

Air cooled chiller with inverter driven screw compressor



ATS 380/60

ATS SE-ST 380/60 - Screw - R134a - 170÷710 kW - SILVER
ATS SE-XN 380/60 - Screw - R134a - 170÷710 kW - SILVER
ATS XE-ST 380/60 - Screw - R134a - 180÷682 kW - GOLD
ATS XE-XN 380/60 - Screw - R134a - 180÷682 kW - GOLD
ATS PR-ST 380/60 - Screw - R134a - 185÷639 kW - PLATINUM
ATS PR-XN 380/60 - Screw - R134a - 185÷639 kW - PLATINUM



Low operating cost and extended operating life This chiller range is the result of careful design, aimed to optimize the energy efficiency of the chillers, with the objective of bringing down operating costs and improving installation profitability, effectiveness and economical management.

The chillers feature a high efficiency single screw Inverter driven compressor design, large condenser coil surface area for maximum heat transfer and low discharge pressure, advanced technology condenser fans and a 'shell&tube' or plate heat exchanger evaporator with low refrigerant pressure drops.

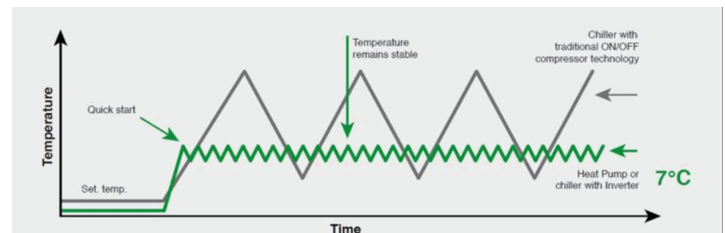
Low operating sound levels Very low sound levels both at full load and part load conditions are achieved by the latest compressor design and by a unique new fan that moves large volume of air at exceptionally low sound levels and by the virtually vibration-free operation.

Outstanding reliability The chillers have one or two truly independent refrigerant circuits, in order to assure maximum safety for any maintenance, whether planned or not. They are equipped with a rugged compressor design with advanced composite compressor gaterotors material, a proactive control logic and are full factory-run-tested to optimized trouble-free operation.

Infinite capacity control Cooling capacity control is infinitely variable by means of a Inverter driven screw compressor controlled by microprocessor system. Each unit has infinitely variable capacity control from 100% down to minimum capacity which is variable depending on unit model (between 33% and 22% on single circuit units and between 15% and 11% for dual circuit models). This modulation allows the compressor capacity to exactly match the building cooling load without any leaving evaporator water temperature fluctuation. This chilled water temperature fluctuation is avoided only with a stepless control.

Inverter stepless regulation Based on the geographical location and the application, the load profile of a building can vary enormously but our system has an infinitely variable load regulation without pre-set steps for a perfect comfort solution.

The stepless regulation provides the required power to meet the demand, ensuring highly accurate leaving water temperature control and so delivering optimal comfort as well as cost savings.

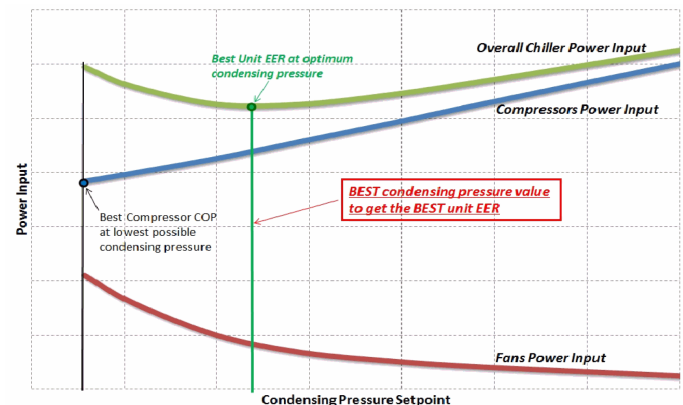


Superior control logic The new MicroTech III controller provides an easy to use control environmental. The control logic is designed to provide maximum efficiency, to continue operation in unusual operating conditions and to provide a history of unit operation. One of the greatest benefits is the easy interface with LonWorks, Bacnet, Ethernet TCP/IP or Modbus communications.

Dynamic Condensing Pressure Management

A new superior software logic has been developed to get the highest efficiency at whichever operating condition: thanks to the Dynamic Condensing Pressure Management the chiller controller adjusts the condensing pressure setpoint to minimize the overall chiller power input.

The result is an efficiency optimization thanks to the achievement of the most efficient working point for the unit at any ambient temperature.



High full load and part load efficiency High efficiency at full load, but especially maximum efficiency at part load conditions - which is the majority of the operating time of a chiller - are the factors that allow considerable savings in a system's annual energy costs.

With the objective of bringing down these operating costs and improving a building's economical management, this inverter range has been designed to optimize both full load efficiency (EER) and the seasonal energy efficiency (ESEER).

Seasonal quietness Very low sound levels in part load conditions are achieved by varying the fan speed, but especially thanks to the variation of compressor frequency, which ensure the minimum sound level at all the time.

Quick comfort conditions The ability to vary the output power in direct relation to the cooling requirements of the system, allow the possibility to achieve building comfort conditions much faster at start-up.

Low starting current No current spikes at start-up. The starting current is always lower than current absorbed in the maximum operating conditions (FLA).

Displacement power factor always > 0.95 This inverter range can operate always with a displacement power factor > 0.95, which allows building owners to avoid power factor penalties and decrease electrical losses in cable and transformers.

Code requirements – Safety and observant of laws/directives Units are designed and manufactured in accordance with applicable selections of the following:

Construction of pressure vessel	97/23/EC (PED)
Machinery Directive	2006/42/EC
Low Voltage	2006/95/EC
Electromagnetic Compatibility	2004/108/EC
Electrical & Safety codes	EN 60204-1 / EN 60335-2-40
Manufacturing Quality Stds	UNI – EN ISO 9001:2004

Certifications Units are CE marked, complying with European directives in force, concerning manufacturing and safety. On request units can be produced complying with laws in force in non European countries (ASME, GOST, etc.), and with other applications, such as naval (RINA, etc.).

Versions This range is available in two three different efficiency versions:

SILVER

14 sizes to cover a range from 170 up to 710 kW with an ESEER up to 4.82.

GOLD

14 sizes to cover a range from 180 up to 682 kW and ESEER up to 5.23.

PLATINUM

14 sizes to cover a range from 185 up to 639 kW and ESEER up to 5.73

The EER (Energy Efficiency Ratio) is the ratio of the Cooling Capacity to the Power Input of the unit. The Power Input includes: the power input for operation of the compressor, the power input of all control and safety devices, the power input for fans.

The ESEER (European Seasonal Energy Efficiency Ratio) is a weighed formula enabling to take into account the variation of EER with the load rate and the variation of air inlet condenser temperature.

$ESEER = A \times EER100\% + B \times EER75\% + C \times EER50\% + D \times EER25\%$

	A	B	C	D
K	0.03 (3%)	0.33 (33%)	0.41 (41%)	0.23 (23%)
T	35°C	30°C	25°C	20°C

K = Coefficient; T = Air inlet condenser temperature.

Sound configurations Standard and reduced sound configurations available as follows:

STANDARD SOUND

SILVER and GOLD: Condenser fans rotating at 700 rpm, rubber antivibration mounts under compressor

PLATINUM: Condenser fans rotating at 600 rpm, rubber antivibration mounts under compressor

REDUCED SOUND

SILVER and GOLD: Condenser fans rotating at 700 rpm, compressor sound proof cabinet, flexible joint on compressor suction line and, rubber and antivibration mounts under compressor.

PLATINUM: Condenser fans rotating at 600 rpm, compressor sound proof cabinet, flexible pipes on suction and discharge compressor lines, rubber antivibration under compressor.

Cabinet and structure The cabinet is made of galvanized steel sheet and painted to provide a high resistance to corrosion. Colour Ivory White (Munsell code 5Y7.5/1) ($\pm$ RAL7044). The base frame has an eye-hook to lift the unit with ropes for an easy installation. The weight is uniformly distributed along the profiles of the base and this facilitates the arrangement of the unit.

Compressor New technology semi-hermetic, single-screw type with gate-rotor made with the latest high-strength fiber reinforced star material.

Each compressor has one inverter managed by the unit microprocessor for infinitely modulating the capacity.

Main features:

- Inverter integrated to the compressor body, resulting in compact design and no need of additional components in the electrical panel.
- Refrigerant cooled Inverter.
- Variable Volume Ratio (VVR) for a complete compressor efficiency optimization.
- Larger compressor discharge and suction ports to minimize refrigerant pressure drops.
- Electric motors optimized for highest efficiencies at all operating conditions.
- Integrated high efficiency oil separator maximizes the oil separation

Refrigerant The compressors have been designed to operate with R-134a, ecological refrigerant with zero ODP (Ozone Depletion Potential) and very low GWP (Global Warming Potential), resulting in low TEWI (Total Equivalent Warming Impact).

Evaporator

SINGLE CIRCUIT MODELS (Plate Heat Exchanger)

The unit is equipped with a direct expansion plate to plate type evaporator. This heat exchanger is made of stainless steel brazed plates and is covered with a 20mm closed cell insulation material. The exchanger is equipped with an electric heater for protection against freezing down to -28°C and evaporator water connections are provided with victaulic kit (as standard). The evaporator has 1 circuit (one compressor) and is manufactured in accordance to 97/23/EC directive (PED). Flow switch on evaporator available as option (shipped loose). Water filter is standard.

DUAL CIRCUIT MODELS (Shell&Tube)

The unit is equipped with a direct expansion shell&tube evaporator with refrigerant evaporating inside the tubes and water flowing outside. The tubes are enhanced for maximum heat transfer and rolled into steel tube sheet and sealed.

The evaporators are single-pass on both the refrigerant and water sides for pure counter-flow heat exchange and low refrigerant pressure drops. Both characteristics contribute to the heat exchanger effectiveness and total unit's outstanding efficiency. The water side is designed for 10 bar of maximum operating pressure and is provided with vents and drain.

The external shell is covered with a 10mm closed cell insulation material and the evaporator water connections are provided with victaulic kit (as standard). Each evaporator has 2 circuits, one for each compressor and is manufactured in accordance to 97/23/EC directive (PED). Flow switch on evaporator available as option (shipped loose). Water filter is not available.

Condenser The condenser is manufactured with internally enhanced seamless copper tubes arranged in a staggered row pattern and mechanically expanded into lanced and rippled aluminum condenser fins with full fin collars. An integral sub-cooler circuit provides sub-cooling to effectively eliminate liquid flashing and increase cooling capacity without increasing the power input.

Condenser fans

SILVER: The ON/OFF condenser fans are propeller type with high efficiency design blades to maximize performances. The material of the blades is glass reinforced resin and each fan is protected by a guard. Fan motors are protected by circuit breakers installed inside the electrical panel as a standard. The motors are IP54 and are suitable for use with inverters (optionals).

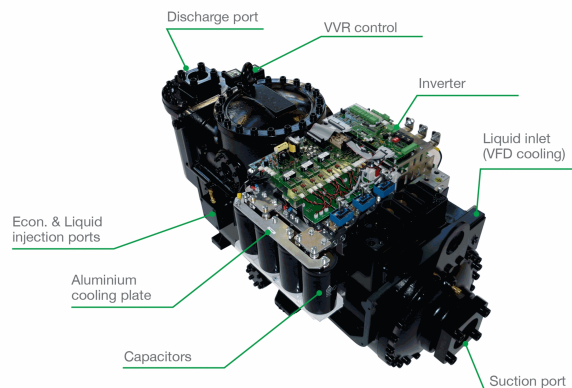
GOLD: The Inverter Driven (AC inverter type) condenser fans are propeller type with high efficiency design blades to maximize performances. The material of the blades is glass reinforced resin and each fan is protected by a guard. Fan motors are protected by circuit breakers installed inside the electrical panel as a standard. The motors are IP54.

PLATINUM: The condenser fans are "brushless" (EC) type and are made with synchronous motors excited by permanent magnets and with phase currents controlled by a PWM inverter integrated in the fan motor housing, that allows operation at different speeds. With this technology the fans reach high efficiencies with an extremely low noise level across a very wide speed range. The motors are IP54.

Electronic expansion valve The unit is equipped with the most advanced electronic expansion valves to achieve precise control of refrigerant mass flow. As today's system requires improved energy efficiency, tighter temperature control, wider range of operating conditions and incorporate features like remote monitoring and diagnostics, the application of electronic expansion valves becomes mandatory.

Electronic expansion valves possess unique features: short opening and closing time, high resolution, positive shut-off function to eliminate use of additional solenoid valve, continuous modulation of mass flow without stress in the refrigerant circuit and corrosion resistance stainless steel body.

Electronic expansion valves are typically working with lower ΔP between high and low pressure side, than a thermostatic expansion valve. The electronic expansion valve allows the system to work with low condenser pressure (winter time) without any refrigerant flow problems and with a perfect chilled water leaving temperature control.



Refrigerant circuit Each unit has one or two independent refrigerant circuits and each one includes:

- Compressor Inverter driven with integrated oil separator
- Refrigerant
- Evaporator
- Air Cooled Condenser
- Electronic expansion valve
- Discharge line shut off valve
- Liquid line shut off valve
- Sight glass with moisture indicator
- Filter drier
- Charging valves
- High pressure switch
- High pressure transducers
- Low pressure transducers
- Oil pressure transducer
- Suction temperature sensor

Electrical control panel Power and control are located in the main panel that is manufactured to ensure protection against all weather conditions. The electrical panel is IP54 and (when opening the doors) internally protected against possible accidental contact with live parts. The main panel is fitted with a main switch interlocked door that shuts off power supply when opening.

Power Section

The power section includes compressors and fans protection devices, fans starters and control circuit power supply.

MicroTech III controller

MicroTech III controller is installed as standard; it can be used to modify unit set-points and check control parameters. A built-in display shows chiller operating status plus temperatures and pressures of water, refrigerant and air, programmable values, set-points. A sophisticated software with predictive logic, selects the most energy efficient combination of compressors, EEXV and condenser fans to keep stable operating conditions to maximise chiller energy efficiency and reliability.

MicroTech III is able to protect critical components based on external signals from its system (such as motor temperatures, refrigerant gas and oil pressures, correct phase sequence, pressure switches and evaporator). The input coming from the high pressure switch cuts all digital output from the controller in less than 50ms, this is an additional security for the equipment.

Fast program cycle (200ms) for a precise monitoring of the system. Floating point calculations supported for increased accuracy in Pressure / Temperature conversions.

Control section - main features

Control Section has the following feature.

- Management of the compressor stepless capacity and fans modulation.
- Chiller enabled to work in partial failure condition.
- Full routine operation at condition of:
 - high ambient temperature value
 - high thermal load
 - high evaporator entering water temperature (start-up)
- Display of evaporator entering/leaving water temperature.
- Display of Outdoor Ambient Temperature.
- Display of condensing-evaporating temperature and pressure, suction and discharge superheat for each circuit.
- Leaving water evaporator temperature regulation (temperature tolerance = 0,1°C).
- Compressor and evaporator pumps hours counter.
- Display of Status Safety Devices.
- Number of starts and compressor working hours.
- Optimized management of compressor load.
- Fan management according to condensing pressure.
- Re-start in case of power failure (automatic / manual).
- Soft Load (optimized management of the compressor load during the start-up).
- Start at high evaporator water temperature.
- Return Reset (Set Point Reset based on return water temperature).
- OAT (Outside Ambient temperature) Reset.
- Set point Reset (optional).
- Application and system upgrade with commercial SD cards.
- Ethernet port for remote or local servicing using standard web browsers.
- Two different sets of default parameters could be stored for easy restore.

Safety device / logic for each refrigerant circuit

The following devices / logics are available.

- High pressure (pressure switch).
- High pressure (transducer).
- Low pressure (transducer).
- Fans circuit breaker.
- High compressor discharge temperature.
- High motor winding temperature.
- Phase Monitor.
- Low pressure ratio.
- High oil pressure drop.
- Low oil pressure.
- No pressure change at start.

System security

The following securities are available.

- Phase monitor.
- Low Ambient temperature lock-out.
- Freeze protection.

Regulation type

Proportional + integral + derivative regulation on the evaporator leaving water output probe.

MicroTech III

MicroTech III built-in terminal has the following features.

- 164x44 dots liquid crystal display with white back lighting. Supports Unicode fonts for multi-lingual.
- Key-pad consisting of 3 keys.
- Push'n'Roll control for an increased usability.
- Memory to protect the data.
- General faults alarm relays.
- Password access to modify the setting.
- Application security to prevent application tampering or hardware usability with third party applications.
- Service report displaying all running hours and general conditions.
- Alarm history memory to allow an easy fault analysis.

Supervising systems (on request)**MicroTech III remote communication**

MicroTech III is able to communicate to BMS (Building Management System) based on the most common protocols as:

- ModbusRTU
- LonWorks, now also based on the international 8040 Standard Chiller Profile and LonMark Technology.
- BacNet BTP certified over IP and MS/TP (class 4) (Native).
- Ethernet TCP/IP.

Standard Options (supplied on basic unit)

Double setpoint - Dual leaving water temperature setpoints.

Compressor thermal overload relays - Safety electronic devices that, added to the standard protection devices, protect compressor motors against overload and current unbalance.

Phase monitor - Device that monitors input voltage and stops the chiller in case of phase loss or wrong phase sequence.

Inverter compressor starter

Under / Over voltage control - Electronic device that monitors and displays input voltage, and stops the chiller in case of phase loss, wrong phase sequence, or voltage exceeding minimum and maximum allowed values.

Evaporator victaulic kit - Hydraulic joint with gasket for an easy and quick water connection.

20mm evaporator insulation - The external shell is covered with a 20mm closed cell insulation material (standard for single circuit units only)

Evaporator electric heater - Electric heater (controlled by a thermostat) to protect the evaporator from freezing down to -28°C ambient temperature, providing the power supply is on.

Electronic expansion valve

Discharge line shut-off valve - Installed on the discharge port of the compressor to facilitate maintenance operation.

Suction line shut-off valve - Installed on the suction port of the compressor to facilitate maintenance operation.

Ambient outside temperature sensor and setpoint reset

Hour run meter

General fault contactor

Setpoint reset, Demand limit and Alarm from external device - Setpoint Reset: The leaving water temperature set-point can be overwritten with an external 4-20mA, through the ambient temperature, or through the evaporator water temperature ΔT . Demand Limit: Chiller capacity can be limited through an external 4-20mA signal or via network. Alarm from external device: The unit controller is able to receive an external alarm signal. The user can decide whether this alarm signal will stop the unit or not.

Fans circuit breakers - Safety devices that, added to the standard protection devices, protect fan motors against overload and overcurrent.

Main switch interlock door

Water filter - The water filter removes impurities from water by means of a fine physical barrier (available only on single circuit units).

Options (on request)

MECHANICAL

Total heat recovery - Plate to plate heat exchangers for hot water production.

Partial heat recovery - Plate to plate heat exchangers for hot water production.

Evaporator flange kit Available only on dual circuits models (Shell&Tube)

Condenser coil guards

Cu-Cu condenser coil - To give better protection against corrosion by aggressive environments.

Cu-Cu-Sn condenser coil - To give better protection against corrosion in aggressive environments and by salty air.

Alucoat fins coil - Fins are protected by a special acrylic paint with a high resistance to corrosion.

Blygold Coil Treatment - It is a Polyurethane coating impregnated with metallic pigment which provides a long lasting corrosion protection to condenser fins coils; it is UV resistant, flexible, heat conductive, chemical resistant to aggressive environments.

High pressure side manometers

Low pressure side manometers

Double pressure relief valve with diverter

Evaporator right water connections Available only for dual circuit units.

Brine version - Allows the unit to operate down to -8°C leaving liquid temperature (antifreeze required). Recommended below +4°C

One centrifugal pump (low lift) - Hydronic kit consists of: single direct driven centrifugal pump, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pump are protected from freezing with an additional electrical heater.

One centrifugal pump (high lift) Hydronic kit consists of: single direct driven centrifugal pump, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pump are protected from freezing with an additional electrical heater.

Two centrifugal pump (low lift) - Hydronic kit consists of: twin direct driven centrifugal pumps, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pumps are protected from freezing with an additional electrical heater.

Two centrifugal pump (high lift) Hydronic kit consists of: twin direct driven centrifugal pumps, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pumps are protected from freezing with an additional electrical heater.

Refrigerant leak detection system (available on REDUCED SOUND versions only) Automated permanent refrigerant leak detection system installed on board. The refrigerant sensors are installed within the compressor acoustic enclosures and are specifically calibrated for R134a refrigerant. When leaks above a certain concentration are detected, the sensor sends a signal to the unit controller (a specific alarm is visualized on the unit microprocessor). The automatic shut down and pump down of refrigerant into the condensing section occurs on the detection of refrigerant leakage. The alarm threshold that triggers automatic pump down upon detection of refrigerant is set to a maximum of 2000ppm.

ELECTRICAL / CONTROL

Rapid Restart Rapid Restart is the ideal solution for those application where we cannot afford the loose of cooling such as data centers, health care facilities, process cooling ...etc. For this kind of applications, in case of a power failure, chiller equipment are required to restore the cooling supply to the system as fast as possible.

Standard unit (without the Rapid Restart option) will be starting within 310 seconds after the power is restored and it will be reaching full load cooling capacity within 20 ÷ 25 minutes (obviously depending on the load demand).

Rapid Restart is allowing the chiller to start as fast as 30 seconds after power is restored and to reach full load cooling capacity in less than 6 minutes from the unit restart.

For more details about this option please refer to the Control Manual.

Inverter kit for water pump/pumps Inverter kit for unit mounted water pump/pumps (one inverter per each pump). Inverter on pump/pumps can be used for one of the following purposes:

1. Variable flow systems: water pump velocity controlled by the BMS (0-10 V input signal to the unit). Some recommendations:

- a. Minimum evaporator flow rate for single circuit units: 60% of the nominal unit flow rate (nominal unit flow rate is the one referred to standard conditions: EWT 12/7°C and OAT 35°C).
- b. Minimum evaporator flow rate for dual circuit units: 50% of the nominal unit flow rate (nominal unit flow rate is the one referred to standard conditions: EWT 12/7°C and OAT 35°C).
- c. The rate of change in the water flow should not be greater than 10% of the change per minute.

2. Water flow adjustment at start up: the inverter can be used at start-up to adjust the evaporator flow rate to the design value.

Compressors circuit breakers Safety devices that include in a single device all safety functions otherwise provided by standard fuses and optional thermal relays, such as protection against overcurrent, overload, current unbalance.

Fans speed regulation (+ fan silent mode) - Continuous fan speed regulation of all fans (VFD driven) for improved sound level of the unit during low ambient temperature operation. At very low temperatures, all fans except the first are switched off thus allowing unit operation down to -18°C (standard for GOLD and PLATINUM version, optional for SILVER version).

Energy meter - Device installed inside the control box that displays all chiller electrical power parameters at line input such as line voltage and phase current, input active and reactive power, active and reactive energy, including current limit option. An integrated RS485 module allows a Modbus communication to an external BMS.

Speedtrol (fan speed control device - ON/OFF - up to -18°C) - Continuous fan speed regulation on the first fan (VFD driven) of each circuit. It allows unit operation down to -18°C (available only for SILVER version).

Ground fault relay - To shut down the entire unit if a ground fault condition is detected.

Evaporator flow switch - Supplied separately to be wired and installed on the evaporator water piping (by the customer).

INSTALLATION

Rubber anti vibration mounts - Supplied separately, these are positioned under the base of the unit during installation. Ideal to reduce the vibrations when the unit is floor mounted.

Spring anti vibration mounts - Supplied separately, these are positioned under the base of the unit during installation. Ideal for dampening vibrations for installation on roofs and metallic structures.

External tank without cabinet (500 L)

External tank without cabinet (1000 L)

External tank with cabinet (500 L)

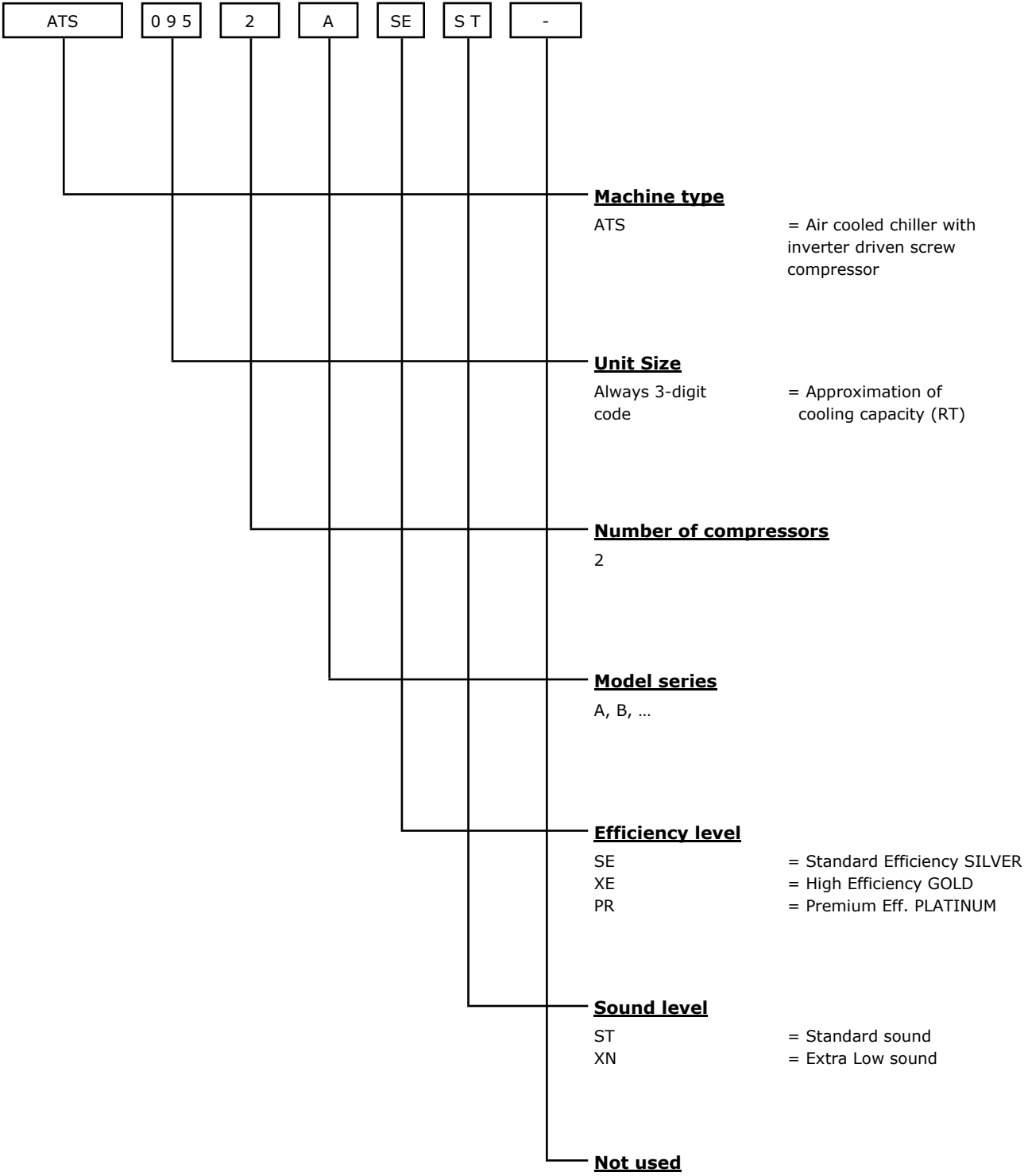
External tank with cabinet (1000 L)

OTHER

Container Kit

Transport kit

Condenser coil protection panel - Wooden panels protecting the coils against possible damage are installed for shipment.



ATS SE-ST 380/60

MODEL		050.1	060.1	070.1	080.1	090.1	100.1	110.2	120.2
Capacity - Cooling (1)	kW	171	206	230	269	317	366	367	414
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless
Capacity control - Minimum capacity	%	33.3	28.6	33.3	28.6	25.0	22.2	15.4	14.3
Unit power input - Cooling (1)	kW	61.7	71.9	78.4	95.2	115	132	133	143
EER (1)	---	2.76	2.86	2.93	2.83	2.76	2.76	2.77	2.89
ESEER	---	4.69	4.81	4.89	4.86	4.86	4.84	4.83	5.03
IPLV	---	5.33	5.44	5.90	5.68	5.69	5.67	5.73	5.86
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2270	2270	2270	2270	2270	2270	2222	2222
Width	mm	1224	1224	1224	1224	1224	2258	2258	2258
Length	mm	3461	4361	4361	5261	5261	3218	3218	4117
WEIGHT									
Unit Weight	kg	1898	1977	2083	2478	2444	2756	3906	4256
Operating Weight	kg	1915	2077	2183	2504	2596	2806	3995	4426
WATER HEAT EXCHANGER									
Type (3)	---	PHE	PHE	PHE	PHE	PHE	PHE	S&T	S&T
Water Volume	l	17	24	24	26	39	50	89	170
Nominal water flow rate - Cooling	l/s	8.1	9.8	11.0	12.8	15.1	17.4	17.5	19.7
Nominal Water pressure drop - Cooling	kPa	25	24	29	33	26	27	36	50
Insulation material (4)		CC	CC	CC	CC	CC	CC	CC	CC
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	12399	16532	16015	20665	20019	24023	24023	33064
Quantity	No.	3	4	4	5	5	6	6	8
Speed	rpm	700	700	700	700	700	700	700	700
Motor input	kW	2.7	3.6	3.6	4.5	4.5	5.3	5.3	7.1
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw
Oil charge	l	18	18	18	18	18	18	36	36
Quantity	No.	1	1	1	1	1	1	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	96	97	96	97	98	101	99	100
Sound Pressure - Cooling (8)	dB(A)	77	77	77	77	78	82	80	80
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	29	35	39	46	54	62	62	70
N. of circuits	No.	1	1	1	1	1	1	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	114.3 mm	139.7 mm

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS SE-ST 380/60

MODEL		130.2	140.2	150.2	170.2	180.2	200.2		
Capacity - Cooling (1)	kW	464	500	538	591	642	713		
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless		
Capacity control - Minimum capacity	%	16.7	15.4	14.3	13.3	12.5	11.1		
Unit power input - Cooling (1)	kW	162	176	188	215	233	264		
EER (1)	---	2.86	2.84	2.85	2.75	2.76	2.71		
ESEER	---	5.02	5.05	5.01	5.01	5.02	5.02		
IPLV	---	5.86	5.83	5.91	5.88	5.95	5.78		
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW		
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS		
DIMENSIONS									
Height	mm	2222	2222	2222	2222	2222	2222		
Width	mm	2258	2258	2258	2258	2258	2258		
Length	mm	4117	4117	5015	5015	5015	5917		
WEIGHT									
Unit Weight	kg	4426	4481	4709	4892	4969	5291		
Operating Weight	kg	4590	4645	4873	5162	5231	5553		
WATER HEAT EXCHANGER									
Type (3)	---	S&T	S&T	S&T	S&T	S&T	S&T		
Water Volume	l	164	164	164	270	262	262		
Nominal water flow rate - Cooling	l/s	22.1	23.9	25.6	28.2	30.6	34.0		
Nominal Water pressure drop - Cooling	kPa	33	37	43	36	47	57		
Insulation material (4)		CC	CC	CC	CC	CC	CC		
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP		
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT		
Drive (7)	---	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off		
Diameter	mm	800	800	800	800	800	800		
Nominal air flow	l/s	33064	32030	41330	41330	40038	48046		
Quantity	No.	8	8	10	10	10	12		
Speed	rpm	700	700	700	700	700	700		
Motor input	kW	7.1	7.1	8.9	8.9	8.9	10.7		
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw		
Oil charge	l	36	36	36	36	36	36		
Quantity	No.	2	2	2	2	2	2		
SOUND LEVEL									
Sound Power - Cooling	dB(A)	99	99	100	100	101	104		
Sound Pressure - Cooling (8)	dB(A)	79	80	80	80	81	84		
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a		
Refrigerant charge	kg	79	85	91	100	109	121		
N. of circuits	No.	2	2	2	2	2	2		
PIPING CONNECTIONS									
Evaporator water inlet/outlet		139.7 mm	139.7 mm	139.7 mm	168.3 mm	168.3 mm	168.3 mm		

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS SE-XN 380/60

MODEL		050.1	060.1	070.1	080.1	090.1	100.1	110.2	120.2
Capacity - Cooling (1)	kW	171	206	230	269	317	366	367	414
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless
Capacity control - Minimum capacity	%	33.3	28.6	33.3	28.6	25.0	22.2	15.4	14.3
Unit power input - Cooling (1)	kW	61.7	71.9	78.4	95.2	115	132	133	143
EER (1)	---	2.76	2.86	2.93	2.83	2.76	2.76	2.77	2.89
ESEER	---	4.69	4.81	4.89	4.86	4.86	4.84	4.83	5.03
IPLV	---	5.33	5.44	5.90	5.68	5.69	5.67	5.73	5.86
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2270	2270	2270	2270	2270	2270	2222	2222
Width	mm	1224	1224	1224	1224	1224	2258	2258	2258
Length	mm	3461	4361	4361	5261	5261	3218	3218	4117
WEIGHT									
Unit Weight	kg	1996	2075	2181	2576	2541	2854	4101	4452
Operating Weight	kg	2013	2174	2280	2602	2693	2903	4190	4622
WATER HEAT EXCHANGER									
Type (3)	---	PHE	PHE	PHE	PHE	PHE	PHE	S&T	S&T
Water Volume	l	17	24	24	26	39	50	89	170
Nominal water flow rate - Cooling	l/s	8.1	9.8	11.0	12.8	15.1	17.4	17.5	19.7
Nominal Water pressure drop - Cooling	kPa	25	24	29	33	26	27	36	50
Insulation material (4)		CC	CC	CC	CC	CC	CC	CC	CC
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	12399	16532	16015	20665	20019	24023	24023	33064
Quantity	No.	3	4	4	5	5	6	6	8
Speed	rpm	700	700	700	700	700	700	700	700
Motor input	kW	2.7	3.6	3.6	4.5	4.5	5.3	5.3	7.1
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw
Oil charge	l	18	18	18	18	18	18	36	36
Quantity	No.	1	1	1	1	1	1	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	89	89	89	89	90	92	92	92
Sound Pressure - Cooling (8)	dB(A)	70	70	69	70	71	73	73	72
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	29	35	39	46	54	62	62	70
N. of circuits	No.	1	1	1	1	1	1	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	114.3 mm	139.7 mm

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS SE-XN 380/60

MODEL		130.2	140.2	150.2	170.2	180.2	200.2		
Capacity - Cooling (1)	kW	464	500	538	591	642	713		
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless		
Capacity control - Minimum capacity	%	16.7	15.4	14.3	13.3	12.5	11.1		
Unit power input - Cooling (1)	kW	162	176	188	215	233	264		
EER (1)	---	2.86	2.84	2.85	2.75	2.76	2.71		
ESEER	---	5.02	5.05	5.01	5.01	5.02	5.02		
IPLV	---	5.86	5.83	5.91	5.88	5.95	5.78		
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW		
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS		
DIMENSIONS									
Height	mm	2222	2222	2222	2222	2222	2222		
Width	mm	2258	2258	2258	2258	2258	2258		
Length	mm	4117	4117	5015	5015	5015	5917		
WEIGHT									
Unit Weight	kg	4621	4676	4904	5087	5164	5486		
Operating Weight	kg	4785	4840	5068	5357	5426	5748		
WATER HEAT EXCHANGER									
Type (3)	---	S&T	S&T	S&T	S&T	S&T	S&T		
Water Volume	l	164	164	164	270	262	262		
Nominal water flow rate - Cooling	l/s	22.1	23.9	25.6	28.2	30.6	34.0		
Nominal Water pressure drop - Cooling	kPa	33	37	43	36	47	57		
Insulation material (4)		CC	CC	CC	CC	CC	CC		
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP		
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT		
Drive (7)	---	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off		
Diameter	mm	800	800	800	800	800	800		
Nominal air flow	l/s	33064	32030	41330	41330	40038	48046		
Quantity	No.	8	8	10	10	10	12		
Speed	rpm	700	700	700	700	700	700		
Motor input	kW	7.1	7.1	8.9	8.9	8.9	10.7		
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw		
Oil charge	l	36	36	36	36	36	36		
Quantity	No.	2	2	2	2	2	2		
SOUND LEVEL									
Sound Power - Cooling	dB(A)	92	92	92	93	93	95		
Sound Pressure - Cooling (8)	dB(A)	72	72	72	73	73	74		
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a		
Refrigerant charge	kg	79	85	91	100	109	121		
N. of circuits	No.	2	2	2	2	2	2		
PIPING CONNECTIONS									
Evaporator water inlet/outlet		139.7 mm	139.7 mm	139.7 mm	168.3 mm	168.3 mm	168.3 mm		

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS XE-ST 380/60

MODEL		050.1	060.1	075.1	085.1	095.1	100.1	110.2	120.2
Capacity - Cooling (1)	kW	180	217	266	289	332	361	368	408
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless
Capacity control - Minimum capacity	%	33.3	28.6	30.8	28.6	25.0	23.5	16.7	15.4
Unit power input - Cooling (1)	kW	55.6	67.8	84.0	89.2	105	112	115	127
EER (1)	---	3.24	3.20	3.17	3.24	3.17	3.22	3.21	3.22
ESEER	---	5.27	5.35	5.30	5.38	5.45	5.48	5.31	5.40
IPLV	---	6.32	6.20	6.33	6.26	6.32	6.37	6.38	6.47
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2270	2270	2270	2222	2222	2222	2222	2222
Width	mm	1224	1224	1224	2258	2258	2258	2258	2258
Length	mm	4361	5261	5261	3218	4117	4117	4117	4117
WEIGHT									
Unit Weight	kg	2060	2304	2434	2582	2986	3039	4247	4321
Operating Weight	kg	2081	2404	2586	2734	3035	3088	4417	4479
WATER HEAT EXCHANGER									
Type (3)	---	PHE	PHE	PHE	PHE	PHE	PHE	S&T	S&T
Water Volume	l	20	24	39	39	50	50	170	158
Nominal water flow rate - Cooling	l/s	8.6	10.4	12.7	13.8	15.9	17.2	17.5	19.5
Nominal Water pressure drop - Cooling	kPa	24	25	19	22	23	26	40	41
Insulation material (4)		CC	CC	CC	CC	CC	CC	CC	CC
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	VFD	VFD	VFD	VFD	VFD	VFD	VFD	VFD
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	16015	20665	20019	24023	33064	32030	33064	32030
Quantity	No.	4	5	5	6	8	8	8	8
Speed	rpm	700	700	700	700	700	700	700	700
Motor input	kW	3.6	4.5	4.5	5.3	7.1	7.1	7.1	7.1
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw
Oil charge	l	18	18	18	18	18	18	36	36
Quantity	No.	1	1	1	1	1	1	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	96	97	96	97	98	99	99	99
Sound Pressure - Cooling (8)	dB(A)	77	77	77	77	78	80	79	80
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	31	37	45	49	57	61	62	69
N. of circuits	No.	1	1	1	1	1	1	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	139.7 mm	139.7 mm

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS XE-ST 380/60

MODEL		130.2	140.2	150.2	160.2	180.2	200.2		
Capacity - Cooling (1)	kW	443	492	538	579	631	685		
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless		
Capacity control - Minimum capacity	%	14.3	16.7	15.4	14.3	13.3	12.5		
Unit power input - Cooling (1)	kW	137	154	168	183	199	213		
EER (1)	---	3.22	3.21	3.20	3.16	3.17	3.22		
ESEER	---	5.38	5.38	5.40	5.39	5.42	5.49		
IPLV	---	6.39	6.42	6.48	6.44	6.53	6.51		
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW		
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS		
DIMENSIONS									
Height	mm	2222	2222	2222	2222	2222	2222		
Width	mm	2258	2258	2258	2258	2258	2258		
Length	mm	5015	5015	5015	5917	5917	6817		
WEIGHT									
Unit Weight	kg	4706	4706	4882	5185	5275	5588		
Operating Weight	kg	4864	4864	5152	5455	5537	5843		
WATER HEAT EXCHANGER									
Type (3)	---	S&T	S&T	S&T	S&T	S&T	S&T		
Water Volume	l	158	158	270	270	262	255		
Nominal water flow rate - Cooling	l/s	21.1	23.5	25.7	27.6	30.1	32.7		
Nominal Water pressure drop - Cooling	kPa	48	56	30	34	44	57		
Insulation material (4)		CC	CC	CC	CC	CC	CC		
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP		
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT		
Drive (7)	---	VFD	VFD	VFD	VFD	VFD	VFD		
Diameter	mm	800	800	800	800	800	800		
Nominal air flow	l/s	41330	41330	40038	49597	48046	56053		
Quantity	No.	10	10	10	12	12	14		
Speed	rpm	700	700	700	700	700	700		
Motor input	kW	8.9	8.9	8.9	10.7	10.7	12.5		
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw		
Oil charge	l	36	36	36	36	36	36		
Quantity	No.	2	2	2	2	2	2		
SOUND LEVEL									
Sound Power - Cooling	dB(A)	100	99	99	100	100	101		
Sound Pressure - Cooling (8)	dB(A)	80	79	79	79	80	80		
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a		
Refrigerant charge	kg	75	84	91	98	107	116		
N. of circuits	No.	2	2	2	2	2	2		
PIPING CONNECTIONS									
Evaporator water inlet/outlet		139.7 mm	139.7 mm	168.3 mm	168.3 mm	168.3 mm	168.3 mm		

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS XE-XN 380/60

MODEL		050.1	060.1	075.1	085.1	095.1	100.1	110.2	120.2
Capacity - Cooling (1)	kW	180	217	266	289	332	361	368	408
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless
Capacity control - Minimum capacity	%	33.3	28.6	30.8	28.6	25.0	23.5	16.7	15.4
Unit power input - Cooling (1)	kW	55.6	67.8	84.0	89.2	105	112	115	127
EER (1)	---	3.24	3.20	3.17	3.24	3.17	3.22	3.21	3.22
ESEER	---	5.27	5.35	5.30	5.38	5.45	5.48	5.31	5.40
IPLV	---	6.32	6.20	6.33	6.26	6.32	6.37	6.38	6.47
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2270	2270	2270	2222	2222	2222	2222	2222
Width	mm	1224	1224	1224	2258	2258	2258	2258	2258
Length	mm	4361	5261	5261	3218	4117	4117	4117	4117
WEIGHT									
Unit Weight	kg	2158	2402	2532	2679	3084	3136	4442	4516
Operating Weight	kg	2178	2502	2684	2831	3133	3186	4612	4674
WATER HEAT EXCHANGER									
Type (3)	---	PHE	PHE	PHE	PHE	PHE	PHE	S&T	S&T
Water Volume	l	20	24	39	39	50	50	170	158
Nominal water flow rate - Cooling	l/s	8.6	10.4	12.7	13.8	15.9	17.2	17.5	19.5
Nominal Water pressure drop - Cooling	kPa	24	25	19	22	23	26	40	41
Insulation material (4)		CC	CC	CC	CC	CC	CC	CC	CC
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	VFD	VFD	VFD	VFD	VFD	VFD	VFD	VFD
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	16015	20665	20019	24023	33064	32030	33064	32030
Quantity	No.	4	5	5	6	8	8	8	8
Speed	rpm	700	700	700	700	700	700	700	700
Motor input	kW	3.6	4.5	4.5	5.3	7.1	7.1	7.1	7.1
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw
Oil charge	l	18	18	18	18	18	18	36	36
Quantity	No.	1	1	1	1	1	1	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	89	89	89	89	91	92	92	92
Sound Pressure - Cooling (8)	dB(A)	69	70	69	70	71	72	72	72
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	31	37	45	49	57	61	62	69
N. of circuits	No.	1	1	1	1	1	1	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	139.7 mm	139.7 mm

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS XE-XN 380/60

MODEL		130.2	140.2	150.2	160.2	180.2	200.2		
Capacity - Cooling (1)	kW	443	492	538	579	631	685		
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless		
Capacity control - Minimum capacity	%	14.3	16.7	15.4	14.3	13.3	12.5		
Unit power input - Cooling (1)	kW	137	154	168	183	199	213		
EER (1)	---	3.22	3.21	3.20	3.16	3.17	3.22		
ESEER	---	5.38	5.38	5.40	5.39	5.42	5.49		
IPLV	---	6.39	6.42	6.48	6.44	6.53	6.51		
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW		
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS		
DIMENSIONS									
Height	mm	2222	2222	2222	2222	2222	2222		
Width	mm	2258	2258	2258	2258	2258	2258		
Length	mm	5015	5015	5015	5917	5917	6817		
WEIGHT									
Unit Weight	kg	4901	4901	5077	5381	5471	5783		
Operating Weight	kg	5059	5059	5347	5651	5733	6038		
WATER HEAT EXCHANGER									
Type (3)	---	S&T	S&T	S&T	S&T	S&T	S&T		
Water Volume	l	158	158	270	270	262	255		
Nominal water flow rate - Cooling	l/s	21.1	23.5	25.7	27.6	30.1	32.7		
Nominal Water pressure drop - Cooling	kPa	48	56	30	34	44	57		
Insulation material (4)		CC	CC	CC	CC	CC	CC		
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP		
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT		
Drive (7)	---	VFD	VFD	VFD	VFD	VFD	VFD		
Diameter	mm	800	800	800	800	800	800		
Nominal air flow	l/s	41330	41330	40038	49597	48046	56053		
Quantity	No.	10	10	10	12	12	14		
Speed	rpm	700	700	700	700	700	700		
Motor input	kW	8.9	8.9	8.9	10.7	10.7	12.5		
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw		
Oil charge	l	36	36	36	36	36	36		
Quantity	No.	2	2	2	2	2	2		
SOUND LEVEL									
Sound Power - Cooling	dB(A)	92	92	92	92	93	94		
Sound Pressure - Cooling (8)	dB(A)	72	72	72	72	72	73		
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a		
Refrigerant charge	kg	75	84	91	98	107	116		
N. of circuits	No.	2	2	2	2	2	2		
PIPING CONNECTIONS									
Evaporator water inlet/outlet		139.7 mm	139.7 mm	168.3 mm	168.3 mm	168.3 mm	168.3 mm		

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS PR-ST 380/60

MODEL		050.1	060.1	070.1	080.1	085.1	090.1	100.2	110.2
Capacity - Cooling (1)	kW	186	222	248	272	294	317	340	370
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless
Capacity control - Minimum capacity	%	33.3	28.6	33.3	30.8	28.6	26.7	18.2	16.7
Unit power input - Cooling (1)	kW	52.2	64.3	68.7	76.8	84.5	93.7	100	109
EER (1)	---	3.56	3.45	3.60	3.54	3.48	3.38	3.38	3.41
ESEER	---	5.75	5.72	5.96	5.90	5.88	5.86	5.76	5.81
IPLV	---	6.95	6.70	7.22	7.04	7.08	6.81	6.87	7.03
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2355	2355	2355	2355	2355	2355	2355	2355
Width	mm	2258	2258	2258	2258	2258	2258	2258	2258
Length	mm	3218	3218	4117	4117	4117	4117	4117	5015
WEIGHT									
Unit Weight	kg	2436	2565	2810	2815	3026	3031	4290	4517
Operating Weight	kg	2536	2591	2962	2967	3076	3080	4460	4687
WATER HEAT EXCHANGER									
Type (3)	---	PHE	PHE	PHE	PHE	PHE	PHE	S&T	S&T
Water Volume	l	24	26	39	39	50	50	170	170
Nominal water flow rate - Cooling	l/s	8.9	10.6	11.8	13.0	14.0	15.1	16.2	17.7
Nominal Water pressure drop - Cooling	kPa	20	23	18	20	18	21	34	41
Insulation material (4)		CC	CC	CC	CC	CC	CC	CC	CC
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	BRS	BRS	BRS	BRS	BRS	BRS	BRS	BRS
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	20172	19284	26896	26896	25712	25712	25712	33621
Quantity	No.	6	6	8	8	8	8	8	10
Speed	rpm	600	600	600	600	600	600	600	600
Motor input	kW	2.2	2.2	3.0	3.0	3.0	3.0	3.0	3.7
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw
Oil charge	l	18	18	18	18	18	18	36	36
Quantity	No.	1	1	1	1	1	1	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	96	96	96	96	97	97	99	99
Sound Pressure - Cooling (8)	dB(A)	77	77	76	76	77	77	79	79
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	32	38	42	46	50	54	58	63
N. of circuits	No.	1	1	1	1	1	1	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	139.7 mm	139.7 mm

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS PR-ST 380/60

MODEL		120.2	130.2	140.2	160.2	170.2	180.2		
Capacity - Cooling (1)	kW	419	454	496	556	601	642		
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless		
Capacity control - Minimum capacity	%	15.4	14.3	16.7	15.4	14.3	13.3		
Unit power input - Cooling (1)	kW	122	132	145	166	181	198		
EER (1)	---	3.42	3.43	3.41	3.35	3.33	3.25		
ESEER	---	5.86	5.91	5.91	6.00	5.98	5.92		
IPLV	---	7.05	7.05	7.14	7.13	7.11	6.93		
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW		
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS		
DIMENSIONS									
Height	mm	2355	2355	2355	2355	2355	2355		
Width	mm	2258	2258	2258	2258	2258	2258		
Length	mm	5015	5917	5917	5917	6817	6817		
WEIGHT									
Unit Weight	kg	4764	5007	5241	5269	5489	5591		
Operating Weight	kg	5034	5277	5511	5524	5744	5838		
WATER HEAT EXCHANGER									
Type (3)	---	S&T	S&T	S&T	S&T	S&T	S&T		
Water Volume	l	270	270	270	255	255	255		
Nominal water flow rate - Cooling	l/s	20.0	21.6	23.7	26.5	28.7	30.6		
Nominal Water pressure drop - Cooling	kPa	30	35	26	39	44	50		
Insulation material (4)		CC	CC	CC	CC	CC	CC		
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP		
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT		
Drive (7)	---	BRS	BRS	BRS	BRS	BRS	BRS		
Diameter	mm	800	800	800	800	800	800		
Nominal air flow	l/s	32140	40345	38568	38568	47069	44996		
Quantity	No.	10	12	12	12	14	14		
Speed	rpm	600	600	600	600	600	600		
Motor input	kW	3.7	4.4	4.4	4.4	5.2	5.2		
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw		
Oil charge	l	36	36	36	36	36	36		
Quantity	No.	2	2	2	2	2	2		
SOUND LEVEL									
Sound Power - Cooling	dB(A)	99	99	99	99	100	100		
Sound Pressure - Cooling (8)	dB(A)	79	79	78	79	79	79		
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a		
Refrigerant charge	kg	71	77	84	94	102	109		
N. of circuits	No.	2	2	2	2	2	2		
PIPING CONNECTIONS									
Evaporator water inlet/outlet		168.3 mm	168.3 mm	168.3 mm	168.3 mm	168.3 mm	168.3 mm		

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS PR-XN 380/60

MODEL		050.1	060.1	070.1	080.1	085.1	090.1	100.2	110.2
Capacity - Cooling (1)	kW	186	222	248	272	294	317	340	370
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless
Capacity control - Minimum capacity	%	33.3	28.6	33.3	30.8	28.6	26.7	18.2	16.7
Unit power input - Cooling (1)	kW	52.2	64.3	68.7	76.8	84.5	93.7	100	109
EER (1)	---	3.56	3.45	3.60	3.54	3.48	3.38	3.38	3.41
ESEER	---	5.75	5.72	5.96	5.90	5.88	5.86	5.76	5.81
IPLV	---	6.95	6.70	7.22	7.04	7.08	6.81	6.87	7.03
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2355	2355	2355	2355	2355	2355	2355	2355
Width	mm	2258	2258	2258	2258	2258	2258	2258	2258
Length	mm	3218	3218	4117	4117	4117	4117	4117	5015
WEIGHT									
Unit Weight	kg	2533	2662	2908	2913	3124	3128	4485	4712
Operating Weight	kg	2633	2688	3060	3065	3173	3178	4655	4882
WATER HEAT EXCHANGER									
Type (3)	---	PHE	PHE	PHE	PHE	PHE	PHE	S&T	S&T
Water Volume	l	24	26	39	39	50	50	170	170
Nominal water flow rate - Cooling	l/s	8.9	10.6	11.8	13.0	14.0	15.1	16.2	17.7
Nominal Water pressure drop - Cooling	kPa	20	23	18	20	18	21	34	41
Insulation material (4)		CC	CC	CC	CC	CC	CC	CC	CC
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	BRS	BRS	BRS	BRS	BRS	BRS	BRS	BRS
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	20172	19284	26896	26896	25712	25712	25712	33621
Quantity	No.	6	6	8	8	8	8	8	10
Speed	rpm	600	600	600	600	600	600	600	600
Motor input	kW	2.2	2.2	3.0	3.0	3.0	3.0	3.0	3.7
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw
Oil charge	l	18	18	18	18	18	18	36	36
Quantity	No.	1	1	1	1	1	1	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	87	87	87	87	87	88	89	89
Sound Pressure - Cooling (8)	dB(A)	67	68	67	67	68	68	69	69
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	32	38	42	46	50	54	58	63
N. of circuits	No.	1	1	1	1	1	1	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	88.9 mm	139.7 mm	139.7 mm

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS PR-XN 380/60

MODEL		120.2	130.2	140.2	160.2	170.2	180.2		
Capacity - Cooling (1)	kW	419	454	496	556	601	642		
Capacity control - Type	---	Stepless	Stepless	Stepless	Stepless	Stepless	Stepless		
Capacity control - Minimum capacity	%	15.4	14.3	16.7	15.4	14.3	13.3		
Unit power input - Cooling (1)	kW	122	132	145	166	181	198		
EER (1)	---	3.42	3.43	3.41	3.35	3.33	3.25		
ESEER	---	5.86	5.91	5.91	6.00	5.98	5.92		
IPLV	---	7.05	7.05	7.14	7.13	7.11	6.97		
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW		
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS		
DIMENSIONS									
Height	mm	2355	2355	2355	2355	2355	2355		
Width	mm	2258	2258	2258	2258	2258	2258		
Length	mm	5015	5917	5917	5917	6817	6817		
WEIGHT									
Unit Weight	kg	4960	5203	5436	5465	5685	5786		
Operating Weight	kg	5230	5473	5706	5720	5940	6033		
WATER HEAT EXCHANGER									
Type (3)	---	S&T	S&T	S&T	S&T	S&T	S&T		
Water Volume	l	270	270	270	255	255	255		
Nominal water flow rate - Cooling	l/s	20.0	21.6	23.7	26.5	28.7	30.6		
Nominal Water pressure drop - Cooling	kPa	30	35	26	39	44	50		
Insulation material (4)		CC	CC	CC	CC	CC	CC		
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP		
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT		
Drive (7)	---	BRS	BRS	BRS	BRS	BRS	BRS		
Diameter	mm	800	800	800	800	800	800		
Nominal air flow	l/s	32140	40345	38568	38568	47069	44996		
Quantity	No.	10	12	12	12	14	14		
Speed	rpm	600	600	600	600	600	600		
Motor input	kW	3.7	4.4	4.4	4.4	5.2	5.2		
COMPRESSOR									
Type	---	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw	Inverter Driven Single Screw		
Oil charge	l	36	36	36	36	36	36		
Quantity	No.	2	2	2	2	2	2		
SOUND LEVEL									
Sound Power - Cooling	dB(A)	90	90	90	90	90	90		
Sound Pressure - Cooling (8)	dB(A)	69	69	69	69	69	69		
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a		
Refrigerant charge	kg	71	77	84	94	102	109		
N. of circuits	No.	2	2	2	2	2	2		
PIPING CONNECTIONS									
Evaporator water inlet/outlet		168.3 mm	168.3 mm	168.3 mm	168.3 mm	168.3 mm	168.3 mm		

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 3744 and are referred to: evaporator 12/7°C, ambient 35°C, full load operation.

ATS SE-ST 380/60

MODEL		050.1	060.1	070.1	080.1	090.1	100.1	110.2	120.2
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	60	60	60	60	60	60	60	60
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	3	3	3	3	3	3	3	3
Nominal running current cooling	A	111	128	140	168	203	231	236	255
Maximum running current	A	126	150	165	196	227	259	274	300
Maximum current for wires sizing	A	139	165	181	198	249	261	301	329
FANS									
Nominal running current cooling	A	8	10	10	13	13	16	16	21
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	119	140	155	183	214	244	129	140
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

ATS SE-ST 380/60

MODEL		130.2	140.2	150.2	170.2	180.2	200.2		
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3		
Frequency	Hz	60	60	60	60	60	60		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
UNIT									
Maximum starting current	A	3	3	3	3	3	3		
Nominal running current cooling	A	290	312	333	381	410	461		
Maximum running current	A	330	358	391	425	454	519		
Maximum current for wires sizing	A	363	390	395	467	499	522		
FANS									
Nominal running current cooling	A	21	21	26	26	26	31		
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
Maximum running current	A	155	169	183	199	214	244		
Starting method	---	INV	INV	INV	INV	INV	INV		

Fluid: Water

Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.

Nominal current in cooling mode is referred to the following conditions: evaporator $12/7^{\circ}\text{C}$; ambient 35°C ; compressors + fans current.

Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current

Maximum unit current for wires sizing is based on minimum allowed voltage

Maximum current for wires sizing: (compressors full load ampere + fans current) $\times 1,1$.

ATS SE-XN 380/60

MODEL		050.1	060.1	070.1	080.1	090.1	100.1	110.2	120.2
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	60	60	60	60	60	60	60	60
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	3	3	3	3	3	3	3	3
Nominal running current cooling	A	111	128	140	168	203	231	236	255
Maximum running current	A	126	150	165	196	227	259	274	300
Maximum current for wires sizing	A	139	165	181	198	249	261	301	329
FANS									
Nominal running current cooling	A	8	10	10	13	13	16	16	21
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	119	140	155	183	214	244	129	140
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

ATS SE-XN 380/60

MODEL		130.2	140.2	150.2	170.2	180.2	200.2		
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3		
Frequency	Hz	60	60	60	60	60	60		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
UNIT									
Maximum starting current	A	3	3	3	3	3	3		
Nominal running current cooling	A	290	312	333	381	410	461		
Maximum running current	A	330	358	391	425	454	519		
Maximum current for wires sizing	A	363	390	395	467	499	522		
FANS									
Nominal running current cooling	A	21	21	26	26	26	31		
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
Maximum running current	A	155	169	183	199	214	244		
Starting method	---	INV	INV	INV	INV	INV	INV		

Fluid: Water

Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.

Nominal current in cooling mode is referred to the following conditions: evaporator $12/7^{\circ}\text{C}$; ambient 35°C ; compressors + fans current.

Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current

Maximum unit current for wires sizing is based on minimum allowed voltage

Maximum current for wires sizing: (compressors full load ampere + fans current) $\times 1,1$.

ATS XE-ST 380/60

MODEL		050.1	060.1	075.1	085.1	095.1	100.1	110.2	120.2
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	60	60	60	60	60	60	60	60
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	3	3	3	3	3	3	3	3
Nominal running current cooling	A	102	123	151	160	190	202	210	230
Maximum running current	A	129	153	182	198	235	249	258	279
Maximum current for wires sizing	A	141	167	198	200	257	266	283	306
FANS									
Nominal running current cooling	A	10	13	13	16	21	21	21	21
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	119	140	169	183	214	229	119	129
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

ATS XE-ST 380/60

MODEL		130.2	140.2	150.2	160.2	180.2	200.2		
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3		
Frequency	Hz	60	60	60	60	60	60		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
UNIT									
Maximum starting current	A	3	3	3	3	3	3		
Nominal running current cooling	A	249	278	301	328	359	383		
Maximum running current	A	305	336	363	396	430	464		
Maximum current for wires sizing	A	335	368	395	400	472	509		
FANS									
Nominal running current cooling	A	26	26	26	31	31	36		
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
Maximum running current	A	140	155	169	183	199	214		
Starting method	---	INV	INV	INV	INV	INV	INV		

Fluid: Water

Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.

Nominal current in cooling mode is referred to the following conditions: evaporator 12/7°C; ambient 35°C; compressors + fans current.

Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current

Maximum unit current for wires sizing is based on minimum allowed voltage

Maximum current for wires sizing: (compressors full load ampere + fans current) $\times 1,1$.

ATS XE-XN 380/60

MODEL		050.1	060.1	075.1	085.1	095.1	100.1	110.2	120.2
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	60	60	60	60	60	60	60	60
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	3	3	3	3	3	3	3	3
Nominal running current cooling	A	102	123	151	160	190	202	210	230
Maximum running current	A	129	153	182	198	235	249	258	279
Maximum current for wires sizing	A	141	167	198	200	257	266	283	306
FANS									
Nominal running current cooling	A	10	13	13	16	21	21	21	21
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	119	140	169	183	214	229	119	129
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

ATS XE-XN 380/60

MODEL		130.2	140.2	150.2	160.2	180.2	200.2		
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3		
Frequency	Hz	60	60	60	60	60	60		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
UNIT									
Maximum starting current	A	3	3	3	3	3	3		
Nominal running current cooling	A	249	278	301	328	359	383		
Maximum running current	A	305	336	363	396	430	464		
Maximum current for wires sizing	A	335	368	395	400	472	509		
FANS									
Nominal running current cooling	A	26	26	26	31	31	36		
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
Maximum running current	A	140	155	169	183	199	214		
Starting method	---	INV	INV	INV	INV	INV	INV		

Fluid: Water

Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.

Nominal current in cooling mode is referred to the following conditions: evaporator $12/7^{\circ}\text{C}$; ambient 35°C ; compressors + fans current.

Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current

Maximum unit current for wires sizing is based on minimum allowed voltage

Maximum current for wires sizing: (compressors full load ampere + fans current) $\times 1,1$.

ATS PR-ST 380/60

MODEL		050.1	060.1	070.1	080.1	085.1	090.1	100.2	110.2
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	60	60	60	60	60	60	60	60
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	3	3	3	3	3	3	3	3
Nominal running current cooling	A	92	111	120	133	145	163	178	191
Maximum running current	A	122	143	159	173	187	204	221	243
Maximum current for wires sizing	A	134	158	176	189	189	225	244	268
FANS									
Nominal running current cooling	A	3	3	5	5	5	5	5	6
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	119	140	155	169	183	199	108	119
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

ATS PR-ST 380/60

MODEL		120.2	130.2	140.2	160.2	170.2	180.2		
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3		
Frequency	Hz	60	60	60	60	60	60		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
UNIT									
Maximum starting current	A	3	3	3	3	3	3		
Nominal running current cooling	A	213	229	253	286	309	342		
Maximum running current	A	264	286	316	344	373	407		
Maximum current for wires sizing	A	291	316	349	376	377	449		
FANS									
Nominal running current cooling	A	6	7	7	7	8	8		
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
Maximum running current	A	129	140	155	169	183	199		
Starting method	---	INV	INV	INV	INV	INV	INV		

Fluid: Water

Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.

Nominal current in cooling mode is referred to the following conditions: evaporator $12/7^{\circ}\text{C}$; ambient 35°C ; compressors + fans current.

Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current

Maximum unit current for wires sizing is based on minimum allowed voltage

Maximum current for wires sizing: (compressors full load ampere + fans current) $\times 1,1$.

ATS PR-XN 380/60

MODEL		050.1	060.1	070.1	080.1	085.1	090.1	100.2	110.2
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	60	60	60	60	60	60	60	60
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	3	3	3	3	3	3	3	3
Nominal running current cooling	A	92	111	120	133	145	163	178	191
Maximum running current	A	122	143	159	173	187	204	221	243
Maximum current for wires sizing	A	134	158	176	189	189	225	244	268
FANS									
Nominal running current cooling	A	3	3	5	5	5	5	5	6
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	380	380	380	380	380	380	380	380
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	119	140	155	169	183	199	108	119
Starting method	---	INV	INV	INV	INV	INV	INV	108	119
								INV	INV

ATS PR-XN 380/60

MODEL		120.2	130.2	140.2	160.2	170.2	180.2		
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3		
Frequency	Hz	60	60	60	60	60	60		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
UNIT									
Maximum starting current	A	3	3	3	3	3	3		
Nominal running current cooling	A	213	229	253	286	309	342		
Maximum running current	A	264	286	316	344	373	407		
Maximum current for wires sizing	A	291	316	349	376	377	449		
FANS									
Nominal running current cooling	A	6	7	7	7	8	8		
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3		
Voltage	V	380	380	380	380	380	380		
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%		
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%		
Maximum running current	A	129	140	155	169	183	199		
		129	140	155	169	183	199		
Starting method	---	INV	INV	INV	INV	INV	INV		

Fluid: Water

Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.

Nominal current in cooling mode is referred to the following conditions: evaporator $12/7^{\circ}\text{C}$; ambient 35°C ; compressors + fans current.

Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current

Maximum unit current for wires sizing is based on minimum allowed voltage

Maximum current for wires sizing: (compressors full load ampere + fans current) $\times 1,1$.

ATS PR-ST 380/60

	Sound pressure level at 1 m from the unit (rif. 2 x 10 ⁻⁵ Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
050.1	76.9	73.9	73.8	76.5	71.4	66.8	58.9	51.5	76.7	96.0
060.1	77.3	74.3	74.2	76.9	71.8	67.2	59.3	51.9	77.1	96.4
070.1	76.4	73.4	73.3	76.0	70.9	66.3	58.4	51.0	76.2	96.0
080.1	76.6	73.6	73.5	76.2	71.1	66.5	58.6	51.2	76.4	96.2
085.1	76.9	73.9	73.8	76.5	71.4	66.8	58.9	51.5	76.7	96.5
090.1	77.3	74.3	74.2	76.9	71.8	67.2	59.3	51.9	77.1	96.9
100.2	79.0	76.0	75.9	78.6	73.5	68.9	61.0	53.6	78.8	98.6
110.2	78.9	75.9	75.8	78.5	73.4	68.8	60.9	53.5	78.7	98.9
120.2	79.2	76.2	76.1	78.8	73.7	69.1	61.2	53.8	79.0	99.2
130.2	79.0	76.0	75.9	78.6	73.5	68.9	61.0	53.6	78.8	99.4
140.2	78.6	75.6	75.5	78.2	73.1	68.5	60.6	53.2	78.4	99.0
160.2	78.8	75.8	75.7	78.4	73.3	68.7	60.8	53.4	78.6	99.2
170.2	78.7	75.7	75.6	78.3	73.2	68.6	60.7	53.3	78.5	99.5
180.2	79.1	76.1	76.0	78.7	73.6	69.0	61.1	53.7	78.9	99.9

ATS PR-XN 380/60

	Sound pressure level at 1 m from the unit (rif. 2 x 10 ⁻⁵ Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
050.1	70.8	67.8	64.9	67.3	62.3	55.6	45.7	43.4	67.3	86.6
060.1	71.1	68.1	65.2	67.6	62.6	55.9	46.0	43.7	67.6	86.9
070.1	70.7	67.7	64.8	67.2	62.2	55.5	45.6	43.3	67.2	87.0
080.1	70.8	67.8	64.9	67.3	62.3	55.6	45.7	43.4	67.3	87.1
085.1	71.0	68.0	65.1	67.5	62.5	55.8	45.9	43.6	67.5	87.3
090.1	71.3	68.3	65.4	67.8	62.8	56.1	46.2	43.9	67.8	87.6
100.2	72.5	69.5	66.6	69.0	64.0	57.3	47.4	45.1	69.0	88.8
110.2	72.6	69.6	66.7	69.1	64.1	57.4	47.5	45.2	69.1	89.3
120.2	72.8	69.8	66.9	69.3	64.3	57.6	47.7	45.4	69.3	89.5
130.2	72.8	69.8	66.9	69.3	64.3	57.6	47.7	45.4	69.3	89.9
140.2	72.5	69.5	66.6	69.0	64.0	57.3	47.4	45.1	69.0	89.6
160.2	72.6	69.6	66.7	69.1	64.1	57.4	47.5	45.2	69.1	89.7
170.2	72.6	69.6	66.7	69.1	64.1	57.4	47.5	45.2	69.1	90.1
180.2	72.9	69.9	67.0	69.4	64.4	57.7	47.8	45.5	69.4	90.4

ATS SE-ST 380/60

	Sound pressure level at 1 m from the unit (rif. 2 x 10 ⁻⁵ Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
050.1	77.5	74.5	74.4	77.1	72.0	67.4	59.5	52.1	77.3	96.0
060.1	77.5	74.5	74.4	77.1	72.0	67.4	59.5	52.1	77.3	96.5
070.1	77.1	74.1	74.0	76.7	71.6	67.0	59.1	51.7	76.9	96.1
080.1	77.2	74.2	74.1	76.8	71.7	67.1	59.2	51.8	77.0	96.6
090.1	78.4	75.4	75.3	78.0	72.9	68.3	60.4	53.0	78.2	97.8
100.1	82.1	79.1	79.0	81.7	76.6	72.0	64.1	56.7	81.9	101.1
110.2	80.2	77.2	77.1	79.8	74.7	70.1	62.2	54.8	80.0	99.2
120.2	80.0	77.0	76.9	79.6	74.5	69.9	62.0	54.6	79.8	99.5
130.2	79.6	76.6	76.5	79.2	74.1	69.5	61.6	54.2	79.4	99.1
140.2	79.8	76.8	76.7	79.4	74.3	69.7	61.8	54.4	79.6	99.3
150.2	79.7	76.7	76.6	79.3	74.2	69.6	61.7	54.3	79.5	99.6
170.2	80.1	77.1	77.0	79.7	74.6	70.0	62.1	54.7	79.9	100.0
180.2	80.9	77.9	77.8	80.5	75.4	70.8	62.9	55.5	80.7	100.8
200.2	83.8	80.8	80.7	83.4	78.3	73.7	65.8	58.4	83.6	104.1

ATS SE-XN 380/60

	Sound pressure level at 1 m from the unit (rif. 2 x 10 ⁻⁵ Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
050.1	70.0	67.0	66.9	69.6	64.5	59.9	52.0	44.6	69.8	88.5
060.1	70.1	67.1	67.0	69.7	64.6	60.0	52.1	44.7	69.9	89.1
070.1	69.6	66.6	66.5	69.2	64.1	59.5	51.6	44.2	69.4	88.6
080.1	69.8	66.8	66.7	69.4	64.3	59.7	51.8	44.4	69.6	89.2
090.1	70.9	67.9	67.8	70.5	65.4	60.8	52.9	45.5	70.7	90.3
100.1	76.2	73.2	70.3	72.7	67.7	61.0	51.1	48.8	72.7	91.9
110.2	72.7	69.7	69.6	72.3	67.2	62.6	54.7	47.3	72.5	91.7
120.2	72.6	69.6	69.5	72.2	67.1	62.5	54.6	47.2	72.4	92.1
130.2	72.2	69.2	69.1	71.8	66.7	62.1	54.2	46.8	72.0	91.7
140.2	72.3	69.3	69.2	71.9	66.8	62.2	54.3	46.9	72.1	91.8
150.2	72.3	69.3	69.2	71.9	66.8	62.2	54.3	46.9	72.1	92.2
170.2	72.7	69.7	69.6	72.3	67.2	62.6	54.7	47.3	72.5	92.6
180.2	73.4	70.4	70.3	73.0	67.9	63.3	55.4	48.0	73.2	93.3
200.2	77.9	74.9	72.0	74.4	69.4	62.7	52.8	50.5	74.4	94.9

ATS XE-ST 380/60

	Sound pressure level at 1 m from the unit (rif. 2 x 10 ⁻⁵ Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
050.1	77.1	74.1	74.0	76.7	71.6	67.0	59.1	51.7	76.9	96.1
060.1	77.2	74.2	74.1	76.8	71.7	67.1	59.2	51.8	77.0	96.6
075.1	76.9	73.9	73.8	76.5	71.4	66.8	58.9	51.5	76.7	96.3
085.1	77.6	74.6	74.5	77.2	72.1	67.5	59.6	52.2	77.4	96.6
095.1	78.4	75.4	75.3	78.0	72.9	68.3	60.4	53.0	78.2	97.9
100.1	79.7	76.7	76.6	79.3	74.2	69.6	61.7	54.3	79.5	99.2
110.2	79.6	76.6	76.5	79.2	74.1	69.5	61.6	54.2	79.4	99.1
120.2	79.8	76.8	76.7	79.4	74.3	69.7	61.8	54.4	79.6	99.3
130.2	79.7	76.7	76.6	79.3	74.2	69.6	61.7	54.3	79.5	99.6
140.2	79.2	76.2	76.1	78.8	73.7	69.1	61.2	53.8	79.0	99.1
150.2	79.5	76.5	76.4	79.1	74.0	69.4	61.5	54.1	79.3	99.4
160.2	79.3	76.3	76.2	78.9	73.8	69.2	61.3	53.9	79.1	99.6
180.2	79.8	76.8	76.7	79.4	74.3	69.7	61.8	54.4	79.6	100.1
200.2	80.3	77.3	77.2	79.9	74.8	70.2	62.3	54.9	80.1	100.9

ATS XE-XN 380/60

	Sound pressure level at 1 m from the unit (rif. 2 x 10 ⁻⁵ Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
050.1	69.6	66.6	66.5	69.2	64.1	59.5	51.6	44.2	69.4	88.6
060.1	69.9	66.8	66.7	69.4	64.3	59.7	51.8	44.4	69.6	89.2
075.1	69.6	66.6	66.5	69.2	64.1	59.5	51.6	44.2	69.4	89.0
085.1	70.4	67.3	67.2	69.9	64.8	60.2	52.3	44.9	70.1	89.4
095.1	71.2	68.1	68.0	70.7	65.6	61.0	53.1	45.7	70.9	90.7
100.1	72.3	69.3	69.2	71.9	66.8	62.2	54.3	46.9	72.1	91.8
110.2	72.2	69.2	69.1	71.8	66.7	62.1	54.2	46.8	72.0	91.7
120.2	72.4	69.3	69.2	71.9	66.8	62.2	54.3	46.9	72.1	91.8
130.2	72.4	69.3	69.2	71.9	66.8	62.2	54.3	46.9	72.1	92.2
140.2	71.9	68.9	68.8	71.5	66.4	61.8	53.9	46.5	71.7	91.8
150.2	72.2	69.2	69.1	71.8	66.7	62.1	54.2	46.8	72.0	92.0
160.2	72.1	69.0	68.9	71.6	66.5	61.9	54.0	46.6	71.8	92.4
180.2	72.5	69.5	69.4	72.1	67.0	62.4	54.5	47.1	72.3	92.8
200.2	73.0	70.0	69.9	72.6	67.5	62.9	55.0	47.6	72.8	93.6

ATS PR-ST 380/60

SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
050.1	76.7	68.7	63.9	60.8	58.5	56.7	51.0
060.1	77.1	69.1	64.3	61.2	58.9	57.1	51.4
070.1	76.2	68.5	63.7	60.7	58.4	56.6	50.9
080.1	76.4	68.7	63.9	60.9	58.6	56.8	51.1
085.1	76.7	69.0	64.2	61.2	58.9	57.1	51.4
090.1	77.1	69.4	64.6	61.6	59.3	57.5	51.8
100.2	78.8	71.1	66.3	63.3	61.0	59.2	53.5
110.2	78.7	71.3	66.6	63.5	61.3	59.5	53.8
120.2	79.0	71.6	66.9	63.8	61.6	59.8	54.1
130.2	78.8	71.6	66.9	64.0	61.7	60.0	54.3
140.2	78.4	71.2	66.5	63.6	61.3	59.6	53.9
160.2	78.6	71.4	66.7	63.8	61.5	59.8	54.1
170.2	78.5	71.5	66.9	63.9	61.7	60.0	54.3
180.2	78.9	71.9	67.3	64.3	62.1	60.4	54.7

ATS PR-XN 380/60

SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
050.1	67.3	59.3	54.5	51.4	49.1	47.3	41.6
060.1	67.6	59.6	54.8	51.7	49.4	47.6	41.9
070.1	67.2	59.5	54.7	51.7	49.4	47.6	41.9
080.1	67.3	59.6	54.8	51.8	49.5	47.7	42.0
085.1	67.5	59.8	55.0	52.0	49.7	47.9	42.2
090.1	67.8	60.1	55.3	52.3	50.0	48.2	42.5
100.2	69.0	61.3	56.5	53.5	51.2	49.4	43.7
110.2	69.1	61.7	57.0	53.9	51.7	49.9	44.2
120.2	69.3	61.9	57.2	54.1	51.9	50.1	44.4
130.2	69.3	62.1	57.4	54.5	52.2	50.5	44.8
140.2	69.0	61.8	57.1	54.2	51.9	50.2	44.5
160.2	69.1	61.9	57.2	54.3	52.0	50.3	44.6
170.2	69.1	62.1	57.5	54.5	52.3	50.6	44.9
180.2	69.4	62.4	57.8	54.8	52.6	50.9	45.2

ATS SE-ST 380/60

SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
050.1	77.3	68.9	64.0	60.9	58.6	56.7	51.0
060.1	77.3	69.2	64.4	61.3	59.0	57.2	51.4
070.1	76.9	68.8	64.0	60.9	58.6	56.8	51.0
080.1	77.0	69.2	64.4	61.3	59.1	57.3	51.6
090.1	78.2	70.4	65.6	62.5	60.3	58.5	52.8
100.1	81.9	73.9	69.0	65.9	63.6	61.8	56.1
110.2	80.0	72.0	67.1	64.0	61.7	59.9	54.2
120.2	79.8	72.0	67.3	64.2	61.9	60.1	54.4
130.2	79.4	71.6	66.9	63.8	61.5	59.7	54.0
140.2	79.6	71.8	67.1	64.0	61.7	59.9	54.2
150.2	79.5	72.0	67.3	64.2	62.0	60.2	54.5
170.2	79.9	72.4	67.7	64.6	62.4	60.6	54.9
180.2	80.7	73.2	68.5	65.4	63.2	61.4	55.7
200.2	83.6	76.3	71.7	68.6	66.4	64.6	59.0

ATS SE-XN 380/60

SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
050.1	69.8	61.4	56.5	53.4	51.1	49.2	43.5
060.1	69.9	61.8	57.0	53.9	51.6	49.8	44.0
070.1	69.4	61.3	56.5	53.4	51.1	49.3	43.5
080.1	69.6	61.8	57.0	53.9	51.7	49.9	44.2
090.1	70.7	62.9	58.1	55.0	52.8	51.0	45.3
100.1	72.7	64.7	59.8	56.7	54.4	52.6	46.9
110.2	72.5	64.5	59.6	56.5	54.2	52.4	46.7
120.2	72.4	64.6	59.9	56.8	54.5	52.7	47.0
130.2	72.0	64.2	59.5	56.4	54.1	52.3	46.6
140.2	72.1	64.3	59.6	56.5	54.2	52.4	46.7
150.2	72.1	64.6	59.9	56.8	54.6	52.8	47.1
170.2	72.5	65.0	60.3	57.2	55.0	53.2	47.5
180.2	73.2	65.7	61.0	57.9	55.7	53.9	48.2
200.2	74.4	67.1	62.5	59.4	57.2	55.4	49.8

ATS XE-ST 380/60

SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
050.1	76.9	68.8	64.0	60.9	58.6	56.8	51.0
060.1	77.0	69.2	64.4	61.3	59.1	57.3	51.6
075.1	76.7	68.9	64.1	61.0	58.8	57.0	51.3
085.1	77.4	69.4	64.5	61.4	59.1	57.3	51.6
095.1	78.2	70.4	65.7	62.6	60.3	58.5	52.8
100.1	79.5	71.7	67.0	63.9	61.6	59.8	54.1
110.2	79.4	71.6	66.9	63.8	61.5	59.7	54.0
120.2	79.6	71.8	67.1	64.0	61.7	59.9	54.2
130.2	79.5	72.0	67.3	64.2	62.0	60.2	54.5
140.2	79.0	71.5	66.8	63.7	61.5	59.7	54.0
150.2	79.3	71.8	67.1	64.0	61.8	60.0	54.3
160.2	79.1	71.8	67.2	64.1	61.9	60.1	54.5
180.2	79.6	72.3	67.7	64.6	62.4	60.6	55.0
200.2	80.1	73.0	68.4	65.4	63.2	61.5	55.8

ATS XE-XN 380/60

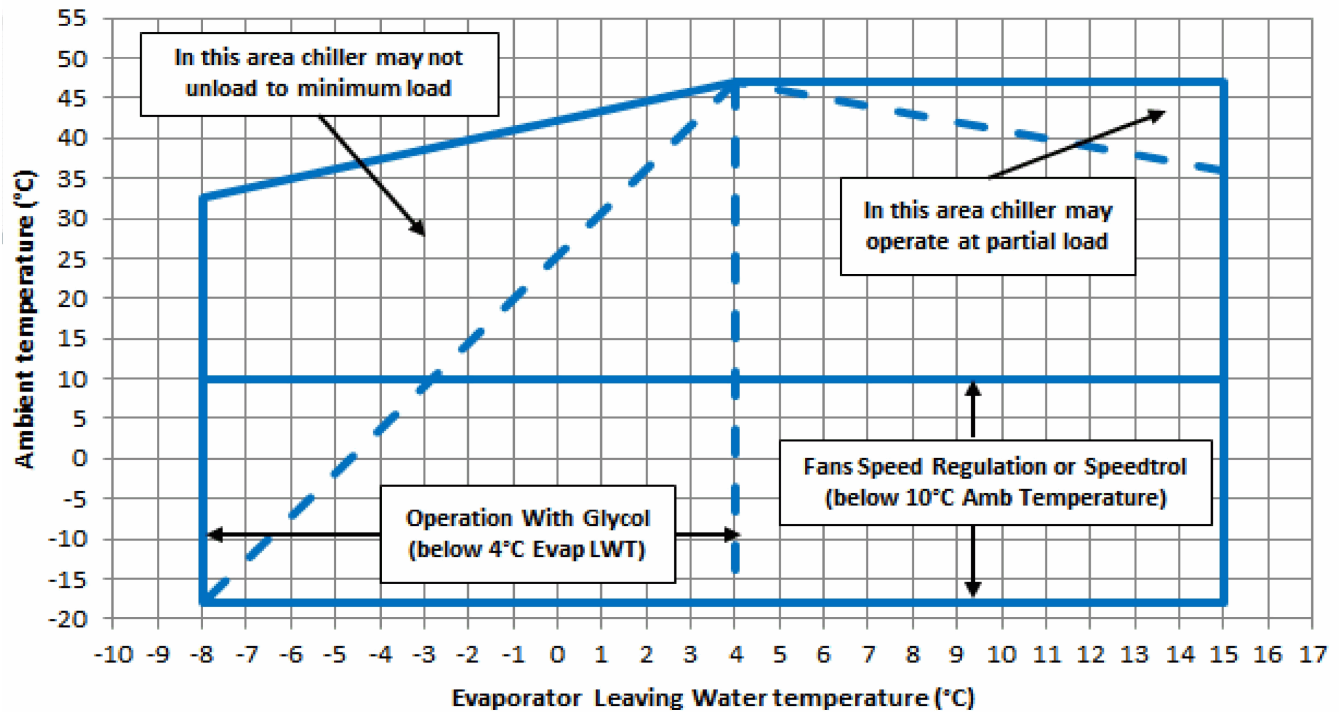
SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
050.1	69.4	61.3	56.5	53.4	51.1	49.3	43.5
060.1	69.6	61.8	57.0	53.9	51.7	49.9	44.2
075.1	69.4	61.6	56.8	53.7	51.5	49.7	44.0
085.1	70.1	62.1	57.2	54.1	51.8	50.0	44.3
095.1	70.9	63.1	58.4	55.3	53.0	51.2	45.5
100.1	72.1	64.3	59.6	56.5	54.2	52.4	46.7
110.2	72.0	64.2	59.5	56.4	54.1	52.3	46.6
120.2	72.1	64.3	59.6	56.5	54.2	52.4	46.7
130.2	72.1	64.6	59.9	56.8	54.6	52.8	47.1
140.2	71.7	64.2	59.5	56.4	54.2	52.4	46.7
150.2	72.0	64.5	59.8	56.7	54.5	52.7	47.0
160.2	71.8	64.5	59.9	56.8	54.6	52.8	47.2
180.2	72.3	65.0	60.4	57.3	55.1	53.3	47.7
200.2	72.8	65.7	61.1	58.1	55.9	54.2	48.5

Fluid: Water

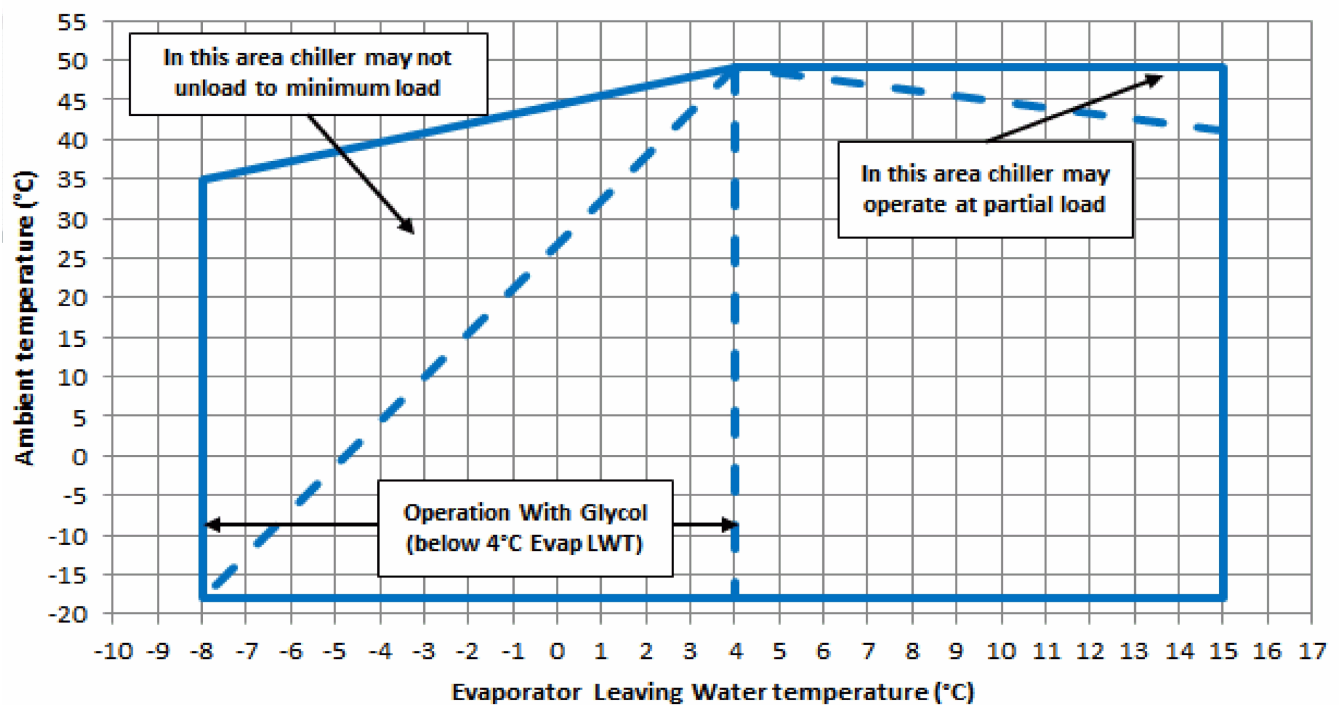
Note: The values are according to ISO 3744 and are referred to: evaporator 12/7° C, air ambient 35°C, full load operation

Operating Limits

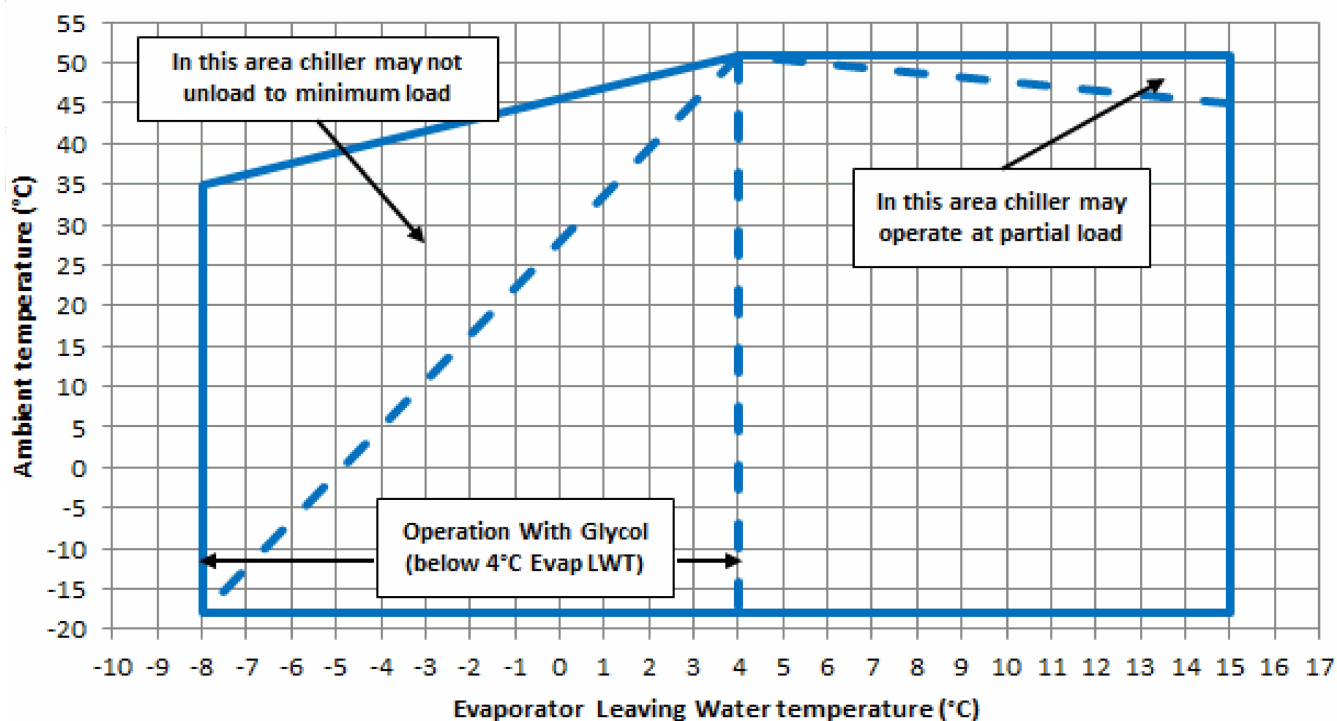
SILVER VERSION



GOLD VERSION



PLATINUM VERSION



Note

The above graphic represents a guidelines about the operating limits of the range. Please refer to Chiller Selection Software (CSS) for real operating limits working conditions for each size.

Table 1 - Water heat exchanger - Minimum and maximum water Δt

A - Δt	°C	8
B - Δt	°C	4

Legend:

A = Max evaporator water Δt
B = Min evaporator water Δt

Table 2 - Minimum glycol percentage for low air ambient temperature

	AAT (2)	-3	-8	-15	-20
A (1)		10%	20%	30%	40%
	AAT (2)	-3	-7	-12	-20
B (1)		10%	20%	30%	40%

Legend:

AAT = Air Ambient Temperature (°C) (2)
A = Ethylene glycol (%) (1)
B = Propylene glycol (%) (1)

(1) Minimum glycol percentage to prevent freezing of water circuit at indicated air ambient temperature

(2) Air ambient temperature do exceed the operating limits of the unit, a protection of water circuit may be needed in winter season at non-working conditions.

Table 3 - Air heat exchanger - Altitude correction factors

A	0	300	600	900	1200	1500	1800
B	1013	977	942	908	875	843	812
C	1.000	0.993	0.986	0.979	0.973	0.967	0.960
D	1.000	1.005	1.009	1.015	1.021	1.026	1.031

Legend:

A = Elevation above sea level (m)

B = Barometric pressure (mbar)

C = Cooling capacity correction factor

D = Power input correction factor

- Maximum operating altitude is 2000 m above sea level
- Contact factory in case the unit has to be installed at altitudes between 1000 and 2000 m above sea level
- Please refer to the Chiller Selection Software for a more accurate calculation

Table 4 - Available fan static pressure correction factors (for Silver and Gold version only)

A	0	10	20	30	40	50	60	70
B	1.000	0.996	0.991	0.985	0.978	0.970	0.954	0.927
C	1.000	1.005	1.012	1.020	1.028	1.039	1.058	1.092
D	1.0	-0.3	-0.7	-1.1	-1.6	-2.2	-3.3	-5.1

The above data are referred to:

- Fan 800 mm diameter
- Fan speed 700 rpm or 705 rpm

Legend:

A = External Static Pressure (Pa)

B = Cooling Capacity (kW) Correction factor

C = Compressor Power Input (kW) Correction factor

D = Reduction of Maximum Condenser Inlet Air Temperature (°C)

Water content in cooling circuits

The cooled water distribution circuits should have minimum water content to avoid excessive compressors start and stop. In fact, each time the compressor starts up, an excessive quantity of oil goes from the compressor sump and simultaneously there is a rise in the temperature of the compressor motor's stator due to the inrush current during the start-up. To prevent damage to the compressors, have been envisaged the application of a device to limit frequent stops and restarts.

During the span of one hour there will be no more than 6 starts of the compressor. The plant side should therefore ensure that the overall water content allows a more constant functioning of the unit and consequently greater environmental comfort.

The minimum water content per unit should be calculated by using the Chiller Selection Software.

Water charge, flow and quality

Water charge, flow and quality

Items (1) (6)			Cooling Water			Cooled Water		Heated water (2)			Tendency if out of criteria	
			Circulating System		Once Flow	Circulating water [Below 20°C]	Supply water (4)	Low temperature		High temperature		
			Circulating water	Supply water (4)	Flowing water			Circulating water [20°C ~ 60°C]	Supply water (4)	Circulating water [60°C ~ 80°C]		Supply water (4)
Items to be controlled:	pH	at 25°C	6.5 ~ 8.2	6.0 ~ 8.0	6.0 ~ 8.0	6.8 ~ 8.0	6.0 ~ 8.0	7.0 ~ 8.0	7.0 ~ 8.0	7.0 ~ 8.0	Corrosion + Scale	
	Electrical conductivity	[mS/m] at 25°C	Below 80	Below 30	Below 40	Below 80	Below 80	Below 80	Below 30	Below 30	Corrosion + Scale	
		[μS/cm] at 25°C	(Below 800)	(Below 300)	(Below 400)	(Below 800)	(Below 800)	(Below 300)	(Below 300)	(Below 300)	Corrosion + Scale	
	Chloride ion	[mgCl ² /l]	Below 200	Below 50	Below 50	Below 200	Below 50	Below 50	Below 30	Below 30	Corrosion	
	Sulfate ion	[mgSO ²⁻⁴ /l]	Below 200	Below 50	Below 50	Below 200	Below 50	Below 50	Below 30	Below 30	Corrosion	
	M-alkalinity (pH4.8)	[mgCaCO ₃ /l]	Below 100	Below 50	Below 50	Below 100	Below 50	Below 50	Below 50	Below 50	Scale	
	Total hardness	[mgCaCO ₃ /l]	Below 200	Below 70	Below 70	Below 200	Below 70	Below 70	Below 70	Below 70	Scale	
	Calcium harness	[mgCaCO ₃ /l]	Below 150	Below 50	Below 50	Below 50	Below 50	Below 50	Below 50	Below 50	Scale	
	Silica ion	[mgSiO ₂ /l]	Below 50	Below 30	Below 30	Below 30	Below 30	Below 30	Below 30	Below 30	Scale	
	Oxygen	(mg O ₂ /l)	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Corrosion	
	Particole size	(mm)	Below 0.5	Below 0.5	Below 0.5	Below 0.5	Below 0.6	Below 0.5	Below 0.5	Below 0.6	Erosion	
	Total dissolved solids	(mg / l)	Below 1000	Below 1000	Below 1000	Below 1000	Below 1001	Below 1000	Below 1000	Below 1001	Erosion	
	Ethylene, Propylene Glycol (weight conc.)		Below 60%	Below 60%	---	Below 60%	Below 60%	Below 60%	Below 60%	Below 60%	--	
	Items to be referred to:	Nitrate ion	(mg NO3- /l)	Below 100	Below 100	Below 100	Below 100	Below 101	Below 100	Below 101	Below 101	Corrosion
TOC Total organic carbon		(mg /l)	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Scale	
Iron		[mgFe/l]	Below 1.0	Below 0.3	Below 1.0	Below 1.0	Below 0.3	Below 1.0	Below 1.0	Below 0.3	Corrosion + Scale	
Copper		[mgCu/l]	Below 0.3	Below 0.1	Below 1.0	Below 1.0	Below 1.0	Below 1.0	Below 0.1	Below 0.1	Corrosion	
Sulfite ion		[mgS ²⁻ /l]	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Corrosion	
Ammonium ion		[mgNH ⁺ 4/l]	Below 1.0	Below 0.1	Below 1.0	Below 1.0	Below 0.1	Below 0.3	Below 0.1	Below 0.1	Corrosion	
Remaining chloride		[mgCL/l]	Below 0.3	Below 0.3	Below 0.3	Below 0.3	Below 0.3	Below 0.25	Below 0.3	Below 0.1	Corrosion	
Free carbide		[mgCO ₂ /l]	Below 4.0	Below 4.0	Below 4.0	Below 4.0	Below 4.0	Below 0.4	Below 4.0	Below 4.0	Corrosion	
Stability index			6.0 ~ 7.0	---	---	---	---	---	---	---	Corrosion + Scale	

1 Names, definitions and units are according to JIS K 0101. Units and figures between brackets are old units published as reference only.
2 In case of using heated water (more than 40°C), corrosion is generally noticeable.
Especially when the iron materials is in direct contact with water without any protection shields, it is desirable to give the valid measure for corrosion. E.g. chemical measure
3 In the cooling water using hermetic cooling tower, close circuit water is according to heated water standard, and scattered water is according to cooling water standard.
4 Supply water is considered drink water, industrial water and ground water except for genuine water, neutral water and soft water.
5 The above mentioned items are representable items in corrosion and scale cases.
6 The limits above have to be considered as a general prescription and can not totally assure the absence of corrosion and erosion.
Some particular combinations of elements or the presence of components not listed in the table or factors not considered may trigger corrosion phenomena.

ATS SE-ST 380/60

			050.1						060.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	172	167	165	161	154	145	206	201	198	194	187	178
	PI	kW	49.5	54.6	56.7	60	65.7	69.9	57.9	63.8	66.2	69.9	76.4	83.1
	qw	l/s	8.2	8.0	7.9	7.7	7.4	6.9	9.8	9.6	9.4	9.3	8.9	8.5
	dpw	kPa	25	24	23	22	21	18	24	23	23	22	20	19
7	CC	kW	181	176	174	171	164	148	217	212	210	206	198	189
	PI	kW	51	56.2	58.3	61.7	67.5	66.8	59.7	65.6	68.2	71.9	78.5	85.4
	qw	l/s	8.6	8.4	8.3	8.1	7.8	7.0	10.4	10.1	10.0	9.8	9.4	9.0
	dpw	kPa	28	26	26	25	23	19	27	26	25	24	23	21
9	CC	kW	191	186	184	180	173	150	229	224	221	217	209	196
	PI	kW	52.6	57.8	60.1	63.5	69.4	63.6	61.5	67.5	70	74.1	80.7	84.1
	qw	l/s	9.1	8.9	8.8	8.6	8.3	7.2	10.9	10.7	10.6	10.4	10.0	9.3
	dpw	kPa	30	29	28	27	26	20	30	28	28	27	25	22
11	CC	kW	200	195	193	189	182	144	241	235	233	229	221	187
	PI	kW	54.2	59.5	61.8	65.3	71.3	55.5	63.3	69.5	72.1	76.1	83	72.2
	qw	l/s	9.6	9.3	9.2	9.0	8.7	6.9	11.5	11.2	11.1	10.9	10.6	9.0
	dpw	kPa	33	32	31	30	28	18	32	31	30	29	28	21
13	CC	kW	210	205	203	199	180	131	253	247	245	240	232	178
	PI	kW	55.9	61.3	63.5	67.2	64.5	51.9	65.2	71.5	74.1	78.2	85.3	62.4
	qw	l/s	10.0	9.8	9.7	9.5	8.6	6.3	12.1	11.8	11.7	11.5	11.1	8.5
	dpw	kPa	36	35	34	33	27	16	35	34	33	32	30	19
15	CC	kW	220	215	212	208	172	124	265	259	257	252	225	161
	PI	kW	57.6	63.1	65.4	69	56.2	45.1	67.2	73.5	76.2	80.4	74.7	57.9
	qw	l/s	10.5	10.3	10.2	10.0	8.2	5.9	12.7	12.4	12.3	12.1	10.8	7.7
	dpw	kPa	39	38	37	36	25	14	38	37	36	35	29	16
			070.1						080.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	230	225	222	217	209	199	271	263	260	255	245	233
	PI	kW	62.9	69.4	72.1	76.3	83.6	91.3	76.7	84.7	87.7	92.6	101	110
	qw	l/s	11.0	10.7	10.6	10.4	10.0	9.5	12.9	12.6	12.4	12.1	11.7	11.1
	dpw	kPa	29	27	27	26	24	22	33	31	31	29	27	25
7	CC	kW	243	237	234	230	221	211	285	278	275	269	259	244
	PI	kW	64.7	71.3	74.1	78.4	85.8	93.7	78.9	86.9	90.2	95.2	104	111
	qw	l/s	11.6	11.3	11.2	11.0	10.6	10.1	13.6	13.3	13.1	12.8	12.4	11.7
	dpw	kPa	32	30	30	29	27	25	36	34	34	33	30	27
9	CC	kW	256	250	247	242	234	218	300	292	289	284	273	251
	PI	kW	66.6	73.2	76.1	80.5	88.1	91.7	81.2	89.3	92.8	97.8	107	107
	qw	l/s	12.2	11.9	11.8	11.6	11.2	10.4	14.3	14.0	13.8	13.6	13.1	12.0
	dpw	kPa	35	33	33	32	30	26	40	38	37	36	34	29
11	CC	kW	268	262	260	255	246	211	315	307	304	298	288	243
	PI	kW	68.5	75.3	78.2	82.7	90.4	81	83.6	91.9	95.3	101	110	93.5
	qw	l/s	12.8	12.5	12.4	12.2	11.8	10.1	15.0	14.7	14.5	14.3	13.8	11.6
	dpw	kPa	38	36	36	35	33	25	43	41	41	39	37	27
13	CC	kW	281	275	272	268	259	201	330	322	319	313	303	220
	PI	kW	70.4	77.4	80.3	84.9	92.9	70.4	86	94.5	97.9	104	113	88.7
	qw	l/s	13.4	13.2	13.0	12.8	12.4	9.6	15.8	15.4	15.3	15.0	14.5	10.5
	dpw	kPa	41	40	39	38	36	23	47	45	44	43	40	23
15	CC	kW	294	288	285	281	255	180	346	338	334	329	294	207
	PI	kW	72.5	79.6	82.5	87.1	84	65.4	88.6	97.2	101	106	99	75.2
	qw	l/s	14.1	13.8	13.7	13.4	12.2	8.6	16.5	16.2	16.0	15.7	14.1	9.9
	dpw	kPa	45	43	42	41	35	19	51	49	48	47	38	20

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			090.1						100.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	320	311	307	300	288	266	368	357	352	345	330	312
	PI	kW	92.8	102	106	111	121	124	107	118	122	128	139	150
	qw	l/s	15.2	14.8	14.6	14.3	13.7	12.7	17.5	17.0	16.8	16.4	15.7	14.9
	dpw	kPa	26	25	24	23	22	19	27	26	25	24	22	20
7	CC	kW	337	328	324	317	305	274	389	378	374	366	350	325
	PI	kW	95.7	105	109	115	125	121	110	122	126	132	143	147
	qw	l/s	16.1	15.7	15.5	15.1	14.5	13.1	18.6	18.1	17.8	17.4	16.7	15.5
	dpw	kPa	29	28	27	26	24	20	30	28	28	27	25	22
9	CC	kW	355	346	342	335	322	279	411	400	395	387	372	333
	PI	kW	98.6	109	112	118	129	114	114	125	130	137	148	141
	qw	l/s	17.0	16.5	16.3	16.0	15.4	13.3	19.6	19.1	18.9	18.5	17.7	15.9
	dpw	kPa	32	30	30	29	27	21	33	32	31	30	28	23
11	CC	kW	373	364	359	352	339	268	434	422	417	409	393	322
	PI	kW	102	112	116	122	133	98.5	117	129	134	141	153	122
	qw	l/s	17.8	17.4	17.2	16.8	16.2	12.8	20.7	20.2	20.0	19.6	18.8	15.4
	dpw	kPa	35	33	33	31	29	19	36	35	34	33	31	21
13	CC	kW	391	381	377	370	334	242	456	445	440	431	397	293
	PI	kW	105	115	119	126	118	93.6	121	133	138	146	144	118
	qw	l/s	18.7	18.2	18.0	17.7	16.0	11.6	21.8	21.3	21.0	20.6	19.0	14.0
	dpw	kPa	38	36	35	34	29	16	40	38	37	36	31	18
15	CC	kW	409	399	395	388	321	230	479	467	462	453	383	278
	PI	kW	108	119	123	130	102	79.9	125	137	143	150	124	99.1
	qw	l/s	19.6	19.1	18.9	18.6	15.4	11.0	22.9	22.4	22.1	21.7	18.3	13.3
	dpw	kPa	41	39	39	37	27	15	44	42	41	40	29	16
			110.2						120.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	370	360	355	347	333	308	414	404	399	392	377	359
	PI	kW	106	117	122	129	141	147	115	127	132	139	152	165
	qw	l/s	17.6	17.1	16.9	16.6	15.9	14.7	19.7	19.3	19.0	18.7	18.0	17.1
	dpw	kPa	36	35	34	32	30	26	50	48	47	46	42	39
7	CC	kW	390	379	375	367	352	324	437	426	422	414	399	381
	PI	kW	110	121	125	133	145	148	118	130	135	143	156	170
	qw	l/s	18.6	18.1	17.9	17.5	16.8	15.5	20.8	20.3	20.1	19.7	19.0	18.2
	dpw	kPa	40	38	37	36	33	29	55	53	52	50	47	43
9	CC	kW	410	399	395	387	372	331	458	448	444	436	421	399
	PI	kW	113	124	129	136	149	142	122	134	139	147	160	171
	qw	l/s	19.6	19.1	18.8	18.5	17.8	15.8	21.9	21.4	21.2	20.8	20.1	19.1
	dpw	kPa	44	42	41	40	37	30	61	58	57	55	52	47
11	CC	kW	431	420	415	407	392	327	480	470	465	458	443	389
	PI	kW	116	128	133	140	153	129	125	137	142	151	165	151
	qw	l/s	20.6	20.1	19.8	19.5	18.7	15.6	22.9	22.5	22.2	21.9	21.2	18.6
	dpw	kPa	48	46	45	43	41	29	66	63	62	61	57	45
13	CC	kW	452	441	436	428	408	301	502	492	487	480	465	366
	PI	kW	120	132	137	144	154	123	128	141	146	155	169	127
	qw	l/s	21.6	21.1	20.9	20.5	19.5	14.4	24.0	23.5	23.3	22.9	22.2	17.5
	dpw	kPa	52	50	49	48	44	25	72	69	68	66	62	41
15	CC	kW	474	462	457	449	399	282	525	514	510	502	467	332
	PI	kW	124	136	140	149	137	103	132	145	150	158	159	118
	qw	l/s	22.7	22.1	21.9	21.5	19.1	13.5	25.1	24.6	24.4	24.0	22.4	15.9
	dpw	kPa	57	55	54	52	42	22	78	75	74	72	63	34

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			130.2						140.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	467	455	449	439	421	394	504	490	484	474	454	427
	PI	kW	130	144	149	158	173	184	142	156	162	172	188	200
	qw	l/s	22.3	21.7	21.4	20.9	20.1	18.8	24.0	23.4	23.1	22.6	21.7	20.4
	dpw	kPa	33	31	31	30	27	24	38	36	35	34	31	28
7	CC	kW	492	479	474	464	446	403	529	516	510	500	480	438
	PI	kW	134	148	154	162	178	176	146	161	167	176	193	192
	qw	l/s	23.5	22.9	22.6	22.1	21.3	19.2	25.2	24.6	24.3	23.9	22.9	20.9
	dpw	kPa	36	35	34	33	30	25	41	40	39	37	35	29
9	CC	kW	517	505	499	489	470	409	555	542	536	526	507	446
	PI	kW	138	152	158	167	182	167	150	165	171	181	198	184
	qw	l/s	24.7	24.1	23.8	23.4	22.5	19.5	26.5	25.9	25.6	25.1	24.2	21.3
	dpw	kPa	40	38	37	36	34	26	45	43	42	41	38	31
11	CC	kW	542	529	524	514	496	391	582	568	562	552	532	432
	PI	kW	142	156	162	172	188	146	154	170	176	186	203	162
	qw	l/s	25.9	25.3	25.0	24.6	23.7	18.7	27.8	27.1	26.9	26.4	25.4	20.7
	dpw	kPa	43	42	41	39	37	24	49	47	46	45	42	29
13	CC	kW	568	554	549	539	488	353	609	595	588	578	541	391
	PI	kW	146	161	167	176	170	138	159	174	181	191	195	153
	qw	l/s	27.2	26.5	26.2	25.8	23.4	16.9	29.1	28.4	28.1	27.6	25.9	18.7
	dpw	kPa	47	45	44	43	36	20	54	51	50	49	43	24
15	CC	kW	593	580	574	564	468	334	636	622	615	605	519	368
	PI	kW	151	165	171	181	148	120	163	179	186	197	168	131
	qw	l/s	28.4	27.8	27.5	27.0	22.4	16.0	30.4	29.8	29.5	28.9	24.9	17.6
	dpw	kPa	51	49	48	47	33	18	58	56	55	53	40	22
			150.2						170.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	540	527	521	511	491	468	596	579	572	559	535	487
	PI	kW	152	167	174	184	201	219	173	191	198	209	227	227
	qw	l/s	25.7	25.1	24.8	24.3	23.4	22.3	28.4	27.6	27.2	26.7	25.5	23.2
	dpw	kPa	43	41	40	39	36	33	36	34	33	32	30	25
7	CC	kW	567	554	547	538	518	496	628	611	603	591	567	501
	PI	kW	156	172	178	188	206	224	179	197	204	215	234	219
	qw	l/s	27.0	26.4	26.1	25.6	24.7	23.6	29.9	29.1	28.8	28.2	27.0	23.9
	dpw	kPa	47	45	44	43	40	37	40	38	37	36	33	26
9	CC	kW	595	581	575	565	545	508	660	643	635	622	598	501
	PI	kW	160	176	183	193	211	216	184	203	210	221	241	202
	qw	l/s	28.4	27.7	27.5	27.0	26.0	24.3	31.5	30.7	30.3	29.7	28.6	23.9
	dpw	kPa	51	49	48	47	44	39	43	41	41	39	36	27
11	CC	kW	623	609	603	592	573	501	691	675	667	654	624	455
	PI	kW	164	181	188	198	217	194	190	209	217	228	243	195
	qw	l/s	29.8	29.1	28.8	28.3	27.4	23.9	33.0	32.2	31.9	31.3	29.8	21.7
	dpw	kPa	56	54	53	51	48	38	47	45	44	43	39	22
13	CC	kW	651	637	631	620	600	480	723	706	698	686	604	435
	PI	kW	169	186	193	204	222	169	196	215	223	235	210	167
	qw	l/s	31.2	30.5	30.2	29.7	28.7	22.9	34.6	33.8	33.4	32.8	28.9	20.8
	dpw	kPa	60	58	57	55	52	35	51	49	48	47	37	21
15	CC	kW	680	666	660	649	611	433	756	738	730	717	581	413
	PI	kW	173	190	197	209	214	157	201	221	229	242	183	144
	qw	l/s	32.6	31.9	31.6	31.1	29.2	20.7	36.2	35.3	35.0	34.3	27.8	19.8
	dpw	kPa	66	63	62	60	54	29	56	53	52	51	35	19

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			180.2						200.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	647	629	621	607	581	531	717	698	690	676	649	618
	PI	kW	188	206	214	225	245	246	213	235	243	256	278	301
	qw	l/s	30.8	30.0	29.6	28.9	27.7	25.3	34.2	33.3	32.9	32.2	31.0	29.4
	dpw	kPa	47	45	44	42	39	33	58	55	54	52	48	44
7	CC	kW	682	664	656	642	616	547	754	736	727	713	686	640
	PI	kW	194	213	221	233	253	238	219	242	250	264	287	295
	qw	l/s	32.5	31.7	31.3	30.6	29.4	26.1	36.0	35.1	34.7	34.0	32.7	30.5
	dpw	kPa	52	49	48	47	43	35	63	61	59	57	53	47
9	CC	kW	717	699	690	677	651	550	791	773	764	751	724	655
	PI	kW	200	220	228	240	261	221	225	248	258	271	295	282
	qw	l/s	34.3	33.4	33.0	32.3	31.1	26.2	37.8	36.9	36.5	35.8	34.6	31.3
	dpw	kPa	57	54	53	51	48	35	69	66	65	63	59	49
11	CC	kW	753	734	726	712	673	525	829	810	801	787	761	629
	PI	kW	206	226	235	247	258	189	231	255	265	279	303	239
	qw	l/s	36.0	35.1	34.7	34.0	32.2	25.1	39.6	38.7	38.3	37.6	36.4	30.1
	dpw	kPa	62	60	58	56	51	33	75	72	71	69	65	46
13	CC	kW	788	769	761	747	654	476	867	847	839	824	786	569
	PI	kW	212	233	242	255	224	180	238	262	272	288	301	228
	qw	l/s	37.7	36.8	36.4	35.7	31.3	22.8	41.5	40.5	40.1	39.4	37.6	27.2
	dpw	kPa	68	65	64	61	48	27	82	78	77	75	69	38
15	CC	kW	824	805	796	782	624	448	906	886	877	862	758	538
	PI	kW	218	240	248	263	192	153	244	269	279	295	256	191
	qw	l/s	39.4	38.5	38.1	37.4	29.9	21.5	43.4	42.4	42.0	41.3	36.3	25.8
	dpw	kPa	73	70	69	67	44	25	88	85	84	81	64	35

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
* For working condition where dpw value is "Italic-Red Color" please contac factory

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			050.1						060.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	172	167	165	161	154	145	206	201	198	194	187	178
	PI	kW	49.5	54.6	56.7	60	65.7	69.9	57.9	63.8	66.2	69.9	76.4	83.1
	qw	l/s	8.2	8.0	7.9	7.7	7.4	6.9	9.8	9.6	9.4	9.3	8.9	8.5
	dpw	kPa	25	24	23	22	21	18	24	23	23	22	20	19
7	CC	kW	181	176	174	171	164	148	217	212	210	206	198	189
	PI	kW	51	56.2	58.3	61.7	67.5	66.8	59.7	65.6	68.2	71.9	78.5	85.4
	qw	l/s	8.6	8.4	8.3	8.1	7.8	7.0	10.4	10.1	10.0	9.8	9.4	9.0
	dpw	kPa	28	26	26	25	23	19	27	26	25	24	23	21
9	CC	kW	191	186	184	180	173	150	229	224	221	217	209	196
	PI	kW	52.6	57.8	60.1	63.5	69.4	63.6	61.5	67.5	70	74.1	80.7	84.1
	qw	l/s	9.1	8.9	8.8	8.6	8.3	7.2	10.9	10.7	10.6	10.4	10.0	9.3
	dpw	kPa	30	29	28	27	26	20	30	28	28	27	25	22
11	CC	kW	200	195	193	189	182	144	241	235	233	229	221	187
	PI	kW	54.2	59.5	61.8	65.3	71.3	55.5	63.3	69.5	72.1	76.1	83	72.2
	qw	l/s	9.6	9.3	9.2	9.0	8.7	6.9	11.5	11.2	11.1	10.9	10.6	9.0
	dpw	kPa	33	32	31	30	28	18	32	31	30	29	28	21
13	CC	kW	210	205	203	199	180	131	253	247	245	240	232	178
	PI	kW	55.9	61.3	63.5	67.2	64.5	51.9	65.2	71.5	74.1	78.2	85.3	62.4
	qw	l/s	10.0	9.8	9.7	9.5	8.6	6.3	12.1	11.8	11.7	11.5	11.1	8.5
	dpw	kPa	36	35	34	33	27	16	35	34	33	32	30	19
15	CC	kW	220	215	212	208	172	124	265	259	257	252	225	161
	PI	kW	57.6	63.1	65.4	69	56.2	45.1	67.2	73.5	76.2	80.4	74.7	57.9
	qw	l/s	10.5	10.3	10.2	10.0	8.2	5.9	12.7	12.4	12.3	12.1	10.8	7.7
	dpw	kPa	39	38	37	36	25	14	38	37	36	35	29	16
			070.1						080.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	230	225	222	217	209	199	271	263	260	255	245	233
	PI	kW	62.9	69.4	72.1	76.3	83.6	91.3	76.7	84.7	87.7	92.6	101	110
	qw	l/s	11.0	10.7	10.6	10.4	10.0	9.5	12.9	12.6	12.4	12.1	11.7	11.1
	dpw	kPa	29	27	27	26	24	22	33	31	31	29	27	25
7	CC	kW	243	237	234	230	221	211	285	278	275	269	259	244
	PI	kW	64.7	71.3	74.1	78.4	85.8	93.7	78.9	86.9	90.2	95.2	104	111
	qw	l/s	11.6	11.3	11.2	11.0	10.6	10.1	13.6	13.3	13.1	12.8	12.4	11.7
	dpw	kPa	32	30	30	29	27	25	36	34	34	33	30	27
9	CC	kW	256	250	247	242	234	218	300	292	289	284	273	251
	PI	kW	66.6	73.2	76.1	80.5	88.1	91.7	81.2	89.3	92.8	97.8	107	107
	qw	l/s	12.2	11.9	11.8	11.6	11.2	10.4	14.3	14.0	13.8	13.6	13.1	12.0
	dpw	kPa	35	33	33	32	30	26	40	38	37	36	34	29
11	CC	kW	268	262	260	255	246	211	315	307	304	298	288	243
	PI	kW	68.5	75.3	78.2	82.7	90.4	81	83.6	91.9	95.3	101	110	93.5
	qw	l/s	12.8	12.5	12.4	12.2	11.8	10.1	15.0	14.7	14.5	14.3	13.8	11.6
	dpw	kPa	38	36	36	35	33	25	43	41	41	39	37	27
13	CC	kW	281	275	272	268	259	201	330	322	319	313	303	220
	PI	kW	70.4	77.4	80.3	84.9	92.9	70.4	86	94.5	97.9	104	113	88.7
	qw	l/s	13.4	13.2	13.0	12.8	12.4	9.6	15.8	15.4	15.3	15.0	14.5	10.5
	dpw	kPa	41	40	39	38	36	23	47	45	44	43	40	23
15	CC	kW	294	288	285	281	255	180	346	338	334	329	294	207
	PI	kW	72.5	79.6	82.5	87.1	84	65.4	88.6	97.2	101	106	99	75.2
	qw	l/s	14.1	13.8	13.7	13.4	12.2	8.6	16.5	16.2	16.0	15.7	14.1	9.9
	dpw	kPa	45	43	42	41	35	19	51	49	48	47	38	20

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			090.1						100.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	320	311	307	300	288	266	368	357	352	345	330	312
	PI	kW	92.8	102	106	111	121	124	107	118	122	128	139	150
	qw	l/s	15.2	14.8	14.6	14.3	13.7	12.7	17.5	17.0	16.8	16.4	15.7	14.9
	dpw	kPa	26	25	24	23	22	19	27	26	25	24	22	20
7	CC	kW	337	328	324	317	305	274	389	378	374	366	350	325
	PI	kW	95.7	105	109	115	125	121	110	122	126	132	143	147
	qw	l/s	16.1	15.7	15.5	15.1	14.5	13.1	18.6	18.1	17.8	17.4	16.7	15.5
	dpw	kPa	29	28	27	26	24	20	30	28	28	27	25	22
9	CC	kW	355	346	342	335	322	279	411	400	395	387	372	333
	PI	kW	98.6	109	112	118	129	114	114	125	130	137	148	141
	qw	l/s	17.0	16.5	16.3	16.0	15.4	13.3	19.6	19.1	18.9	18.5	17.7	15.9
	dpw	kPa	32	30	30	29	27	21	33	32	31	30	28	23
11	CC	kW	373	364	359	352	339	268	434	422	417	409	393	322
	PI	kW	102	112	116	122	133	98.5	117	129	134	141	153	122
	qw	l/s	17.8	17.4	17.2	16.8	16.2	12.8	20.7	20.2	20.0	19.6	18.8	15.4
	dpw	kPa	35	33	33	31	29	19	36	35	34	33	31	21
13	CC	kW	391	381	377	370	334	242	456	445	440	431	397	293
	PI	kW	105	115	119	126	118	93.6	121	133	138	146	144	118
	qw	l/s	18.7	18.2	18.0	17.7	16.0	11.6	21.8	21.3	21.0	20.6	19.0	14.0
	dpw	kPa	38	36	35	34	29	16	40	38	37	36	31	18
15	CC	kW	409	399	395	388	321	230	479	467	462	453	383	278
	PI	kW	108	119	123	130	102	79.9	125	137	143	150	124	99.1
	qw	l/s	19.6	19.1	18.9	18.6	15.4	11.0	22.9	22.4	22.1	21.7	18.3	13.3
	dpw	kPa	41	39	39	37	27	15	44	42	41	40	29	16
			110.2						120.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	370	360	355	347	333	308	414	404	399	392	377	359
	PI	kW	106	117	122	129	141	147	115	127	132	139	152	165
	qw	l/s	17.6	17.1	16.9	16.6	15.9	14.7	19.7	19.3	19.0	18.7	18.0	17.1
	dpw	kPa	36	35	34	32	30	26	50	48	47	46	42	39
7	CC	kW	390	379	375	367	352	324	437	426	422	414	399	381
	PI	kW	110	121	125	133	145	148	118	130	135	143	156	170
	qw	l/s	18.6	18.1	17.9	17.5	16.8	15.5	20.8	20.3	20.1	19.7	19.0	18.2
	dpw	kPa	40	38	37	36	33	29	55	53	52	50	47	43
9	CC	kW	410	399	395	387	372	331	458	448	444	436	421	399
	PI	kW	113	124	129	136	149	142	122	134	139	147	160	171
	qw	l/s	19.6	19.1	18.8	18.5	17.8	15.8	21.9	21.4	21.2	20.8	20.1	19.1
	dpw	kPa	44	42	41	40	37	30	61	58	57	55	52	47
11	CC	kW	431	420	415	407	392	327	480	470	465	458	443	389
	PI	kW	116	128	133	140	153	129	125	137	142	151	165	151
	qw	l/s	20.6	20.1	19.8	19.5	18.7	15.6	22.9	22.5	22.2	21.9	21.2	18.6
	dpw	kPa	48	46	45	43	41	29	66	63	62	61	57	45
13	CC	kW	452	441	436	428	408	301	502	492	487	480	465	366
	PI	kW	120	132	137	144	154	123	128	141	146	155	169	127
	qw	l/s	21.6	21.1	20.9	20.5	19.5	14.4	24.0	23.5	23.3	22.9	22.2	17.5
	dpw	kPa	52	50	49	48	44	25	72	69	68	66	62	41
15	CC	kW	474	462	457	449	399	282	525	514	510	502	467	332
	PI	kW	124	136	140	149	137	103	132	145	150	158	159	118
	qw	l/s	22.7	22.1	21.9	21.5	19.1	13.5	25.1	24.6	24.4	24.0	22.4	15.9
	dpw	kPa	57	55	54	52	42	22	78	75	74	72	63	34

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			130.2						140.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	467	455	449	439	421	394	504	490	484	474	454	427
	PI	kW	130	144	149	158	173	184	142	156	162	172	188	200
	qw	l/s	22.3	21.7	21.4	20.9	20.1	18.8	24.0	23.4	23.1	22.6	21.7	20.4
	dpw	kPa	33	31	31	30	27	24	38	36	35	34	31	28
7	CC	kW	492	479	474	464	446	403	529	516	510	500	480	438
	PI	kW	134	148	154	162	178	176	146	161	167	176	193	192
	qw	l/s	23.5	22.9	22.6	22.1	21.3	19.2	25.2	24.6	24.3	23.9	22.9	20.9
	dpw	kPa	36	35	34	33	30	25	41	40	39	37	35	29
9	CC	kW	517	505	499	489	470	409	555	542	536	526	507	446
	PI	kW	138	152	158	167	182	167	150	165	171	181	198	184
	qw	l/s	24.7	24.1	23.8	23.4	22.5	19.5	26.5	25.9	25.6	25.1	24.2	21.3
	dpw	kPa	40	38	37	36	34	26	45	43	42	41	38	31
11	CC	kW	542	529	524	514	496	391	582	568	562	552	532	432
	PI	kW	142	156	162	172	188	146	154	170	176	186	203	162
	qw	l/s	25.9	25.3	25.0	24.6	23.7	18.7	27.8	27.1	26.9	26.4	25.4	20.7
	dpw	kPa	43	42	41	39	37	24	49	47	46	45	42	29
13	CC	kW	568	554	549	539	488	353	609	595	588	578	541	391
	PI	kW	146	161	167	176	170	138	159	174	181	191	195	153
	qw	l/s	27.2	26.5	26.2	25.8	23.4	16.9	29.1	28.4	28.1	27.6	25.9	18.7
	dpw	kPa	47	45	44	43	36	20	54	51	50	49	43	24
15	CC	kW	593	580	574	564	468	334	636	622	615	605	519	368
	PI	kW	151	165	171	181	148	120	163	179	186	197	168	131
	qw	l/s	28.4	27.8	27.5	27.0	22.4	16.0	30.4	29.8	29.5	28.9	24.9	17.6
	dpw	kPa	51	49	48	47	33	18	58	56	55	53	40	22
			150.2						170.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	540	527	521	511	491	468	596	579	572	559	535	487
	PI	kW	152	167	174	184	201	219	173	191	198	209	227	227
	qw	l/s	25.7	25.1	24.8	24.3	23.4	22.3	28.4	27.6	27.2	26.7	25.5	23.2
	dpw	kPa	43	41	40	39	36	33	36	34	33	32	30	25
7	CC	kW	567	554	547	538	518	496	628	611	603	591	567	501
	PI	kW	156	172	178	188	206	224	179	197	204	215	234	219
	qw	l/s	27.0	26.4	26.1	25.6	24.7	23.6	29.9	29.1	28.8	28.2	27.0	23.9
	dpw	kPa	47	45	44	43	40	37	40	38	37	36	33	26
9	CC	kW	595	581	575	565	545	508	660	643	635	622	598	501
	PI	kW	160	176	183	193	211	216	184	203	210	221	241	202
	qw	l/s	28.4	27.7	27.5	27.0	26.0	24.3	31.5	30.7	30.3	29.7	28.6	23.9
	dpw	kPa	51	49	48	47	44	39	43	41	41	39	36	27
11	CC	kW	623	609	603	592	573	501	691	675	667	654	624	455
	PI	kW	164	181	188	198	217	194	190	209	217	228	243	195
	qw	l/s	29.8	29.1	28.8	28.3	27.4	23.9	33.0	32.2	31.9	31.3	29.8	21.7
	dpw	kPa	56	54	53	51	48	38	47	45	44	43	39	22
13	CC	kW	651	637	631	620	600	480	723	706	698	686	604	435
	PI	kW	169	186	193	204	222	169	196	215	223	235	210	167
	qw	l/s	31.2	30.5	30.2	29.7	28.7	22.9	34.6	33.8	33.4	32.8	28.9	20.8
	dpw	kPa	60	58	57	55	52	35	51	49	48	47	37	21
15	CC	kW	680	666	660	649	611	433	756	738	730	717	581	413
	PI	kW	173	190	197	209	214	157	201	221	229	242	183	144
	qw	l/s	32.6	31.9	31.6	31.1	29.2	20.7	36.2	35.3	35.0	34.3	27.8	19.8
	dpw	kPa	66	63	62	60	54	29	56	53	52	51	35	19

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			180.2						200.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	647	629	621	607	581	531	717	698	690	676	649	618
	PI	kW	188	206	214	225	245	246	213	235	243	256	278	301
	qw	l/s	30.8	30.0	29.6	28.9	27.7	25.3	34.2	33.3	32.9	32.2	31.0	29.4
	dpw	kPa	47	45	44	42	39	33	58	55	54	52	48	44
7	CC	kW	682	664	656	642	616	547	754	736	727	713	686	640
	PI	kW	194	213	221	233	253	238	219	242	250	264	287	295
	qw	l/s	32.5	31.7	31.3	30.6	29.4	26.1	36.0	35.1	34.7	34.0	32.7	30.5
	dpw	kPa	52	49	48	47	43	35	63	61	59	57	53	47
9	CC	kW	717	699	690	677	651	550	791	773	764	751	724	655
	PI	kW	200	220	228	240	261	221	225	248	258	271	295	282
	qw	l/s	34.3	33.4	33.0	32.3	31.1	26.2	37.8	36.9	36.5	35.8	34.6	31.3
	dpw	kPa	57	54	53	51	48	35	69	66	65	63	59	49
11	CC	kW	753	734	726	712	673	525	829	810	801	787	761	629
	PI	kW	206	226	235	247	258	189	231	255	265	279	303	239
	qw	l/s	36.0	35.1	34.7	34.0	32.2	25.1	39.6	38.7	38.3	37.6	36.4	30.1
	dpw	kPa	62	60	58	56	51	33	75	72	71	69	65	46
13	CC	kW	788	769	761	747	654	476	867	847	839	824	786	569
	PI	kW	212	233	242	255	224	180	238	262	272	288	301	228
	qw	l/s	37.7	36.8	36.4	35.7	31.3	22.8	41.5	40.5	40.1	39.4	37.6	27.2
	dpw	kPa	68	65	64	61	48	27	82	78	77	75	69	38
15	CC	kW	824	805	796	782	624	448	906	886	877	862	758	538
	PI	kW	218	240	248	263	192	153	244	269	279	295	256	191
	qw	l/s	39.4	38.5	38.1	37.4	29.9	21.5	43.4	42.4	42.0	41.3	36.3	25.8
	dpw	kPa	73	70	69	67	44	25	88	85	84	81	64	35

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
* For working condition where dpw value is "Italic-Red Color" please contac factory

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			050.1						060.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	179	175	173	170	165	158	215	211	209	205	198	190
	PI	kW	44.8	49.4	51.3	54.3	59.6	65.2	54.7	60.2	62.5	66.2	72.4	78.9
	qw	l/s	8.5	8.3	8.2	8.1	7.8	7.5	10.3	10.0	9.9	9.8	9.4	9.1
	dpw	kPa	23	22	22	21	20	19	25	24	24	23	22	20
7	CC	kW	188	185	183	180	175	168	227	223	221	217	210	202
	PI	kW	46	50.6	52.5	55.6	61	66.7	56.2	61.8	64.1	67.8	74.2	80.8
	qw	l/s	9.0	8.8	8.7	8.6	8.3	8.0	10.8	10.6	10.5	10.4	10.0	9.6
	dpw	kPa	26	25	24	24	22	21	28	27	26	25	24	22
9	CC	kW	199	195	193	190	185	178	240	235	233	229	222	214
	PI	kW	47.3	51.9	53.9	56.9	62.4	68.2	57.7	63.3	65.7	69.5	76	82.8
	qw	l/s	9.5	9.3	9.2	9.1	8.8	8.5	11.4	11.2	11.1	10.9	10.6	10.2
	dpw	kPa	28	27	27	26	25	23	30	29	29	28	27	25
11	CC	kW	209	205	203	201	195	188	252	247	245	242	235	226
	PI	kW	48.5	53.2	55.2	58.3	63.9	69.8	59.3	65	67.4	71.2	77.9	84.8
	qw	l/s	10.0	9.8	9.7	9.6	9.3	9.0	12.0	11.8	11.7	11.5	11.2	10.8
	dpw	kPa	31	30	29	29	27	26	33	32	32	31	29	27
13	CC	kW	220	216	214	211	205	198	264	260	258	254	247	236
	PI	kW	49.9	54.6	56.6	59.7	65.3	71.3	60.9	66.6	69.1	72.9	79.7	85.1
	qw	l/s	10.5	10.3	10.2	10.1	9.8	9.5	12.7	12.4	12.3	12.1	11.8	11.3
	dpw	kPa	34	33	32	31	30	28	36	35	35	34	32	30
15	CC	kW	230	226	225	222	216	191	277	272	270	267	260	221
	PI	kW	51.2	56	58	61.2	66.9	63.3	62.5	68.3	70.8	74.7	81.6	71.6
	qw	l/s	11.0	10.8	10.8	10.6	10.3	9.2	13.3	13.0	12.9	12.8	12.4	10.6
	dpw	kPa	37	36	35	34	33	26	40	38	38	37	35	26
			075.1						085.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	265	259	256	251	242	231	287	281	278	273	264	253
	PI	kW	67.6	74.4	77.3	81.7	89.5	97.6	71.9	79.2	82.2	87.1	95.1	104
	qw	l/s	12.6	12.3	12.2	12.0	11.5	11.0	13.7	13.4	13.2	13.0	12.6	12.0
	dpw	kPa	19	18	18	17	16	15	22	21	21	20	19	18
7	CC	kW	280	274	271	266	257	246	303	297	294	289	280	269
	PI	kW	69.5	76.5	79.3	84	91.8	100	73.8	81.2	84.3	89.2	97.5	106
	qw	l/s	13.4	13.1	12.9	12.7	12.2	11.7	14.4	14.1	14.0	13.8	13.3	12.8
	dpw	kPa	21	20	20	19	18	17	24	23	23	22	21	20
9	CC	kW	295	289	286	281	272	261	319	313	310	305	296	285
	PI	kW	71.5	78.6	81.6	86.2	94.2	103	75.7	83.3	86.5	91.3	99.9	109
	qw	l/s	14.1	13.8	13.6	13.4	13.0	12.4	15.2	14.9	14.8	14.6	14.1	13.6
	dpw	kPa	23	22	22	21	20	19	27	26	25	25	23	22
11	CC	kW	311	304	301	296	287	265	336	329	326	322	312	301
	PI	kW	73.6	80.8	83.8	88.5	96.7	98.5	77.8	85.4	88.7	93.7	103	112
	qw	l/s	14.9	14.5	14.4	14.2	13.7	12.7	16.0	15.7	15.6	15.4	14.9	14.4
	dpw	kPa	25	25	24	23	22	19	29	28	28	27	26	24
13	CC	kW	327	320	317	312	302	253	353	346	343	338	329	310
	PI	kW	75.7	83.1	86.2	90.9	99.4	85.5	79.9	87.7	90.9	96	105	110
	qw	l/s	15.6	15.3	15.2	14.9	14.5	12.1	16.9	16.6	16.4	16.2	15.7	14.8
	dpw	kPa	28	27	26	26	24	18	32	31	31	30	28	25
15	CC	kW	343	336	333	328	318	228	370	363	360	355	346	290
	PI	kW	78	85.4	88.6	93.4	102	79.9	82.1	90	93.3	98.5	108	92.1
	qw	l/s	16.4	16.1	15.9	15.7	15.2	10.9	17.7	17.4	17.3	17.0	16.6	13.9
	dpw	kPa	30	29	29	28	27	15	35	34	33	33	31	23

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			095.1						100.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	329	322	319	313	302	290	357	349	346	340	328	314
	PI	kW	84.5	93.1	96.7	102	111	121	90.2	99.5	103	110	119	129
	qw	l/s	15.7	15.3	15.2	14.9	14.4	13.8	17.0	16.6	16.5	16.2	15.6	15.0
	dpw	kPa	23	22	22	21	20	18	26	25	24	23	22	20
7	CC	kW	349	341	338	332	322	308	378	370	367	361	349	335
	PI	kW	86.8	95.5	99.2	105	114	124	92.6	102	106	112	122	133
	qw	l/s	16.6	16.3	16.1	15.9	15.3	14.7	18.0	17.7	17.5	17.2	16.6	16.0
	dpw	kPa	25	25	24	23	22	20	28	27	27	26	25	23
9	CC	kW	369	361	358	352	341	328	400	392	388	382	370	356
	PI	kW	89.2	98	102	108	117	128	95.1	105	109	115	126	136
	qw	l/s	17.6	17.3	17.1	16.8	16.3	15.7	19.1	18.7	18.5	18.2	17.7	17.0
	dpw	kPa	28	27	27	26	25	23	31	30	30	29	27	26
11	CC	kW	390	382	378	373	361	348	422	414	410	404	392	378
	PI	kW	91.7	101	104	110	121	131	97.7	107	111	118	129	140
	qw	l/s	18.6	18.3	18.1	17.8	17.3	16.6	20.2	19.8	19.6	19.3	18.7	18.1
	dpw	kPa	31	30	30	29	27	25	35	34	33	32	30	28
13	CC	kW	411	403	399	393	382	368	445	436	433	426	414	400
	PI	kW	94.3	103	107	113	124	134	100	110	114	121	132	144
	qw	l/s	19.7	19.3	19.1	18.8	18.3	17.6	21.3	20.9	20.7	20.4	19.8	19.1
	dpw	kPa	34	33	33	32	30	28	38	37	36	35	34	32
15	CC	kW	432	424	421	415	403	351	467	459	455	449	437	393
	PI	kW	97	106	110	116	127	116	103	113	117	124	136	130
	qw	l/s	20.7	20.3	20.1	19.9	19.3	16.8	22.4	22.0	21.8	21.5	20.9	18.8
	dpw	kPa	38	36	36	35	33	26	42	41	40	39	37	31
			110.2						120.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	365	357	353	347	335	320	406	397	392	385	372	356
	PI	kW	92.4	102	106	112	123	134	102	113	117	124	135	148
	qw	l/s	17.4	17.0	16.8	16.5	16.0	15.3	19.3	18.9	18.7	18.4	17.7	17.0
	dpw	kPa	39	38	37	36	34	31	41	39	38	37	35	32
7	CC	kW	386	378	374	368	355	341	429	420	416	408	395	378
	PI	kW	94.9	104	108	115	126	137	105	116	120	127	139	151
	qw	l/s	18.4	18.0	17.8	17.5	17.0	16.3	20.5	20.0	19.8	19.5	18.8	18.1
	dpw	kPa	44	42	41	40	38	35	45	43	43	41	39	36
9	CC	kW	406	398	394	388	376	361	453	444	439	432	418	402
	PI	kW	97.5	107	111	117	129	140	108	119	123	130	142	155
	qw	l/s	19.4	19.0	18.8	18.5	18.0	17.3	21.6	21.2	21.0	20.6	20.0	19.2
	dpw	kPa	48	46	45	44	42	39	50	48	47	46	43	40
11	CC	kW	427	419	415	409	397	382	478	468	464	456	442	414
	PI	kW	100	110	114	120	132	144	112	122	127	134	146	152
	qw	l/s	20.4	20.0	19.9	19.6	19.0	18.3	22.8	22.4	22.2	21.8	21.1	19.8
	dpw	kPa	53	51	50	49	46	43	55	53	52	50	48	42
13	CC	kW	449	440	437	430	418	370	503	493	489	481	467	388
	PI	kW	103	113	117	123	135	127	115	126	130	138	150	129
	qw	l/s	21.5	21.1	20.9	20.6	20.0	17.7	24.1	23.6	23.4	23.0	22.3	18.6
	dpw	kPa	57	56	55	53	51	41	60	58	57	56	53	38
15	CC	kW	469	461	458	451	439	343	529	519	514	507	492	368
	PI	kW	106	116	120	127	138	109	119	130	134	141	154	113
	qw	l/s	22.5	22.1	21.9	21.6	21.0	16.4	25.3	24.8	24.6	24.3	23.5	17.6
	dpw	kPa	62	60	60	58	55	36	66	64	63	61	58	34

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			130.2						140.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	439	429	425	418	404	387	491	479	474	465	448	428
	PI	kW	111	122	127	134	146	160	124	136	141	150	164	179
	qw	l/s	20.9	20.5	20.3	19.9	19.2	18.4	23.4	22.8	22.6	22.2	21.4	20.4
	dpw	kPa	47	45	44	43	40	37	55	53	52	50	47	43
7	CC	kW	464	454	450	443	428	411	518	507	501	492	475	455
	PI	kW	114	125	130	137	150	164	127	140	145	154	168	183
	qw	l/s	22.1	21.7	21.5	21.1	20.4	19.6	24.7	24.2	23.9	23.5	22.7	21.7
	dpw	kPa	52	50	49	48	45	42	61	59	58	56	52	48
9	CC	kW	490	480	476	468	454	436	546	535	530	521	503	483
	PI	kW	117	129	133	141	154	168	131	144	149	158	172	188
	qw	l/s	23.4	22.9	22.7	22.4	21.7	20.8	26.1	25.5	25.3	24.9	24.0	23.1
	dpw	kPa	57	55	54	53	50	47	67	65	64	62	58	54
11	CC	kW	517	507	502	494	480	462	574	562	557	548	532	490
	PI	kW	121	132	137	145	158	172	134	148	153	162	177	180
	qw	l/s	24.7	24.2	24.0	23.6	22.9	22.1	27.4	26.9	26.6	26.2	25.4	23.4
	dpw	kPa	63	61	60	58	55	52	74	71	70	68	64	55
13	CC	kW	543	533	528	521	506	452	603	591	585	576	559	461
	PI	kW	124	136	141	148	162	155	138	152	157	166	181	154
	qw	l/s	26.0	25.5	25.3	24.9	24.2	21.6	28.8	28.3	28.0	27.6	26.8	22.1
	dpw	kPa	69	67	66	64	61	50	81	78	76	74	70	50
15	CC	kW	569	559	555	547	532	423	631	619	614	605	587	415
	PI	kW	128	139	144	152	166	132	142	156	161	170	186	144
	qw	l/s	27.3	26.8	26.6	26.2	25.5	20.3	30.2	29.7	29.4	29.0	28.1	19.9
	dpw	kPa	75	73	72	70	67	44	88	85	83	81	77	41
			150.2						160.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	536	523	517	508	489	467	577	564	557	547	527	504
	PI	kW	135	149	155	164	179	195	148	163	169	179	195	212
	qw	l/s	25.5	24.9	24.6	24.2	23.3	22.3	27.5	26.9	26.6	26.1	25.1	24.0
	dpw	kPa	29	28	27	27	25	23	33	32	31	30	28	26
7	CC	kW	566	553	547	538	519	497	608	595	589	579	560	536
	PI	kW	139	153	159	168	184	200	152	167	173	183	200	218
	qw	l/s	27.0	26.4	26.1	25.7	24.8	23.7	29.0	28.4	28.1	27.6	26.7	25.6
	dpw	kPa	32	31	31	30	28	26	37	35	35	34	32	29
9	CC	kW	596	584	578	568	550	527	640	627	620	610	591	568
	PI	kW	143	157	163	172	189	205	156	171	178	188	205	224
	qw	l/s	28.5	27.9	27.6	27.1	26.2	25.2	30.6	29.9	29.6	29.2	28.2	27.1
	dpw	kPa	36	34	34	33	31	29	40	39	38	37	35	33
11	CC	kW	627	614	608	599	580	537	672	659	653	643	623	593
	PI	kW	147	162	168	177	194	197	160	176	183	193	211	225
	qw	l/s	30.0	29.4	29.1	28.6	27.7	25.7	32.1	31.5	31.2	30.7	29.8	28.4
	dpw	kPa	39	38	37	36	34	30	44	43	42	41	39	35
13	CC	kW	658	645	639	629	610	503	704	691	685	675	655	567
	PI	kW	151	166	172	182	199	167	164	180	187	198	216	193
	qw	l/s	31.5	30.9	30.6	30.1	29.2	24.1	33.7	33.0	32.8	32.3	31.4	27.1
	dpw	kPa	43	41	40	39	37	26	48	47	46	45	42	33
15	CC	kW	689	676	671	661	641	461	736	723	717	707	687	528
	PI	kW	155	171	177	187	204	160	169	185	192	203	221	164
	qw	l/s	33.0	32.4	32.1	31.6	30.7	22.1	35.2	34.6	34.3	33.8	32.9	25.3
	dpw	kPa	46	45	44	43	41	22	52	51	50	48	46	29

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		180.2						200.2					
Twout	Ta	25	30	32	35	40	45	25	30	32	35	40	45
5	CC kW	628	614	607	596	575	549	680	665	658	647	625	599
	PI kW	160	177	184	194	212	230	172	189	197	208	227	246
	qw l/s	29.9	29.2	28.9	28.4	27.4	26.2	32.4	31.7	31.4	30.8	29.8	28.6
	dpw kPa	44	42	41	40	37	35	56	54	53	51	48	45
7	CC kW	663	649	642	631	609	584	719	704	697	685	663	637
	PI kW	165	181	188	199	217	236	176	194	202	213	233	253
	qw l/s	31.6	31.0	30.6	30.1	29.1	27.9	34.3	33.6	33.2	32.7	31.6	30.4
	dpw kPa	49	47	46	44	42	39	62	60	59	57	54	50
9	CC kW	698	683	677	666	645	619	758	743	736	724	702	675
	PI kW	169	186	193	204	223	243	181	199	207	219	239	260
	qw l/s	33.3	32.6	32.3	31.8	30.8	29.6	36.2	35.5	35.1	34.6	33.5	32.2
	dpw kPa	53	51	50	49	46	43	69	66	65	63	60	56
11	CC kW	733	719	712	701	680	641	798	783	776	765	742	715
	PI kW	174	191	198	210	229	239	186	204	212	224	245	266
	qw l/s	35.1	34.4	34.0	33.5	32.5	30.6	38.1	37.4	37.1	36.5	35.4	34.2
	dpw kPa	58	56	55	54	51	46	75	73	72	70	66	62
13	CC kW	769	755	748	737	715	607	837	822	815	804	781	700
	PI kW	179	196	204	215	235	203	191	210	218	230	251	239
	qw l/s	36.8	36.1	35.8	35.2	34.2	29.0	40.0	39.3	39.0	38.4	37.4	33.5
	dpw kPa	64	62	61	59	56	42	82	80	78	76	73	60
15	CC kW	805	790	783	772	751	549	878	862	855	843	821	658
	PI kW	184	201	209	221	241	191	196	215	223	236	258	203
	qw l/s	38.5	37.8	37.5	37.0	36.0	26.3	42.0	41.3	40.9	40.4	39.3	31.5
	dpw kPa	69	67	66	64	61	35	90	87	86	83	80	53

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
* For working condition where dpw value is "Italic-Red Color" please contac factory

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			050.1						060.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	179	175	173	170	165	158	215	211	209	205	198	190
	PI	kW	44.8	49.4	51.3	54.3	59.6	65.2	54.7	60.2	62.5	66.2	72.4	78.9
	qw	l/s	8.5	8.3	8.2	8.1	7.8	7.5	10.3	10.0	9.9	9.8	9.4	9.1
	dpw	kPa	23	22	22	21	20	19	25	24	24	23	22	20
7	CC	kW	188	185	183	180	175	168	227	223	221	217	210	202
	PI	kW	46	50.6	52.5	55.6	61	66.7	56.2	61.8	64.1	67.8	74.2	80.8
	qw	l/s	9.0	8.8	8.7	8.6	8.3	8.0	10.8	10.6	10.5	10.4	10.0	9.6
	dpw	kPa	26	25	24	24	22	21	28	27	26	25	24	22
9	CC	kW	199	195	193	190	185	178	240	235	233	229	222	214
	PI	kW	47.3	51.9	53.9	56.9	62.4	68.2	57.7	63.3	65.7	69.5	76	82.8
	qw	l/s	9.5	9.3	9.2	9.1	8.8	8.5	11.4	11.2	11.1	10.9	10.6	10.2
	dpw	kPa	28	27	27	26	25	23	30	29	29	28	27	25
11	CC	kW	209	205	203	201	195	188	252	247	245	242	235	226
	PI	kW	48.5	53.2	55.2	58.3	63.9	69.8	59.3	65	67.4	71.2	77.9	84.8
	qw	l/s	10.0	9.8	9.7	9.6	9.3	9.0	12.0	11.8	11.7	11.5	11.2	10.8
	dpw	kPa	31	30	29	29	27	26	33	32	32	31	29	27
13	CC	kW	220	216	214	211	205	198	264	260	258	254	247	236
	PI	kW	49.9	54.6	56.6	59.7	65.3	71.3	60.9	66.6	69.1	72.9	79.7	85.1
	qw	l/s	10.5	10.3	10.2	10.1	9.8	9.5	12.7	12.4	12.3	12.1	11.8	11.3
	dpw	kPa	34	33	32	31	30	28	36	35	35	34	32	30
15	CC	kW	230	226	225	222	216	191	277	272	270	267	260	221
	PI	kW	51.2	56	58	61.2	66.9	63.3	62.5	68.3	70.8	74.7	81.6	71.6
	qw	l/s	11.0	10.8	10.8	10.6	10.3	9.2	13.3	13.0	12.9	12.8	12.4	10.6
	dpw	kPa	37	36	35	34	33	26	40	38	38	37	35	26

			075.1						085.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	265	259	256	251	242	231	287	281	278	273	264	253
	PI	kW	67.6	74.4	77.3	81.7	89.5	97.6	71.9	79.2	82.2	87.1	95.1	104
	qw	l/s	12.6	12.3	12.2	12.0	11.5	11.0	13.7	13.4	13.2	13.0	12.6	12.0
	dpw	kPa	19	18	18	17	16	15	22	21	21	20	19	18
7	CC	kW	280	274	271	266	257	246	303	297	294	289	280	269
	PI	kW	69.5	76.5	79.3	84	91.8	100	73.8	81.2	84.3	89.2	97.5	106
	qw	l/s	13.4	13.1	12.9	12.7	12.2	11.7	14.4	14.1	14.0	13.8	13.3	12.8
	dpw	kPa	21	20	20	19	18	17	24	23	23	22	21	20
9	CC	kW	295	289	286	281	272	261	319	313	310	305	296	285
	PI	kW	71.5	78.6	81.6	86.2	94.2	103	75.7	83.3	86.5	91.3	99.9	109
	qw	l/s	14.1	13.8	13.6	13.4	13.0	12.4	15.2	14.9	14.8	14.6	14.1	13.6
	dpw	kPa	23	22	22	21	20	19	27	26	25	25	23	22
11	CC	kW	311	304	301	296	287	265	336	329	326	322	312	301
	PI	kW	73.6	80.8	83.8	88.5	96.7	98.5	77.8	85.4	88.7	93.7	103	112
	qw	l/s	14.9	14.5	14.4	14.2	13.7	12.7	16.0	15.7	15.6	15.4	14.9	14.4
	dpw	kPa	25	25	24	23	22	19	29	28	28	27	26	24
13	CC	kW	327	320	317	312	302	253	353	346	343	338	329	310
	PI	kW	75.7	83.1	86.2	90.9	99.4	85.5	79.9	87.7	90.9	96	105	110
	qw	l/s	15.6	15.3	15.2	14.9	14.5	12.1	16.9	16.6	16.4	16.2	15.7	14.8
	dpw	kPa	28	27	26	26	24	18	32	31	31	30	28	25
15	CC	kW	343	336	333	328	318	228	370	363	360	355	346	290
	PI	kW	78	85.4	88.6	93.4	102	79.9	82.1	90	93.3	98.5	108	92.1
	qw	l/s	16.4	16.1	15.9	15.7	15.2	10.9	17.7	17.4	17.3	17.0	16.6	13.9
	dpw	kPa	30	29	29	28	27	15	35	34	33	33	31	23

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			095.1						100.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	329	322	319	313	302	290	357	349	346	340	328	314
	PI	kW	84.5	93.1	96.7	102	111	121	90.2	99.5	103	110	119	129
	qw	l/s	15.7	15.3	15.2	14.9	14.4	13.8	17.0	16.6	16.5	16.2	15.6	15.0
	dpw	kPa	23	22	22	21	20	18	26	25	24	23	22	20
7	CC	kW	349	341	338	332	322	308	378	370	367	361	349	335
	PI	kW	86.8	95.5	99.2	105	114	124	92.6	102	106	112	122	133
	qw	l/s	16.6	16.3	16.1	15.9	15.3	14.7	18.0	17.7	17.5	17.2	16.6	16.0
	dpw	kPa	25	25	24	23	22	20	28	27	27	26	25	23
9	CC	kW	369	361	358	352	341	328	400	392	388	382	370	356
	PI	kW	89.2	98	102	108	117	128	95.1	105	109	115	126	136
	qw	l/s	17.6	17.3	17.1	16.8	16.3	15.7	19.1	18.7	18.5	18.2	17.7	17.0
	dpw	kPa	28	27	27	26	25	23	31	30	30	29	27	26
11	CC	kW	390	382	378	373	361	348	422	414	410	404	392	378
	PI	kW	91.7	101	104	110	121	131	97.7	107	111	118	129	140
	qw	l/s	18.6	18.3	18.1	17.8	17.3	16.6	20.2	19.8	19.6	19.3	18.7	18.1
	dpw	kPa	31	30	30	29	27	25	35	34	33	32	30	28
13	CC	kW	411	403	399	393	382	368	445	436	433	426	414	400
	PI	kW	94.3	103	107	113	124	134	100	110	114	121	132	144
	qw	l/s	19.7	19.3	19.1	18.8	18.3	17.6	21.3	20.9	20.7	20.4	19.8	19.1
	dpw	kPa	34	33	33	32	30	28	38	37	36	35	34	32
15	CC	kW	432	424	421	415	403	351	467	459	455	449	437	393
	PI	kW	97	106	110	116	127	116	103	113	117	124	136	130
	qw	l/s	20.7	20.3	20.1	19.9	19.3	16.8	22.4	22.0	21.8	21.5	20.9	18.8
	dpw	kPa	38	36	36	35	33	26	42	41	40	39	37	31
			110.2						120.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	365	357	353	347	335	320	406	397	392	385	372	356
	PI	kW	92.4	102	106	112	123	134	102	113	117	124	135	148
	qw	l/s	17.4	17.0	16.8	16.5	16.0	15.3	19.3	18.9	18.7	18.4	17.7	17.0
	dpw	kPa	39	38	37	36	34	31	41	39	38	37	35	32
7	CC	kW	386	378	374	368	355	341	429	420	416	408	395	378
	PI	kW	94.9	104	108	115	126	137	105	116	120	127	139	151
	qw	l/s	18.4	18.0	17.8	17.5	17.0	16.3	20.5	20.0	19.8	19.5	18.8	18.1
	dpw	kPa	44	42	41	40	38	35	45	43	43	41	39	36
9	CC	kW	406	398	394	388	376	361	453	444	439	432	418	402
	PI	kW	97.5	107	111	117	129	140	108	119	123	130	142	155
	qw	l/s	19.4	19.0	18.8	18.5	18.0	17.3	21.6	21.2	21.0	20.6	20.0	19.2
	dpw	kPa	48	46	45	44	42	39	50	48	47	46	43	40
11	CC	kW	427	419	415	409	397	382	478	468	464	456	442	414
	PI	kW	100	110	114	120	132	144	112	122	127	134	146	152
	qw	l/s	20.4	20.0	19.9	19.6	19.0	18.3	22.8	22.4	22.2	21.8	21.1	19.8
	dpw	kPa	53	51	50	49	46	43	55	53	52	50	48	42
13	CC	kW	449	440	437	430	418	370	503	493	489	481	467	388
	PI	kW	103	113	117	123	135	127	115	126	130	138	150	129
	qw	l/s	21.5	21.1	20.9	20.6	20.0	17.7	24.1	23.6	23.4	23.0	22.3	18.6
	dpw	kPa	57	56	55	53	51	41	60	58	57	56	53	38
15	CC	kW	469	461	458	451	439	343	529	519	514	507	492	368
	PI	kW	106	116	120	127	138	109	119	130	134	141	154	113
	qw	l/s	22.5	22.1	21.9	21.6	21.0	16.4	25.3	24.8	24.6	24.3	23.5	17.6
	dpw	kPa	62	60	60	58	55	36	66	64	63	61	58	34

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			130.2						140.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	439	429	425	418	404	387	491	479	474	465	448	428
	PI	kW	111	122	127	134	146	160	124	136	141	150	164	179
	qw	l/s	20.9	20.5	20.3	19.9	19.2	18.4	23.4	22.8	22.6	22.2	21.4	20.4
	dpw	kPa	47	45	44	43	40	37	55	53	52	50	47	43
7	CC	kW	464	454	450	443	428	411	518	507	501	492	475	455
	PI	kW	114	125	130	137	150	164	127	140	145	154	168	183
	qw	l/s	22.1	21.7	21.5	21.1	20.4	19.6	24.7	24.2	23.9	23.5	22.7	21.7
	dpw	kPa	52	50	49	48	45	42	61	59	58	56	52	48
9	CC	kW	490	480	476	468	454	436	546	535	530	521	503	483
	PI	kW	117	129	133	141	154	168	131	144	149	158	172	188
	qw	l/s	23.4	22.9	22.7	22.4	21.7	20.8	26.1	25.5	25.3	24.9	24.0	23.1
	dpw	kPa	57	55	54	53	50	47	67	65	64	62	58	54
11	CC	kW	517	507	502	494	480	462	574	562	557	548	532	490
	PI	kW	121	132	137	145	158	172	134	148	153	162	177	180
	qw	l/s	24.7	24.2	24.0	23.6	22.9	22.1	27.4	26.9	26.6	26.2	25.4	23.4
	dpw	kPa	63	61	60	58	55	52	74	71	70	68	64	55
13	CC	kW	543	533	528	521	506	452	603	591	585	576	559	461
	PI	kW	124	136	141	148	162	155	138	152	157	166	181	154
	qw	l/s	26.0	25.5	25.3	24.9	24.2	21.6	28.8	28.3	28.0	27.6	26.8	22.1
	dpw	kPa	69	67	66	64	61	50	81	78	76	74	70	50
15	CC	kW	569	559	555	547	532	423	631	619	614	605	587	415
	PI	kW	128	139	144	152	166	132	142	156	161	170	186	144
	qw	l/s	27.3	26.8	26.6	26.2	25.5	20.3	30.2	29.7	29.4	29.0	28.1	19.9
	dpw	kPa	75	73	72	70	67	44	88	85	83	81	77	41
			150.2						160.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	536	523	517	508	489	467	577	564	557	547	527	504
	PI	kW	135	149	155	164	179	195	148	163	169	179	195	212
	qw	l/s	25.5	24.9	24.6	24.2	23.3	22.3	27.5	26.9	26.6	26.1	25.1	24.0
	dpw	kPa	29	28	27	27	25	23	33	32	31	30	28	26
7	CC	kW	566	553	547	538	519	497	608	595	589	579	560	536
	PI	kW	139	153	159	168	184	200	152	167	173	183	200	218
	qw	l/s	27.0	26.4	26.1	25.7	24.8	23.7	29.0	28.4	28.1	27.6	26.7	25.6
	dpw	kPa	32	31	31	30	28	26	37	35	35	34	32	29
9	CC	kW	596	584	578	568	550	527	640	627	620	610	591	568
	PI	kW	143	157	163	172	189	205	156	171	178	188	205	224
	qw	l/s	28.5	27.9	27.6	27.1	26.2	25.2	30.6	29.9	29.6	29.2	28.2	27.1
	dpw	kPa	36	34	34	33	31	29	40	39	38	37	35	33
11	CC	kW	627	614	608	599	580	537	672	659	653	643	623	593
	PI	kW	147	162	168	177	194	197	160	176	183	193	211	225
	qw	l/s	30.0	29.4	29.1	28.6	27.7	25.7	32.1	31.5	31.2	30.7	29.8	28.4
	dpw	kPa	39	38	37	36	34	30	44	43	42	41	39	35
13	CC	kW	658	645	639	629	610	503	704	691	685	675	655	567
	PI	kW	151	166	172	182	199	167	164	180	187	198	216	193
	qw	l/s	31.5	30.9	30.6	30.1	29.2	24.1	33.7	33.0	32.8	32.3	31.4	27.1
	dpw	kPa	43	41	40	39	37	26	48	47	46	45	42	33
15	CC	kW	689	676	671	661	641	461	736	723	717	707	687	528
	PI	kW	155	171	177	187	204	160	169	185	192	203	221	164
	qw	l/s	33.0	32.4	32.1	31.6	30.7	22.1	35.2	34.6	34.3	33.8	32.9	25.3
	dpw	kPa	46	45	44	43	41	22	52	51	50	48	46	29

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			180.2						200.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	628	614	607	596	575	549	680	665	658	647	625	599
	PI	kW	160	177	184	194	212	230	172	189	197	208	227	246
	qw	l/s	29.9	29.2	28.9	28.4	27.4	26.2	32.4	31.7	31.4	30.8	29.8	28.6
	dpw	kPa	44	42	41	40	37	35	56	54	53	51	48	45
7	CC	kW	663	649	642	631	609	584	719	704	697	685	663	637
	PI	kW	165	181	188	199	217	236	176	194	202	213	233	253
	qw	l/s	31.6	31.0	30.6	30.1	29.1	27.9	34.3	33.6	33.2	32.7	31.6	30.4
	dpw	kPa	49	47	46	44	42	39	62	60	59	57	54	50
9	CC	kW	698	683	677	666	645	619	758	743	736	724	702	675
	PI	kW	169	186	193	204	223	243	181	199	207	219	239	260
	qw	l/s	33.3	32.6	32.3	31.8	30.8	29.6	36.2	35.5	35.1	34.6	33.5	32.2
	dpw	kPa	53	51	50	49	46	43	69	66	65	63	60	56
11	CC	kW	733	719	712	701	680	641	798	783	776	765	742	715
	PI	kW	174	191	198	210	229	239	186	204	212	224	245	266
	qw	l/s	35.1	34.4	34.0	33.5	32.5	30.6	38.1	37.4	37.1	36.5	35.4	34.2
	dpw	kPa	58	56	55	54	51	46	75	73	72	70	66	62
13	CC	kW	769	755	748	737	715	607	837	822	815	804	781	700
	PI	kW	179	196	204	215	235	203	191	210	218	230	251	239
	qw	l/s	36.8	36.1	35.8	35.2	34.2	29.0	40.0	39.3	39.0	38.4	37.4	33.5
	dpw	kPa	64	62	61	59	56	42	82	80	78	76	73	60
15	CC	kW	805	790	783	772	751	549	878	862	855	843	821	658
	PI	kW	184	201	209	221	241	191	196	215	223	236	258	203
	qw	l/s	38.5	37.8	37.5	37.0	36.0	26.3	42.0	41.3	40.9	40.4	39.3	31.5
	dpw	kPa	69	67	66	64	61	35	90	87	86	83	80	53

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
* For working condition where dpw value is "Italic-Red Color" please contac factory

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			050.1						060.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	183	180	178	175	170	164	219	215	213	209	203	194
	PI	kW	41.9	46.2	48.1	51	56.1	61.6	51.5	56.9	59.2	62.7	68.9	75.4
	qw	l/s	8.7	8.6	8.5	8.4	8.1	7.8	10.5	10.2	10.1	10.0	9.7	9.3
	dpw	kPa	19	19	18	18	17	16	22	21	21	20	19	18
7	CC	kW	194	190	188	186	180	174	232	227	225	222	215	207
	PI	kW	43.1	47.4	49.3	52.2	57.4	63	53	58.4	60.7	64.3	70.6	77.2
	qw	l/s	9.2	9.1	9.0	8.9	8.6	8.3	11.1	10.8	10.7	10.6	10.3	9.9
	dpw	kPa	21	21	20	20	19	18	24	24	23	23	21	20
9	CC	kW	204	201	199	196	191	185	245	240	238	234	228	219
	PI	kW	44.2	48.6	50.5	53.4	58.7	64.3	54.5	59.9	62.3	65.9	72.4	79.1
	qw	l/s	9.8	9.6	9.5	9.4	9.1	8.8	11.7	11.5	11.4	11.2	10.9	10.5
	dpw	kPa	24	23	23	22	21	20	27	26	26	25	24	22
11	CC	kW	215	212	210	207	202	196	258	253	251	247	240	232
	PI	kW	45.5	49.9	51.8	54.7	60	65.8	56	61.5	63.9	67.6	74.1	81
	qw	l/s	10.3	10.1	10.0	9.9	9.7	9.4	12.3	12.1	12.0	11.8	11.5	11.1
	dpw	kPa	26	25	25	24	23	22	30	29	28	28	26	25
13	CC	kW	226	223	221	219	213	207	271	266	264	260	254	245
	PI	kW	46.7	51.2	53.1	56.1	61.4	67.2	57.6	63.2	65.6	69.3	76	83.2
	qw	l/s	10.8	10.7	10.6	10.5	10.2	9.9	13.0	12.7	12.6	12.5	12.1	11.7
	dpw	kPa	28	28	27	27	26	24	32	31	31	30	29	27
15	CC	kW	238	234	233	230	224	218	284	279	277	274	267	243
	PI	kW	48.1	52.5	54.4	57.4	62.9	68.7	59.3	64.9	67.3	71.1	77.8	76.2
	qw	l/s	11.4	11.2	11.1	11.0	10.7	10.4	13.6	13.4	13.3	13.1	12.8	11.6
	dpw	kPa	31	30	30	29	28	27	35	34	34	33	32	27
			070.1						080.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	244	239	237	234	227	218	269	263	261	257	249	239
	PI	kW	55.1	60.9	63.3	67.2	73.9	81.1	61.5	68	70.7	75	82.4	90.3
	qw	l/s	11.6	11.4	11.3	11.1	10.8	10.4	12.8	12.5	12.4	12.2	11.8	11.4
	dpw	kPa	17	16	16	16	15	14	20	19	19	18	17	16
7	CC	kW	258	253	251	248	241	232	284	278	276	272	264	254
	PI	kW	56.5	62.4	64.9	68.7	75.6	82.9	63.1	69.7	72.5	76.8	84.3	92.3
	qw	l/s	12.3	12.1	12.0	11.8	11.5	11.1	13.5	13.3	13.2	13.0	12.6	12.1
	dpw	kPa	19	18	18	18	17	16	22	21	21	20	19	18
9	CC	kW	272	268	265	262	255	246	299	294	291	287	279	269
	PI	kW	58	63.9	66.4	70.3	77.2	84.7	64.8	71.5	74.3	78.7	86.4	94.5
	qw	l/s	13.0	12.8	12.7	12.5	12.2	11.8	14.3	14.0	13.9	13.7	13.3	12.9
	dpw	kPa	21	20	20	19	18	17	24	23	23	22	21	20
11	CC	kW	287	282	280	276	269	261	315	310	307	303	295	285
	PI	kW	59.5	65.5	68.1	72	79	86.6	66.6	73.3	76.2	80.6	88.3	96.7
	qw	l/s	13.7	13.5	13.4	13.2	12.9	12.5	15.1	14.8	14.7	14.5	14.1	13.6
	dpw	kPa	23	22	22	21	20	19	26	25	25	24	23	22
13	CC	kW	302	297	295	291	284	276	331	326	323	319	311	301
	PI	kW	61.1	67.2	69.8	73.8	80.9	88.5	68.4	75.2	78.1	82.6	90.5	99.1
	qw	l/s	14.4	14.2	14.1	13.9	13.6	13.2	15.9	15.6	15.5	15.3	14.9	14.4
	dpw	kPa	25	24	24	24	22	21	29	28	27	27	26	24
15	CC	kW	295	312	310	306	299	291	348	342	340	335	327	309
	PI	kW	57.8	68.9	71.5	75.6	82.8	90.4	70.2	77.2	80.1	84.7	92.7	96.9
	qw	l/s	14.1	15.0	14.8	14.7	14.3	13.9	16.7	16.4	16.3	16.1	15.7	14.8
	dpw	kPa	24	27	26	26	25	23	31	30	30	29	28	25

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			085.1						090.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	291	285	282	278	269	258	314	307	304	298	288	276
	PI	kW	67.6	74.8	77.8	82.4	90.4	98.9	74.9	82.9	86.1	91.4	100	109
	qw	l/s	13.9	13.6	13.5	13.2	12.8	12.3	15.0	14.6	14.5	14.2	13.7	13.2
	dpw	kPa	18	17	17	17	16	15	20	20	19	19	17	16
7	CC	kW	308	302	299	294	285	274	333	326	322	317	306	294
	PI	kW	69.5	76.7	79.8	84.5	92.7	101	77.1	85.1	88.5	93.7	103	112
	qw	l/s	14.7	14.4	14.3	14.0	13.6	13.1	15.9	15.5	15.4	15.1	14.6	14.0
	dpw	kPa	20	19	19	18	17	16	23	22	21	21	19	18
9	CC	kW	326	320	317	312	303	291	352	345	341	336	325	312
	PI	kW	71.5	78.8	81.9	86.7	95.2	104	79.4	87.5	91	96.3	105	115
	qw	l/s	15.6	15.3	15.1	14.9	14.5	13.9	16.8	16.5	16.3	16.0	15.5	14.9
	dpw	kPa	22	21	21	21	19	18	25	24	24	23	22	20
11	CC	kW	345	338	335	330	321	309	372	364	361	355	344	331
	PI	kW	73.6	81	84.2	89	97.5	107	81.8	90	93.5	98.9	108	118
	qw	l/s	16.5	16.2	16.0	15.8	15.3	14.8	17.8	17.4	17.3	17.0	16.5	15.8
	dpw	kPa	25	24	23	23	22	20	28	27	26	25	24	22
13	CC	kW	364	357	354	349	339	327	392	384	381	375	364	343
	PI	kW	75.8	83.3	86.5	91.4	100	109	84.2	92.6	96.2	102	111	116
	qw	l/s	17.4	17.1	16.9	16.7	16.2	15.7	18.8	18.4	18.2	17.9	17.4	16.4
	dpw	kPa	27	26	26	25	24	22	30	29	29	28	27	24
15	CC	kW	383	377	373	368	358	324	413	405	402	396	384	327
	PI	kW	78.1	85.7	88.9	94	103	100	86.8	95.4	99	105	114	100
	qw	l/s	18.4	18.0	17.9	17.6	17.1	15.5	19.8	19.4	19.2	18.9	18.4	15.7
	dpw	kPa	30	29	28	28	26	22	33	32	32	31	29	22
			100.2						110.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	337	330	326	320	309	296	367	359	356	350	338	324
	PI	kW	80.3	88.7	92.3	98	108	118	87	96	99.9	106	117	128
	qw	l/s	16.1	15.7	15.6	15.3	14.7	14.1	17.5	17.1	16.9	16.7	16.1	15.4
	dpw	kPa	34	32	32	31	29	27	40	38	38	36	34	32
7	CC	kW	357	349	346	340	328	315	388	380	376	370	359	344
	PI	kW	82.7	91.2	94.8	100	111	121	89.4	98.6	102	109	119	131
	qw	l/s	17.0	16.7	16.5	16.2	15.7	15.0	18.5	18.1	18.0	17.7	17.1	16.4
	dpw	kPa	37	36	35	34	32	30	44	42	42	41	38	36
9	CC	kW	377	369	365	359	348	334	408	400	397	391	380	366
	PI	kW	85.1	93.8	97.5	103	113	124	91.8	101	105	111	122	134
	qw	l/s	18.0	17.6	17.4	17.2	16.6	16.0	19.5	19.1	19.0	18.7	18.1	17.5
	dpw	kPa	41	40	39	38	36	33	48	47	46	45	42	40
11	CC	kW	397	389	385	379	368	354	429	422	418	412	400	387
	PI	kW	87.7	96.4	100	106	116	127	94.4	104	108	114	125	137
	qw	l/s	19.0	18.6	18.4	18.1	17.6	16.9	20.5	20.1	20.0	19.7	19.1	18.5
	dpw	kPa	45	44	43	42	39	37	53	51	50	49	47	44
13	CC	kW	417	409	405	399	388	338	451	443	439	433	422	408
	PI	kW	90.3	99.1	103	109	119	111	97.1	107	111	117	128	140
	qw	l/s	19.9	19.6	19.4	19.1	18.6	16.2	21.6	21.2	21.0	20.7	20.2	19.5
	dpw	kPa	49	48	47	46	43	34	58	56	55	54	51	48
15	CC	kW	437	429	426	420	408	315	471	464	460	454	443	380
	PI	kW	93	102	106	112	122	95.7	99.7	109	113	120	131	118
	qw	l/s	20.9	20.6	20.4	20.1	19.5	15.1	22.6	22.2	22.0	21.8	21.2	18.2
	dpw	kPa	54	52	51	50	48	30	63	61	60	59	56	43

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			120.2						130.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	416	406	402	395	382	366	449	440	435	428	414	397
	PI	kW	98.2	108	113	119	131	143	106	117	122	129	141	154
	qw	l/s	19.8	19.4	19.2	18.8	18.2	17.4	21.4	21.0	20.8	20.4	19.7	18.9
	dpw	kPa	30	29	28	27	25	24	34	33	32	31	29	27
7	CC	kW	440	430	426	419	405	389	475	466	461	454	439	422
	PI	kW	101	111	116	122	134	147	109	120	125	132	145	158
	qw	l/s	21.0	20.5	20.3	20.0	19.3	18.6	22.7	22.2	22.0	21.6	21.0	20.1
	dpw	kPa	33	32	31	30	28	26	38	36	36	35	33	31
9	CC	kW	464	455	450	443	429	413	502	492	488	480	465	448
	PI	kW	104	115	119	126	138	151	112	124	128	136	149	162
	qw	l/s	22.2	21.7	21.5	21.2	20.5	19.7	24.0	23.5	23.3	22.9	22.2	21.4
	dpw	kPa	36	35	34	33	32	29	42	40	40	39	37	34
11	CC	kW	490	480	476	468	454	431	529	519	515	507	492	475
	PI	kW	108	118	122	129	142	151	116	127	132	139	153	167
	qw	l/s	23.4	22.9	22.7	22.4	21.7	20.6	25.3	24.8	24.6	24.2	23.5	22.7
	dpw	kPa	40	39	38	37	35	32	46	44	44	43	40	38
13	CC	kW	516	506	501	494	479	405	557	547	542	535	519	471
	PI	kW	111	121	126	133	145	128	119	131	136	143	157	153
	qw	l/s	24.7	24.2	24.0	23.6	22.9	19.4	26.7	26.2	25.9	25.6	24.8	22.5
	dpw	kPa	44	42	42	41	39	29	51	49	48	47	45	37
15	CC	kW	542	532	528	520	505	377	586	576	571	563	547	441
	PI	kW	114	125	130	137	149	109	123	135	140	147	161	130
	qw	l/s	26.0	25.5	25.3	24.9	24.2	18.0	28.1	27.6	27.3	26.9	26.2	21.1
	dpw	kPa	48	47	46	45	42	25	55	54	53	52	49	33
			140.2						160.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	492	481	476	468	452	433	554	540	534	524	505	483
	PI	kW	116	128	134	142	156	171	133	147	152	162	177	193
	qw	l/s	23.5	22.9	22.7	22.3	21.5	20.6	26.4	25.8	25.5	25.0	24.1	23.0
	dpw	kPa	26	25	24	23	22	20	38	37	36	35	32	30
7	CC	kW	520	509	504	496	480	460	585	572	566	556	536	514
	PI	kW	120	132	137	145	160	175	137	151	157	166	182	199
	qw	l/s	24.8	24.3	24.1	23.7	22.9	22.0	27.9	27.3	27.0	26.5	25.6	24.5
	dpw	kPa	28	27	27	26	24	23	42	41	40	39	36	33
9	CC	kW	550	538	533	525	508	488	618	604	598	588	568	545
	PI	kW	123	136	141	149	164	179	141	156	162	171	187	204
	qw	l/s	26.2	25.7	25.5	25.1	24.3	23.3	29.5	28.9	28.6	28.1	27.1	26.0
	dpw	kPa	31	30	30	29	27	25	47	45	44	43	40	37
11	CC	kW	579	568	563	554	537	517	652	638	631	621	601	523
	PI	kW	127	139	145	153	168	184	146	160	167	176	193	178
	qw	l/s	27.7	27.1	26.9	26.5	25.7	24.7	31.2	30.5	30.2	29.7	28.7	25.0
	dpw	kPa	34	33	33	32	30	28	52	50	49	47	44	35
13	CC	kW	608	597	592	583	567	499	686	672	665	654	634	492
	PI	kW	130	143	149	157	172	162	151	165	172	181	198	152
	qw	l/s	29.1	28.5	28.3	27.9	27.1	23.9	32.8	32.1	31.8	31.3	30.3	23.5
	dpw	kPa	38	36	36	35	33	26	57	54	54	52	49	31
15	CC	kW	638	626	621	612	596	472	722	707	700	689	623	444
	PI	kW	134	147	153	162	177	142	156	171	177	187	180	142
	qw	l/s	30.5	30.0	29.7	29.3	28.5	22.6	34.6	33.8	33.5	33.0	29.8	21.3
	dpw	kPa	41	40	39	38	36	24	62	60	59	57	48	26

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		170.2						180.2					
Twout	Ta	25	30	32	35	40	45	25	30	32	35	40	45
5	CC kW	598	584	577	567	546	522	639	624	617	606	584	558
	PI kW	145	160	166	176	192	210	158	174	181	192	210	228
	qw l/s	28.5	27.8	27.5	27.0	26.0	24.9	30.5	29.7	29.4	28.9	27.8	26.6
	dpw kPa	44	42	41	40	37	34	50	47	46	45	42	39
7	CC kW	632	618	611	601	580	556	676	660	653	642	619	593
	PI kW	149	164	171	181	198	215	163	180	187	198	216	235
	qw l/s	30.2	29.5	29.2	28.7	27.7	26.5	32.2	31.5	31.2	30.6	29.5	28.3
	dpw kPa	49	47	46	44	42	39	55	53	52	50	47	43
9	CC kW	667	653	646	635	614	589	713	698	690	678	656	629
	PI kW	154	169	176	186	203	221	168	185	192	203	222	241
	qw l/s	31.9	31.2	30.9	30.3	29.3	28.1	34.1	33.3	33.0	32.4	31.3	30.0
	dpw kPa	54	52	51	49	46	43	61	58	57	55	52	48
11	CC kW	703	688	682	670	649	579	752	736	728	716	693	614
	PI kW	158	174	181	191	209	199	173	190	198	209	229	214
	qw l/s	33.6	32.9	32.6	32.0	31.0	27.7	35.9	35.2	34.8	34.2	33.1	29.4
	dpw kPa	59	57	56	54	51	42	67	64	63	61	57	46
13	CC kW	741	725	718	707	685	543	790	775	767	754	731	582
	PI kW	163	179	186	197	215	169	178	196	203	215	235	183
	qw l/s	35.4	34.7	34.4	33.8	32.8	26.0	37.8	37.1	36.7	36.1	34.9	27.9
	dpw kPa	65	62	61	60	56	37	73	70	69	67	63	42
15	CC kW	779	763	756	744	695	492	829	812	805	793	735	527
	PI kW	169	185	192	202	206	158	184	202	209	221	222	172
	qw l/s	37.3	36.5	36.2	35.6	33.3	23.5	39.7	38.9	38.5	38.0	35.2	25.2
	dpw kPa	71	69	67	65	58	31	80	77	75	73	64	35

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
* For working condition where dpw value is "Italic-Red Color" please contac factory

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			050.1						060.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	183	180	178	175	170	164	219	215	213	209	203	194
	PI	kW	41.9	46.2	48.1	51	56.1	61.6	51.5	56.9	59.2	62.7	68.9	75.4
	qw	l/s	8.7	8.6	8.5	8.4	8.1	7.8	10.5	10.2	10.1	10.0	9.7	9.3
	dpw	kPa	19	19	18	18	17	16	22	21	21	20	19	18
7	CC	kW	194	190	188	186	180	174	232	227	225	222	215	207
	PI	kW	43.1	47.4	49.3	52.2	57.4	63	53	58.4	60.7	64.3	70.6	77.2
	qw	l/s	9.2	9.1	9.0	8.9	8.6	8.3	11.1	10.8	10.7	10.6	10.3	9.9
	dpw	kPa	21	21	20	20	19	18	24	24	23	23	21	20
9	CC	kW	204	201	199	196	191	185	245	240	238	234	228	219
	PI	kW	44.2	48.6	50.5	53.4	58.7	64.3	54.5	59.9	62.3	65.9	72.4	79.1
	qw	l/s	9.8	9.6	9.5	9.4	9.1	8.8	11.7	11.5	11.4	11.2	10.9	10.5
	dpw	kPa	24	23	23	22	21	20	27	26	26	25	24	22
11	CC	kW	215	212	210	207	202	196	258	253	251	247	240	232
	PI	kW	45.5	49.9	51.8	54.7	60	65.8	56	61.5	63.9	67.6	74.1	81
	qw	l/s	10.3	10.1	10.0	9.9	9.7	9.4	12.3	12.1	12.0	11.8	11.5	11.1
	dpw	kPa	26	25	25	24	23	22	30	29	28	28	26	25
13	CC	kW	226	223	221	219	213	207	271	266	264	260	254	245
	PI	kW	46.7	51.2	53.1	56.1	61.4	67.2	57.6	63.2	65.6	69.3	76	83.2
	qw	l/s	10.8	10.7	10.6	10.5	10.2	9.9	13.0	12.7	12.6	12.5	12.1	11.7
	dpw	kPa	28	28	27	27	26	24	32	31	31	30	29	27
15	CC	kW	238	234	233	230	224	218	284	279	277	274	267	243
	PI	kW	48.1	52.5	54.4	57.4	62.9	68.7	59.3	64.9	67.3	71.1	77.8	76.2
	qw	l/s	11.4	11.2	11.1	11.0	10.7	10.4	13.6	13.4	13.3	13.1	12.8	11.6
	dpw	kPa	31	30	30	29	28	27	35	34	34	33	32	27
			070.1						080.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	244	239	237	234	227	218	269	263	261	257	249	239
	PI	kW	55.1	60.9	63.3	67.2	73.9	81.1	61.5	68	70.7	75	82.4	90.3
	qw	l/s	11.6	11.4	11.3	11.1	10.8	10.4	12.8	12.5	12.4	12.2	11.8	11.4
	dpw	kPa	17	16	16	16	15	14	20	19	19	18	17	16
7	CC	kW	258	253	251	248	241	232	284	278	276	272	264	254
	PI	kW	56.5	62.4	64.9	68.7	75.6	82.9	63.1	69.7	72.5	76.8	84.3	92.3
	qw	l/s	12.3	12.1	12.0	11.8	11.5	11.1	13.5	13.3	13.2	13.0	12.6	12.1
	dpw	kPa	19	18	18	18	17	16	22	21	21	20	19	18
9	CC	kW	272	268	265	262	255	246	299	294	291	287	279	269
	PI	kW	58	63.9	66.4	70.3	77.2	84.7	64.8	71.5	74.3	78.7	86.4	94.5
	qw	l/s	13.0	12.8	12.7	12.5	12.2	11.8	14.3	14.0	13.9	13.7	13.3	12.9
	dpw	kPa	21	20	20	19	18	17	24	23	23	22	21	20
11	CC	kW	287	282	280	276	269	261	315	310	307	303	295	285
	PI	kW	59.5	65.5	68.1	72	79	86.6	66.6	73.3	76.2	80.6	88.3	96.7
	qw	l/s	13.7	13.5	13.4	13.2	12.9	12.5	15.1	14.8	14.7	14.5	14.1	13.6
	dpw	kPa	23	22	22	21	20	19	26	25	25	24	23	22
13	CC	kW	302	297	295	291	284	276	331	326	323	319	311	301
	PI	kW	61.1	67.2	69.8	73.8	80.9	88.5	68.4	75.2	78.1	82.6	90.5	99.1
	qw	l/s	14.4	14.2	14.1	13.9	13.6	13.2	15.9	15.6	15.5	15.3	14.9	14.4
	dpw	kPa	25	24	24	24	22	21	29	28	27	27	26	24
15	CC	kW	295	312	310	306	299	291	348	342	340	335	327	309
	PI	kW	57.8	68.9	71.5	75.6	82.8	90.4	70.2	77.2	80.1	84.7	92.7	96.9
	qw	l/s	14.1	15.0	14.8	14.7	14.3	13.9	16.7	16.4	16.3	16.1	15.7	14.8
	dpw	kPa	24	27	26	26	25	23	31	30	30	29	28	25

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			085.1						090.1					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	291	285	282	278	269	258	314	307	304	298	288	276
	PI	kW	67.6	74.8	77.8	82.4	90.4	98.9	74.9	82.9	86.1	91.4	100	109
	qw	l/s	13.9	13.6	13.5	13.2	12.8	12.3	15.0	14.6	14.5	14.2	13.7	13.2
	dpw	kPa	18	17	17	17	16	15	20	20	19	19	17	16
7	CC	kW	308	302	299	294	285	274	333	326	322	317	306	294
	PI	kW	69.5	76.7	79.8	84.5	92.7	101	77.1	85.1	88.5	93.7	103	112
	qw	l/s	14.7	14.4	14.3	14.0	13.6	13.1	15.9	15.5	15.4	15.1	14.6	14.0
	dpw	kPa	20	19	19	18	17	16	23	22	21	21	19	18
9	CC	kW	326	320	317	312	303	291	352	345	341	336	325	312
	PI	kW	71.5	78.8	81.9	86.7	95.2	104	79.4	87.5	91	96.3	105	115
	qw	l/s	15.6	15.3	15.1	14.9	14.5	13.9	16.8	16.5	16.3	16.0	15.5	14.9
	dpw	kPa	22	21	21	21	19	18	25	24	24	23	22	20
11	CC	kW	345	338	335	330	321	309	372	364	361	355	344	331
	PI	kW	73.6	81	84.2	89	97.5	107	81.8	90	93.5	98.9	108	118
	qw	l/s	16.5	16.2	16.0	15.8	15.3	14.8	17.8	17.4	17.3	17.0	16.5	15.8
	dpw	kPa	25	24	23	23	22	20	28	27	26	25	24	22
13	CC	kW	364	357	354	349	339	327	392	384	381	375	364	343
	PI	kW	75.8	83.3	86.5	91.4	100	109	84.2	92.6	96.2	102	111	116
	qw	l/s	17.4	17.1	16.9	16.7	16.2	15.7	18.8	18.4	18.2	17.9	17.4	16.4
	dpw	kPa	27	26	26	25	24	22	30	29	29	28	27	24
15	CC	kW	383	377	373	368	358	324	413	405	402	396	384	327
	PI	kW	78.1	85.7	88.9	94	103	100	86.8	95.4	99	105	114	100
	qw	l/s	18.4	18.0	17.9	17.6	17.1	15.5	19.8	19.4	19.2	18.9	18.4	15.7
	dpw	kPa	30	29	28	28	26	22	33	32	32	31	29	22
			100.2						110.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	337	330	326	320	309	296	367	359	356	350	338	324
	PI	kW	80.3	88.7	92.3	98	108	118	87	96	99.9	106	117	128
	qw	l/s	16.1	15.7	15.6	15.3	14.7	14.1	17.5	17.1	16.9	16.7	16.1	15.4
	dpw	kPa	34	32	32	31	29	27	40	38	38	36	34	32
7	CC	kW	357	349	346	340	328	315	388	380	376	370	359	344
	PI	kW	82.7	91.2	94.8	100	111	121	89.4	98.6	102	109	119	131
	qw	l/s	17.0	16.7	16.5	16.2	15.7	15.0	18.5	18.1	18.0	17.7	17.1	16.4
	dpw	kPa	37	36	35	34	32	30	44	42	42	41	38	36
9	CC	kW	377	369	365	359	348	334	408	400	397	391	380	366
	PI	kW	85.1	93.8	97.5	103	113	124	91.8	101	105	111	122	134
	qw	l/s	18.0	17.6	17.4	17.2	16.6	16.0	19.5	19.1	19.0	18.7	18.1	17.5
	dpw	kPa	41	40	39	38	36	33	48	47	46	45	42	40
11	CC	kW	397	389	385	379	368	354	429	422	418	412	400	387
	PI	kW	87.7	96.4	100	106	116	127	94.4	104	108	114	125	137
	qw	l/s	19.0	18.6	18.4	18.1	17.6	16.9	20.5	20.1	20.0	19.7	19.1	18.5
	dpw	kPa	45	44	43	42	39	37	53	51	50	49	47	44
13	CC	kW	417	409	405	399	388	338	451	443	439	433	422	408
	PI	kW	90.3	99.1	103	109	119	111	97.1	107	111	117	128	140
	qw	l/s	19.9	19.6	19.4	19.1	18.6	16.2	21.6	21.2	21.0	20.7	20.2	19.5
	dpw	kPa	49	48	47	46	43	34	58	56	55	54	51	48
15	CC	kW	437	429	426	420	408	315	471	464	460	454	443	380
	PI	kW	93	102	106	112	122	95.7	99.7	109	113	120	131	118
	qw	l/s	20.9	20.6	20.4	20.1	19.5	15.1	22.6	22.2	22.0	21.8	21.2	18.2
	dpw	kPa	54	52	51	50	48	30	63	61	60	59	56	43

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			120.2						130.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	416	406	402	395	382	366	449	440	435	428	414	397
	PI	kW	98.2	108	113	119	131	143	106	117	122	129	141	154
	qw	l/s	19.8	19.4	19.2	18.8	18.2	17.4	21.4	21.0	20.8	20.4	19.7	18.9
	dpw	kPa	30	29	28	27	25	24	34	33	32	31	29	27
7	CC	kW	440	430	426	419	405	389	475	466	461	454	439	422
	PI	kW	101	111	116	122	134	147	109	120	125	132	145	158
	qw	l/s	21.0	20.5	20.3	20.0	19.3	18.6	22.7	22.2	22.0	21.6	21.0	20.1
	dpw	kPa	33	32	31	30	28	26	38	36	36	35	33	31
9	CC	kW	464	455	450	443	429	413	502	492	488	480	465	448
	PI	kW	104	115	119	126	138	151	112	124	128	136	149	162
	qw	l/s	22.2	21.7	21.5	21.2	20.5	19.7	24.0	23.5	23.3	22.9	22.2	21.4
	dpw	kPa	36	35	34	33	32	29	42	40	40	39	37	34
11	CC	kW	490	480	476	468	454	431	529	519	515	507	492	475
	PI	kW	108	118	122	129	142	151	116	127	132	139	153	167
	qw	l/s	23.4	22.9	22.7	22.4	21.7	20.6	25.3	24.8	24.6	24.2	23.5	22.7
	dpw	kPa	40	39	38	37	35	32	46	44	44	43	40	38
13	CC	kW	516	506	501	494	479	405	557	547	542	535	519	471
	PI	kW	111	121	126	133	145	128	119	131	136	143	157	153
	qw	l/s	24.7	24.2	24.0	23.6	22.9	19.4	26.7	26.2	25.9	25.6	24.8	22.5
	dpw	kPa	44	42	42	41	39	29	51	49	48	47	45	37
15	CC	kW	542	532	528	520	505	377	586	576	571	563	547	441
	PI	kW	114	125	130	137	149	109	123	135	140	147	161	130
	qw	l/s	26.0	25.5	25.3	24.9	24.2	18.0	28.1	27.6	27.3	26.9	26.2	21.1
	dpw	kPa	48	47	46	45	42	25	55	54	53	52	49	33
			140.2						160.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	492	481	476	468	452	433	554	540	534	524	505	483
	PI	kW	116	128	134	142	156	171	133	147	152	162	177	193
	qw	l/s	23.5	22.9	22.7	22.3	21.5	20.6	26.4	25.8	25.5	25.0	24.1	23.0
	dpw	kPa	26	25	24	23	22	20	38	37	36	35	32	30
7	CC	kW	520	509	504	496	480	460	585	572	566	556	536	514
	PI	kW	120	132	137	145	160	175	137	151	157	166	182	199
	qw	l/s	24.8	24.3	24.1	23.7	22.9	22.0	27.9	27.3	27.0	26.5	25.6	24.5
	dpw	kPa	28	27	27	26	24	23	42	41	40	39	36	33
9	CC	kW	550	538	533	525	508	488	618	604	598	588	568	545
	PI	kW	123	136	141	149	164	179	141	156	162	171	187	204
	qw	l/s	26.2	25.7	25.5	25.1	24.3	23.3	29.5	28.9	28.6	28.1	27.1	26.0
	dpw	kPa	31	30	30	29	27	25	47	45	44	43	40	37
11	CC	kW	579	568	563	554	537	517	652	638	631	621	601	523
	PI	kW	127	139	145	153	168	184	146	160	167	176	193	178
	qw	l/s	27.7	27.1	26.9	26.5	25.7	24.7	31.2	30.5	30.2	29.7	28.7	25.0
	dpw	kPa	34	33	33	32	30	28	52	50	49	47	44	35
13	CC	kW	608	597	592	583	567	499	686	672	665	654	634	492
	PI	kW	130	143	149	157	172	162	151	165	172	181	198	152
	qw	l/s	29.1	28.5	28.3	27.9	27.1	23.9	32.8	32.1	31.8	31.3	30.3	23.5
	dpw	kPa	38	36	36	35	33	26	57	54	54	52	49	31
15	CC	kW	638	626	621	612	596	472	722	707	700	689	623	444
	PI	kW	134	147	153	162	177	142	156	171	177	187	180	142
	qw	l/s	30.5	30.0	29.7	29.3	28.5	22.6	34.6	33.8	33.5	33.0	29.8	21.3
	dpw	kPa	41	40	39	38	36	24	62	60	59	57	48	26

ATS PR-XN 380/60

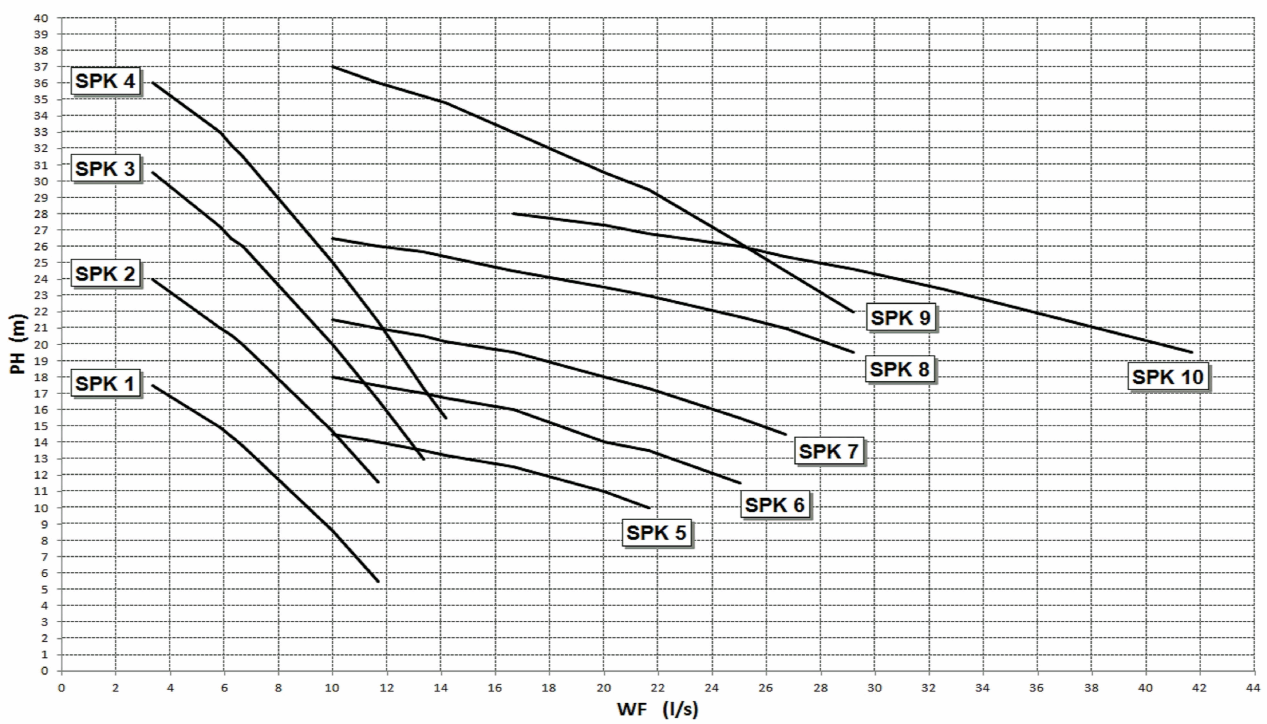
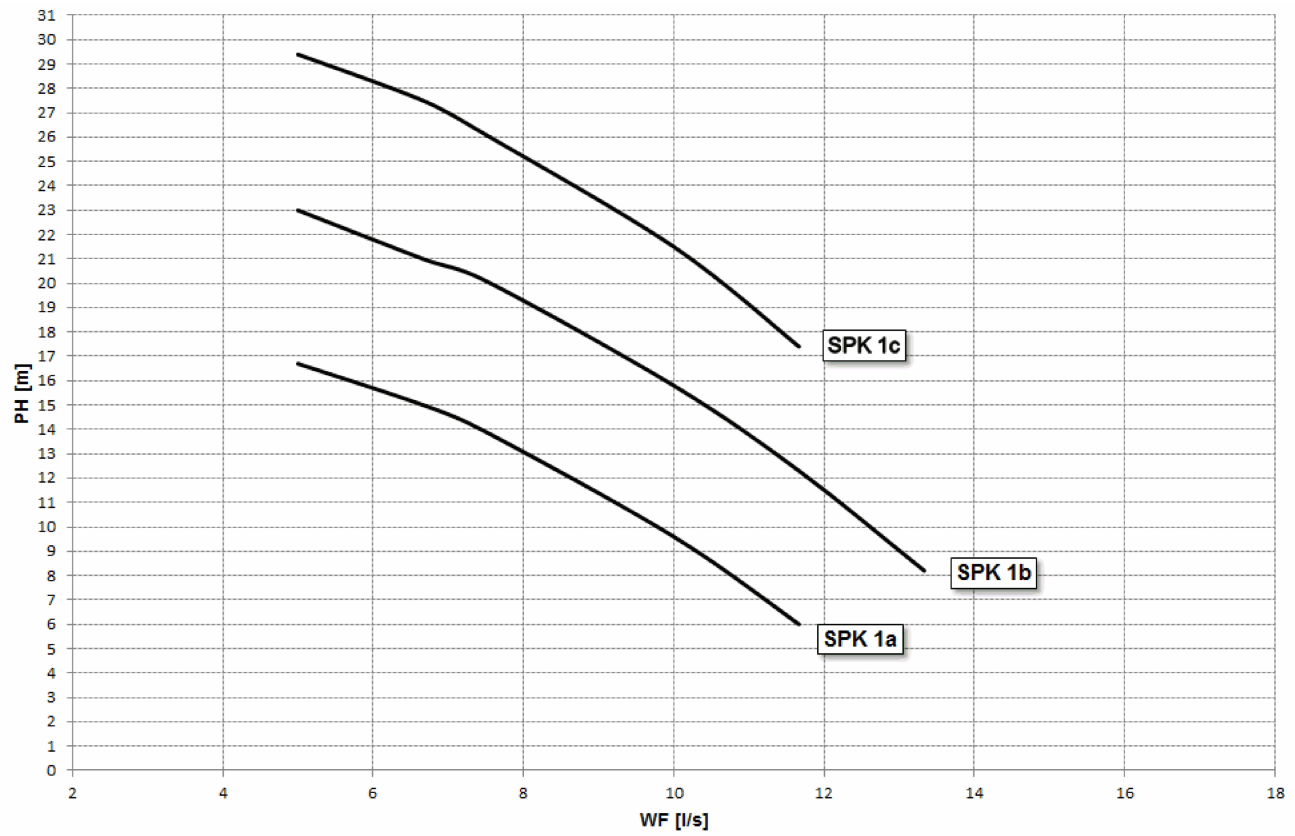
			170.2						180.2					
Twout	Ta		25	30	32	35	40	45	25	30	32	35	40	45
5	CC	kW	598	584	577	567	546	522	639	624	617	606	584	558
	PI	kW	145	160	166	176	192	210	158	174	181	192	210	228
	qw	l/s	28.5	27.8	27.5	27.0	26.0	24.9	30.5	29.7	29.4	28.9	27.8	26.6
	dpw	kPa	44	42	41	40	37	34	50	47	46	45	42	39
7	CC	kW	632	618	611	601	580	556	676	660	653	642	619	593
	PI	kW	149	164	171	181	198	215	163	180	187	198	216	235
	qw	l/s	30.2	29.5	29.2	28.7	27.7	26.5	32.2	31.5	31.2	30.6	29.5	28.3
	dpw	kPa	49	47	46	44	42	39	55	53	52	50	47	43
9	CC	kW	667	653	646	635	614	589	713	698	690	678	656	629
	PI	kW	154	169	176	186	203	221	168	185	192	203	222	241
	qw	l/s	31.9	31.2	30.9	30.3	29.3	28.1	34.1	33.3	33.0	32.4	31.3	30.0
	dpw	kPa	54	52	51	49	46	43	61	58	57	55	52	48
11	CC	kW	703	688	682	670	649	579	752	736	728	716	693	614
	PI	kW	158	174	181	191	209	199	173	190	198	209	229	214
	qw	l/s	33.6	32.9	32.6	32.0	31.0	27.7	35.9	35.2	34.8	34.2	33.1	29.4
	dpw	kPa	59	57	56	54	51	42	67	64	63	61	57	46
13	CC	kW	741	725	718	707	685	543	790	775	767	754	731	582
	PI	kW	163	179	186	197	215	169	178	196	203	215	235	183
	qw	l/s	35.4	34.7	34.4	33.8	32.8	26.0	37.8	37.1	36.7	36.1	34.9	27.9
	dpw	kPa	65	62	61	60	56	37	73	70	69	67	63	42
15	CC	kW	779	763	756	744	695	492	829	812	805	793	735	527
	PI	kW	169	185	192	202	206	158	184	202	209	221	222	172
	qw	l/s	37.3	36.5	36.2	35.6	33.3	23.5	39.7	38.9	38.5	38.0	35.2	25.2
	dpw	kPa	71	69	67	65	58	31	80	77	75	73	64	35

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
* For working condition where dpw value is "Italic-Red Color" please contac factory

Water Pump Kit

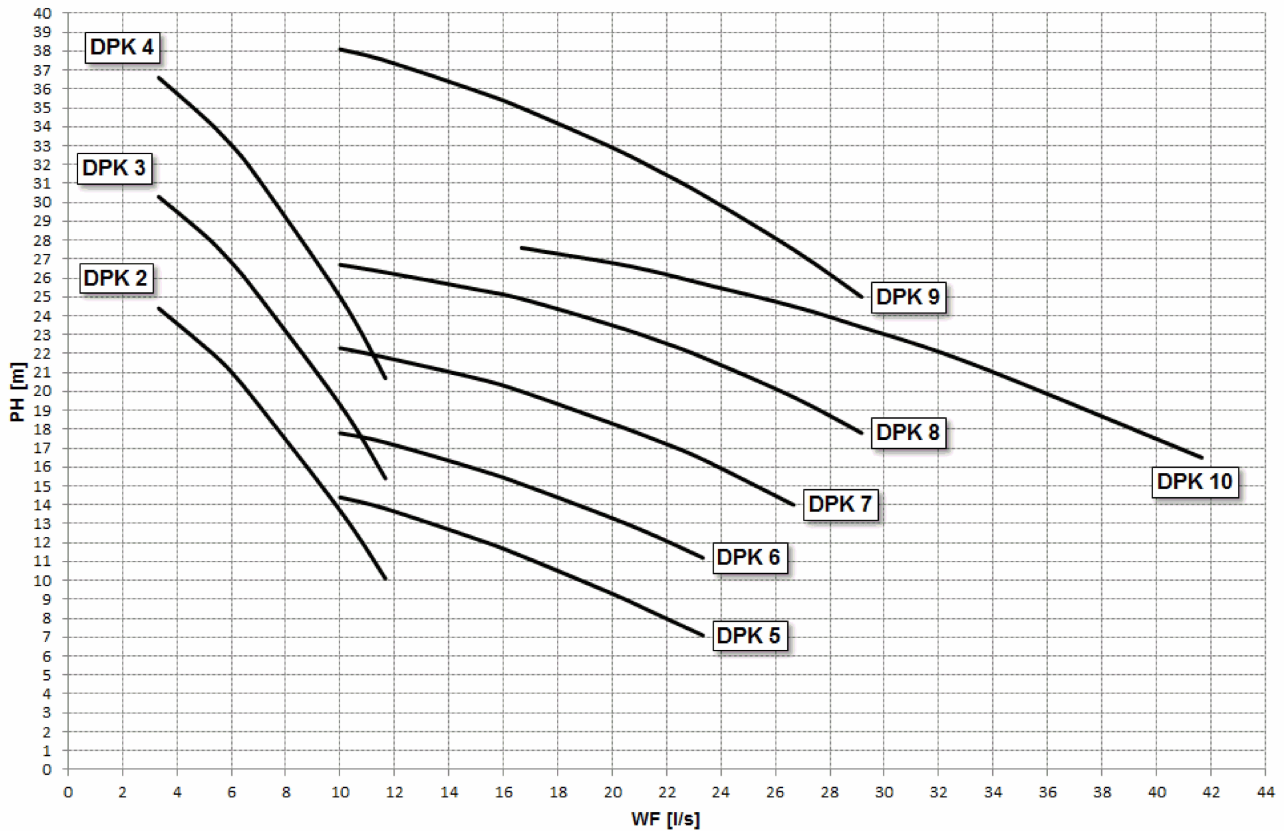
Single Pump (2 poles)

Discharge Head



Twin Pump (2 poles)

Discharge Head



Legend:

PH = Pump Discharge Head (m); WF = Water Flow (l/s)

Note

- the above curves are referred to the discharge head of the pump only, not including pressure drops in the unit
- when using mixture of water and glycol please contact the factory as above specification can change

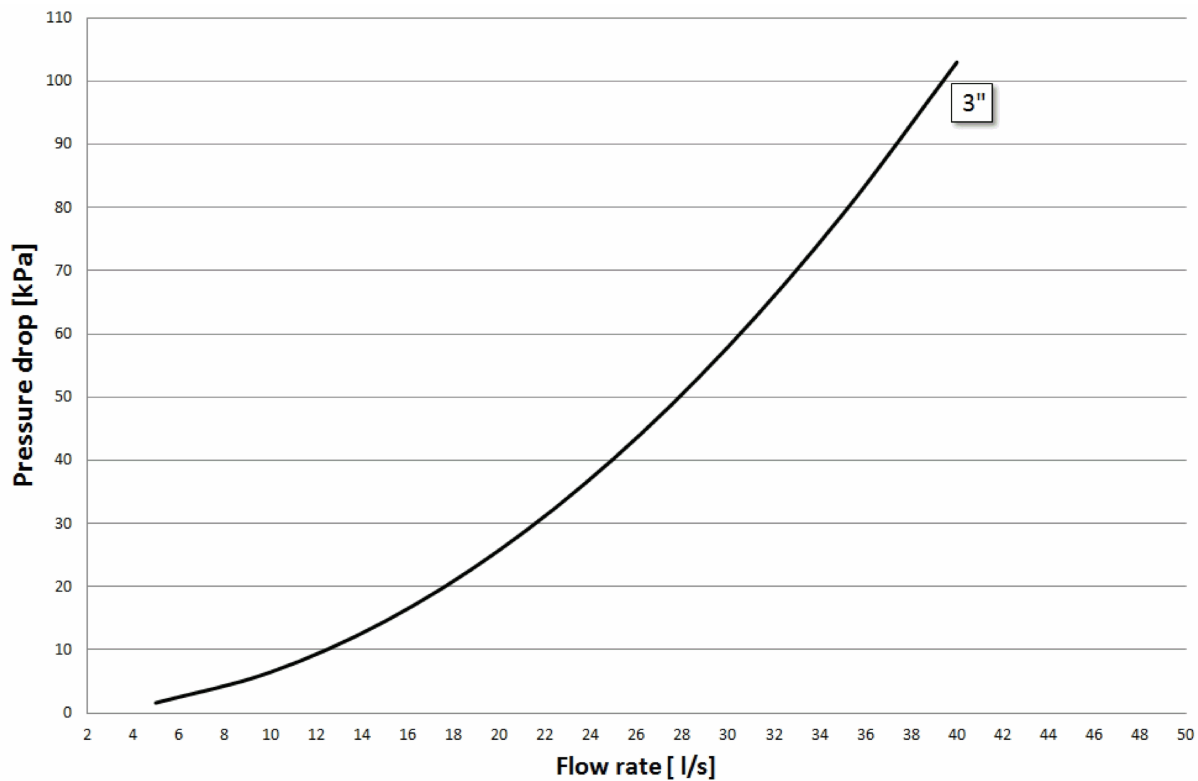
Water Pump Kit - Combination Matrix

		Single Pump										Twin Pump											
		SPK 1a	SPK 1b	SPK 1c	SPK 1	SPK 2	SPK 3	SPK 4	SPK 5	SPK 6	SPK 7	SPK 8	SPK 9	SPK 10	DPK 2	DPK 3	DPK 4	DPK 5	DPK 6	DPK 7	DPK 8	DPK 9	DPK 10
S I L V E R	050.1 SE	X	X	X											X	X	X						
	060.1 SE				X	X	X																
	070.1 SE					X	X									X	X						
	080.1 SE							X	X	X	X						X	X	X	X			
	090.1 SE							X	X	X	X						X	X	X	X			
	100.1 SE							X	X	X	X						X	X	X	X			
	110.2 SE							X	X	X	X							X	X	X			
	120.2 SE								X	X	X	X						X	X	X	X		
	130.2 SE									X	X	X	X							X	X	X	X
	140.2 SE										X	X	X								X	X	X
G O L D	150.2 SE										X	X	X								X	X	X
	160.2 SE										X	X	X								X	X	X
	170.2 SE										X	X	X								X	X	X
	180.2 SE										X	X	X								X	X	X
	200.2 SE										X	X	X								X	X	X
	SPK 1a	SPK 1b	SPK 1c	SPK 1	SPK 2	SPK 3	SPK 4	SPK 5	SPK 6	SPK 7	SPK 8	SPK 9	SPK 10	DPK 2	DPK 3	DPK 4	DPK 5	DPK 6	DPK 7	DPK 8	DPK 9	DPK 10	
	050.1 XE				X	X	X	X							X	X	X						
	060.1 XE					X	X	X							X	X	X						
	075.1 XE							X	X	X	X						X	X	X	X			
	085.1 XE							X	X	X	X						X	X	X	X			
095.1 XE							X	X	X	X						X	X	X	X				
100.1 XE							X	X	X	X						X	X	X	X				
110.2 XE							X	X	X	X							X	X	X				
120.2 XE								X	X	X	X						X	X	X	X			
130.2 XE									X	X	X	X						X	X	X	X		
140.2 XE										X	X	X							X	X	X		
150.2 XE										X	X	X								X	X	X	
160.2 XE										X	X	X								X	X	X	
170.2 XE										X	X	X								X	X	X	
180.2 XE										X	X	X								X	X	X	
200.2 XE										X	X	X								X	X	X	
P L A T I N U M	050.1 PR				X	X	X	X							X	X	X						
	060.1 PR					X	X	X							X	X	X						
	070.1 PR							X	X	X	X						X	X	X	X			
	080.1 PR							X	X	X	X						X	X	X	X			
	085.1 PR							X	X	X	X						X	X	X	X			
	090.1 PR							X	X	X	X						X	X	X	X			
	100.2 PR							X	X	X	X						X	X	X	X			
	110.2 PR							X	X	X	X	X					X	X	X	X			
	120.2 PR								X	X	X	X						X	X	X	X		
	130.2 PR									X	X	X	X						X	X	X	X	
	140.2 PR										X	X	X							X	X	X	
	160.2 PR										X	X	X							X	X	X	
	170.2 PR										X	X	X							X	X	X	
	180.2 PR										X	X	X							X	X	X	

Water Pump Kit - Technical Information

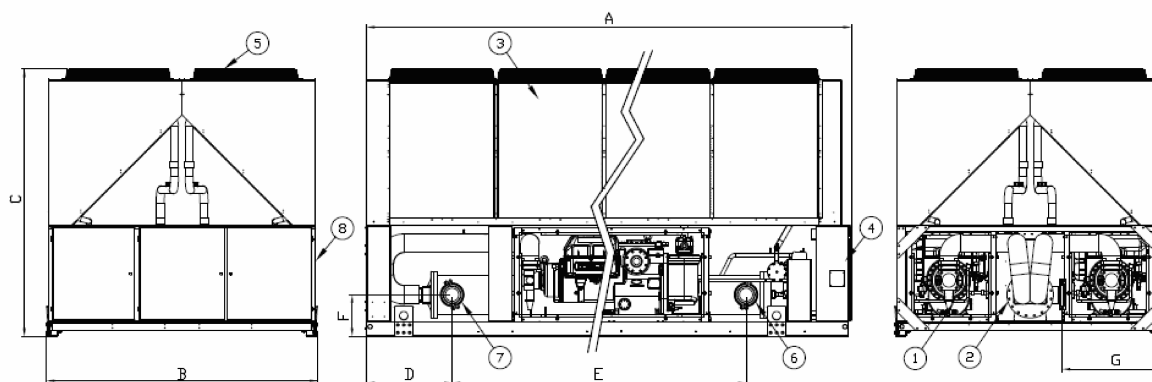
		Pump Motor Power [kW]	Pump Motor Current [A]	Power supply	PN	Motor Protection	Insulation (class)	Water Working Temperatures [°C]
Single Pumps	SPK1a	1,5	3,5	400V-3ph-50Hz	PN12	IP55	F	-20 ÷ 85
	SPK1b	2,2	5,0	400V-3ph-50Hz	PN12	IP55	F	-20 ÷ 85
	SPK1c	3,0	6,0	400V-3ph-50Hz	PN12	IP55	F	-20 ÷ 85
	SPK1	1,5	3,5	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK2	2,2	5,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK3	3,0	6,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK4	4,0	8,1	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK5	3,0	6,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK6	4,0	8,1	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK7	5,5	10,1	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK8	7,5	13,7	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK9	11,0	20,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	SPK10	11,0	20,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
Twin Pumps	DPK2	2,2	5,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK3	3,0	6,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK4	4,0	8,1	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK5	3,0	6,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK6	4,0	8,1	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK7	5,5	10,1	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK8	7,5	13,7	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK9	11,0	20,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130
	DPK10	11,0	20,0	400V-3ph-50Hz	PN10	IP55	F	-10 ÷ 130

Water filter pressure drops curve



Note:

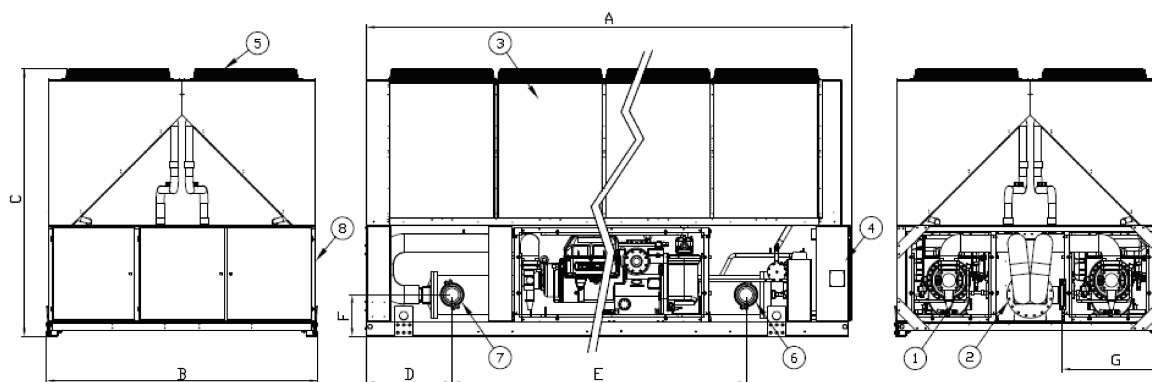
to calculate the pressure drops values introduced by the water filter, refer to the above curve.
Available for single circuit units only.



LEGEND

- 1: Compressor
- 2: Evaporator
- 3: Condenser coil
- 4: Electrical panel
- 5: Fan
- 6: Evaporator water outlet
- 7: Evaporator water inlet
- 8: Slot for power and control panel connection

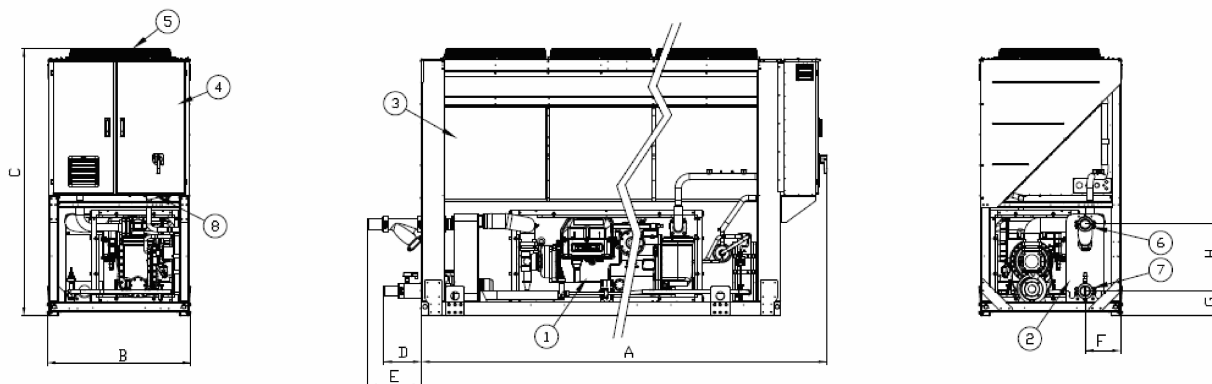
	A	B	C	D	E	F	G	H	I	L	M
ATS.110.2.SE-ST 380-60	3218	2258	2222	522	1911	346	876				
ATS.120.2.SE-ST 380-60	4117	2258	2222	718	2450	346	850				
ATS.130.2.SE-ST 380-60	4117	2258	2222	718	2450	346	850				
ATS.140.2.SE-ST 380-60	4117	2258	2222	718	2450	346	850				
ATS.150.2.SE-ST 380-60	5015	2258	2222	1617	2450	346	850				
ATS.170.2.SE-ST 380-60	5015	2258	2222	1589	2412	386	809				
ATS.180.2.SE-ST 380-60	5015	2258	2222	1589	2412	386	809				
ATS.200.2.SE-ST 380-60	5917	2258	2222	2489	2412	386	809				
ATS.110.2 SE-XN 380-60	3218	2258	2222	522	1911	346	876				
ATS.120.2 SE-XN 380-60	4117	2258	2222	718	2450	346	850				
ATS.130.2 SE-XN 380-60	4117	2258	2222	718	2450	346	850				
ATS.140.2 SE-XN 380-60	4117	2258	2222	718	2450	346	850				
ATS.150.2 SE-XN 380-60	5015	2258	2222	1617	2450	346	850				
ATS.170.2 SE-XN 380-60	5015	2258	2222	1589	2412	386	809				
ATS.180.2 SE-XN 380-60	5015	2258	2222	1589	2412	386	809				
ATS.200.2 SE-XN 380-60	5917	2258	2222	2489	2412	386	809				
ATS.110.2 XE-ST 380-60	4117	2258	2222	718	2450	346	850				
ATS.120.2 XE-ST 380-60	4117	2258	2222	718	2450	346	850				
ATS.130.2 XE-ST 380-60	5015	2258	2222	1617	2450	346	850				
ATS.140.2 XE-ST 380-60	5015	2258	2222	1617	2450	346	850				
ATS.150.2 XE-ST 380-60	5015	2258	2222	1589	2412	386	809				
ATS.160.2 XE-ST 380-60	5917	2258	2222	2489	2412	386	809				
ATS.180.2 XE-ST 380-60	5917	2258	2222	2489	2412	386	809				
ATS.200.2 XE-ST 380-60	6817	2258	2222	3389	2412	386	809				
ATS.110.2 XE-XN 380-60	4117	2258	2222	718	2450	346	850				
ATS.120.2 XE-XN 380-60	4117	2258	2222	718	2450	346	850				
ATS.130.2 XE-XN 380-60	5015	2258	2222	1617	2450	346	850				
ATS.140.2 XE-XN 380-60	5015	2258	2222	1617	2450	346	850				
ATS.150.2 XE-XN 380-60	5015	2258	2222	1589	2412	386	809				
ATS.160.2 XE-XN 380-60	5917	2258	2222	2489	2412	386	809				
ATS.180.2 XE-XN 380-60	5917	2258	2222	2489	2412	386	809				
ATS.200.2 XE-XN 380-60	6817	2258	2222	3389	2412	386	809				
ATS.100.2 PR-ST 380-60	4117	2258	2355	718	2450	346	850				
ATS.110.2 PR-ST 380-60	5015	2258	2355	1617	2450	346	850				
ATS.120.2 PR-ST 380-60	5015	2258	2355	1589	2412	386	809				
ATS.130.2 PR-ST 380-60	5917	2258	2355	2489	2412	386	809				
ATS.140.2 PR-ST 380-60	5917	2258	2355	2489	2412	386	809				
ATS.160.2 PR-ST 380-60	5917	2258	2355	2489	2412	386	809				
ATS.170.2 PR-ST 380-60	6817	2258	2355	3389	2412	386	809				
ATS.180.2 PR-ST 380-60	6817	2258	2355	3389	2412	386	809				
ATS.100.2 PR-XN 380-60	4117	2258	2355	718	2450	346	850				
ATS.110.2 PR-XN 380-60	5015	2258	2355	1617	2450	346	850				
ATS.120.2 PR-XN 380-60	5015	2258	2355	1589	2412	386	809				



LEGEND

- 1: Compressor
- 2: Evaporator
- 3: Condenser coil
- 4: Electrical panel
- 5: Fan
- 6: Evaporator water outlet
- 7: Evaporator water inlet
- 8: Slot for power and control panel connection

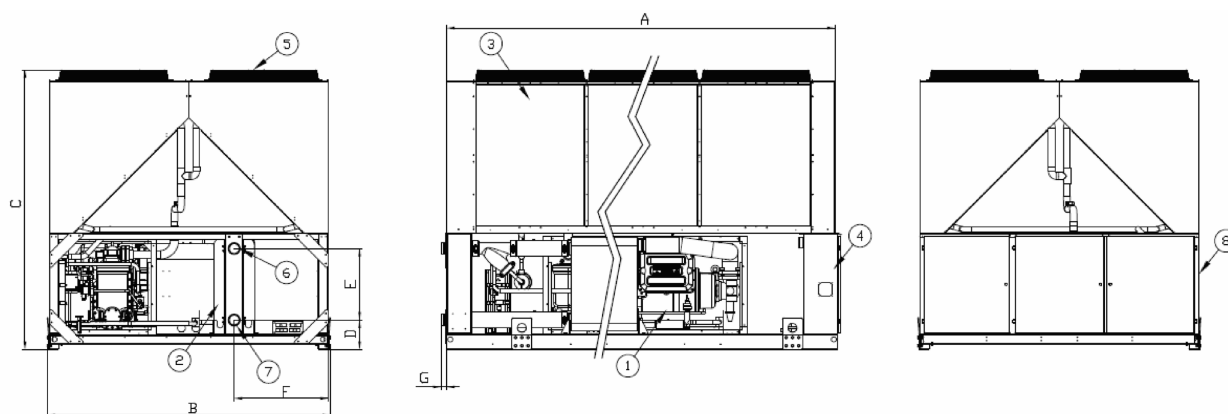
	A	B	C	D	E	F	G	H	I	L	M
ATS.130.2 PR-XN 380-60	5917	2258	2355	2489	2412	386	809				
ATS.140.2 PR-XN 380-60	5917	2258	2355	2489	2412	386	809				
ATS.160.2 PR-XN 380-60	5917	2258	2355	2489	2412	386	809				
ATS.170.2 PR-XN 380-60	6817	2258	2355	3389	2412	386	809				
ATS.180.2 PR-XN 380-60	6817	2258	2355	3389	2412	386	809				



LEGEND

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- 3: Condenser coil
- 4: Electrical panel
- 5: Fan
- 6: Evaporator water inlet
- 7: Evaporator water outlet
- 8: Slot for power and control panel connection

	A	B	C	D	E	F	G	H	I	L	M
ATS.050.1.SE-ST 380-60	3461	1224	2270	322	455	301	212	569			
ATS.060.1.SE-ST 380-60	4361	1224	2270	44	44	301	212	569			
ATS.070.1.SE-ST 380-60	4361	1224	2270	44	44	301	212	569			
ATS.080.1.SE-ST 380-60	5261	1224	2270	44	44	301	212	569			
ATS.090.1.SE-ST 380-60	5261	1224	2270	44	44	301	212	569			
ATS.050.1 SE-XN 380-60	3461	1224	2270	322	455	301	212	569			
ATS.060.1 SE-XN 380-60	4361	1224	2270	44	44	301	212	569			
ATS.070.1 SE-XN 380-60	4361	1224	2270	44	44	301	212	569			
ATS.080.1 SE-XN 380-60	5261	1224	2270	44	44	301	212	569			
ATS.090.1 SE-XN 380-60	5261	1224	2270	44	44	301	212	569			
ATS.050.1 XE-ST 380-60	4361	1224	2270	44	44	301	212	569			
ATS.060.1 XE-ST 380-60	5261	1224	2270	44	44	301	212	569			
ATS.075.1 XE-ST 380-60	5261	1224	2270	44	44	301	212	569			
ATS.050.1 XE-XN 380-60	4361	1224	2270	44	44	301	212	569			
ATS.060.1 XE-XN 380-60	5261	1224	2270	44	44	301	212	569			
ATS.075.1 XE-XN 380-60	5261	1224	2270	44	44	301	212	569			



LEGEND

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	A	B	C	D	E	F	G	H	I	L	M
ATS.100.1.SE-ST 380-60	3218	2258	2222	234	568	750	44				
ATS.100.1 SE-XN 380-60	3218	2258	2222	234	568	750	44				
ATS.085.1 XE-ST 380-60	3218	2258	2222	234	568	750	44				
ATS.095.1 XE-ST 380-60	4117	2258	2222	234	568	750	44				
ATS.100.1 XE-ST 380-60	4117	2258	2222	234	568	750	44				
ATS.085.1 XE-XN 380-60	3218	2258	2222	234	568	750	44				
ATS.095.1 XE-XN 380-60	4117	2258	2222	234	568	750	44				
ATS.100.1 XE-XN 380-60	4117	2258	2222	234	568	750	44				
ATS.050.1 PR-ST 380-60	3218	2258	2355	234	568	750	44				
ATS.060.1 PR-ST 380-60	3218	2258	2355	234	568	750	44				
ATS.070.1 PR-ST 380-60	4117	2258	2355	234	568	750	44				
ATS.080.1 PR-ST 380-60	4117	2258	2355	234	568	750	44				
ATS.085.1 PR-ST 380-60	4117	2258	2355	234	568	750	44				
ATS.090.1 PR-ST 380-60	4117	2258	2355	234	568	750	44				
ATS.050.1 PR-XN 380-60	3218	2258	2355	234	568	750	44				
ATS.060.1 PR-XN 380-60	3218	2258	2355	234	568	750	44				
ATS.070.1 PR-XN 380-60	4117	2258	2355	234	568	750	44				
ATS.080.1 PR-XN 380-60	4117	2258	2355	234	568	750	44				
ATS.085.1 PR-XN 380-60	4117	2258	2355	234	568	750	44				
ATS.090.1 PR-XN 380-60	4117	2258	2355	234	568	750	44				

Warning Installation and maintenance of the unit must to be performed only by qualified personnel who have knowledge with local codes and regulations, and experience with this type of equipment. Must be avoided the unit installation in places that could be considered dangerous for all the maintenance operations.

Handling Care should be taken to avoid rough handling or shock due to dropping the unit. Do not push or pull the unit from anything other than the base frame. Never allow the unit to fall during unloading or moving as this may result in serious damage. To lift the unit, rings are provided in the base frame of the unit. Spreader bar and cables should be arranged to prevent damage to the condenser coil or unit cabinet.

Location The units are produced for outside installation on roofs, floors or below ground level on condition that the area is free from obstacles for the passage of the condenser air. The unit should be positioned on solid foundations and perfectly level; in the case of installation on roofs or floors, it may be advisable to arrange the use of suitable weight distribution beams. When the units are installed on the ground, a concrete base at least 250 mm wider and longer than the unit's footprint should be laid. Furthermore, this base should withstand the unit weight mentioned in the technical data table.

Space requirements The units are air-cooled, then it is important to respect the minimum distances which guarantee the best ventilation of the condenser coils. Limitations of space reducing the air flow could cause significant reductions in cooling capacity and an increase in electricity consumption.

To determinate unit placement, careful consideration must be given to assure a sufficient air flow across the condenser heat transfer surface. Two conditions must be avoided to achieve the best performance: warm air recirculation and coil starvation.

Both these conditions cause an increase of condensing pressures that results in reductions in unit efficiency and capacity.

Moreover the unique microprocessor has the ability to calculate the operating environment of the air cooled chiller and the capacity to optimize its performance staying on-line during abnormal conditions.

Each side of the unit must be accessible after installation for periodic service. 'Fig.1 and Fig.2' shows you minimum recommended clearance requirements.

Vertical condenser air discharge must be unobstructed because the unit would have its capacity and efficiency significantly reduced.

If the units are positioned in places surrounded by walls or obstacles of the same height as the units, the units should follow the minimum recommended clearance requirements shown in 'Fig.3 and Fig.4'. In the event the obstacles are higher than the units, the minimum recommended clearance requirements are shown in 'Fig.5 and Fig.6'. Units installed closer than the minimum recommended distance to a wall or other vertical riser may experience a combination of coil starvation and warm air recirculation, thus causing reduction in unit capacity and efficiency reductions. The microprocessor control is proactive in response "of design condition". In the case of single or compounded influences restricting airflow to the unit, the microprocessor will act to keep the compressor(s) running (at reduced capacity) rather than allowing a shut-off on high discharge pressure.

When two or more units are positioned side by side it is recommended that the condenser coils are at a minimum distance from one another as shown in 'Fig.7 and Fig.8'; strong wind could be the cause of air warm recirculation.

For other installation solutions, consult our technicians.

The above recommended information are representative of general installation. A specific evaluation should be done by contractor depending on the case.

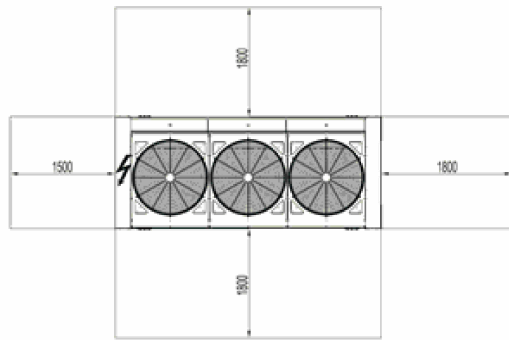


Fig. 1

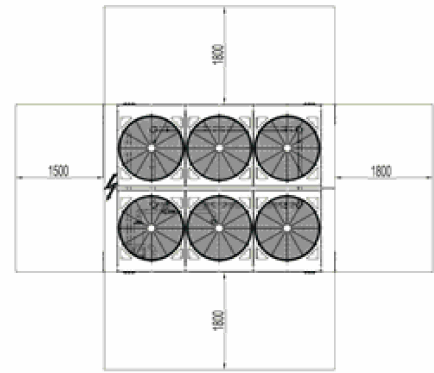


Fig. 2

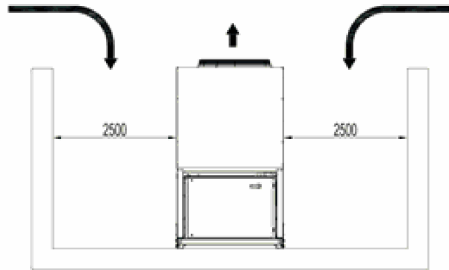


Fig. 3

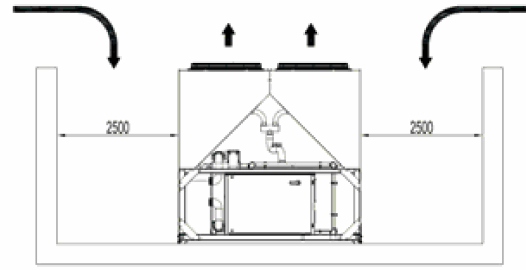


Fig. 4

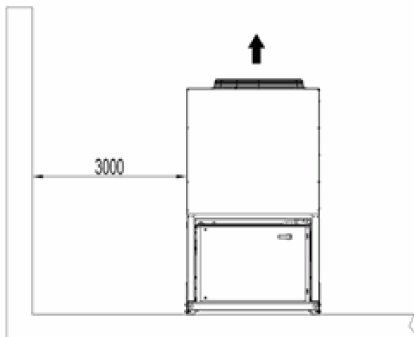


Fig. 5

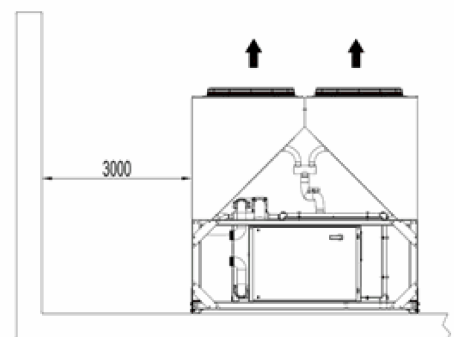


Fig. 6

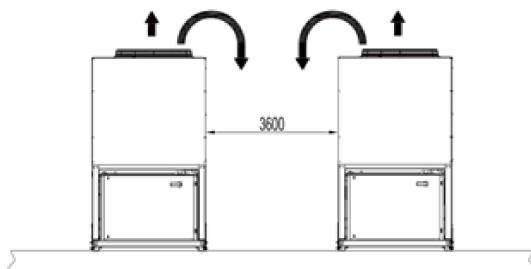


Fig. 7

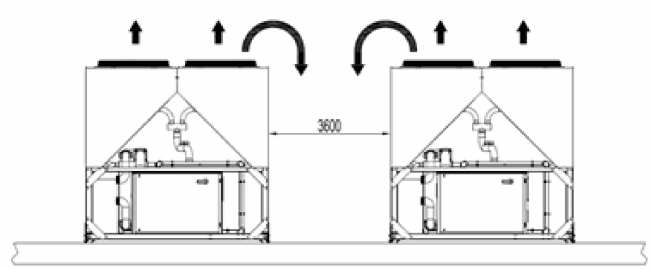


Fig. 8

Acoustic protection When noise level must meet special requirements, it is necessary to pay the maximum attention to ensure the perfect insulation of the unit from the support base by applying appropriate vibration-dampening devices on the unit, on the water pipes and on the electrical connections.

Storage The environment conditions have to be in the following limits:

Minimum ambient temperature:	-20°C
Maximum ambient temperature:	+57°C
Maximum R.H.:	95% not condensing

General The chiller will be designed and manufactured in accordance with the following European directives:

- Construction of pressure vessel 97/23/EC (PED)
- Machinery Directive 2006/42/EC
- Low Voltage 2006/95/EC
- Electromagnetic Compatibility 2004/108/EC
- Electrical & Safety codes EN 60204-1 / EN 60335-2-40
- Manufacturing Quality Standards UNI – EN ISO 9001:2004

To avoid any losses, the unit will be tested at full load in the factory (at the nominal working conditions and water temperatures). The chiller will be delivered to the job site completely assembled and charged with refrigerant and oil. The installation of the chiller must comply with the manufacturer's instructions for rigging and handling equipment.

The unit will be able to start up and operate (as standard) at full load with:

- outside air temperature from °C to °C
- evaporator leaving fluid temperature between °C and °C

Refrigerant Only HFC 134a can be used.

Performance Chiller shall supply the following performances:

- Number of chiller(s) : unit(s)
- Cooling capacity for single chiller : kW
- Power input for single chiller in cooling mode : kW
- Heat exchanger entering water temperature in cooling mode : °C
- Heat exchanger leaving water temperature in cooling mode : °C
- Heat exchanger water flow : l/s
- Nominal outside working ambient temperature in cooling mode : °C
- Minimum full load efficiency (EER): (kW/kW)
- Minimum part load efficiency (ESEER): (kW/kW)

Operating voltage range should be 400V $\pm 10\%$, 3ph, 50Hz (or 380V $\pm 10\%$, 3ph, 60Hz) , voltage unbalance maximum 3%, without neutral conductor and shall only have one power connection point.

Unit description Chiller shall include one or two independent refrigerant circuits, semi-hermetic type rotary single screw compressors, refrigerant cooled inverter drive for each compressor, electronic expansion device (EEXV), direct expansion 'shell & tube' or PHE evaporator, air-cooled condenser section, R-134a refrigerant, lubrication system, motor starting components, discharge line shut-off valve, suction line shut-off valve, control system and all components necessary for a safe and stable unit operation.

The chiller will be factory assembled on a robust base frame made of galvanized steel, protected by an epoxy paint.

Sound level and vibrations Sound pressure level at 1 meter distance in free field, semispheric conditions, shall not exceeddB(A). The sound pressure levels must be rated in accordance to ISO 3744 (other types of rating cannot be used).

Vibration on the base frame should not exceed 2 mm/s.

Dimensions Unit dimensions shall not exceed following indications:

- Unit length mm
- Unit width mm
- Unit height mm

Compressors

- Semi-hermetic, single-screw type with one main helical rotor meshing with gaterotor. The gaterotor will be constructed of a carbon impregnated engineered composite material. The gaterotor supports will be constructed of cast iron.
- Each compressor shall be fitted with inverter drive for variable capacity control. Inverter shall be integrated within the compressor casing and it shall be cooled by liquid refrigerant.
- The oil injection shall be used in order to get high EER (Energy Efficiency Ratio) also at high condensing pressure and low sound pressure levels in each load condition.
- Refrigerant system differential pressure shall provide oil flow through service replaceable, 0.5 micron, full flow, cartridge type oil filter internal to compressor.
- Refrigerant system differential pressure shall provide oil injection on all moving compressor parts to correctly lubricate them. Electrical oil pump lubricating system is not acceptable.
- The compressor's oil cooling must be realized, when necessary, by refrigerant liquid injection. External dedicated heat exchanger and additional piping to carry the oil from the compressor to heat exchanger and vice versa will be not accepted.
- The compressor shall be provided with an integrated, high efficiency, cyclonic type oil separator and with built-in oil filter, cartridge type.
- The compressor shall be direct electrical driven, without gear transmission between the screw and the electrical motor.
- The compressor casing shall be provided with ports to realize economized refrigerant cycles.
- Shall be present two thermal protection realized by a thermistor for high temperature protection: one temperature sensor to protect electrical motor and another sensor to protect unit and lubricating oil from high discharge gas temperature.
- The compressor shall be equipped with an electric oil-crankcase heater.
- Compressor shall be fully field serviceable. Compressor that must be removed and returned to the factory for service shall be unacceptable.

Cooling capacity control system The chiller will have a microprocessor for the control of the compressor capacity through inverter in order to continuously modulate the compressor's rotational speed.

- The unit capacity control shall be infinitely modulating, from 100% down to minimum capacity which shall not be higher than 33% on single circuit units and 15% for dual circuit models. The chiller shall be capable of stable operation to minimum capacity without hot gas bypass.
- The system shall control the unit based on the leaving evaporator water temperature that shall be controlled by PID (Proportional Integral Derivative) logic.
- Unit control logic shall to manage frequency level of the compressor electric motor to exactly match plant load request in order to keep constant the set point for delivered chilled or hot water temperature.
- The microprocessor unit control shall detect conditions that approach protective limits and take self-corrective action prior to an alarm occurring. The system shall automatically reduce the chiller capacity when any of the following parameters are outside their normal operating range:
 - High condenser pressure
 - Low evaporating refrigerant temperature

Unit-mounted Compressor's Inverter and Electrical Requirement Customer electrical connection for compressor motor power shall be limited to the main power lead to the single point power connection located into electrical panel.

- The Inverter shall be refrigerant cooled type. Water cooled design or air cooled designs are not acceptable.
- The Inverter full load efficiency shall meet or exceed 97% at 100% Inverter rated capacity.
- Base motor frequency shall permit motor to be utilized at nameplate voltage. Adjustable frequency range, monitored by unit's microprocessor control, shall permit a stable unit capacity control down to minimum capacity without hot-gas bypass.
- Unit starting current shall not exceed 3 A.
- Unit displacement power factor shall be not less than 0.95 on entire unit capacity range, from 100% down to minimum capacity.

Evaporator

(Single circuit unit)

The units shall be equipped with a direct expansion plate to plate type evaporator.

- The evaporator will be made of of stainless steel brazed plates and shall be linked with an electrical heater to prevent freezing down to -28°C ambient temperature, controlled by a thermostat and shall be insulated with flexible, closed cell polyurethane insulation material (20-mm thick).
- The evaporator will have 1 refrigerant circuit for each compressor.
- The water connections shall be VICTAULIC type connections as standard to ensure quick mechanical disconnection between the unit and the hydronic network.
- The evaporator will be manufactured in accordance to PED approval.
- Flow switch on evaporator available as option (shipped loose).
- Water filter is not available.
- Flow switch will be standard factory mounted.
- Water filter will be standard.

(Dual Circuit units)

The units shall be equipped with a direct expansion shell&tube evaporator with copper tubes rolled into steel tubesheets. The evaporator shall be single-pass on both the refrigerant and water sides for pure counter-flow heat exchange and low refrigerant pressure drops.

- The external shell shall be linked with an electrical heater to prevent freezing down to -28°C ambient temperature, controlled by a thermostat and shall be insulated with flexible, closed cell polyurethane insulation material (20-mm thick).
- The evaporator will have 2 circuits, one for each compressor and shall be single refrigerant pass.
- The water connections shall be VICTAULIC type connections as standard to ensure quick mechanical disconnection between the unit and the hydronic network.
- The evaporator will be manufactured in accordance to PED approval.
- Flow switch on evaporator available as option (shipped loose).
- Water filter is not available.

Condenser coil The unit shall be equipped with condenser coils constructed with internally finned seamless copper tubes and arranged in a staggered row pattern and mechanically expanded into lanced and rippled aluminum fins with full fin collars for higher efficiencies. The space between the fins is given by a collar that will increase the surface area in connection with the tubes, protecting them from ambient corrosion.

- The condenser coils will have an integral subcooler circuit that provides sufficient subcooling to effectively eliminate the possibility of liquid flashing and increase the unit's efficiency with 5% to 7% without increasing in energy consumption.
- The condenser coils shall be leak-tested and submitted to a pressure test with dry air.

Condenser fans The condenser fans used in conjunction with the condenser coils, shall be propeller type with glass reinforced resin blades for higher efficiencies and lower sound. Each fan shall be protected by a fan guard.

- The air discharge shall be vertical and each fan must be coupled to the electrical motor, supplied as standard to IP54 and capable to work to ambient temperatures of - 20°C to + 65°C.
- The condenser fans shall have as a standard a thermally protection by internal thermal motor protection and protected by circuit breaker installed inside the electrical panel as a standard.

Refrigerant circuit The unit shall have one or two independent refrigerant circuits and one variable electrical frequency driver per compressor (Inverter).

- The circuit shall include as standard: electronic expansion device piloted by unit's microprocessor control, compressor suction and discharge shut-off valves, liquid line shut-off valve, sight glass with moisture indicator, replaceable filter drier, charging valves, high pressure switch, high and low pressure transducers, oil pressure transducer and insulated suction line.

Condensation control The units will be provided with an automatic control for condensing pressure which ensures the working at low external temperatures down to - °C, to maintain condensing pressure.

- The compressor automatically unloads when abnormal high condensing pressure is detected. This to prevent the shutdown of the refrigerant circuit (shutdown of the unit) due to a high-pressure fault.

Reduced Sound unit configurations (on request) The unit compressor shall be connected with unit's metal base frame by rubber antivibration supports to prevent the transmission of vibrations to all metal unit structure, in order to limit the unit noise emissions.

The chiller shall be provided with an acoustical compressor enclosure. This enclosure shall be realized with a light, corrosion resisting aluminum structure and metal panels. The compressor sound-proof enclosure shall be internally fitted with flexible, multi-layer, high density materials.

Hydronic kit options (on request) The hydronic module shall be integrated in the chiller chassis without increasing its dimensions and includes the following elements: centrifugal pump with motor protected by a circuit breaker installed in control panel, water filling system with pressure gauge, safety valve, drain valve.

- The hydronic module shall be assembled and wired to the control panel.
- The water piping shall be protected against corrosion and freezing and insulated to prevent condensation.
- A choice of two pump types shall be available:
 - in-line single pump
 - in-line twin pumps.

Electrical control panel Power and control shall be located in the main panel that will be manufactured to ensure protection against all weather conditions.

- The electrical panel shall be IP54 and (when opening the doors) internally protected against possible accidental contact with live parts.
- The main panel shall be fitted with a main switch interlocked door that shuts off power supply when opening.
- The power section will include compressors and fans protection devices, fans starters and control circuit power supply.

Controller The controller will be installed as standard and it will be used to modify unit set-points and check control parameters.

- A built-in display will show chiller operating status plus temperatures and pressures of water, refrigerant and air, programmable values, set-points.
- A sophisticated software with predictive logic, will select the most energy efficient combination of compressors, EEXV and condenser fans to keep stable operating conditions to maximize chiller energy efficiency and reliability.
- The controller will be able to protect critical components based on external signals from its system (such as motor temperatures, refrigerant gas and oil pressures, correct phase sequence, pressure switches and evaporator). The input coming from the high pressure switch cuts all digital output from the controller in less than 50ms, this will be an additional security for the equipment.
- Fast program cycle (200ms) for a precise monitoring of the system.
- Floating point calculations supported for increased accuracy in P/T conversions.

Controller main features Controller shall be guarantee following minimum functions:

- Management of the compressor stepless capacity and fans modulation.
- Chiller enabled to work in partial failure condition.
- Full routine operation at condition of:
 - high ambient temperature value
 - high thermal load
 - high evaporator entering water temperature (start-up)
- Display of evaporator entering/leaving water temperature.
- Display of Outdoor Ambient Temperature.
- Display of condensing-evaporating temperature and pressure, suction and discharge superheat for each circuit.
- Leaving water evaporator temperature regulation (temperature tolerance = 0,1°C).
- Compressor and evaporator pumps hours counter.
- Display of Status Safety Devices.
- Number of starts and compressor working hours.
- Optimized management of compressor load.
- Fan management according to condensing pressure.
- Re-start in case of power failure (automatic / manual).
- Soft Load (optimized management of the compressor load during the start-up).
- Start at high evaporator water temperature.
- Return Reset (Set Point Reset based on return water temperature).
- OAT (Outside Ambient temperature) Reset.
- Set point Reset (optional).
- Application and system upgrade with commercial SD cards.
- Ethernet port for remote or local servicing using standard web browsers.
- Two different sets of default parameters could be stored for easy restore.

High Level Communications Interface (on request) The chiller shall be able to communicate to BMS (Building Management System) based on the most common protocols as:

- ModbusRTU
- LonWorks, now also based on the international 8040 Standard Chiller Profile and LonMark Technology
- BacNet BTP certified over IP and MS/TP (class 4) (Native)
- Ethernet TCP/IP.

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