.2
95-2	381.9	16.3	97.7	358.7	15.3	106.8	343.3	14.6	116.1	325.7	13.9	121.3	298.9	12.8	133.8
95-1	383.4	16.4	98.8	360.1	15.4	107.9	345.4	14.7	112.4	326.7	13.9	118.0	300.4	12.8	129.8
100-2	426.3	18.2	113.2	399.2	17.0	124.2	381.2	16.3	136.3	360.1	15.4	142.8	329.2	14.0	157.5
100-1	426.6	18.2	109.9	399.5	17.0	120.6	381.6	16.3	132.2	360.8	15.4	138.6	329.9	14.1	152.6
110-2	455.1	19.4	108.5	428.7	18.3	118.0	411.8	17.6	122.7	391.8	16.7	128.2	361.9	15.4	141.1
120-2	476.9	20.3	117.2	448.4	19.1	127.6	430.5	18.4	132.7	410.1	17.5	138.4	377.7	16.1	152.7
125-2	497.3	21.2	125.9	467.8	20.0	137.1	449.1	19.2	142.7	425.9	18.2	149.4	391.8	16.7	165.0
135-2	551.8	23.5	140.4	518.4	22.1	153.3	497.7	21.2	159.4	470.9	20.1	167.2	432.6	18.5	184.2
140-2	586.6	25.0	154.3	550.1	23.5	168.8	526.5	22.5	182.9	498.7	21.3	191.5	455.5	19.4	211.9
145-2	614.8	26.2	150.4	578.9	24.7	163.5	555.7	23.7	169.9	528.6	22.5	177.6	487.5	20.8	195.9
160-2	647.5	27.6	161.3	609.5	26.0	175.5	584.2	24.9	182.6	555.3	23.7	191.2	510.7	21.8	211.0
165-2	674.9	28.8	171.4	633.4	27.0	186.9	608.4	25.9	194.2	577.1	24.6	203.4	530.7	22.6	224.9
175-2	710.4	30.3	181.1	665.8	28.4	198.1	638.0	27.2	216.5	605.3	25.8	227.0	553.9	23.6	251.0
190-2	733.3	31.3	182.5	689.3	29.4	198.2	661.9	28.2	205.8	630.2	26.9	215.2	580.3	24.8	237.4
195-2	773.7	33.0	203.1	725.9	31.0	222.1	693.6	29.6	241.3	657.3	28.0	252.6	602.1	25.7	278.8
200-2	802.6	34.2	200.9	754.4	32.2	218.9	722.7	30.8	227.8	688.6	29.4	237.5	634.5	27.1	262.4
205-2	886.3	37.8	209.7	833.2	35.5	228.9	800.5	34.1	238.0	759.3	32.4	249.1	700.6	29.9	273.5
210-2	896.5	38.2	230.3	839.2	35.8	252.9	801.9	34.2	271.5	757.2	32.3	284.2	693.9	29.6	311.4
220-2	934.1	39.8	223.5	878.5	37.5	243.8	843.0	36.0	253.6	799.1	34.1	265.7	735.4	31.4	291.9
235-2	1,004.8	42.9	252.2	943.3	40.2	275.9	903.2	38.5	287.4	856.0	36.5	300.4	785.3	33.5	330.5
250-2	1,069.9	45.6	276.8	1,002.3	42.8	303.3	960.8	41.0	321.4	908.4	38.7	336.3	830.7	35.4	370.3
275-2	1,138.1	48.5	292.1	1,064.9	45.4	320.8	1,015.7	43.3	348.6	958.0	40.9	365.1	873.6	37.3	402.3
280-2	1,133.9	48.4	272.1	1,066.0	45.5	296.9	1,022.0	43.6	309.2	971.0	41.4	322.8	891.9	38.0	355.7
285-2	1,199.3	51.1	308.1	1,120.2	47.8	338.9	1,044.9	44.6	372.4	983.7	42.0	390.3	899.3	38.4	428.3
300-2	1,233.8	52.6	309.0	1,157.8	49.4	338.2	1,108.6	47.3	352.5	1,047.0	44.7	369.8	960.1	40.9	407.0
315-3	1,296.7	55.3	334.9	1,214.4	51.8	367.4	1,161.7	49.6	394.1	1,098.0	46.8	412.4	1,004.5	42.8	454.2
315-2	1,302.0	55.5	333.7	1,219.3	52.0	366.1	1,166.2	49.7	388.9	1,102.6	47.0	407.1	1,008.3	43.0	448.3
335-2	1,417.7	60.5	364.7	1,325.2	56.5	401.2	1,268.9	54.1	433.6	1,196.1	51.0	454.3	1,089.6	46.5	500.5
350-3	1,481.0	63.2	372.0	1,386.4	59.1	408.9	1,326.3	56.6	426.5	1,255.9	53.6	445.9	1,150.8	49.1	490.6
350-2	1,462.7	62.4	362.7	1,372.7	58.5	397.0	1,313.6	56.0	413.9	1,244.7	53.1	432.7	1,140.9	48.7	476.0
360-3	1,514.4	64.6	360.5	1,424.4	60.8	393.4	1,364.2	58.2	410.6	1,296.7	55.3	428.4	1,190.2	50.8	472.2
375-3	1,544.7	65.9	399.8	1,446.5	61.7	438.7	1,381.1	58.9	462.6	1,305.2	55.7	484.4	1,198.6	51.1	531.2
400-3	1,655.5	70.6	417.7	1,553.1	66.2	457.3	1,485.2	63.3	477.5	1,406.4	60.0	499.1	1,289.3	55.0	549.2
415-3	1,764.8	75.3	460.9	1,651.9	70.5	505.7	1,582.3	67.5	541.7	1,494.4	63.7	567.3	1,364.6	58.2	624.9
430-3	1,806.7	77.1	459.0	1,695.2	72.3	502.1	1,623.1	69.2	523.3	1,537.3	65.6	547.7	1,410.0	60.1	602.9
450-3	1,860.8	79.4	484.0	1,745.8	74.5	528.9	1,646.7	70.2	580.9	1,551.7	66.2	609.0	1,413.1	60.3	671.7
465-3	1,892.1	80.7	488.9	1,773.6	75.7	535.5	1,696.2	72.3	558.6	1,600.9	68.3	586.7	1,465.5	62.5	646.1
475-3	1,959.0	83.6	505.6	1,833.8	78.2	554.8	1,750.8	74.7	596.6	1,653.7	70.5	624.8	1,510.2	64.4	688.7
485-3	1,995.9	85.1	506.6	1,872.8	79.9	554.1	1,792.6	76.5	577.4	1,698.4	72.4	603.7	1,557.7	66.4	664.7
500-3	2,038.1	86.9	526.0	1,905.2	81.3	577.9	1,802.1	76.9	632.7	1,703.6	72.7	660.8	1,554.2	66.3	729.1
510-3	2,064.8	88.1	529.3	1,935.8	82.6	579.6	1,849.6	78.9	611.1	1,750.4	74.7	639.3	1,603.0	68.4	704.0
550-4	2,190.0	93.4	571.5	2,056.7	87.7	625.2	1,968.1	84.0	650.9	1,860.5	79.4	681.2	1,701.2	72.6	750.1
580-4	2,398.2	102.3	616.2	2,240.3	95.6	677.9	2,089.8	89.1	744.8	1,967.4	83.9	780.7	1,798.9	76.7	856.7
600-4	2,450.3	104.5	658.2	2,292.7	97.8	723.2	2,182.7	93.1	764.3	2,064.5	88.1	796.6	1,879.5	80.2	876.5

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 5.5°C cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - IMP

Leaving Water Temperature = 40 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	52.2	125.1	52.5	48.5	116.3	58.0	46.0	110.3	63.3	43.0	102.9	66.9	38.3	91.7	76.0
60-1	56.3	134.9	49.6	52.7	126.2	53.9	50.4	120.8	56.1	47.5	113.9	58.9	43.0	103.1	66.8
65-1	61.6	147.6	57.1	57.6	138.1	62.2	55.0	131.9	64.8	51.9	124.5	68.2	46.8	112.1	77.7
70-1	65.9	158.0	60.9	61.7	147.7	66.2	58.9	141.1	68.9	55.7	133.5	72.3	50.2	120.3	82.4
70-2	67.1	160.6	65.6	62.6	149.9	71.5	59.8	143.3	74.4	56.4	135.1	78.2	51.0	122.1	89.2
75-1	76.2	182.6	70.6	71.2	170.6	77.1	67.9	162.8	80.5	64.0	153.4	84.6	57.5	137.8	96.3
80-1	83.4	199.9	80.0	77.8	186.3	87.7	74.1	177.5	91.8	69.6	166.7	96.8	62.4	149.5	110.1
95-2	91.4	219.0	89.4	85.3	204.3	98.2	81.1	194.2	107.1	75.9	181.8	113.1	68.0	163.0	128.3
95-1	91.7	219.8	90.4	85.6	205.1	99.3	81.3	194.9	104.1	76.4	183.2	109.5	68.3	163.5	124.7
100-2	101.9	244.1	102.7	94.8	227.1	113.3	89.9	215.4	124.9	83.9	201.0	132.4	74.9	179.5	150.7
100-1	102.0	244.4	99.6	94.9	227.3	109.9	90.1	215.8	121.2	84.3	201.9	127.9	75.2	180.2	145.6
110-2	107.9	258.4	100.3	100.8	241.6	109.4	96.4	230.9	113.9	90.8	217.6	119.8	81.8	196.0	136.5
120-2	112.7	269.9	108.0	105.3	252.2	118.0	100.5	240.9	123.0	94.8	227.1	129.4	85.1	203.9	147.5
125-2	117.4	281.3	115.5	109.4	262.0	126.4	104.3	249.8	132.1	98.1	235.0	139.4	88.2	211.2	158.8
135-2	131.7	315.4	128.6	122.9	294.5	140.9	116.9	280.2	147.6	109.6	262.7	155.8	98.1	235.0	177.5
140-2	140.1	335.7	140.2	130.4	312.5	154.4	123.5	296.0	168.5	115.8	277.4	177.7	103.5	247.9	202.8
145-2	145.4	348.3	139.1	135.9	325.7	151.7	129.4	310.0	158.3	122.1	292.5	166.4	109.7	262.9	189.7
160-2	153.1	366.7	148.4	142.9	342.4	162.3	136.2	326.2	169.4	128.1	307.0	178.5	115.3	276.2	203.4
165-2	159.1	381.2	157.1	148.4	355.4	172.1	141.4	338.8	180.0	132.6	317.7	189.8	119.2	285.6	216.6
175-2	166.4	398.7	165.3	155.3	372.0	181.1	147.9	354.2	199.1	138.5	331.9	210.4	124.4	298.1	240.6
190-2	171.2	410.2	167.9	160.0	383.2	183.0	152.3	364.9	190.9	143.9	344.7	200.7	129.5	310.3	229.0
195-2	182.6	437.4	184.0	169.8	406.9	202.9	161.7	387.5	220.8	151.2	362.3	233.8	135.3	324.0	267.6
200-2	187.9	450.1	184.6	175.8	421.1	201.1	167.7	401.7	210.4	157.9	378.3	221.4	142.1	340.4	253.0
205-2	211.6	507.1	192.9	198.0	474.3	210.9	188.6	452.0	220.4	177.3	424.8	232.1	159.0	380.8	263.8
210-2	216.2	517.9	208.1	201.0	481.5	229.8	190.6	456.6	248.2	177.4	425.0	262.8	157.9	378.4	298.3
220-2	223.7	535.9	204.7	208.8	500.3	224.5	198.8	476.3	234.9	186.3	446.5	247.7	167.4	401.1	280.4
235-2	241.4	578.4	229.7	225.0	539.1	252.5	213.5	511.5	265.1	200.3	479.8	278.8	178.6	427.9	317.7
250-2	258.0	618.1	250.7	240.0	574.9	276.4	226.8	543.4	296.5	212.1	508.1	312.4	189.1	453.2	354.8
275-2	273.8	655.9	265.1	254.3	609.2	293.1	240.8	576.9	320.0	224.6	538.1	337.6	199.6	478.3	383.6
280-2	271.7	650.8	249.1	253.7	607.8	273.1	241.1	577.8	286.0	226.8	543.4	300.4	202.9	486.2	341.8
285-2	289.7	694.0	278.0	268.7	643.9	307.7	249.0	596.6	339.7	231.9	555.6	358.7	205.6	492.7	407.9
300-2	295.8	708.8	281.9	275.7	660.4	310.2	261.8	627.3	325.1	245.6	588.3	342.0	218.8	524.2	389.7
315-3	312.5	748.7	302.8	289.9	694.6	335.2	275.0	659.0	361.8	257.3	616.5	381.3	229.1	548.8	434.3
315-2	312.9	749.8	302.8	291.0	697.3	334.1	276.1	661.5	357.1	258.3	618.8	376.4	230.5	552.2	427.4
335-2	342.3	820.1	328.8	317.8	761.3	364.0	300.7	720.4	397.8	280.2	671.4	419.8	249.6	598.1	475.5
350-3	354.8	850.0	339.5	330.4	791.7	373.9	314.1	752.6	391.5	294.0	704.3	413.1	262.3	628.5	469.6
350-2	351.3	841.7	329.8	327.3	784.2	363.0	311.2	745.7	380.0	291.9	699.3	399.9	260.3	623.6	455.6
360-3	362.3	868.0	330.3	337.9	809.7	362.9	322.3	772.3	378.6	302.1	723.9	399.2	270.8	648.8	453.6
375-3	372.0	891.2	362.2	345.9	828.8	399.7	327.4	784.4	424.5	306.0	733.1	447.5	272.7	653.3	508.3
400-3	397.1	951.5	380.8	370.0	886.5	419.0	350.5	839.8	440.2	328.6	787.2	463.4	293.8	703.8	526.1
415-3	426.0	1,020.6	416.4	395.9	948.5	459.8	374.9	898.1	497.6	350.2	839.0	524.7	311.9	747.2	596.2
430-3	433.7	1,039.1	418.1	404.1	968.2	459.6	383.4	918.6	482.7	359.7	861.8	508.1	320.6	768.0	579.3
450-3	448.7	1,074.9	436.4	416.4	997.7	483.0	390.0	934.3	533.2	363.5	870.9	562.9	322.9	773.6	640.1
465-3	454.3	1,088.4	444.6	422.0	1,011.0	491.6	400.8	960.3	515.0	374.4	897.1	544.1	333.8	799.7	618.9
475-3	469.9	1,125.8	459.0	436.8	1,046.5	506.6	414.3	992.7	547.3	387.4	928.3	577.6	344.8	826.1	658.5
485-3	478.8	1,147.0	461.0	445.9	1,068.4	507.1	422.9	1,013.1	532.5	396.8	950.8	560.6	354.4	849.1	639.8
500-3	490.1	1,174.3	474.1	455.2	1,090.5	524.0	426.7	1,022.2	578.0	398.4	954.5	610.7	353.7	847.3	697.9
510-3	494.1	1,183.7	481.9	460.0	1,102.0	530.5	435.3	1,042.9	563.0	408.0	977.4	593.4	364.5	873.2	675.3
550-4	528.6	1,266.4	516.4	491.7	1,178.0	569.7	465.5	1,115.4	599.4	435.3	1,043.0	631.6	388.2	930.1	716.8
580-4	579.4	1,388.1	555.9	537.5	1,287.8	615.5	498.0	1,193.2	679.4	463.8	1,111.2	717.5	411.3	985.3	815.8
600-4	592.6	1,419.8	591.4	549.7	1,317.0	655.7	519.8	1,245.4	696.3	483.9	1,159.3	735.1	430.2	1,030.7	832.5

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - IMP

Leaving Water Temperature = 42 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	54.1	129.4	53.4	50.3	120.3	59.0	47.7	114.2	64.4	44.7	106.8	67.9	39.7	94.9	77.4
60-1	58.5	139.8	50.2	54.8	131.0	54.6	52.4	125.2	56.8	49.5	118.4	59.7	44.8	107.1	67.6
65-1	64.3	153.8	58.0	60.2	143.9	63.3	57.5	137.4	65.9	54.2	129.7	69.2	48.9	117.0	78.9
70-1	69.0	164.9	61.8	64.6	154.4	67.4	61.7	147.5	70.1	58.3	139.5	73.6	52.7	126.1	83.7
70-2	70.2	168.0	66.6	65.7	157.0	72.6	62.7	149.9	75.7	59.1	141.3	79.7	53.4	127.7	90.7
75-1	79.0	189.0	71.7	74.0	176.9	78.3	70.6	168.8	81.7	66.5	159.1	85.9	59.9	143.2	97.6
80-1	86.8	207.5	81.3	81.0	193.8	89.2	77.1	184.3	93.3	72.4	173.2	98.4	65.1	155.8	111.7
95-2	95.0	227.1	90.8	88.4	211.3	100.1	84.2	201.3	108.8	78.9	188.6	114.9	70.8	169.3	130.3
95-1	95.3	227.9	91.8	88.9	212.7	100.8	84.5	202.0	105.8	79.3	189.7	111.3	71.0	169.9	126.7
100-2	106.0	253.4	104.8	98.5	235.6	115.7	93.5	223.5	127.6	87.4	209.0	134.6	77.9	186.3	153.2
100-1	106.4	254.5	101.4	99.0	236.7	112.0	94.0	224.8	123.4	87.5	209.3	130.7	78.1	186.7	148.5
110-2	112.5	269.1	101.9	105.1	251.4	111.2	100.4	240.1	115.9	94.8	226.6	121.9	85.4	204.2	138.4
120-2	118.0	282.1	109.9	110.4	264.0	119.9	105.2	251.7	125.0	99.1	237.1	131.6	89.2	213.3	149.8
125-2	122.9	294.0	117.5	114.7	274.2	128.8	109.2	261.1	134.7	102.9	246.0	141.8	92.7	221.8	161.4
135-2	137.2	328.1	130.6	127.6	305.2	143.7	121.7	290.9	150.1	114.1	272.9	158.4	102.4	244.9	180.0
140-2	145.9	349.0	143.1	135.9	325.1	157.5	129.1	308.8	171.7	120.6	288.4	181.6	108.0	258.2	206.2
145-2	152.1	363.8	141.2	142.1	339.8	154.0	135.5	324.1	160.9	127.8	305.6	169.1	114.8	274.6	192.6
160-2	160.1	382.9	150.8	149.5	357.4	165.2	142.6	341.1	172.7	134.0	320.5	181.8	120.7	288.6	206.7
165-2	166.8	398.9	159.9	155.3	371.4	175.2	147.9	353.8	183.4	139.1	332.6	193.5	124.9	298.7	220.3
175-2	174.5	417.3	168.3	162.5	388.6	185.1	154.8	370.2	203.5	145.5	347.9	214.6	130.3	311.6	245.0
190-2	179.5	429.2	170.7	167.7	401.0	186.2	160.2	383.2	194.3	151.0	361.1	204.1	136.3	325.9	232.9
195-2	191.0	456.7	188.0	177.8	425.3	207.0	169.2	404.7	225.4	158.9	379.9	238.5	141.7	338.8	272.4
200-2	197.1	471.4	187.8	184.4	441.0	204.9	175.7	420.1	214.0	165.7	396.3	225.7	149.0	356.3	257.0
205-2	219.8	525.7	195.7	205.0	490.3	214.8	195.8	468.3	223.9	184.1	440.4	235.8	165.4	395.5	268.0
210-2	224.0	535.8	211.7	208.2	498.0	234.1	197.5	472.2	252.9	184.4	440.9	266.9	164.3	392.8	302.9
220-2	232.3	555.4	207.7	216.3	517.3	228.6	206.3	493.4	238.6	193.6	463.1	251.6	174.2	416.5	284.9
235-2	250.1	598.2	233.7	233.1	557.5	257.2	221.7	530.1	269.3	208.0	497.5	283.2	185.7	444.0	322.6
250-2	267.5	639.7	254.9	248.8	595.0	281.3	235.8	563.8	301.3	220.5	527.4	317.5	196.8	470.6	360.3
275-2	283.5	678.0	270.0	263.6	630.3	298.3	249.7	597.1	325.7	233.1	557.3	343.5	207.4	495.9	390.0
280-2	281.8	673.9	252.7	263.2	629.4	277.3	250.4	598.8	290.6	235.1	562.1	306.1	211.0	504.6	347.1
285-2	300.0	717.3	283.1	278.2	665.4	313.8	257.8	616.5	346.5	240.1	574.2	365.9	213.4	510.4	415.0
300-2	306.8	733.6	286.4	285.8	683.5	315.5	272.0	650.3	330.3	254.6	608.8	348.6	227.6	544.3	395.8
315-3	323.9	774.5	308.1	301.1	720.0	340.5	285.8	683.4	367.7	267.4	639.4	387.4	237.7	568.5	441.8
315-2	325.0	777.1	307.3	302.3	722.8	339.4	286.9	686.1	362.9	268.4	641.9	382.3	239.7	573.1	434.0
335-2	354.5	847.7	334.9	329.0	786.7	371.2	311.8	745.5	405.0	290.8	695.4	427.3	259.5	620.4	483.0
350-3	368.4	880.9	344.5	343.1	820.5	379.8	326.2	780.2	397.8	304.8	729.0	420.5	272.8	652.4	476.9
350-2	364.9	872.6	334.8	340.0	813.1	368.9	322.3	770.6	387.6	302.2	722.7	408.0	270.6	647.1	462.6
360-3	375.6	898.2	335.7	350.8	838.8	368.4	334.2	799.2	385.2	314.1	751.1	405.7	282.3	675.2	459.8
375-3	386.0	923.0	367.7	359.0	858.5	406.2	339.9	812.8	431.9	317.9	760.3	455.2	283.7	678.3	516.5
400-3	411.9	984.9	386.8	383.6	917.2	426.1	364.2	871.0	447.4	341.7	817.1	470.9	304.4	727.9	536.4
415-3	441.1	1,054.9	424.0	409.9	980.3	468.7	388.7	929.4	506.6	363.0	868.2	534.4	323.4	773.4	607.4
430-3	449.2	1,074.3	425.5	418.5	1,000.8	468.4	398.1	952.0	490.4	373.5	893.2	516.2	333.5	797.6	588.3
450-3	464.9	1,111.8	444.6	431.3	1,031.5	492.6	403.7	965.5	543.9	378.2	904.5	572.0	336.2	803.9	650.0
465-3	470.8	1,125.9	452.6	438.0	1,047.5	499.2	416.0	994.8	523.1	388.5	929.0	553.7	347.3	830.4	628.6
475-3	487.7	1,166.3	467.3	453.2	1,083.9	516.3	429.8	1,027.9	557.9	401.7	960.7	588.3	358.4	857.1	668.4
485-3	496.8	1,188.0	469.5	462.8	1,106.8	516.8	439.9	1,051.9	541.4	412.7	986.9	569.7	368.3	880.8	649.5
500-3	509.3	1,217.8	483.6	472.7	1,130.4	535.1	443.0	1,059.4	590.5	413.3	988.4	623.6	368.0	880.1	708.6
510-3	514.0	1,229.2	490.4	478.4	1,144.1	540.5	453.9	1,085.6	573.0	425.2	1,016.8	603.5	378.4	904.8	688.4
550-4	547.3	1,308.9	525.8	509.1	1,217.3	580.8	483.0	1,155.1	609.2	451.8	1,080.5	642.0	403.1	964.0	728.8
580-4	599.9	1,434.7	566.2	556.5	1,330.8	627.5	515.6	1,232.9	693.0	480.2	1,148.4	731.9	426.9	1,020.8	830.0
600-4	613.8	1,467.9	602.6	569.1	1,361.0	668.7	538.2	1,287.0	710.4	502.1	1,200.6	748.2	447.3	1,069.7	845.6

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 44 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	56.2	134.1	54.2	52.2	124.7	59.9	49.6	118.3	65.4	46.4	110.7	69.0	41.2	98.5	78.7
60-1	60.7	144.9	50.9	56.9	135.8	55.4	54.5	130.0	57.6	51.4	122.8	60.5	46.7	111.4	68.5
65-1	66.8	159.4	58.8	62.4	149.1	64.2	59.7	142.6	66.9	56.5	134.8	70.2	50.9	121.4	79.9
70-1	71.9	171.6	62.6	67.1	160.2	68.4	64.2	153.4	71.1	60.6	144.6	74.8	54.8	130.9	84.8
70-2	73.0	174.4	67.6	68.4	163.2	73.8	65.3	155.9	76.9	61.6	147.0	80.9	55.5	132.4	92.1
75-1	81.9	195.6	72.8	76.8	183.3	79.5	73.3	175.0	83.0	69.1	164.9	87.3	62.3	148.7	99.1
80-1	89.9	214.7	82.6	84.1	200.7	90.5	80.1	191.2	94.8	75.2	179.5	99.9	67.7	161.7	113.2
95-2	98.4	235.0	92.2	91.8	219.1	101.7	87.4	208.7	110.5	81.9	195.5	116.7	73.5	175.5	132.3
95-1	98.8	235.8	93.3	92.2	220.0	102.6	87.7	209.5	107.5	82.2	196.2	113.5	73.8	176.2	128.7
100-2	110.0	262.7	106.4	102.3	244.3	117.6	97.1	231.8	129.7	90.9	217.0	136.8	80.7	192.7	156.1
100-1	110.4	263.5	103.0	102.6	245.0	113.8	97.4	232.6	125.5	91.0	217.3	132.8	81.3	194.0	150.8
110-2	116.8	278.8	103.2	109.2	260.7	112.9	104.2	248.9	117.7	98.4	234.9	123.7	88.9	212.3	140.3
120-2	122.4	292.2	111.4	114.6	273.5	121.6	109.4	261.1	127.0	102.9	245.6	133.7	92.7	221.4	152.1
125-2	127.9	305.3	119.3	119.3	284.8	130.9	113.7	271.4	137.0	107.2	255.9	143.9	96.4	230.1	163.6
135-2	142.2	339.5	132.6	132.6	316.6	146.0	126.4	301.8	152.5	118.4	282.7	160.9	106.5	254.2	182.3
140-2	151.3	361.2	145.4	140.9	336.5	160.2	133.8	319.5	174.8	125.3	299.2	184.4	112.2	267.9	209.3
145-2	157.8	376.6	143.2	147.6	352.4	156.4	140.7	336.0	163.1	132.7	316.8	171.6	119.5	285.4	195.2
160-2	166.4	397.3	153.0	155.2	370.5	167.7	148.0	353.2	175.3	139.5	333.1	184.4	125.7	300.2	209.5
165-2	173.4	414.0	162.6	161.9	386.5	178.2	154.0	367.6	186.5	144.8	345.7	196.8	130.4	311.2	223.4
175-2	182.3	435.1	171.8	170.0	405.9	188.6	161.7	386.1	207.8	152.1	363.2	218.6	136.2	325.1	249.2
190-2	188.1	449.1	173.7	175.5	419.1	189.6	167.7	400.4	197.7	158.1	377.6	208.0	142.5	340.3	236.5
195-2	199.5	476.3	191.2	185.3	442.4	211.3	176.2	420.7	230.1	165.3	394.5	243.1	147.8	352.9	276.9
200-2	205.9	491.5	190.9	192.6	459.8	208.6	183.5	438.1	217.9	172.7	412.4	229.6	155.6	371.4	261.5
205-2	227.9	544.1	198.7	212.9	508.2	218.2	203.4	485.6	227.5	191.2	456.4	239.6	171.9	410.5	271.9
210-2	231.9	553.7	215.6	215.5	514.6	238.7	204.4	487.9	258.0	191.0	455.9	272.0	170.1	406.2	308.7
220-2	240.6	574.5	211.1	224.6	536.1	232.2	214.2	511.5	242.4	201.0	479.8	255.6	180.9	431.8	289.3
235-2	259.6	619.7	237.3	241.9	577.6	261.4	229.6	548.0	274.5	215.4	514.2	288.8	192.9	460.6	327.5
250-2	276.9	661.1	259.5	257.5	614.8	286.7	244.4	583.4	306.7	228.6	545.8	323.2	204.0	487.0	366.9
275-2	293.5	700.7	274.9	273.5	653.0	303.0	259.2	618.7	330.9	242.0	577.8	348.9	215.5	514.4	396.0
280-2	291.8	696.7	257.1	272.5	650.4	282.6	259.8	620.3	295.2	243.8	582.0	311.4	219.3	523.4	352.5
285-2	310.5	741.2	288.3	287.9	687.4	319.8	266.7	636.8	353.4	248.7	593.8	372.7	221.9	529.7	421.3
300-2	318.3	759.9	290.6	296.6	708.1	320.4	282.2	673.7	335.5	264.1	630.4	354.7	236.7	565.0	402.0
315-3	335.4	800.6	313.7	311.9	744.6	346.8	296.0	706.6	374.7	276.9	661.0	394.9	247.0	589.8	448.5
315-2	336.8	804.0	312.6	313.1	747.6	345.6	297.2	709.4	369.8	278.0	663.7	389.7	248.1	592.4	442.4
335-2	367.0	876.2	341.1	340.4	812.8	378.4	323.6	772.5	411.4	302.0	720.9	434.0	268.6	641.2	492.6
350-3	381.6	910.9	350.6	355.3	848.3	387.0	337.8	806.4	405.6	316.5	755.6	427.2	283.4	676.6	484.1
350-2	378.3	903.1	340.1	352.5	841.5	375.1	334.6	798.9	394.0	314.0	749.7	414.6	281.4	671.9	469.9
360-3	389.8	930.6	340.5	364.1	869.2	374.2	346.3	826.6	392.3	326.0	778.2	412.0	293.5	700.7	466.3
375-3	399.7	954.2	374.4	371.6	887.3	414.1	352.7	842.0	438.9	329.9	787.5	462.6	294.5	703.0	525.0
400-3	426.4	1,017.9	393.8	397.1	948.1	434.3	377.5	901.3	455.0	354.1	845.5	479.1	316.6	755.9	544.9
415-3	456.7	1,090.3	431.7	424.2	1,012.7	477.7	402.2	960.2	516.7	376.5	898.9	543.9	335.9	801.8	617.6
430-3	466.4	1,113.5	431.9	434.6	1,037.5	475.9	413.5	987.2	498.3	386.6	923.0	526.6	346.5	827.2	597.3
450-3	481.3	1,149.1	452.8	446.4	1,065.8	502.2	419.4	1,001.4	552.8	392.1	936.1	582.2	348.6	832.2	661.9
465-3	487.5	1,163.8	460.7	453.6	1,082.8	508.7	430.7	1,028.4	533.4	403.3	962.8	562.3	360.8	861.3	638.0
475-3	506.4	1,208.9	474.4	470.6	1,123.6	524.5	446.4	1,065.7	566.8	417.5	996.6	597.6	372.4	889.0	678.4
485-3	515.3	1,230.1	476.9	480.1	1,146.1	525.3	455.6	1,087.8	551.6	427.5	1,020.5	580.7	382.6	913.5	659.3
500-3	527.1	1,258.5	492.4	489.2	1,168.0	545.4	458.5	1,094.7	602.3	427.9	1,021.5	635.9	382.8	913.9	719.4
510-3	532.0	1,270.1	499.1	495.1	1,181.9	550.7	470.4	1,123.1	583.1	440.7	1,052.1	614.5	393.5	939.4	699.0
550-4	566.7	1,352.8	535.3	526.9	1,257.9	592.1	500.0	1,193.7	621.2	467.7	1,116.7	654.5	417.5	996.7	742.4
580-4	620.9	1,482.4	576.6	575.9	1,374.8	639.7	533.5	1,273.6	706.8	497.4	1,187.6	745.4	443.8	1,059.5	842.5
600-4	635.4	1,516.9	613.9	589.1	1,406.5	681.9	556.9	1,329.6	724.8	521.4	1,244.8	759.9	463.1	1,105.5	862.4

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - IMP

Leaving Water Temperature = 45 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	57.2	136.4	54.6	53.2	126.8	60.5	50.4	120.3	66.0	47.2	112.6	69.7	42.1	100.3	79.3
60-1	61.8	147.4	51.2	57.9	138.2	55.8	55.5	132.4	58.0	52.5	125.1	60.9	47.6	113.6	69.0
65-1	68.0	162.2	59.2	63.7	151.9	64.7	60.9	145.3	67.3	57.5	137.3	70.7	51.9	123.8	80.4
70-1	73.2	174.7	63.0	68.4	163.2	68.8	65.5	156.3	71.6	61.8	147.3	75.3	56.0	133.5	85.4
70-2	74.5	177.6	68.1	69.7	166.2	74.3	66.5	158.7	77.4	62.8	149.8	81.5	56.6	135.0	92.7
75-1	83.5	199.2	73.3	78.2	186.6	80.1	74.6	178.0	83.6	70.4	167.9	88.0	63.5	151.4	99.9
80-1	91.7	218.6	83.2	85.7	204.4	91.2	81.5	194.5	95.5	76.6	182.8	100.7	69.1	164.8	114.1
95-2	100.1	238.8	93.0	93.4	222.8	102.4	89.0	212.3	111.4	83.5	199.1	117.7	75.0	178.9	133.3
95-1	100.5	239.6	94.1	93.7	223.6	103.5	89.3	213.0	108.3	83.8	199.8	114.4	75.3	179.5	129.7
100-2	112.1	267.4	107.2	104.2	248.6	118.6	98.9	235.9	130.7	92.5	220.7	137.8	82.3	196.4	157.3
100-1	112.3	267.9	103.9	104.4	249.1	114.9	99.1	236.3	126.7	92.7	221.0	133.7	82.7	197.4	151.9
110-2	119.0	283.9	104.0	111.2	265.3	113.7	106.2	253.3	118.6	100.4	239.4	124.6	90.8	216.5	141.3
120-2	124.7	297.5	112.2	116.7	278.5	122.5	111.3	265.5	128.0	104.9	250.2	134.8	94.5	225.5	153.3
125-2	130.2	310.6	120.3	121.6	290.1	131.9	115.8	276.1	138.0	109.2	260.5	144.9	98.3	234.5	164.9
135-2	144.6	345.0	133.8	135.0	321.9	147.0	128.7	306.9	153.6	120.7	288.0	162.2	108.6	259.1	183.8
140-2	154.2	367.8	146.5	143.6	342.7	161.4	136.0	324.5	176.5	127.6	304.4	185.8	114.3	272.6	211.1
145-2	160.4	382.7	144.4	150.2	358.3	157.5	143.4	342.2	164.4	135.3	322.7	173.0	121.8	290.6	196.4
160-2	169.4	404.2	154.1	158.1	377.1	169.0	150.8	359.7	176.7	142.4	339.6	185.7	128.1	305.5	210.8
165-2	176.3	420.7	163.9	164.8	393.1	179.5	157.0	374.4	188.0	147.6	352.1	198.3	133.0	317.2	224.9
175-2	185.8	443.2	173.1	173.3	413.5	190.0	164.8	393.1	209.4	155.0	369.8	220.3	138.8	331.1	251.1
190-2	191.4	456.6	174.8	178.9	426.9	191.0	170.9	407.8	199.3	161.0	384.1	209.6	145.4	346.8	238.4
195-2	203.0	484.3	192.7	188.8	450.5	212.9	179.7	428.6	232.0	168.0	400.8	245.4	150.5	359.1	278.9
200-2	209.6	500.0	192.2	196.1	467.8	210.1	186.9	445.8	219.6	176.1	420.2	231.5	158.4	377.8	263.4
205-2	231.8	553.1	200.4	216.7	517.0	219.9	207.1	494.1	229.3	194.8	464.7	241.5	175.5	418.6	273.7
210-2	235.9	562.8	217.6	219.2	522.9	240.9	207.8	495.8	260.6	194.3	463.5	274.5	173.3	413.3	311.3
220-2	244.8	584.0	212.8	228.7	545.5	233.9	218.1	520.2	244.4	204.8	488.7	257.6	184.4	439.9	291.5
235-2	264.3	630.5	239.0	246.3	587.7	263.4	233.6	557.4	276.9	219.3	523.3	291.3	196.7	469.2	330.1
250-2	281.7	671.9	261.8	261.9	624.7	289.4	248.5	592.7	309.6	232.4	554.4	326.3	207.5	494.9	370.3
275-2	298.5	712.2	277.4	278.4	664.1	305.7	263.8	629.3	334.1	246.3	587.6	352.4	219.3	523.2	400.0
280-2	297.3	709.3	259.0	277.6	662.3	284.8	264.8	631.6	297.5	248.5	592.7	313.9	223.5	533.1	355.2
285-2	315.9	753.6	291.0	292.9	698.8	323.0	271.3	647.3	357.0	253.6	604.9	375.7	225.9	538.9	425.2
300-2	324.0	772.9	293.2	301.9	720.2	323.5	287.2	685.1	338.9	269.1	642.0	357.5	241.2	575.5	405.1
315-3	341.2	813.9	316.5	317.3	756.9	350.1	301.1	718.3	378.4	281.9	672.5	398.4	251.9	600.8	452.0
315-2	342.5	817.1	315.4	318.5	759.8	348.9	302.3	721.1	373.4	283.0	675.1	393.2	252.8	603.2	446.1
335-2	373.3	890.6	344.3	346.3	826.2	382.2	329.4	785.7	415.3	307.3	733.2	438.3	273.4	652.2	497.6
350-3	388.3	926.2	353.7	361.5	862.5	390.7	343.7	819.9	409.6	322.2	768.6	431.2	288.5	688.2	488.9
350-2	384.8	918.0	343.1	358.5	855.3	378.7	340.8	813.1	397.1	319.8	762.8	417.8	286.7	683.9	473.4
360-3	396.9	946.7	343.3	370.6	884.1	377.4	352.9	841.8	395.5	332.3	792.8	415.4	299.3	713.9	470.0
375-3	406.7	970.3	377.9	378.2	902.3	418.2	358.9	856.1	443.4	335.7	800.7	467.3	299.5	714.6	530.2
400-3	433.8	1,034.8	397.3	404.0	963.6	438.5	384.0	916.1	459.6	360.1	859.0	483.8	322.5	769.3	548.8
415-3	464.5	1,108.1	435.6	431.5	1,029.4	482.3	408.9	975.4	521.7	383.9	915.9	548.3	342.6	817.2	622.4
430-3	475.0	1,133.0	435.0	442.5	1,055.7	479.5	421.0	1,004.2	502.1	394.0	939.8	530.8	353.4	843.0	601.9
450-3	489.8	1,168.4	457.0	454.6	1,084.4	506.4	427.1	1,019.0	557.1	398.5	950.6	587.7	354.4	845.5	667.9
465-3	496.0	1,183.3	464.9	461.5	1,100.9	513.6	438.3	1,045.6	538.8	411.0	980.6	566.7	367.9	877.7	643.0
475-3	515.5	1,229.7	478.0	479.1	1,142.9	528.8	454.3	1,083.7	571.5	424.9	1,013.7	602.9	379.2	904.5	684.9
485-3	525.0	1,252.5	480.4	489.2	1,166.9	529.5	463.6	1,106.0	556.6	435.0	1,037.8	585.9	390.0	930.4	664.4
500-3	536.5	1,279.8	496.9	497.9	1,187.8	550.8	467.2	1,114.4	607.2	436.2	1,040.6	641.0	389.8	930.0	725.2
510-3	541.0	1,290.6	503.4	503.4	1,200.9	555.9	478.1	1,140.6	588.6	448.0	1,068.7	620.4	400.9	956.3	704.1
550-4	576.8	1,375.9	540.3	536.3	1,279.2	597.9	509.6	1,215.6	626.3	476.8	1,137.5	659.8	425.8	1,015.8	748.2
580-4	631.8	1,507.2	582.0	585.9	1,397.6	646.0	542.7	1,294.6	713.9	507.2	1,209.8	751.3	451.8	1,077.8	850.4
600-4	646.3	1,541.9	619.6	599.2	1,429.4	688.6	566.4	1,351.3	732.0	530.7	1,265.9	767.5	471.3	1,124.4	871.1

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 46 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	58.2	138.6	55.1	54.1	128.9	61.1	51.3	122.3	66.7	48.0	114.4	70.4	42.8	102.1	79.9
60-1	63.0	150.1	51.6	59.0	140.7	56.2	56.5	134.7	58.4	53.5	127.5	61.4	48.5	115.7	69.4
65-1	69.3	165.2	59.6	64.9	154.8	65.1	62.1	148.0	67.8	58.6	139.8	71.2	53.0	126.2	81.0
70-1	74.6	177.7	63.4	69.8	166.3	69.3	66.8	159.1	72.1	63.0	150.2	75.8	57.1	136.1	86.0
70-2	75.9	180.8	68.5	70.9	169.0	74.8	67.8	161.7	78.0	64.0	152.6	82.1	57.7	137.6	93.4
75-1	85.0	202.6	73.8	79.6	189.8	80.7	76.0	181.3	84.3	71.7	171.0	88.7	64.6	154.1	100.6
80-1	93.3	222.4	83.7	87.2	207.9	91.9	83.1	198.0	96.3	78.1	186.2	101.5	70.4	167.8	115.0
95-2	102.0	243.1	93.7	95.1	226.6	103.4	90.6	215.9	112.5	85.1	202.8	118.6	76.4	182.2	134.4
95-1	102.3	244.0	94.8	95.5	227.6	104.4	90.9	216.6	109.4	85.4	203.5	115.3	76.7	182.9	130.7
100-2	114.1	271.9	108.1	106.1	252.8	119.6	100.6	239.9	131.9	94.2	224.5	139.2	84.0	200.1	158.5
100-1	114.2	272.3	104.9	106.2	253.2	116.0	100.8	240.2	128.0	94.3	224.8	135.1	84.2	200.8	153.5
110-2	121.2	288.9	104.7	113.3	270.0	114.6	108.2	258.0	119.6	102.4	244.0	125.4	92.5	220.4	142.2
120-2	126.9	302.6	112.9	118.8	283.2	123.4	113.4	270.3	129.0	106.9	254.9	135.9	96.3	229.4	154.4
125-2	132.4	315.5	121.3	123.7	295.0	132.9	118.0	281.2	139.1	111.4	265.5	146.1	100.1	238.7	166.2
135-2	147.3	351.1	134.8	137.4	327.5	148.4	131.0	312.2	155.1	123.1	293.4	163.5	110.7	263.9	185.2
140-2	156.9	374.1	147.5	146.2	348.4	162.6	138.6	330.5	177.9	130.1	310.1	187.3	116.2	277.1	213.2
145-2	163.4	389.6	145.4	153.0	364.8	158.7	146.2	348.5	165.7	137.7	328.2	174.3	124.2	296.0	198.0
160-2	172.5	411.3	155.1	161.1	384.0	170.3	153.5	366.0	178.1	145.0	345.6	186.9	130.6	311.3	212.4
165-2	179.6	428.2	165.1	167.9	400.1	180.9	160.0	381.4	189.5	150.2	358.0	199.8	135.5	323.0	226.4
175-2	189.3	451.2	174.3	176.6	421.0	191.5	167.7	399.8	211.0	157.8	376.2	222.0	141.6	337.5	253.1
190-2	195.0	464.9	176.0	182.3	434.6	192.5	173.9	414.5	200.7	164.1	391.2	211.3	148.1	353.1	240.2
195-2	206.6	492.5	194.4	192.3	458.5	214.6	182.9	436.0	233.7	171.2	408.0	247.5	153.6	366.1	281.1
200-2	213.4	508.8	193.5	199.6	475.8	211.8	190.5	454.1	221.3	179.3	427.5	233.2	161.5	385.0	265.5
205-2	236.0	562.7	201.9	220.7	526.2	221.6	210.8	502.4	231.4	198.5	473.2	243.4	179.0	426.8	275.5
210-2	240.1	572.3	219.6	223.1	531.7	243.3	211.4	504.0	263.2	198.1	472.2	276.7	176.7	421.2	313.7
220-2	249.4	594.6	214.4	233.0	555.3	235.7	221.9	529.0	246.9	208.7	497.5	259.7	187.9	447.9	293.8
235-2	269.0	641.3	240.9	250.7	597.7	265.6	238.1	567.6	279.1	223.5	532.9	293.6	200.5	478.1	332.7
250-2	286.6	683.1	264.1	266.4	635.1	292.2	253.1	603.2	312.2	236.8	564.6	329.0	211.6	504.3	373.2
275-2	303.7	724.0	280.0	283.1	674.9	308.7	268.2	639.4	337.3	250.4	597.0	355.8	222.9	531.4	403.8
280-2	302.9	722.1	260.9	282.8	674.2	287.0	269.8	643.1	299.9	253.0	603.0	316.3	227.6	542.6	357.9
285-2	321.3	765.8	293.6	297.9	710.1	326.1	275.9	657.7	360.5	258.3	615.8	378.5	229.7	547.6	429.3
300-2	329.5	785.4	295.8	306.9	731.7	326.5	292.0	696.1	342.2	274.0	653.2	360.2	245.7	585.6	408.1
315-3	347.2	827.6	319.4	322.8	769.5	353.6	306.3	730.2	382.2	287.4	685.0	401.6	256.9	612.3	455.5
315-2	348.6	830.9	318.4	324.1	772.6	352.3	307.5	733.1	377.2	288.5	687.8	396.4	257.9	614.7	449.6
335-2	379.8	905.5	347.5	352.4	839.9	385.9	335.0	798.6	419.5	312.5	744.9	442.5	277.9	662.5	502.3
350-3	395.0	941.6	356.9	367.8	876.7	394.5	349.5	833.2	413.7	327.7	781.2	435.6	293.3	699.2	493.6
350-2	391.6	933.4	346.2	364.8	869.5	382.4	346.9	827.0	400.8	325.5	775.8	421.8	291.7	695.4	478.1
360-3	403.7	962.4	346.3	377.0	898.7	381.0	359.4	856.7	398.6	338.5	806.9	418.6	304.8	726.6	473.5
375-3	413.6	986.0	381.3	384.5	916.6	422.1	364.8	869.6	447.6	341.4	813.8	471.7	304.9	726.7	534.9
400-3	441.4	1,052.1	400.8	411.2	980.2	442.2	391.0	932.0	463.6	366.8	874.3	487.9	328.7	783.7	553.1
415-3	472.6	1,126.7	439.6	439.0	1,046.5	487.0	416.4	992.7	526.1	390.8	931.5	552.3	348.7	831.3	626.9
430-3	483.5	1,152.5	438.7	450.4	1,073.7	483.8	428.5	1,021.4	506.8	401.6	957.3	535.1	360.3	858.8	606.6
450-3	498.2	1,187.7	461.2	463.3	1,104.5	510.5	434.8	1,036.4	562.3	405.5	966.6	593.7	361.5	861.7	673.0
465-3	504.6	1,202.9	469.1	469.4	1,119.0	518.5	445.7	1,062.5	544.1	419.0	998.9	571.2	375.2	894.5	648.1
475-3	524.6	1,250.5	482.4	487.5	1,162.2	534.0	462.4	1,102.2	577.4	432.3	1,030.4	608.9	385.6	919.1	691.4
485-3	534.3	1,273.6	483.9	497.8	1,186.6	533.5	472.5	1,126.3	561.1	443.5	1,057.1	590.6	397.7	948.1	669.6
500-3	545.6	1,300.6	501.4	506.3	1,206.9	556.0	476.2	1,135.0	612.1	444.8	1,060.2	646.1	396.7	945.7	732.4
510-3	550.6	1,312.5	508.0	512.7	1,222.1	560.5	487.0	1,161.0	593.5	456.6	1,088.5	625.4	408.8	974.6	709.6
550-4	586.5	1,398.0	545.1	545.2	1,299.7	603.5	519.3	1,237.8	631.3	486.0	1,158.4	665.0	434.0	1,034.6	753.8
580-4	642.5	1,531.7	587.3	595.7	1,420.1	652.2	551.8	1,315.4	720.9	516.6	1,231.5	757.1	459.5	1,095.2	858.5
600-4	657.6	1,567.5	625.5	609.6	1,453.1	695.4	576.8	1,375.0	738.3	539.6	1,286.2	775.0	479.2	1,142.2	879.4

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Performance - 60 Hz - IMP

Leaving Water Temperature = 48 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	60.2	143.3	56.2	56.0	133.2	62.2	53.1	126.3	68.0	49.6	118.2	71.8	44.3	105.5	81.5
60-1	65.3	155.5	52.2	61.3	145.9	57.0	58.7	139.6	59.3	55.5	132.2	62.2	50.5	120.1	70.4
65-1	71.8	171.0	60.4	67.3	160.3	65.9	64.4	153.4	68.8	60.9	144.9	72.3	55.0	130.9	82.1
70-1	77.4	184.3	64.3	72.4	172.3	70.2	69.3	165.0	73.1	65.5	155.9	76.9	59.3	141.1	87.2
70-2	78.7	187.3	69.4	73.6	175.2	76.0	70.3	167.3	79.2	66.5	158.2	83.3	60.1	143.0	94.6
75-1	88.2	209.9	74.8	82.6	196.7	81.9	78.9	187.8	85.6	74.4	177.1	90.0	67.3	160.2	102.0
80-1	96.6	229.9	85.2	90.3	214.9	93.6	86.2	205.1	97.8	81.0	192.8	103.1	73.1	174.0	116.7
95-2	105.7	251.7	95.1	98.4	234.3	105.2	93.8	223.3	114.5	88.2	210.1	120.4	79.2	188.5	136.8
95-1	106.1	252.6	96.1	99.0	235.7	106.0	94.1	224.1	111.4	88.5	210.8	117.1	79.7	189.6	132.7
100-2	118.0	281.0	110.0	109.7	261.2	121.9	104.1	247.8	134.5	97.4	231.9	141.9	87.0	207.1	161.2
100-1	118.2	281.4	106.8	109.9	261.6	118.3	104.2	248.1	130.5	97.6	232.4	137.5	87.3	207.8	156.1
110-2	125.8	299.4	106.1	117.5	279.8	116.3	112.3	267.2	121.4	106.2	252.9	127.2	96.1	228.7	144.4
120-2	131.8	313.6	114.5	123.0	292.8	125.6	117.6	280.0	131.0	110.9	263.9	137.9	100.0	238.1	156.8
125-2	137.5	327.2	123.1	128.5	305.9	134.9	122.3	291.2	141.3	115.5	274.8	148.3	104.0	247.6	168.8
135-2	152.8	363.6	136.7	142.2	338.5	151.0	135.6	322.7	157.9	127.6	303.8	166.0	114.7	273.0	188.5
140-2	162.4	386.7	150.1	151.3	360.1	165.7	143.8	342.3	180.6	134.9	321.2	190.2	120.6	287.0	216.8
145-2	169.5	403.5	147.4	158.7	377.8	161.1	151.5	360.7	168.2	143.0	340.4	177.1	128.8	306.7	201.0
160-2	179.1	426.3	157.3	167.1	397.7	172.8	159.3	379.3	180.9	150.5	358.4	189.8	135.5	322.6	215.6
165-2	186.3	443.5	167.4	174.1	414.4	183.6	165.8	394.7	192.4	156.1	371.5	203.0	140.8	335.2	229.9
175-2	196.1	466.8	177.0	182.9	435.5	194.6	174.1	414.6	214.3	163.2	388.6	226.4	146.9	349.7	256.8
190-2	202.3	481.5	178.4	189.0	449.9	195.3	180.6	429.9	203.9	170.2	405.1	214.5	153.9	366.3	243.5
195-2	213.9	509.2	197.9	199.2	474.2	218.4	189.4	450.9	238.1	177.6	422.9	251.3	159.4	379.4	285.3
200-2	221.6	527.6	196.3	206.6	491.8	215.6	197.5	470.3	224.7	186.2	443.2	236.9	167.6	399.0	269.5
205-2	244.8	582.8	204.8	228.9	545.0	224.9	218.1	519.2	235.7	205.9	490.1	247.2	186.0	442.7	279.4
210-2	248.4	591.3	223.7	230.7	549.3	248.1	219.1	521.5	267.8	205.4	489.0	281.0	183.3	436.4	318.7
220-2	258.6	615.6	217.4	241.5	575.0	239.3	229.9	547.2	251.2	216.5	515.5	263.8	195.1	464.4	298.3
235-2	278.3	662.6	245.2	259.3	617.4	270.7	246.8	587.4	283.7	231.7	551.6	298.4	207.9	494.9	338.1
250-2	296.4	705.7	268.9	275.5	655.9	297.8	262.5	624.9	317.1	245.8	585.1	334.1	219.6	522.9	378.7
275-2	314.1	747.8	285.1	292.8	697.1	314.7	277.4	660.3	344.0	259.0	616.5	362.9	231.7	551.7	410.1
280-2	313.7	746.9	265.0	292.9	697.3	291.8	279.4	665.1	305.1	262.7	625.3	321.3	236.5	563.0	363.5
285-2	332.3	791.1	299.1	308.1	733.4	332.4	285.4	679.3	367.5	267.4	636.7	385.5	237.6	565.6	437.6
300-2	340.9	811.5	301.1	317.5	755.9	332.8	302.0	718.9	349.0	284.6	677.5	365.9	255.4	607.9	414.5
315-3	359.2	855.1	325.3	333.9	794.9	360.4	317.4	755.7	388.8	298.0	709.4	408.0	266.4	634.2	462.9
315-2	360.6	858.5	324.2	335.2	798.1	359.2	318.6	758.5	383.7	299.2	712.2	402.7	267.5	636.7	456.8
335-2	392.9	935.4	354.0	364.4	867.5	393.5	346.5	824.9	427.9	323.2	769.4	451.4	288.9	687.7	510.1
350-3	408.7	972.9	363.4	380.4	905.6	402.1	362.4	862.8	420.7	340.0	809.4	442.8	304.7	725.3	501.6
350-2	405.1	964.4	352.5	377.3	898.1	389.7	359.0	854.6	408.3	336.9	802.0	429.7	302.1	719.2	486.6
360-3	418.5	996.3	351.6	390.8	930.3	387.3	372.8	887.6	404.9	351.3	836.4	425.2	315.5	751.0	482.7
375-3	427.9	1,018.6	388.2	397.7	946.8	430.3	377.3	898.2	456.6	354.6	844.1	479.2	316.9	754.4	543.2
400-3	456.8	1,087.4	407.8	426.6	1,015.6	449.2	405.7	965.8	470.9	380.8	906.4	495.6	341.3	812.6	561.5
415-3	489.0	1,164.2	447.7	454.1	1,081.1	496.5	432.2	1,029.0	534.5	404.3	962.5	563.1	360.7	858.8	639.2
430-3	500.3	1,190.9	446.5	466.0	1,109.3	493.1	443.3	1,055.2	516.9	416.5	991.5	543.3	373.9	890.0	615.7
450-3	515.6	1,227.3	469.8	480.0	1,142.8	518.8	449.6	1,070.4	573.4	419.3	998.3	605.4	375.3	893.5	683.0
465-3	522.2	1,243.2	477.6	486.7	1,158.7	527.1	462.3	1,100.6	553.3	434.2	1,033.7	580.8	388.8	925.5	658.9
475-3	542.7	1,292.0	491.2	504.3	1,200.4	544.3	478.1	1,138.2	588.8	447.2	1,064.5	621.1	400.3	953.0	702.6
485-3	552.7	1,315.8	492.5	514.8	1,225.6	543.6	489.7	1,165.8	569.8	459.8	1,094.6	599.9	412.8	982.7	679.6
500-3	564.7	1,344.3	510.7	523.9	1,247.1	566.9	493.2	1,174.1	622.4	460.6	1,096.6	657.1	410.3	976.8	746.6
510-3	570.0	1,357.0	516.7	531.9	1,266.2	569.2	505.3	1,202.8	602.9	473.7	1,127.7	635.0	424.3	1,010.0	720.1
550-4	606.8	1,444.5	555.1	563.9	1,342.5	615.3	537.7	1,280.1	642.4	503.3	1,198.3	676.9	449.6	1,070.3	767.3
580-4	664.7	1,582.3	598.2	616.1	1,466.8	664.9	570.7	1,358.7	735.0	534.9	1,273.3	771.0	475.2	1,131.3	875.2
600-4	678.9	1,616.1	639.0	630.5	1,501.0	709.2	598.6	1,425.1	750.1	558.1	1,328.7	790.6	498.1	1,185.7	893.1

Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

Leaving Water Temperature = 50 °F

Model (APSa)	Ambient Temperature (°F)														
	85			95			105			115			125		
	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)	T. CAP (TR)	WFR (GPM)	PI (kW)
50-1	62.3	148.1	57.2	57.9	137.6	63.5	54.9	130.5	69.4	51.5	122.4	72.9	46.0	109.5	82.7
60-1	67.8	161.3	52.9	63.6	151.3	57.7	60.9	144.7	60.2	57.7	137.3	63.1	52.4	124.7	71.3
65-1	74.6	177.3	61.3	69.9	166.2	66.9	66.8	158.8	69.9	63.1	150.1	73.5	57.1	135.8	83.4
70-1	80.3	190.8	65.1	75.1	178.6	71.3	71.8	170.7	74.2	68.0	161.6	78.0	61.5	146.3	88.5
70-2	81.5	193.9	70.4	76.3	181.4	77.1	73.0	173.5	80.5	68.9	163.8	84.6	62.4	148.4	95.9
75-1	91.4	217.3	75.8	85.6	203.4	83.2	81.8	194.5	86.9	77.2	183.5	91.4	69.9	166.2	103.3
80-1	100.1	238.1	86.4	93.6	222.5	95.1	89.1	211.9	99.6	84.0	199.8	104.7	75.8	180.3	118.5
95-2	109.4	260.2	96.7	102.0	242.6	106.8	97.2	231.2	116.3	91.5	217.6	122.3	82.0	195.0	139.1
95-1	109.8	261.1	97.8	102.4	243.5	107.9	97.6	232.0	113.1	91.8	218.3	118.9	82.6	196.4	134.7
100-2	122.1	290.3	112.0	113.5	269.8	124.2	107.6	255.9	137.2	100.8	239.6	144.6	90.1	214.2	164.0
100-1	122.2	290.7	108.7	113.6	270.2	120.6	107.8	256.4	133.0	101.3	240.9	139.7	90.6	215.4	158.4
110-2	130.3	309.8	107.5	121.9	289.8	118.0	116.6	277.4	123.1	110.3	262.2	129.2	99.6	236.9	146.6
120-2	136.5	324.6	116.1	127.5	303.2	127.6	122.0	290.2	133.1	115.0	273.4	140.1	103.8	246.9	159.0
125-2	142.4	338.6	124.8	133.0	316.3	137.1	127.0	301.9	143.5	119.9	285.2	150.7	107.9	256.5	171.3
135-2	158.1	375.9	139.0	147.4	350.6	153.3	140.6	334.2	160.4	132.4	314.7	168.6	118.7	282.3	191.7
140-2	168.0	399.5	152.7	156.4	372.0	168.8	148.7	353.7	184.1	139.5	331.8	193.9	125.1	297.4	219.9
145-2	175.8	418.0	149.4	164.6	391.4	163.5	157.1	373.6	170.8	148.2	352.3	179.8	134.0	318.7	203.7
160-2	185.4	440.9	159.8	173.3	412.1	175.5	165.1	392.6	183.7	156.1	371.0	192.7	140.7	334.7	219.0
165-2	192.8	458.5	170.1	180.1	428.3	186.9	171.9	408.8	195.4	161.7	384.5	206.1	146.1	347.3	233.4
175-2	203.0	482.6	179.9	189.3	450.2	198.1	180.3	428.8	217.9	169.5	403.0	230.0	152.6	362.9	260.8
190-2	209.9	499.0	180.8	196.0	466.1	198.2	187.1	444.8	207.0	176.9	420.6	217.5	160.2	380.8	246.8
195-2	221.4	526.3	201.4	206.4	490.8	222.1	196.3	466.8	242.2	184.5	438.6	255.2	165.6	393.8	289.7
200-2	229.5	545.8	199.4	214.5	510.0	218.9	205.0	487.4	228.3	193.0	458.9	240.5	174.3	414.5	273.1
205-2	253.8	603.5	207.7	236.9	563.3	228.9	226.2	537.9	239.4	213.6	507.8	251.1	193.0	458.8	283.7
210-2	256.9	610.8	227.8	238.6	567.2	252.9	227.1	540.0	272.0	212.4	504.9	286.6	189.6	450.7	324.7
220-2	267.5	636.0	221.3	249.8	593.9	243.8	238.3	566.5	255.1	224.5	533.8	267.8	202.4	481.2	302.8
235-2	287.9	684.5	249.6	268.2	637.6	275.9	255.2	606.7	289.1	239.6	569.7	304.2	215.0	511.3	344.4
250-2	306.6	729.0	273.8	285.0	677.7	303.3	271.6	645.7	323.1	254.2	604.4	340.4	227.1	540.1	386.0
275-2	324.8	772.4	290.4	302.8	719.9	320.8	286.8	681.8	350.9	268.6	638.6	368.8	240.1	570.9	416.7
280-2	324.7	772.1	269.3	303.1	720.7	296.9	289.1	687.4	310.6	272.3	647.5	326.3	245.3	583.4	369.0
285-2	343.7	817.2	304.7	318.5	757.4	338.9	296.2	704.3	373.4	276.5	657.4	393.1	246.5	586.0	444.7
300-2	352.6	838.4	306.6	329.2	782.8	338.2	313.2	744.7	354.7	294.7	700.7	372.2	264.5	628.9	421.6
315-3	371.6	883.5	331.3	345.3	821.1	367.4	329.0	782.3	394.8	308.0	732.4	416.1	275.6	655.3	471.5
315-2	373.0	887.0	330.1	346.7	824.3	366.1	330.3	785.4	389.7	309.3	735.3	410.6	276.7	657.8	465.3
335-2	406.3	966.1	360.6	376.8	895.8	401.2	358.2	851.8	436.4	334.1	794.5	460.4	299.4	711.9	518.5
350-3	422.8	1,005.3	370.1	394.2	937.3	408.9	375.6	893.0	427.5	352.3	837.7	450.0	316.1	751.6	509.1
350-2	419.0	996.2	358.9	390.3	927.9	397.0	372.4	885.5	414.8	349.6	831.3	436.4	313.6	745.8	494.0
360-3	433.7	1,031.2	356.9	405.0	962.9	393.4	386.4	918.7	411.5	364.1	865.8	432.2	327.2	778.1	490.6
375-3	442.6	1,052.4	395.4	411.3	977.9	438.7	391.5	930.8	463.9	367.2	873.0	487.6	328.1	780.2	552.7
400-3	473.9	1,126.8	413.9	441.6	1,050.0	457.3	419.9	998.4	479.7	394.0	936.7	505.0	353.1	839.7	572.0
415-3	505.7	1,202.5	455.9	469.7	1,116.9	505.7	447.2	1,063.3	544.5	418.0	993.9	574.2	374.8	891.2	649.1
430-3	517.4	1,230.3	454.5	482.0	1,146.1	502.1	458.5	1,090.1	526.6	432.2	1,027.7	551.8	388.0	922.6	624.9
450-3	533.4	1,268.2	478.6	496.4	1,180.3	528.9	464.9	1,105.4	584.8	433.8	1,031.5	616.6	388.2	923.1	695.9
465-3	540.3	1,284.7	486.3	504.3	1,199.2	535.5	479.1	1,139.0	562.2	448.9	1,067.4	592.3	402.3	956.6	670.6
475-3	561.3	1,334.7	500.2	521.4	1,239.8	554.8	494.4	1,175.6	600.5	463.1	1,101.2	631.7	415.1	987.1	713.4
485-3	571.8	1,359.6	501.3	532.5	1,266.0	554.1	506.4	1,204.0	581.0	475.3	1,130.1	611.6	428.8	1,019.5	690.0
500-3	584.1	1,388.8	520.2	541.7	1,288.1	577.9	509.9	1,212.3	634.6	476.1	1,132.0	669.9	425.0	1,010.5	759.3
510-3	591.2	1,405.7	524.4	550.4	1,308.6	579.6	522.8	1,243.1	614.2	490.0	1,165.0	647.1	438.7	1,043.0	734.0
550-4	627.5	1,492.1	565.3	584.8	1,390.5	625.2	555.9	1,321.7	655.1	520.3	1,237.0	690.3	465.8	1,107.5	780.4
580-4	687.4	1,634.4	609.3	637.0	1,514.7	677.9	592.4	1,408.5	746.7	553.0	1,314.8	786.3	492.9	1,172.1	889.5
600-4	700.8	1,666.2	653.1	651.9	1,550.0	723.2	619.3	1,472.5	764.3	577.1	1,372.1	806.4	516.3	1,227.6	907.9

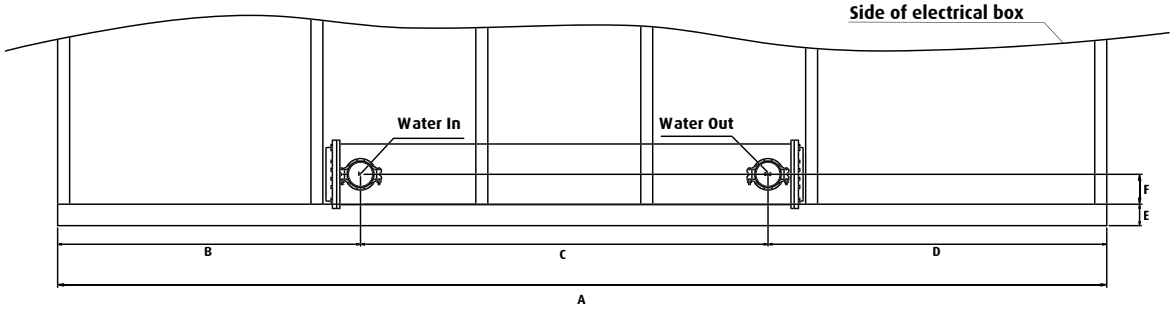
Legend

T. CAP : Total Capacity
WFR : Water Flow Rate
PI : Compressor Power Input

Note

- Ratings based on 10°F cooler water temperature difference between inlet and outlet water temperature
- Power input in this page should not be used for cable or breaker selection. MCA and MOP values in the electrical data section should be referred for the same

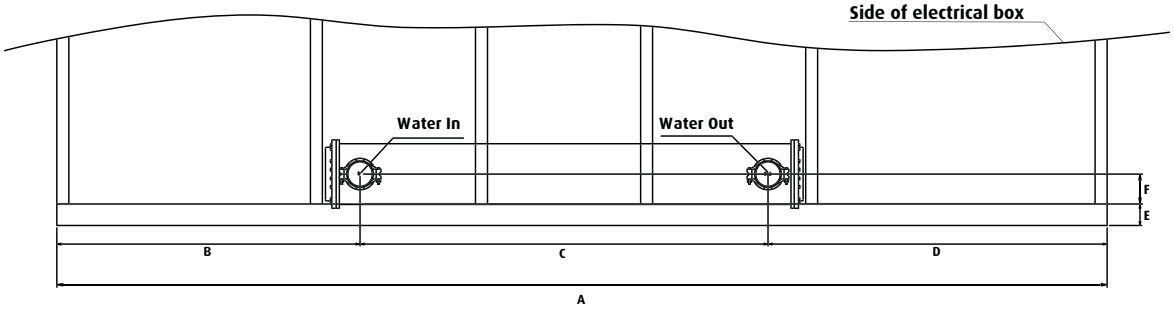
Cooler Connections



MODEL (APSa)	A		B		C		D		E		F		Water In Connection Diameter		Water Out Connection Diameter	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
50-1	3295	[129.7]	680	[26.8]	2280	[89.8]	335	[13.2]	100	[3.9]	185	[7.3]	125	[4.9]	125	[4.9]
60-1	3160	[124.4]	570	[22.4]	2280	[89.8]	310	[12.2]	140	[5.5]	165	[6.5]	125	[4.9]	125	[4.9]
65-1	3160	[124.4]	570	[22.4]	2280	[89.8]	310	[12.2]	140	[5.5]	165	[6.5]	125	[4.9]	125	[4.9]
70-1	3160	[124.4]	570	[22.4]	2280	[89.8]	310	[12.2]	140	[5.5]	165	[6.5]	125	[4.9]	125	[4.9]
70-2	3360	[132.3]	770	[30.3]	2280	[89.8]	310	[12.2]	140	[5.5]	165	[6.5]	125	[4.9]	125	[4.9]
75-1	3160	[124.4]	580	[22.4]	2250	[89.8]	330	[13.0]	140	[5.5]	190	[7.3]	150	[5.9]	150	[5.9]
80-1	3160	[124.4]	580	[22.4]	2250	[89.8]	330	[13.0]	140	[5.5]	190	[7.3]	150	[5.9]	150	[5.9]
95-2	3360	[132.3]	780	[30.7]	2250	[88.6]	330	[13.0]	140	[5.5]	190	[7.5]	150	[5.9]	150	[5.9]
95-1	3160	[124.4]	580	[22.4]	2250	[89.8]	330	[13.0]	140	[5.5]	190	[7.5]	150	[5.9]	150	[5.9]
100-1	3160	[124.4]	580	[22.4]	2250	[89.8]	330	[13.0]	140	[5.5]	190	[7.5]	150	[5.9]	150	[5.9]
100-2	3360	[132.3]	780	[30.7]	2250	[88.6]	330	[13.0]	140	[5.5]	190	[7.5]	150	[5.9]	150	[5.9]
110-2	4740	[186.6]	2110	[83.1]	2250	[88.6]	380	[15.0]	140	[5.5]	190	[7.5]	150	[5.9]	150	[5.9]
120-2	4740	[186.6]	2110	[83.1]	2250	[88.6]	380	[15.0]	140	[5.5]	190	[7.5]	150	[5.9]	150	[5.9]
125-2	4740	[186.6]	2110	[83.1]	2250	[88.6]	380	[15.0]	140	[5.5]	190	[7.5]	150	[5.9]	150	[5.9]
135-2	6120	[240.9]	1800	[70.9]	2200	[86.6]	2120	[83.5]	180	[7.1]	170	[6.7]	200	[7.9]	200	[7.9]
140-2	5140	[202.4]	1800	[70.9]	2200	[86.6]	1140	[44.9]	140	[5.5]	170	[6.7]	200	[7.9]	200	[7.9]
145-2	5140	[202.4]	1800	[70.9]	2200	[86.6]	1140	[44.9]	140	[5.5]	170	[6.7]	200	[7.9]	200	[7.9]
160-2	6120	[240.9]	1800	[70.9]	2200	[86.6]	2120	[83.5]	180	[7.1]	170	[6.7]	200	[7.9]	200	[7.9]
165-2	6120	[240.9]	1800	[70.9]	2200	[86.6]	2120	[83.5]	180	[7.1]	170	[6.7]	200	[7.9]	200	[7.9]
175-2	6120	[240.9]	1800	[70.9]	2200	[86.6]	2120	[83.5]	180	[7.1]	170	[6.7]	200	[7.9]	200	[7.9]
190-2	7300	[287.4]	2980	[117.3]	2200	[86.6]	2120	[83.5]	180	[7.1]	170	[6.7]	200	[7.9]	200	[7.9]
195-2	6120	[240.9]	1600	[63.0]	2500	[98.4]	2020	[79.5]	180	[7.1]	170	[6.7]	200	[7.9]	200	[7.9]
200-2	7300	[287.4]	2680	[105.5]	2500	[98.4]	2120	[83.5]	180	[7.1]	170	[6.7]	200	[7.9]	200	[7.9]
205-2	7500	[295.3]	1750	[68.9]	2900	[114.2]	2850	[112.2]	180	[7.1]	170	[6.7]	150	[5.9]	150	[5.9]

Note

- Water connections are victaulic coupling
- Water connections are shipped loose & tied inside chiller enclosure



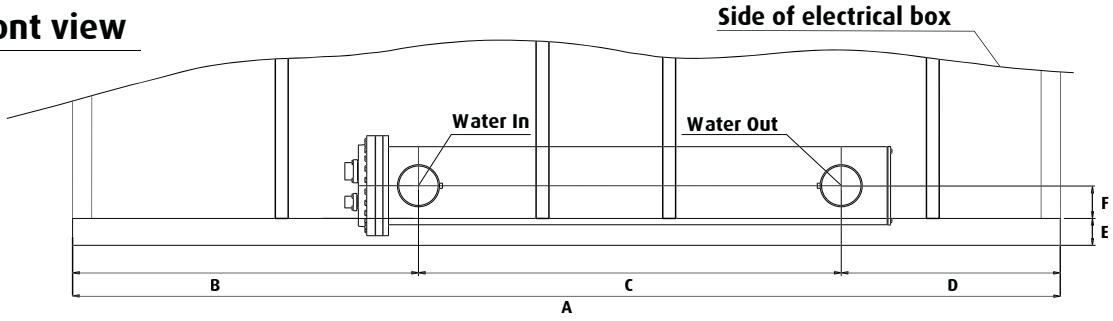
MODEL (APSa)	A		B		C		D		E		F		Water In Connection Diameter		Water Out Connection Diameter	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
210-2	6520	[256.7]	1750	[68.9]	2900	[114.2]	1870	[73.6]	180	[7.1]	170	[6.7]	150	[5.9]	150	[5.9]
220-2	7500	[295.3]	1750	[68.9]	2900	[114.2]	2850	[112.2]	180	[7.1]	170	[6.7]	150	[5.9]	150	[5.9]
235-2	7700	[303.1]	1850	[72.8]	2900	[114.2]	2950	[116.1]	180	[7.1]	170	[6.7]	150	[5.9]	150	[5.9]
250-2	7700	[303.1]	1850	[72.8]	2900	[114.2]	2950	[116.1]	180	[7.1]	170	[6.7]	150	[5.9]	150	[5.9]
275-2	7700	[303.1]	1700	[66.9]	3010	[118.5]	2990	[117.7]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
280-2	8780	[345.7]	2600	[102.4]	3010	[118.5]	3170	[124.8]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
285-2	7700	[303.1]	1700	[66.9]	3010	[118.5]	2990	[117.7]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
300-2	8780	[345.7]	2535	[99.8]	3410	[134.3]	2835	[111.6]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
315-2	8780	[345.7]	2635	[103.7]	3410	[134.3]	2735	[107.6]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
315-3	8980	[353.5]	2735	[107.7]	3410	[134.3]	2835	[111.6]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
335-2	8780	[345.7]	2535	[99.8]	3410	[134.3]	2835	[111.6]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
350-2	10160	[400.0]	3025	[119.1]	3610	[142.1]	3525	[138.8]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
350-3	10560	[415.7]	4025	[158.5]	3610	[142.1]	2925	[115.2]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
360-3	11540	[454.3]	3025	[119.1]	3610	[142.1]	4905	[193.1]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
375-3	10160	[400.0]	3025	[119.1]	3610	[142.1]	6285	[247.4]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
400-3	11540	[454.3]	3025	[119.1]	3610	[142.1]	4905	[193.1]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
415-3	11540	[454.3]	3025	[119.1]	3610	[142.1]	4905	[193.1]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
430-3	12820	[504.7]	3125	[123.0]	3610	[142.1]	6085	[239.6]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
450-3	11540	[454.3]	3125	[123.0]	3610	[142.1]	4805	[189.2]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
465-3	12820	[504.7]	3125	[123.0]	3610	[142.1]	6085	[239.6]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
475-3	12920	[508.7]	3125	[123.0]	3610	[142.1]	6185	[243.5]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
485-3	14200	[559.1]	4400	[173.2]	3610	[142.1]	6190	[243.7]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
500-3	12920	[508.7]	3025	[119.1]	3610	[142.1]	3525	[138.8]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]
510-3	14300	[563.0]	4400	[173.2]	3610	[142.1]	6290	[247.6]	180	[7.1]	250	[9.8]	200	[7.9]	200	[7.9]

Note

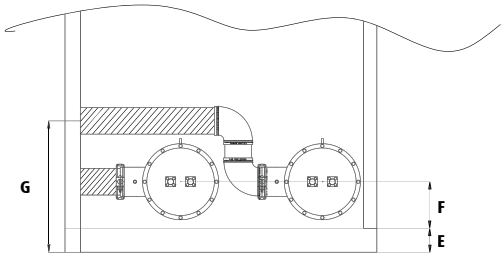
- Water connections are victaulic coupling
- Water connections are shipped loose & tied inside chiller enclosure

Cooler Connections

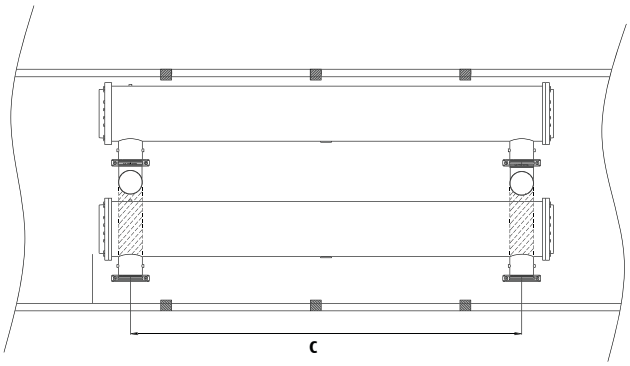
Front view



Side view



Top view



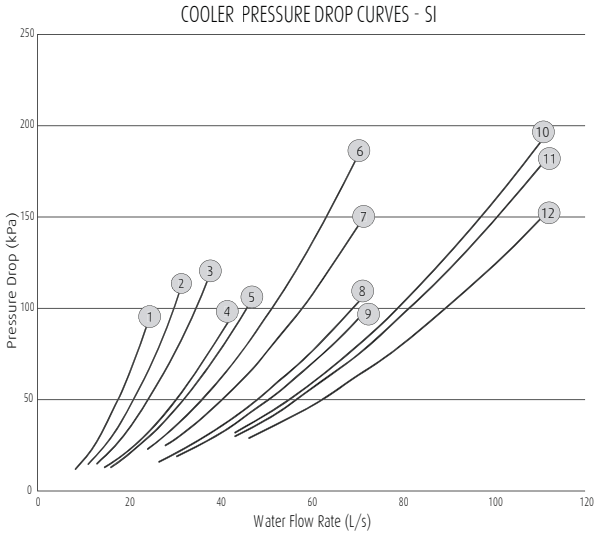
MODEL (APSa)	A		B		C		D		E		F		G	
	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]	mm	[Inch]
550-4	14400	[566.9]	5500	[216.5]	3010	[118.5]	5890	[231.9]	180	[7.1]	350	[13.8]	1000	[39.4]
580-4	14400	[566.9]	5500	[216.5]	3010	[118.5]	5890	[231.9]	180	[7.1]	350	[13.8]	1000	[39.4]
600-4	14400	[566.9]	4600	[181.1]	3610	[142.1]	6190	[243.7]	180	[7.1]	350	[13.8]	1000	[39.4]

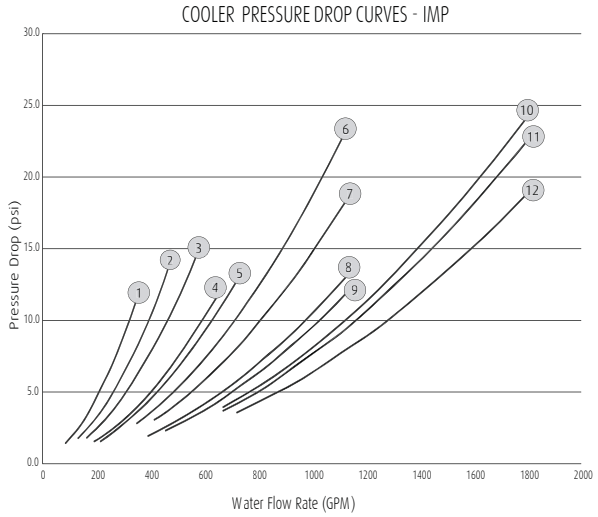
MODEL (APSa)	Water In Connection (Qty Diameter)		Water Out Connection (Qty Diameter)	
	mm	[Inch]	mm	[Inch]
550-4	2x200	[2x8]	2x200	[2x8]
580-4	2x200	[2x8]	2x200	[2x8]
600-4	2x200	[2x8]	2x200	[2x8]

Note

- Water connections are victaulic coupling
- Water connections are shipped loose & tied inside chiller enclosure
- These chillers are shipped on a flat rack (not in container)
- To remove cooler tubes, the whole cooler assembly must be removed from chiller
- Hashed lines are supplied by installer at site

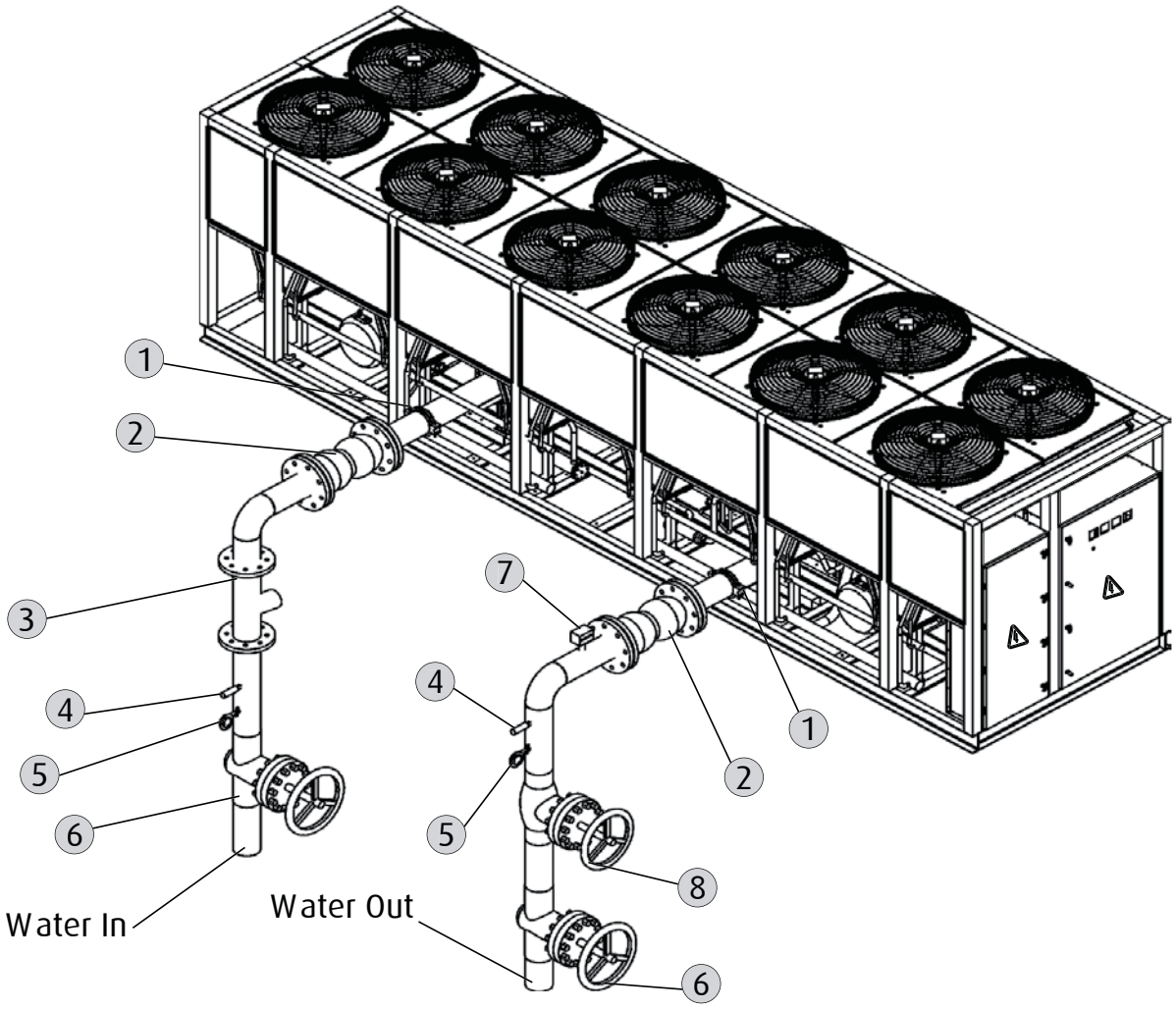
Pressure Drop Curves





	(APSa)
1	(50-1, 60-1, 65-1, 70-1, 70-2)
2	(75-1, 80-1)
3	(95-2, 95-1, 100-2, 100-1, 110-2, 120-2, 125-2)
4	(135-2, 140-2, 145-2)
5	(165-2, 175-2, 190-2)
6	(195-2, 200-2)
7	(205-2, 220-2, 235-2, 250-2)
8	(275-2, 280-2, 285-2, 550-4, 580-4)
9	(300-2, 315-3, 315-3)
10	(335-2, 350-2, 350-3, 360-3, 375-3, 400-3, 415-3, 430-3, 600-4)
11	(450-3, 465-3)
12	(475-3, 485-3, 500-3, 510-3)

Typical piping

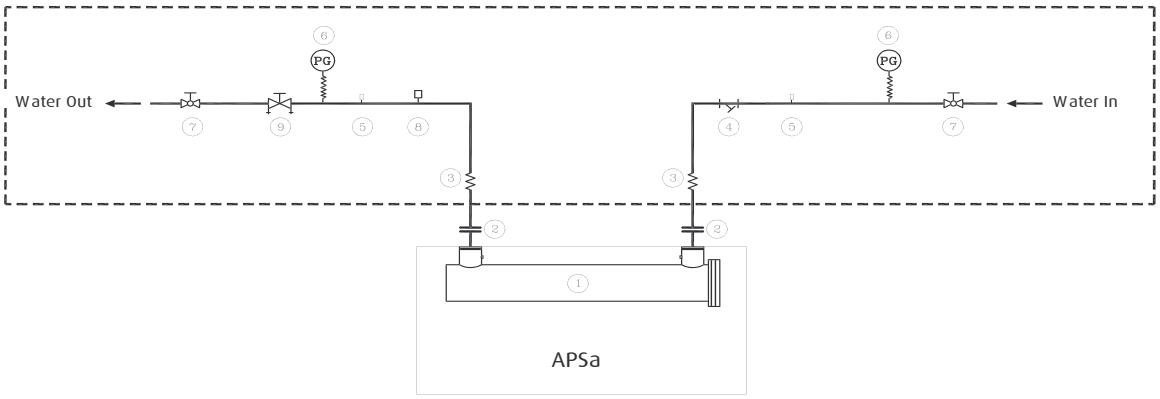


	COMPONENTS
1	Flange adapter
2	Flexible joint
3	Strainer
4	Thermometer
5	Pressure gauge
6	Valve
7	Flow switch
8	Balancing valve

Note

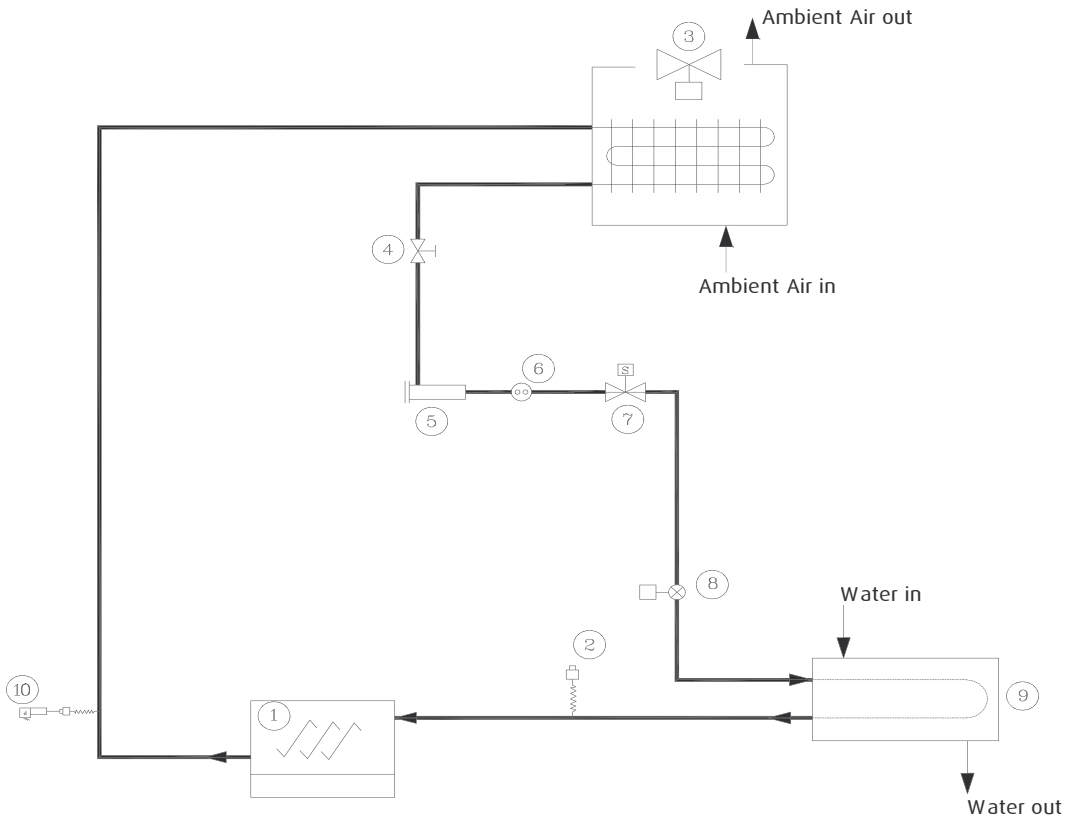
- Piping shown are general points of connection guides only and are not intended for a specific installation
- Piping shown are for a quick overview of system and are not in accordance with recognized standards
- All piping must follow standard piping techniques. Refer to appropriate ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers) handbook for details

Water Schematic Diagram



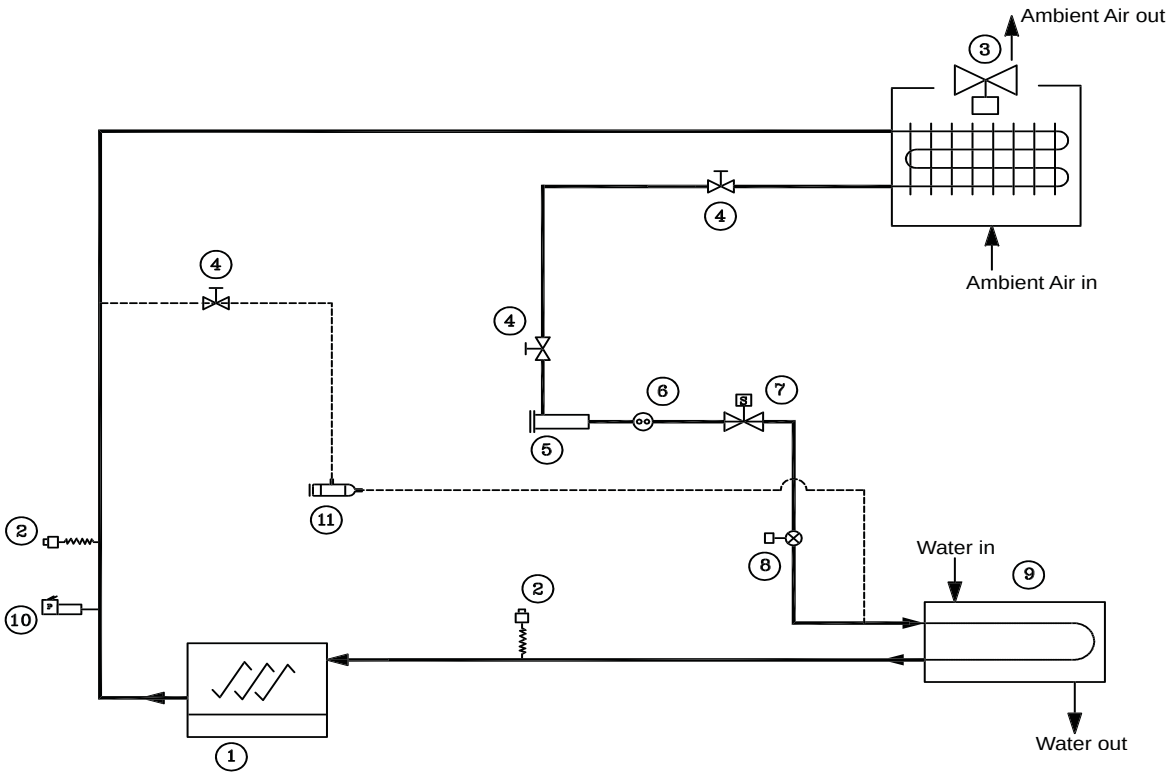
	ITEM
1	Cooler
2	Flange adapter
3	Flexible joint
4	Strainer
5	Thermometer
6	Water pressure gauge
7	Valve
8	Flow switch
9	Balancing Valve

Refrigeration Schematic Diagram



	ITEM
1	Screw compressor
2	Charging nipple
3	Condenser coil
4	Shut off valve
5	Filter drier
6	Sight glass
7	Solenoid valve
8	Electronic expansion valve
9	Barrel (Cooler)
10	High pressure switch

HGBP Schematic Diagram (Optional)



	ITEM
1	Screw compressor
2	Charging nipple
3	Condenser coil
4	Shut off valve
5	Filter drier
6	Sight glass
7	Solenoid valve
8	Electronic expansion valve
9	Barrel (Cooler)
10	High pressure switch
11	Mechanical hot gas valve

Sound Data

380V/3Ph/50Hz

Model (APSa)	Sound Power (dBA)								
	Band Frequency (Hz)								
	63	125	250	500	1000	2000	4000	8000	Total
50-1	61	68	77	80	87	85	81	69	90
60-1	64	71	80	82	88	86	82	70	92
65-1	64	71	80	82	88	86	82	70	92
70-1	64	71	80	83	89	87	83	72	93
70-2	67	73	79	84	89	89	84	74	93
75-1	64	71	80	83	89	87	83	72	93
80-1	64	71	80	83	90	88	84	72	93
95-2	67	73	79	84	90	89	84	75	94
95-1	64	71	81	83	90	88	84	72	93
100-1	64	71	81	83	91	89	85	73	94
100-2	67	73	79	84	90	89	84	75	94
110-2	69	75	81	86	91	91	86	76	95
120-2	69	75	81	86	91	91	86	76	95
125-2	69	75	81	86	91	91	86	76	95
135-2	69	75	81	86	91	91	86	76	95
140-2	69	75	81	86	92	91	86	76	96
145-2	70	76	82	87	92	92	87	77	96
160-2	70	76	82	87	93	92	87	77	97
165-2	70	76	82	87	93	92	87	77	97
175-2	70	76	82	87	93	92	87	78	97
190-2	71	77	83	88	94	93	88	78	98
195-2	70	76	82	87	93	92	87	78	97
200-2	71	77	83	88	94	93	88	78	98
205-2	71	77	83	88	94	93	88	78	98
210-2	71	77	83	88	94	93	88	78	98
220-2	71	77	83	88	95	94	89	79	99
235-2	71	77	83	88	95	94	89	79	99
250-2	71	77	84	88	95	94	89	79	99
275-2	71	77	84	88	95	94	89	79	99
280-2	72	78	84	89	95	95	89	79	99
285-2	71	77	84	88	95	94	89	79	99
300-2	72	78	84	89	95	95	89	79	99
315-3	72	78	84	89	96	95	90	79	100
315-2	72	78	84	89	95	95	89	79	99
335-2	72	78	84	89	95	95	90	79	99
350-2	73	79	85	90	96	95	90	80	100
350-3	73	79	85	90	96	95	90	80	100
360-3	73	79	85	90	97	96	91	81	101
375-3	73	79	85	90	96	96	90	80	100
400-3	73	79	86	90	97	96	91	81	101
415-3	73	79	86	90	97	96	91	81	101
430-3	74	80	86	91	97	96	91	81	101
450-3	73	79	86	90	97	96	91	81	101
465-3	74	80	86	91	97	96	91	81	101
475-3	74	80	86	91	97	96	91	81	101
485-3	74	80	86	91	97	97	92	81	101
500-3	74	80	86	91	97	96	91	81	101
510-3	74	80	86	91	97	97	92	81	101
550-4	74	80	87	91	98	97	92	82	102
580-4	74	80	87	91	98	97	92	82	102
600-4	74	80	87	91	98	97	92	82	102

Note

- Sound data is calculated based on standard components design
- Sound data shall be as per AHRI 370 and ISO BS 3744 standard
- Sound data are ±2 dBA

380-460V/3Ph/60Hz

Model (APSa)	Sound Power (dBA)								
	Band Frequency (Hz)								
	63	125	250	500	1000	2000	4000	8000	Total
50-1	66	72	78	83	89	88	83	74	93
60-1	68	74	79	85	90	89	85	75	94
65-1	68	74	79	85	90	89	85	75	94
70-1	69	75	881	86	91	91	86	76	95
70-2	69	75	81	86	91	91	86	76	95
75-1	69	75	81	86	91	91	86	76	95
80-1	69	75	81	86	92	91	86	76	96
95-2	69	75	81	86	92	91	86	77	96
95-1	69	75	81	86	92	91	86	77	96
100-1	69	75	82	86	93	92	87	77	97
100-2	69	75	81	86	92	91	86	77	96
110-2	71	77	83	88	93	93	88	78	97
120-2	71	77	83	88	93	93	88	78	97
125-2	71	77	83	88	93	93	88	78	97
135-2	71	77	83	88	93	93	88	78	97
140-2	71	77	83	88	94	93	88	78	98
145-2	72	78	84	89	94	94	89	79	98
160-2	72	78	84	89	95	94	89	79	99
165-2	72	78	84	89	95	94	89	79	99
175-2	72	78	84	89	95	94	89	80	99
190-2	73	79	85	90	96	95	90	80	100
195-2	72	78	84	89	95	94	89	80	99
200-2	73	79	85	90	96	95	90	80	100
205-2	73	79	85	90	96	95	90	80	100
210-2	73	79	85	90	96	95	90	80	100
220-2	73	79	85	90	97	96	91	81	101
235-2	73	79	85	90	97	96	91	81	101
250-2	73	79	86	90	97	96	91	81	101
275-2	73	79	86	90	97	96	91	81	101
280-2	74	80	86	91	97	97	91	81	101
285-2	73	79	86	90	97	96	91	81	101
300-2	74	80	86	91	97	97	91	81	101
315-3	74	80	86	91	98	97	92	81	102
315-2	74	80	86	91	97	97	91	81	101
335-2	74	80	86	91	97	97	92	81	101
350-2	75	81	87	92	98	97	92	82	102
350-3	75	81	87	92	98	97	92	82	102
360-3	75	81	87	92	99	98	93	83	103
375-3	75	81	87	92	98	98	92	82	102
400-3	75	81	88	92	99	98	93	83	103
415-3	75	81	88	92	99	98	93	83	103
430-3	76	82	88	93	99	98	93	83	103
450-3	75	81	88	92	99	98	93	83	103
465-3	76	82	88	93	99	98	93	83	103
475-3	76	82	88	93	99	98	93	83	103
485-3	76	82	88	93	99	99	94	83	103
500-3	76	82	88	93	99	98	93	83	103
510-3	76	82	88	93	99	99	94	83	103
550-4	76	82	89	93	100	99	94	84	104
580-4	76	82	89	93	100	99	94	84	104
600-4	76	82	89	93	100	99	94	84	104

Note

- Sound data is calculated based on standard components design
- Sound data shall be as per AHRI 370 and ISO BS 3744 standard
- Sound data are ±2 dBA

Electrical Data

MODEL (APSa)	POWER SUPPLY (V/Ph/Hz)	SUPPLIED VOLTAGE		COMPRESSOR				CONDENSOR FAN MOTOR			MCA	MOP	MDS
				No.	RLA (A)	LRA							
		MIN	MAX			P.W	Y-D	NO.	kW	FLA (A)			
50-1	380 / 3 / 50	357	403	1	99.5	350	-	2	1.45	3.5	134.1	225	160
	415 / 3 / 50	390	440	1	91.1	322	-	2	1.45	3.5	123.6	200	125
	208 / 3 / 60	196	220	1	213.6	822	-	2	1.75	6.0	279.0	450	260
	380 / 3 / 60	357	403	1	116.9	428	-	2	2.05	3.9	152.9	250	160
	460 / 3 / 60	432	488	1	96.6	329	-	2	2.30	4.0	128.8	225	125
60-1	380 / 3 / 50	357	403	1	99.5	350	-	4	1.45	3.5	143.8	225	160
	415 / 3 / 50	390	440	1	91.1	322	-	4	1.45	3.5	133.3	200	160
	208 / 3 / 60	196	220	1	213.6	822	-	4	1.75	6.0	291.0	500	315
	380 / 3 / 60	357	403	1	116.9	428	-	4	2.05	3.9	159.7	250	160
	460 / 3 / 60	432	488	1	96.6	329	-	4	2.30	4.0	136.8	225	160
65-1	380 / 3 / 50	357	403	1	112.3	462	-	4	1.45	3.5	159.8	250	160
	415 / 3 / 50	390	440	1	102.8	410	-	4	1.45	3.5	147.9	250	160
	208 / 3 / 60	196	220	1	244.9	943	-	4	1.75	6.0	330.2	500	315
	380 / 3 / 60	357	403	1	134	546	-	4	2.05	3.9	181.1	300	200
	460 / 3 / 60	432	488	1	110.7	423	-	4	2.30	4.0	154.4	250	160
70-1	380 / 3 / 50	357	403	1	120.8	462	-	4	1.45	3.5	170.4	250	200
	415 / 3 / 50	390	440	1	110.6	410	-	4	1.45	3.5	157.7	250	160
	208 / 3 / 60	196	220	1	263.9	943	-	4	1.75	6.0	353.9	600	400
	380 / 3 / 60	357	403	1	144.4	546	-	4	2.05	3.9	194.1	300	200
	460 / 3 / 60	432	488	1	119.3	423	-	4	2.30	4.0	165.1	250	160
70-2	380 / 3 / 50	357	403	2	65.4	155	-	4	1.45	3.5	166.6	225	200
	415 / 3 / 50	390	440	2	59.9	145	-	4	1.45	3.5	154.2	200	200
	208 / 3 / 60	196	220	2	142.1	338	-	4	1.75	6.0	343.8	450	400
	380 / 3 / 60	357	403	2	77.8	185	-	4	2.05	3.9	188.7	250	200
	460 / 3 / 60	432	488	2	64.3	163	-	4	2.30	4.0	160.7	200	200
75-1	380 / 3 / 50	357	403	1	136.2	475	-	4	1.45	3.5	189.7	300	200
	415 / 3 / 50	390	440	1	124.7	429	-	4	1.45	3.5	175.3	250	200
	380 / 3 / 60	357	403	1	162.4	553	-	4	2.05	3.9	216.6	350	260
	460 / 3 / 60	432	488	1	134.1	497	-	4	2.30	4.0	183.6	300	200
80-1	380 / 3 / 50	357	403	1	152.1	571	-	4	1.45	3.5	209.5	350	200
	415 / 3 / 50	390	440	1	139.3	513	-	4	1.45	3.5	193.5	300	200
	380 / 3 / 60	357	403	1	180.9	677	-	4	2.05	3.9	239.7	400	260
	460 / 3 / 60	432	488	1	149.4	598	-	4	2.30	4.0	202.8	350	200
95-2	380 / 3 / 50	357	403	2	85.9	303	-	4	1.45	3.5	212.7	250	260
	415 / 3 / 50	390	440	2	78.7	267	-	4	1.45	3.5	196.5	250	260
	208 / 3 / 60	196	220	2	186.7	645	-	4	1.75	6.0	444.1	600	600
	380 / 3 / 60	357	403	2	102.2	360	-	4	2.05	3.9	243.6	300	260
	460 / 3 / 60	432	488	2	84.4	285	-	4	2.30	4.0	205.9	250	260
95-1	380 / 3 / 50	357	403	1	166.2	571	-	4	1.45	3.5	227.2	350	260
	415 / 3 / 50	390	440	1	152.2	513	-	4	1.45	3.5	209.7	350	200
	380 / 3 / 60	357	403	1	198.2	677	-	4	2.05	3.9	261.4	450	260
	460 / 3 / 60	432	488	1	163.9	598	-	4	2.30	4.0	220.9	350	260
100-2	380 / 3 / 50	357	403	2	99.5	350	-	4	1.45	3.5	243.3	300	260
	415 / 3 / 50	390	440	2	91.1	322	-	4	1.45	3.5	224.4	300	260
	208 / 3 / 60	196	220	2	213.6	822	-	4	1.75	6.0	504.6	700	600
	380 / 3 / 60	357	403	2	116.9	428	-	4	2.05	3.9	276.6	350	315
	460 / 3 / 60	432	488	2	96.6	329	-	4	2.30	4.0	233.4	300	260
100-1	380 / 3 / 50	357	403	1	187.4	615	-	4	1.45	3.5	253.7	400	260
	415 / 3 / 50	390	440	1	171.6	595	-	4	1.45	3.5	233.9	400	260
	380 / 3 / 60	357	403	1	226.2	779	-	4	2.05	3.9	296.4	500	315
	460 / 3 / 60	432	488	1	186.9	646	-	4	2.30	4.0	249.6	400	260
110-2	380 / 3 / 50	357	403	2	99.5	350	-	6	1.45	3.5	253.0	350	315
	415 / 3 / 50	390	440	2	91.1	322	-	6	1.45	3.5	234.1	300	260
	208 / 3 / 60	196	220	2	213.6	822	-	6	1.75	6.0	516.7	700	600
	380 / 3 / 60	357	403	2	116.9	428	-	6	2.05	3.9	283.4	400	315
	460 / 3 / 60	432	488	2	96.6	329	-	6	2.30	4.0	241.4	300	260

Legend

- kW: Nominal Output Power (for each Fan motor)
- RLA: Rated Load Ampere
- FLA: Full Load Ampere (for each Fan motor)
- MOP: Maximum Overcurrent Protection
- MDS: Non-Fused Main Disconnect Switch
- LRA: Locked Rotor Ampere
- MCA: Minimum Circuit Ampacity
- PW: Part winding connection
- Y-D: Star-Delta connection

Note

- The power supply (208V/3Ph/60Hz) applies only for the following models: (50-1, 60-1, 65-1, 70-1, 70-2, 95-2, 100-2, 110-2)
- MCA is based on 125% of the RLA for the largest motor plus 100% of the RLA/FLA for all other loads included in the circuit (NEC-Article 430-24)
- MOP is based on 225% of the RLA for the largest motor plus 100% of the RLA for all other loads included in the circuit (NEC-Article 440-22)
- MDS is based on 115% of the total summation of RLA/FLA for all loads included in the circuit (NEC-Article 440- 12A1)

MODEL (APSa)	POWER SUPPLY (V/Ph/Hz)	SUPPLIED VOLTAGE		COMPRESSOR				CONDENSOR FAN MOTOR			MCA	MOP	MDS
				No.	RLA (A)	LRA							
		MIN	MAX			P.W	Y-D	NO.	kW	FLA (A)			
120-2	380 / 3 / 50	357	403	1+1	99.5+112.3	350+462	-	6	1.45	3.5	269.0	350	315
	415 / 3 / 50	390	440	1+1	91.1+102.8	322+410	-	6	1.45	3.5	248.7	350	260
	208 / 3 / 60	196	220	1+1	213.6+244.9	822+943	-	6	1.75	6.0	555.8	800	600
	380 / 3 / 60	357	403	1+1	116.9+134.0	428+546	-	6	2.05	3.9	304.8	400	315
	460 / 3 / 60	432	488	1+1	96.6+110.7	329+423	-	6	2.30	4.0	259.0	350	315
125-2	380 / 3 / 50	357	403	2	112.3	462	-	6	1.45	3.5	281.8	350	315
	415 / 3 / 50	390	440	2	102.8	410	-	6	1.45	3.5	260.4	350	315
	208 / 3 / 60	196	220	2	244.9	943	-	6	1.75	6.0	587.1	800	800
	380 / 3 / 60	357	403	2	134	546	-	6	2.05	3.9	321.9	450	400
	460 / 3 / 60	432	488	2	110.7	423	-	6	2.30	4.0	273.1	350	315
135-2	380 / 3 / 50	357	403	2	120.8	462	-	6	1.45	3.5	300.9	400	315
	415 / 3 / 50	390	440	2	110.6	410	-	6	1.45	3.5	278.0	350	315
	208 / 3 / 60	196	220	2	263.9	943	-	6	1.75	6.0	629.8	800	800
	380 / 3 / 60	357	403	2	144.4	546	-	6	2.05	3.9	345.3	450	400
	460 / 3 / 60	432	488	2	119.3	423	-	6	2.30	4.0	292.4	400	315
140-2	380 / 3 / 50	357	403	2	136.2	475	-	6	1.45	3.5	335.6	450	400
	415 / 3 / 50	390	440	2	124.7	429	-	6	1.45	3.5	309.7	400	400
	380 / 3 / 60	357	403	2	162.4	553	-	6	2.05	3.9	385.8	500	400
	460 / 3 / 60	432	488	2	134.1	497	-	6	2.30	4.0	325.7	450	400
145-2	380 / 3 / 50	357	403	2	136.2	475	-	8	1.45	3.5	345.3	450	400
	415 / 3 / 50	390	440	2	124.7	429	-	8	1.45	3.5	319.4	400	400
	380 / 3 / 60	357	403	2	162.4	553	-	8	2.05	3.9	392.6	500	600
	460 / 3 / 60	432	488	2	134.1	497	-	8	2.30	4.0	333.7	450	400
160-2	380 / 3 / 50	357	403	1+1	136.2+152.1	475+571	-	8	1.45	3.5	365.1	500	400
	415 / 3 / 50	390	440	1+1	127.7+139.3	429+513	-	8	1.45	3.5	340.6	450	400
	380 / 3 / 60	357	403	1+1	162.4+180.9	553+677	-	8	2.05	3.9	415.7	500	600
	460 / 3 / 60	432	488	1+1	134.1+149.4	497+598	-	8	2.30	4.0	352.9	500	400
165-2	380 / 3 / 50	357	403	2	152.1	571	-	8	1.45	3.5	381.0	500	400
	415 / 3 / 50	390	440	2	139.3	513	-	8	1.45	3.5	352.2	450	400
	380 / 3 / 60	357	403	2	180.9	677	-	8	2.05	3.9	434.2	600	600
	460 / 3 / 60	432	488	2	149.4	598	-	8	2.30	4.0	368.2	500	400
175-2	380 / 3 / 50	357	403	2	166.2	571	-	8	1.45	3.5	412.8	500	600
	415 / 3 / 50	390	440	2	152.2	513	-	8	1.45	3.5	381.3	500	400
	380 / 3 / 60	357	403	2	198.2	677	-	8	2.05	3.9	473.2	600	600
	460 / 3 / 60	432	488	2	163.9	598	-	8	2.30	4.0	400.8	500	600
190-2	380 / 3 / 50	357	403	2	166.2	571	-	10	1.45	3.5	422.5	500	600
	415 / 3 / 50	390	440	2	152.2	513	-	10	1.45	3.5	391.0	500	600
	380 / 3 / 60	357	403	2	198.2	677	-	10	2.05	3.9	480.0	600	600
	460 / 3 / 60	432	488	2	163.9	598	-	10	2.30	4.0	408.8	500	600
195-2	380 / 3 / 50	357	403	2	178.3	615	-	8	1.45	3.5	440.0	600	600
	415 / 3 / 50	390	440	2	163.3	596	-	8	1.45	3.5	406.2	500	600
	380 / 3 / 60	357	403	2	214.5	779	-	8	2.05	3.9	509.8	700	600
	460 / 3 / 60	432	488	2	177.2	646	-	8	2.30	4.0	430.7	600	600
200-2	380 / 3 / 50	357	403	2	178.3	615	-	10	1.45	3.5	449.7	600	600
	415 / 3 / 50	390	440	2	163.3	596	-	10	1.45	3.5	415.9	500	600
	380 / 3 / 60	357	403	2	214.5	779	-	10	2.05	3.9	516.6	700	600
	460 / 3 / 60	432	488	2	177.2	646	-	10	2.30	4.0	438.7	600	600
205-2	380 / 3 / 50	357	403	2	178.3	615	-	10	1.45	3.5	449.7	600	600
	415 / 3 / 50	390	440	2	163.3	596	-	10	1.45	3.5	415.9	500	600
	380 / 3 / 60	357	403	2	214.5	779	-	10	2.05	3.9	516.6	700	600
	460 / 3 / 60	432	488	2	177.2	646	-	10	2.30	4.0	438.7	600	600
210-2	380 / 3 / 50	357	403	2	187.4	615	-	8	1.45	3.5	460.5	600	600
	415 / 3 / 50	390	440	2	171.6	596	-	8	1.45	3.5	424.9	500	600
	380 / 3 / 60	357	403	2	226.2	779	-	8	2.05	3.9	536.2	700	600
	460 / 3 / 60	432	488	2	186.9	646	-	8	2.30	4.0	452.5	600	600

Legend

- kW: Nominal Output Power (for each Fan motor)
- RLA: Rated Load Ampere
- FLA: Full Load Ampere (for each Fan motor)
- MOP: Maximum Overcurrent Protection
- MDS: Non-Fused Main Disconnect Switch
- LRA: Locked Rotor Ampere
- MCA: Minimum Circuit Ampacity
- PW: Part winding connection
- Y-D: Star-Delta connection

Note

- The power supply (208V/3Ph/60Hz) applies only for the following models: (120-2, 125-2 & 135-2)
- MCA is based on 125% of the RLA for the largest motor plus 100% of the RLA/FLA for all other loads included in the circuit (NEC-Article 430-24)
- MOP is based on 225% of the RLA for the largest motor plus 100% of the RLA for all other loads included in the circuit (NEC-Article 440-22)
- MDS is based on 115% of the total summation of RLA/FLA for all loads included in the circuit (NEC-Article 440- 12A1)

Electrical Data

MODEL (APSa)	POWER SUPPLY (V/Ph/Hz)	SUPPLIED VOLTAGE		COMPRESSOR				CONDENSOR FAN MOTOR			MCA	MOP	MDS
				No.	RLA (A)	LRA							
		MIN	MAX			P.W	Y-D	NO.	kW	FLA (A)			
220-2	380 / 3 / 50	357	403	2	187.4	615	-	10	1.45	3.5	470.2	600	600
	415 / 3 / 50	390	440	2	171.6	595	-	10	1.45	3.5	434.6	600	600
	380 / 3 / 60	357	403	2	226.2	779	-	10	2.05	3.9	543.0	700	600
	460 / 3 / 60	432	488	2	186.9	646	-	10	2.30	4.0	460.5	600	600
235-2	380 / 3 / 50	357	403	1+1	221.7+187.4	615	447	10	1.45	3.5	513.0	700	600
	415 / 3 / 50	390	440	1+1	203.0+171.6	595	432	10	1.45	3.5	473.9	600	600
	380 / 3 / 60	357	403	1+1	264.9+226.2	779	483	10	2.05	3.9	591.3	800	800
	460 / 3 / 60	432	488	1+1	218.8+186.9	646	467	10	2.30	4.0	500.4	700	600
250-2	380 / 3 / 50	357	403	2	221.7	-	447	10	1.45	3.5	547.3	700	600
	415 / 3 / 50	390	440	2	203.0	-	432	10	1.45	3.5	505.3	700	600
	380 / 3 / 60	357	403	2	264.9	-	483	10	2.05	3.9	630.0	800	800
	460 / 3 / 60	432	488	2	218.8	-	467	10	2.30	4.0	532.3	700	600
275-2	380 / 3 / 50	357	403	1+1	221.7+243.8	-	447+477	10	1.45	3.5	575.0	800	600
	415 / 3 / 50	390	440	1+1	203.0+223.2	-	432+547	10	1.45	3.5	530.5	700	600
	380 / 3 / 60	357	403	1+1	264.9+290.0	-	583+643	10	2.05	3.9	661.4	800	800
	460 / 3 / 60	432	488	1+1	28.8+239.9	-	467+498	10	2.30	4.0	558.3	700	600
280-2	380 / 3 / 50	357	403	2	221.7	-	447	12	1.45	3.5	557.0	700	600
	415 / 3 / 50	390	440	2	203.0	-	432	12	1.45	3.5	515.0	700	600
	380 / 3 / 60	357	403	2	264.9	-	583	12	2.05	3.9	636.8	800	800
	460 / 3 / 60	432	488	2	218.8	-	467	12	2.30	4.0	540.3	700	600
285-2	380 / 3 / 50	357	403	2	243.8	-	447	10	1.45	3.5	597.1	800	800
	415 / 3 / 50	390	440	2	223.2	-	457	10	1.45	3.5	550.7	700	600
	380 / 3 / 60	357	403	2	290.0	-	643	10	2.05	3.9	686.5	800	800
	460 / 3 / 60	432	488	2	239.6	-	498	10	2.30	4.0	579.1	800	600
300-2	380 / 3 / 50	357	403	2	243.8	-	447	12	1.45	3.5	606.8	800	800
	415 / 3 / 50	390	440	2	223.2	-	457	12	1.45	3.5	560.4	700	600
	380 / 3 / 60	357	403	2	290.0	-	643	12	2.05	3.9	693.3	800	800
	460 / 3 / 60	432	488	2	239.6	-	498	12	2.30	4.0	587.1	800	800
315-3	380 / 3 / 50	357	403	1 + 2	178.3+187.4	615+615	-	12	1.45	3.5	658.2	800	800
	415 / 3 / 50	390	440	1 + 2	163.3+171.6	596+595	-	12	1.45	3.5	607.6	700	800
	380 / 3 / 60	357	403	1 + 2	214.5+226.2	779+779	-	12	2.05	3.9	764.3	800	1000
	460 / 3 / 60	432	488	1 + 2	177.2+186.9	646+646	-	12	2.30	4.0	645.7	800	800
315-2	380 / 3 / 50	357	403	1+1	243.8+291.8	-	447+663	12	1.45	3.5	666.8	800	800
	415 / 3 / 50	390	440	1+1	223.2+267.2	-	457+617	12	1.45	3.5	615.4	800	800
	380 / 3 / 60	357	403	1+1	290.0+349.4	-	643+823	12	2.05	3.9	767.6	1000	800
	460 / 3 / 60	432	488	1+1	239.6+288.6	-	498+693	12	2.30	4.0	648.4	800	800
335-2	380 / 3 / 50	357	403	2	291.8	-	663	12	1.45	3.5	714.8	1000	800
	415 / 3 / 50	390	440	2	467.2	-	617	12	1.45	3.5	659.4	800	800
	380 / 3 / 60	357	403	2	349.4	-	823	12	2.05	3.9	827.0	1000	1000
	460 / 3 / 60	432	488	2	288.6	-	693	12	2.30	4.0	697.4	800	800
350-2	380 / 3 / 50	357	403	2	291.8	-	663	14	1.45	3.5	724.5	1000	800
	415 / 3 / 50	390	440	2	467.2	-	617	14	1.45	3.5	669.1	800	800
	380 / 3 / 60	357	403	2	349.4	-	823	14	2.05	3.9	833.8	1000	1000
	460 / 3 / 60	432	488	2	288.6	-	693	14	2.30	4.0	705.4	800	800
350-3	380 / 3 / 50	357	403	2 + 1	187.4+221.7	615	447	14	1.45	3.5	719.8	800	800
	415 / 3 / 50	390	440	2 + 1	171.6+203.0	595	432	14	1.45	3.5	664.9	800	800
	380 / 3 / 60	357	403	2 + 1	226.2+264.9	779	583	14	2.05	3.9	831.1	1000	1000
	460 / 3 / 60	432	488	2 + 1	186.9+218.8	646	467	14	2.30	4.0	703.3	800	800
360-3	380 / 3 / 50	357	403	2 + 1	187.4+221.7	615	447	16	1.45	3.5	729.5	800	800
	415 / 3 / 50	390	440	2 + 1	171.6+203.0	595	432	16	1.45	3.5	674.6	800	800
	380 / 3 / 60	357	403	2 + 1	226.2+264.9	779	583	16	2.05	3.9	837.9	1000	1000
	460 / 3 / 60	432	488	2 + 1	186.9+218.8	646	467	16	2.30	4.0	711.3	800	800

Legend

- kW: Nominal Output Power (for each Fan motor)
- RLA: Rated Load Ampere
- FLA: Full Load Ampere (for each Fan motor)
- MOP: Maximum Overcurrent Protection
- MDS: Non-Fused Main Disconnect Switch
- LRA: Locked Rotor Ampere
- MCA: Minimum Circuit Ampacity
- PW: Part winding connection
- Y-D: Star-Delta connection

Note

- MCA is based on 125% of the RLA for the largest motor plus 100% of the RLA/FLA for all other loads included in the circuit (NEC-Article 430-24)
- MOP is based on 225% of the RLA for the largest motor plus 100% of the RLA for all other loads included in the circuit (NEC-Article 440-22)
- MDS is based on 115% of the total summation of RLA/FLA for all loads included in the circuit (NEC-Article 440- 12A1)

MODEL (APSa)	POWER SUPPLY (V/Ph/Hz)	SUPPLIED VOLTAGE		COMPRESSOR				CONDENSOR FAN MOTOR			MCA	MOP	MDS
				No.	RLA (A)	LRA							
		MIN	MAX			P.W	Y-D	NO.	kW	FLA (A)			
375-3	380 / 3 / 50	357	403	1+2	187.4+221.7	615	447	14	1.45	3.5	754.1	800	1000
	415 / 3 / 50	390	440	1+2	171.6+203.0	595	432	14	1.45	3.5	696.3	800	800
	380 / 3 / 60	357	403	1+2	226.2+264.9	779	583	14	2.05	3.9	869.8	1000	1200
	460 / 3 / 60	432	488	1+2	186.9+218.8	646	467	14	2.30	4.0	735.2	800	800
400-3	380 / 3 / 50	357	403	3	221.7	-	447	16	1.45	3.5	798.1	1000	1000
	415 / 3 / 50	390	440	3	203.0	-	432	16	1.45	3.5	737.4	800	800
	380 / 3 / 60	357	403	3	264.9	-	583	16	2.05	3.9	915.3	1000	1000
	460 / 3 / 60	432	488	3	218.8	-	467	16	2.30	4.0	775.1	1000	1000
415-3	380 / 3 / 50	357	403	3	243.8	-	447	16	1.45	3.5	870.0	1000	1000
	415 / 3 / 50	390	440	3	223.2	-	457	16	1.45	3.5	803.0	1000	1000
	380 / 3 / 60	357	403	3	290.0	-	643	16	2.05	3.9	996.9	1200	1200
	460 / 3 / 60	432	488	3	239.6	-	498	16	2.30	4.0	842.7	1000	1000
430-3	380 / 3 / 50	357	403	3	243.8	-	477	18	1.45	3.5	879.7	1000	1000
	415 / 3 / 50	390	440	3	223.2	-	457	18	1.45	3.5	812.7	1000	1000
	380 / 3 / 60	357	403	3	290	-	643	18	2.05	3.9	1003.7	1200	1200
	460 / 3 / 60	432	488	3	239.6	-	498	18	2.30	4.0	850.7	1000	1000
450-3	380 / 3 / 50	357	403	2 + 1	243.8+291.8	-	447+663	16	1.45	3.5	930.0	1200	1000
	415 / 3 / 50	390	440	2 + 1	223.2+267.2	-	457+617	16	1.45	3.5	858.0	1000	1000
	380 / 3 / 60	357	403	2 + 1	290.0+349.4	-	643+823	16	2.05	3.9	1071.2	1200	1200
	460 / 3 / 60	432	488	2 + 1	239.6+288.6	-	498+693	16	2.30	4.0	904.0	1000	1000
465-3	380 / 3 / 50	357	403	2 + 1	243.8+291.8	-	447+663	18	1.45	3.5	939.7	1200	1000
	415 / 3 / 50	390	440	2 + 1	223.2+267.2	-	457+617	18	1.45	3.5	867.7	1000	1000
	380 / 3 / 60	357	403	2 + 1	290.0+349.4	-	643+823	18	2.05	3.9	1078.0	1200	1200
	460 / 3 / 60	432	488	2 + 1	239.6+288.6	-	498+693	18	2.30	4.0	912.0	1200	1000
475-3	380 / 3 / 50	357	403	1 + 2	243.8+291.8	-	447+663	18	1.45	3.5	987.7	1200	1200
	415 / 3 / 50	390	440	1 + 2	223.2+267.2	-	457+617	18	1.45	3.5	911.7	1000	1000
	380 / 3 / 60	357	403	1 + 2	290.0+349.4	-	643+823	18	2.05	3.9	1137.4	1200	1250
	460 / 3 / 60	432	488	1 + 2	239.6+288.6	-	498+693	18	2.30	4.0	961.0	1200	1200
485-3	380 / 3 / 50	357	403	1 + 2	243.8+291.8	-	447+663	20	1.45	3.5	997.4	1200	1200
	415 / 3 / 50	390	440	1 + 2	223.2+267.2	-	457+617	20	1.45	3.5	921.4	1000	1000
	380 / 3 / 60	357	403	1 + 2	290.0+349.4	-	643+823	20	2.05	3.9	1144.2	1200	1250
	460 / 3 / 60	432	488	1 + 2	239.6+288.6	-	498+693	20	2.30	4.0	969.0	1200	1200
500-3	380 / 3 / 50	357	403	3	291.8	-	663	18	1.45	3.5	1035.7	1200	1200
	415 / 3 / 50	390	440	3	267.2	-	617	18	1.45	3.5	955.7	1200	1200
	380 / 3 / 60	357	403	3	349.4	-	823	18	2.05	3.9	1196.8	1200	1600
	460 / 3 / 60	432	488	3	288.6	-	693	18	2.30	4.0	1010.0	1200	1200
510-3	380 / 3 / 50	357	403	3	291.8	-	663	20	1.45	3.5	1045.4	1200	1200
	415 / 3 / 50	390	440	3	267.2	-	617	20	1.45	3.5	965.4	1200	1200
	380 / 3 / 60	357	403	3	349.4	-	823	20	2.05	3.9	1203.6	1600	1600
	460 / 3 / 60	432	488	3	288.6	-	693	20	2.30	4.0	1018.0	1200	1200
550-4	380 / 3 / 50	357	403	4	221.7	-	447	20	1.45	3.5	1039.2	1200	1200
	415 / 3 / 50	390	440	4	203.0	-	432	20	1.45	3.5	959.8	1000	1200
	380 / 3 / 60	357	403	4	264.9	-	583	20	2.05	3.9	1193.8	1200	1600
	460 / 3 / 60	432	488	4	218.8	-	467	20	2.30	4.0	1009.9	1200	1200
580-4	380 / 3 / 50	357	403	4	243.8	-	477	20	1.45	3.5	1133.2	1200	1250
	415 / 3 / 50	390	440	4	223.2	-	457	20	1.45	3.5	1045.6	1200	1200
	380 / 3 / 60	357	403	4	290.0	-	643	20	2.05	3.9	1300.5	1600	1600
	460 / 3 / 60	432	488	4	239.6	-	498	20	2.30	4.0	1098.3	1200	1200
600-4	380 / 3 / 50	357	403	4	243.8	-	477	20	1.45	3.5	1133.2	1200	1250
	415 / 3 / 50	390	440	4	223.2	-	457	20	1.45	3.5	1045.6	1200	1200
	380 / 3 / 60	357	403	4	290.0	-	643	20	2.05	3.9	1300.5	1600	1600
	460 / 3 / 60	432	488	4	239.6	-	498	20	2.30	4.0	1098.3	1200	1200

Legend

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- FLA: Full Load Ampere (for each Fan motor)
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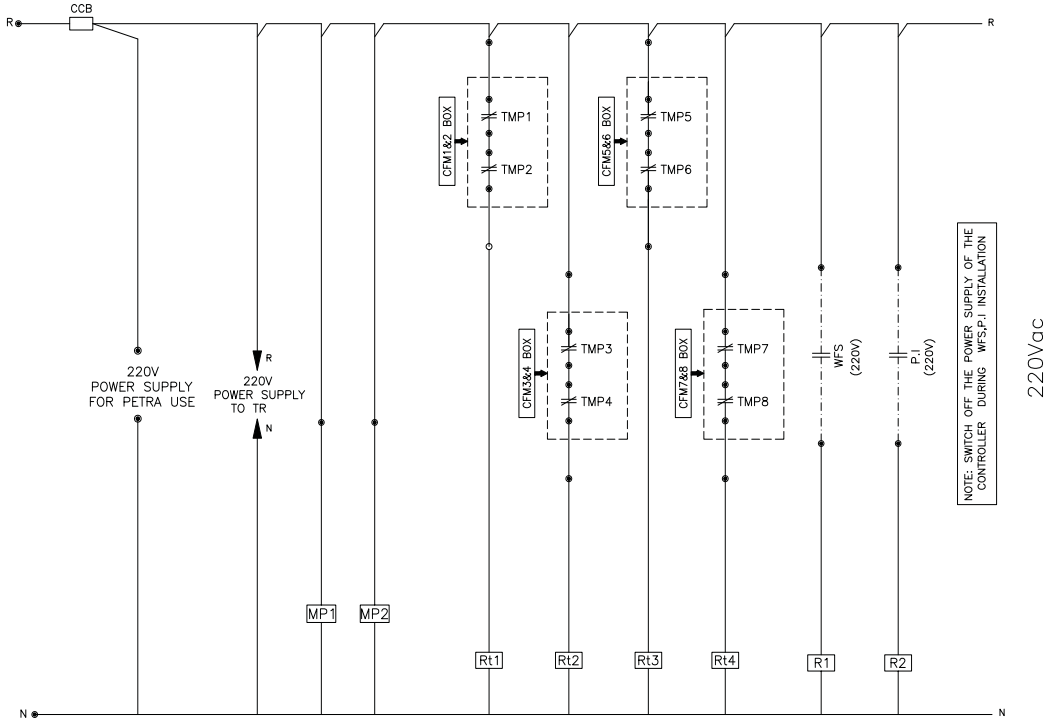
- MDS: Non-Fused Main Disconnect Switch
- LRA: Locked Rotor Ampere
- MCA: Minimum Circuit Ampacity
- PW: Part winding connection
- Y-D: Star-Delta connection

Note

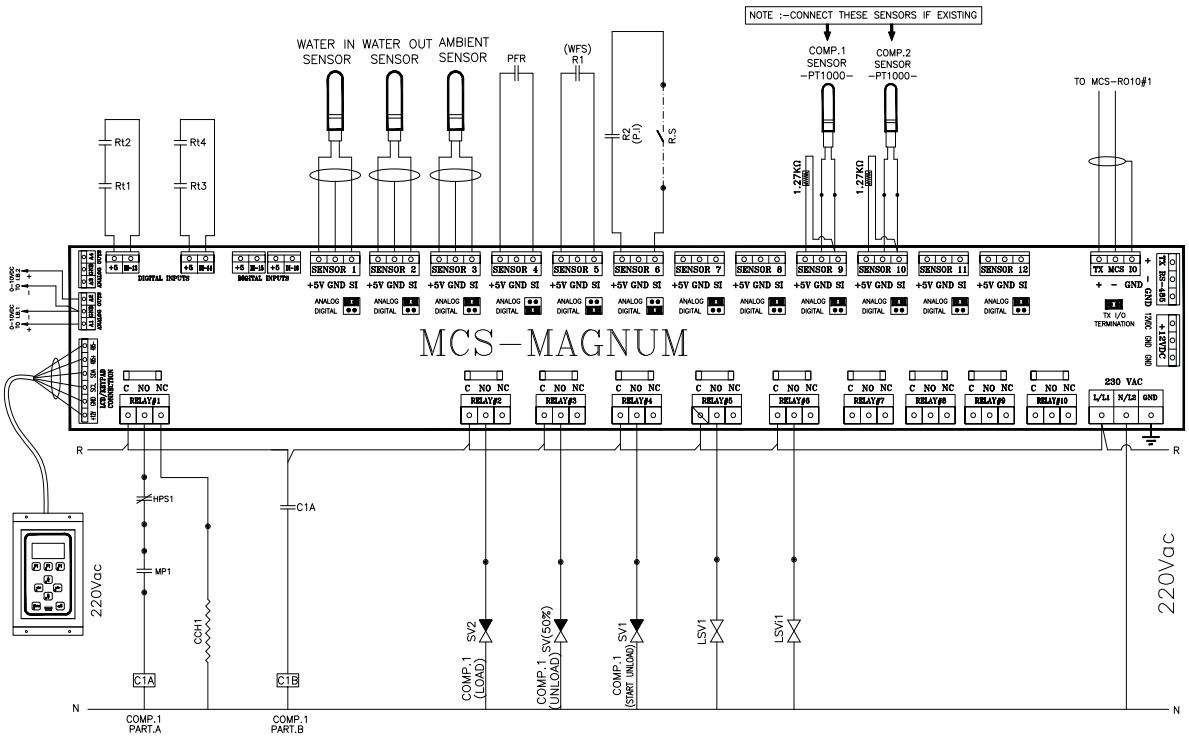
- MCA is based on 125% of the RLA for the largest motor plus 100% of the RLA/FLA for all other loads included in the circuit (NEC-Article 430-24)
- MOP is based on 225% of the RLA for the largest motor plus 100% of the RLA for all other loads included in the circuit (NEC-Article 440-22)
- MDS is based on 115% of the total summation of RLA/FLA for all loads included in the circuit (NEC-Article 440- 12A1)

Typical Wiring - 380~415V/3Ph/50Hz

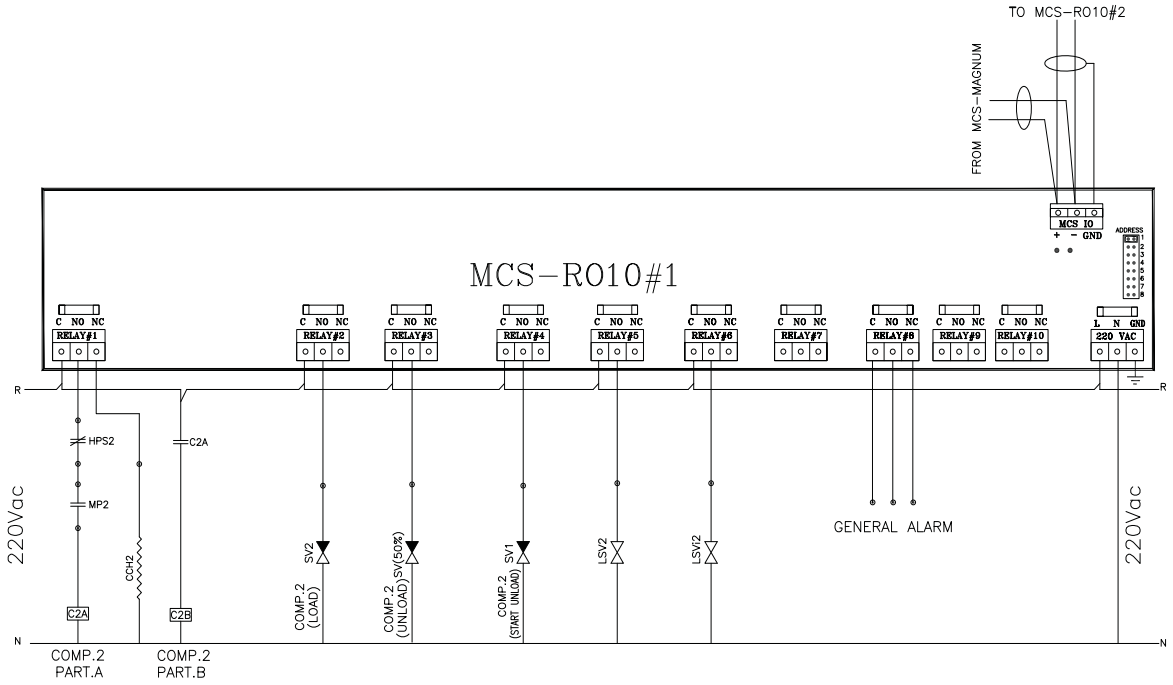
- **Control Diagram**



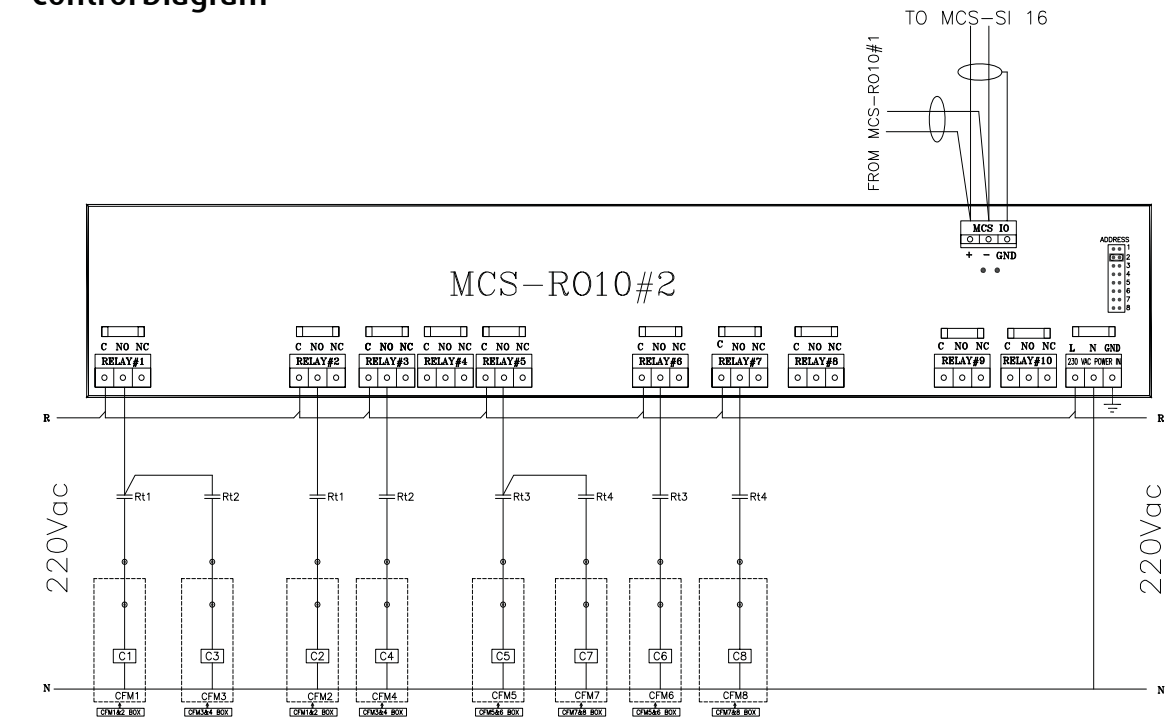
- **Control Diagram**



- **Control Diagram**

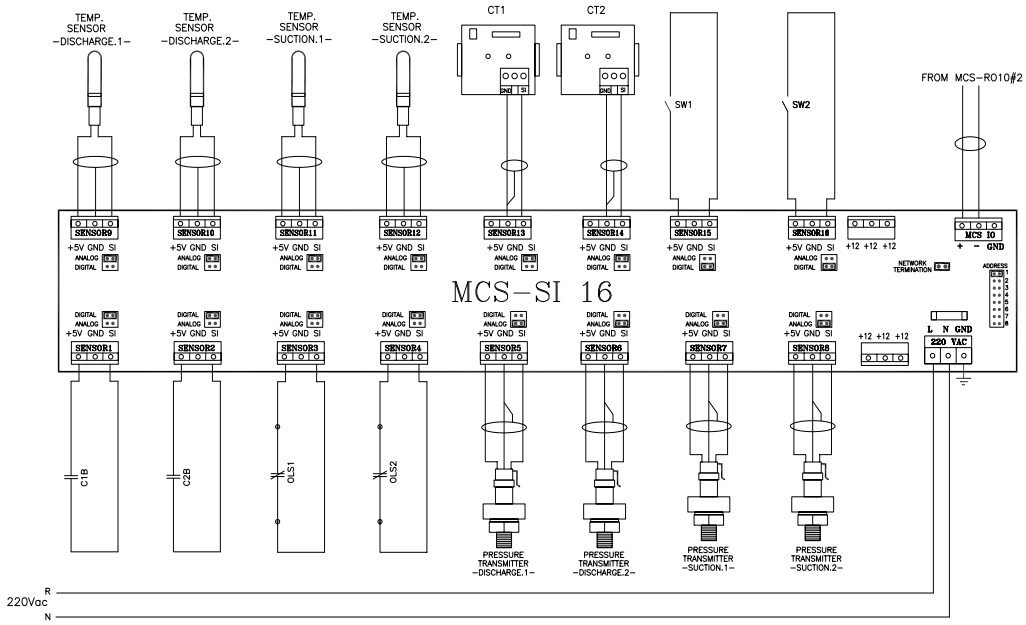


- **Control Diagram**

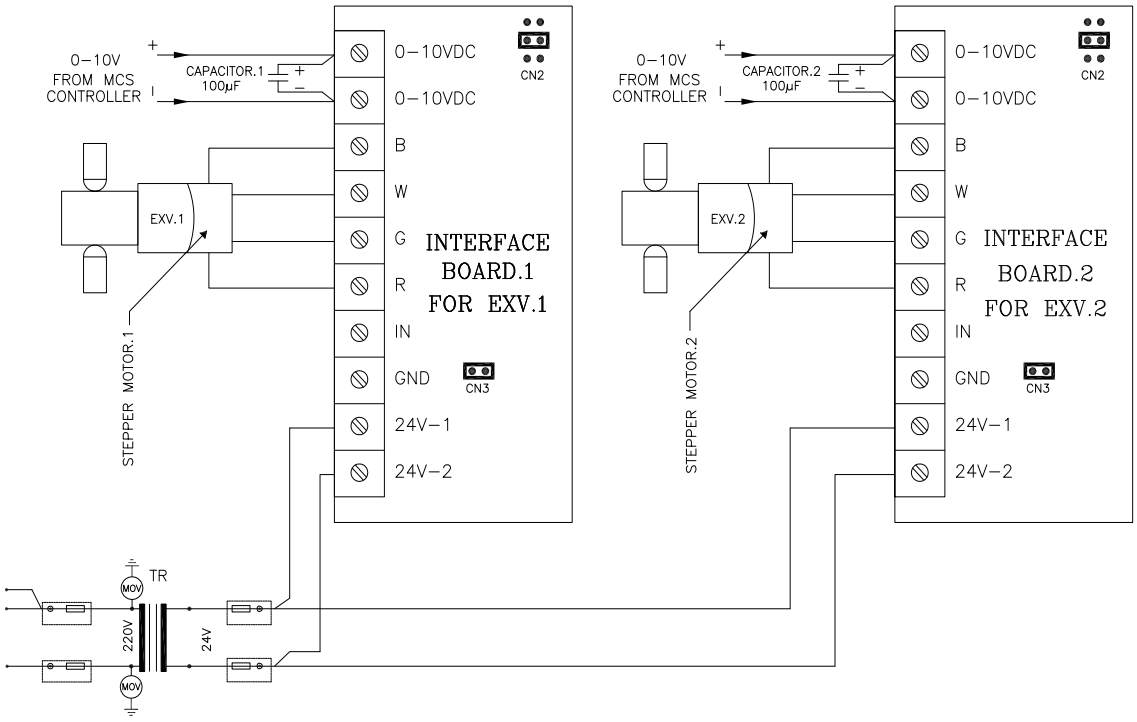


Typical Wiring - 380~415V/3Ph/50Hz

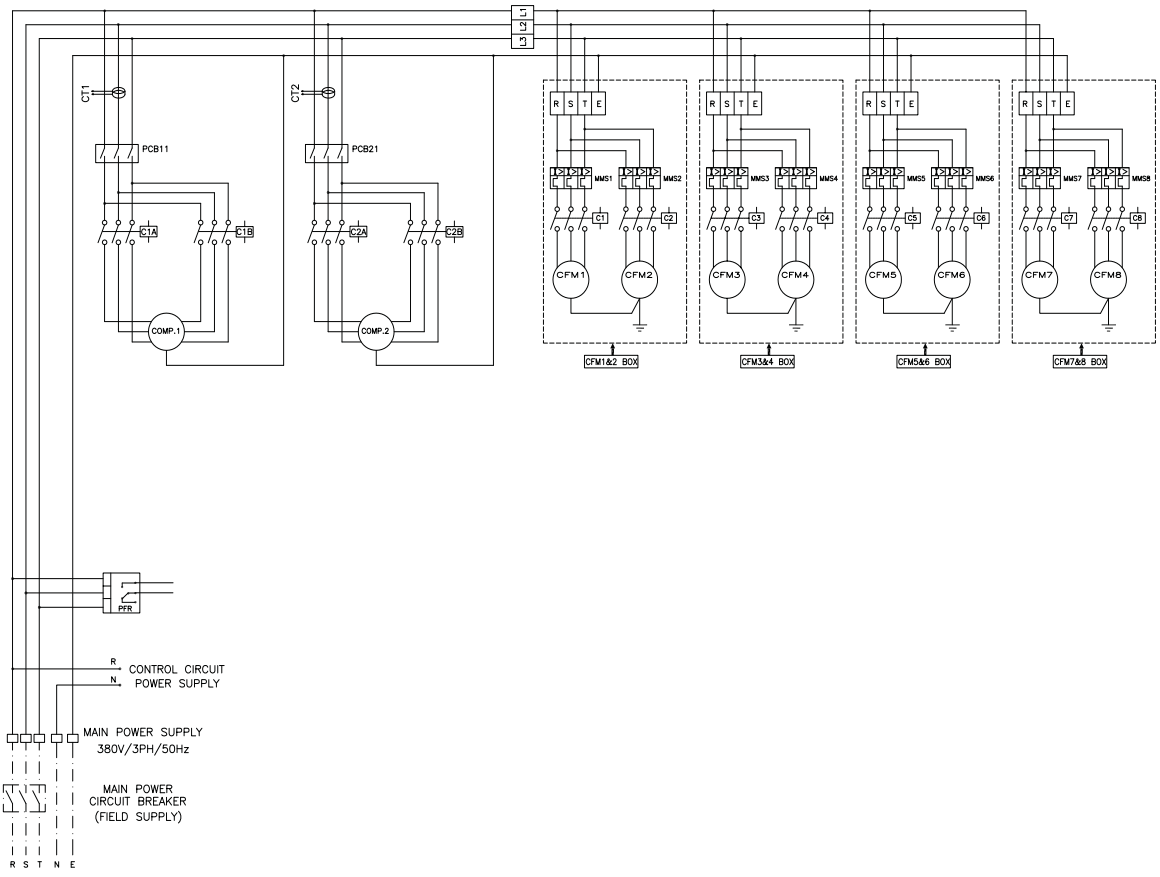
- **Control Diagram**



- **Electronic Expansion V alve Drive**



- **Power Diagram**



Typical Wiring - 380~415V/3Ph/50Hz

- **Lists & Tables**

LEGEND			
COMP.	COMPRESSOR	HPS	HIGH PRESSURE SWITCH
CFM	CONDENSER FAN MOTOR	OLS	OIL LEVEL SWITCH
CCB	CONTROL CIRCUIT BREAKER	SV	SLIDING VALVE
C	CONTACTOR	WFS	WATER FLOW SWITCH
PFR	PHASE FAILURE RELAY	LSVi	LIQUID SOLENOID VALVE INJECTION
CCH	CRANK CASE HEATER	TR	TRANSFORMER
LSV	LIQUID SOLENOID VALVE	R.S	REMOTE SWITCH
MP	MOTOR PROTECTOR	R	CONTROL RELAY
PI	PUMP INTERLOCK	MMS	MANUAL MOTOR STARTER
CT	CURRENT TRANSFORMER	MOV	METAL OXIDE VARISTER
SW	SWITCH	⊙n	TERMINAL NUMBER
EXV	ELECTRONIC EXPANSION VALVE	⊗	SIGNAL LAMP
I.B	INTERFACE BOARD	Wn	WIRING NUMBER
TMP	THERMAL MOTOR PROTECTOR	— — —	FEILD CONNECTION (BY OTHERS)
PCB	POWER CIRCUIT BREAKER		

- **Lists & Tables**

MCS DISPLAY

ALARM:

1* IN CASE OF "COMP. PROOF" ALARM MESSAGE FOR ANY CIRCUIT CHECK : (HPS,MP) RELATED TO THAT CIRCUIT

2* IN CASE OF "FREEZE" ALARM IT MEANS ONE OF THE FOLLOWING:
- –FREEZE CONDITION
- –WATER OUT SENSOR ISN'T CONNECTED OR DOESN'T OPERATE

LEGEND:

DISC.P :– DISCHARGE PRESSURE
SUC.P :– SUCTION PRESSURE
DISC.T :– DISCHARGE TEMPERATURE
SUC.T :– SUCTION TEMPERATURE

PFR INDICATOR LIGHT DIAGNOSTICS	
RUN	GREEN
RESTART DELAY	GREEN
REVERSE PHASE	RED
UNBALANCE/SINGLE PHASE	RED
HIGH/LOW VOLTAGE	RED

ACCESS TO SET POINT

PRESS MENU BUTTON (Menu 8) ON THE CONTROLLER KEYPAD

GO TO THE (SETPOINTS) BY PRESSING (→ 6) AND THEN PRESS ENTER

GO TO THE (CHW OUT TRGT) AND THEN PRESS ON (↵) BUTTON

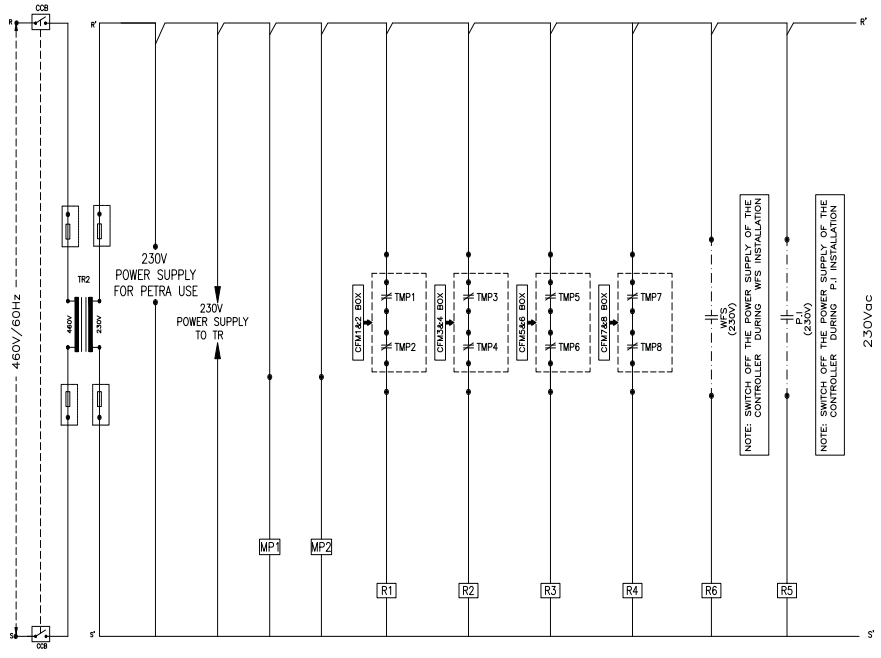
AND THEN PRESS (↵) TO ENABLE MODIFYING THE VALUE

NOW YOU CAN CHANGE IT BY PRESSING (↑ 4) AND (↓ 7) AND THEN PRESS (↵) TO SAVE

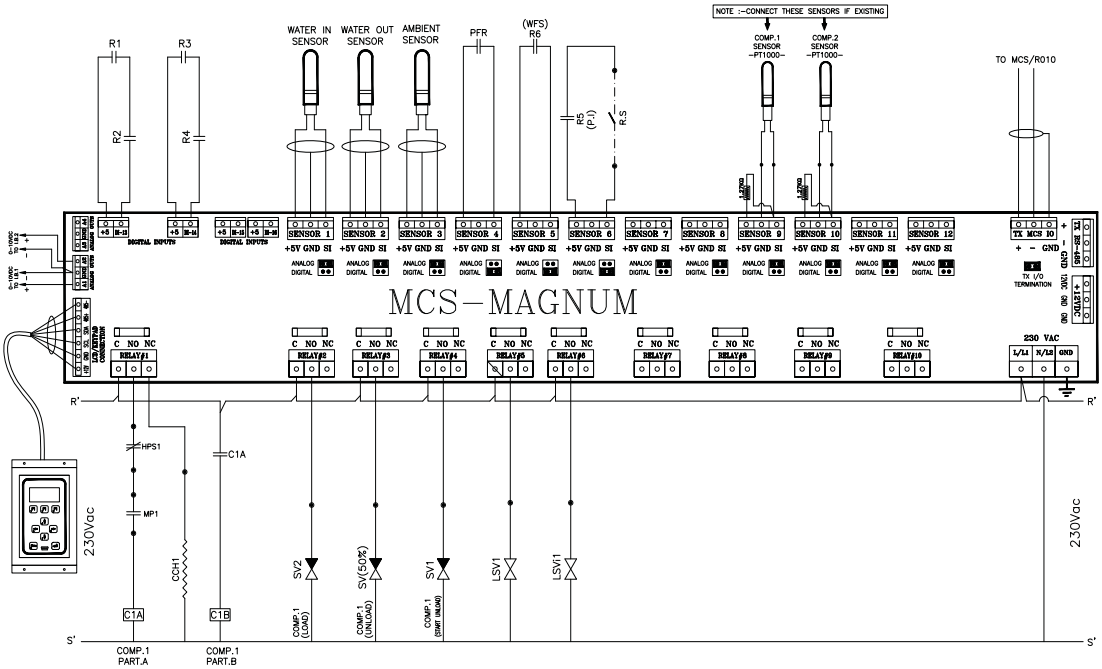
THEN PRESS (Menu 8) TO EXIT TO THE MAIN MENU

Typical Wiring - 460V/3Ph/60 Hz

- **Control Diagram**

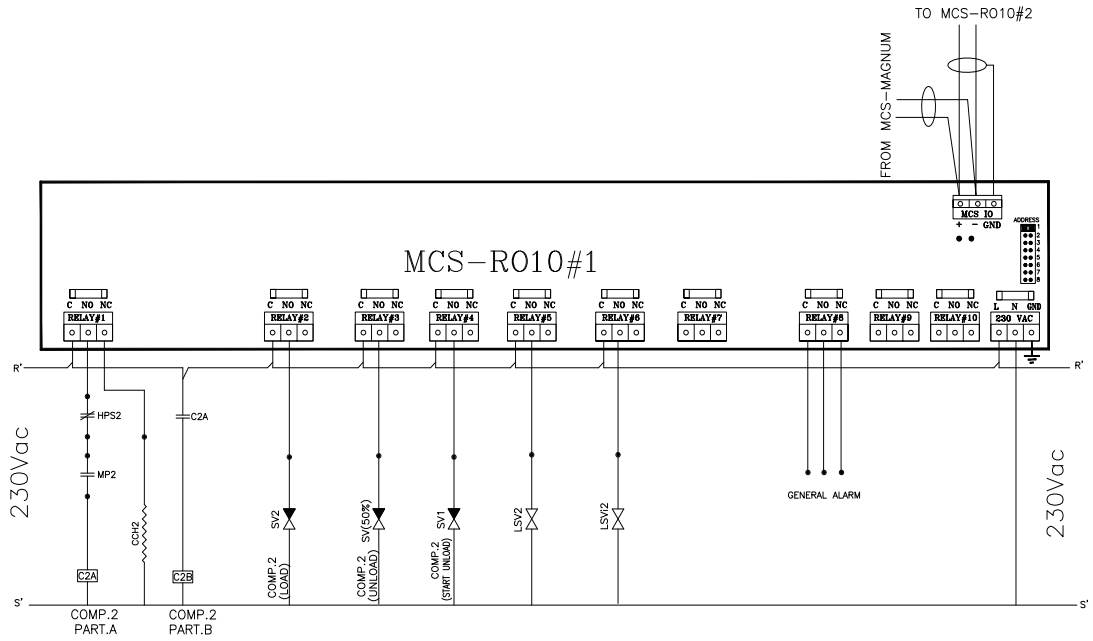


- **Control Diagram**

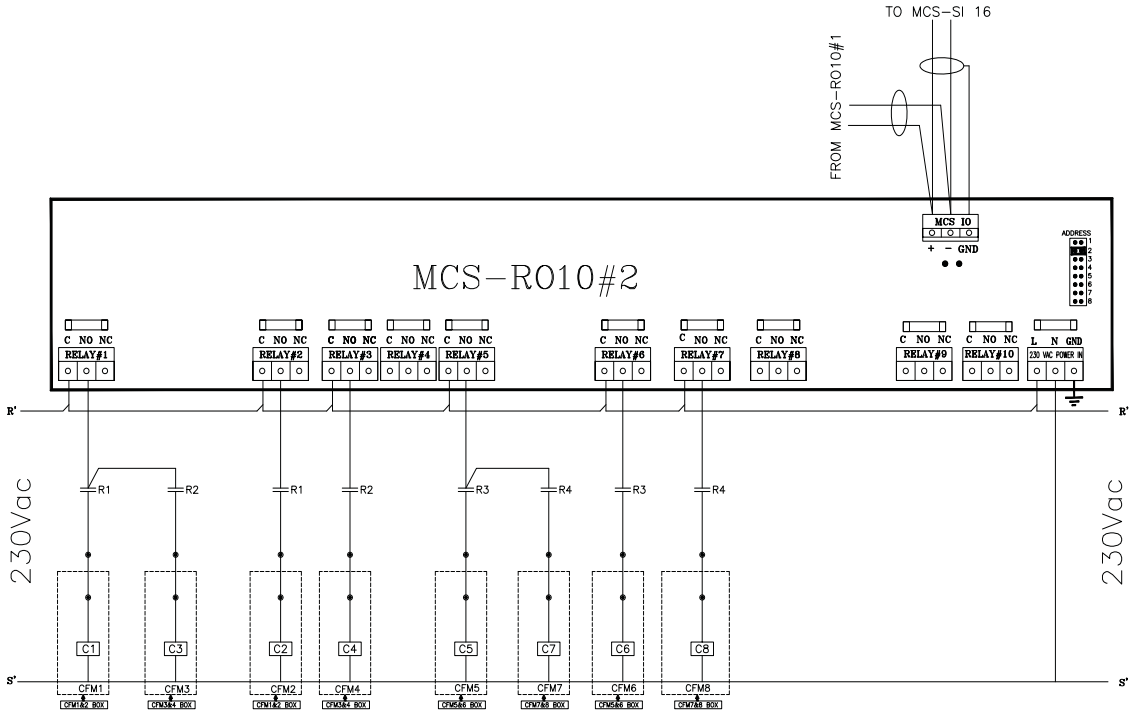


Typical Wiring - 460V/3Ph/60 Hz

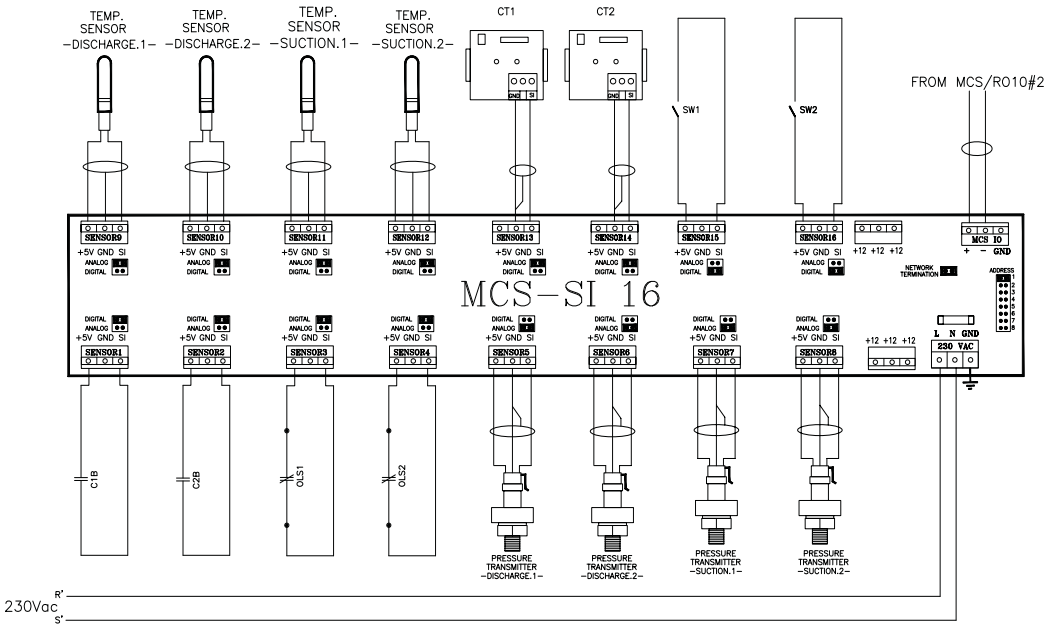
- **Control Diagram**



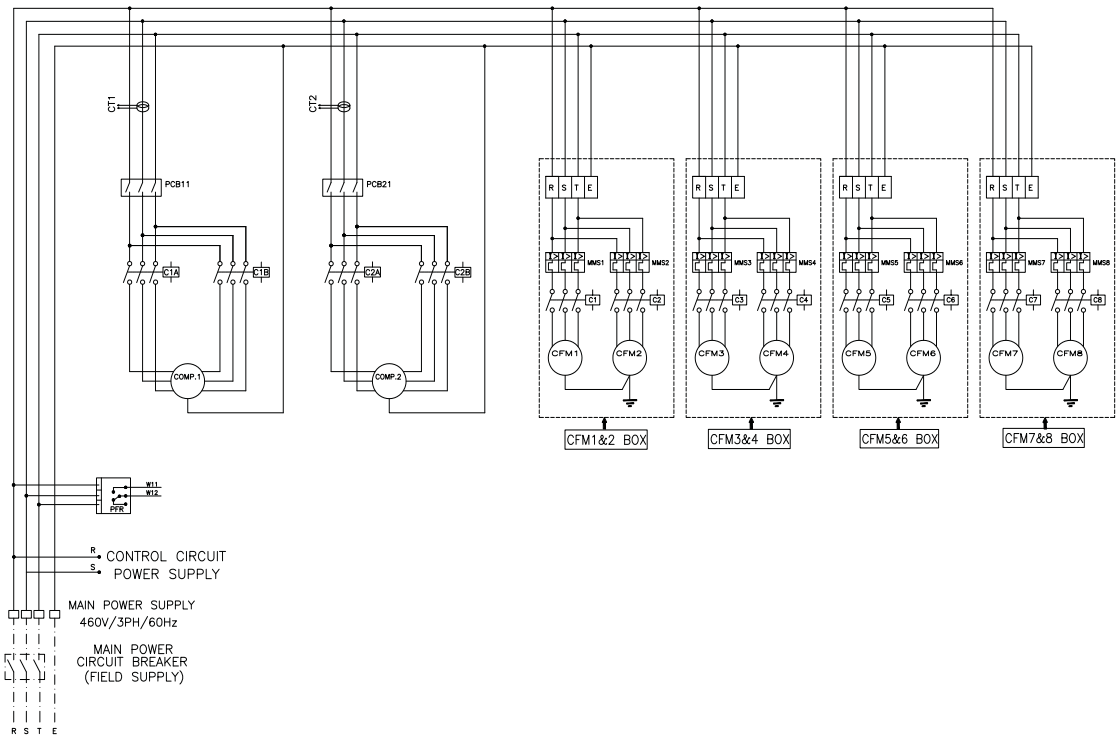
- **Control Diagram**



- **Control Diagram**

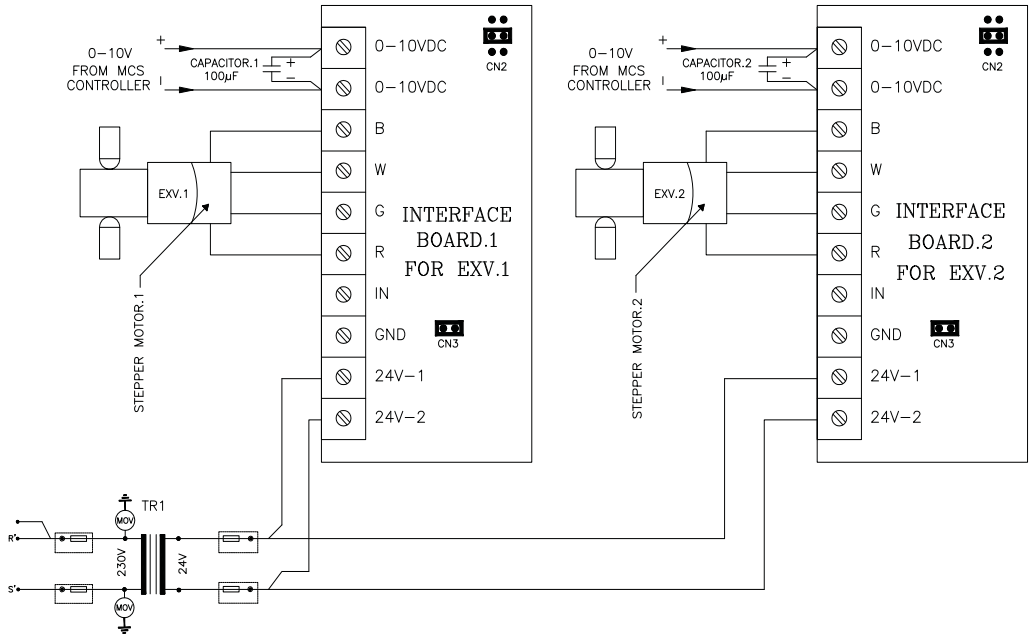


- **Power Diagram**



Typical Wiring - 460V/3Ph/60 Hz

- **Electronic Expansion V alve Drive**



- **Lists & Tables**

LEGEND			
COMP.	COMPRESSOR	TR	TRANSFORMER
CFM	CONDENSER FAN MOTOR	R	CONTROL RELAY
CCB	CONTROL CIRCUIT BREAKER	HPS	HIGH PRESSURE SWITCH
C	CONTACTOR	OLS	OIL LEVEL SWITCH
PFR	PHASE FAILURE RELAY	SV	SLIDING VALVE
CCH	CRANK CASE HEATER	WFS	WATER FLOW SWITCH
LSV	LIQUID SOLENOID VALVE	LSVi	LIQUID SOLENOID VALVE INJECTION
MP	MOTOR PROTECTOR	R.S	REMOTE SWITCH
PI	PUMP INTERLOCK	MMS	MANUAL MOTOR STARTER
CT	CURRENT TRANSFORMER	TMP	THERMAL MOTOR PROTECTION
SW	ON/OFF SWITCH	⊙n	TERMINAL NUMBER
EXV	ELECTRONIC EXPANSION VALVE	Wn	WIRING NUMBER
I.B	INTERFACE BOARD	– – –	FEILD CONNECTION (BY OTHERS)
PCB	POWER CIRCUIT BREAKER		

- **Lists & Tables**

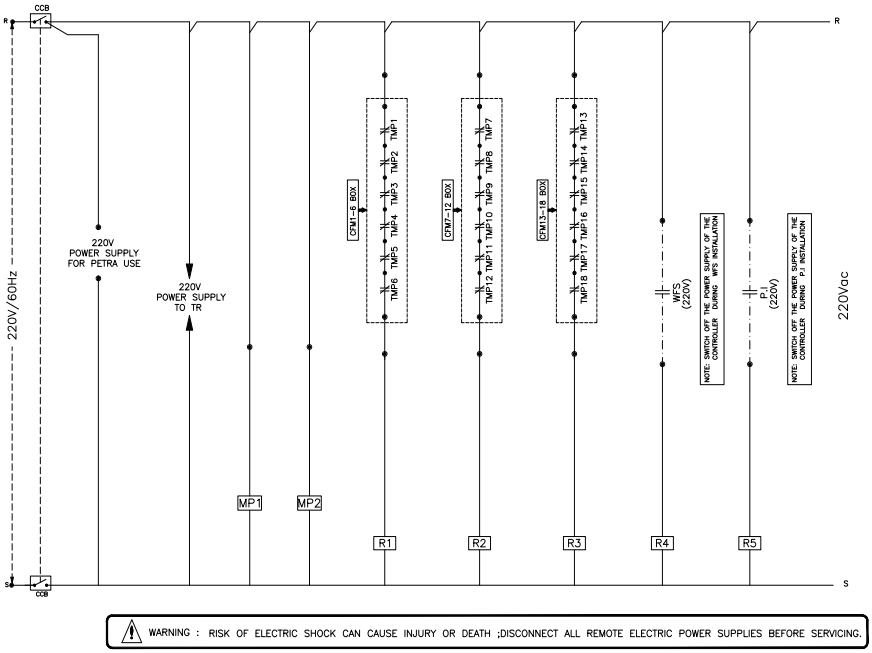
MCS DISPLAY
ALARM: 1* IN CASE OF "COMP. PROOF" ALARM MESSAGE FOR ANY CIRCUIT CHECK : (HPS,MP) RELATED TO THAT CIRCUIT 2* IN CASE OF "FREEZE" ALARM IT MEANS ONE OF THE FOLLOWING: –FREEZE CONDITION –WATER OUT SENSOR ISN'T CONNECTED OR DOESN'T OPERATE **LEGEND:** DISC.P :– DISCHARGE PRESSURE SUC.P :– SUCTION PRESSURE DISC.T :– DISCHARGE TEMPERATURE SUC.T :– SUCTION TEMPERATURE

PFR INDICATOR LIGHT DIAGNOSTICS	
RUN	GREEN
RESTART DELAY	GREEN
REVERSE PHASE	RED
UNBALANCE/SINGLE PHASE	RED
HIGH/LOW VOLTAGE	RED

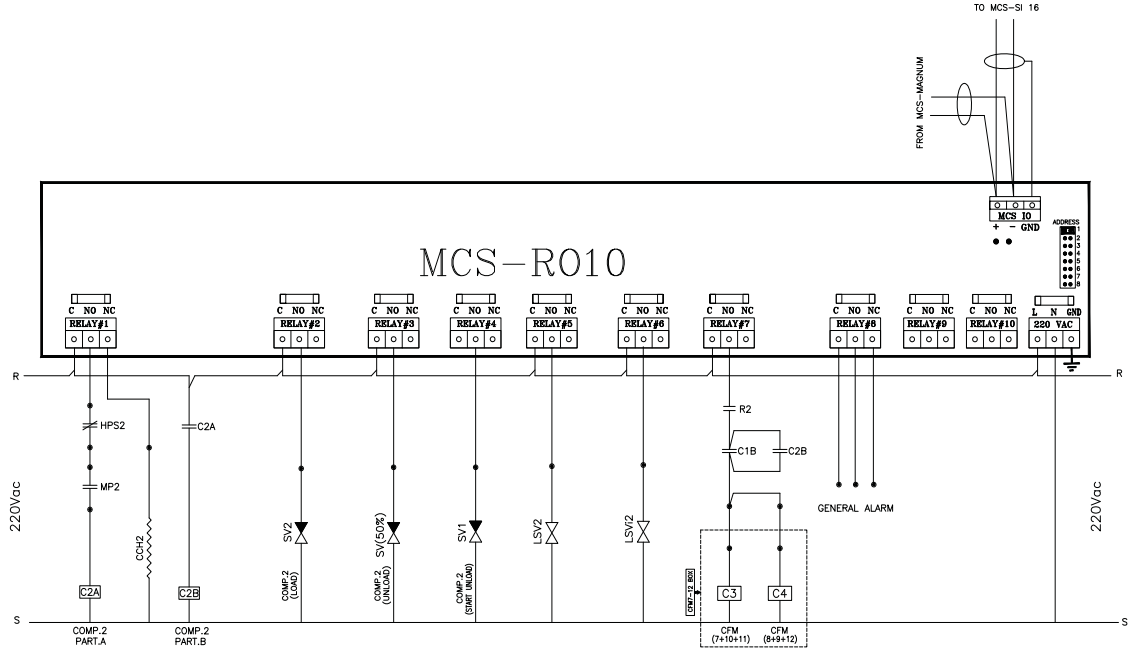
ACCESS TO SET POINT
PRESS MENU BUTTON (Menu 8) ON THE CONTROLLER KEYPAD GO TO THE (SETPOINTS) BY PRESSING (6 →) AND THEN PRESS ENTER GO TO THE (CHW OUT TRGT) AND THEN PRESS ON (↵) BUTTON AND THEN PRESS (↵) TO ENABLE MODIFYING THE VALUE NOW YOU CAN CHANGE IT BY PRESSING (4 ↑) AND (7 ↓) AND THEN PRESS (↵) TO SAVE THEN PRESS (Menu 8) TO EXIT TO THE MAIN MENU

Typical Wiring - 208V/3Ph/60 Hz

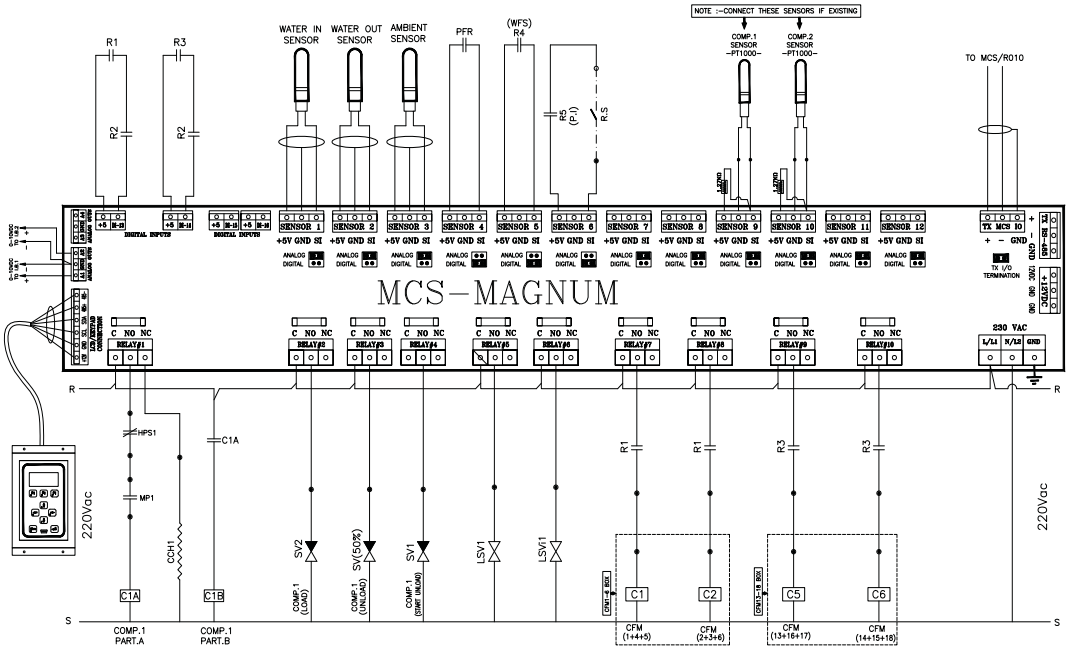
- **Control Diagram**



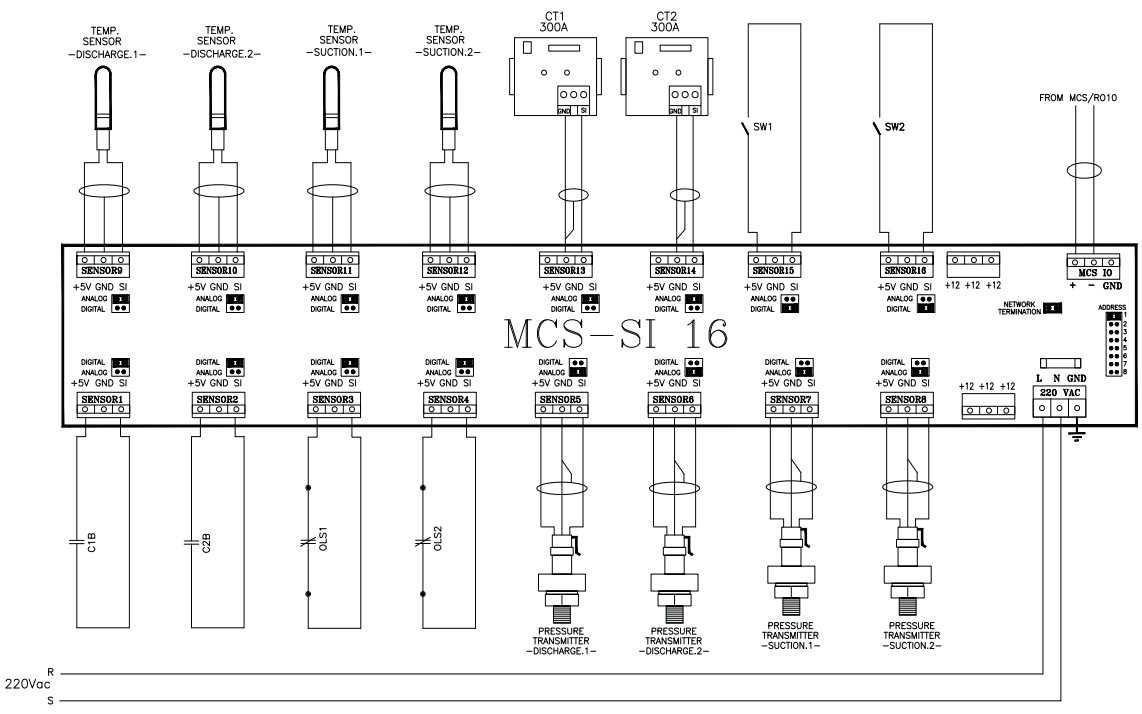
- **Control Diagram**



- **Control Diagram**

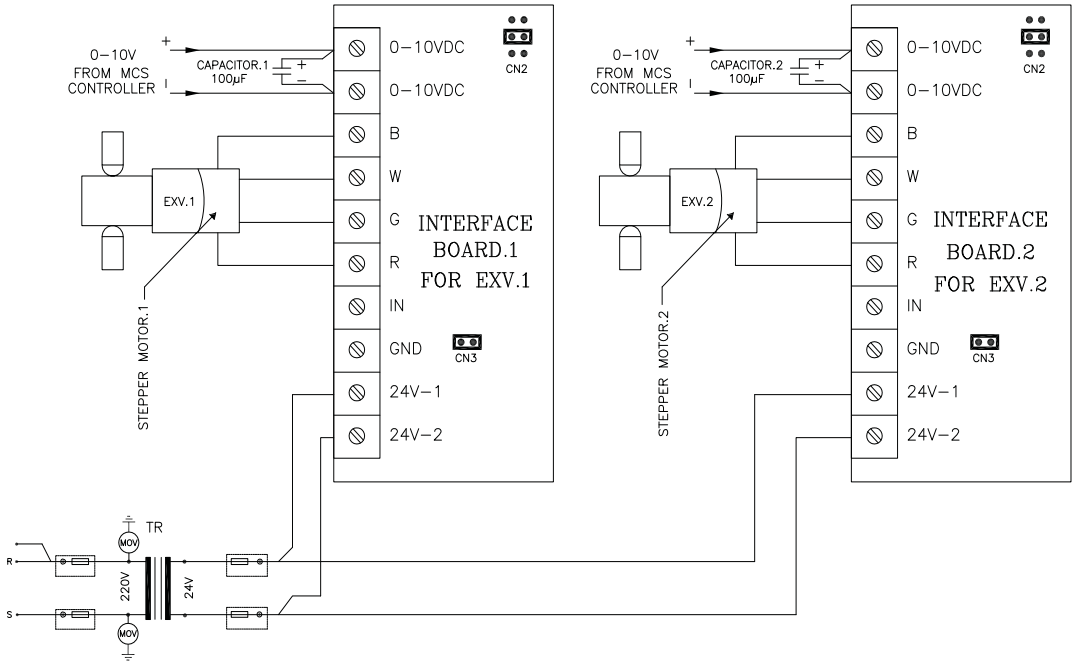


- **Control Diagram**

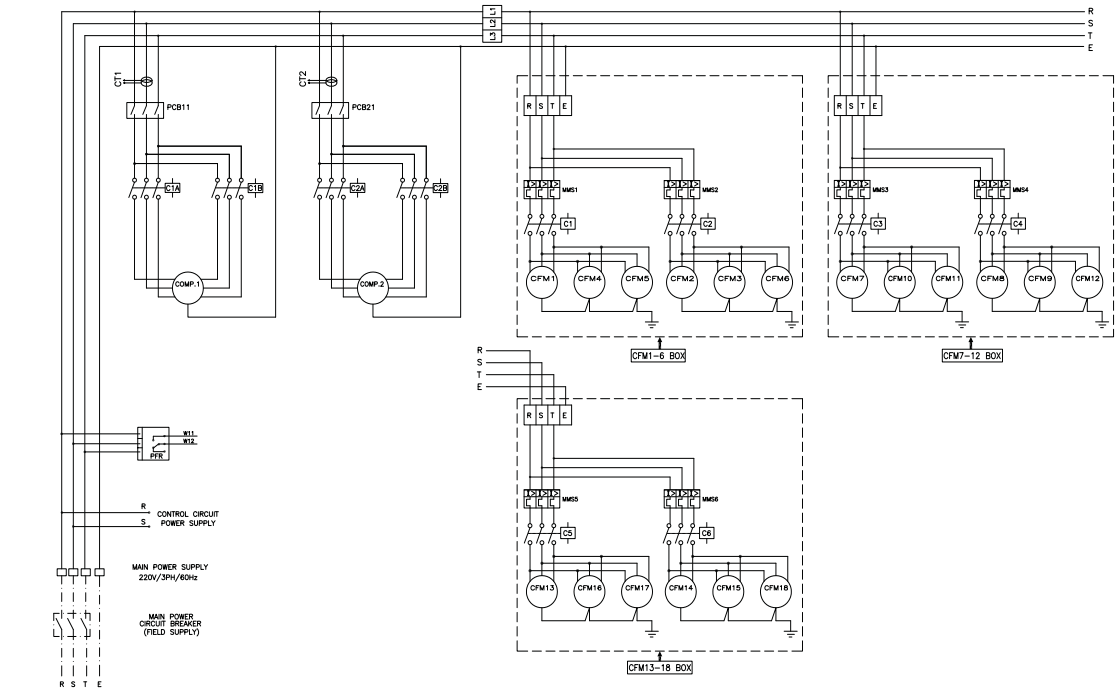


Typical Wiring - 208V/3Ph/60 Hz

- **Electronic Expansion V alve Drive**



- **Power Diagram**



- **Lists & Tables**

LEGEND			
COMP.	COMPRESSOR	HPS	HIGH PRESSURE SWITCH
CFM	CONDENSER FAN MOTOR	OLS	OIL LEVEL SWITCH
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C	CONTACTOR	WFS	WATER FLOW SWITCH
PFR	PHASE FAILURE RELAY	LSVi	LIQUID SOLENOID VALVE INJECTION
CCH	CRANK CASE HEATER	TR	TRANSFORMER
LSV	LIQUID SOLENOID VALVE	R.S	REMOTE SWITCH
MP	MOTOR PROTECTOR	R	CONTROL RELAY
PI	PUMP INTERLOCK	MMS	MANUAL MOTOR STARTER
CT	CURRENT TRANSFORMER	MOV	METAL OXIDE VARISTER
SW	SWITCH	⊙n	TERMINAL NUMBER
EXV	ELECTRONIC EXPANSION VALVE	⊗	SIGNAL LAMP
I.B	INTERFACE BOARD	Wn	WIRING NUMBER
TMP	THERMAL MOTOR PROTECTOR	– – –	FEILD CONNECTION (BY OTHERS)
PCB	POWER CIRCUIT BREAKER		

- **Lists & Tables**

MCS DISPLAY

ALARM:

1* IN CASE OF "COMP. PROOF" ALARM MESSAGE FOR ANY CIRCUIT CHECK : (HPS,MP) RELATED TO THAT CIRCUIT

2* IN CASE OF "FREEZE" ALARM IT MEANS ONE OF THE FOLLOWING:
- –FREEZE CONDITION
- –WATER OUT SENSOR ISN'T CONNECTED OR DOESN'T OPERATE

LEGEND:

DISC.P :– DISCHARGE PRESSURE
SUC.P :– SUCTION PRESSURE
DISC.T :– DISCHARGE TEMPERATURE
SUC.T :– SUCTION TEMPERATURE

PFR INDICATOR LIGHT DIAGNOSTICS	
RUN	GREEN
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ACCESS TO SET POINT

PRESS MENU BUTTON (Menu 8) ON THE CONTROLLER KEYPAD

GO TO THE (SETPOINTS) BY PRESSING (6 →) AND THEN PRESS ENTER

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AND THEN PRESS (↵) TO ENABLE MODIFYING THE VALUE

NOW YOU CAN CHANGE IT BY PRESSING (4 ↑) AND (7 ↓) AND THEN PRESS (↵) TO SAVE

THEN PRESS (Menu 8) TO EXIT TO THE MAIN MENU

Application Data

Unit Leveling

Unit must be leveled when installed to ensure proper oil returnto the compressor

Fluid Temperature

1. Maximum leaving chilled fluid temperature for unit is 10ºC (50ºF). For continuous operation, it isrecommended that return fluid temperature doesnot exceed 16ºC (60ºF) (If continuous operation isrequired for return water temperature above 16ºC (60ºF) please refer to Petra nearest sales office)
2. Minimum leaving chilled fluid temperature for a standard unit is 4ºC (40ºF) (for lower leaving temperature contact Petra nearest sales office)

Barrel (Cooler) Flow Range

Chiller ratings and performance data pertain to a fluid temperature rise of 5.5ºC (10°F). Chillers may be suitable for operation in a range from 3ºC (5.4°F)to 9ºC (16°F) temperature rise without adjustment and provided flow limits are within the minimum limits (for larger or smaller temperature rise, a mixing loop is required; please contact Petra nearest sales office)

Minimum Cooler Flow

Is based on the maximum permissible temperature rise across the cooler of 9ºC (16°F)

Fluid loop volume

To obtain proper temperature control, the loop fluid volume must be at least 297 (L/s)/kW (5 GPM/Ton) based on a 5.5ºC (10°F) temperature rise for chiller nominal capacity in air conditioning applications, taking into consideration the minimum system volume

Cooler protection:

Protection against low ambient freeze-up is required for ambient temperatures below 0ºC (32°F)

Protection should be in the form of:

1. Inhibited ethylene glycol or any other suitable glycol (please contact Petra nearest sales office)
2. Cooler is equipped with an electric tape heat that prevents freeze-up (Optional)

High Ambient Temperature

High outdoor ambient chiller start-up and operation is possible for chillers at ambient temperatures up to 52ºC (125°F) at nominal voltage (for standard units)(for higher ambient temperatures, please contact Petra nearest sales office)

Condenser Airflow

Any restrictions on the unit's fan airflow will affect the unit's capacity, condenser head pressure, and compressor power input. Such restrictions -not providing vertical clearance or lateral clearance, insufficient unit-to-unit clearance- will cause warm air re-circulation or coil starvation. Minimum required operational and maintenance clearances around the unit are shown in the figure on page 110

Altitude correction factors

Capacity correction and compressor power factors must be applied to standard ratings at altitudes above sea level using the multipliers on the right

Altitude Meter [ft]	Correction Factor	Compressor Power Factor
Sea Level	1.000	1.000
305 (1000)	0.995	1.005
610 (2000)	0.990	1.010
915 (3000)	0.985	1.015
1220 (4000)	0.980	1.020
1525 (5000)	0.973	1.025
1830 (6000)	0.976	1.030
2135 (7000)	0.960	1.035
2440 (8000)	0.950	1.040

MODEL (APSa)	Nominal water flow rate				Minimum water flow rate				Minimum loop volume			
	50 Hz		60 Hz		50 Hz		60 Hz		50 Hz		60 Hz	
	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	Liter	gallon	Liter	gallon
50-1	7	108	8	124	5	74	5	85	2,023	535	2,310	610
60-1	7	116	9	135	5	80	6	93	2,192	579	2,545	672
65-1	8	128	9	148	6	89	7	102	2,424	640	2,793	738
70-1	9	139	10	159	6	96	7	110	2,625	694	3,002	793
70-2	9	141	10	161	6	98	7	112	2,675	707	3,048	805
75-1	10	157	11	181	7	109	8	125	2,967	784	3,422	904
80-1	11	172	13	198	8	110	9	137	3,262	862	3,738	988
95-2	12	188	14	215	8	130	9	149	3,560	940	4,078	1,077
95-1	12	189	14	216	8	140	10	150	3,572	944	4,095	1,082
100-1	13	211	15	240	9	146	11	166	3,991	1,055	4,536	1,198
100-2	13	212	15	242	9	147	10	167	4,020	1,062	4,583	1,211
110-2	14	225	16	257	10	156	11	178	4,260	1,125	4,869	1,286
120-2	15	236	17	270	11	164	12	187	4,469	1,180	5,106	1,349
125-2	16	247	18	281	11	171	12	195	4,672	1,236	5,309	1,405
135-2	17	273	20	312	12	189	14	216	5,152	1,363	5,891	1,559
140-2	18	293	21	334	13	203	15	231	5,544	1,465	6,315	1,668
145-2	19	303	22	348	13	210	15	241	5,734	1,517	6,570	1,738
160-2	20	321	23	366	14	222	16	254	6,074	1,605	6,925	1,829
165-2	21	335	24	381	15	232	17	264	6,322	1,673	7,195	1,904
175-2	22	354	25	399	15	245	17	276	6,697	1,769	7,556	1,996
190-2	23	365	26	414	17	269	19	305	6,902	1,826	7,826	2,071
195-2	25	389	28	440	17	269	19	305	7,352	1,942	8,328	2,200
200-2	25	399	29	453	17	277	20	314	7,552	1,995	8,578	2,266
205-2	27	433	32	501	20	311	21	332	8,189	2,167	9,465	2,504
210-2	28	439	32	503	19	304	16	249	8,317	2,197	9,524	2,516
220-2	29	458	33	528	20	318	23	366	8,656	2,290	9,977	2,640
235-2	31	494	36	566	22	342	25	393	9,350	2,470	10,721	2,832
250-2	35	550	40	628	24	381	27	436	10,411	2,750	11,894	3,142
275-2	37	581	42	666	25	403	29	461	10,993	2,904	12,598	3,328
280-2	37	580	42	667	26	410	30	468	10,953	2,898	12,597	3,333
285-2	38	602	43	686	26	417	30	475	11,392	3,010	12,977	3,428
300-2	40	630	46	723	28	437	31	501	11,927	3,151	13,691	3,617
315-3	42	665	48	759	29	461	33	526	12,576	3,327	14,347	3,796
315-2	42	668	48	762	29	463	33	528	12,645	3,340	14,419	3,809
335-2	46	725	52	828	31	492	35	560	13,442	3,550	15,304	4,043
350-2	47	748	54	858	33	519	37	595	14,157	3,740	16,236	4,289
350-3	48	756	55	868	32	512	37	587	14,283	3,779	16,409	4,341
360-3	49	773	56	891	33	522	38	596	14,600	3,863	16,834	4,454
375-3	50	790	57	905	34	535	38	612	14,620	3,862	16,705	4,413
400-3	54	848	61	971	37	588	42	673	16,056	4,241	18,375	4,854
415-3	57	909	65	1,036	40	630	45	718	17,209	4,546	19,617	5,182
430-3	59	929	67	1,059	41	644	46	734	17,556	4,645	20,023	5,297
450-3	60	948	68	1,079	41	657	47	748	17,942	4,740	20,422	5,395
465-3	61	972	70	1,109	43	674	48	769	18,369	4,860	20,953	5,543
475-3	63	1,006	72	1,146	44	697	50	794	19,041	5,030	21,681	5,727
485-3	65	1,028	74	1,171	44	696	50	789	19,429	5,140	22,139	5,857
500-3	66	1,041	74	1,178	45	722	51	817	19,711	5,207	22,296	5,890
510-3	67	1,064	76	1,210	46	737	53	839	20,137	5,320	22,904	6,050
550-4	71	1,122	81	1,288	49	778	56	893	21,243	5,612	24,370	6,438
580-4	76	1,204	87	1,371	53	835	60	951	22,786	6,019	25,955	6,857
600-4	80	1,262	92	1,452	55	875	63	1,007	23,883	6,309	27,478	7,258

Note

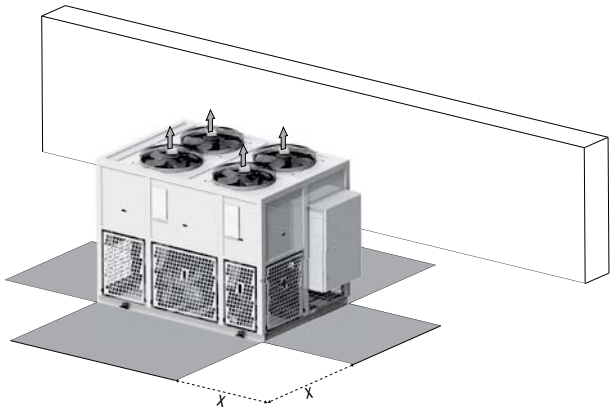
- Nominal water flow rate is based on AHRI condition of 35 ºC (95 ºF) ambient and leaving water temperature of 6.7ºC (44ºF) and inlet water temperature of 12.2ºC (54ºF)
- Minimum water flow rate is based on leaving water temperature of 4ºC (40ºF) and inletwater temperature of 13ºC (55ºF)
- Minimum cooler loop volume is based on normal air conditioning application

Unit Clearance

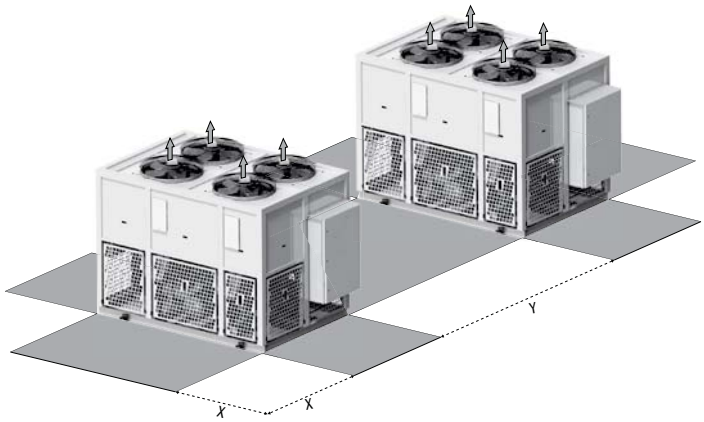
When locating the chiller, pay particular attention to the clearances between the unit and adjacent objects. The relevant electrical code (NEC or CEC) requires a minimum of 36 inches (100 cm) of service space between the face of any electrical enclosure and any wall or obstruction.

Provide sufficient clearance to ensure full access door swings, panel removal and room for piping and wiring ducting. There must be no obstructions to prevent airflow through hoods or louvers. Allow a distance equivalent to the horizontal width of the louver between the louver and any wall facing the louver.

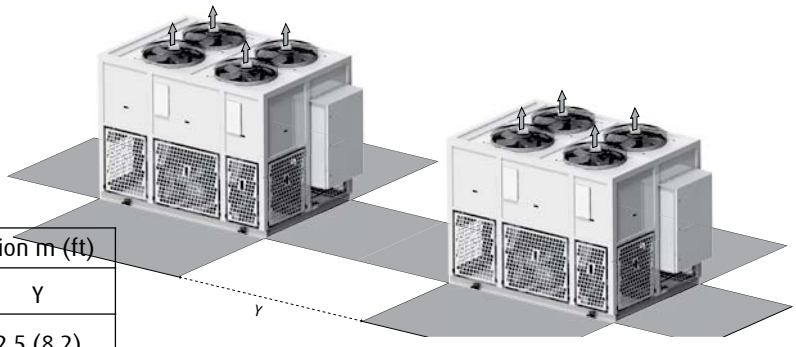
· Single unit



· Side-by-side



· End-to-end



Clearance Dimension m (ft)	
X	Y
1.8 (5.9)	2.5 (8.2)

Legend

- Free Space For Service
- Electric Box
- No Obstacles

Note

- Unit must be leveled
- Service area above is the minimum accepted
- Condenser fan level must be higher than louver or wall level to avoid any short air circulation to condenser coil
- For any other site installation requirements or multiple chiller installation, please contact your nearest Petra sales office

Guide Specification

Part 1 — General

1.01 SYSTEM DESCRIPTION

A. This section includes a microprocessor controlled air-cooled liquid chiller with twin-screw semi hermetic compressors, suitable for outdoor installation with low sound fans and independent refrigeration circuits. Chiller will have the scheduled capacities as shown and indicated on the plans tables and drawings

1.02 QUALITY ASSURANCE

A. Chiller unit shall be designed, manufactured, tested, rated and certified in accordance with the applicable section of the following standards and codes:

1- AHRI 550/590, "Water Chilling Package Using the Vapor Compression Cycle" latest edition
2- AHRI 370, "Sound Rating of Large Outdoor Refrigeration and Air-Conditioning Equipment"
3- ASHRAE 90.1, "Energy Standard for Buildings Except Low-Rise Residential Buildings"
4- ANSI/ASHRAE 15, "Safety Code for Mechanical Refrigeration". Comply with ASHRAE guideline 3 for refrigerant leaks, recovery, handling and storage requirements
5- ANSI/ASHRAE 34, "Number Designation andSafety Classification of Refrigerants"
6- ANSI/NFPA 70, "National Electrical Code (NEC)"
7- OSHA, "Occupational Safety and Health Act"
8- ASME Compliance: Fabricate and label water chiller heat exchangers (Barrel) to comply with "ASME Boiler and Pressure Vessel Code: Section VIII, Division I"
9- Manufactured in a facility registered to ISO 9001-2015, "Manufacturing Quality Standard" that define, establish, and maintain an effective quality assurance system for manufacturing and service industries and ISO 14001-2015, "Environmental Management System" that identify and control the environment impact and constantly improve the organization environmental performance
10- Conform to UL 1995-2000 under "Intertek Testing Services" for construction of chillers and bear the ETL/cETL mark

B. Factory Run Test

1- Unit shall be full load run tested at the factory. This includes pressure testing, evacuation of refrigeration circuits and charging afterward with refrigerant and oil. The run test will be carried out in a controlled environment based on the ambient design temperature, entering and leaving water temperatures and with water flowing through the barrel (Evaporator)

1.03 DELIVERY, STORAGE AND HANDLING

A. Unit controls shall be capable of withstanding 65.5 °C (150 °F) storage temperatures in the control compartment
B. Unit shall be delivered to job site fully assembled with all interconnecting refrigeration piping and internal wiring ready for field installation and charged with refrigerant and oil by the manufacturer
C. Unit to have a protective transparent shipping cover over the whole. This cover shall be secured to the unit base through special welded steel rods with nylon robes. Barrel opening shall be protected with plastic caps
D. Unit shall be stored and handled per unit manufacturer's recommendations

1.04 WARRANTY

A. Manufacturer shall warrant the equipment (parts only) against defects of workmanship and/or material for a period of eighteen (18) months from date of shipment or twelve (12) months from date of start-up, whichever occurs first

Part 2 — PRODUCTS

2.01 APROVED MANUFACTURERS

A.The design shown on the Plans & Drawings is based on PETRA model APSa chiller manufactured by Petra Engineering Industries Co. Alternate equipment will be acceptable if the manufacturer's equipment meets the scheduled performance and complies with these specifications. If equipment manufactured by a manufacturer other than that scheduled is utilized, then the Mechanical Contractor shall be responsible for coordinating with the General Contractor and all affected Subcontractors to insure proper provisions for installation of the furnished unit. This coordination shall include, but not be limited to, the following:

1- Electrical power requirements, wire and conduit sizes, circuit breakers and feeders sizes and overcurrent protection size
2- Structural supports for units
3- Chiller physical size on plant layout and apace availability
4- Water piping sizes and water connection locations on the unit
5- Compliance with the proper international codes such as AHRI, ANSI, NFPA, UL and ASME
6- Site noise considerations

B. The Mechanical Contractor shall be Responsible for all costs incurred by the General contractor, Subcontractors, and Consultants to modify the building provisions to accept the furnished alternate equipment

2.02 GENERAL

A. Description:

1- Furnish, install and commission a factory assembled single piece chassis air cooled screw compressor chiller unit that is charged and run tested in the factory as specified herein and shown on the Drawings. Chiller shall include, but is not limited to: twin screw semi hermetic compressors,a complete refrigeration system with multiple independent refrigerant circuit, shell and tube DX type barrel (evaporator), air-cooled condenser, a full charge of R-134a refrigerant, flanged on lubrication system, interconnecting wiring, safety and operating controls and all special features as specified herein or required for safe and automatic operation

B. Unit Paint and Color:

1- Unit panels, structural members, control and electrical boxes shall be constructed of a minimum of G-60-90 galvanized steel that shall be coated with a polyester oven baked powder paint that meets a minimum 5,000 hours salt spray tested in accordance with the ASTM B117 standard. Color code will be RAL 9002 (White Gray). Any other paint process that meets less than 5,000 hours shall not be accepted

C. Unit Base Structure And Finish:

1- Unit will be supported by a structural welded steel C-channel of heights of 100 mm (3.1"),140 mm (5.5") and 180 mm (7.1"). The base shall incorporate cross members to support internal components and will be equipped with screwed-in lifting lugs (eye bolts) of suitable loading capacity. Each lifting lug will be fitted on a welded bracket to the side of the C- channel. The base members will be coated with mono component catalyzed primer sprayed paint. Welded rods inside the C-channel shall be added to tie-in the unit roof cover for shipment purposes

2- OPTIONAL: Sprayed base by two layers of the same color epoxy paint

D. Unit Structure and Cabinet:

1- Frames shall be made of semi-welded structure of galvanized steel tubes of 50 mm (4") cross section and gauge 15 (1.8 mm {0.071"}) wall thickness

2- A protective panel made from gauge 18 (1.25 mm {0.051"}) thickness galvanized steel is fitted on the whole unit perimeter (upper level) to ensure a uniform air distribution across the condenser coil face area and provide addition al protection for the coils from the weather elements

3- All self-tapping screws and Bolts/Nuts used shall be made from Stainless steel with a built in rubber retainer included

4- All electrical panels are made from gauge 18 (1.25 mm {0.051"}) thickness galvanized

5- *OPTIONAL: A Coil guard made from gauge 18 (1.25 mm {0.051"}) thickness galvanized steel is fitted on the whole unit perimeter (lower level) to provide a protective barrier for the chiller components. The coil guards are secured in place with a spring loaded quick turn latches and supported upon opening by a Stainless Steel hinges}*

E. Compressors:

1- Twin rotary screw semi-hermetic compressors

2- Direct drive Compressor, suction gas cooled motor with a nominal speed of 2900/3500 rpm (50/60 power supply cycle). Motor shall be protected by a solid state motor protector feeding from imbedded motor temperature sensors on all three phases

3- Compressors shall be equipped with a flanged on oil separator that utilized the oil collection with a fine mesh oil filter and all necessary safeties. External oil separators with pumps shall not accepted

4- A crank case heater is fitted to the compressor to heat up the oil before startups. It is recommended to turn on the chiller controls before at least 24-hours to energize the crank case heater

5- Compressors shall be equipped with a discharge valve as part of the compressor

6- Compressors shall start unloaded with the unit microprocessor to load the compressor to match the system load

7- Compressor starting shall be part winding or Wye-Delta

8- Capacity control shall utilize an infinitely step less modulating slide valve to modulate capacity to match load requirements

9- Compressor shall be supported by rubber in shear vibration isolators and provided with ample space around it for service and removal

10- Compressor shall be equipped with a built in low pressure protection through a pressure transmitter connected to unit controller

11- Compressor shall have an oil level switch, high efficiency suction strainer

F. Barrels (Evaporator Cooler):

1- Shall be a shell-and-tube, Direct Expansion (DX) type. It will be mechanically cleanable tubes removable head(s). Water in the shell and refrigerant in tubes
2- Tubes shall be internally enhanced seamless copper type rolled into tube sheets. Baffles shall be provided in the shell to ensure maximum water distribution for best heat transfer
3- Cooler will be designed with independent refrigeration circuits (one per each compressor)
4- Shall be insulated with a closed cell foam insulation of 19 mm (3/4") thickness with a maximum K factor of 0.035 W/(m-K°) {0.020 BTUH/(ft-°F)}
4- OPTIONAL: Shall be insulated with a closed cell foam insulation of 25 mm (1") thickness with a maximum K factor of 0.035 W/(m-K°) {0.020 BTUH/(ft-°F)}
4- OPTIONAL: Shall be insulated with a closed cell foam insulation of 38 mm (1 1/2") thickness with a maximum K factor of 0.035 W/(m-K°) {0.020 BTUH/(ft-°F)}
4- *OPTIONAL: Shall be insulated with a closed cell foam insulation of 50 mm (2") thickness with a maximum K factor of 0.035 W/(m-K°) {0.020 BTUH/(ft-°F)}*
5- Cooler shall have a built on drain and vent connection
6- It shall be equipped with Victaulic-type water connections that are supplied as loose items and shipped within the chiller enclosure
7- Cooler shall be tested and stamped in accordance with ASME Code for refrigerant. Refrigerant side design working pressure shall be 1000 kPa (145 psig) and the maximum water side design working pressure shall be 1500 kPa (220 psig)
8- OPTIONAL: Anti-freeze protection tape heater to protect the cooler down to 0°C (32°F). Heater will be energized directly from unit electrical panel and requires no external power supply. Anti-freeze tape heater that requires an external power supply is not accepted. Unit must be kept ON to enable this protection 24/7
8- OPTIONAL: Anti-freeze protection tape heater to protect the cooler down to -17°C (0°F). Heater will be energized directly from unit electrical panel and requires no external power supply. Anti-freeze tape heater that requires an external power supply is not accepted. Unit must be kept ON to enable this protection 24/7
8- OPTIONAL: Anti-freeze protection tape heater to protect the cooler down to -29°C (-20°F). Heater will be energized directly from unit electrical panel and requires no external power supply. Anti-freeze tape heater that requires an external power supply is not accepted. Unit must be kept ON to enable this protection 24/7
9- OPTIONAL: Aluminum protective Cladding cover that shall be applied above barrel (cooler) insulation. Aluminum cladding shall be of gauge 22 [0.7 mm (0.03")] thick
9- OPTIONAL: Stainless steel protective Cladding cover that shall be applied above barrel (cooler) insulation. Aluminum cladding shall be of gauge 22 [0.7mm (0.03")] thick
9- OPTIONAL: Painted galvanized steel protective Cladding cover that shall be applied above barrel (cooler) insulation. Aluminum cladding shall be of gauge 22 [0.7 mm (0.03")] thick
10- OPTIONAL: Water flow switch shall be supplied as a loose item to be field installed by contractor. Flow switch shall be of the paddle type. The paddle shall be made from copper alloy. Switch shall be SPDT, IP 42 protection, with operating range of water temperature of -20°C to 80°C (-4°F to 176°F)

G. Condenser Coils:

1- Coils shall be air cooled microchannel type (MCHE) and shall have a series of flat tubes containing a series of multiple parallel flow microchannels layered between the refrigerant manifold. Coil construction shall consists of aluminum alloys for fins, tubes, and manifolds in combination with a corrosion resistance coating
2- OPTIONAL: Coils shall be fabricated from internally enhanced seamless copper tubes, mechanically expanded into aluminum alloys fins. Tubes are made from seamless copper of the L-type and of with a nominal wall thickness of 0.4 mm (0.016") and a nominal diameter of 9.5 mm (3/8")
3- OPTIONAL: Fins are made from Aluminum alloy of and manufactured in a sinusoidal shape with ripple edges to maximize the heat transfer. Each tube opening in the fin has a full height collar to allow the tube to expand using the collar material and reduce any fin failure at the expansion point. Aluminum fins have a nominal wall thickness of 0.12 mm (0.005"). Flat fin design is not accepted
3- OPTIONAL: Post Coated Fins are made from Aluminum alloy and sprayed on with a polyurethane coat that provides a protection up to 3,000-hour salt spray tested in accordance with the ASTM B117 standard. Finns shall be manufactured in a sinusoidal shape with ripple edges to maximize the heat transfer. Each tube opening in the fin has a full height collar to allow the tube to expand using the collar material and reduce any fin failure at the expansion point. Aluminum fins have a nominal wall thickness of 0.12 mm (0.005"). Flat fin design is not accepted

3- OPTIONAL: Pre Coated Fins are made from Aluminum alloy that is pre-painted (pre coated) with a polyurethane coat that provides a protection up to 3,000-hour salt spray tested in accordance with the ASTM B117 standard. Finns shall be manufactured in a sinusoidal shape with ripple edges to maximize the heat transfer. Each tube opening in the fin has a full height collar to allow the tube to expand using the collar material and reduce any fin failure at the expansion point. Aluminum fins have a nominal wall thickness of 0.12 mm (0.005"). Flat fin design is not accepted

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3- OPTIONAL: Fins are made from Copper alloy and manufactured in a sinusoidal shape with ripple edges to maximize the heat transfer. Each tube opening in the fin has a full height collar to allow the tube to expand using the collar material and reduce any fin failure at the expansion point. Aluminum fins have a nominal wall thickness of 0.10 mm (0.004"). Flat fin design is not accepted

3- OPTIONAL: Post Coated Fins are made from Copper alloy and sprayed on with a polyurethane coat that provides a protection up to 3,000-hour salt spray tested in accordance with the ASTM B117 standard. Finns shall be manufactured in a sinusoidal shape with ripple edges to maximize the heattransfer. Each tube opening in the fin has a full height collar to allow the tube to expand using the collar material and reduce any fin failure at the expansion point. Aluminum fins have a nominal wall thickness of 0.10 mm (0.004"). Flat fin design is not accepted

4- OPTIONAL: Coils shall be fitted with galvanized steel end plates all around that are made from gauge 16 (1.5 mm {0.0635"}). All plates have full height collars for tubes penetration, to prevent any tube damage and thus leakage

4- OPTIONAL: Coils shall be fitted with Stainless steel end plates all around that are made from gauge 16 (1.5 mm {0.0635"}). All plates have full height collars for tubes penetration, to prevent any tube damage and thus leakage

5- Assemble coils shall be pressure tested at the factory by dry air under water at a pressure of 3,100 kPa (450 psig). Then cleaned and dehydrated in a drying room up to a temperature of 40 °C (105 °F) to evaporate any oil or water residuals

H. Condenser Fans:

1- Fans are of the low noise, external rotor type with the stator in the center and the rotor on the exterior
2- Fan, motor protection grill and electrical junction box are manufactured in one single piece assembly
3- Fan shall be of the direct drive, 5-blade, airfoil cross section, and axial type blades
4- Motors are TEFC, IP 54 protection with class F motor insulation with inherent motor protection imbedded inside the windings
5- Motor shall have a sealed for life ball bearing with a life expectancy of L40, 40,000 hours of operation. Motor nominal speed is 900/1100 RPM (50/60 HZ power supply)
6- Assembly is statically and dynamically balanced and can be replaced as one single piece
7- Fans shall be protected by coated steel wire safety guards
8- *OPTIONAL: Ultra low sound fans with reduced speed (700/900 RPM {50/60 HZ power supply})*
9- *OPTIONAL: Speed control for condenser fan motors shall be carried out by speed regulators*

I. Refrigeration Circuits and Components:

1- Refrigerant used shall be R-134a
2- Unit shall have independent refrigeration circuits for each compressor
3- Refrigeration circuit components shall include replaceable-core filter drier, moisture indicating sight glass, electronic expansion valve, discharge & suction compressor service nipples, liquid line service valve and a complete operating charge of refrigerant R-134a and compressor oil
4- Each compressor shall be equipped with an external high pressure cut outs
5- All suction lines shall be sand papered, insulated with closed cell foam insulation, wrapped with protective material and finally epoxy coated
6- All other exposed refrigeration pipes shall be sand papered cleaned and epoxy coated afterwards
7- All safety devices and valves are marked after unit run test to indicate factory position for each component
8- *OPTIONAL: Mechanically controlled Hot Gas By Pass (HGBP) valve to enable compressor to operate below its minimum load point*

9- OPTIONAL: Pressure Relief Valve with a brass body, a pressure setting of 3100 kPa (450 psig), a working temperature range between -40°C and 107°C (-40°F and 225°F) and conforms to ASME VIII, Division I. The valve is a conventional back pressure dependent type and therefore required to discharge to atmosphere

10- OPTIONAL: High and low pressure gauges for each refrigeration circuit. Gauges shall be Bourdon type with stainless steel housing oil filled

J. Acoustical Data:

1- Provide acoustical sound power or sound pressure level data in decibels (dB) at the scheduled eight (8) octave band center frequencies and/or at 1/3 of each octave band upon request. A-weighted sound data alone is not acceptable

2- Supplied equipment shall not exceed scheduled sound power or sound pressure level data at any load point. The mechanical Contractor shall be responsible for any additional costs associated with equipment deviation

3- Acoustical performance ratings shall be in accordance with AHRI 370 and ISO BS 3744 Standards

4- OPTIONAL: Ultra low sound fans with reduced speed (700/900 RPM {50/60 HZ power supply}) to meet the specified sound levels scheduled in the plans at full load and all other load points (if requested)

4- OPTIONAL: Compressor Jacket to meet the specified sound levels scheduled in the plans at full load and all other load points (if requested). Compressor jacket shall consists of a 9.5 mm (3/8") thick closed cell rubber sound insulation material encapsulated in a sound deflecting vinyl cover

4- OPTIONAL: Ultra low sound fans with reduced speed (RPM) & Compressor jacket to achieve the requested sound rating in the plans

4- OPTIONAL: Standard compressor acoustic compartment to meet the specified sound levels scheduled in the plans at full load and all other load points (if requested. Compartment shall be made from a single wall gauge 16 [1.5 mm (0.06")] thick galvanized steel sheet metal with 9.5 mm (3/8") thick closed cell rubber sound insulation. All galvanized sheet metal shall be painted with the same unit paint

4- OPTIONAL: Ultra low sound fans with reduced speed (RPM) with standard compressor acoustic compartment to meet the specified sound levels scheduled in the plans at full load and all other load points (if requested)

4- OPTIONAL: Advanced compressor acoustic compartment to meet the specified sound levels scheduled in the plans at full load and all other load points (if requested)

5- OPTIONAL: Ultra low sound fans with reduced speed (RPM) with Advanced Compressor acoustic compartment to meet the specified sound levels scheduled in the plans at full load and all other load points (if requested). Compartment shall be made from a double wall gauge 14 [2 mm (0.08")] thick solid outer skin and gauge 22 [0.7 mm (0.03")] thick perforated inner skin with 50 mm (2") thick fiber glass sound insulation with a density of 48 kg/m3 (3 lb/ft3). All galvanized sheet metal shall be painted with the same unit paint

K. Operating Characteristics:

1- Unit shall be capable of starting and running at outdoor ambient temperatures from 7°C (45°F) to 52 °C (125°F) for all sizes, without any additional added accessory

1- OPTIONAL: Low ambient control down to 0°C (32°F):

a. Unit shall be capable of starting and running at outdoor ambient from 0°C (32°F) to 52 °C (125°F) for all sizes. Working down to a low ambient of 0°C (32°F) shall be achieved by a combination of on/off condenser fans sequencing plus speed varying using a speed regulator option. This shall be controlled through a pressure transmitter for each refrigerant circuit via the unit controller

1- OPTIONAL: Low ambient control down to -17°C (0°F):

a. Unit shall be capable of starting and running at outdoor ambient temperatures from -17°C (0°F) to 52 °C (125°F) for all sizes. Working down to a low ambient of -17°C (0°F) shall be achieved by a combination of on/off condenser fans sequencing, speed varying using a speed regulator option and a flooded condenser design. Flooded condenser control shall be obtained by adding multiple of solenoid valves on each condenser with a suitable liquid received to control the amount of liquid flooding the condenser coils and maintain a workable head pressure. This shall be controlled through a pressure transmitter for each refrigerant circuit via the unit controller.

Guide Specification

2- Unit shall be capable of starting up with 35°C (95°F) entering fluid temperature to the cooler

L. Power & Electrical:

1- Power/Control Panel:

a. Factory installed and wired IP 54 (NEMA3X) panel, that shall be made from welded G-60/90 (as a minimum) galvanized steel gauge 18 (1.25 mm {0.05"}). Panel shall be equipped with lockable and gasket sealed access doors with a minimum of two external handles and multiple hinges

a. OPTIONAL: Factory installed and wired IP 66 (NEMA 4X) panel, that shall be made from fully welded all around G-60/90 (as a minimum) galvanized steel gauge 12 (3 mm{0.12"}). Panel shall be equipped with lockable and gasket sealed access doors with a minimum of two external handles and multiple hinges

a. OPTIONAL: Factory installed and wired IP 66 (NEMA 4X) panel, that shall be made from fully welded all around Stainless steel gauge12 (3 mm {0.12"}). Panel shall be equipped with lockable and gasket sealed access doors with a minimum of two external handles and multiple hinges

b. Panel doors shall be provided with a door retainer for each door to keep the door open during service

c. Unit shall be provided with two separate panels, one for control and one for power

d. Panel door shall be provided with a pocket to place the laminated wiring diagrams and IOM manuals

e. Panel shall have a transparent solid PVC NFPA rated piece to cover the power input bus bars

f. All bus brass bars shall be coated with a zinc coat to prevent brass corrosion

g. Panel shall have one power entry either from the side or bottom

h. Condenser fan motors shall have a separate dedicated electrical boxes located on condense side and fully wired to the main panel

2- Main Power and Control components:

a. Compressor electronic current monitoring overload motor protector

b. Free terminal for ON/OFF unit connection c. Free terminal for general alarm output

d. Interlock for pump and water flow switch e. Circuit breaker for each compressor

f. Starting contactors for each compressor and condenser fan motors

g. Manual motor starter for condenser fans h. ON/OFF switch for each compressor

I. Control circuit breaker for short circuit protection

j. Short cycling protection timer for each compressor

k. Control transformer mounted and wired that shall supply all unit control voltage from the main unit power supply to internal components such as (not limited to) solenoid valves, compressor motor protector, compressor crank case heater and Microprocessor controller

l. Power supply monitor (Phase Failure Relay) to protect power circuit against over voltage, under voltage, phase loss, phase imbalance and phase reversing conditions

m. Control transformer for the secondary and controller voltages

n. Microprocessor controller

o. All running wiring inside panels must be contained within PVC trunks

p. All wires connection shall be marked with a clear and typed on tags to identify each wire

q. An extra loop of wires must be provided for each power connection to a circuit breaker, contactor or motor start to allow for a clamp on measuring current device to be installed during start up and service

r. Full documentation shall be provided inside the electrical panel pocket. This shall include (not limited to) a laminated wiring diagram, IOM manual, hard copy of wiring diagram, and quality check list

s. OPTIONAL: Power Factor correction capacitor:

1- Provide unit with power factor correction capacitors upon request to maintain a displacement power factor of 95% at all load conditions

2- The installing contractor shall be responsible for any and all additional cost to furnish and install power factor correction capacitors if they are requested and not factory mounted and wired

t. OPTIONAL: Earth Leakage Relay:

1- Provide unit with an earth leakage relay for the unit power supply to shut down the unit if the amount of leakage is above the set point

2- Provide unit with an earth leakage relay for the each compressor power supply to shut down the associated compressor if the amount of leakage is above the set point

u. *OPTIONAL: External over load for each compressor*

v. OPTIONAL: External over load for condenser fan motor

w. OPTIONAL: Circuit breaker for condenser fan motor

x. OPTIONAL: Control transformer to supply power input to auxiliary components at 120 or 220 volt, such as bulk head light and GFI outlet

y. OPTIONAL: Bulk Head Light for electrical panel:

1- IP 54 protection, class I electric safety bulk head light fixture shall be installed in the electrical panel for inspection purposes. The bulb shall be supplied at field by the installing contractor

z. OPTIONAL: Ampere-meter and Volt-meter:
1- Shall be mounted on power panel exterior door. Ampere-meter shall be provided for each phase and the Volt-meter shall be provide for one phase
aa. OPTIONAL:120 Volt power supply with Transformer and GFI outlet socket. A 120 volt power supply shall be connected through a transformer to provide a 120 volt circuit, to connect a female GFI outlet socket to provide connection to site appliances such as laptop, tablet or cell phone. 120 volt power circuit shall be connected after the unit main disconnect switch, so as to be OFF upon main disconnect switch OFF position
ab. OPTIONAL: 120 Volt power supply with Transformer and GFI outlet socket. A 120 volt power supply shall be connected through a transformer to provide a 120 volt circuit, to connect a GFI outlet socket to provide connection to site appliances such as laptop, tablet or cell phone. 120 volt power circuit shall be connected before the unit main disconnect switch, so as to be ON upon main disconnect switch OFF position

3- Power Entry:

a. Provide a SINGLE point power entry connection to chiller, that shall be of THREE phase as per scheduled voltage
b. Terminal Block connections shall be provided at the point of incoming single point connection for
c. The incoming power wiring must comply with local codes
d. OPTIONAL: A Main Non-Fused Disconnect Switch lockable external handle shall be supplied to isolate the unit power voltage for servicing. Disconnect switch shall be provided for all power connections to the unit
e. OPTIONAL: A Main Fused Disconnect Switch lockable external handle shall be supplied to isolate the unit power voltage for servicing. Disconnect switch shall be provided for all power connections to the unit
f. OPTIONAL: Provide a DUAL point power connection to chiller, that shall be of THREE phase as per scheduled voltage. One connection shall be for compressors and the second connection shall be for the rest of the unit. Each power connection can be equipped with a separate main disconnect switch

4- Power and Control wiring:

a. All power & control wiring from the electrical power and control panels shall be routed through metal duct in the unit base and shall be connected to each components through and PCV, UV-stabilized, non-metallic conduit beside each component

5- Minimum Circuit Ampacity (MCA):

a. Supplied equipment shall not exceed the scheduled Minimum Circuit Ampacity (MCA). The mechanical Contractor shall be responsible for any additional costs associated with equipment deviation in this matter

6- Control Circuit components:

a. Unit control circuit shall include the following minimum components:

1- Microprocessor with non-volatile memory. Battery backup system shall not be accepted
2- Separate terminal block for power and controls
3- Separate 220 volt power supply to serve all controllers, relay, control controllers, relays and control components
4- ON/OFF control by the controller keypad
5- Replaceable solid-state controller
6- Pressure sensors installed to measure suction & discharge. Thermistors installed to measure barrel (cooler) entering and leaving fluid temperatures and outside air temperature

b. Microprocessor controller shall contain the following:

1- Microprocessor main board designed to supervise and monitor the unit with access port for external connection to a laptop
2- I/O expansion board with additional input/output terminals
3- LCD screen display with I/O status and ability to adjust set point. The LCD consists of a liquid crystal display) with adjustable contrast and backlighting

c. Displayed data on the LCD display:

1- Leaving and return water temperatures
2- Ambient temperature
3- Compressor discharge pressure and temperature
4- Compressor suction pressure and temperature
5- Compressor drawn current
6- Suction and discharge super heat
7- Compressor load percentage
8- Saturated suction and discharge
9- Compressor oil differential
10- Compressor times
11- Digital inputs status
12- Output relays status
13- Protection status
14- Historical alarms
15- Schedules
16- Adjustable set point

d. Unit controls shall include the following functions:
1- Automatic circuit lead/lag
2- Capacity control based on leaving chilled fluid temperature and compensated by rate of change of leaving fluid temperature
3- Limiting the chilled fluid temperature pull- down rate at start-up to an adjustable range to prevent excessive demand spikes at start-up
4- Seven-day time schedule. Two operating schedules per day of the week and 8- holiday shall e supported by the microprocessor
5- Leaving and return chilled fluid temperature reset from BMS system
6- Chilled water pump and water flow interlock connection
7- Barrel (cooler) freeze protection by energizing tape heaters (if installed)
8- High discharge pressure protection
9- Low leaving water temperature protection
10- Unloaded start for all compressors

e. LCD display panel features:
1- Display shall allow access to configuration, maintenance, alarm history, set points, time schedule and status data
2- Display shall have one button for chiller ON/OFF
3- Display shall include three levels of password protection against unauthorized access to programming files and imbedded set points
4- Display shall allow for easy connection of a portable hand held technician tool such as a laptop to access information and upload and/ or download chiller settings

f. Safeties and Alarms:
1- Cutout and unloading
2- High discharge pressure
3- High discharge temperature
4- Low suction pressure
5- Low suction temperature
6- Freeze state
7- High ampere state
8- Low discharge pressure
9- Unsafe suction pressure
10- Unsafe discharge pressure
11- Flow switch (no flow protection)
12- Phase loss protection
13- Low oil differential pressure
14- Unsafe oil pressure
15- Low oil level
16- Motor temperature
17- Low motor amps
18- Probe error alarm

g. Supporting protocols:
1- Bacnet IP
2- Bacnet MS/TP with a BMS gateway module
3- Modbus IP
4- Modbus RTU
5- Johnson N2 with a BMS gateway
6- Lontalk with a BMS gateway

Part 3 — EXECUTION

3.01 INSTALLATION

A. General:
1- Rig and Install in full accordance with manufacturer's requirements, Project drawings, and contract documents

B. Location
1- Locate chiller as indicated on drawings, including cleaning and service maintenance clearance per manufacturer instructions. Adjust and level chiller on support structure

C. Components:
1- Installing Contractor shall provide and install all auxiliary devices and accessories for fully operational chiller

D. Electrical
1- Coordinate electrical requirements and connections for all power feeds with Electrical Contractor

E. Controls:
1- Coordinate all control requirements and connections with Controls Contractor

F. Finish:
1- Installing Contractor shall paint damaged and abraded factory finish with touch-up paint matching factory finish