Air to Water Heat Pump Multiscroll

ECOLOGICAL HFC 410A REFRIGERANT

EWYQ~G

XS (High Efficiency - Standard Noise) - Cooling Capacity from 78 to 165 kW
XR (High Efficiency - Reduced Noise) - Cooling Capacity from 75 to 155 kW

Performance according to EN14511.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

www.eurovent-certification.com
www.certiflash.com

CE

TÜV SÜD

DAIKIN

Low operating cost and extended operating life This Heat Pump range is the result of careful design, aimed to optimize the energy efficiency of the unit, with the objective of bringing down operating costs and improving installation profitability, effectiveness and economical management.
The Heat Pump feature a high efficiency scroll compressors, large condenser coil surface area for maximum heat transfer and low discharge pressure, continuous fan speed modulation, and a 'plate to plate' 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 unit is equipped with hermetic orbiting scroll compressor complete with motor over-temperature and over-current devices and protection against excessive gas discharge temperature, a proactive control logic and are full factory-run-tested to optimized trouble-free operation.

Superior control logic The new 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.

Code requirements – Safety and observant of laws/directives
Units are designed and 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.

Versions This range is available in one version:

HIGH EFFICIENCY
7 sizes to cover a range from 78 up to 165 Kw with an EER up to 2,97 and an ESEER up to 4.03 and COP up to 3.25 (data referred to Standard Noise).

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 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 (%)
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
Condenser fan rotating at 1360 rpm, rubber antivibration under compressor

REDUCED SOUND
Condenser fan rotating at 1108 rpm, rubber antivibration under compressor, compressors acoustic insulation.

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.

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.

Refrigerant Units have been optimized to operates with R-410A, refrigerant with zero ODP (Ozone Depletion Potential). 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.

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 exchanger is equipped with an electric heater for protection against freezing. The evaporator is manufactured in accordance to PED approval.

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 (ø 450 mm) The 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 internally protected from overtemperature and 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 difference 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 1 refrigerant circuit that includes:
- Compressors
- Refrigerant
- Evaporator
- Air Cooled Condenser
- Electronic expansion valve
- Charging valves
- High pressure switch
- High pressure transducers
- Low pressure transducers
- 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, compressors and fans 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 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, 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 feratures

Control section has the following features:
- Management of the refrigerant circuit capacity
- 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.
- Leaving water evaporator temperature regulation.
- Compressor and pumps hours counter.
- Display of Status Safety Devices.
- Number of starts and compressor working hours.
- Re-start in case of power failure (automatic / manual).
- Soft Load (optimized management of the compressor load during the start-up).
- OAT (Outside Ambient temperature) Reset.
- 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.

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.
- Under/over voltage control (available as options)
- Freeze protection.

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)
- 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)
EWYQ075G-XS	R410A	2087,5	1	15,0	31,3
EWYQ085G-XS	R410A	2087,5	1	15,0	31,3
EWYQ100G-XS	R410A	2087,5	1	18,0	37,6
EWYQ110G-XS	R410A	2087,5	1	23,0	48,0
EWYQ120G-XS	R410A	2087,5	1	23,0	48,0
EWYQ140G-XS	R410A	2087,5	1	30,0	62,6
EWYQ160G-XS	R410A	2087,5	1	30,0	62,6

Unit model	Refrigerant type	Refrigerant GWP	No. of circuits	Refrigerant charge circuit 1 (kg)	Refrigerant charge circuit 1 (TCO2Eq)
EWYQ075G-XR	R410A	2087,5	1	15,0	31,3
EWYQ085G-XR	R410A	2087,5	1	15,0	31,3
EWYQ100G-XR	R410A	2087,5	1	18,0	37,6
EWYQ110G-XR	R410A	2087,5	1	23,0	48,0
EWYQ120G-XR	R410A	2087,5	1	23,0	48,0
EWYQ140G-XR	R410A	2087,5	1	30,0	62,6
EWYQ160G-XR	R410A	2087,5	1	30,0	62,6

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.

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

Ambient outside temperature sensor and setpoint reset

General fault contactor

Hour run meter

Main switch interlock door

Master / Slave – sequencing control that allow to connect up to 4 units in order to coordinate the operation of the chillers working as a bigger unit with multiple circuits.

Options (on request)

MECHANICAL

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

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

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

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). Required below +4°C

Coil guards

Suction and Discharge line shut-off valve - Installed to facilitate maintenance operation.

High and low pressure side manometers

One centrifugal pump (low lift) - Hydronic kit consists of: single direct driven centrifugal pump, 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, 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, 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, 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.

Inertial tank (installed on board) All the Hydronic kit are available with inertial tank installed on board.
The tank capacities are the follow:
size from 075 to 100 – tank volume 250 liters
size from 110 to 160 – tank volume 430 liters

Double pressure relief valve with diverter

(*) Note: the installation is mandatory

ELECTRICAL / CONTROL

Controller expansion pack including :
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 deltaT. 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.

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

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

Condenser coils protection panel

Witness test

Acoustic test

Machine type

EWY = Air to Water Heat Pump

Refrigerant

Q = R410a

Capacity class in kW (Cooling)

Always 3-digit code

Model series

G = single circuit

Inverter

- = no Inverter

Efficiency level

X = High Efficiency

Sound level

S = Standard noise
R = Reduced noise

EWYQ~G-XS

MODEL		075	085	100	110	120	140
COOLING PERFORMANCE							
Capacity - Cooling(1)	kW	77.8	88.1	101	117	127	147
Capacity Control - Type		Step	Step	Step	Step	Step	Step
Capacity Control - Minimum capacity	%	50	44	50	44	50	43
Unit power input - Cooling(1)	kW	27.0	31.5	36.0	39.5	44.7	50.2
EER(1)		2.88	2.80	2.81	2.97	2.84	2.92
ESEER		3.90	3.94	3.97	4.03	3.92	3.96
IPLV		4.40	4.47	4.40	4.49	4.40	4.50
CASING							
Colour(2)		IW	IW	IW	IW	IW	IW
Material(2)		GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS							
Height	mm	1800	1800	1800	1800	1800	1800
Width	mm	1195	1195	1195	1195	1195	1195
Length	mm	2826	2826	2826	3426	3426	4026
WEIGHT							
Unit Weight	kg	850	912	1077	1183	1213	1333
Operating Weight	kg	858	921	1088	1194	1224	1344
WATER HEAT EXCHANGER							
Type(3)		BPHE	BPHE	BPHE	BPHE	BPHE	BPHE
Water Volume	l	8.10	9.40	10.8	10.8	10.8	10.8
Nominal water flow rate	l/s	3.7	4.2	4.8	5.6	6.1	7.0
Nominal Water pressure drop	kPa	8.40	8.30	8.70	11.6	13.7	18.2
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)		DOL	DOL	DOL	DOL	DOL	DOL
Diameter	mm	450	450	450	450	450	450
Nominal air flow	l/s	10042	10042	9861	13148	13148	16435
Quantity	No.	6	6	6	8	8	10
Speed	rpm	1360	1360	1360	1360	1360	1360
Motor input	kW	2.7	2.7	2.7	3.6	3.6	4.5
COMPRESSOR							
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Oil charge	l	6.80	8.10	9.30	11.5	13.6	13.1
Quantity	No.	2	2	2	2	2	2
SOUND LEVEL							
Sound power - Cooling(8)	dB(A)	84	85	87	89	89	89
Sound pressure - Cooling	dB(A)	66	68	70	71	71	71
REFRIGERANT CIRCUIT							
Refrigerant type		R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	kg	15	15	18	23	23	30
N. of circuits	No.	1	1	1	1	1	1
PIPING CONNECTIONS							
Evaporator water inlet/outlet	mm	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2

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) 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

EWYQ~G-XS

MODEL		160
COOLING PERFORMANCE		
Capacity - Cooling(1)	kW	165
Capacity Control - Type		Step
Capacity Control - Minimum capacity	%	50
Unit power input - Cooling(1)	kW	57.8
EER(1)		2.85
ESEER		3.96
IPLV		4.50
CASING		
Colour(2)		IW
Material(2)		GPSS
DIMENSIONS		
Height	mm	1800
Width	mm	1195
Length	mm	4026
WEIGHT		
Unit Weight	kg	1394
Operating Weight	kg	1411
WATER HEAT EXCHANGER		
Type(3)		BPHE
Water Volume	l	16.7
Nominal water flow rate	l/s	7.9
Nominal Water pressure drop	kPa	19.9
Insulation material(4)		CC
AIR HEAT EXCHANGER		
Type(5)		HFP
FAN		
Type(6)		DPT
Drive(7)		DOL
Diameter	mm	450
Nominal air flow	l/s	16435
Quantity	No.	10
Speed	rpm	1360
Motor input	kW	4.5
COMPRESSOR		
Type		Scroll
Oil charge	l	12.6
Quantity	No.	2
SOUND LEVEL		
Sound power - Cooling(8)	dB(A)	89
Sound pressure - Cooling	dB(A)	71
REFRIGERANT CIRCUIT		
Refrigerant type		R410A
Refrigerant charge	kg	30
N. of circuits	No.	1
PIPING CONNECTIONS		
Evaporator water inlet/outlet	mm	2"1/2

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) 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.
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EWYQ~G-XR

MODEL		075	085	100	110	120	140
COOLING PERFORMANCE							
Capacity - Cooling(1)	kW	75.2	84.5	95.0	111	120	139
Capacity Control - Type		Step	Step	Step	Step	Step	Step
Capacity Control - Minimum capacity	%	50	44	50	44	50	43
Unit power input - Cooling(1)	kW	27.7	32.7	38.6	41.5	47.4	52.8
EER(1)		2.71	2.59	2.46	2.68	2.52	2.64
ESEER		3.85	3.90	3.79	3.92	3.76	3.86
IPLV		4.35	4.41	4.29	4.42	4.27	4.40
CASING							
Colour(2)		IW	IW	IW	IW	IW	IW
Material(2)		GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS							
Height	mm	1800	1800	1800	1800	1800	1800
Width	mm	1195	1195	1195	1195	1195	1195
Length	mm	2826	2826	2826	3426	3426	4026
WEIGHT							
Unit Weight	kg	880	942	1107	1213	1243	1363
Operating Weight	kg	888	951	1118	1224	1254	1374
WATER HEAT EXCHANGER							
Type(3)		BPHE	BPHE	BPHE	BPHE	BPHE	BPHE
Water Volume	l	8.10	9.40	10.8	10.8	10.8	10.8
Nominal water flow rate	l/s	3.6	4.0	4.5	5.3	5.7	6.7
Nominal Water pressure drop	kPa	7.90	7.70	7.60	10.5	12.1	16.4
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)		DOL	DOL	DOL	DOL	DOL	DOL
Diameter	mm	450	450	450	450	450	450
Nominal air flow	l/s	7859	7859	7101	9468	9468	11835
Quantity	No.	6	6	6	8	8	10
Speed	rpm	1108	1108	1108	1108	1108	1108
Motor input	kW	2.3	2.3	2.3	3.0	3.0	3.8
COMPRESSOR							
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Oil charge	l	6.80	8.10	9.30	11.5	13.6	13.1
Quantity	No.	2	2	2	2	2	2
SOUND LEVEL							
Sound power - Cooling(8)	dB(A)	80	82	84	86	86	86
Sound pressure - Cooling	dB(A)	62	65	66	68	68	67
REFRIGERANT CIRCUIT							
Refrigerant type		R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	kg	15	15	18	23	23	30
N. of circuits	No.	1	1	1	1	1	1
PIPING CONNECTIONS							
Evaporator water inlet/outlet	mm	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2

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) 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

EWYQ~G-XR

MODEL		160
COOLING PERFORMANCE		
Capacity - Cooling(1)	kW	155
Capacity Control - Type		Step
Capacity Control - Minimum capacity	%	50
Unit power input - Cooling(1)	kW	61.5
EER(1)		2.51
ESEER		3.79
IPLV		4.35
CASING		
Colour(2)		IW
Material(2)		GPSS
DIMENSIONS		
Height	mm	1800
Width	mm	1195
Length	mm	4026
WEIGHT		
Unit Weight	kg	1424
Operating Weight	kg	1441
WATER HEAT EXCHANGER		
Type(3)		BPHE
Water Volume	l	16.7
Nominal water flow rate	l/s	7.4
Nominal Water pressure drop	kPa	17.5
Insulation material(4)		CC
AIR HEAT EXCHANGER		
Type(5)		HFP
FAN		
Type(6)		DPT
Drive(7)		DOL
Diameter	mm	450
Nominal air flow	l/s	11835
Quantity	No.	10
Speed	rpm	1108
Motor input	kW	3.8
COMPRESSOR		
Type		Scroll
Oil charge	l	12.6
Quantity	No.	2
SOUND LEVEL		
Sound power - Cooling(8)	dB(A)	86
Sound pressure - Cooling	dB(A)	67
REFRIGERANT CIRCUIT		
Refrigerant type		R410A
Refrigerant charge	kg	30
N. of circuits	No.	1
PIPING CONNECTIONS		
Evaporator water inlet/outlet	mm	2"1/2

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) 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

EWYQ~G-XS

MODEL		075	085	100	110	120	140
HEATING PERFORMANCE							
Capacity - Heating*	kW	82.2	91.2	110	127	138	156
Unit power input - Heating*	kW	26	29	34	39	43	50
COP*		3.14	3.12	3.24	3.25	3.20	3.11
SCOP**		3.25	3.20	3.46	3.42	3.39	3.33
HEAT EXCHANGER - EVAPORATOR							
Nominal water flow rate	l/s	4.0	4.4	5.3	6.1	6.7	7.5
Nominal Water pressure drop	kPa	9.50	9.10	11.2	14.4	17.2	21.7

MODEL		160
HEATING PERFORMANCE		
Capacity - Heating*	kW	170
Unit power input - Heating*	kW	54
COP*		3.13
SCOP**		3.35
HEAT EXCHANGER - EVAPORATOR		
Nominal water flow rate	l/s	8.2
Nominal Water pressure drop	kPa	22.5

Fluid: Water

(*) Heating capacity, unit power input and COP are based on the following conditions: ambient 7°C; condenser 40.0/45.0 °C, unit at full load operation;

(**) SCOP is based on the following conditions: Tbivalent -3 °C, Tdesign -10 °C, Average ambient conditions, Ref. EN14825

EWYQ~G-XR

MODEL		075	085	100	110	120	140
HEATING PERFORMANCE							
Capacity - Heating*	kW	82.2	91.2	110	127	138	156
Unit power input - Heating*	kW	26	29	34	39	43	50
COP*		3.14	3.12	3.24	3.25	3.20	3.11
SCOP**		3.25	3.20	3.46	3.42	3.39	3.33
HEAT EXCHANGER - EVAPORATOR							
Nominal water flow rate	l/s	4.0	4.4	5.3	6.1	6.7	7.5
Nominal Water pressure drop	kPa	9.50	9.10	11.2	14.4	17.2	21.7

MODEL		160
HEATING PERFORMANCE		
Capacity - Heating*	kW	170
Unit power input - Heating*	kW	54
COP*		3.13
SCOP**		3.35
HEAT EXCHANGER - EVAPORATOR		
Nominal water flow rate	l/s	8.2
Nominal Water pressure drop	kPa	22.5

Fluid: Water

(*) Heating capacity, unit power input and COP are based on the following conditions: ambient 7°C; condenser 40.0/45.0 °C, unit at full load operation;

(**) SCOP is based on the following conditions: Tbivalent -3 °C, Tdesign -10 °C, Average ambient conditions, Ref. EN14825

EWYQ~G-XS

MODEL		075	085	100	110	120	140
POWER SUPPLY							
Phases	No.	3	3	3	3	3	3
Frequency	Hz	50	50	50	50	50	50
Voltage	V	400	400	400	400	400	400
Voltage tollerance minimum	%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance maximum	%	10%	10%	10%	10%	10%	10%
UNIT							
Maximum starting current	A	210	261	267	316	323	363
Nominal running current cooling	A	52	56	60	69	76	88
Maximum running current	A	66	72	78	87	95	111
Maximum current for wires sizing	A	73	79	86	96	105	122
FANS							
Nominal running current cooling	A	6	6	6	7	7	9
COMPRESSORS							
Phases	No.	3	3	3	3	3	3
Voltage	V	400	400	400	400	400	400
Voltage tollerance minimum	%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance maximum	%	10%	10%	10%	10%	10%	10%
Maximum running current	A	61	67	72	80	88	102
Starting method		DOL	DOL	DOL	DOL	DOL	DOL

MODEL		160
POWER SUPPLY		
Phases	No.	3
Frequency	Hz	50
Voltage	V	400
Voltage tollerance minimum	%	-10%
Voltage tollerance maximum	%	10%
UNIT		
Maximum starting current	A	377
Nominal running current cooling	A	95
Maximum running current	A	125
Maximum current for wires sizing	A	138
FANS		
Nominal running current cooling	A	9
COMPRESSORS		
Phases	No.	3
Voltage	V	400
Voltage tollerance minimum	%	-10%
Voltage tollerance maximum	%	10%
Maximum running current	A	116
Starting method		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 other compressors at maximum load + fans current at maximum load. In case of inverter driven units, no inrush current at start up is experienced.

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) x 1,1.

EWYQ~G-XR

MODEL		075	085	100	110	120	140
POWER SUPPLY							
Phases	No.	3	3	3	3	3	3
Frequency	Hz	50	50	50	50	50	50
Voltage	V	400	400	400	400	400	400
Voltage tollerance minimum	%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance maximum	%	10%	10%	10%	10%	10%	10%
UNIT							
Maximum starting current	A	210	261	267	316	323	363
Nominal running current cooling	A	54	60	65	71	80	90
Maximum running current	A	66	72	78	87	95	111
Maximum current for wires sizing	A	73	79	86	96	105	122
FANS							
Nominal running current cooling	A	5	5	5	7	7	9
COMPRESSORS							
Phases	No.	3	3	3	3	3	3
Voltage	V	400	400	400	400	400	400
Voltage tollerance minimum	%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tollerance maximum	%	10%	10%	10%	10%	10%	10%
Maximum running current	A	61	67	72	80	88	102
Starting method		DOL	DOL	DOL	DOL	DOL	DOL

MODEL		160
POWER SUPPLY		
Phases	No.	3
Frequency	Hz	50
Voltage	V	400
Voltage tollerance minimum	%	-10%
Voltage tollerance maximum	%	10%
UNIT		
Maximum starting current	A	377
Nominal running current cooling	A	103
Maximum running current	A	125
Maximum current for wires sizing	A	138
FANS		
Nominal running current cooling	A	9
COMPRESSORS		
Phases	No.	3
Voltage	V	400
Voltage tollerance minimum	%	-10%
Voltage tollerance maximum	%	10%
Maximum running current	A	116
Starting method		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 other compressors at maximum load + fans current at maximum load. In case of inverter driven units, no inrush current at start up is experienced.

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) x 1,1.

EWYQ~G-XS

	Sound pressure level at 1 m from the unit (rif. 2 x 10-5 Pa)								Power db(A)
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	db(A)
075	75,0	66,0	63,0	64,0	61,0	57,0	50,0	44,0	**66**	**84**
085	77,0	67,0	65,0	66,0	63,0	59,0	52,0	45,0	**68**	**85**
100	78,0	69,0	67,0	68,0	65,0	61,0	54,0	47,0	**70**	**87**
110	80,0	71,0	68,0	69,0	66,0	62,0	55,0	48,0	**71**	**89**
120	80,0	71,0	68,0	70,0	66,0	62,0	56,0	49,0	**71**	**89**
140	80,0	70,0	68,0	69,0	66,0	62,0	55,0	48,0	**71**	**89**
160	80,0	70,0	68,0	69,0	66,0	62,0	55,0	48,0	**71**	**89**

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

EWYQ~G-XR

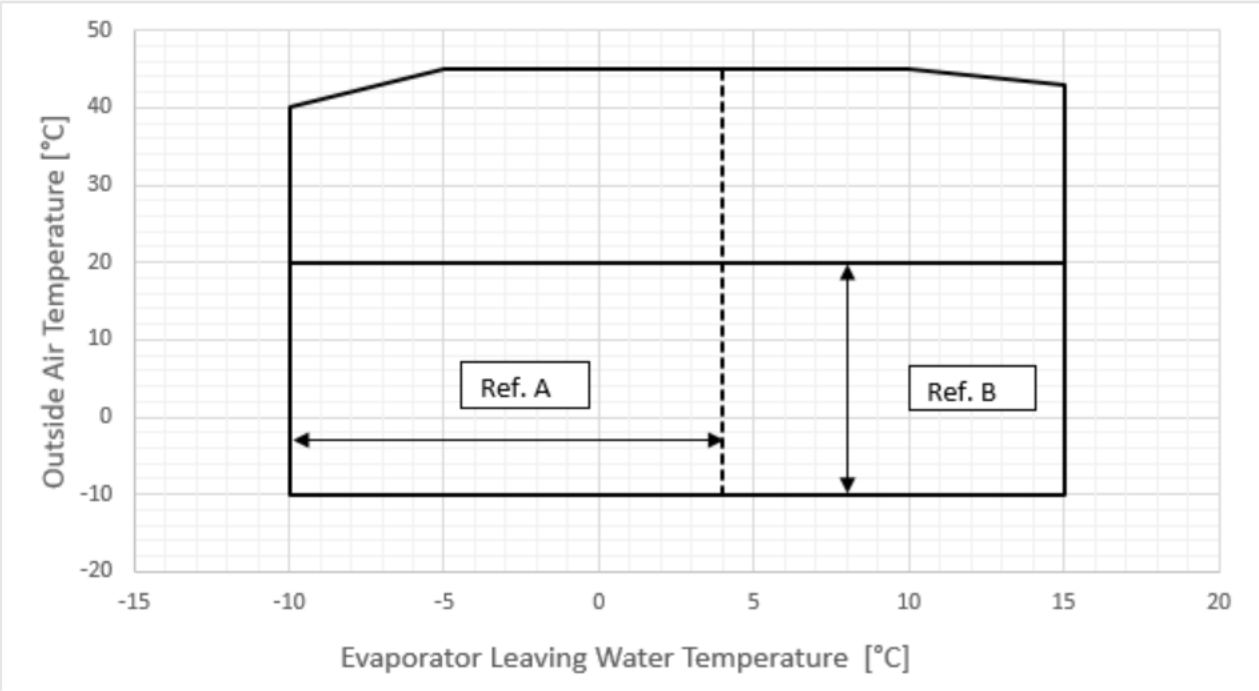
	Sound pressure level at 1 m from the unit (rif. 2 x 10-5 Pa)								Power db(A)
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	db(A)
075	68,0	59,0	59,0	61,0	57,0	53,0	45,0	37,0	62	80
085	70,0	62,0	61,0	63,0	60,0	56,0	48,0	39,0	65	82
100	72,0	63,0	63,0	65,0	61,0	58,0	49,0	41,0	66	84
110	73,0	65,0	64,0	66,0	63,0	59,0	51,0	42,0	68	86
120	73,0	65,0	64,0	67,0	63,0	59,0	51,0	42,0	68	86
140	73,0	65,0	64,0	66,0	63,0	59,0	51,0	42,0	67	86
160	73,0	65,0	64,0	66,0	63,0	59,0	51,0	42,0	67	86

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

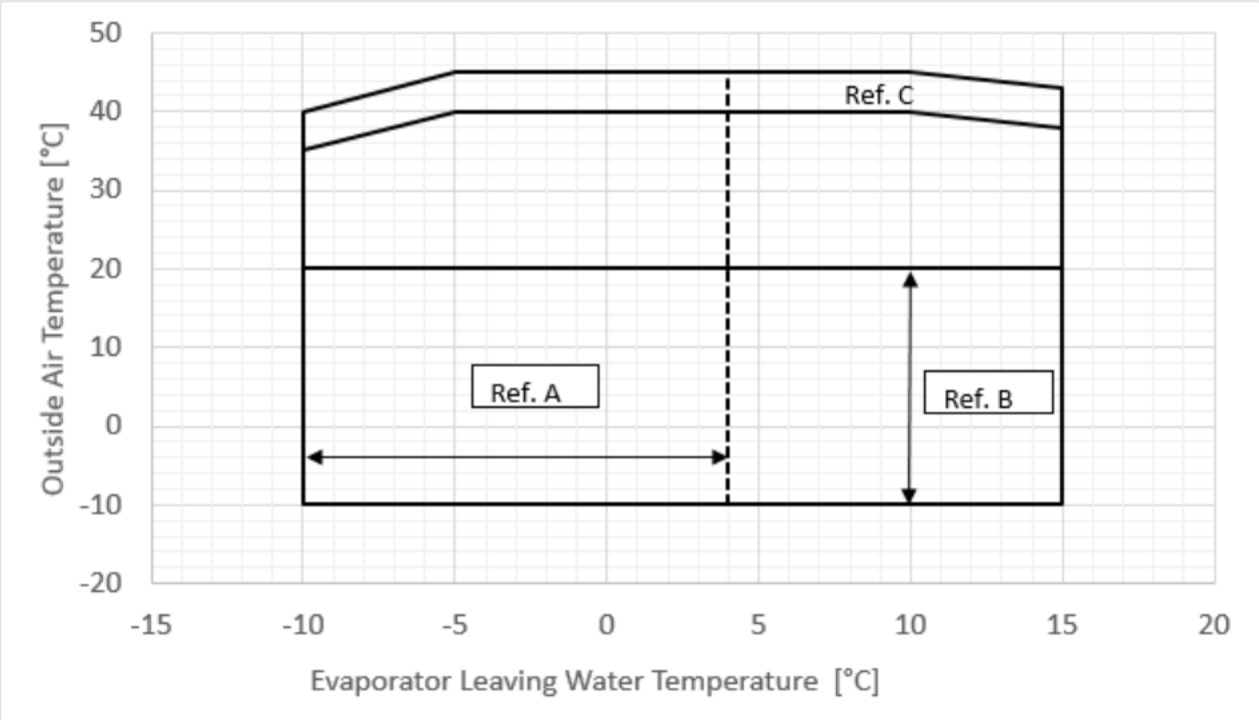
Operating Limits

Cooling Mode

EWYQ G XS (High efficiency, Standard Noise)



EWYQ G XR (High efficiency, Reduced Noise)



Ref. A: Operation with glycol

Ref. B: operation with fan speed modulation (fans speed modulation provided as standard)

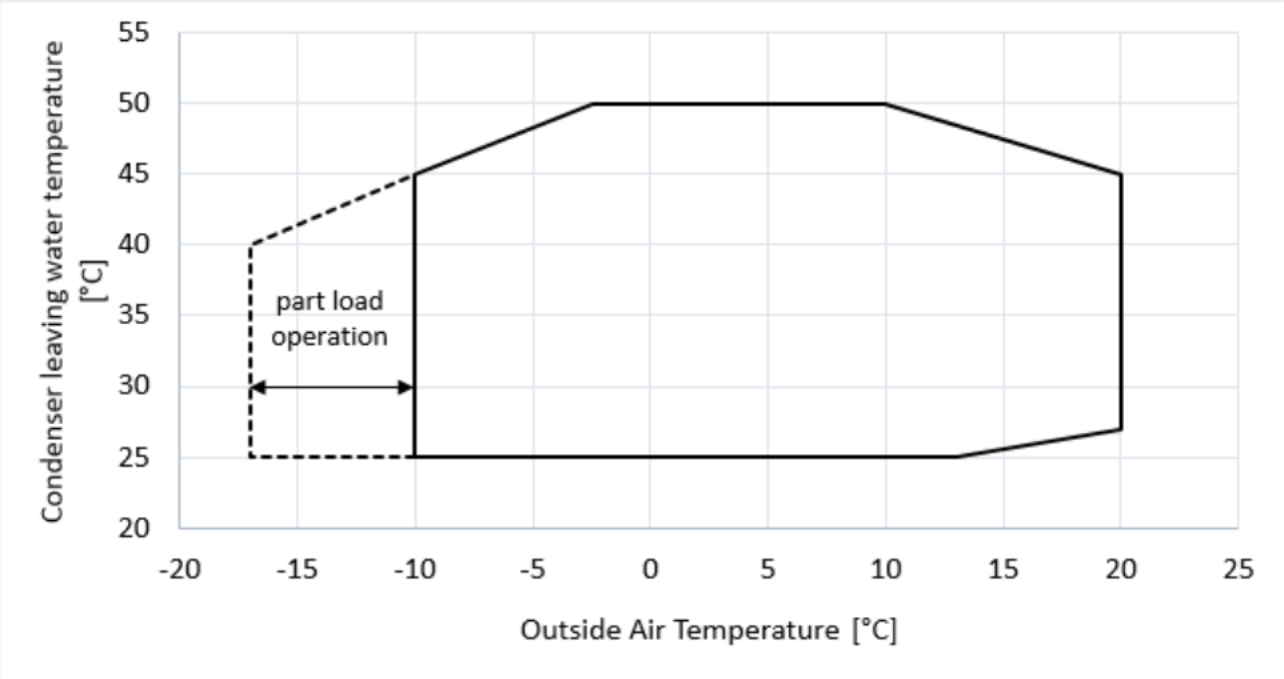
Ref. C: in this area the fan speed increase in order to ensure the functioning of the unit.

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.

Heating mode

EWYQ G XS (High efficiency, Standard Noise)

EWYQ G XR (High efficiency, Reduced Noise)



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 deltaT

A - Δt	°C	8
B - Δt	°C	4

Legend:
A = Max evaporator water deltaT
B = Min evaporator water deltaT

Table 2 - Water heat exchanger - 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

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

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

Table 4 - Minimum glycol percentage for low air ambient temperature

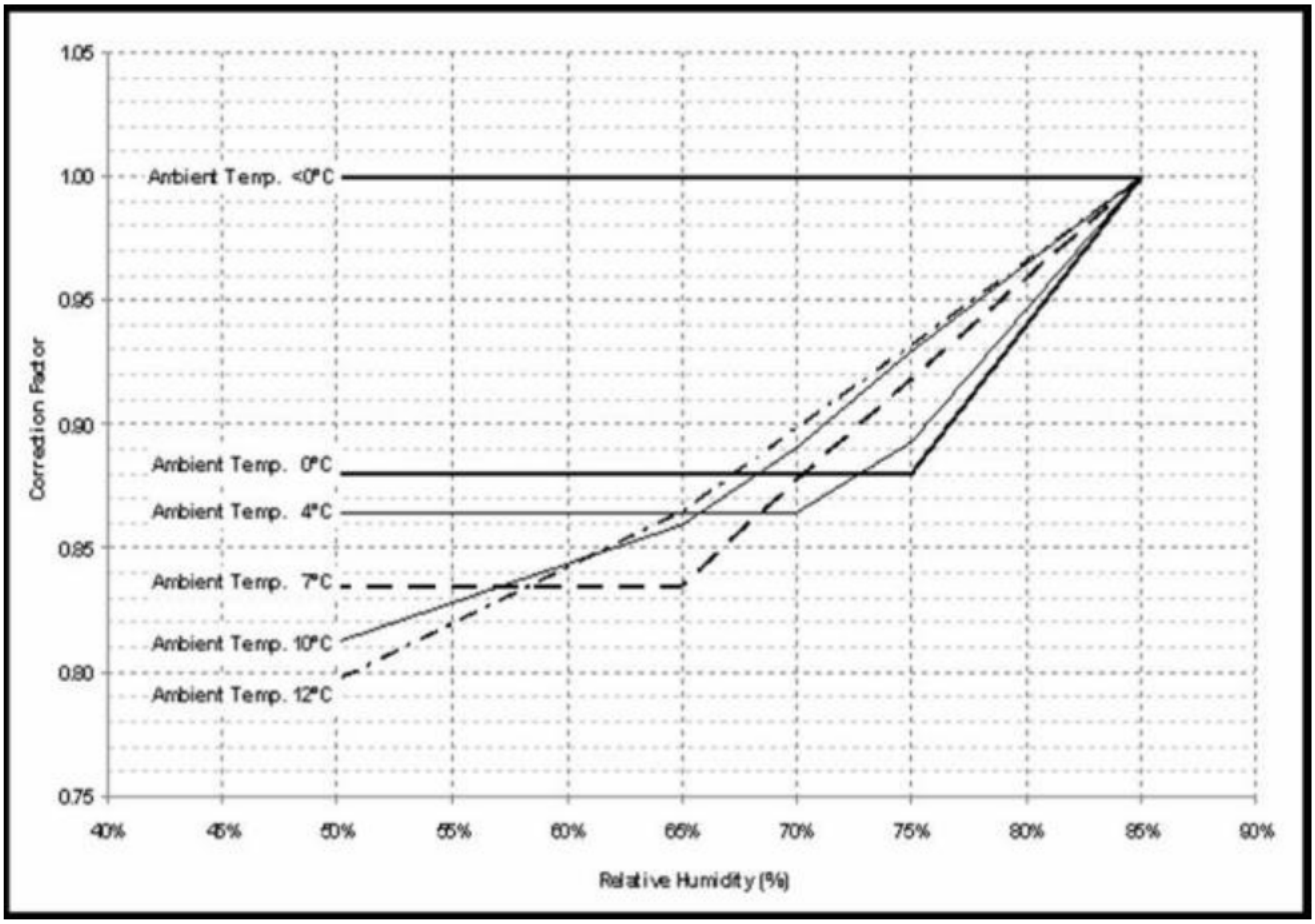
AAT (2)	-3	-8	-15	-20
A (1)	10%	20%	30%	40%
AAT (2)	-3	-7	-12	-20
B (1)	10%	20%	30%	40%

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.

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 with a certain approximation using this simplified formula:

For 2 compressors unit
M (liters) = (12.153 x DT(°C) - 22.168) x P(kW)

Heating Capacity correction factors for different evaporator inlet air temperature and relative humidity conditions



EWYQ~G-XS

			075						085					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	83.0	78.4	73.5	68.2	64.8	61.1	94.5	89.0	83.2	76.9	73.0	68.8
	Pa	kW	22.6	24.5	26.6	29.0	30.6	32.3	26.2	28.4	31.0	33.9	35.9	38.1
	qw	l/s	4.0	3.7	3.5	3.3	3.1	2.9	4.5	4.2	4.0	3.7	3.5	3.3
	dpw	kPa	9.60	8.60	7.50	6.50	5.80	5.20	9.60	8.50	7.40	6.30	5.70	5.10
7	Pf	kW	87.9	83.0	77.8	72.2	68.6	64.8	100	94.2	88.1	81.5	77.3	72.9
	Pa	kW	23.0	24.9	27.0	29.4	31.0	32.7	26.7	28.9	31.5	34.5	36.4	38.6
	qw	l/s	4.2	4.0	3.7	3.5	3.3	3.1	4.8	4.5	4.2	3.9	3.7	3.5
	dpw	kPa	10.8	9.60	8.40	7.30	6.60	5.80	10.7	9.50	8.30	7.10	6.40	5.70
9	Pf	kW	92.9	87.8	82.3	76.3	72.5	68.5	106	99.6	93.1	86.2	81.8	77.2
	Pa	kW	23.4	25.3	27.4	29.8	31.4	33.1	27.2	29.5	32.1	35.0	37.0	39.2
	qw	l/s	4.4	4.2	3.9	3.7	3.5	3.3	5.1	4.8	4.5	4.1	3.9	3.7
	dpw	kPa	12.1	10.8	9.50	8.10	7.30	6.50	12.0	10.7	9.30	8.00	7.20	6.40
11	Pf	kW	98.2	92.7	86.9	80.6	76.6		112	105	98.2	90.9	86.3	
	Pa	kW	23.8	25.7	27.8	30.2	31.8		27.7	30.0	32.6	35.6	37.6	
	qw	l/s	4.7	4.4	4.2	3.9	3.7		5.3	5.0	4.7	4.4	4.1	
	dpw	kPa	13.5	12.0	10.6	9.10	8.20		13.4	11.9	10.4	8.90	8.00	
13	Pf	kW	104	97.8	91.6	85.0	80.8		118	111	104	95.8	91.0	
	Pa	kW	24.2	26.1	28.3	30.7	32.3		28.3	30.6	33.2	36.2	38.2	
	qw	l/s	5.0	4.7	4.4	4.1	3.9		5.6	5.3	5.0	4.6	4.4	
	dpw	kPa	15.0	13.4	11.8	10.1	9.10		14.9	13.2	11.6	9.90	8.90	
15	Pf	kW	109	103	96.5	89.5			124	117	109	101		
	Pa	kW	24.6	26.6	28.7	31.1			28.9	31.2	33.8	36.9		
	qw	l/s	5.2	4.9	4.6	4.3			5.9	5.6	5.2	4.8		
	dpw	kPa	16.7	14.9	13.1	11.2			16.5	14.7	12.8	11.0		

			100						110					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	109	102	95.6	88.5	84.1	79.5	125	118	111	103	97.8	92.7
	Pa	kW	29.8	32.4	35.4	38.9	41.2	43.9	32.9	35.7	38.9	42.5	44.9	47.6
	qw	l/s	5.2	4.9	4.6	4.2	4.0	3.8	6.0	5.6	5.3	4.9	4.7	4.4
	dpw	kPa	10.0	8.80	7.70	6.60	6.00	5.30	13.2	11.7	10.3	8.90	8.10	7.20
7	Pf	kW	115	108	101	93.9	89.2	84.3	132	125	117	109	104	98.4
	Pa	kW	30.4	33.0	36.0	39.5	41.9	44.5	33.5	36.3	39.5	43.1	45.5	48.2
	qw	l/s	5.5	5.2	4.8	4.5	4.3	4.0	6.3	6.0	5.6	5.2	5.0	4.7
	dpw	kPa	11.2	10.0	8.70	7.50	6.70	6.00	14.8	13.2	11.6	10.0	9.10	8.20
9	Pf	kW	122	115	107	99.4	94.4	89.3	140	132	124	115	110	104
	Pa	kW	31.0	33.6	36.7	40.2	42.6	45.2	34.0	36.9	40.1	43.7	46.2	48.8
	qw	l/s	5.8	5.5	5.1	4.8	4.5	4.3	6.7	6.3	5.9	5.5	5.3	5.0
	dpw	kPa	12.6	11.2	9.80	8.40	7.60	6.80	16.6	14.9	13.1	11.3	10.2	9.20
11	Pf	kW	129	121	113	105	99.8		148	140	131	122	116	
	Pa	kW	31.6	34.3	37.4	40.9	43.4		34.6	37.5	40.7	44.4	46.8	
	qw	l/s	6.2	5.8	5.4	5.0	4.8		7.1	6.7	6.3	5.8	5.6	
	dpw	kPa	14.1	12.5	10.9	9.40	8.50		18.6	16.6	14.6	12.7	11.5	
13	Pf	kW	136	128	119	111	105		156	148	139	129	123	
	Pa	kW	32.3	35.0	38.1	41.7	44.1		35.3	38.1	41.4	45.1	47.5	
	qw	l/s	6.5	6.1	5.7	5.3	5.0		7.5	7.1	6.6	6.2	5.9	
	dpw	kPa	15.7	13.9	12.1	10.4	9.40		20.8	18.5	16.3	14.1	12.8	
15	Pf	kW	143	134	126	117			165	156	146	136		
	Pa	kW	33.0	35.7	38.9	42.5			35.9	38.8	42.1	45.8		
	qw	l/s	6.9	6.5	6.0	5.6			7.9	7.5	7.0	6.5		
	dpw	kPa	17.4	15.4	13.5	11.6			23.1	20.6	18.2	15.7		

EWYQ~G-XS

			120						140					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	136	128	120	111	106	99.8	156	148	138	129	123	116
	Pa	kW	37.2	40.4	44.0	48.1	50.8	53.6	41.8	45.4	49.4	54.0	57.1	60.3
	qw	l/s	6.5	6.1	5.7	5.3	5.0	4.8	7.5	7.1	6.6	6.1	5.9	5.5
	dpw	kPa	15.6	13.9	12.2	10.5	9.40	8.40	20.6	18.4	16.2	14.0	12.7	11.4
7	Pf	kW	144	136	127	118	112	106	165	156	147	136	130	123
	Pa	kW	37.8	41.0	44.7	48.8	51.4	54.3	42.5	46.1	50.2	54.8	57.8	61.1
	qw	l/s	6.9	6.5	6.1	5.6	5.3	5.1	7.9	7.5	7.0	6.5	6.2	5.9
	dpw	kPa	17.5	15.6	13.7	11.8	10.6	9.50	23.1	20.7	18.2	15.7	14.2	12.8
9	Pf	kW	152	143	134	124	118	112	175	165	155	144	137	130
	Pa	kW	38.5	41.7	45.4	49.5	52.1	55.0	43.2	46.8	50.9	55.5	58.6	61.9
	qw	l/s	7.3	6.9	6.4	6.0	5.7	5.4	8.4	7.9	7.4	6.9	6.6	6.2
	dpw	kPa	19.6	17.4	15.3	13.2	11.9	10.7	25.9	23.1	20.4	17.6	16.0	14.4
11	Pf	kW	160	151	142	131	125		184	174	164	152	145	
	Pa	kW	39.2	42.4	46.1	50.2	52.9		44.0	47.6	51.7	56.4	59.4	
	qw	l/s	7.7	7.2	6.8	6.3	6.0		8.8	8.4	7.9	7.3	7.0	
	dpw	kPa	21.8	19.5	17.1	14.7	13.3		28.9	25.8	22.8	19.7	17.9	
13	Pf	kW	169	159	149	139	132		194	184	173	161	153	
	Pa	kW	39.9	43.1	46.8	51.0	53.6		44.8	48.4	52.6	57.2	60.3	
	qw	l/s	8.1	7.6	7.2	6.6	6.3		9.3	8.8	8.3	7.7	7.3	
	dpw	kPa	24.3	21.6	19.0	16.4	14.8		32.2	28.8	25.4	22.0	19.9	
15	Pf	kW	177	168	157	146			205	194	182	169		
	Pa	kW	40.6	43.9	47.6	51.7			45.6	49.3	53.4	58.1		
	qw	l/s	8.5	8.0	7.5	7.0			9.8	9.3	8.7	8.1		
	dpw	kPa	26.9	24.0	21.1	18.2			35.7	31.9	28.2	24.4		

			160					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	177	166	156	144	137	129
	Pa	kW	48.0	52.1	56.8	62.2	65.7	69.6
	qw	l/s	8.4	8.0	7.4	6.9	6.5	6.2
	dpw	kPa	22.8	20.2	17.7	15.1	13.6	12.2
7	Pf	kW	187	176	165	153	145	137
	Pa	kW	48.9	53.0	57.8	63.1	66.7	70.5
	qw	l/s	8.9	8.4	7.9	7.3	6.9	6.5
	dpw	kPa	25.6	22.7	19.9	17.0	15.3	13.7
9	Pf	kW	198	186	174	161	153	145
	Pa	kW	49.8	54.0	58.8	64.2	67.7	71.6
	qw	l/s	9.5	8.9	8.3	7.7	7.3	6.9
	dpw	kPa	28.7	25.4	22.2	19.1	17.2	15.4
11	Pf	kW	209	197	184	170	162	
	Pa	kW	50.8	55.1	59.9	65.3	68.8	
	qw	l/s	10	9.4	8.8	8.2	7.8	
	dpw	kPa	32.0	28.4	24.8	21.3	19.2	
13	Pf	kW	220	207	194	179	171	
	Pa	kW	51.9	56.2	61.0	66.4	70.0	
	qw	l/s	10	9.9	9.3	8.6	8.2	
	dpw	kPa	35.6	31.6	27.6	23.7	21.4	
15	Pf	kW	231	218	204	189		
	Pa	kW	53.0	57.3	62.2	67.7		
	qw	l/s	11	10	9.8	9.1		
	dpw	kPa	39.4	35.0	30.6	26.3		

EWYQ~G-XR

			075						085					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	80.8	76.2	71.2	65.7	62.1	58.4	91.5	85.9	80.0	73.6	69.6	65.3
	Pa	kW	23.1	25.1	27.3	29.8	31.4	33.2	27.0	29.4	32.1	35.2	37.3	39.5
	qw	l/s	3.9	3.6	3.4	3.1	3.0	2.8	4.4	4.1	3.8	3.5	3.3	3.1
	dpw	kPa	9.10	8.10	7.00	6.00	5.40	4.70	9.00	7.90	6.90	5.80	5.20	4.60
7	Pf	kW	85.5	80.5	75.2	69.5	65.7	61.8	96.7	90.8	84.5	77.8	73.6	46.3
	Pa	kW	23.5	25.5	27.7	30.2	31.9	33.7	27.6	29.9	32.7	35.8	37.9	20.8
	qw	l/s	4.1	3.8	3.6	3.3	3.1	3.0	4.6	4.3	4.0	3.7	3.5	2.2
	dpw	kPa	10.2	9.00	7.90	6.70	6.00	5.30	10.0	8.80	7.70	6.50	5.80	2.30
9	Pf	kW	90.2	85.0	79.4	73.3	69.4	65.3	102	95.8	89.2	82.1	77.6	49.2
	Pa	kW	24.0	26.0	28.2	30.7	32.3	34.1	28.1	30.5	33.3	36.4	38.5	21.1
	qw	l/s	4.3	4.1	3.8	3.5	3.3	3.1	4.9	4.6	4.3	3.9	3.7	2.4
	dpw	kPa	11.4	10.1	8.80	7.50	6.70	5.90	11.2	9.90	8.50	7.20	6.50	2.60
11	Pf	kW	95.2	89.6	83.7	77.3	73.2		108	101	93.9	86.5	81.8	
	Pa	kW	24.4	26.4	28.7	31.2	32.8		28.7	31.2	34.0	37.1	39.2	
	qw	l/s	4.6	4.3	4.0	3.7	3.5		5.1	4.8	4.5	4.1	3.9	
	dpw	kPa	12.7	11.2	9.80	8.30	7.50		12.4	11.0	9.50	8.10	7.20	
13	Pf	kW	100	94.3	88.0	81.3	77.0		113	106	98.8	91.0	86.1	
	Pa	kW	24.9	26.9	29.2	31.7	33.3		29.4	31.8	34.6	37.8	39.9	
	qw	l/s	4.8	4.5	4.2	3.9	3.7		5.4	5.1	4.7	4.4	4.1	
	dpw	kPa	14.1	12.5	10.9	9.30	8.30		13.8	12.2	10.5	8.90	8.00	
15	Pf	kW	105	99.2	92.6	85.5			119	111	104	95.6		
	Pa	kW	25.4	27.4	29.7	32.2			30.1	32.5	35.4	38.6		
	qw	l/s	5.1	4.8	4.4	4.1			5.7	5.3	5.0	4.6		
	dpw	kPa	15.6	13.8	12.0	10.2			15.2	13.4	11.6	9.90		

			100						110					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	103	96.7	89.9	82.6	78.1	44.5	120	113	105	97.2	92.1	86.9
	Pa	kW	31.6	34.5	37.8	41.7	44.3	20.9	34.4	37.4	40.8	44.7	47.3	50.1
	qw	l/s	4.9	4.6	4.3	3.9	3.7	2.1	5.7	5.4	5.0	4.6	4.4	4.1
	dpw	kPa	9.00	7.90	6.80	5.80	5.10	1.70	12.1	10.7	9.30	8.00	7.20	6.40
7	Pf	kW	109	102	95.0	87.3	82.5	47.5	127	119	111	103	97.5	92.0
	Pa	kW	32.3	35.2	38.6	42.5	45.2	21.1	35.1	38.1	41.5	45.5	48.1	50.9
	qw	l/s	5.2	4.9	4.5	4.2	3.9	2.3	6.1	5.7	5.3	4.9	4.7	4.4
	dpw	kPa	10.1	8.80	7.60	6.50	5.80	1.90	13.6	12.0	10.5	8.90	8.00	7.20
9	Pf	kW	115	108	100	92.2	87.1	50.5	134	126	118	109	103	97.3
	Pa	kW	33.1	36.0	39.4	43.4	46.0	21.4	35.8	38.8	42.3	46.3	48.9	51.7
	qw	l/s	5.5	5.2	4.8	4.4	4.2	2.4	6.4	6.0	5.6	5.2	4.9	4.7
	dpw	kPa	11.2	9.90	8.50	7.20	6.40	2.20	15.2	13.4	11.7	10.0	9.00	8.00
11	Pf	kW	121	114	106	97.1	56.4		141	133	124	115	109	
	Pa	kW	33.9	36.8	40.3	44.3	20.5		36.5	39.6	43.1	47.1	49.7	
	qw	l/s	5.8	5.4	5.1	4.6	2.7		6.8	6.4	5.9	5.5	5.2	
	dpw	kPa	12.5	11.0	9.50	8.00	2.70		16.9	15.0	13.0	11.2	10.0	
13	Pf	kW	127	119	111	102	59.9		149	140	131	121	115	
	Pa	kW	34.7	37.7	41.2	45.2	20.8		37.2	40.4	43.9	47.9	50.5	
	qw	l/s	6.1	5.7	5.3	4.9	2.9		7.1	6.7	6.3	5.8	5.5	
	dpw	kPa	13.8	12.1	10.5	8.90	3.00		18.8	16.6	14.5	12.4	11.2	
15	Pf	kW	134	125	117	107			156	147	137	127		
	Pa	kW	35.6	38.6	42.2	46.2			38.0	41.2	44.7	48.8		
	qw	l/s	6.4	6.0	5.6	5.1			7.5	7.1	6.6	6.1		
	dpw	kPa	15.3	13.4	11.6	9.80			20.8	18.4	16.0	13.7		

EWYQ~G-XR

			120						140					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	130	122	113	104	98.6	92.7	150	141	132	122	115	109
	Pa	kW	39.2	42.7	46.6	50.9	53.7	56.7	43.8	47.6	52.0	56.9	60.1	63.6
	qw	l/s	6.2	5.8	5.4	5.0	4.7	4.4	7.2	6.7	6.3	5.8	5.5	5.2
	dpw	kPa	14.2	12.5	10.9	9.20	8.20	7.30	19.0	16.8	14.6	12.5	11.2	10.0
7	Pf	kW	137	128	120	110	104	59.6	158	149	139	129	122	115
	Pa	kW	40.0	43.5	47.4	51.7	54.6	26.3	44.6	48.5	52.8	57.8	61.0	64.5
	qw	l/s	6.5	6.1	5.7	5.3	5.0	2.8	7.6	7.1	6.7	6.2	5.8	5.5
	dpw	kPa	15.9	14.0	12.1	10.3	9.20	3.00	21.2	18.8	16.4	14.0	12.6	11.2
9	Pf	kW	144	135	126	116	110	63.4	167	157	147	136	129	121
	Pa	kW	40.8	44.3	48.2	52.6	55.4	26.5	45.5	49.4	53.8	58.7	62.0	65.4
	qw	l/s	6.9	6.5	6.0	5.6	5.3	3.0	8.0	7.5	7.0	6.5	6.2	5.8
	dpw	kPa	17.7	15.6	13.5	11.5	10.3	3.40	23.7	21.0	18.3	15.6	14.0	12.5
11	Pf	kW	152	143	133	122	116		176	166	155	143	136	
	Pa	kW	41.6	45.2	49.1	53.5	56.3		46.4	50.3	54.7	59.7	63.0	
	qw	l/s	7.3	6.8	6.4	5.9	5.5		8.4	7.9	7.4	6.9	6.5	
	dpw	kPa	19.6	17.3	15.0	12.7	11.4		26.3	23.3	20.3	17.3	15.6	
13	Pf	kW	160	150	140	129	122		185	174	163	150	143	
	Pa	kW	42.5	46.1	50.0	54.4	57.3		47.3	51.3	55.8	60.8	64.0	
	qw	l/s	7.7	7.2	6.7	6.2	5.8		8.9	8.4	7.8	7.2	6.8	
	dpw	kPa	21.7	19.2	16.6	14.1	12.6		29.1	25.8	22.5	19.2	17.3	
15	Pf	kW	167	157	147	135			194	183	171	158		
	Pa	kW	43.4	47.0	51.0	55.4			48.4	52.4	56.8	61.9		
	qw	l/s	8.0	7.6	7.0	6.5			9.3	8.8	8.2	7.6		
	dpw	kPa	24.0	21.1	18.3	15.6			32.2	28.5	24.9	21.3		

			160					
Twout		**Tain**	**25**	**30**	**35**	**40**	**43**	**46**
5	Pf	kW	168	158	147	135	127	72.5
	Pa	kW	50.7	55.2	60.4	66.2	70.0	33.5
	qw	l/s	8.0	7.5	7.0	6.4	6.1	3.5
	dpw	kPa	20.6	18.1	15.7	13.2	11.8	3.80
7	Pf	kW	178	166	155	142	134	77.2
	Pa	kW	51.8	56.4	61.5	67.3	71.1	33.8
	qw	l/s	8.5	8.0	7.4	6.8	6.4	3.7
	dpw	kPa	23.1	20.3	17.5	14.8	13.2	4.30
9	Pf	kW	187	175	163	150	142	82.0
	Pa	kW	53.0	57.6	62.8	68.6	72.4	34.2
	qw	l/s	9.0	8.4	7.8	7.2	6.8	3.9
	dpw	kPa	25.7	22.6	19.5	16.5	14.7	4.90
11	Pf	kW	197	185	172	158	149	
	Pa	kW	54.2	58.9	64.1	69.9	73.7	
	qw	l/s	9.4	8.9	8.2	7.6	7.1	
	dpw	kPa	28.5	25.0	21.6	18.3	16.3	
13	Pf	kW	207	194	180	166	97.1	
	Pa	kW	55.5	60.2	65.5	71.3	33.4	
	qw	l/s	9.9	9.3	8.6	7.9	4.7	
	dpw	kPa	31.5	27.7	23.9	20.2	6.90	
15	Pf	kW	217	204	189	174		
	Pa	kW	56.9	61.6	66.9	72.9		
	qw	l/s	10	9.8	9.1	8.3		
	dpw	kPa	34.8	30.5	26.3	22.3		

EWYQ~G-XS

			075						085					
Tain		**Twout**	**-10**	**-5**	**0**	**2**	**7**	**10**	**-10**	**-5**	**0**	**2**	**7**	**10**
35	Pf	kW	54.0	61.6	69.8	73.4	83.2	89.8	60.1	68.0	76.9	80.8	91.6	98.8
	Pa	kW	20.7	21.0	21.3	21.4	21.8	22.0	23.2	23.4	23.7	23.9	24.2	24.5
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	2.9	3.3	3.7	3.9	4.4	4.8
	dpw	kPa	4.10	5.30	6.90	7.60	9.70	11.3	4.00	5.10	6.50	7.10	9.20	10.7
38	Pf	kW	54.2	61.6	69.8	73.3	83.0	89.4	60.3	68.2	77.0	80.9	91.5	98.5
	Pa	kW	22.0	22.2	22.5	22.6	23.0	23.2	24.6	24.8	25.1	25.2	25.6	25.8
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	2.9	3.3	3.7	3.9	4.4	4.7
	dpw	kPa	4.10	5.30	6.90	7.60	9.70	11.2	4.00	5.10	6.50	7.20	9.20	10.6
40	Pf	kW	54.2	61.7	69.8	73.3	82.8	89.1	60.5	68.4	77.1	80.9	91.4	98.4
	Pa	kW	22.9	23.1	23.4	23.5	23.8	24.1	25.5	25.8	26.1	26.2	26.5	26.8
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	2.9	3.3	3.7	3.9	4.4	4.7
	dpw	kPa	4.10	5.40	6.90	7.60	9.60	11.2	4.00	5.10	6.50	7.20	9.10	10.6
45	Pf	kW	54.5	61.7	69.7	73.0	82.2	88.3	61.3	68.9	77.4	81.1	91.2	97.9
	Pa	kW	25.3	25.5	25.7	25.8	26.2	26.4	28.3	28.5	28.8	28.9	29.2	29.5
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	3.0	3.3	3.7	3.9	4.4	4.7
	dpw	kPa	4.20	5.40	6.80	7.50	9.50	11.0	4.10	5.20	6.60	7.20	9.10	10.5
48	Pf	kW		61.7	69.5	72.8	81.8	87.7		69.3	77.6	81.2	91.1	97.7
	Pa	kW		27.1	27.3	27.4	27.7	27.9		30.4	30.6	30.7	31.1	31.3
	qw	l/s		3.0	3.4	3.5	4.0	4.2		3.3	3.8	3.9	4.4	4.7
	dpw	kPa		5.40	6.80	7.50	9.40	10.8		5.30	6.60	7.20	9.10	10.5
50	Pf	kW			69.4	72.7	81.5	87.2			77.7	81.3	91.0	97.5
	Pa	kW			28.5	28.6	28.8	29.1			31.9	32.1	32.4	32.6
	qw	l/s			3.4	3.5	3.9	4.2			3.8	3.9	4.4	4.7
	dpw	kPa			6.80	7.50	9.40	10.7			6.60	7.30	9.10	10.4

			100						110					
Tain		**Twout**	**-10**	**-5**	**0**	**2**	**7**	**10**	**-10**	**-5**	**0**	**2**	**7**	**10**
35	Pf	kW	74.0	83.2	94.4	99.5	113	122	83.6	95.4	108	114	130	140
	Pa	kW	26.9	27.2	27.6	27.7	28.2	28.5	30.8	31.2	31.7	31.9	32.4	32.8
	qw	l/s	3.6	4.0	4.5	4.8	5.5	5.9	4.0	4.6	5.2	5.5	6.3	6.8
	dpw	kPa	5.00	6.40	8.20	9.10	11.8	13.8	6.30	8.20	10.6	11.7	15.2	17.8
38	Pf	kW	73.8	82.9	93.9	98.8	112	121	83.6	95.2	108	113	129	139
	Pa	kW	28.5	28.8	29.1	29.3	29.8	30.1	32.5	33.0	33.4	33.7	34.2	34.6
	qw	l/s	3.6	4.0	4.5	4.8	5.4	5.9	4.0	4.6	5.2	5.5	6.2	6.7
	dpw	kPa	5.00	6.30	8.10	9.00	11.6	13.6	6.30	8.10	10.5	11.6	14.9	17.4
40	Pf	kW	73.8	82.7	93.5	98.3	111	120	83.6	95.0	107	113	128	138
	Pa	kW	29.6	29.9	30.2	30.4	30.9	31.2	33.8	34.2	34.7	34.9	35.5	35.9
	qw	l/s	3.6	4.0	4.5	4.7	5.4	5.8	4.0	4.6	5.2	5.5	6.2	6.7
	dpw	kPa	5.00	6.30	8.00	8.90	11.5	13.4	6.30	8.10	10.4	11.5	14.8	17.2
45	Pf	kW	74.0	82.5	92.8	97.4	110	118	84.0	94.9	106	112	126	136
	Pa	kW	32.7	33.0	33.4	33.5	34.0	34.3	37.3	37.7	38.2	38.4	39.0	39.4
	qw	l/s	3.6	4.0	4.5	4.7	5.3	5.7	4.1	4.6	5.2	5.4	6.1	6.6
	dpw	kPa	5.00	6.30	7.90	8.70	11.2	13.0	6.30	8.10	10.3	11.3	14.4	16.7
48	Pf	kW		82.6	92.5	97.0	109	117		94.9	106	111	125	134
	Pa	kW		35.2	35.5	35.7	36.1	36.5		40.1	40.6	40.8	41.3	41.7
	qw	l/s		4.0	4.5	4.7	5.3	5.7		4.6	5.1	5.4	6.1	6.5
	dpw	kPa		6.30	7.90	8.70	11.0	12.7		8.10	10.2	11.2	14.2	16.3
50	Pf	kW			92.4	96.7	108	116			106	111	124	133
	Pa	kW			37.1	37.2	37.7	38.0			42.2	42.4	43.0	43.4
	qw	l/s			4.5	4.7	5.3	5.7			5.1	5.4	6.0	6.5
	dpw	kPa			7.90	8.60	10.9	12.6			10.2	11.1	14.0	16.1

EWYQ~G-XS

			120						140					
Tain		**Twout**	**-10**	**-5**	**0**	**2**	**7**	**10**	**-10**	**-5**	**0**	**2**	**7**	**10**
35	Pf	kW	91.8	104	118	124	141	152	104	117	132	139	158	170
	Pa	kW	33.9	34.5	35.0	35.3	35.9	36.3	39.6	40.0	40.5	40.8	41.5	42.0
	qw	l/s	4.4	5.0	5.7	6.0	6.8	7.3	5.0	5.6	6.4	6.7	7.6	8.2
	dpw	kPa	7.60	9.80	12.6	14.0	18.0	21.0	9.70	12.3	15.8	17.4	22.4	26.0
38	Pf	kW	92.0	104	118	124	140	151	104	117	132	139	157	169
	Pa	kW	35.9	36.5	37.0	37.3	37.9	38.3	42.0	42.4	42.9	43.1	43.8	44.3
	qw	l/s	4.4	5.0	5.7	6.0	6.8	7.3	5.0	5.7	6.4	6.7	7.6	8.2
	dpw	kPa	7.60	9.80	12.6	13.9	17.8	20.7	9.80	12.4	15.8	17.4	22.2	25.7
40	Pf	kW	92.1	104	117	123	139	150	105	117	132	139	157	168
	Pa	kW	37.3	37.9	38.5	38.7	39.3	39.8	43.7	44.1	44.6	44.8	45.5	46.0
	qw	l/s	4.4	5.0	5.7	6.0	6.7	7.3	5.1	5.7	6.4	6.7	7.6	8.1
	dpw	kPa	7.60	9.80	12.5	13.8	17.6	20.4	9.90	12.4	15.7	17.3	22.1	25.5
45	Pf	kW	92.5	104	117	122	138	148	106	118	132	138	155	167
	Pa	kW	41.1	41.7	42.3	42.6	43.2	43.7	48.4	48.7	49.2	49.4	50.0	50.5
	qw	l/s	4.5	5.0	5.7	5.9	6.7	7.2	5.1	5.7	6.4	6.7	7.5	8.1
	dpw	kPa	7.70	9.80	12.4	13.6	17.2	19.9	10.1	12.6	15.7	17.2	21.7	25.0
48	Pf	kW		104	116	122	137	147		118	132	138	154	165
	Pa	kW		44.3	44.9	45.1	45.8	46.2		51.8	52.2	52.4	53.1	53.5
	qw	l/s		5.0	5.6	5.9	6.6	7.1		5.7	6.4	6.7	7.5	8.0
	dpw	kPa		9.80	12.3	13.5	16.9	19.5		12.7	15.7	17.2	21.5	24.7
50	Pf	kW			116	121	136	146			132	138	154	164
	Pa	kW			46.7	46.9	47.6	48.0			54.3	54.5	55.2	55.7
	qw	l/s			5.6	5.9	6.6	7.1			6.4	6.7	7.4	8.0
	dpw	kPa			12.2	13.4	16.8	19.2			15.7	17.1	21.3	24.4

			160					
Tain		**Twout**	**-10**	**-5**	**0**	**2**	**7**	**10**
35	Pf	kW	113	127	144	151	171	185
	Pa	kW	43.6	43.8	44.1	44.3	44.8	45.3
	qw	l/s	5.5	6.1	6.9	7.3	8.2	8.9
	dpw	kPa	10.0	12.6	16.1	17.8	22.8	26.5
38	Pf	kW	114	128	144	151	171	184
	Pa	kW	46.4	46.5	46.8	46.9	47.4	47.8
	qw	l/s	5.5	6.2	6.9	7.3	8.2	8.9
	dpw	kPa	10.2	12.8	16.2	17.8	22.7	26.4
40	Pf	kW	115	128	144	151	171	184
	Pa	kW	48.4	48.5	48.7	48.8	49.3	49.7
	qw	l/s	5.5	6.2	7.0	7.3	8.2	8.9
	dpw	kPa	10.3	12.9	16.2	17.8	22.7	26.3
45	Pf	kW	117	129	145	151	170	182
	Pa	kW	53.8	53.7	53.8	53.9	54.3	54.7
	qw	l/s	5.6	6.3	7.0	7.3	8.2	8.8
	dpw	kPa	10.7	13.1	16.3	17.9	22.5	25.9
48	Pf	kW		130	145	151	169	181
	Pa	kW		57.2	57.2	57.3	57.7	58.0
	qw	l/s		6.3	7.0	7.3	8.2	8.8
	dpw	kPa		13.3	16.4	17.9	22.4	25.7
50	Pf	kW			145	151	169	181
	Pa	kW			59.7	59.7	60.1	60.4
	qw	l/s			7.0	7.3	8.2	8.8
	dpw	kPa			16.5	17.9	22.3	25.6

EWYQ~G-XR

			075						085					
Tain		Twout	-10	-5	0	2	7	10	-10	-5	0	2	7	10
35	Pf	kW	54.0	61.6	69.8	73.4	83.2	89.8	60.1	68.0	76.9	80.8	91.6	98.8
	Pa	kW	20.7	21.0	21.3	21.4	21.8	22.0	23.2	23.4	23.7	23.9	24.2	24.5
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	2.9	3.3	3.7	3.9	4.4	4.8
	dpw	kPa	4.10	5.30	6.90	7.60	9.70	11.3	4.00	5.10	6.50	7.10	9.20	10.7
38	Pf	kW	54.2	61.6	69.8	73.3	83.0	89.4	60.3	68.2	77.0	80.9	91.5	98.5
	Pa	kW	22.0	22.2	22.5	22.6	23.0	23.2	24.6	24.8	25.1	25.2	25.6	25.8
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	2.9	3.3	3.7	3.9	4.4	4.7
	dpw	kPa	4.10	5.30	6.90	7.60	9.70	11.2	4.00	5.10	6.50	7.20	9.20	10.6
40	Pf	kW	54.2	61.7	69.8	73.3	82.8	89.1	60.5	68.4	77.1	80.9	91.4	98.4
	Pa	kW	22.9	23.1	23.4	23.5	23.8	24.1	25.5	25.8	26.1	26.2	26.5	26.8
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	2.9	3.3	3.7	3.9	4.4	4.7
	dpw	kPa	4.10	5.40	6.90	7.60	9.60	11.2	4.00	5.10	6.50	7.20	9.10	10.6
45	Pf	kW	54.5	61.7	69.7	73.0	82.2	88.3	61.3	68.9	77.4	81.1	91.2	97.9
	Pa	kW	25.3	25.5	25.7	25.8	26.2	26.4	28.3	28.5	28.8	28.9	29.2	29.5
	qw	l/s	2.6	3.0	3.4	3.5	4.0	4.3	3.0	3.3	3.7	3.9	4.4	4.7
	dpw	kPa	4.20	5.40	6.80	7.50	9.50	11.0	4.10	5.20	6.60	7.20	9.10	10.5
48	Pf	kW		61.7	69.5	72.8	81.8	87.7		69.3	77.6	81.2	91.1	97.7
	Pa	kW		27.1	27.3	27.4	27.7	27.9		30.4	30.6	30.7	31.1	31.3
	qw	l/s		3.0	3.4	3.5	4.0	4.2		3.3	3.8	3.9	4.4	4.7
	dpw	kPa		5.40	6.80	7.50	9.40	10.8		5.30	6.60	7.20	9.10	10.5
50	Pf	kW			69.4	72.7	81.5	87.2			77.7	81.3	91.0	97.5
	Pa	kW			28.5	28.6	28.8	29.1			31.9	32.1	32.4	32.6
	qw	l/s			3.4	3.5	3.9	4.2			3.8	3.9	4.4	4.7
	dpw	kPa			6.80	7.50	9.40	10.7			6.60	7.30	9.10	10.4

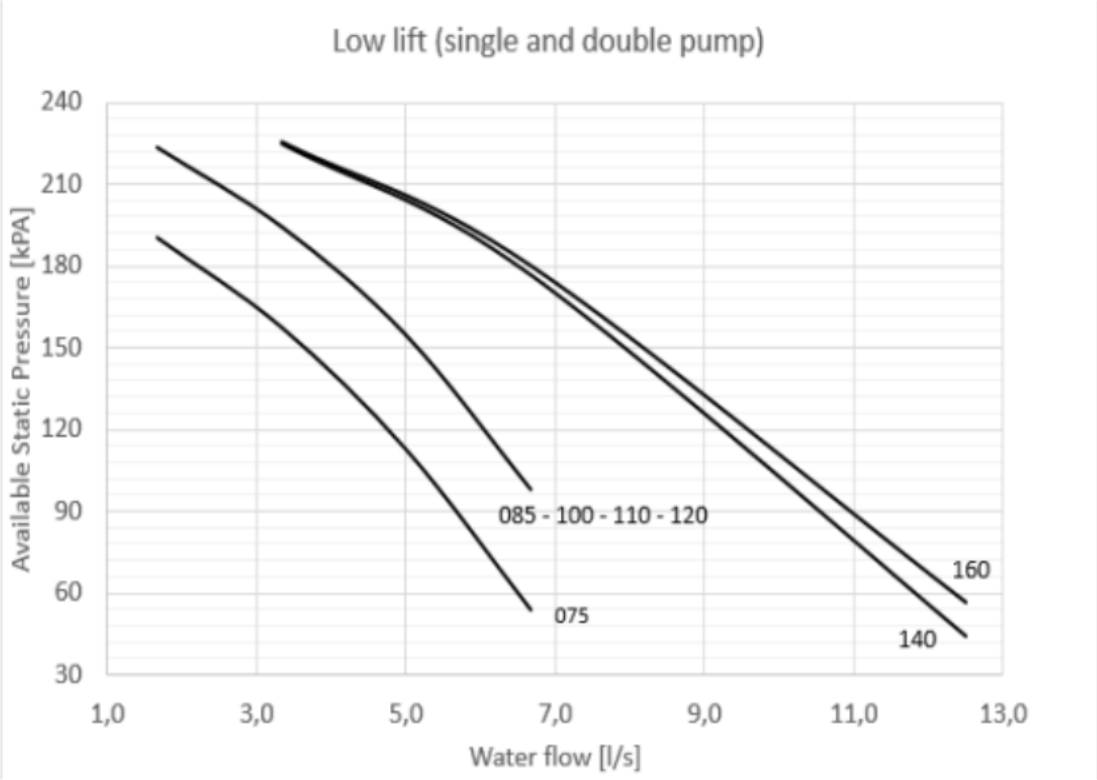
			100						110					
Tain		Twout	-10	-5	0	2	7	10	-10	-5	0	2	7	10
35	Pf	kW	74.0	83.2	94.4	99.5	113	122	83.6	95.4	108	114	130	140
	Pa	kW	26.9	27.2	27.6	27.7	28.2	28.5	30.8	31.2	31.7	31.9	32.4	32.8
	qw	l/s	3.6	4.0	4.5	4.8	5.5	5.9	4.0	4.6	5.2	5.5	6.3	6.8
	dpw	kPa	5.00	6.40	8.20	9.10	11.8	13.8	6.30	8.20	10.6	11.7	15.2	17.8
38	Pf	kW	73.8	82.9	93.9	98.8	112	121	83.6	95.2	108	113	129	139
	Pa	kW	28.5	28.8	29.1	29.3	29.8	30.1	32.5	33.0	33.4	33.7	34.2	34.6
	qw	l/s	3.6	4.0	4.5	4.8	5.4	5.9	4.0	4.6	5.2	5.5	6.2	6.7
	dpw	kPa	5.00	6.30	8.10	9.00	11.6	13.6	6.30	8.10	10.5	11.6	14.9	17.4
40	Pf	kW	73.8	82.7	93.5	98.3	111	120	83.6	95.0	107	113	128	138
	Pa	kW	29.6	29.9	30.2	30.4	30.9	31.2	33.8	34.2	34.7	34.9	35.5	35.9
	qw	l/s	3.6	4.0	4.5	4.7	5.4	5.8	4.0	4.6	5.2	5.5	6.2	6.7
	dpw	kPa	5.00	6.30	8.00	8.90	11.5	13.4	6.30	8.10	10.4	11.5	14.8	17.2
45	Pf	kW	74.0	82.5	92.8	97.4	110	118	84.0	94.9	106	112	127	136
	Pa	kW	32.7	33.0	33.4	33.5	34.0	34.3	37.3	37.7	38.2	38.4	39.0	39.4
	qw	l/s	3.6	4.0	4.5	4.7	5.3	5.7	4.1	4.6	5.2	5.4	6.1	6.6
	dpw	kPa	5.00	6.30	7.90	8.70	11.2	13.0	6.30	8.10	10.3	11.3	14.4	16.7
48	Pf	kW		82.6	92.5	97.0	109	117		94.9	106	111	125	134
	Pa	kW		35.2	35.5	35.7	36.1	36.5		40.1	40.6	40.8	41.3	41.7
	qw	l/s		4.0	4.5	4.7	5.3	5.7		4.6	5.1	5.4	6.1	6.5
	dpw	kPa		6.30	7.90	8.70	11.0	12.7		8.10	10.2	11.2	14.2	16.3
50	Pf	kW			92.4	96.7	108	116			106	111	124	133
	Pa	kW			37.1	37.2	37.7	38.0			42.2	42.4	43.0	43.4
	qw	l/s			4.5	4.7	5.3	5.7			5.1	5.4	6.0	6.5
	dpw	kPa			7.90	8.60	10.9	12.6			10.2	11.1	14.0	16.1

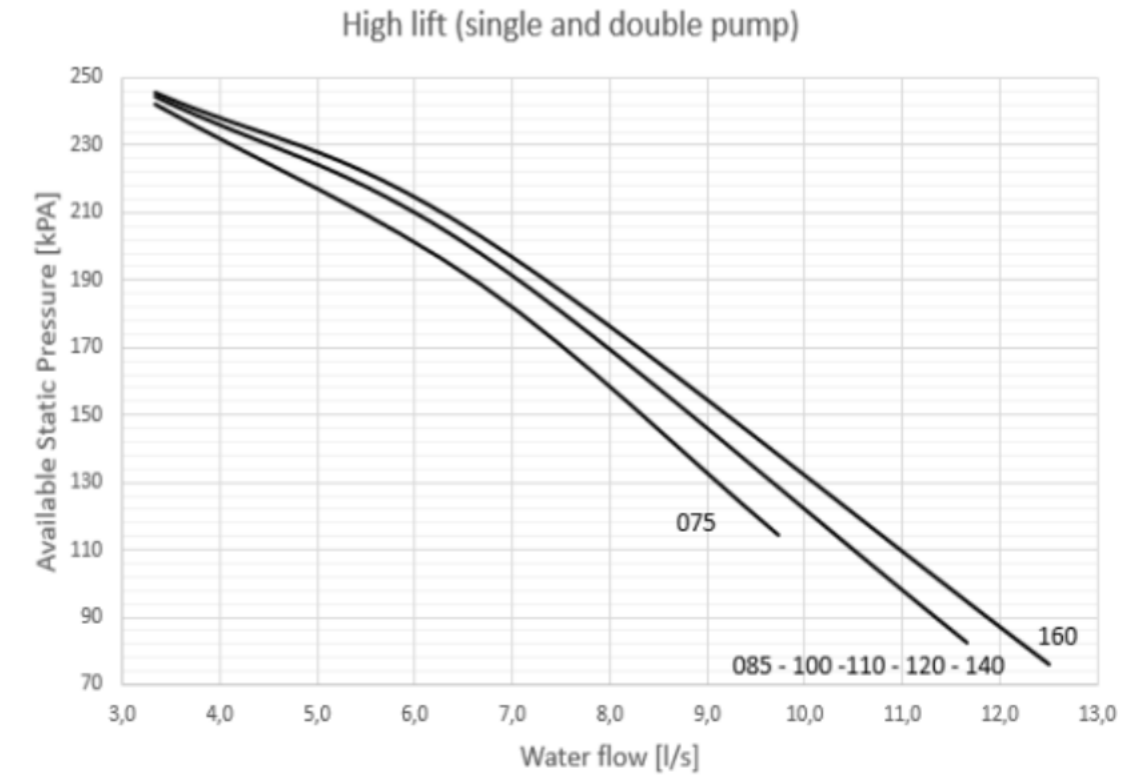
EWYQ~G-XR

			120						140					
Tain		**Twout**	**-10**	**-5**	**0**	**2**	**7**	**10**	**-10**	**-5**	**0**	**2**	**7**	**10**
35	Pf	kW	91.8	104	118	124	141	152	104	117	132	139	158	170
	Pa	kW	33.9	34.5	35.0	35.3	35.9	36.3	39.6	40.0	40.5	40.8	41.5	42.0
	qw	l/s	4.4	5.0	5.7	6.0	6.8	7.3	5.0	5.6	6.4	6.7	7.6	8.2
	dpw	kPa	7.60	9.80	12.6	14.0	18.0	21.0	9.70	12.3	15.8	17.4	22.4	26.0
38	Pf	kW	92.0	104	118	124	140	151	104	117	132	139	157	169
	Pa	kW	35.9	36.5	37.0	37.3	37.9	38.3	42.0	42.4	42.9	43.1	43.8	44.3
	qw	l/s	4.4	5.0	5.7	6.0	6.8	7.3	5.0	5.7	6.4	6.7	7.6	8.2
	dpw	kPa	7.60	9.80	12.6	13.9	17.8	20.7	9.80	12.4	15.8	17.4	22.2	25.7
40	Pf	kW	92.1	104	117	123	139	150	105	117	132	139	157	168
	Pa	kW	37.3	37.9	38.5	38.7	39.3	39.8	43.7	44.1	44.6	44.8	45.5	46.0
	qw	l/s	4.4	5.0	5.7	6.0	6.7	7.3	5.1	5.7	6.4	6.7	7.6	8.1
	dpw	kPa	7.60	9.80	12.5	13.8	17.6	20.4	9.90	12.4	15.7	17.3	22.1	25.5
45	Pf	kW	92.5	104	117	122	138	148	106	118	132	138	156	167
	Pa	kW	41.1	41.7	42.3	42.6	43.2	43.7	48.4	48.7	49.2	49.4	50.0	50.5
	qw	l/s	4.5	5.0	5.7	5.9	6.7	7.2	5.1	5.7	6.4	6.7	7.5	8.1
	dpw	kPa	7.70	9.80	12.4	13.6	17.2	19.9	10.1	12.6	15.7	17.2	21.7	25.0
48	Pf	kW		104	116	122	137	147		118	132	138	154	165
	Pa	kW		44.3	44.9	45.1	45.8	46.2		51.8	52.2	52.4	53.1	53.5
	qw	l/s		5.0	5.6	5.9	6.6	7.1		5.7	6.4	6.7	7.5	8.0
	dpw	kPa		9.80	12.3	13.5	16.9	19.5		12.7	15.7	17.2	21.5	24.7
50	Pf	kW			116	121	136	146			132	138	154	164
	Pa	kW			46.7	46.9	47.6	48.0			54.3	54.5	55.2	55.7
	qw	l/s			5.6	5.9	6.6	7.1			6.4	6.7	7.4	8.0
	dpw	kPa			12.2	13.4	16.8	19.2			15.7	17.1	21.3	24.4

			160					
Tain		**Twout**	**-10**	**-5**	**0**	**2**	**7**	**10**
35	Pf	kW	113	127	144	151	171	185
	Pa	kW	43.6	43.8	44.1	44.3	44.8	45.3
	qw	l/s	5.5	6.1	6.9	7.3	8.2	8.9
	dpw	kPa	10.0	12.6	16.1	17.8	22.8	26.5
38	Pf	kW	114	128	144	151	171	184
	Pa	kW	46.4	46.5	46.8	46.9	47.4	47.8
	qw	l/s	5.5	6.2	6.9	7.3	8.2	8.9
	dpw	kPa	10.2	12.8	16.2	17.8	22.7	26.4
40	Pf	kW	115	128	144	151	171	184
	Pa	kW	48.4	48.5	48.7	48.8	49.3	49.7
	qw	l/s	5.5	6.2	7.0	7.3	8.2	8.9
	dpw	kPa	10.3	12.9	16.2	17.8	22.7	26.3
45	Pf	kW	117	129	145	151	170	182
	Pa	kW	53.8	53.7	53.8	53.9	54.3	54.7
	qw	l/s	5.6	6.3	7.0	7.3	8.2	8.8
	dpw	kPa	10.7	13.1	16.3	17.9	22.5	25.9
48	Pf	kW		130	145	151	169	181
	Pa	kW		57.2	57.2	57.3	57.7	58.0
	qw	l/s		6.3	7.0	7.3	8.2	8.8
	dpw	kPa		13.3	16.4	17.9	22.4	25.7
50	Pf	kW			145	151	169	181
	Pa	kW			59.7	59.7	60.1	60.4
	qw	l/s			7.0	7.3	8.2	8.8
	dpw	kPa			16.5	17.9	22.3	25.6

Water Pump Kit for EWYQ~G XS/XR (high efficiency version)





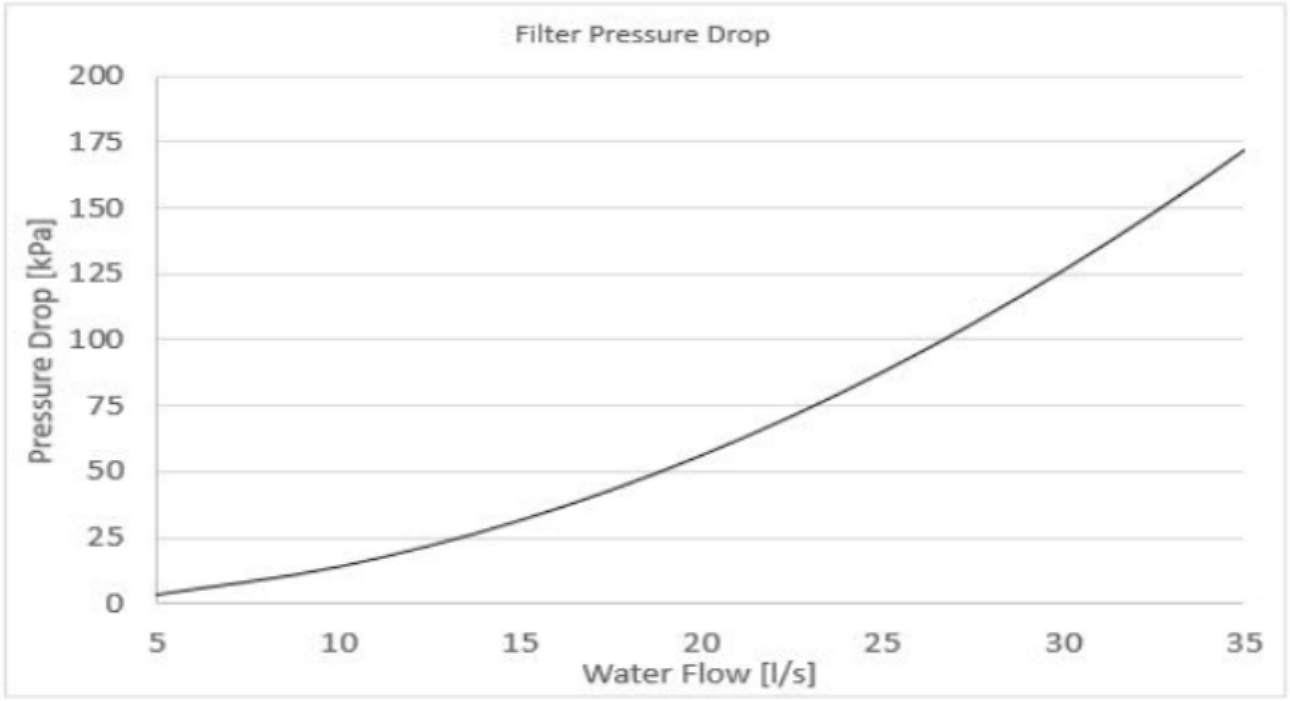
The above curves are representing the available static pressure external to the unit. The filter (available as option) pressure drops are not included.
-when using mixture of water and glycol please contact factory as above specification can change

Water pump kit – Technical Information

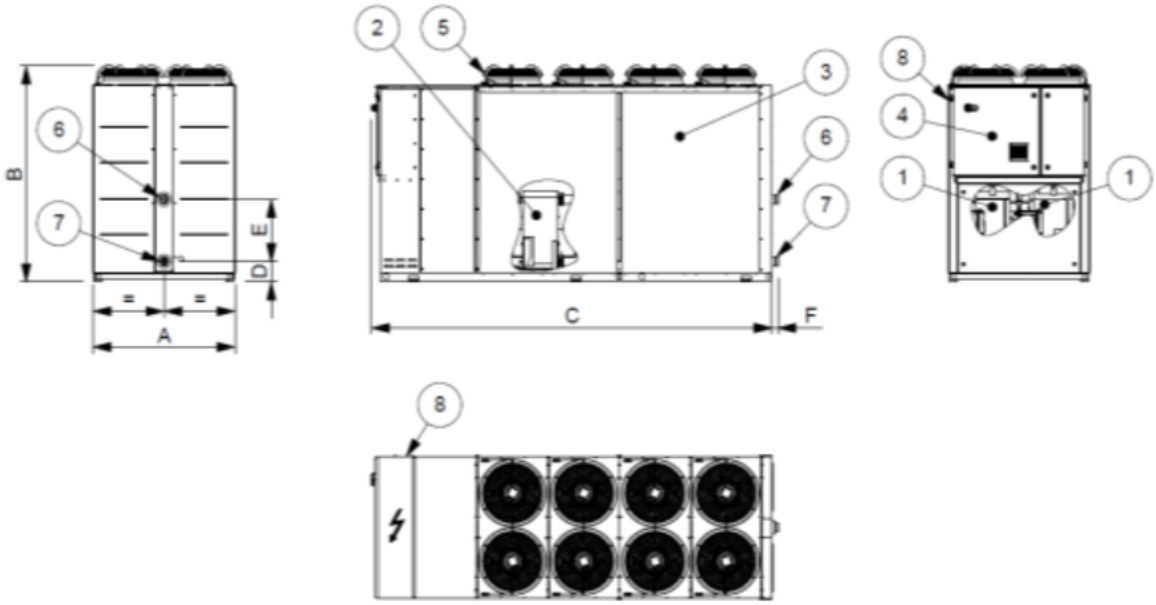
EWAQ~G XS/XR (high efficiency version)

	model		Pump Motor Power[kW]	Pump Motor Current[A]	Power Supply[V-ph-Hz]	PN	Motor Protection	Insulation[Class]	Working Temperature[°C]
low lift	EWYQ075G-XS	EWYQ075G-XR	1,1	3,2	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ085G-XS	EWYQ085G-XR	1,1	3,2	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ100G-XS	EWYQ100G-XR	1,5	3,7	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ110G-XS	EWYQ110G-XR	1,5	3,7	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ120G-XS	EWYQ120G-XR	1,5	3,7	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ140G-XS	EWYQ140G-XR	2,2	4,5	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ160G-XS	EWYQ160G-XR	2,2	4,5	400-3ph-50Hz	8	IP55	F	-15 / 90
high lift	EWYQ075G-XS	EWYQ075G-XR	3	6,1	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ085G-XS	EWYQ085G-XR	3	6,1	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ100G-XS	EWYQ100G-XR	3	6,1	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ110G-XS	EWYQ110G-XR	3	6,1	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ120G-XS	EWYQ120G-XR	3	6,1	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ140G-XS	EWYQ140G-XR	3	6,1	400-3ph-50Hz	8	IP55	F	-15 / 90
	EWYQ160G-XS	EWYQ160G-XR	3	6,1	400-3ph-50Hz	8	IP55	F	-15 / 90

Filter pressure drops (size 2’ ½)



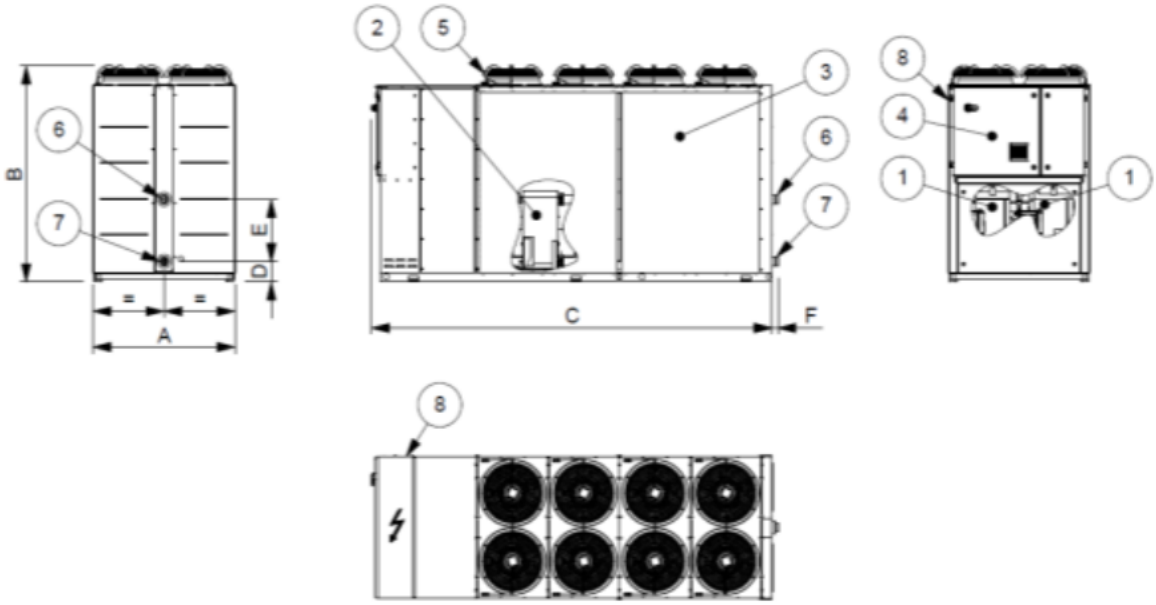
Note:
to calculate the pressure drops values introduced by the water filter, refer to the above curve.



LEGEND

1. COMPRESSOR
2. EVAPORATOR
3. CONDENSER COIL
4. ELECTRICAL PANEL
5. FAN
6. EVAPORATOR WATER INLET
7. EVAPORATOR WATER OUTLET
8. SLOT FOR POWER AND CONTROL PANEL CONNECTION

MODEL	A	B	C	D	E	F	G	H
EWYQ075G-XS	1195	1800	2776	172	519	50	0	0
EWYQ085G-XS	1195	1800	2776	172	519	50	0	0
EWYQ100G-XS	1195	1800	2776	172	519	50	0	0
EWYQ110G-XS	1195	1800	3376	172	519	50	0	0
EWYQ120G-XS	1195	1800	3376	172	519	50	0	0
EWYQ140G-XS	1195	1800	3976	172	519	50	0	0
EWYQ160G-XS	1195	1800	3976	172	519	50	0	0



LEGEND

1. COMPRESSOR
2. EVAPORATOR
3. CONDENSER COIL
4. ELECTRICAL PANEL
5. FAN
6. EVAPORATOR WATER INLET
7. EVAPORATOR WATER OUTLET
8. SLOT FOR POWER AND CONTROL PANEL CONNECTION

MODEL	A	B	C	D	E	F	G	H
EWYQ075G-XR	1195	1800	2776	172	519	50	0	0
EWYQ085G-XR	1195	1800	2776	172	519	50	0	0
EWYQ100G-XR	1195	1800	2776	172	519	50	0	0
EWYQ110G-XR	1195	1800	3376	172	519	50	0	0
EWYQ120G-XR	1195	1800	3376	172	519	50	0	0
EWYQ140G-XR	1195	1800	3976	172	519	50	0	0
EWYQ160G-XR	1195	1800	3976	172	519	50	0	0

Warning Installation and maintenance of the unit must 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 outdoor 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 leveled; 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' 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.2'. In the event the obstacles are higher than the units, the minimum recommended clearance requirements are shown in 'Fig.3'. 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.4'; 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.

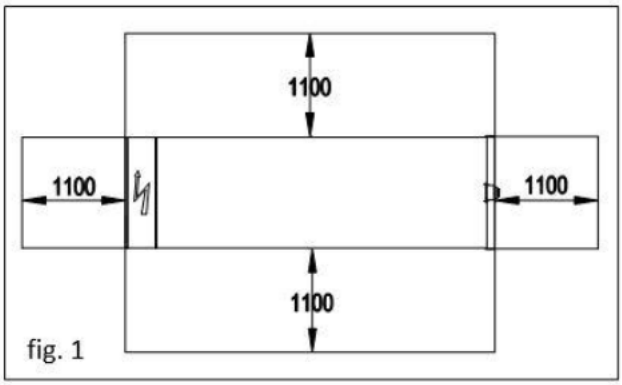


fig. 1

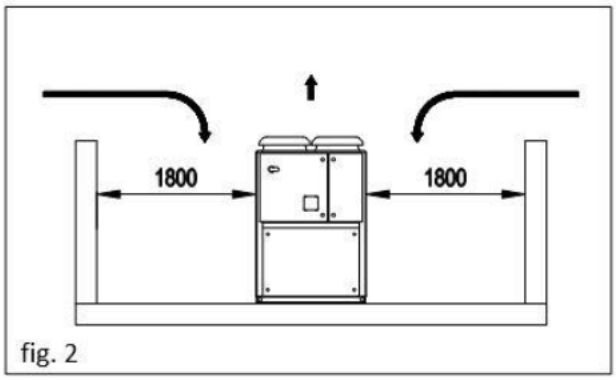


fig. 2

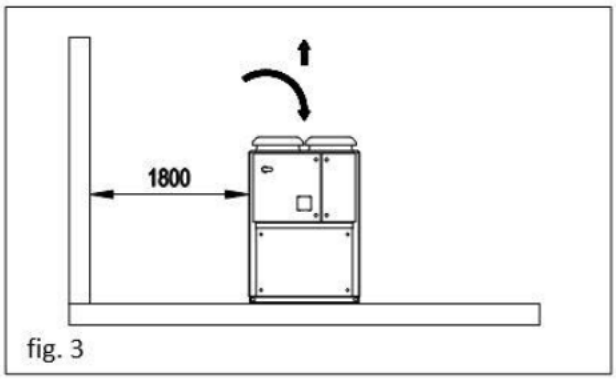


fig. 3

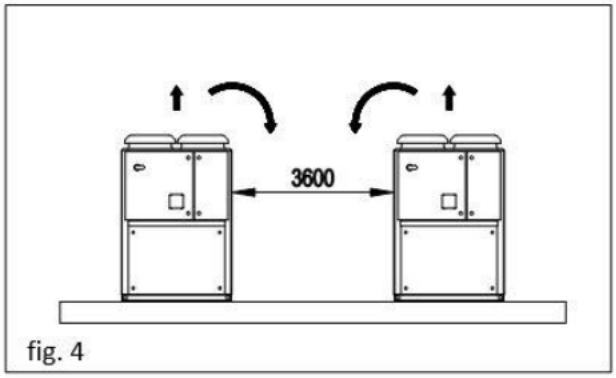


fig. 4

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:	+42°C
Maximum R.H.:	95% not condensing

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.

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 410A can be used.

Performance
- Number of air to water heat pumps: ..... unit(s)
- Cooling capacity for single air to water heat pump: ..... kW
- Power input for single air to water heat pump 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
- Heating capacity for single air to water heat pump: ..... kW
- Power input for single air to water heat pump in heating mode : ..... kW
- Heat exchanger entering water temperature in heating mode : ..... °C
- Heat exchanger leaving water temperature in heating mode : ..... °C
- Heat exchanger water flow : ..... l/s
- Nominal outside working ambient temperature in heating mode : ..... °C

Unit description Chiller shall include as standard not less than: one refrigerant circuit, hermetic type rotary scroll compressors, electronic expansion device (EEXV), refrigerant direct expansion plate to plate heat exchanger, air-cooled condenser section, 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, semispheric conditions, shall not exceed .....dB(A). The sound power levels must be rated in accordance to ISO 9614 (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 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.
• The water connections shall be treated 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.

Condenser coil The unit shall be equipped with condenser coils constructed with internally finned seamless coppertubes 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 an internally protection from overtemperature.

Refrigerant circuit The unit shall have one refrigerant circuit.
• The circuit shall include as standard: electronic expansion device piloted by unit's microprocessor control, liquid line shut-off valve, sight glass with moisture indicator, charging valves, high pressure switch, high and low pressure transducers.

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 unit 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.

Low 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 control the unit sound.
• The chiller shall be provided with an acoustical compressor enclosure.
The compressor sound proof enclosure shall be internally fitted with flexible multi-layer high density material

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, 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
- in-line single pump with tank
- in-line twin pumps with tank.

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, 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 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 guarantee the following minimum functions:
• Management of the refrigerant circuit capacity
• 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).
• OAT (Outside Ambient temperature) Reset.
• 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.

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)
- Ethernet TCP/IP.

Daikin products are distributed by:

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