Databook

Code:	CSS -10.29
Printing date:	04/2021
EWWQ~G/L	

Water Cooled chiller cooling

ECOLOGICAL
HFC
410A
REFRIGERANT

EWWQ~G/L

SS (Standard Efficiency - Standard Noise) - Cooling Capacity from 91 to 369 kW
SS (Standard Efficiency - Standard Noise) - Cooling Capacity from 183 to 387 kW

Performance according to EN14511.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

www.eurovent-certification.com
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CE

DAIKIN

Low operating cost and extended operating life The water cooled ranges are 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.

Flexibility The water cooled series meets all the possible request in terms of plant needs for comfort and process applications. The units are available for chilled water production and for hot water production reversing on water side. There is also a condenserless version. Partial recover version and hydronic version, with low or high pump head, are available on request.

Wide capacity range The water cooled series covers a wide range of cooling capacities from 100 kW up to 387 kW. The introduction of the new 60 HP scroll compressor allows to reach very high capacity in the minimum space.

Wide operating range The extended operating range allows the unit to work in a very wide range of water temperatures. The electronic expansion valve (mounted as standard) guarantees a fine control of the refrigerant flow even at low condensing temperatures.

Compact Design The innovative design makes the unit easy to carry and position within technical room occupying the minimum footprint. The Modular conception allows to position one unit upon the other reaching the highest kW/m2 ratio on the market.

Plug & play installation The units is conceived in order to be connected quickly to the plant. Victaulic connection are available as option.

Superior control logic The unit 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. Master/Slave control is available as standard.

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 one version:

STANDARD EFFICIENCY
18 sizes to cover a range 92 up to 387 kW with an EER up to 4.60 and an ESEER up to 5.55.

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 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 x EER100% + B x EER75% + C x EER50% + D x EER25%

	A	B	C	D
K	0.03 (3%)	0.33 (33%)	0.41 (41%)	0.23 (23%)
T	30°C	26°C	22°C	18°C

K = Coefficient; T = Water inlet condenser temperature.

Sound configurations STANDARD SOUND

(Compressor sound attenuation jacket or compressor sound enclosure available as option)

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) (±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.

Refrigerant Units have been optimized to operate with R-410A, refrigerant with zero ODP (Ozone Depletion Potential) and GWP (Global Warming Potential) 1890. R-410A has been the logical choice for our multiple scroll chiller because today it is one of the most promising refrigerants in terms of efficiency, stability and environmental impact. R-410A offers a small swept volume, a good heat exchange capacity and leads to reduced component sizes of items such as heat exchangers and tubing.

Compressor The compressor is hermetic orbiting scroll compressor complete with motor over-temperature and over-current devices. An oil heater, which starts automatically, keeps the oil from being diluted by the refrigerant when the compressor stops. The compressors are connected in Tandem on a single refrigerating circuit and are fitted on rubber antivibration mounts and complete with oil charge.

Evaporator (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 evaporator is manufactured in accordance to PED approval. Flow switch and victaulic kit are provided mounted as option.

Condenser (Plate Heat Exchanger) The unit is equipped with a direct expansion plate to plate type condenser. This heat exchanger is made of stainless steel brazed plates and is covered with a 20mm closed cell insulation material (mounted as option). The condenser is manufactured in accordance to PED approval. Flow switch and victaulic kit are provided mounted as option.

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 without any refrigerant flow problems and with a perfect chilled water leaving temperature control.

Refrigerant circuit Each unit has 1 or 2 refrigerant circuit, according to the capacity, that includes:
- Compressors
- Refrigerant
- Evaporator
- Condenser
- Electronic expansion valve
- Liquid line shut off valve
- Filter drier
- Sight glass with moisture indicator
- High pressure switch
- High pressure transducers
- Low pressure transducers
- Suction temperature sensor

Electrical control panel Power and control are located in the main panel. The electrical panel is IP54 and (when opening the doors) internally protected with plexiglass panel against possible accidental contact with electrical components (IP20). The main panel is fitted with a main switch interlocked door.

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

Unit controller
Unit 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, programmable values, set-points. A sophisticated software with predictive logic, selects the most energy efficient combination of compressors and EEXV to keep stable operating conditions to maximise chiller energy efficiency and reliability.
The unit controller is able to protect critical components based on external signs 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 refrigerant circuit capacity
- Chiller enabled to work in partial failure condition (only for 2 circuits unit)
- Full routine operation at condition of:
  - high thermal load
  - high evaporator entering water temperature (start-up)
- Display of evaporator entering/leaving water temperature.
- Display of condensing-evaporating temperature and pressure, suction superheat for each circuit.
- Leaving water evaporator temperature regulation .
- Compressor and pumps hours counter.
- Display of Status Safety Devices.
- Number of starts and compressor working hours.
- Optimized management of compressor load.
- 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).
- Set point Reset (optional).
- Application and system upgrade with commercial SD cards.
- Ethernet port for remote or local servicing using standard web browsers.

Safety device / logic for each refrigerant circuit

The following devices / logics are available.

- High pressure (pressure switch).
- High pressure (transducer).
- Low pressure (transducer).
- High motor winding temperature.
- No pressure change at start

System security

The following securities are available.

- Phase monitor.
- Freeze protection.

Regulation type

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

Unit controller

Unit controller 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)

Unit controller remote communication

Unit controller 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 certifief over IP and MS/TP (class 4) (Native).
- Ethernet TCP/IP.

Additional information related to F-GAS Regulation (EU) No 517/2014 OF THE European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006

Unit model	Refrigerant type	Refrigerant GWP	No. of circuits	Refrigerant charge circuit 1 (kg)	Refrigerant charge circuit 1 (TCO2Eq)
EWWQ100G-SS	R410A	2087,5	1	9,0	18,8
EWWQ120G-SS	R410A	2087,5	1	9,0	18,8
EWWQ130G-SS	R410A	2087,5	1	10,0	20,9
EWWQ150G-SS	R410A	2087,5	1	10,0	20,9
EWWQ160G-SS	R410A	2087,5	1	13,0	27,1
EWWQ190G-SS	R410A	2087,5	1	11,0	23,0
EWWQ210G-SS	R410A	2087,5	1	13,0	27,1
EWWQ240G-SS	R410A	2087,5	1	15,0	31,3
EWWQ270G-SS	R410A	2087,5	1	15,0	31,3
EWWQ340G-SS	R410A	2087,5	1	19,0	39,7
EWWQ400G-SS	R410A	2087,5	1	19,0	39,7

Note: Equipment contains fluorinated greenhouse gases. Actual refrigerant charge depends on the final unit construction, details can be found on the unit labels.

Unit model	Refrigerant type	Refrigerant GWP	No. of circuits	Refrigerant charge circuit 1 (kg)	Refrigerant charge circuit 1 (TCO2Eq)	Refrigerant charge circuit 2 (kg)	Refrigerant charge circuit 2 (TCO2Eq)
EWWQ180L-SS	R410A	2087,5	2	10	20,9	10	20,9
EWWQ205L-SS	R410A	2087,5	2	10	20,9	10	20,9
EWWQ230L-SS	R410A	2087,5	2	11	23,0	11	23,0
EWWQ260L-SS	R410A	2087,5	2	11	23,0	11	23,0
EWWQ290L-SS	R410A	2087,5	2	12	25,1	12	25,1
EWWQ330L-SS	R410A	2087,5	2	12	25,1	12	25,1
EWWQ380L-SS	R410A	2087,5	2	15	31,3	15	31,3
EWWQ430L-SS	R410A	2087,5	2	16	33,4	16	33,4
EWWQ480L-SS	R410A	2087,5	2	17	35,5	17	35,5
EWWQ540L-SS	R410A	2087,5	2	17	35,5	17	35,5
EWWQ600L-SS	R410A	2087,5	2	19	39,7	19	39,7
EWWQ660L-SS	R410A	2087,5	2	20	41,8	20	41,8
EWWQ720L-SS	R410A	2087,5	2	20	41,8	20	41,8

Note: Equipment contains fluorinated greenhouse gases. Actual refrigerant charge depends on the final unit construction, details can be found on the unit labels.

Standard Options (supplied on basic unit)

Direct on line starter (DOL)

Double setpoint - Dual leaving water temperature setpoints.

20mm evaporator insulation - The external shell is covered with a 20mm closed cell insulation material.

Electronic expansion valve

General fault contactor

Hour run meter

Main switch interlock door

Options (on request)

MECHANICAL

Heat Pump version reversing on water side

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

Water filter(*) - The water filter removes impurities from water by means of a fine physical barrier.

Evaporator and Condenser flow switch (**)

20mm condenser insulation - The external shell is covered with a 20mm closed cell insulation material.

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

Brine version - Allows the unit to operate down to -10°C leaving liquid temperature (antifreeze required). Recommended below +4°C

Suction and discharge line shut-off valve - Installed on the suction and discharge ports of the compressor's tandem to facilitate maintenance operation.

High and low pressure side manometers

Sound Proof System (Compressor jacket-Avarage reduction 3dB (A))

Sound Proof System (Compressor Enclosure- Avarage reduction 6dB (A))

One centrifugal pump (low lift– 100 kPa available static pressure) - 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.

One centrifugal pump (high lift– 200 kPa available static pressure) 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.

Double pressure relief valve with diverter

(*) the installation of the filter is mandatory.

(**) the installation of the flow switch is mandatory on evaporator side. Refer to the Installation manual for the connection size

ELECTRICAL / CONTROL

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.
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.

Capacitors for power factor correction - Devices that increase the power factor of the unit. The capacitors are "dry" self-regenerating type with over pressure disconnecting safety device insulated with a no toxic dielectric mix without PCB or PCT.

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.

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.

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.

Container Kit: wooden pallet structure positioned below the unit specially designed to ease the chiller (un)load in the container with a forklift.

Witness test

Acoustic test

Machine type

EWW = Water cooled chiller cooling only

Refrigerant

Q = R-410A

Capacity class in kW (Cooling)

Always 3-digit code

Model series

G,L G=single circuit
L=dual circuit

Inverter

- = Non inverter

Efficiency level

S = Standard Efficiency

Sound level

S = Standard sound

EWWQ G-SS

MODEL		090	100	120	130	150	170	190	210
Capacity - Cooling	kW	93.7	106	119	136	150	172	194	221
Capacity control - Type	---	Step	Step	Step	Step	Step	Step	Step	Step
Capacity control - Minimum capacity	%	50.0	43.0	50.0	44.0	50.0	45.0	50.0	43.0
Unit power input - Cooling	kW	21.3	24.0	26.9	30.5	33.9	38.9	43.8	50.7
EER	---	4.40	4.40	4.42	4.46	4.42	4.42	4.42	4.35
ESEER	---	5.51	5.52	5.51	5.53	5.51	5.53	5.52	5.52
IPLV	---	6.71	6.79	6.22	6.36	6.22	6.32	6.30	6.31
CASING									
Colour *	---	IW	IW	IW	IW	IW	IW	IW	IW
Material *	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	1066	1066	1066	1066	1066	1066	1066	1066
Width	mm	928	928	928	928	928	928	928	928
Length	mm	2432	2432	2264	2264	2264	2432	2432	2432
WEIGHT									
Unit Weight	kg	516	606	728	762	795	832	871	921
Operating Weight	kg	555	652	782	821	859	901	946	1010
HEAT EXCHANGER - EVAPORATOR									
Type *	---	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE
Water Volume	l	6	8	8	10	12	13	15	17
Nominal water flow rate	l/s	4.5	5.1	5.7	6.5	7.2	8.2	9.3	10.6
Nominal Water pressure drop **	kPa	49	49	39	33	33	35	37	34
Insulation material *		CC	CC	CC	CC	CC	CC	CC	CC
HEAT EXCHANGER - CONDENSER									
Type *	---	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE
Water Volume	l	6	8	8	10	12	13	15	17
Nominal water flow rate	l/s	5.5	6.2	7.1	8.0	8.9	10.2	11.4	13.0
Nominal Water pressure drop **	kPa	72	73	60	50	50	52	56	46
COMPRESSOR									
Type	---	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Oil charge	l	7	8	9	11	14	13	13	13
Quantity	No.	2	2	2	2	2	2	2	2
SOUND LEVEL									
Sound Power - Cooling ***	dB(A)	80	83	85	87	88	88	88	90
Sound Pressure - Cooling	dB(A)	64	67	69	70	72	72	72	74
REFRIGERANT CIRCUIT									
Refrigerant type	---	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	kg	10	10	11	11	12	12	15	16
N. of circuits	No.	1	1	1	1	1	1	1	1
PIPING CONNECTIONS									
Evaporator water inlet/outlet		1" 1/2	1" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2
Condenser water inlet/outlet		1" 1/2	1" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2

Fluid: Water
** IW: Ivory White - GPSS: Galvanized and Painted Steel Sheet - PHE: Plate Heat Exchanger - S&T: Single Pass Shell & Tube.* CC: Closed Cell - HFP: High efficiency fin and tube type - DPT: Direct Propeller Type - DOL: Direct On Line - VFD: Inverter - BRS: Brushless.** If red contact factory.***sound power level (@STD conditions) are mesuared in accordance with ISO 9614 and Eurovent 8/1 for Eurovent certified units*

EWWQ G-SS

MODEL		240	300	360
Capacity - Cooling	kW	246	314	370
Capacity control - Type	---	Step	Step	Step
Capacity control - Minimum capacity	%	50.0	40.0	50.0
Unit power input - Cooling	kW	56.1	70.2	84.0
EER	---	4.39	4.48	4.41
ESEER	---	5.52	5.52	5.52
IPLV	---	6.10	6.28	6.16
CASING				
Colour *	---	IW	IW	IW
Material *	---	GPSS	GPSS	GPSS
DIMENSIONS				
Height	mm	1066	1186	1186
Width	mm	928	928	928
Length	mm	2432	2432	2432
WEIGHT				
Unit Weight	kg	934	1083	1181
Operating Weight	kg	1023	1195	1311
HEAT EXCHANGER - EVAPORATOR				
Type *	---	PHE	PHE	PHE
Water Volume	l	17	27	34
Nominal water flow rate	l/s	11.8	15.1	17.7
Nominal Water pressure drop **	kPa	42	47	47
Insulation material *		CC	CC	CC
HEAT EXCHANGER - CONDENSER				
Type *	---	PHE	PHE	PHE
Water Volume	l	17	27	34
Nominal water flow rate	l/s	14.5	18.5	21.8
Nominal Water pressure drop **	kPa	*57*	69	71
COMPRESSOR				
Type	---	Scroll	Scroll	Scroll
Oil charge	l	13	13	13
Quantity	No.	2	2	2
SOUND LEVEL				
Sound Power - Cooling ***	dB(A)	92	93	93
Sound Pressure - Cooling	dB(A)	76	76	77
REFRIGERANT CIRCUIT				
Refrigerant type	---	R410A	R410A	R410A
Refrigerant charge	kg	17	19	20
N. of circuits	No.	1	1	1
PIPING CONNECTIONS				
Evaporator water inlet/outlet		2" 1/2	3"	3"
Condenser water inlet/outlet		2" 1/2	3"	3"

Fluid: Water
** IW: Ivory White - GPSS: Galvanized and Painted Steel Sheet - PHE: Plate Heat Exchanger - S&T: Single Pass Shell & Tube.* CC: Closed Cell - HFP: High efficiency fin and tube type - DPT: Direct Propeller Type - DOL: Direct On Line - VFD: Inverter - BRS: Brushless.** If red contact factory.***sound power level (@STD conditions) are mesuared in accordance with ISO 9614 and Eurovent 8/1 for Eurovent certified units*

EWWQ L-SS

MODEL		180	205	230	260	290	330	380
Capacity - Cooling	kW	187	215	244	273	303	345	387
Capacity control - Type	---	Step	Step	Step	Step	Step	Step	Step
Capacity control - Minimum capacity	%	25.0	21.0	25.0	22.0	25.0	23.0	25.0
Unit power input - Cooling	kW	41.7	47.3	53.1	60.2	67.1	77.1	87.0
EER	---	4.49	4.55	4.60	4.53	4.52	4.47	4.45
ESEER	---	5.54	5.54	5.52	5.53	5.54	5.53	5.54
IPLV	---	6.77	6.84	6.35	6.38	6.31	6.32	6.36
CASING								
Colour *	---	IW	IW	IW	IW	IW	IW	IW
Material *	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS								
Height	mm	1970	1970	1970	1970	1970	1970	1970
Width	mm	928	928	928	928	928	928	928
Length	mm	2801	2801	2801	2801	2801	2801	2801
WEIGHT								
Unit Weight	kg	877	1062	1285	1347	1439	1498	1559
Operating Weight	kg	957	1156	1401	1469	1575	1641	1723
HEAT EXCHANGER - EVAPORATOR								
Type *	---	PHE	PHE	PHE	PHE	PHE	PHE	PHE
Water Volume	l	35	41	53	53	65	65	76
Nominal water flow rate	l/s	9.0	10.3	11.7	13.0	14.5	16.5	18.5
Nominal Water pressure drop **	kPa	28	28	23	28	25	32	32
Insulation material *		CC	CC	CC	CC	CC	CC	CC
HEAT EXCHANGER - CONDENSER								
Type *	---	PHE	PHE	PHE	PHE	PHE	PHE	PHE
Water Volume	l	19	22	29	29	35	35	41
Nominal water flow rate	l/s	5.5 5.5	6.3 6.3	7.2 7.2	8.1 8.1	9.0 9.0	10.2 10.2	11.4 11.4
Nominal Water pressure drop **	kPa	72 72	73 73	61 61	49 49	50 50	51 51	55 55
COMPRESSOR								
Type	---	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Oil charge	l	14	16	19	23	27	26	25
Quantity	No.	4	4	4	4	4	4	4
SOUND LEVEL								
Sound Power - Cooling ***	dB(A)	83	86	88	90	91	91	91
Sound Pressure - Cooling	dB(A)	65	68	70	72	74	74	73
REFRIGERANT CIRCUIT								
Refrigerant type	---	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	kg	20	20	22	22	24	24	30
N. of circuits	No.	2	2	2	2	2	2	2
PIPING CONNECTIONS								
Evaporator water inlet/outlet		3"	3"	3"	3"	3"	3"	3"
Condenser water inlet/outlet		1" 1/2	1" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2

Fluid: Water
** IW: Ivory White - GPSS: Galvanized and Painted Steel Sheet - PHE: Plate Heat Exchanger - S&T: Single Pass Shell & Tube.* CC: Closed Cell - HFP: High efficiency fin and tube type - DPT: Direct Propeller Type - DOL: Direct On Line - VFD: Inverter - BRS: Brushless.** If red contact factory.***sound power level (@STD conditions) are mesuared in accordance with ISO 9614 and Eurovent 8/1 for Eurovent certified units*

EWWQ G-SS

MODEL		090	100	120	130	150	170	190	210
Capacity - Heating (1)	kW	118	133	150	169	187	215	244	276
Unit power input - Heating (1)	kW	25.7	29.2	32.9	37.2	41.4	47.6	53.7	61.3
COP (1)	---	4.58	4.56	4.55	4.55	4.53	4.52	4.54	4.50
Capacity - Cooling (1)	kW	93.7	106	119	136	150	172	194	221
HEAT EXCHANGER - EVAPORATOR									
Nominal water flow rate	l/s	4.4	5.0	5.6	6.3	7.0	8.0	9.1	10.3
Nominal Water pressure drop	kPa	47	47	38	31	31	33	35	32
HEAT EXCHANGER - CONDENSER									
Nominal water flow rate	l/s	5.7	6.4	7.3	8.2	9.1	10.4	11.8	13.3
Nominal Water pressure drop	kPa	76	77	63	52	52	54	59	48

EWWQ G-SS

MODEL		240	300	360
Capacity - Heating (1)	kW	310	396	468
Unit power input - Heating (1)	kW	68.3	85.6	103
COP (1)	---	4.54	4.62	4.56
Capacity - Cooling (1)	kW	246	314	370
HEAT EXCHANGER - EVAPORATOR				
Nominal water flow rate	l/s	11.6	14.9	17.5
Nominal Water pressure drop	kPa	41	46	46
HEAT EXCHANGER - CONDENSER				
Nominal water flow rate	l/s	15.0	19.1	22.6
Nominal Water pressure drop	kPa	61	74	76

EWWQ L-SS

MODEL		180	205	230	260	290	330	380
Capacity - Heating (1)	kW	234	269	305	339	377	430	486
Unit power input - Heating (1)	kW	50.5	57.5	65.0	73.6	82.0	94.4	107
COP (1)	---	4.64	4.67	4.68	4.60	4.60	4.56	4.55
Capacity - Cooling (1)	kW	187	215	244	273	303	345	387
HEAT EXCHANGER - EVAPORATOR								
Nominal water flow rate	l/s	8.8	10.1	11.5	12.7	14.1	16.1	18.2
Nominal Water pressure drop	kPa	27	27	22	27	24	31	31
HEAT EXCHANGER - CONDENSER								
Nominal water flow rate	l/s	11.3	13.0	14.8	16.5	18.3	20.9	23.5
Nominal Water pressure drop	kPa	76	77	64	52	52	53	59

Fluid: Water
(1) Heating capacity, unit power input and COP are based on the following conditions: evaporator 5.0/10.0°C; condenser 40.0/45.0 °C, unit at full load operation;

EWWQ G-SS

MODEL		090	100	120	130	150	170	190	210
Power supply									
Phases	---	3	3	3	3	3	3	3	3
Frequency	Hz	50	50	50	50	50	50	50	50
Voltage	V	400	400	400	400	400	400	400	400
Voltage tollerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Unit									
Maximum starting current	A	204	255	261	308	316	354	368	466
Nominal running current cooling	A	42	45	48	54	61	68	76	86
Maximum running current	A	59	66	72	80	88	102	116	131
Maximum current for wires sizing	A	65	72	79	88	96	112	128	144
Compressors									
Phases	No.	3	3	3	3	3	3	3	3
Voltage	V	400	400	400	400	400	400	400	400
Voltage tollerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	59	66	72	80	88	102	116	131
Starting method	---	DOL	DOL	DOL	DOL	DOL	DOL	DOL	DOL

EWWQ G-SS

MODEL		240	300	360
Power supply				
Phases	---	3	3	3
Frequency	Hz	50	50	50
Voltage	V	400	400	400
Voltage tollerance Minimum	%	-10%	-10%	-10%
Voltage tollerance Maximum	%	+10%	+10%	+10%
Unit				
Maximum starting current	A	481	640	677
Nominal running current cooling	A	95	118	143
Maximum running current	A	145	183	221
Maximum current for wires sizing	A	160	201	243
Compressors				
Phases	No.	3	3	3
Voltage	V	400	400	400
Voltage tollerance Minimum	%	-10%	-10%	-10%
Voltage tollerance Maximum	%	+10%	+10%	+10%
Maximum running current	A	145	183	221
Starting method	---	DOL	DOL+PW	PW

Fluid: Water
Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.
Maximum starting current: starting current of biggest compressor + current of the compressor at 75% maximum load
Nominal current in cooling mode is referred to the following conditions: evaporator 12/7°C; condenser 30/35°C; compressors current
Maximum running current is based on max compressor absorbed current in its envelope
Maximum unit current for wires sizing is based on minimum allowed voltage
Maximum current for wires sizing: (compressors full load ampere) x 1,1.

EWWQ L-SS

MODEL		180	205	230	260	290	330	380
Power supply								
Phases	---	3	3	3	3	3	3	3
Frequency	Hz	50	50	50	50	50	50	50
Voltage	V	400	400	400	400	400	400	400
Voltage tollerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Unit								
Maximum starting current	A	263	320	333	388	403	456	484
Nominal running current cooling	A	83	89	96	109	121	137	151
Maximum running current	A	118	131	144	160	175	205	232
Maximum current for wires sizing	A	130	144	159	176	193	225	255
Compressors								
Phases	No.	3	3	3	3	3	3	3
Voltage	V	400	400	400	400	400	400	400
Voltage tollerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	59 59	66 66	72 72	80 80	88 88	102 102	116 116
Starting method	---	DOL	DOL	DOL	DOL	DOL	DOL	DOL

Fluid: Water
Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.
Maximum starting current: starting current of biggest compressor + current of the compressor at 75% maximum load
Nominal current in cooling mode is referred to the following conditions: evaporator 12/7°C; condenser 30/35°C; compressors current
Maximum running current is based on max compressor absorbed current in its envelope
Maximum unit current for wires sizing is based on minimum allowed voltage
Maximum current for wires sizing: (compressors full load ampere) x 1,1.

EWWQ G-SS

	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)
090	59.0	61.0	50.2	59.9	58.6	56.5	54.3	52.3	**64.0**	**80.0**
100	62.4	64.4	60.3	60.3	58.6	63.1	54.5	49.1	**67.0**	**83.0**
120	65.2	67.0	63.5	62.1	60.2	66.1	56.2	47.3	**69.0**	**85.0**
130	63.0	64.9	62.9	61.8	65.0	66.4	57.9	53.6	**70.0**	**87.0**
150	60.8	62.7	63.1	62.2	67.6	67.3	59.6	56.4	**72.0**	**88.0**
170	61.1	63.1	65.4	64.4	68.0	67.1	60.0	55.8	**72.0**	**88.0**
190	60.6	62.6	66.6	65.6	67.6	65.6	59.6	53.6	**72.0**	**88.0**
210	60.7	62.7	66.0	63.9	71.4	68.1	60.2	54.2	**74.0**	**90.0**
240	61.1	63.1	65.8	62.1	73.3	69.7	60.9	54.9	**76.0**	**92.0**
300	58.8	60.8	62.8	57.9	74.6	69.8	59.0	53.0	**76.0**	**93.0**
360	57.9	59.9	61.3	54.9	75.3	70.1	58.5	52.5	**77.0**	**93.0**

EWWQ L-SS

	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)
180	60.6	62.6	51.8	61.5	60.2	58.1	55.9	53.9	**65.0**	**83.0**
205	64.0	66.0	62.0	62.0	60.2	64.7	56.1	50.7	**68.0**	**86.0**
230	65.6	67.6	64.1	62.7	60.8	66.7	56.8	47.9	**70.0**	**88.0**
260	64.6	66.6	64.6	63.4	66.7	68.0	59.6	55.3	**72.0**	**90.0**
290	62.3	64.3	64.7	63.8	69.2	68.9	61.2	58.0	**74.0**	**91.0**
330	62.6	64.6	66.9	66.0	69.6	68.6	61.6	57.4	**74.0**	**91.0**
380	62.2	64.2	68.2	67.2	69.2	67.2	61.2	55.2	**73.0**	**91.0**

EWWQ G-SS

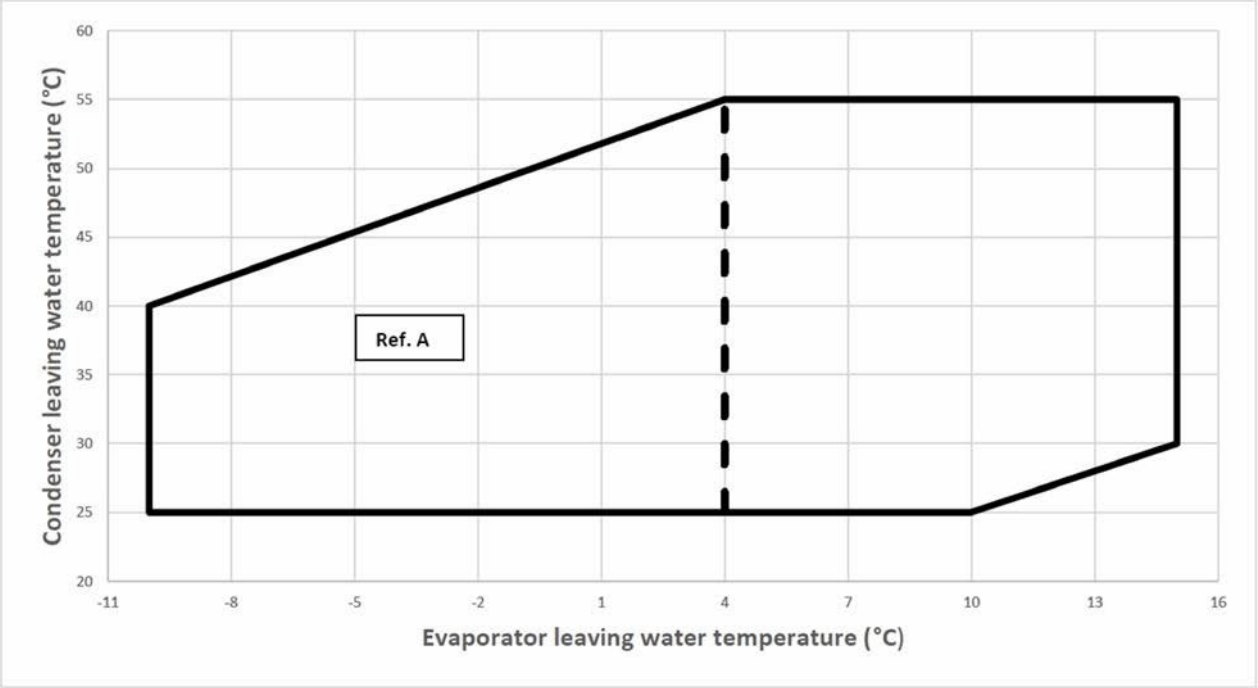
	DISTANCE						
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
090	64.0	54.1	48.8	45.5	43.2	41.3	35.4
100	67.0	57.1	51.8	48.5	46.2	44.3	38.4
120	69.0	59.1	53.7	50.4	48.1	46.2	40.3
130	70.0	60.1	54.7	51.4	49.1	47.2	41.3
150	72.0	62.1	56.7	53.4	51.1	49.2	43.3
170	72.0	62.1	56.8	53.5	51.2	49.3	43.4
190	72.0	62.1	56.8	53.5	51.2	49.3	43.4
210	74.0	64.1	58.8	55.5	53.2	51.3	45.4
240	76.0	66.1	60.8	57.5	55.2	53.3	47.4
300	76.0	66.3	61.0	57.7	55.3	53.5	47.6
360	77.0	67.3	62.0	58.7	56.3	54.5	48.6

EWWQ L-SS

	DISTANCE						
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
180	65.0	56.1	50.9	47.8	45.4	43.6	37.8
205	68.0	59.1	53.9	50.8	48.4	46.6	40.8
230	70.0	61.1	55.9	52.8	50.4	48.6	42.8
260	72.0	63.1	57.9	54.8	52.4	50.6	44.8
290	74.0	65.1	59.9	56.8	54.4	52.6	46.8
330	74.0	65.1	59.9	56.8	54.4	52.6	46.8
380	73.0	64.1	58.9	55.8	53.4	51.6	45.8

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
Sound power level (referred to evaporator 12/7°C, ambient 35°C full load operation) are mesuared in accordance with ISO 9614 and Eurovent 8/1 for Eurovent certified units.
The certification refers only to the overall sound power level, the sound pressure is calculated from the sound power level and are for information only and not cosidered bounding

Operating Limits



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

Ref.:
A = operation with glycol (below 4°C Evaporator LWT)

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

A - Δt	**°C**	**8**
B - Δt	**°C**	**4**
C - Δt	**°C**	**8**
D - Δt	**°C**	**4**

Legend:
A = Max evaporator water Δt
B = Min evaporator water Δt
C = Max condenser water Δt
D = Min condenser water Δt

Table 2 - Water heat exchanger - Evaporator Fouling factors

A	B	C	D
0.0176	1.000	1.000	1.000
0.0440	0.978	0.986	0.992
0.0880	0.957	0.974	0.983
0.1320	0.938	0.962	0.975

Table 2 - Water heat exchanger - Condenser Fouling factors

A	B	C	D
0.0176	1.006	0.989	1.016
0.0440	1.000	1.000	1.000
0.0880	0.957	0.974	0.983
0.1320	0.938	0.962	0.975

Legend:
A = Fouling factors (m2 °C / kW)
B = Cooling capacity correction factor
C = Power input correction factor
D = EER correction factor

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.

Water charge, flow and quality

DAE Water quality requirements	BPHE
Ph (25 °C)	7.5 – 9.0
Electrical conductivity [µS/cm] (25°C)	< 500
Chloride ion [mg Cl^- / l]	< 70 (HP^1); < 300 (CO^2)
Sulphate ion [mg SO_4^{2-} / l]	< 100
Alkalinity [mg $CaCO_3$ / l]	< 200
Total Hardness [mg $CaCO_3$ / l]	75 ÷ 150
Iron [mg Fe / l]	< 0.2
Ammonium ion [mg NH^{4+} / l]	< 0.5
Silica [mg SiO_2 / l]	-
Chlorine molecular (mg Cl_2/l)	< 0.5

Note: 1. Heat Pump
2. Cooling Only

EWWQ G-SS

			090						100					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	92.3	88.2	83.7	78.8	73.6	68	104	99.3	94.1	88.6	82.8	76.9
	PI	kW	19.2	21	22.9	24.9	27.2	29.8	21.8	23.7	25.8	28.3	31.1	34.5
	qwe	l/s	4.4	4.2	4.0	3.8	3.5	3.3	5.0	4.8	4.5	4.2	4.0	3.7
	dpwe	kPa	47	43	39	34	30	26	48	43	39	34	30	26
	HC	kW	111	108	106	103	100	97.1	125	122	119	116	113	111
	qwc	l/s	5.4	5.3	5.1	5.0	4.9	4.8	6.0	5.9	5.8	5.7	5.5	5.4
	dpwc	kPa	68	65	62	59	56	53	69	66	63	60	57	55
7	CC	kW	98	93.7	89.1	84	78.5	72.6	111	106	100	94.5	88.5	82.2
	PI	kW	19.5	21.3	23.2	25.2	27.5	30	22.1	24	26.2	28.6	31.4	34.7
	qwe	l/s	4.7	4.5	4.3	4.0	3.8	3.5	5.3	5.1	4.8	4.5	4.2	3.9
	dpwe	kPa	53.4	48.8	44.0	39.1	34.1	29.2	53.9	49.0	44.1	39.2	34.3	29.6
	HC	kW	117	114	111	108	105	102	132	129	126	122	119	116
	qwc	l/s	6	6	5	5	5	5	6	6	6	6	6	6
	dpwc	kPa	75	72	69	66	62	58	76	73	70	66	63	60
9	CC	kW	104	99.4	94.5	89.3	83.6	77.4	117	112	107	101	94.3	87.8
	PI	kW	19.7	21.6	23.5	25.6	27.8	30.3	22.4	24.3	26.5	29	31.8	35
	qwe	l/s	5.0	4.8	4.5	4.3	4.0	3.7	5.6	5.4	5.1	4.8	4.5	4.2
	dpwe	kPa	60	55	50	44	39	33	61	55	50	45	39	34
	HC	kW	123	120	117	114	111	107	139	135	132	129	125	122
	qwc	l/s	5.9	5.8	5.7	5.5	5.4	5.2	6.7	6.6	6.4	6.3	6.1	6.0
	dpwc	kPa	83	80	76	72	68	64	85	81	77	73	70	66
11	CC	kW	110	105	100	94.8	88.8	82.5	124	119	113	107	100	93.6
	PI	kW	19.9	21.8	23.8	25.9	28.1	30.6	22.7	24.7	26.9	29.3	32.2	35.4
	qwe	l/s	5.3	5.1	4.8	4.6	4.3	4.0	6.0	5.7	5.4	5.1	4.8	4.5
	dpwe	kPa	68	62	56	50	44	38	68	62	56	50	45	39
	HC	kW	129	126	123	120	116	112	146	142	139	135	132	128
	qwc	l/s	6.2	6.1	6.0	5.8	5.7	5.5	7.1	6.9	6.7	6.6	6.4	6.3
	dpwc	kPa	92	88	84	80	75	71	94	89	85	81	77	73
13	CC	kW	116	111	106	100	94.3	87.7	132	126	120	113	107	99.6
	PI	kW	20.1	22.1	24.2	26.2	28.5	31	23.1	25.1	27.3	29.7	32.5	35.7
	qwe	l/s	5.6	5.4	5.1	4.8	4.5	4.2	6.3	6.1	5.8	5.5	5.1	4.8
	dpwe	kPa	76	70	63	56	50	43	77	70	64	57	50	44
	HC	kW	135	132	129	126	122	118	153	150	146	142	138	134
	qwc	l/s	6.5	6.4	6.3	6.1	5.9	5.8	7.4	7.2	7.1	6.9	6.7	6.6
	dpwc	kPa	101	97	93	88	83	78	103	99	94	89	85	80
15	CC	kW	123	118	112	106	99.9	93.1	139	133	127	120	113	106
	PI	kW	20.3	22.4	24.5	26.6	28.9	31.3	23.5	25.5	27.7	30.2	33	36.2
	qwe	l/s	5.9	5.7	5.4	5.1	4.8	4.5	6.7	6.4	6.1	5.8	5.4	5.1
	dpwe	kPa	85	78	71	63	56	48	86	79	71	64	57	50
	HC	kW	142	139	136	132	128	123	161	157	153	149	145	141
	qwc	l/s	6.8	6.7	6.6	6.4	6.2	6.0	7.8	7.6	7.4	7.2	7.1	6.9
	dpwc	kPa	111	107	102	97	91	85	114	109	103	98	93	88

EWWQ G-SS

			120						130					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	118	112	105	99.2	92.9	86.4	134	127	120	112	104	95.9
	PI	kW	24.4	26.5	29	32	35.5	39.6	27.6	30.1	33	36.3	40.1	44.5
	qwe	l/s	5.6	5.3	5.1	4.8	4.4	4.1	6.4	6.1	5.7	5.4	5.0	4.6
	dpwe	kPa	38	34	31	27	24	21	32	29	26	23	19	16
	HC	kW	141	137	134	131	128	125	161	157	152	148	144	140
	qwc	l/s	6.8	6.7	6.5	6.4	6.3	6.2	7.8	7.6	7.4	7.2	7.1	6.9
	dpwc	kPa	56	54	51	49	47	45	47	45	42	40	38	36
7	CC	kW	125	119	113	106	99.3	92.5	143	136	128	120	112	103
	PI	kW	24.8	26.9	29.4	32.3	35.8	39.9	28	30.5	33.4	36.7	40.5	44.9
	qwe	l/s	6.0	5.7	5.4	5.1	4.8	4.4	6.9	6.5	6.1	5.8	5.3	4.9
	dpwe	kPa	43.3	39.1	34.9	30.9	27.1	23.5	36.7	33.0	29.4	25.7	22.2	18.8
	HC	kW	149	145	141	138	134	132	170	166	161	156	151	147
	qwc	l/s	7	7	7	7	7	7	8	8	8	8	7	7
	dpwc	kPa	63	60	57	54	52	50	53	50	47	45	42	40
9	CC	kW	133	127	120	113	106	98.8	152	145	137	128	119	110
	PI	kW	25.2	27.3	29.8	32.7	36.2	40.3	28.4	30.9	33.7	37	40.9	45.2
	qwe	l/s	6.4	6.1	5.8	5.4	5.1	4.7	7.3	6.9	6.6	6.1	5.7	5.3
	dpwe	kPa	49	44	40	35	31	27	42	38	33	29	25	22
	HC	kW	158	153	149	145	141	138	180	175	169	164	159	154
	qwc	l/s	7.6	7.4	7.3	7.1	6.9	6.8	8.7	8.5	8.3	8.0	7.8	7.6
	dpwc	kPa	70	67	63	60	57	55	59	56	52	49	47	44
11	CC	kW	142	135	128	120	113	105	162	154	145	136	127	117
	PI	kW	25.7	27.7	30.2	33.1	36.6	40.6	28.9	31.3	34.1	37.4	41.2	45.6
	qwe	l/s	6.8	6.5	6.1	5.8	5.4	5.1	7.8	7.4	7.0	6.6	6.1	5.6
	dpwe	kPa	56	50	45	40	35	31	47	43	38	33	29	25
	HC	kW	166	161	157	153	149	145	190	184	179	173	167	162
	qwc	l/s	8.1	7.8	7.6	7.5	7.3	7.1	9.2	8.9	8.7	8.4	8.2	7.9
	dpwc	kPa	78	74	70	67	63	61	65	62	58	55	51	48
13	CC	kW	150	143	136	128	120	112	172	163	154	145	135	125
	PI	kW	26.2	28.2	30.7	33.6	37	41	29.4	31.8	34.6	37.9	41.6	46
	qwe	l/s	7.2	6.9	6.5	6.2	5.8	5.4	8.3	7.8	7.4	7.0	6.5	6.0
	dpwe	kPa	63	57	51	46	40	35	53	48	43	38	33	28
	HC	kW	175	170	165	161	156	152	200	194	188	182	176	170
	qwc	l/s	8.5	8.3	8.0	7.8	7.7	7.5	9.7	9.4	9.1	8.9	8.6	8.3
	dpwc	kPa	87	82	78	74	70	67	73	68	64	61	57	53
15	CC	kW	159	152	144	136	128	120	182	173	164	154	144	133
	PI	kW	26.7	28.8	31.2	34	37.4	41.5	30	32.4	35.1	38.3	42.1	46.4
	qwe	l/s	7.7	7.3	6.9	6.6	6.2	5.8	8.8	8.3	7.9	7.4	6.9	6.4
	dpwe	kPa	71	64	58	51	45	40	60	54	48	43	37	32
	HC	kW	185	179	174	169	164	160	211	204	198	191	185	178
	qwc	l/s	8.9	8.7	8.5	8.2	8.0	7.9	10.2	9.9	9.6	9.3	9.0	8.7
	dpwc	kPa	96	91	86	81	77	74	80	76	71	67	63	59

EWWQ G-SS

			150						170					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	148	141	133	124	116	106	170	162	153	143	133	122
	PI	kW	30.7	33.5	36.7	40.4	44.6	49.2	35.2	38.4	42.1	46.4	51.2	56.8
	qwe	l/s	7.1	6.7	6.3	5.9	5.5	5.1	8.1	7.7	7.3	6.8	6.3	5.8
	dpwe	kPa	32	29	26	22	19	16	34	30	27	24	21	17
	HC	kW	178	173	169	164	159	155	204	199	194	189	183	178
	qwc	l/s	8.6	8.4	8.2	8.0	7.8	7.6	9.9	9.7	9.4	9.2	9.0	8.7
	dpwc	kPa	47	45	43	41	38	36	49	47	44	42	40	38
7	CC	kW	158	150	142	133	123	113	181	172	163	153	142	130
	PI	kW	31.1	33.9	37.1	40.8	44.9	49.6	35.7	38.9	42.6	46.8	51.7	57.2
	qwe	l/s	7.6	7.2	6.8	6.3	5.9	5.4	8.7	8.2	7.8	7.3	6.8	6.2
	dpwe	kPa	36.2	32.6	29.1	25.5	22.0	18.6	38.2	34.5	30.8	27.1	23.4	19.7
	HC	kW	188	183	178	173	168	162	216	210	204	199	193	187
	qwc	l/s	9	9	9	8	8	8	10	10	10	10	9	9
	dpwc	kPa	53	50	47	45	42	40	55	52	49	47	44	42
9	CC	kW	168	160	151	141	132	121	193	183	173	163	151	139
	PI	kW	31.5	34.3	37.5	41.2	45.3	50	36.3	39.4	43.1	47.3	52.1	57.6
	qwe	l/s	8.1	7.7	7.2	6.8	6.3	5.8	9.2	8.8	8.3	7.8	7.2	6.7
	dpwe	kPa	41	37	33	29	25	21	43	39	35	31	27	23
	HC	kW	198	193	187	182	176	170	228	221	215	209	202	196
	qwc	l/s	9.6	9.4	9.1	8.9	8.6	8.3	11.0	10.7	10.5	10.2	9.9	9.6
	dpwc	kPa	59	56	53	50	47	44	61	58	55	52	49	46
11	CC	kW	178	170	160	151	140	129	204	195	184	173	161	148
	PI	kW	32	34.8	38	41.6	45.7	50.3	36.9	40	43.7	47.8	52.6	58.1
	qwe	l/s	8.6	8.1	7.7	7.2	6.7	6.2	9.8	9.3	8.8	8.3	7.7	7.1
	dpwe	kPa	46	42	38	33	29	24	49	44	40	35	30	26
	HC	kW	209	203	197	191	185	178	240	233	227	220	212	205
	qwc	l/s	10.1	9.9	9.6	9.3	9.0	8.7	11.6	11.3	11.0	10.7	10.4	10.0
	dpwc	kPa	65	62	58	55	52	48	68	64	61	57	54	50
13	CC	kW	189	180	170	160	149	137	217	206	195	184	171	157
	PI	kW	32.6	35.3	38.4	42	46.1	50.7	37.6	40.7	44.3	48.4	53.2	58.6
	qwe	l/s	9.1	8.7	8.2	7.7	7.2	6.6	10.4	9.9	9.4	8.8	8.2	7.6
	dpwe	kPa	52	47	42	37	32	28	55	50	45	39	34	29
	HC	kW	221	214	208	201	194	187	253	246	238	231	223	215
	qwc	l/s	10.7	10.4	10.1	9.8	9.5	9.2	12.2	11.9	11.6	11.2	10.9	10.5
	dpwc	kPa	72	68	65	61	57	53	75	71	67	63	59	55
15	CC	kW	201	191	181	170	158	146	230	219	207	195	181	167
	PI	kW	33.2	35.9	39	42.5	46.5	51.1	38.3	41.4	44.9	49	53.8	59.2
	qwe	l/s	9.7	9.2	8.7	8.2	7.6	7.0	11.1	10.5	10.0	9.4	8.7	8.0
	dpwe	kPa	59	53	48	42	37	31	62	56	50	44	39	33
	HC	kW	232	225	218	211	204	196	266	258	250	242	234	225
	qwc	l/s	11.2	10.9	10.6	10.3	10.0	9.6	12.9	12.5	12.2	11.8	11.4	11.0
	dpwc	kPa	80	76	71	67	63	58	83	79	74	69	65	60

EWWQ G-SS

			190						210					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	191	182	172	162	151	140	218	207	196	183	170	156
	PI	kW	39.6	43.2	47.4	52.3	57.8	64.2	46.2	50.1	54.6	59.8	65.9	72.9
	qwe	l/s	9.1	8.7	8.2	7.7	7.2	6.7	10.4	9.9	9.4	8.8	8.1	7.5
	dpwe	kPa	36	32	29	26	22	19	33	30	27	23	20	17
	HC	kW	230	224	219	213	208	204	263	256	249	242	235	228
	qwc	l/s	11.1	10.8	10.6	10.4	10.1	9.9	12.7	12.4	12.0	11.7	11.4	11.1
	dpwc	kPa	52	50	48	46	44	42	44	42	40	37	35	33
7	CC	kW	204	194	184	173	162	150	232	221	209	196	182	167
	PI	kW	40.2	43.8	48	52.8	58.3	64.7	46.9	50.7	55.2	60.4	66.4	73.3
	qwe	l/s	9.8	9.3	8.8	8.3	7.7	7.2	11.1	10.6	10.0	9.4	8.7	8.0
	dpwe	kPa	40.5	36.7	32.9	29.2	25.5	21.9	37.4	33.8	30.2	26.5	22.9	19.3
	HC	kW	242	236	230	225	219	214	278	270	263	255	247	239
	qwc	l/s	12	11	11	11	11	10	13	13	13	12	12	12
	dpwc	kPa	59	56	53	51	48	46	49	46	44	41	39	37
9	CC	kW	216	206	196	184	172	160	247	235	222	208	194	178
	PI	kW	40.8	44.4	48.6	53.4	58.9	65.2	47.6	51.5	55.9	61	66.9	73.8
	qwe	l/s	10.4	9.9	9.4	8.8	8.3	7.7	11.8	11.3	10.6	10.0	9.3	8.5
	dpwe	kPa	46	42	38	33	29	25	42	38	34	30	26	22
	HC	kW	256	249	243	236	230	224	293	285	277	268	259	251
	qwc	l/s	12.3	12.1	11.8	11.5	11.2	10.9	14.1	13.7	13.4	13.0	12.6	12.2
	dpwc	kPa	65	62	59	56	53	51	55	52	49	46	43	40
11	CC	kW	230	219	208	196	184	170	262	250	236	221	206	189
	PI	kW	41.5	45.1	49.2	54	59.5	65.8	48.4	52.2	56.6	61.7	67.5	74.3
	qwe	l/s	11.0	10.5	10.0	9.4	8.8	8.2	12.6	12.0	11.3	10.6	9.9	9.1
	dpwe	kPa	52	47	42	38	33	29	48	43	39	34	30	25
	HC	kW	270	263	256	249	242	235	309	300	291	282	272	263
	qwc	l/s	13.0	12.7	12.4	12.1	11.8	11.5	14.9	14.5	14.1	13.6	13.2	12.8
	dpwc	kPa	72	69	65	62	59	56	*61*	57	54	51	47	44
13	CC	kW	244	233	221	208	195	181	278	265	250	235	219	202
	PI	kW	42.3	45.8	49.9	54.7	60.2	66.4	49.2	53	57.4	62.4	68.2	74.9
	qwe	l/s	11.7	11.2	10.6	10.0	9.4	8.7	13.4	12.7	12.0	11.3	10.5	9.7
	dpwe	kPa	59	53	48	43	37	32	54	49	44	39	33	28
	HC	kW	284	277	269	262	254	247	326	316	306	296	286	275
	qwc	l/s	13.7	13.4	13.0	12.7	12.4	12.0	15.7	15.2	14.8	14.3	13.8	13.4
	dpwc	kPa	80	76	72	69	65	61	*67*	*64*	*60*	56	52	48
15	CC	kW	258	246	234	221	207	193	295	281	266	250	232	214
	PI	kW	43.2	46.7	50.7	55.4	60.9	67.1	50.1	53.9	58.2	63.1	68.9	75.5
	qwe	l/s	12.4	11.9	11.3	10.6	10.0	9.3	14.2	13.5	12.8	12.0	11.2	10.3
	dpwe	kPa	66	60	54	48	42	37	61	55	49	44	38	32
	HC	kW	299	291	283	275	267	259	343	333	322	311	300	288
	qwc	l/s	14.4	14.1	13.7	13.3	13.0	12.6	16.5	16.0	15.5	15.0	14.5	14.0
	dpwc	kPa	89	85	80	76	71	67	*75*	*70*	*66*	*62*	57	53

EWWQ G-SS

			240						300					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	243	231	219	207	193	179	309	295	280	265	248	230
	PI	kW	50.7	55.1	60.1	65.9	72.3	79.6	63.5	69.1	75.6	83.1	91.6	101
	qwe	l/s	11.6	11.1	10.5	9.9	9.3	8.6	14.8	14.1	13.4	12.6	11.9	11.0
	dpwe	kPa	41	37	33	29	26	22	45	41	37	33	29	25
	HC	kW	292	285	278	272	265	258	371	362	354	346	338	330
	qwc	l/s	14.1	13.8	13.5	13.2	12.9	12.6	17.9	17.5	17.1	16.8	16.4	16.1
	dpwc	kPa	54	52	49	47	45	43	65	62	60	57	54	52
7	CC	kW	258	246	234	220	206	192	329	314	299	282	265	246
	PI	kW	51.8	56.1	61.1	66.8	73.2	80.4	64.7	70.2	76.6	84	92.5	102
	qwe	l/s	12.4	11.8	11.2	10.6	9.9	9.2	15.8	15.1	14.3	13.5	12.7	11.8
	dpwe	kPa	46.0	41.8	37.7	33.5	29.4	25.3	51.3	46.8	42.2	37.7	33.1	28.6
	HC	kW	308	301	293	286	278	271	392	382	373	364	355	346
	qwc	l/s	15	15	14	14	14	13	19	19	18	18	17	17
	dpwc	kPa	*60*	57	55	52	49	47	72	69	66	63	60	57
9	CC	kW	274	262	248	234	220	204	349	334	318	301	282	263
	PI	kW	52.9	57.2	62.1	67.7	74.1	81.3	66	71.4	77.7	85.1	93.4	103
	qwe	l/s	13.1	12.6	11.9	11.2	10.5	9.8	16.8	16.0	15.2	14.4	13.5	12.6
	dpwe	kPa	52	47	43	38	33	29	58	53	48	43	38	33
	HC	kW	325	317	309	301	293	284	413	403	393	383	374	364
	qwc	l/s	15.7	15.3	15.0	14.6	14.2	13.9	19.9	19.5	19.0	18.6	18.1	17.7
	dpwc	kPa	*67*	*64*	*61*	58	55	52	81	77	73	70	66	63
11	CC	kW	291	278	264	249	234	218	371	355	338	320	300	280
	PI	kW	54.2	58.4	63.2	68.7	75.1	82.3	67.5	72.8	79	86.2	94.5	104
	qwe	l/s	14.0	13.3	12.7	12.0	11.2	10.4	17.8	17.0	16.2	15.4	14.4	13.4
	dpwe	kPa	59	54	48	43	38	33	65	60	54	49	43	37
	HC	kW	343	334	325	316	307	298	435	425	414	404	393	382
	qwc	l/s	16.5	16.1	15.7	15.3	14.9	14.5	21.0	20.5	20.0	19.6	19.1	18.6
	dpwc	kPa	*74*	*71*	*67*	*64*	*60*	57	90	85	81	77	73	70
13	CC	kW	308	294	280	265	249	231	393	376	358	340	320	298
	PI	kW	55.6	59.7	64.4	69.8	76.1	83.3	69.1	74.2	80.3	87.4	95.6	105
	qwe	l/s	14.8	14.2	13.5	12.7	11.9	11.1	18.9	18.1	17.2	16.3	15.4	14.3
	dpwe	kPa	66	60	55	49	43	37	74	68	61	55	49	42
	HC	kW	361	352	342	333	323	313	459	447	436	424	413	401
	qwc	l/s	17.4	17.0	16.6	16.1	15.7	15.3	22.1	21.6	21.1	20.6	20.0	19.5
	dpwc	kPa	*83*	*79*	*74*	*70*	*67*	*63*	99	95	90	86	81	77
15	CC	kW	326	312	297	281	264	246	416	398	380	360	339	317
	PI	kW	57.1	61.1	65.7	71.1	77.3	84.3	70.9	75.9	81.8	88.8	96.9	106
	qwe	l/s	15.7	15.0	14.3	13.5	12.7	11.8	20.0	19.2	18.3	17.3	16.3	15.2
	dpwe	kPa	74	68	61	55	48	42	83	76	69	62	55	48
	HC	kW	381	370	360	350	339	328	483	471	458	446	433	421
	qwc	l/s	18.3	17.9	17.4	17.0	16.5	16.0	23.3	22.7	22.2	21.6	21.0	20.5
	dpwc	kPa	*92*	*87*	*82*	*78*	*73*	*69*	110	105	100	94	89	84

EWWQ G-SS

			360					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	364	348	331	312	293	272
	PI	kW	75.9	82.9	91	100	111	123
	qwe	l/s	17.4	16.6	15.8	14.9	14.0	13.0
	dpwe	kPa	45	41	37	33	29	25
	HC	kW	438	429	420	411	402	393
	qwc	l/s	21.1	20.7	20.3	19.9	19.5	19.1
	dpwc	kPa	67	64	62	59	57	54
7	CC	kW	387	370	352	333	312	291
	PI	kW	77.2	84	92	101	112	124
	qwe	l/s	18.6	17.7	16.9	15.9	14.9	13.9
	dpwe	kPa	51.3	46.8	42.3	37.8	33.3	28.8
	HC	kW	462	452	442	432	422	412
	qwc	l/s	22	22	21	21	21	20
	dpwc	kPa	74	71	68	65	63	60
9	CC	kW	411	394	375	354	333	310
	PI	kW	78.5	85.2	93.1	102	113	125
	qwe	l/s	19.7	18.9	18.0	17.0	15.9	14.9
	dpwe	kPa	58	53	48	43	38	33
	HC	kW	487	476	465	454	443	433
	qwc	l/s	23.5	23.0	22.5	22.0	21.5	21.0
	dpwc	kPa	83	79	76	72	69	66
11	CC	kW	436	418	398	377	355	331
	PI	kW	80.1	86.6	94.4	103	114	126
	qwe	l/s	21.0	20.1	19.1	18.1	17.0	15.9
	dpwe	kPa	65	60	54	49	43	37
	HC	kW	513	501	489	478	466	454
	qwc	l/s	24.7	24.2	23.7	23.1	22.6	22.1
	dpwc	kPa	92	88	84	80	76	72
13	CC	kW	462	443	422	400	377	352
	PI	kW	81.7	88.1	95.7	105	115	127
	qwe	l/s	22.2	21.3	20.3	19.2	18.1	16.9
	dpwe	kPa	74	67	61	55	49	43
	HC	kW	540	527	514	502	489	476
	qwc	l/s	26.0	25.4	24.9	24.3	23.7	23.1
	dpwc	kPa	102	97	92	88	84	80
15	CC	kW	489	469	447	424	400	374
	PI	kW	83.6	89.8	97.2	106	116	128
	qwe	l/s	23.6	22.6	21.5	20.4	19.2	18.0
	dpwe	kPa	83	76	69	62	55	48
	HC	kW	568	554	541	527	513	499
	qwc	l/s	27.4	26.8	26.1	25.5	24.9	24.3
	dpwc	kPa	112	107	102	97	92	87

Fluid: Water
Twe: Evaporator leaving water temperature (Δt 5°C); Twc: Condenser leaving water temperature (Δt 5°C);
HC: Heat capacity at condenser; qwc: Fluid flow rate at condenser; dpwc: Fluid pressure drop at condenser
qwc: Fluid flow rate at condenser; dpwc: Fluid pressure drop at condenser
** For working condition where dpw value is "Italic-Red Color" please contac factory*

EWWQ L-SS

			180						205					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	185	176	167	158	147	136	212	202	191	180	168	156
	PI	kW	37.6	41.2	44.9	49	53.5	58.7	42.8	46.7	51	56	61.7	68.4
	qwe	l/s	8.8	8.4	8.0	7.5	7.0	6.5	10.1	9.6	9.1	8.6	8.1	7.5
	dpwe	kPa	27	25	22	20	17	15	27	24	22	19	17	15
	HC	kW	221	216	211	205	199	193	253	247	241	235	229	223
	qwc	l/s	5.3	5.2	5.1	5.0	4.9	4.7	6.1	6.0	5.9	5.7	5.6	5.5
	dpwc	kPa	68	65	62	59	56	53	69	66	63	60	57	55
7	CC	kW	196	187	178	168	157	145	226	215	204	192	180	167
	PI	kW	38	41.7	45.5	49.6	54.1	59.2	43.4	47.3	51.7	56.6	62.3	68.9
	qwe	l/s	9.4	9.0	8.5	8.0	7.5	6.9	10.8	10.3	9.8	9.2	8.6	8.0
	dpwe	kPa	30.7	28.0	25.3	22.4	19.6	16.8	30.4	27.6	24.8	22.0	19.3	16.6
	HC	kW	232	227	222	216	209	203	267	261	254	247	241	235
	qwc	l/s	5.6	5.5	5.4	5.3	5.1	5.0	6.5	6.3	6.2	6.0	5.9	5.8
	dpwc	kPa	75	72	69	65	62	58	77	73	70	66	63	60
9	CC	kW	208	199	189	178	167	155	240	229	217	205	192	179
	PI	kW	38.4	42.2	46.1	50.2	54.7	59.7	43.9	47.9	52.3	57.2	62.9	69.5
	qwe	l/s	10.0	9.5	9.1	8.6	8.0	7.4	11.5	11.0	10.4	9.8	9.2	8.6
	dpwe	kPa	35	32	29	25	22	19	34	31	28	25	22	19
	HC	kW	245	239	233	227	220	213	282	275	267	260	253	246
	qwc	l/s	5.9	5.8	5.7	5.5	5.4	5.2	6.8	6.7	6.5	6.4	6.2	6.1
	dpwc	kPa	83	80	76	72	68	64	85	81	77	73	70	66
11	CC	kW	221	211	201	190	178	165	255	243	231	218	204	190
	PI	kW	38.7	42.7	46.6	50.8	55.3	60.3	44.6	48.6	53	57.9	63.5	70.1
	qwe	l/s	10.6	10.1	9.6	9.1	8.5	7.9	12.2	11.6	11.1	10.4	9.8	9.1
	dpwe	kPa	39	36	32	29	25	22	39	35	32	28	25	22
	HC	kW	257	252	245	239	231	223	297	289	282	274	266	259
	qwc	l/s	6.2	6.1	6.0	5.8	5.6	5.5	7.2	7.0	6.9	6.7	6.5	6.4
	dpwc	kPa	92	88	84	80	75	70	94	90	86	81	77	73
13	CC	kW	234	224	213	201	189	175	270	258	245	231	217	203
	PI	kW	39	43.2	47.2	51.4	56	60.9	45.2	49.3	53.8	58.7	64.3	70.7
	qwe	l/s	11.2	10.7	10.2	9.6	9.1	8.4	13.0	12.4	11.8	11.1	10.4	9.7
	dpwe	kPa	44	40	36	32	29	25	44	40	36	32	28	25
	HC	kW	270	264	258	251	243	234	312	304	296	288	279	271
	qwc	l/s	6.5	6.4	6.3	6.1	5.9	5.7	7.6	7.4	7.2	7.0	6.8	6.7
	dpwc	kPa	101	97	93	88	83	77	105	100	95	90	85	80
15	CC	kW	247	237	225	213	200	186	286	273	260	246	231	215
	PI	kW	39.4	43.6	47.8	52.1	56.6	61.6	46	50.1	54.6	59.5	65.1	71.5
	qwe	l/s	11.9	11.4	10.8	10.2	9.6	8.9	13.7	13.1	12.5	11.8	11.1	10.4
	dpwe	kPa	49	45	41	37	32	28	49	45	40	36	32	28
	HC	kW	284	278	271	263	255	246	329	320	311	302	294	285
	qwc	l/s	6.9	6.7	6.6	6.4	6.2	6.0	8.0	7.8	7.6	7.4	7.2	7.0
	dpwc	kPa	112	107	102	97	91	85	116	110	105	99	94	88

EWWQ L-SS

			230						260					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	241	229	216	204	190	177	270	256	241	226	210	193
	PI	kW	48.1	52.4	57.4	63.3	70.3	78.5	54.5	59.5	65.2	71.8	79.5	88.3
	qwe	l/s	11.5	10.9	10.3	9.7	9.1	8.5	12.9	12.2	11.5	10.8	10.0	9.2
	dpwe	kPa	22	20	18	16	14	12	27	25	22	19	17	14
	HC	kW	288	280	272	265	259	254	323	314	305	297	288	280
	qwc	l/s	7.0	6.8	6.7	6.5	6.4	6.3	7.8	7.6	7.5	7.3	7.1	6.9
	dpwc	kPa	58	55	52	50	48	46	47	44	42	40	38	36
7	CC	kW	257	244	231	217	204	190	287	273	257	241	224	207
	PI	kW	48.8	53.1	58.1	64	70.9	79.1	55.3	60.2	65.9	72.5	80.2	88.9
	qwe	l/s	12.3	11.7	11.1	10.4	9.7	9.1	13.7	13.0	12.3	11.5	10.7	9.9
	dpwe	kPa	25.1	22.6	20.2	17.9	15.7	13.6	31.1	28.0	25.0	21.9	19.0	16.1
	HC	kW	304	296	287	280	273	267	341	331	322	312	303	294
	qwc	l/s	7.4	7.2	7.0	6.9	6.7	6.6	8.3	8.1	7.9	7.7	7.5	7.3
	dpwc	kPa	64	61	58	55	53	51	52	49	47	44	42	40
9	CC	kW	274	260	246	232	217	203	305	290	274	257	239	220
	PI	kW	49.6	53.8	58.8	64.7	71.6	79.8	56	61	66.7	73.3	80.9	89.6
	qwe	l/s	13.1	12.5	11.8	11.1	10.4	9.7	14.6	13.9	13.1	12.3	11.4	10.6
	dpwe	kPa	29	26	23	20	18	16	35	32	28	25	22	18
	HC	kW	321	312	303	295	287	281	360	349	339	329	319	309
	qwc	l/s	7.8	7.6	7.4	7.2	7.1	6.9	8.7	8.5	8.3	8.1	7.8	7.6
	dpwc	kPa	72	68	64	61	58	56	58	55	52	49	46	44
11	CC	kW	291	277	262	247	232	216	324	308	291	274	255	235
	PI	kW	50.5	54.7	59.6	65.4	72.4	80.5	56.9	61.8	67.4	74	81.6	90.3
	qwe	l/s	13.9	13.3	12.6	11.8	11.1	10.4	15.6	14.8	14.0	13.1	12.2	11.3
	dpwe	kPa	32	29	26	23	20	18	40	36	32	28	25	21
	HC	kW	339	329	320	311	302	295	379	368	357	346	335	324
	qwc	l/s	8.2	8.0	7.8	7.6	7.4	7.3	9.2	9.0	8.7	8.5	8.2	8.0
	dpwc	kPa	80	76	72	68	65	62	64	61	57	54	51	48
13	CC	kW	309	294	279	263	247	231	344	327	310	291	271	250
	PI	kW	51.4	55.6	60.5	66.3	73.1	81.2	57.9	62.7	68.3	74.8	82.3	91
	qwe	l/s	14.8	14.1	13.4	12.6	11.8	11.1	16.5	15.7	14.9	14.0	13.0	12.0
	dpwe	kPa	36	33	30	26	23	20	45	41	36	32	28	24
	HC	kW	358	347	337	327	318	310	400	388	376	364	352	340
	qwc	l/s	8.7	8.4	8.2	8.0	7.8	7.7	9.7	9.4	9.2	8.9	8.6	8.4
	dpwc	kPa	89	84	79	75	71	68	71	67	64	60	56	53
15	CC	kW	327	312	296	279	263	245	365	347	328	309	288	266
	PI	kW	52.5	56.6	61.5	67.2	74	82.1	59	63.7	69.2	75.6	83.1	91.7
	qwe	l/s	15.7	15.0	14.2	13.4	12.6	11.8	17.5	16.7	15.8	14.8	13.8	12.8
	dpwe	kPa	41	37	33	30	26	23	51	46	41	36	32	27
	HC	kW	377	366	355	344	334	325	421	408	395	382	369	356
	qwc	l/s	9.1	8.9	8.7	8.4	8.2	8.0	10.2	9.9	9.6	9.3	9.1	8.8
	dpwc	kPa	98	93	88	83	79	75	79	75	70	66	62	58

EWWQ L-SS

			290						330					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	300	285	269	252	234	215	340	324	306	287	267	245
	PI	kW	60.7	66.4	72.8	80.2	88.5	97.8	69.7	76.2	83.7	92.2	102	113
	qwe	l/s	14.3	13.6	12.8	12.0	11.2	10.3	16.3	15.5	14.6	13.7	12.8	11.7
	dpwe	kPa	24	22	20	17	15	13	31	28	25	22	19	16
	HC	kW	359	349	340	331	321	311	408	398	388	378	368	357
	qwc	l/s	8.7	8.5	8.3	8.1	7.9	7.7	9.9	9.7	9.5	9.2	9.0	8.8
	dpwc	kPa	47	45	43	41	39	36	48	46	44	42	40	38
7	CC	kW	319	303	286	269	250	229	362	345	326	306	285	262
	PI	kW	61.5	67.1	73.6	80.9	89.2	98.5	70.7	77.1	84.6	93	103	114
	qwe	l/s	15.3	14.5	13.7	12.8	11.9	11.0	17.3	16.5	15.6	14.6	13.6	12.5
	dpwe	kPa	27.8	25.1	22.4	19.7	17.0	14.3	35.6	32.2	28.8	25.4	22.0	18.6
	HC	kW	379	369	358	348	337	327	431	420	409	397	386	374
	qwc	l/s	9.2	9.0	8.7	8.5	8.3	8.0	10.4	10.2	10.0	9.7	9.5	9.2
	dpwc	kPa	53	50	48	45	43	40	54	51	49	46	44	41
9	CC	kW	339	323	305	286	266	245	385	366	347	326	303	279
	PI	kW	62.3	67.9	74.3	81.6	89.9	99.2	71.8	78.1	85.5	93.9	104	115
	qwe	l/s	16.3	15.4	14.6	13.7	12.7	11.7	18.4	17.5	16.6	15.6	14.5	13.4
	dpwe	kPa	32	29	25	22	19	16	40	37	33	29	25	21
	HC	kW	399	389	377	366	354	342	454	442	430	418	405	392
	qwc	l/s	9.7	9.4	9.2	8.9	8.7	8.4	11.0	10.7	10.5	10.2	9.9	9.6
	dpwc	kPa	59	56	53	50	47	44	60	57	54	51	48	45
11	CC	kW	360	343	324	304	283	261	408	389	368	346	322	297
	PI	kW	63.3	68.8	75.1	82.3	90.6	99.9	73	79.3	86.5	94.9	105	115
	qwe	l/s	17.3	16.4	15.5	14.6	13.6	12.5	19.6	18.6	17.6	16.6	15.4	14.2
	dpwe	kPa	36	32	29	25	22	19	46	41	37	33	28	24
	HC	kW	421	409	397	385	372	359	479	466	452	439	425	411
	qwc	l/s	10.2	9.9	9.7	9.4	9.1	8.8	11.6	11.3	11.0	10.7	10.4	10.1
	dpwc	kPa	65	62	58	55	52	48	66	63	59	56	53	50
13	CC	kW	382	364	344	323	301	278	433	412	390	367	342	316
	PI	kW	64.3	69.7	76	83.2	91.3	101	74.3	80.5	87.7	96	106	116
	qwe	l/s	18.4	17.5	16.5	15.5	14.4	13.3	20.8	19.8	18.7	17.6	16.4	15.1
	dpwe	kPa	40	36	33	29	25	21	51	47	42	37	32	27
	HC	kW	444	431	418	404	391	377	504	490	475	461	446	430
	qwc	l/s	10.7	10.5	10.2	9.9	9.6	9.3	12.2	11.9	11.6	11.2	10.9	10.6
	dpwc	kPa	72	68	65	61	57	53	73	69	66	62	58	54
15	CC	kW	405	386	365	343	320	295	458	437	414	389	363	335
	PI	kW	65.5	70.8	77	84.1	92.2	101	75.7	81.9	89	97.2	107	118
	qwe	l/s	19.5	18.5	17.5	16.5	15.4	14.2	22.0	21.0	19.9	18.7	17.4	16.1
	dpwe	kPa	45	41	37	32	28	24	58	52	47	41	36	31
	HC	kW	467	453	439	425	410	395	531	515	500	484	467	450
	qwc	l/s	11.3	11.0	10.7	10.4	10.0	9.7	12.8	12.5	12.2	11.8	11.4	11.1
	dpwc	kPa	80	76	71	67	63	58	81	77	72	68	64	60

EWWQ L-SS

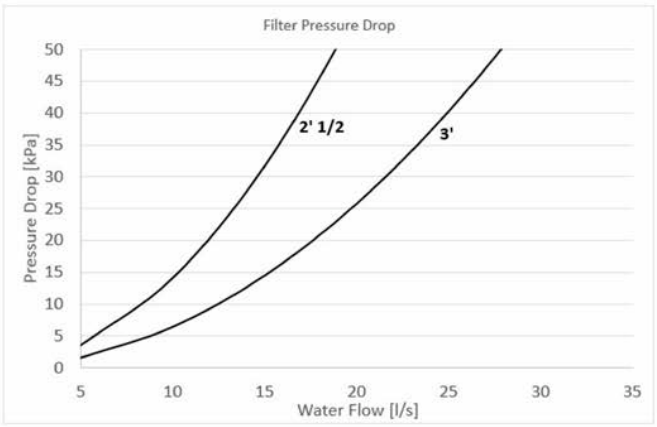
			380					
Twe		**Twc**	**30**	**35**	**40**	**45**	**50**	**55**
5	CC	kW	381	363	344	324	303	281
	PI	kW	78.6	85.9	94.3	104	115	128
	qwe	l/s	18.2	17.3	16.4	15.5	14.5	13.4
	dpwe	kPa	31	28	25	22	20	17
	HC	kW	458	447	436	426	416	407
	qwc	l/s	11.1	10.8	10.6	10.4	10.1	10.0
	dpwc	kPa	52	50	48	45	43	42
7	CC	kW	406	387	367	345	323	300
	PI	kW	79.8	87	95.4	105	116	129
	qwe	l/s	19.4	18.5	17.5	16.5	15.4	14.3
	dpwe	kPa	35.2	31.9	28.7	25.4	22.2	19.2
	HC	kW	483	472	460	448	437	427
	qwc	l/s	11.7	11.4	11.1	10.9	10.7	10.4
	dpwc	kPa	58	55	53	50	48	46
9	CC	kW	432	412	390	368	344	320
	PI	kW	81.1	88.3	96.5	106	117	130
	qwe	l/s	20.7	19.7	18.7	17.6	16.5	15.3
	dpwe	kPa	40	36	33	29	25	22
	HC	kW	510	497	484	472	459	448
	qwc	l/s	12.3	12.0	11.7	11.5	11.2	10.9
	dpwc	kPa	65	62	59	56	53	50
11	CC	kW	459	437	415	391	366	341
	PI	kW	82.5	89.6	97.8	107	118	131
	qwe	l/s	22.0	21.0	19.9	18.8	17.6	16.3
	dpwe	kPa	45	41	37	33	29	25
	HC	kW	538	524	510	496	482	469
	qwc	l/s	13.0	12.7	12.4	12.1	11.8	11.5
	dpwc	kPa	72	68	65	62	58	55
13	CC	kW	486	464	441	416	390	362
	PI	kW	84	91.1	99.2	109	120	132
	qwe	l/s	23.4	22.3	21.1	20.0	18.7	17.4
	dpwe	kPa	51	46	42	37	33	28
	HC	kW	567	552	537	521	507	492
	qwc	l/s	13.7	13.3	13.0	12.7	12.3	12.0
	dpwc	kPa	80	76	72	68	64	61
15	CC	kW	515	492	467	441	414	385
	PI	kW	85.6	92.6	101	110	121	134
	qwe	l/s	24.8	23.6	22.5	21.2	19.9	18.5
	dpwe	kPa	57	52	47	42	37	32
	HC	kW	597	581	564	548	532	516
	qwc	l/s	14.4	14.0	13.7	13.3	12.9	12.6
	dpwc	kPa	88	84	79	75	71	67

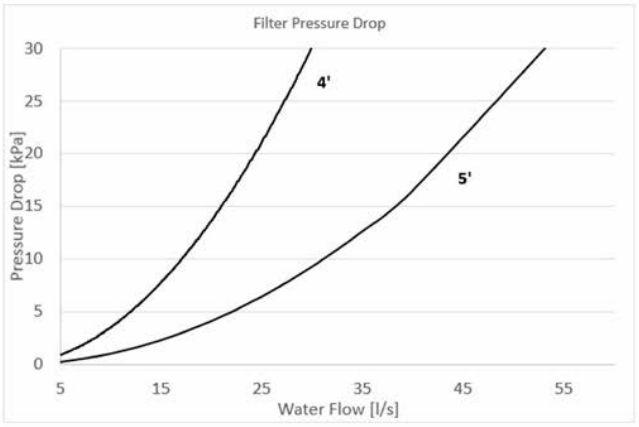
Water filter - Combination matrix

Models			filter		
			2' 1/2	3'	4'
EWWQ090G-SS	EWHQ100G-SS	EWLQ090G-SS	x		
EWWQ100G-SS	EWHQ120G-SS	EWLQ100G-SS	x		
EWWQ120G-SS	EWHQ130G-SS	EWLQ120G-SS	x		
EWWQ130G-SS	EWHQ150G-SS	EWLQ130G-SS	x		
EWWQ150G-SS	EWHQ160G-SS	EWLQ150G-SS	x		
EWWQ170G-SS	EWHQ190G-SS	EWLQ170G-SS	x		
EWWQ190G-SS	EWHQ210G-SS	EWLQ190G-SS	x		
EWWQ210G-SS	EWHQ240G-SS	EWLQ210G-SS	x		
EWWQ240G-SS	EWHQ270G-SS	EWLQ240G-SS		x	
EWWQ300G-SS	EWHQ340G-SS	EWLQ300G-SS		x	
EWWQ360G-SS	EWHQ400G-SS	EWLQ360G-SS			x

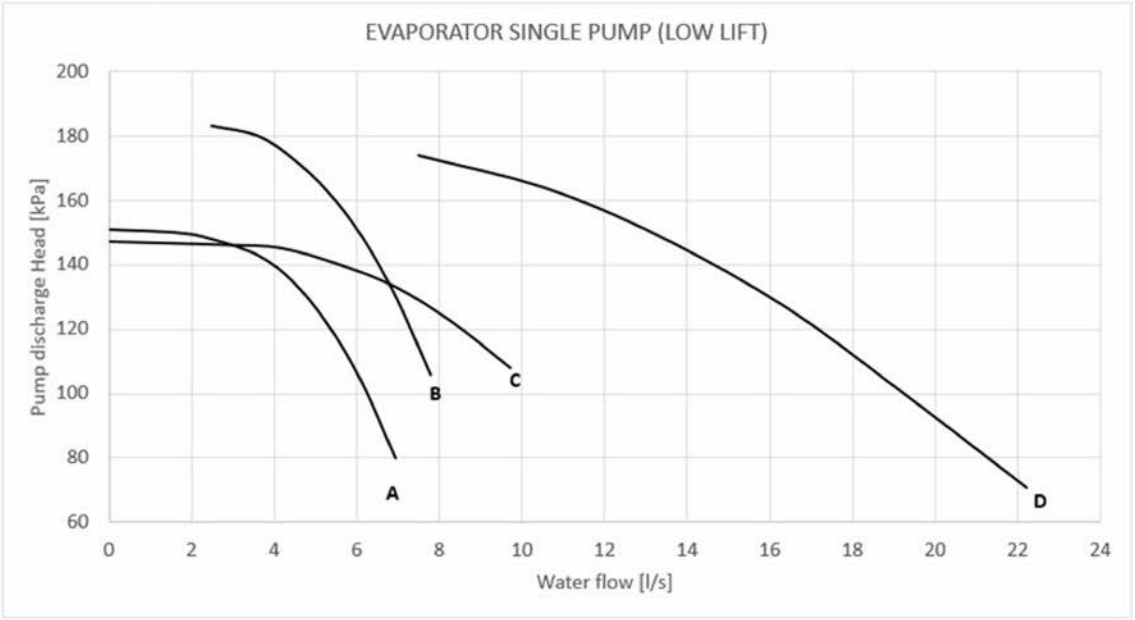
Models		filter		
		3'	4'	5'
EWWQ180L-SS	EWLQ180L-SS	x		
EWWQ205L-SS	EWLQ205L-SS	x		
EWWQ230L-SS	EWLQ230L-SS	x		
EWWQ260L-SS	EWLQ260L-SS	x		
EWWQ290L-SS	EWLQ290L-SS	x		
EWWQ330L-SS	EWLQ330L-SS		x	
EWWQ380L-SS	EWLQ380L-SS		x	

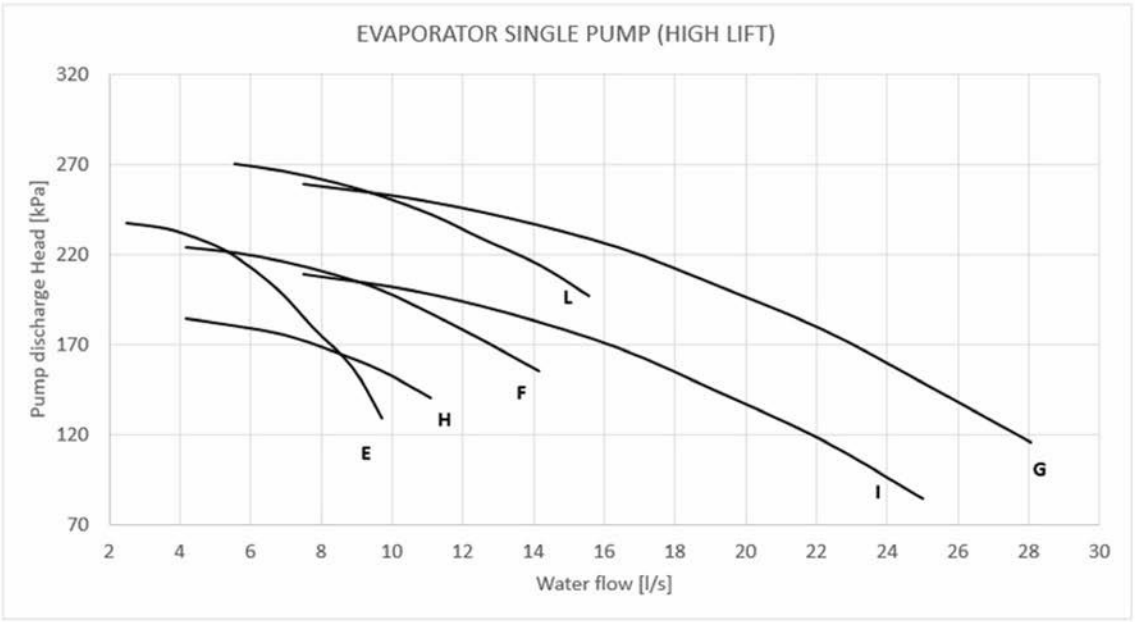
Filter pressure drops



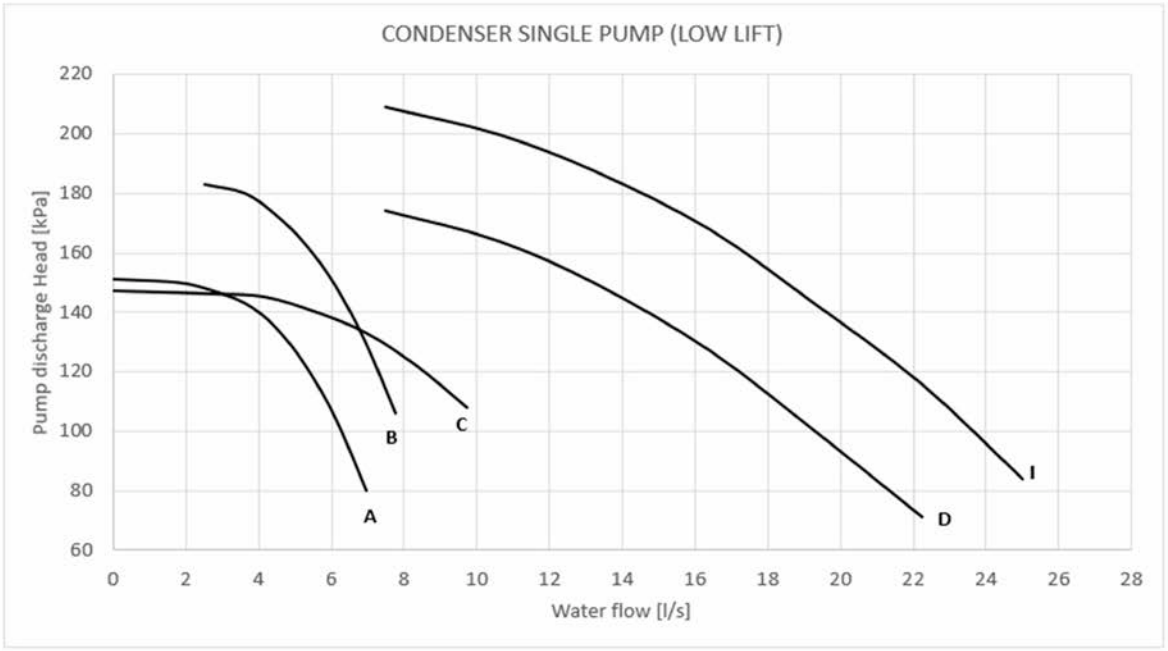


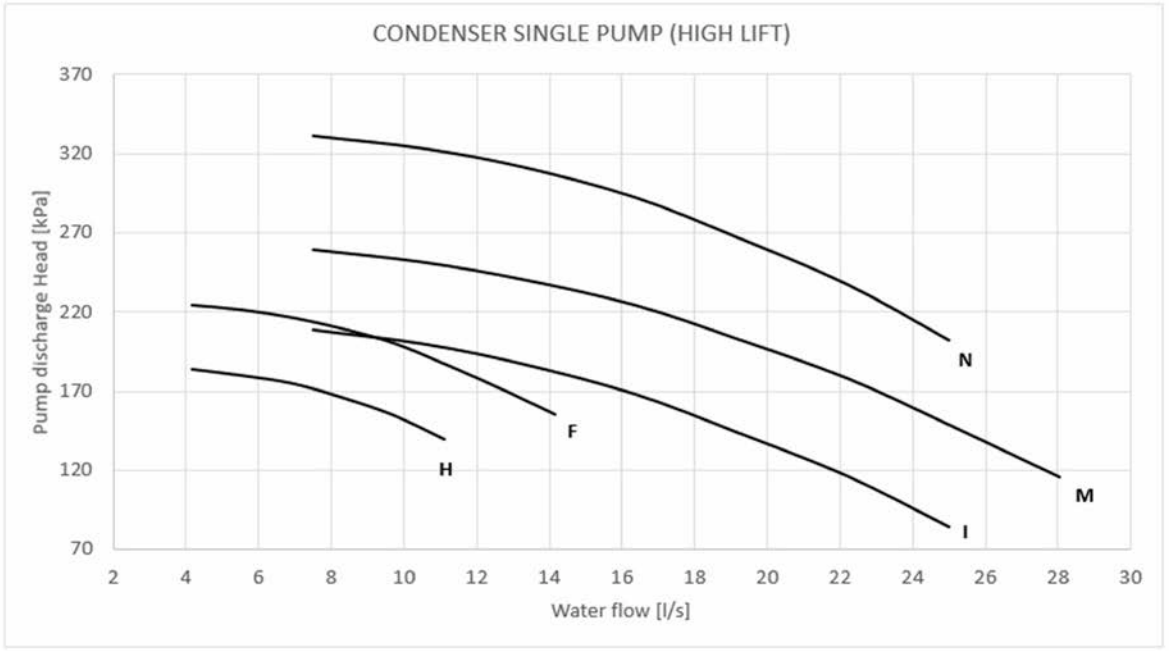
Water Pump Kit





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





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 - Technical Information

	Models			ref	Pump Motor Power [kW]	Pumo Motor Current [A]	Power Supply [V-ph-Hz]	PN	Motor Protection	Insulation [Class]	Working Temperature [°C]
EVAPORATOR SINGLE PUMP (LOW LIFT)	EWWQ090G-SS	EWHQ100G-SS	EWLQ090G-SS	A	1,1	2,38	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ100G-SS	EWHQ120G-SS	EWLQ100G-SS	A	1,1	2,38	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ120G-SS	EWHQ130G-SS	EWLQ120G-SS	A	1,1	2,38	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ130G-SS	EWHQ150G-SS	EWLQ130G-SS	B	1,5	3,18	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ150G-SS	EWHQ160G-SS	EWLQ150G-SS	C	1,5	3,18	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ170G-SS	EWHQ190G-SS	EWLQ170G-SS	C	1,5	3,18	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ190G-SS	EWHQ210G-SS	EWLQ190G-SS	C	1,5	3,18	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ210G-SS	EWHQ240G-SS	EWLQ210G-SS	D	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ240G-SS	EWHQ270G-SS	EWLQ240G-SS	D	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ300G-SS	EWHQ340G-SS	EWLQ300G-SS	D	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ360G-SS	EWHQ400G-SS	EWLQ360G-SS	D	3	6,27	400-3ph-50Hz	16	IP55	F	-25 / 120
EVAPORATOR SINGLE PUMP (HIGH LIFT)	EWWQ090G-SS	EWHQ100G-SS	EWLQ090G-SS	E	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ100G-SS	EWHQ120G-SS	EWLQ100G-SS	E	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ120G-SS	EWHQ130G-SS	EWLQ120G-SS	E	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ130G-SS	EWHQ150G-SS	EWLQ130G-SS	H	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ150G-SS	EWHQ160G-SS	EWLQ150G-SS	H	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ170G-SS	EWHQ190G-SS	EWLQ170G-SS	F	3	6,27	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ190G-SS	EWHQ210G-SS	EWLQ190G-SS	F	3	6,27	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ210G-SS	EWHQ240G-SS	EWLQ210G-SS	L	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ240G-SS	EWHQ270G-SS	EWLQ240G-SS	I	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ300G-SS	EWHQ340G-SS	EWLQ300G-SS	I	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ360G-SS	EWHQ400G-SS	EWLQ360G-SS	G	5,5	10,5	400-3ph-50Hz	16	IP55	F	-25 / 120

	Models		ref	Pump Motor Power [kW]	Pumo Motor Current [A]	Power Supply [V-ph-Hz]	PN	Motor Protection	Insulation [Class]	Working Temperature [°C]
CONDENSER SINGLE PUMP (LOW LIFT)	EWWQ090G-SS	EWHQ100G-SS	A	1,1	2,38	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ100G-SS	EWHQ120G-SS	A	1,1	2,38	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ120G-SS	EWHQ130G-SS	B	1,5	3,18	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ130G-SS	EWHQ150G-SS	C	1,5	3,18	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ150G-SS	EWHQ160G-SS	C	1,5	3,18	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ170G-SS	EWHQ190G-SS	D	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ190G-SS	EWHQ210G-SS	D	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ210G-SS	EWHQ240G-SS	D	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ240G-SS	EWHQ270G-SS	D	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ300G-SS	EWHQ340G-SS	D	3	6,27	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ360G-SS	EWHQ400G-SS	I	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
CONDENSER SINGLE PUMP (HIGH LIFT)	EWWQ090G-SS	EWHQ100G-SS	H	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ100G-SS	EWHQ120G-SS	H	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ120G-SS	EWHQ130G-SS	H	2,2	4,54	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ130G-SS	EWHQ150G-SS	F	3	6,27	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ150G-SS	EWHQ160G-SS	F	3	6,27	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ170G-SS	EWHQ190G-SS	I	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ190G-SS	EWHQ210G-SS	I	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ210G-SS	EWHQ240G-SS	I	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ240G-SS	EWHQ270G-SS	I	4	7,62	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ300G-SS	EWHQ340G-SS	M	5,5	10,5	400-3ph-50Hz	16	IP55	F	-25 / 120
	EWWQ360G-SS	EWHQ400G-SS	N	7,5	14,1	400-3ph-50Hz	16	IP55	F	-25 / 120

How to calculate the overall chiller water side pressure drops (pump by others)

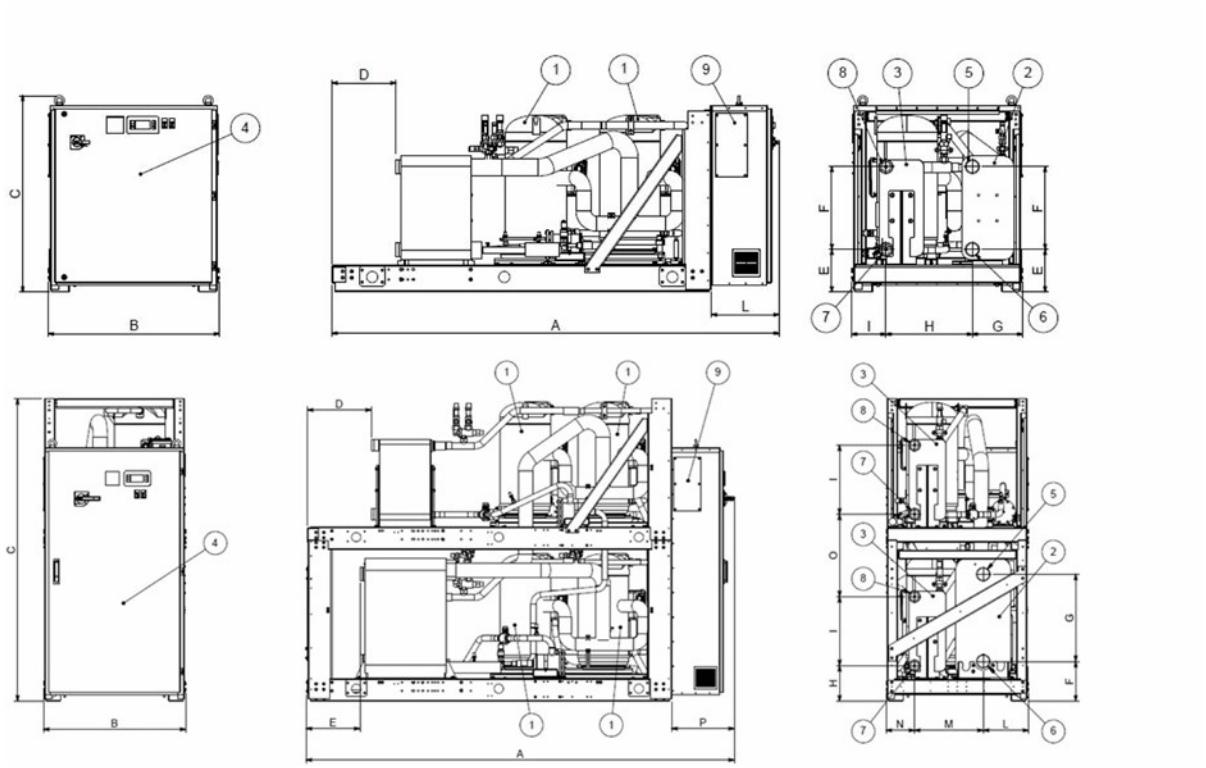
In order to calculate the overall pressure drops introduced by the chiller in an installation the following points have to be considered:
- The pressure drop value showed in CSS (Chiller Selection Software) are referred to chiller's evaporator only
- This multiscroll series is not equipped as standard with water filter. The filter is selectable as option and mounted externally from the unit.

Overall chiller pressure drops = evaporator [kPa] + Filter pressure drop [kPa]

a) Select the chiller with CSS tool, you get easily the design water flow rate and the corresponding 'evaporator pressure drops' value (in CSS tool kPa figures are referred to evaporator only).
b) Refer to table "Water filter and piping diameter - Combination Matrix" to know what filter size and piping diameter correspond to the selected chiller.
c) Considering the design flow rate and water filter size and piping diameter, from graph "Filter pressure drops" get the corresponding kPa value.
d) By adding the values at point a and c, 'Overall chiller pressure drops' figure is got.

How to calculate the chiller external available pressure head with Single/Twin pumps kit option (factory supplied)

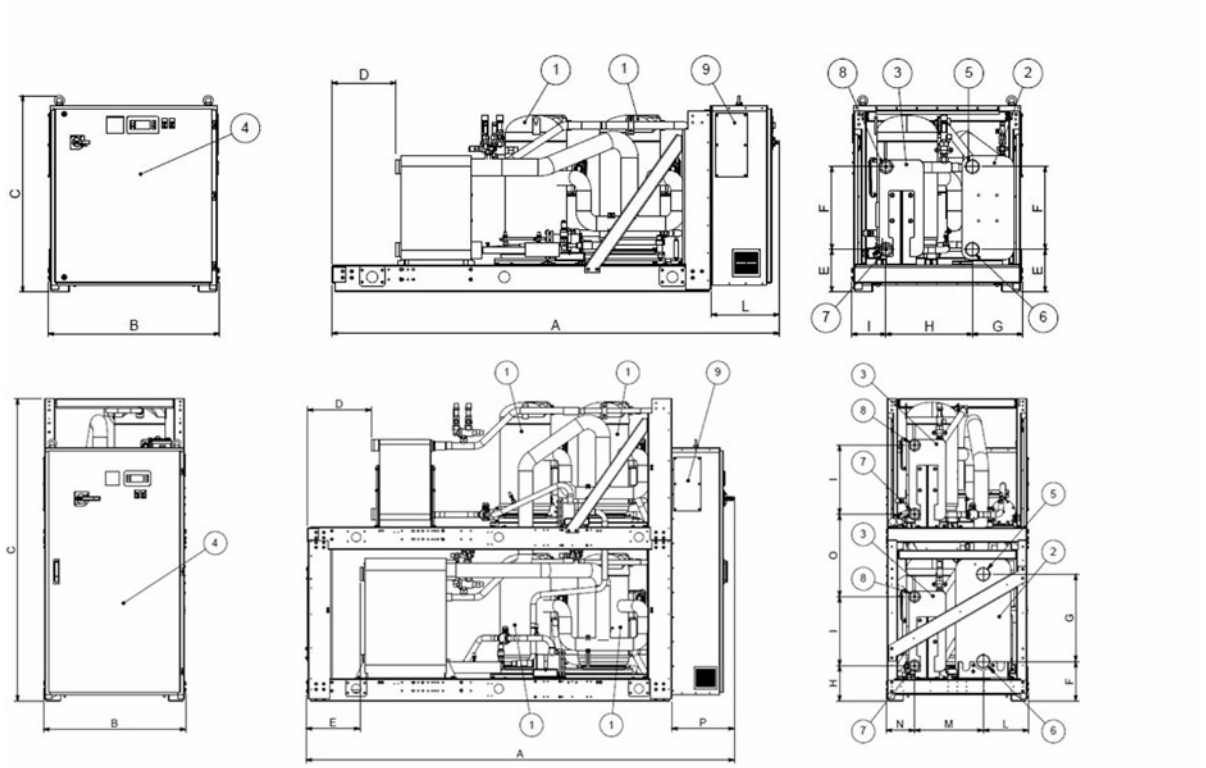
In order to calculate the chiller external available pressure head with Single pumps kit option (factory supplied) the following points have to be considered:
-The pressure drop values showed in CSS (Chiller Selection Software) are referred to chiller's evaporator only.
- This multiscroll series is not equipped as standard with water filter. The filter is selectable as option and mounted externally from the unit.
Chiller external available pressure head = pump discharge head [kPa] – evaporator pressure drop [kPa] –Single/Twin pumps kit pressure drop (including filter) [kPa]
a) Select the pump characteristic from the graph (refer to the Technical information table in order to get the pump curve corresponding to the selected unit) and get the corresponding 'Pump Discharge Head'.
b) Select the chiller with CSS tool at design conditions, you get easily the design water flow rate and the corresponding "evaporator pressure drop" (in CSS tool kPa figures are referred to evaporator only)
c) If the option 115 "Water filter" has been selected, considering the design flow rate and water filter size from the Filter combination matxix, from graph "Filter pressure drops" get the corresponding kPa value.
f) By considering the values at point a, b and c you can easily calculate the chiller external available pressure head as pump discharge head – evaporator pressure drop – filter pressure drop.
Note: when using mixture of water and glycol please contact the factory as above specification could change



LEGEND

1: COMPRESSOR
2: EVAPORATOR
3: CONDENSER
4: ELECTRICAL PANEL
5: EVAPORATOR WATER INLET CONNECTION (VICTAULIC AS OPTION)
6: EVAPORATOR WATER OUTLET CONNECTION (VICTAULIC AS OPTION)
7: CONDENSER WATER INLET CONNECTION (VICTAULIC AS OPTION)
8: CONDENSER WATER OUTLET CONNECTION (VICTAULIC AS OPTION)
9: POWER CONNECTIONS SLOT 150X200

	A N	B O	C	D	E	F	G	H	I	L	M
EWWQ090G-SS	2432 0	928 0	1066	426	227	470	221	469	238	371	0
EWWQ100G-SS	2432 0	928 0	1066	372	227	470	221	469	238	371	0
EWWQ120G-SS	2264 0	928 0	1066	343	231	450	273	469	185	371	0
EWWQ130G-SS	2264 0	928 0	1066	306	231	450	273	469	185	371	0
EWWQ150G-SS	2264 0	928 0	1066	279	231	450	273	469	185	371	0
EWWQ170G-SS	2432 0	928 0	1066	415	231	450	273	469	185	371	0
EWWQ190G-SS	2432 0	928 0	1066	383	231	450	273	469	185	371	0
EWWQ210G-SS	2432 0	928 0	1066	346	231	450	273	469	185	371	0
EWWQ240G-SS	2432 0	928 0	1066	346	231	450	273	469	185	371	0
EWWQ300G-SS	2432 0	928 0	1186	348	242	597	330	433	165	371	0
EWWQ360G-SS	2432 0	928 0	1186	275	242	597	330	433	165	371	0
EWWQ180L-SS	2801 238	928 421	1970	643	258	568	295	245	150	1352	395
EWWQ205L-SS	2801 238	928 421	1970	613	258	568	295	245	150	1352	395
EWWQ230L-SS	2801 185	928 421	1970	553	258	568	295	245	150	1352	448
EWWQ260L-SS	2801 185	928 421	1970	553	258	568	295	245	150	1352	448



LEGEND

1: COMPRESSOR
2: EVAPORATOR
3: CONDENSER
4: ELECTRICAL PANEL
5: EVAPORATOR WATER INLET CONNECTION (VICTAULIC AS OPTION)
6: EVAPORATOR WATER OUTLET CONNECTION (VICTAULIC AS OPTION)
7: CONDENSER WATER INLET CONNECTION (VICTAULIC AS OPTION)
8: CONDENSER WATER OUTLET CONNECTION (VICTAULIC AS OPTION)
9: POWER CONNECTIONS SLOT 150X200

	A N	B O	C	D	E	F	G	H	I	L	M
EWWQ290L-SS	2801 185	928 421	1970	492	258	568	295	245	150	1352	448
EWWQ330L-SS	2801 185	928 421	1970	492	258	568	295	245	150	1352	448
EWWQ380L-SS	2801 185	928 421	1970	432	258	568	295	245	150	1352	448

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 Avoid bumping and/or jolting during loading/unloading unit from the truck and moving it. Do not push or pull the unit from any part other than the basis. Secure the unit inside the truck to prevent it from moving and causing damages. Do not allow any part of the unit to fall during transportation or loading/unloading. Use extreme caution when handling the unit to prevent damage to the control or the refrigerant piping. The unit must be lifted by inserting a hook in each corner, where there are holes for lifting (see the following drawings instruction). During the lifting phase to verify that the ropes and / or the lifting chains do not touch the electrical panel and / or piping. If moving the machine, you had the sleds or skates, push only on the basis of the machine without touching the pipes of copper, steel, compressors and / or the electrical panel.

Location All units are designed for indoor installation. A leveled and sufficiently strong floor is required. If necessary, additional structural members should be provided to transfer the weight of the unit to nearest beams.
Rubber-in-shear isolators can be furnished and field placed under each corner of the package. A rubber anti-skid pad should be used under isolators if hold-down bolts are not used. Vibration isolator in all water piping connected to the chiller is recommended to avoid straining the piping and transmitting vibration and noise.

Space requirements Every side of the machine must be accessible for all post-installation maintenance activities. The minimum space required is shown on the following drawing:

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

The above recommended information are representative of a general installation. A specific evaluation should be done by the contractor case by case.
For complete information refer to the installation manual.

General The unit 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:
- evaporator leaving fluid temperature between ..... °C and ..... °C
- condenser leaving fluid temperature between ..... °C and ..... °C

Refrigerant Only HFC 410A can be used.

Performance The unit shall supply the following performances:
- Number..... unit(s)
- Cooling capacity for single unit..... kW
- Power input for single chiller in cooling mode .....kW
- Evaporator heat exchanger entering water temperature in cooling mode.....°C
- Evaporator heat exchanger leaving water temperature in cooling mode ..... °C
- Evaporator heat exchanger water flow.....l/s
- Condenser heat exchanger entering water temperature in cooling mode ..... °C
- Condenser heat exchanger leaving water temperature in cooling mode.....°C
- Condenser heat exchanger water flow ..... l/s

Operating voltage range should be 400V ±10%, 3ph, 50Hz, voltage unbalance maximum 3%, without neutral conductor and shall only have one power connection point.

Unit description The unit shall include as standard: one or two refrigerant circuit, two or four hermetic type rotary scroll compressors (according to the capacity), electronic expansion device (EEXV), refrigerant direct expansion plate to plate heat exchangers, R-410A refrigerant, motor starting components, 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, hemispheric conditions, shall not exceed ……dB(A). The sound pressure levels must be rated in accordance to ISO 3744 (other types of rating can not 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 The units shall be equipped with:
- High performance hermetic scroll compressors optimized to work with R410a, with reduced vibration and sound emissions. High efficiency values shall be guaranteed:

-by high volumetric efficiency in the whole range of application, through the continuous contact between the fixed and the orbiting scroll deleting the dead space and the re-expansion of the refrigerant gas;
-by low pressure drops due to the absence of inlet and discharge valves and to the uniform compression cycle;
-reduction of the heat exchange between the gas during suction and discharge due to the separation of gas flows;

- The reduced noise shall be obtained:-for the absence of the inlet and discharge valves

-for the uniform compression cycle
-for the absence of pistons which ensures reduced vibration and pulsation of the refrigerant

- The engine shall be cooled by the suction refrigerant fluid.
- The terminal shall be contained in a casing with protection degree IP 54.
- The compressors shall be provided with crankcase heater to prevent the dilution of refrigerant and oil the during the stops of the unit;
- Shall be present an electronic thermal protection for the three phases complete with sensors on the stator windings to avoid overheating caused by lack of phase, insufficient cooling, mechanical locks, power supply out of tolerance;
- The compressors shall be connected in Tandem on a single refrigerating circuit.
- The compressors shall be fitted on rubber antivibration mounts.
- The compressors shall be provided complete with oil charge.

Evaporator (PHE) The units shall be equipped with a direct expansion plate to plate type evaporator.
• The evaporator will be made of stainless steel brazed plates closed cell polyurethane insulation material (20-mm thick).
•The evaporator will have 1 or 2 refrigerant circuit.
•The evaporator will be manufactured in accordance to PED approval.
•Flow switch must be installed on plant.
•Water filter must be installed on plant.

Condenser (PHE) The units shall be equipped with a plate to plate type condenser.
• The condenser will be made of stainless steel brazed
•The condenser will have 1 refrigerant circuit.
•The condenser will be manufactured in accordance to PED approval.
•Water filter must be installed on plant.

Refrigerant circuit The unit shall have one or two refrigerant circuits according to the capacity.
•The circuits shall include as standard: electronic expansion device piloted by unit's microprocessor control, liquid line shut-off valve, sight glass with moisture indicator, filter drier, charging valves, high pressure switch, high and low pressure transducers and insulated suction line.

Condensation control The controller automatically unloads the circuit 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.

Hydronic kit options (on request) The hydronic module shall be integrated in the unit chassis without increasing its dimensions and includes the following elements: centrifugal pump with motor protected by a circuit breaker installed in control panel 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 insulated to prevent condensation.

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 funs protection devices, compressors and 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 shows 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.

Controller main features Controller shall be guarantee following minimum functions:
• Management of the circuit capacity.
•Chiller enabled to work in partial failure condition (for 2 circuit units).
• Full routine operation at condition of:
- high thermal load
-high evaporator entering water temperature (start-up)
•Display of evaporator entering/leaving water temperature.
•Display of condensing-evaporating temperature and pressure, suction superheat for each circuit.
•Leaving water evaporator temperature regulation.
•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 (for condenserless units).
•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).
•Set point Reset (optional).
• Application and system upgrade with commercial SD cards.
•Ethernet port for remote or local servicing using standard web browsers.

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 certifief over IP and MS/TP (class 4) (Native)
- Ethernet TCP/IP.

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