DAIKIN

Chillers

Technical Data

R-410A

Water Cooled Chiller

ECDEN10-421

EWWQ-AJYNN
EWWQ-AJYNN/A

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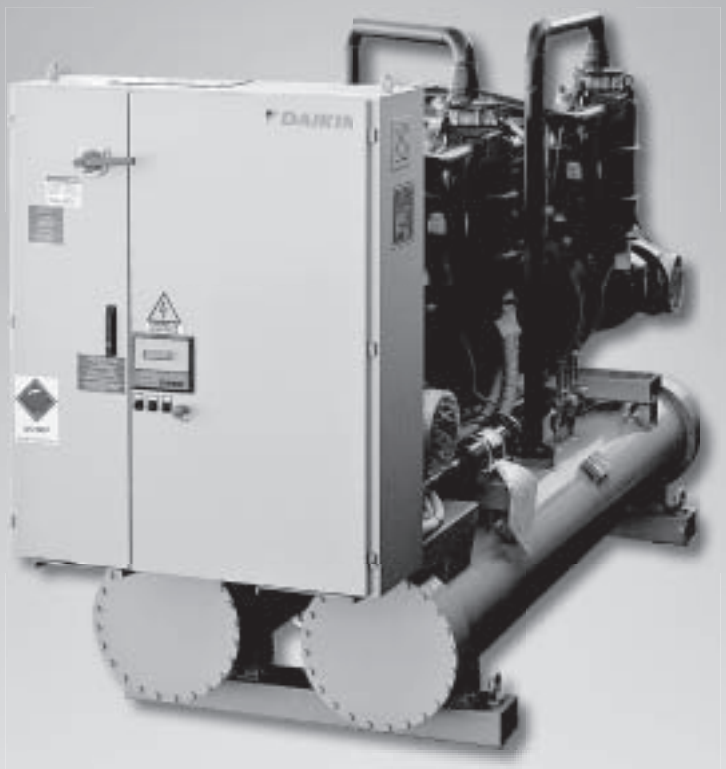

ECDEN10-421

EWWQ-AJYNN
EWWQ-AJYNN/A

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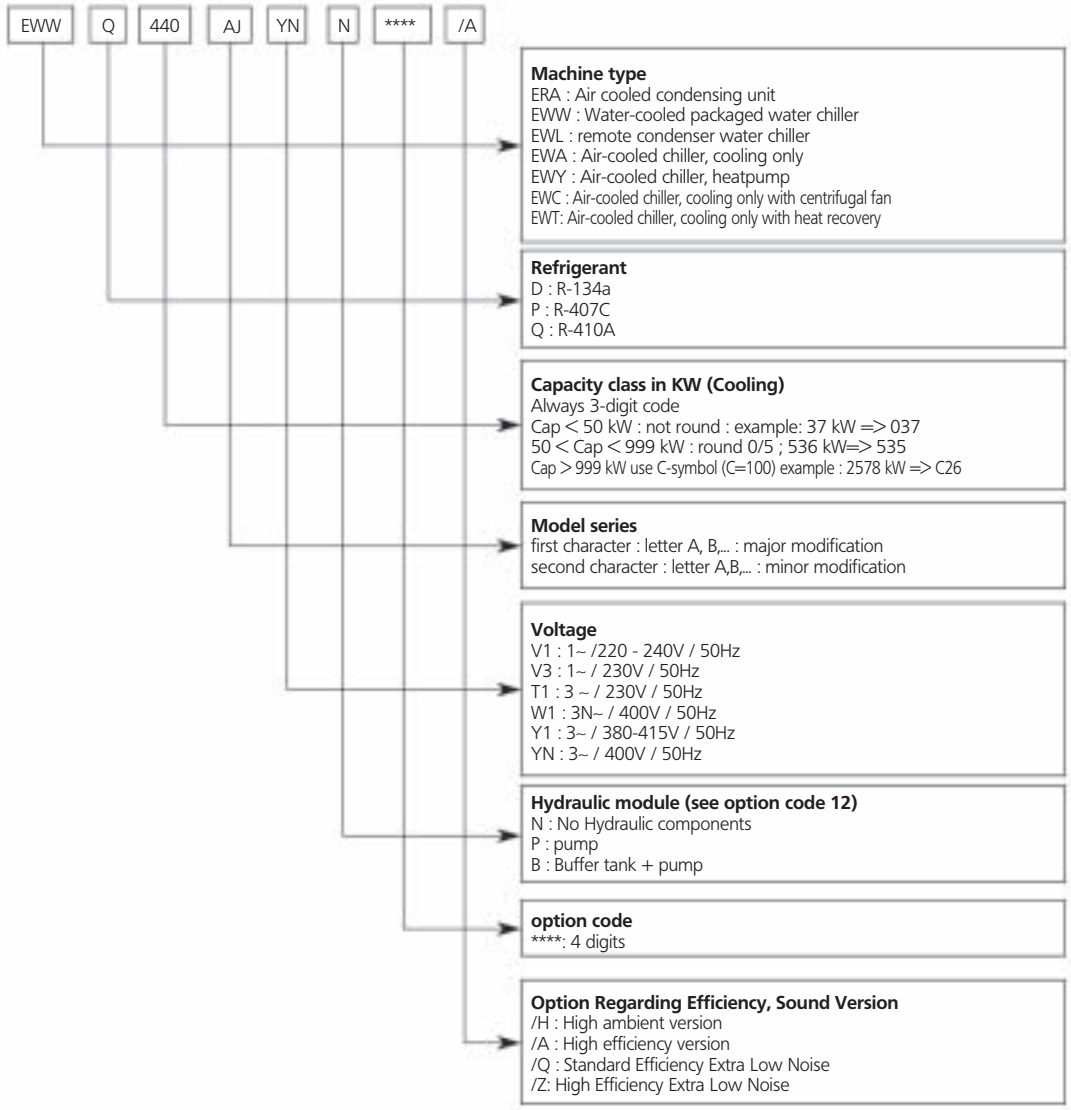
1 Nomenclature



2 Specifications text

GENERAL CHARACTERISTICS

Structure

The chiller is equipped with brackets directly installed on heat exchangers. The evaporator and the suction piping are appropriately insulated to prevent condensation. Unit is provided with lifting holes.

Screw compressors

The Stargate™ single-screw compressor has a well balanced compression mechanism which gives main bearing design life of 3-4 times greater than twin-screws and eliminates expensive and complicated thrust balancing schemes.
Oil injection is used for these compressors in order to get high EER at high condensing pressure. The oil supplied to the compressor performs three basic functions: oil for capacity control actuation, oil for bearing lubrication, oil for sealing. The oil is injected via fixed ports in the casing around the rotor.
Compressors have an infinitely variable capacity control down to 25% of its total capacity. This control is made by means of capacity slides controlled by microprocessors.
The unit is furnished with an external (for Frame 4) or integrated (for Frame 3200) high efficiency oil separator to maximise oil extraction.
The compressor is provided with a liquid injection circuit to reach oil cooling.
Standard start is star-delta type.

Evaporator

The units are supplied with optimised shell and tubes evaporator pass that allows a perfect oil circulation and so a perfect oil return to the compressor. It is direct expansion with refrigerant inside the tubes and water outside (shell side) with carbon steel tube sheets, with straight copper tubes that are spirally wound internally for higher efficiencies, expanded on the tube plates. The external shell is covered with a closed cell insulation material.
Each evaporator has 1 or 2 circuits, one for each compressor and is manufactured in accordance to PED approval. The evaporator water outlet connections are provided with Victaulic Kit.

Condensers

Condensers are shell and tubes cleanable, through-tube type. The unit has indenpendent condensers, one per circuit. Each condenser has a carbon steel and seamless, integrally finned high efficiency copper tubes, roll expanded into heavy carbon steel tube sheets. Water heads are removable and include vent and drain plugs. Condensers come complete with liquid shut-off valve, spring loaded relief valve.

Electronic expansion valve (EEV)

EWWQAJYNN-AJYNN/A water cooled chiller is equipped with the most advanced electronic expansion valve 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.
EEV strength point is the capacity to work with lower DP 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. This feature becomes more important in EWWQAJYNN-AJYNN/A that works with R-410A: the research indicates a favourable energy consumption when this refrigerant is used with low condensing temperatures.

Refrigerant circuit

Each unit has 1 or 2 independent refrigerant circuits with one compressor per circuit, including:

- High and low pressure switches
- Moisture liquid indicator
- High efficiency oil separator
- Replaceable core filter-drier
- Electronic expansion valve

Electrical control panel

Power and control are located into two sections of the main panel that is manufactured to insure protection for all weather conditions.
The power panel is fitted with an interlocked door main isolator to prevent access while power supply is on. Electrical panel is IP54.

Power section includes

The power section includes contactors, all compressors fuses and control circuit transformer.
Additional space is provided for an easy installation of the various optional accessories provided to enhance the EWWQ-AJYNN & AJYNN/A units capabilities.

2 Specifications text

MicroTech II C Plus controller

MicroTech II C Plus controller is installed as standard on all the units; it can be used to modify unit set points and check control parameters. A display illustrates the machine's operating status, programmable values and setpoints e.g. temperatures, and pressures of fluids (water, refrigerant). Device controls maximise the Daikin chillers energy efficiency and reliability characteristics. It uses sophisticated software with predictive logic to select the most energy efficient combination of compressor, expansion device and condenser fan to keep stable operating conditions and maximise energy efficiency. The compressors are automatically rotated to ensure equal operating hours. MicroTech II C Plus protects critical components in response to external signals from its system sensors measuring: motor temperatures, refrigerant gas and oil pressures, correct phases sequence and phase loss.

Control section - main features:

- Chillers enabled to work in partial failure condition thanks to the distributed multiprocessor logic system
- Management of the compressor capacity slide and the EEV valve according to the distributed multiprocessor logic system
- Full routine operation at condition of:
  - High pressure value
  - 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 and discharge superheating temperature for each circuit
- Leaving water cooled temperature regulation. Temperature tolerance ± 0,1°C
- Compressors and evaporator/condenser pumps hours counter
- Display of Status Safety Devices
- Start up numbers and compressors working hours equalization
- Excellent management of compressors load
- Cooling tower's fans management according to condensing pressure
- Automatic re-start in case of power supply interruption (adjustable)
- Soft Load
- Return Reset
- AOT Reset (optional)
- Setpoint Reset (optional)
- Demand limit or Current limit (optional)

Safety for each refrigerant circuit

- High pressure (pressure switch)
- Compressor overload (optional)
- High discharge temperature on the compressor
- Phase monitor
- Star/delta transition failed
- Low delta pressure between suction and discharge
- Low pressure ratio
- High oil pressure drop
- Low oil pressure

2 Specifications text

Compressor overload (optional)

- Phase monitor
- Freeze protection
- An evaporator's flow controller input (stops the unit)
- Remote on/off input
- Emergency stop (shuts down all compressors)

Regulation type

Proportional + integral + derivative regulation on the input probe of the evaporator water leaving temperature.

MicroTech II C Plus terminal

The MicroTech II C Plus terminal has following features:

- 4-lines by 20-character liquid crystal display back lighted
- Key-pad consisting of 15 keys " clear language display "
- Memory to protect the data
- General faults alarm led
- 4-level password access to modify the setting
- Service report displaying all running hours and general conditions
- Memorized alarm history to facilitate the fault's analysis
- Remote full featured versions of the LCD terminal are available for a comfortable check and control of the unit over RS488 line.

2 Specifications text

SPECIFICATIONS - EWWQ-AJYNN & AJYNN/A

To supply and install, where specified in the project n° . . . . . unit(s) water cooled chiller with cooling capacity of . . . . . kW, to cool . . . . . l/sec. of water from . . . . . °C to . . . . . °C,, condenser entering water temperature . . . . . °C, condenser leaving water temperature . . . . . °C.

The unit should work with electricity at . . . . . V, 3ph, 50Hz. The electrical power absorbed should not exceed . . . . . kW. The units EER will be at least . . . . . at the working conditions of the project. Part load EER will be at least . . . . . at the working conditions of the project.

The units will have 1 or 2 independent refrigerant circuits, and the respective electronic microprocessor will allow the starting of the compressors. Each chiller will be factory assembled and protected by an epoxy paint.

The unit will be tested at full load in the factory at the nominal working conditions and water temperatures. Before shipment a full test will be held to avoid any losses. Chiller will be delivered to the job site completely assembled and charged with refrigerant and oil.

Comply with the manufacturer instructions for rigging and handling equipment.

General

All units should be designed and manufactured in accordance with applicable selections of the following which are equivalent to American Air-conditioning industry applicable codes:

Rating of chillers	EN 12055
Construction of pressure vessel	Pressure Equipment 97/23/EC (PED)
Machinery Directive	98/37/EC
Low Voltage Directive	2006/95/ES
Electromagnetic Compatibility Directive	2004/108/EC
Electrical & Safety Codes	IEC 60204-1
Manufacturing Quality Stds	ISO 9001:2000

Refrigerant

Will be accepted only R-410A.

UNIT DESCRIPTION

Each chiller consist of single or multiple semi-hermetic rotary screw compressor, direct expansion evaporator, water-cooled condenser section, control system and all components necessary for safe and controlled unit operation.

NOISE LEVEL AND VIBRATIONS

Sound pressure level at 1 meter distance in free field, semispheric conditions, shall not exceed . . . . . dBA. The sound pressure levels must be rated in accordance to ISO 9614-2. Other types of rating unacceptable. Vibration level should not exceed 2 mm/s.

Dimensions

Unit length shall not exceed . . . . . mm, unit width shall not exceed . . . . . .mm, unit height shall not exceed . . . . . mm.

2 Specifications text

CHILLER COMPONENTS

Compressors

- The compressors shall be field serviceable, semi-hermetic, single-screw type with one main helical rotor meshing with two opposed gaterotor. Twin-screw compressor will no be accepted because of the large bearing loads inherent with this design. For a Single-screw compressor the two exactly opposed gaterotors create two exactly opposed compression cycles which results in balanced forces acting on the rotor compressor. The gaterotors will be constructed of a carbon impregnated engineered composite material. The gaterotor supports will be constructed of cast iron.
- The oil injection shall be used for these compressors in order to get high EER also at high condensing pressure and low sound pressure levels in each load condition.
- Refrigerant system differential pressure shall provide oil flow through service replaceable, 0.5 micron, full flow, cartridge type oil filter internal to compressor. Filter bypass or oil pump not acceptable.
- The compressor's oil cooling must be realized by liquid injection. External dedicated heat exchanger and additional piping to carry the oil from the compressor to heat exchanger and viceversa will be not accepted.
- The compressor shall be direct electrical drive, without gear transmission between the screw and the electrical motor. The motor's compressor shall be designed for star/delta. Soft start should be available as option.
- Shall be present two thermal protection realized by a thermistor for high temperature protection to motor and a thermistor for discharge gas high temperature protection.
- The compressor shall be provided with an automatic spring return of capacity control valve to the minimum load position to ensure compressor starting always at minimum motor load so with the minimum mechanical stress.
- The compressor discharge connection shall be fitted with a check valve and with a stop valve.
- The compressor discharge shall be fitted with a head pressure control valve.

Evaporator

- The units shall be supplied with shell and tubes counter-flow evaporator single refrigerant pass. It will be direct expansion with refrigerant inside the tubes and water outside (shell side) with carbon steel tube sheets, with straight copper tubes that are spirally wound internally for higher efficiencies, expanded on the tube plates.
- The external shell, shall be linked with an electrical heater (option on request) to prevent freezing up to -28 C ambient temperature, commanded by a thermostat and shall be insulated with flexible, closed cell polyurethane insulation material.
- The evaporator will have 1 or 2 circuits, one for each compressor and shall be single refrigerant pass to ensure a simpler oil circulation so to ensure always a perfect oil return to the compressor.
- Evaporator is manufactured in accordance to PED approval.

Condensers

- Condensers will be shell and cleanable, through-tube type.
- The unit will have one condensers per circuit.
- Each condenser shall have a carbon steel and seamless, integrally finned high efficiency copper tubes, roll expanded into heavy carbon steel tube sheets.
- Water heads shall be removable and include vent and drain plugs.
- Condensers will come complete with liquid shut-off valve, spring loaded relief valve.

Refrigerant circuit

- The unit must have refrigerant circuits completely independent of each other with one compressor per circuit.
- Each circuit shall include: an electronic expansion valve, external high efficiency oil separator, a liquid line shut-off valve with charging connection, replaceable core filter-drier, sight glass with moisture indicator and insulated suction line. Suction line and discharge line shut-off valves are available as option.

Regulation of cooling capacity

- Each unit will have a microprocessor for the control of compressor slide valve's position (2 slide valves, one for each compressor's cycles).
- The slides shall have a stepless motion that allows a unit's operation with infinitely variable capacity control down to 25% (1 compressor) or down to 12,5% (2 compressors) of the cooling capacity. The chiller shall be capable of stable operation to a minimum of 25% (1 compressor) or to a minimum of 12,5% (2 compressors) of full load without hot gas bypass.
- Step unloading unacceptable because of evaporator leaving water temperature fluctuation and low compressor's efficiency at partial load.
- The system shall stage the unit based on the leaving water temperature.

2 Specifications text

Electronic expansion valve

- Electronic expansion valve allows a simple and perfect control system that quickly interacts at load variations. This valve combines two functions: liquid solenoid and electronic expansion valve.
- It is managed directly by a microprocessor to match exactly the plant thermal load.
- Thermostatic valve unacceptable because of:
    - Its limited load range
    - Higher refrigerant pressure drop
    - Because of leaving evaporator water temperature control less good than an electronic device
    - Thermal expansion device needs a higher differential pressure between high pressure side and low pressure side to work correctly. This doesn't allow to work with low condensing pressure and therefore doesn't allow to reach the money saving that is possible to have with these chiller working conditions.

Control panel

- Field power connections, control interlock terminals, and unit control system should be centrally located in an electric panel (IP 54).
- The Power components and control equipment shall be separately mounted in different compartments of the control panel.
- The Compressor starting method will be star/delta, with an option for Softstart.
- Power and starting controls should include fuses and contactors for the compressor.
- Operating and safety controls should include energy saving; emergency stop switch; thermal overload protection for each compressor motor; high and low pressure cut-out switch (for each refrigerant circuit); anti-freeze thermostat; cut-out switch for each
- All of the information regarding the unit shall be shown on a display with a built-in calendar and clock that will provide unit scheduling throughout the year.
- The following features and functions shall be included:
    - Resetting chilled water temperature by controlling the return water temperature or by a remote 4-20 mA DC signal:
    - Soft load function to prevent the system from operating at full load during the chilled fluid pulldown period
    - Password protection of critical parameters of control
    - Start-to-start and stop-to-start timers to provide minimum compressor off-time with maximum motor protection
    - Communication capability with a PC or remote monitoring
    - Lead-lag selection by manual or automatically by circuit run hours
    - Double set point for brine unit version
    - Scheduling via internal time clock to allow programming of a yearly start-stop schedule accommodating weekends and holidays

Display Capabilities

The controller as a minimum shall be capable of monitoring and displaying the following data:

Operating Conditions

Ent./ Lvg. Evaporator fluid Temp.
Entering Condenser fluid Temp.
Operating Chilled Fluid Setpoint
Oil / Discharge gas Press. (per comp.)
Condensing Press. (per comp.)
Evaporator Press. (per comp.)
Unit Enabled
Compressor Enabled
Water Setpoint Reset
Demand Limit or Current Limit
(Site Selectable)

Alarms

Phase monitor
Freeze protection
Evaporator Flow
Low Gas Pressure (per comp.)
Transition Fault, (per comp.)
Oil Diff. press. (per comp.)
Low Oil Pressure (per comp.)
High Gas Pressure Trip (per comp.)
Motor Overload, (per comp.)
Transducer faults
Units Off-Line
External fault
Processor Faults
Maintenance requirements

2 Specifications text

Standard Customer Interfaces

The controller as a minimum shall be capable of providing the following interlocks:

Chiller Enable Signal: Digital Input, customer contact must be capable of handling 24Volts, 50HZ, 1 Amp.

Chiller Common Fault: Volt free, normally open, digital contact, must be capable of switching 250 V, 50 HZ, 10 Amp.

Pump Enable Signal: Volt free, normally open, digital contact, must be capable of switching 250 V, 50 HZ, 10 Amp.

Setpoint Override: 4 - 20 mA DC analoque input signal.

Demand Limit: 4 - 20 mA DC analoque input signal.

or

Current Limit: 4 - 20 mA DC analoque input signal.

Optional Customer Interfaces

Compressor Running Signals: Volt free, normally open, digital contact, capable of switching 250 V, 50 HZ, 10 Amp.

Optional High Level Communications Interface

Using ModBus, Lonworks or Bacnet protocols.

3 Specifications

3-1 TECHNICAL SPECIFICATIONS				EWWQ400 AJYNN	EWWQ480 AJYNN	EWWQ600 AJYNN	EWWQ650 AJYNN	EWWQ750 AJYNN	EWWQ800 AJYNN	EWWQ850 AJYNN	EWWQ900 AJYNN
Capacity (Eurovent)	Cooling	Nominal	kW	387.96	474.13	574.36	651.45	742.14	812.53	880.09	891.19
Capacity Steps			%	25-100 (stepless)	25-100 (stepless)	25-100 (stepless)	25-100 (stepless)	25-100 (stepless)	12.5-100 (stepless)	25-100 (stepless)	12.5-100 (stepless)
Nominal input (Eurovent)	Cooling		kW	87.37	106.27	130.44	147.86	169.73	175.22	206.4	194.02
EER				4.44	4.46	4.40	4.41	4.37	4.64	4.26	4.59
ESEER				4.95	4.98	4.97	4.97	4.72	5.37	4.60	5.36
Casing	Colour			RAL7032							
	Material			Galvanized and painted steel sheet							
Dimensions	Unit	Height	mm	1,846	1,846	2,000	2,000	1,846	2,170	1,846	2,170
		Width	mm	1,065	1,065	1,226	1,226	1,266	1,350	1,266	1,350
		Depth	mm	3,431	3,431	3,440	3,440	3,561	4,902	3,561	4,902
Weight	Unit		kg	1,933	1,967	2,283	2,332	2,407	3,921	2,427	3,949
	Operating Weight		kg	2,135	2,169	2,543	2,628	2,777	4,422	2,795	4,463
Water Heat Exchanger	Type			Shell and tube							
	Minimum water volume in the system (Formula)			The minimum water content per unit should be calculated with a certain approximation using this simplified formula: Q= 35.83/N x P(kW)/Delta T(°C); where: Q = minimum water content per unit expressed in litres; P = minimum cooling capacity of the unit expressed in kW; Delta T = evaporator entering / leaving water temperature difference expressed in °C; N = number of compressors; For more accurate determination of quantity of water, it is advisable to contact the designer of the plant.							
Water Heat Exchanger Evaporator	Type			Shell and tube							
	Water volume		l	124	118	176	170	274	344	266	344
	Water flow rate	Nominal	l/min	1111.8	1359	1646.4	1867.2	2124.6	2328.6	2519.4	2554.2
	Nominal water pressure drop	Cooling	kPa	49.43	64.65	45.04	47.92	54.74	53.80	50.22	63.54
	Insulation material			Closed cell foam elastomer							
Water Heat Exchanger Condenser	Type			Shell and tube							
	Water volume		l	79	92	84	126	97	79 / 79	102	79 / 92
	Water flow rate	Nominal	l/min	1372.2	1675.2	2034.6	2307.6	2632.2	2851.2	3136.2	3132.6
	Nominal water pressure drop	Cooling	kPa	60.15	64.35	67.91	66.02	16.46	64.44	20.43	66.55
	Insulation material			Expanded elastomer							
	Model	Quantity		1	1	1	1	1	2	1	2
Compressor	Type			Semi-hermetic single screw compressor							
	Refrigerant oil charge		l	16	16	16	16	16	32	16	32
	Model	Quantity		1	1	1	1	1	2	1	2
Sound level	Sound Power	Cooling	dBA	100.2	101.2	102.3	102.3	101.5	104.7	102.3	104.7
	Sound Pressure	Cooling	dBA	82.2	83.0	83.9	83.9	83.2	84.0	84.9	85.2
Operation Range	Evaporator	Min	°CDB	-4	-4	-4	-4	-4	-4	-4	-4
		Max	°CDB	10	10	10	10	10	10	10	10
	Condensor	Min	°CDB	25	25	25	25	25	25	25	25
		Max	°CDB	45	45	45	45	45	45	45	45
Refrigerant circuit	Refrigerant type			R-410A							
	Refrigerant charge		kg	80	80	90	90	100	85	100	85
			kg						85		85
	No of circuits			1	1	1	1	1	2	1	2
	Refrigerant control			Electronic expansion valve							
Piping connections	Evaporator water inlet/outlet			168.3mm	168.3mm	219.1mm	219.1mm	219.1mm	219.1mm	219.1mm	219.1mm
	Condensor water inlet/outlet			5''	5''	5"	5''	6"	5''	6"	5"
Safety Devices				High pressure switch							
				Low pressure switch							
				Emergency stop							
				High discharge temperature on the compressor							
				Phase monitor							
				Low pressure ratio							
				High oil pressure drop							
				Low oil pressure							
Notes				Nominal cooling capacity and power input at Eurovent conditions: Evaporator 12/7°C; Condenser 30/35°C							

3 Specifications

3-1 TECHNICAL SPECIFICATIONS				EWWQC10 AJYNN	EWWQC11 AJYNN	EWWQC12 AJYNN	EWWQC13 AJYNN	EWWQC14 AJYNN	EWWQC15 AJYNN	EWWQC16 AJYNN	EWWQC17 AJYNN
Capacity (Eurovent)	Cooling	Nominal	kW	980.45	1,028.15	1,077.43	1,210.09	1,281.09	1,352.09	1,488.14	1,620.34
Capacity Steps			%	12.5-100 (stepless)	25-100 (stepless)	12.5-100 (stepless)	12.5-100 (stepless)	12.5-100 (stepless)	12.5-100 (stepless)	12.5-100 (stepless)	12.5-100 (stepless)
Nominal input (Eurovent)	Cooling		kW	212.97	245.47	236.90	261.72	279.05	296.39	339.95	375.37
EER				4.60	4.19	4.55	4.62	4.59	4.56	4.38	4.32
ESEER				5.34	4.53	5.33	5.36	5.35	5.29	4.93	4.93
Casing	Colour			RAL7032							
	Material			Galvanized and painted steel sheet							
Dimensions	Unit	Height	mm	2,170	1,846	2,379	2,455	2,455	2,455	2,547	2,547
		Width	mm	1,350	1,266	1,350	1,350	1,350	1,350	1,350	1,350
		Depth	mm	4,902	3,561	4,912	4,835	4,835	4,835	4,844	4,844
Weight	Unit		kg	3,988	2,457	4,344	4,529	4,536	4,607	4,988	4,999
	Operating Weight		kg	4,496	2,812	4,780	5,186	5,200	5,280	5,602	5,615
Water Heat Exchanger	Type			Shell and tube							
	Minimum water volume in the system (Formula)			The minimum water content per unit should be calculated with a certain approximation using this simplified formula: Q= 35.83/N x P(kW)/Delta T(°C); where: Q = minimum water content per unit expressed in litres; P = minimum cooling capacity of the unit expressed in kW; Delta T = evaporator entering / leaving water temperature difference expressed in °C; N = number of compressors; For more accurate determination of quantity of water, it is advisable to contact the designer of the plant.							
Water Heat Exchanger Evaporator	Type			Shell and tube							
	Water volume		l	325	251	325	538	538	538	505	505
	Water flow rate	Nominal	l/min	2809.8	2943	3088.2	3468	3671.4	3875.4	4260	4636.8
	Nominal water pressure drop	Cooling	kPa	59.07	57.23	70.01	45.37	50.28	55.40	59.86	69.74
	Insulation material			Closed cell foam elastomer							
Water Heat Exchanger Condenser	Type			Shell and tube							
	Water volume		l	92 / 92	104	52 / 60	60 / 60	60 / 68	68 / 68	54 / 54	54 / 57
	Water flow rate	Nominal	l/min	3445.2	3676.8	3794.4	4249.2	4504.2	4759.2	5277.6	5760.6
	Nominal water pressure drop	Cooling	kPa	67.64	25.92	70.09	73.40	73.40	69.77	16.52	19.31
	Insulation material			Expanded elastomer							
	Model	Quantity		2	1	2	2	2	2	2	2
Compressor	Type			Semi-hermetic single screw compressor							
	Refrigerant oil charge		l	32	16	32	32	32	32	32	32
	Model	Quantity		2	1	2	2	2	2	2	2
Sound level	Sound Power	Cooling	dBA	105.1	103.2	104.7	105.2	106.5	106.5	105.8	106.2
	Sound Pressure	Cooling	dBA	85.2	85.6	86	86.5	86.9	86.9	86.2	86.6
Operation Range	Evaporator	Min	°CDB	-4	-4	-4	-4	-4	-4	-4	-4
		Max	°CDB	10	10	10	10	10	10	10	10
	Condensor	Min	°CDB	25	25	25	25	25	25	25	25
		Max	°CDB	45	45	45	45	45	45	45	45
Refrigerant circuit	Refrigerant type			R-410A							
	Refrigerant charge		kg	85	100	95	100	100	100	130	130
			kg	85		95	100	100	100	130	130
	No of circuits			2	1	2	2	2	2	2	2
	Refrigerant control									Electronic expansion valve	Electronic expansion valve
Piping connections	Evaporator water inlet/outlet			219.1mm	219.1mm	219.1mm	273.0mm	273.0mm	273.0mm	273.0mm	273.0mm
	Condensor water inlet/outlet			5"	6"	5"	5"	5"	5"	6"	6"
Safety Devices				High pressure switch							
				Low pressure switch							
				Emergency stop							
				High discharge temperature on the compressor							
				Phase monitor							
				Low pressure ratio							
				High oil pressure drop							
				Low oil pressure							
Notes				Nominal cooling capacity and power input at Eurovent conditions: Evaporator 12/7°C; Condenser 30/35°C							

3 Specifications

3-1 TECHNICAL SPECIFICATIONS				EWWQC18AJYNN	EWWQC19AJYNN	EWWQC20AJYNN
Capacity (Eurovent)	Cooling	Nominal	kW	1,783.43	1,928.13	2,092.73
Capacity Steps			%	12.5-100 (stepless)		
Nominal input (Eurovent)	Cooling		kW	408.72	441.58	475.47
EER				4.36	4.37	4.40
ESEER				4.82	4.89	4.87
Casing	Colour			RAL7032		
	Material			Galvanized and painted steel sheet		
Dimensions	Unit	Height	mm	2,547		
		Width	mm	1,350		
		Depth	mm	4,844	4,809	4,809
Weight	Unit		kg	5,053	5,204	5,289
	Operating Weight		kg	5,670	5,881	5,970
Water Heat Exchanger	Type			Shell and tube		
	Minimum water volume in the system (Formula)			The minimum water content per unit should be calculated with a certain approximation using this simplified formula: Q= 35.83/N x P(kW)/Delta T(°C); where: Q = minimum water content per unit expressed in litres; P = minimum cooling capacity of the unit expressed in kW; Delta T = evaporator entering / leaving water temperature difference expressed in °C; N = number of compressors; For more accurate determination of quantity of water, it is advisable to contact the designer of the plant.		
Water Heat Exchanger Evaporator	Type			Shell and tube		
	Water volume		l	495	539	527
	Water flow rate	Nominal	l/min	5105.4	5519.4	5990.4
	Nominal water pressure drop	Cooling	kPa	89.42	98.78	122.57
	Insulation material			Closed cell foam elastomer		
Water Heat Exchanger Condenser	Type			Shell and tube		
	Water volume		l	61 / 61	61 / 77	77 / 77
	Water flow rate	Nominal	l/min	6328.8	6841.2	7413.6
	Nominal water pressure drop	Cooling	kPa	16.93	17.08	15.02
	Insulation material			Expanded elastomer		
	Model	Quantity		2	2	2
Compressor	Type			Semi-hermetic single screw compressor		
	Refrigerant oil charge		l	32	32	32
	Model	Quantity		2	2	2
Sound level	Sound Power	Cooling	dBA	106.6	107.1	107.5
	Sound Pressure	Cooling	dBA	87	87.5	87.9
Operation Range	Evaporator	Min	°CDB	-4	-4	-4
		Max	°CDB	10	10	10
	Condensor	Min	°CDB	25	25	25
		Max	°CDB	45	45	45
Refrigerant circuit	Refrigerant type			R-410A		
	Refrigerant charge		kg	130	130	130
			kg	130	130	130
	No of circuits			2	2	2
	Refrigerant control			Electronic expansion valve		
Piping connections	Evaporator water inlet/outlet			273.0mm	273.0mm	273.0mm
	Condensor water inlet/outlet			6"		
Safety Devices				High pressure switch		
				Low pressure switch		
				Emergency stop		
				High discharge temperature on the compressor		
				Phase monitor		
				Low pressure ratio		
				High oil pressure drop		
				Low oil pressure		
Notes				Nominal cooling capacity and power input at Eurovent conditions: Evaporator 12/7°C; Condenser 30/35°C		

3 Specifications

3-2 ELECTRICAL SPECIFICATIONS				EWWQ400 AJYNN	EWWQ480 AJYNN	EWWQ600 AJYNN	EWWQ650 AJYNN	EWWQ750 AJYNN	EWWQ800 AJYNN	EWWQ850 AJYNN	EWWQ900 AJYNN
Power Supply	Name			YN							
	Phase			3~							
	Frequency		Hz	50	50	50	50	50	50	50	50
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
Unit	Starting Current		A	455	455	455	455	656	455	656	455
	Maximum starting current		A	455	455	455	455	656	610	656	638
	Nominal Running Current Cooling		A	149	176	211	238	275	299	330	325
	Power factor at nominal conditions		A	0.85	0.87	0.89	0.90	0.89	0.85	0.90	0.86
	Maximum Running Current		A	179	214	260	294	325	358	381	393
	Max unit current for wires sizing		A	197	235	286	324	357	394	419	432
	Recommended fuses according to IEC standard 269-2			400 A gG	400 A gG	500 A gG	630 A gG	630 A gG	400 A gG	800 A gG	400 A gG
Compressor	Phase			3~							
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
	Starting current		A	455	455	455	455	656	455	656	455
	Nominal running current (RLA)		A	149	176	211	238	275	149 / 149	330	149 / 176
	Maximum Running Current		A	189	225	274	310	325	189 / 189	388	189 / 225
	Starting Method			Open Star-Delta							
	Recommended fuses			250 A gG	250 A gG	315 A gG	355 A gG	355 A gG	250 A gG / 250 A gG	500 A gG	250 A gG / 250 A gG
Control Circuit	Phase			1~							
	Voltage		V	115	115	115	115	115	115	115	115
	Recommended fuses			4 A gG							
	Crankcase heater (E1/2HC)		W	250	250	250	250	400+140	250 / 250	400+140	250 / 250
Notes				Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.							
				Nominal current in cooling mode is referred to installation with 25kA short circuit current and is based on the following conditions: evaporator 12/7°C, condenser 30/35°C							
				Maximum starting current: starting current of biggest compressor + current of the other compressor at 75 % of maximum load							
				Maximum current for wires sizing: (compressors full load ampere + fans current) x 1.1							
				Recommended fuses (IEC 269-2: 1.6 times largest compressor fuse size)							

3-2 ELECTRICAL SPECIFICATIONS				EWWQC10 AJYNN	EWWQC11 AJYNN	EWWQC12 AJYNN	EWWQC13 AJYNN	EWWQC14 AJYNN	EWWQC15 AJYNN	EWWQC16 AJYNN	EWWQC17 AJYNN
Power Supply	Name			YN							
	Phase			3~							
	Frequency		Hz	50	50	50	50	50	50	50	50
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
Unit	Starting Current		A	455	656	455	455	455	455	656	656
	Maximum starting current		A	638	656	676	676	705	705	933	984
	Nominal Running Current Cooling		A	352	386	387	424	450	477	551	604
	Power factor at nominal conditions		A	0.87	0.92	0.88	0.89	0.90	0.90	0.89	0.90
	Maximum Running Current		A	428	445	474	522	556	589	650	706
	Max unit current for wires sizing		A	470	489	522	574	611	648	715	778
	Recommended fuses according to IEC standard 269-2			400 A gG	800 A gG	500 A gG	500 A gG	630 A gG	630 A gG	800 A gG	800 A gG

3 Specifications

3-2 ELECTRICAL SPECIFICATIONS				EWWQC10 AJYNN	EWWQC11 AJYNN	EWWQC12 AJYNN	EWWQC13 AJYNN	EWWQC14 AJYNN	EWWQC15 AJYNN	EWWQC16 AJYNN	EWWQC17 AJYNN
Compressor	Phase			3~							
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
	Starting current		A	455	656	455	455	455	455	656	656
	Nominal running current (RLA)		A	176 / 176	386	176 / 211	211 / 211	211 / 238	238 / 238	275 / 275	275 / 330
	Maximum Running Current		A	225 / 225	458	225 / 274	274 / 274	274 / 310	310 / 310	325 / 325	325 / 388
	Starting Method			Open Star-Delta							
	Recommended fuses			250 A gG / 250 A gG	630 A gG	250 A gG / 315 A gG	315 A gG / 315 A gG	315 A gG / 355 A gG	355 A gG / 355 A gG	355 A gG / 355 A gG	355 A gG / 500 A gG
Control Circuit	Phase			1~							
	Voltage		V	115	115	115	115	115	115	115	115
	Recommended fuses			4 A gG							
	Crankcase heater (E1/2HC)		W	250 / 250	400+140	250 / 250	250 / 250	250 / 250	250 / 250	400+140 / 400+140	400+140 / 400+140
Notes				Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.							
				Nominal current in cooling mode is referred to installation with 25kA short circuit current and is based on the following conditions: evaporator 12/7°C, condenser 30/35°C							
				Recommended fuses (IEC 269-2: 1.6 times largest compressor fuse size)							
				Maximum starting current: starting current of biggest compressor + current of the other compressor at 75 % of maximum load							
				Maximum current for wires sizing: (compressors full load ampere + fans current) x 1.1							

3-2 ELECTRICAL SPECIFICATIONS				EWWQC18AJYNN	EWWQC19AJYNN	EWWQC20AJYNN
Power Supply	Name			YN		
	Phase			3~		
	Frequency		Hz	50	50	50
	Voltage		V	400	400	400
	Voltage Tolerance	Minimum	%	-10%		
		Maximum	%	+10%		
Unit	Starting Current		A	656	656	656
	Maximum starting current		A	984	1,035	1,035
	Nominal Running Current Cooling		A	654	701	749
	Power factor at nominal conditions		A	0.90	0.91	0.92
	Maximum Running Current		A	764	824	886
	Max unit current for wires sizing		A	840	906	975
	Recommended fuses according to IEC standard 269-2			1,000 A gG		
Compressor	Phase			3~		
	Voltage		V	400	400	400
	Voltage Tolerance	Minimum	%	-10%		
		Maximum	%	+10%		
	Starting current		A	656	656	656
	Nominal running current (RLA)		A	330 / 330	330 / 386	386 / 386
	Maximum Running Current		A	388 / 388	388 / 458	458 / 458
	Starting Method			Open Star-Delta		
	Recommended fuses			500 A gG / 500 A gG	500 A gG / 630 A gG	630 A gG / 630 A gG
Control Circuit	Phase			1~		
	Voltage		V	115	115	115
	Recommended fuses			4 A gG		
	Crankcase heater (E1/2HC)		W	400+140 / 400+140		
Notes				Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.		
				Nominal current in cooling mode is referred to installation with 25kA short circuit current and is based on the following conditions: evaporator 12/7°C, condenser 30/35°C		
				Recommended fuses (IEC 269-2: 1.6 times largest compressor fuse size)		
				Maximum starting current: starting current of biggest compressor + current of the other compressor at 75 % of maximum load		
				Maximum current for wires sizing: (compressors full load ampere + fans current) x 1.1		

4 Options

Standard Configuration (furnished on basic unit)

Star Delta Compressors starter - For low inrush current and reduced starting torque.
Phase monitor - The phase monitor controls phase sequence and phase loss.
Evaporator connection water side Victaulic - Hydraulic joint with gasket for an easy and quick water connection.
Double Set Point version (CB) - Dual leaving glycol mixture temperature setpoints.The lower setpoint can go down to 0°C.
This option needs 20mm thicked evaporator insulation (option on request).
1 pass condensers for EWWQ750-850-C11AJYNN units and EWWQC16-C20AJYNN.
2 passes condensers for EWWQ400-650AJYNN UNITS and EWWQ800-C15AJYNN, and for EWWQ-AJYNN/A units.
Hour run meter - Digital compressors hour run meter.
General fault relay - Contactor for the alarm warning.
Alarm from external device - Microprocessor is able to receive an alarm signal from an external device (pump, etc...). User can decide if this alarm signal will stop the unit or not.
Discharge line check valves

Options (on request)

Partial heat recovery - Enabled through a shell & tubes heat exchanger sited between the compressor and the condenser, completely dedicated to the heat recovery. This allows hot water to be produced up to a maximum temperature of 58°C, and to provide a very economic solution.
Evaporator electric heater - Electric heater controlled by a thermostat to protect the evaporator from freezing down to -28°C ambient temperature.
Compressor thermal overload relays - Safety devices against compressor motor overloading in addition to the normal protection envisaged by the electrical windings.
Amp and Volt Meter - Digital meters of unit drawn amperes and voltage values, installed on the electrical control panel.
Power factor correction - Installed on the electrical control panel to ensure it complies with the plant rules. (Daikin advises maximum 0,9).
Flow switch - Supplied separately to be wired and installed on the evaporator water piping (by the customer).
Suction line shut-off valves - Suction shut-off valve installed on the suction part of the compressor to facilitate maintenance operations. The valve implies an increase of length equal to 150mm
Discharge line shut-off valves - Discharge shut-off valve installed on the discharge part of the compressor to facilitate maintenance operations.
Cu-Ni 90-10 condenser - To work with sea water the heat exchangers are fitted with Cu-Ni tubes and special protection inside the end covers.
Rubber type antivibration mounts - Supplied separately, these are positioned under the base of the unit for "floor" installation.
Sound proof cabinet - Made of sheet metal and internally insulated, the cabinet is "integral kind" (around the whole chiller, not only around the compressors) to reach the best performance in noise reduction.

4 Options

Current Limit / Display - This option allows to monitor the chiller absorbed current with possibility to set a limit value. This option excludes the Demand Limit.
20mm thicked evaporator insulation - Useful in really heavy operating conditions.
2 passes condensers working with 9-12 °C water ΔT for EWWQ750-850-C11AJYNN and EWWQC16-C19AJYNN units.
4 passes condensers working with 9-12 °C water ΔT for EWWQ400-650AJYNN and EWWQ800-C15, and for EWWQ-AJYNN/A units.
Witness tests - The units are normally tested at the test bench prior to the shipment. On request, a second test can be carried out, at customer's presence, in accordance with the procedures indicated on the test form. (Not available for units with Glycol mixtures).
Soft start - Electronic starting device to prevent mechanical stress of the motor. An overload protection is included (no need of compressors thermal relays); soft start causes an increase of length equal to 100mm only on the following versions: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A
Over / Under Voltage - Phase monitor to control the minimum and maximum voltage value that the user can set.

Supervising systems (on request)

PlantVisor™:

Solution for tele-maintenance and supervisory
MicroTech II C Plus can be monitored locally or via modem or GSM by PlantVisor™ supervision program.
PlantVisor™ is compatible with all Windows based systems.
It allows the followings functions:

- Unit status monitoring
- Circuits status monitoring
- Set-points modification
- Alarms display

MicroTech II C Plus remote control

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

- CARELNative
- 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 and SNM.

Chiller Sequencing

MicroTech II control family allows an easy plug-in sequencing technology based on digital or serial field panel.
CSC II (Chiller System Controller II)
Serial sequences for up to 5 MTII chillers. Full featured field serial device to sequence, optimize and monitor a small group of Daikin chillers (check your catalogue for compatibility and features). Monitorable by Plant Visor.

5 Capacity tables

5 - 1 Cooling capacity tables

EWWQ400-800AJYNN

Unit size	Leaving chilled water temp. °C	Entering condenser water temperature (△T=5°C)									
		20		25		30		35		40	
		Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)
400	4	398.3	68.4	377.5	77.4	353.9	86.9	328.0	96.9	300.5	107.6
	5	410.0	68.5	389.1	77.6	365.1	87.1	338.8	97.1	310.8	107.8
	6	422.0	68.6	400.8	77.7	376.4	87.2	349.8	97.2	321.3	107.9
	7	434.1	68.7	412.6	77.9	388.0	87.4	360.9	97.4	332.1	108.1
	8	446.5	68.8	424.5	78.0	399.7	87.5	372.2	97.6	343.0	108.2
	9	459.0	68.9	436.7	78.1	411.5	87.7	383.7	97.7	354.1	108.4
	10	471.8	69.0	449.0	78.2	423.4	87.8	395.4	97.9	365.3	108.5
480	4	486.6	83.2	461.4	94.2	432.7	105.7	401.3	117.9	367.9	131.0
	5	500.7	83.4	475.4	94.4	446.4	105.9	414.4	118.1	380.5	131.1
	6	515.0	83.5	489.7	94.5	460.1	106.1	427.8	118.3	393.4	131.3
	7	529.5	83.6	503.8	94.7	474.1	106.3	441.3	118.5	406.4	131.5
	8	544.3	83.7	518.0	94.9	488.4	106.5	455.1	118.7	419.7	131.7
	9	559.3	83.8	532.6	95.0	502.4	106.6	469.0	118.9	433.1	131.9
	10	574.5	83.9	547.3	95.2	516.7	106.8	483.2	119.1	446.8	132.1
600	4	589.3	102.2	559.2	115.6	524.9	129.7	487.3	144.8	447.2	160.9
	5	606.5	102.3	575.9	115.8	541.2	130.0	503.0	145.0	462.4	161.1
	6	624.1	102.5	592.9	116.0	557.7	130.2	519.0	145.2	477.8	161.3
	7	642.0	102.7	610.2	116.2	574.4	130.4	535.2	145.5	493.5	161.5
	8	660.1	102.8	627.8	116.4	591.3	130.7	551.7	145.7	509.4	161.8
	9	678.6	103.0	645.6	116.6	608.6	130.9	568.3	146.0	525.5	162.0
	10	697.4	103.1	663.8	116.8	626.1	131.1	585.2	146.2	541.9	162.2
650	4	668.2	115.8	634.2	131.0	595.2	147.1	552.3	164.1	506.8	182.5
	5	687.7	116.0	653.1	131.3	613.9	147.3	570.3	164.4	524.0	182.7
	6	707.6	116.2	672.4	131.5	632.6	147.6	588.5	164.7	541.6	182.9
	7	727.8	116.4	691.9	131.7	651.5	147.9	607.1	164.9	559.5	183.2
	8	748.3	116.5	711.8	132.0	670.7	148.1	625.9	165.2	577.6	183.4
	9	769.2	116.7	732.0	132.2	690.2	148.4	644.7	165.5	596.0	183.7
	10	790.4	116.8	752.5	132.4	710.0	148.6	663.8	165.7	614.8	183.9
750	4	754.4	135.4	715.0	150.9	673.3	166.6	629.7	183.1	584.2	200.9
	5	778.5	136.3	738.4	151.9	695.8	167.7	651.2	184.2	604.6	202.1
	6	803.0	137.1	762.1	152.9	718.8	168.8	673.1	185.3	609.3	199.9
	7	828.0	137.9	786.3	153.8	742.1	169.7	695.5	186.4	613.3	197.4
	8	853.4	138.6	810.9	154.6	765.8	170.6	718.3	187.3	616.6	194.6
	9	879.1	139.1	836.0	155.2	789.9	171.3	741.4	188.1	619.0	191.4
	10	905.2	139.5	861.2	155.7	814.4	171.9	764.9	188.7	620.6	187.9
800	4	834.9	137.2	790.0	155.3	739.3	174.2	684.1	194.2	625.7	215.6
	5	860.7	137.4	814.9	155.6	763.3	174.6	707.2	194.6	647.6	215.9
	6	887.1	137.6	840.3	155.9	787.7	174.9	730.5	194.9	670.1	216.2
	7	913.9	137.8	866.2	156.1	812.5	175.2	754.3	195.2	693.0	216.5
	8	941.2	137.9	892.5	156.4	837.9	175.5	778.6	195.6	716.2	216.8
	9	968.9	138.1	919.4	156.6	863.7	175.8	803.4	195.9	739.8	217.2
	10	997.1	138.2	946.7	156.9	890.0	176.1	828.6	196.3	763.9	217.5

Note: C.C. (cooling capacity) and P.I. (unit power input) are referred to 0,0176m² °C/kW evaporator fouling factor and 0,0440m² °C/kW condenser fouling factor. Rated conditions are for compressors running at nominal frequency. Shaded values are referred to part load operation.

5 Capacity tables

5 - 1 Cooling capacity tables

EWWQ850-C13AJYNN

Unit size	Leaving chilled water temp. °C	Entering condenser water temperature (△T=5°C)									
		20		25		30		35		40	
		Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)
850	4	895.9	165.4	849.1	183.3	799.8	202.0	747.7	220.9	632.7	226.2
	5	924.0	166.5	876.4	184.6	826.1	203.5	772.9	222.5	636.1	223.4
	6	952.6	167.7	904.3	185.9	852.8	205.0	798.4	224.1	638.6	220.3
	7	981.8	168.7	932.4	187.2	880.1	206.4	824.5	225.6	640.1	216.9
	8	1011.4	169.8	960.9	188.5	907.7	207.8	851.0	227.1	640.6	213.2
	9	1041.3	170.8	990.0	189.6	935.6	209.1	877.9	228.5	647.3	210.8
	10	1071.5	171.7	1019.5	190.7	964.0	210.3	905.2	229.8	645.8	206.5
900	4	915.2	151.9	866.8	172.0	811.9	192.9	752.1	215.1	688.9	238.9
	5	943.1	152.2	893.7	172.3	837.9	193.3	777.0	215.5	712.7	239.2
	6	971.4	152.4	921.1	172.6	864.3	193.7	802.4	215.9	737.0	239.5
	7	1000.2	152.6	949.1	172.9	891.2	194.0	828.3	216.2	761.8	239.9
	8	1029.4	152.8	977.3	173.2	918.5	194.4	854.6	216.6	787.0	240.2
	9	1058.8	153.0	1006.0	173.5	946.4	194.7	881.4	217.0	812.6	240.6
	10	1088.5	153.1	1035.2	173.7	974.6	195.0	908.6	217.4	838.7	241.0
C10	4	1007.1	166.8	953.4	188.7	892.8	211.7	826.7	236.1	757.0	262.2
	5	1037.8	167.0	983.2	189.1	921.5	212.2	854.3	236.5	783.3	262.6
	6	1068.9	167.3	1013.6	189.5	950.7	212.6	882.4	237.0	810.1	263.0
	7	1100.6	167.5	1044.2	189.8	980.4	213.0	911.0	237.4	837.5	263.3
	8	1132.8	167.8	1075.3	190.1	1010.8	213.4	940.0	237.8	865.4	263.7
	9	1165.4	168.0	1107.0	190.4	1041.3	213.7	969.6	238.2	893.8	264.1
	10	1198.6	168.1	1139.2	190.7	1072.4	214.1	999.8	238.6	922.6	264.5
C11	4	1049.2	196.8	993.7	217.7	934.8	239.7	873.1	261.9	638.5	242.9
	5	1082.2	198.3	1025.4	219.4	965.6	241.7	902.6	263.9	638.2	238.5
	6	1115.8	199.8	1057.8	221.2	996.6	243.6	932.7	266.0	644.7	235.8
	7	1149.8	201.3	1090.7	222.9	1028.1	245.5	963.2	268.1	642.1	230.9
	8	1184.4	202.8	1124.1	224.7	1060.2	247.4	993.9	270.1	646.9	227.8
	9	1219.6	204.4	1157.9	226.4	1092.9	249.3	1025.1	272.1	650.9	224.6
	10	1255.4	205.9	1192.3	228.1	1125.9	251.2	1056.7	274.1	654.1	221.1
C12	4	1105.9	185.5	1048.3	209.9	982.9	235.6	911.5	262.8	835.8	291.9
	5	1139.0	185.8	1080.3	210.3	1013.9	236.0	941.4	263.2	864.4	292.3
	6	1172.0	186.1	1113.0	210.7	1045.4	236.5	971.8	263.7	893.6	292.7
	7	1205.5	186.4	1145.9	211.1	1077.4	236.9	1002.6	264.1	923.4	293.1
	8	1239.6	186.6	1178.9	211.4	1110.0	237.3	1034.0	264.6	953.6	293.6
	9	1274.1	186.8	1212.4	211.8	1143.0	237.7	1065.9	265.0	984.2	294.0
	10	1309.2	187.0	1246.5	212.1	1175.8	238.1	1098.3	265.5	1015.4	294.4
C13	4	1243.7	205.0	1176.3	231.9	1100.6	260.2	1018.0	290.2	931.4	322.3
	5	1282.4	205.3	1213.6	232.4	1136.4	260.7	1052.5	290.7	964.2	322.8
	6	1320.3	205.6	1251.6	232.8	1172.9	261.2	1087.7	291.2	997.6	323.2
	7	1359.0	205.9	1290.0	233.3	1210.1	261.7	1123.4	291.7	1031.8	323.7
	8	1398.3	206.2	1328.0	233.7	1248.0	262.2	1159.7	292.2	1066.6	324.2
	9	1438.4	206.5	1366.7	234.0	1286.5	262.7	1196.7	292.8	1102.1	324.7
	10	1479.2	206.7	1406.0	234.4	1324.4	263.1	1234.4	293.3	1138.1	325.2

Note: C.C. (cooling capacity) and P.I. (unit power input) are referred to 0,0176m² °C/kW evaporator fouling factor and 0,0440m² °C/kW condenser fouling factor. Rated conditions are for compressors running at nominal frequency. Shaded values are referred to part load operation.

5 Capacity tables

5 - 1 Cooling capacity tables

EWWQC14-C19AJYNN

Unit size	Leaving chilled water temp. °C	Entering condenser water temperature (△T=5°C)									
		20		25		30		35		40	
		Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)
C14	4	1315.5	218.6	1246.1	247.3	1167.1	277.5	1080.3	309.5	989.0	343.8
	5	1355.4	218.9	1284.6	247.8	1204.8	278.0	1116.6	310.0	1023.6	344.3
	6	1395.3	219.2	1323.8	248.2	1242.7	278.5	1153.6	310.6	1058.9	344.8
	7	1435.9	219.5	1363.6	248.7	1281.1	279.0	1191.2	311.1	1094.8	345.3
	8	1477.3	219.8	1403.5	249.1	1320.2	279.6	1229.1	311.6	1131.5	345.8
	9	1519.6	220.1	1444.0	249.5	1359.9	280.1	1267.3	312.2	1168.8	346.3
	10	1562.7	220.3	1485.5	249.9	1399.7	280.5	1306.2	312.7	1206.8	346.8
C15	4	1387.3	232.1	1316.0	262.7	1233.6	294.8	1142.6	328.8	1046.5	365.3
	5	1428.4	232.5	1355.6	263.2	1273.3	295.3	1180.7	329.4	1083.0	365.8
	6	1470.2	232.8	1396.0	263.6	1312.5	295.9	1219.5	329.9	1120.2	366.3
	7	1512.7	233.2	1437.1	264.1	1352.1	296.4	1259.0	330.5	1157.9	366.8
	8	1556.2	233.5	1478.9	264.5	1392.4	296.9	1298.6	331.1	1196.3	367.4
	9	1600.8	233.7	1521.4	264.9	1433.4	297.4	1338.0	331.6	1235.5	367.9
	10	1646.2	234.0	1565.0	265.4	1475.1	297.9	1378.1	332.1	1275.5	368.4
C16	4	1512.7	271.2	1433.9	302.3	1350.6	333.8	1263.2	366.8	1172.2	402.7
	5	1560.7	273.0	1480.7	304.4	1395.5	336.0	1306.3	369.1	1192.1	400.6
	6	1609.7	274.6	1528.1	306.3	1441.4	338.1	1350.1	371.3	1200.7	396.0
	7	1659.5	276.1	1576.3	308.0	1488.1	340.0	1394.8	373.3	1196.5	388.4
	8	1710.1	277.4	1625.4	309.5	1535.4	341.6	1440.3	375.1	1201.6	382.4
	9	1761.2	278.5	1675.3	310.8	1583.4	343.1	1486.6	376.6	1217.3	378.3
	10	1813.1	279.3	1725.7	311.8	1632.3	344.2	1533.5	377.7	1219.5	370.8
C17	4	1647.5	300.1	1563.0	333.5	1473.3	368.0	1378.8	403.5	1226.0	428.3
	5	1698.9	302.1	1612.8	335.8	1521.5	370.6	1425.0	406.2	1239.5	424.5
	6	1750.9	304.0	1663.5	338.1	1570.6	373.0	1472.0	408.8	1246.5	419.2
	7	1803.8	305.8	1715.0	340.2	1620.3	375.4	1519.8	411.3	1251.8	413.3
	8	1857.4	307.5	1767.0	342.1	1670.8	377.6	1568.5	413.6	1262.3	408.3
	9	1911.1	309.0	1819.7	343.9	1721.9	379.6	1617.7	415.8	1264.2	401.0
	10	1965.5	310.2	1873.0	345.5	1773.5	381.4	1667.6	417.7	1271.7	394.8
C18	4	1812.6	327.2	1719.9	362.9	1622.1	400.6	1517.9	438.6	1407.3	475.6
	5	1869.3	329.3	1774.8	365.4	1675.1	403.4	1568.9	441.6	1443.7	476.2
	6	1926.9	331.3	1830.6	367.8	1728.8	406.1	1620.8	444.6	1454.6	471.6
	7	1985.5	333.3	1887.3	370.2	1783.4	408.7	1673.4	447.5	1463.7	466.4
	8	2044.3	335.1	1944.9	372.4	1839.0	411.3	1726.6	450.2	1470.9	460.6
	9	2103.8	336.8	2003.3	374.5	1895.3	413.7	1780.7	452.8	1476.1	454.1
	10	2164.2	338.3	2061.7	376.4	1952.5	415.9	1835.6	455.2	1479.2	446.8
C19	4	1958.7	353.5	1860.6	392.0	1755.9	432.9	1645.1	474.5	1528.7	515.2
	5	2018.9	355.7	1918.9	394.6	1812.7	435.8	1699.6	477.7	1574.8	517.3
	6	2079.8	357.8	1978.2	397.1	1870.0	438.8	1755.1	480.9	1602.1	515.5
	7	2141.2	359.9	2038.4	399.6	1928.1	441.6	1811.6	484.1	1635.1	514.6
	8	2203.2	361.9	2099.1	402.1	1987.2	444.4	1868.5	487.1	1652.3	510.4
	9	2265.7	363.8	2160.3	404.4	2047.0	447.1	1926.1	490.0	1652.0	502.5
	10	2329.0	365.6	2222.0	406.7	2107.3	449.7	1984.5	492.9	1657.2	495.5

Note: C.C. (cooling capacity) and P.I. (unit power input) are referred to 0,0176m² °C/kW evaporator fouling factor and 0,0440m² °C/kW condenser fouling factor. Rated conditions are for compressors running at nominal frequency. Shaded values are referred to part load operation.

5 Capacity tables

5 - 1 Cooling capacity tables

EWWQC20AJYNN

Unit size	Leaving chilled water temp. °C	Entering condenser water temperature (△T=5°C)									
		20		25		30		35		40	
		Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)
C20	4	2125.8	380.6	2019.3	421.8	1905.9	466.0	1785.8	511.2	1661.7	555.5
	5	2190.7	382.9	2082.8	424.6	1967.1	469.2	1845.2	514.7	1718.5	559.2
	6	2256.1	385.2	2147.5	427.3	2029.4	472.3	1905.7	518.2	1776.4	562.8
	7	2322.6	387.4	2211.8	430.1	2092.7	475.5	1966.5	521.6	1835.2	566.5
	8	2390.2	389.7	2277.2	432.8	2157.0	478.6	2028.3	525.0	1831.6	557.9
	9	2459.1	391.9	2343.6	435.5	2221.0	481.7	2091.2	528.4	1841.1	551.8
	10	2529.0	394.2	2411.1	438.2	2286.0	484.7	2154.9	531.8	1848.5	545.0

Note: C.C. (cooling capacity) and P.I. (unit power input) are referred to 0,0176m² °C/kW evaporator fouling factor and 0,0440m² °C/kW condenser fouling factor. Rated conditions are for compressors running at nominal frequency. Shaded values are referred to part load operation.

5 Capacity tables

5 - 2 Capacity correction factor

Operating limits

EWWQ-AJYNN & AJYNN/A		R–410A
Max evaporator water △T	°C	6
Min evaporator water △T	°C	4
Max condenser water △T	°C	8
Min condenser water △T	°C	4

Evaporator fouling factors

Fouling factors m² °C/ kW	Cooling capacity correction factor	Power input correction factor	EER Correction factor
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

Condenser fouling factors

Fouling factors m² °C/kW	Cooling capacity correction factor	Power input correction factor	EER Correction factor
0,044	1,000	1,000	1,000
0,088	0,990	1,018	0,973
0,132	0,981	1,036	0,945

Ethylene glycol and low ambient temperature correction factors

Air ambient temperature (°C)	-3	-8	-15	-23	-35
% of ethylene glycol by weight	10	20	30	40	50
Cooling capacity correction factor	0,991	0,982	0,972	0,961	0,946
Power input correction factor	0,996	0,992	0,986	0,976	0,966
Flow rate correction factor	1,013	1,040	1,074	1,121	1,178
Water pressure drops correction factor	1,070	1,129	1,181	1,263	1,308

Low temperature operation performance factors

Ethylene glycol/water leaving temperature °C	3	2	0	-2	-4	-6	-8
Min. % of ethylene glycol	10	10	20	20	30	30	30
Cooling capacity correction factor	0,882	0,853	0,799	0,747	0,697	0,650	0,604
Power input compressors correction factor	0,977	0,971	0,960	0,947	0,934	0,919	0,903

5 Capacity tables

5 - 3 Partial heat recovery ratings

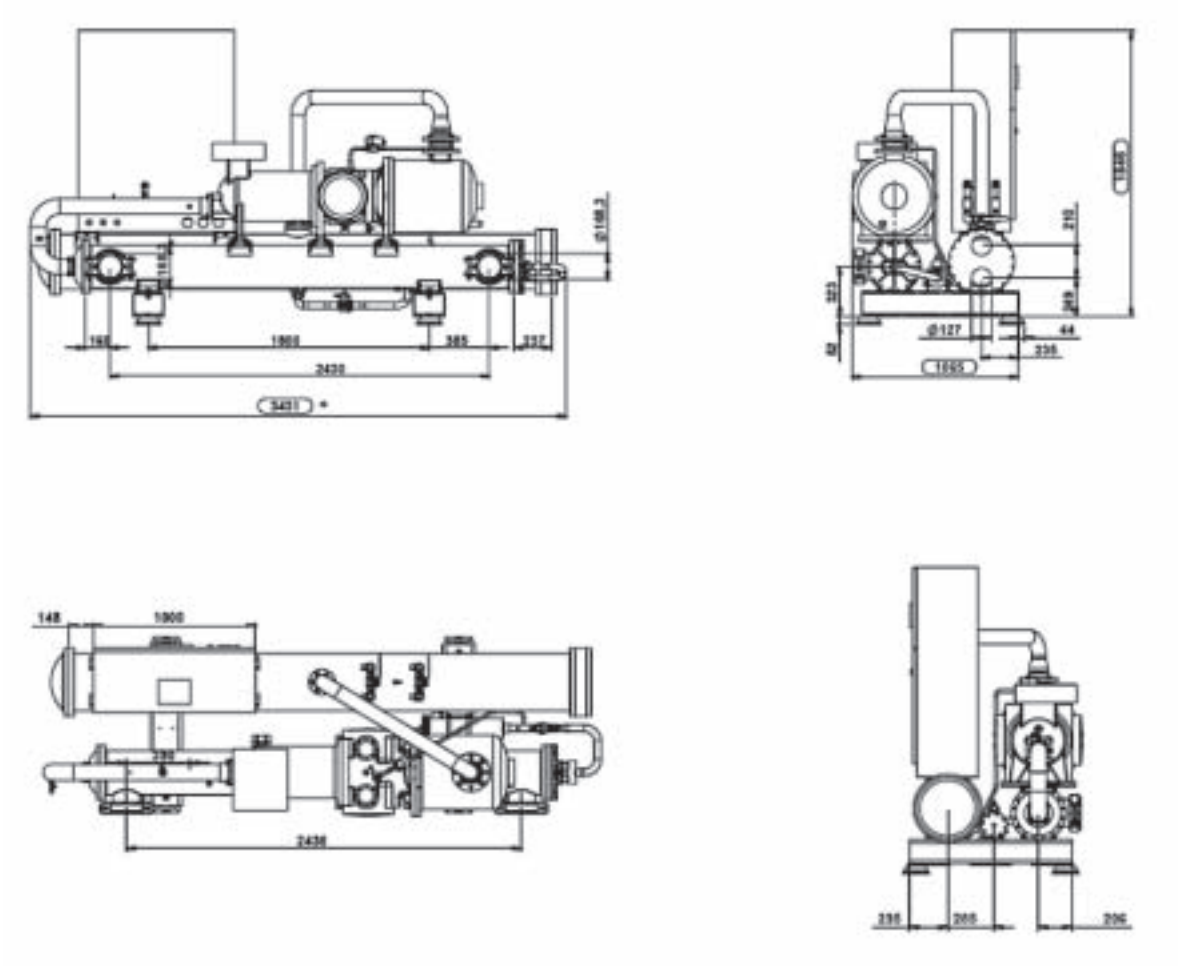
EWWQ-AJYNN

Unit size		Heat recovery leaving water temperature (△T=5°C)		
		45	50	55
		Heating capacity	Heating capacity	Heating capacity
400	Evaporator leaving water temperature 7°C - △T 5°C Condenser leaving water temperature 35°C	54.2	38.5	23.6
480		66.2	48.0	30.6
600		83.0	60.3	38.5
650		88.9	64.6	41.1
750		119.3	89.7	61.4
800		114.3	81.4	49.9
850		145.5	112.5	79.9
900		129.3	93.9	60.2
C10		137.2	99.3	63.0
C11		174.5	136.9	100.7
C12		157.4	114.8	74.1
C13		172.3	122.0	74.1
C14		185.3	134.7	86.6
C15		194.0	137.5	83.7
C16		254.4	191.1	131.3
C17		282.0	214.1	149.7
C18		301.0	226.6	155.9
C19		318.7	240.6	166.4
C20		344.4	257.9	175.7

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ400-480AJYNN

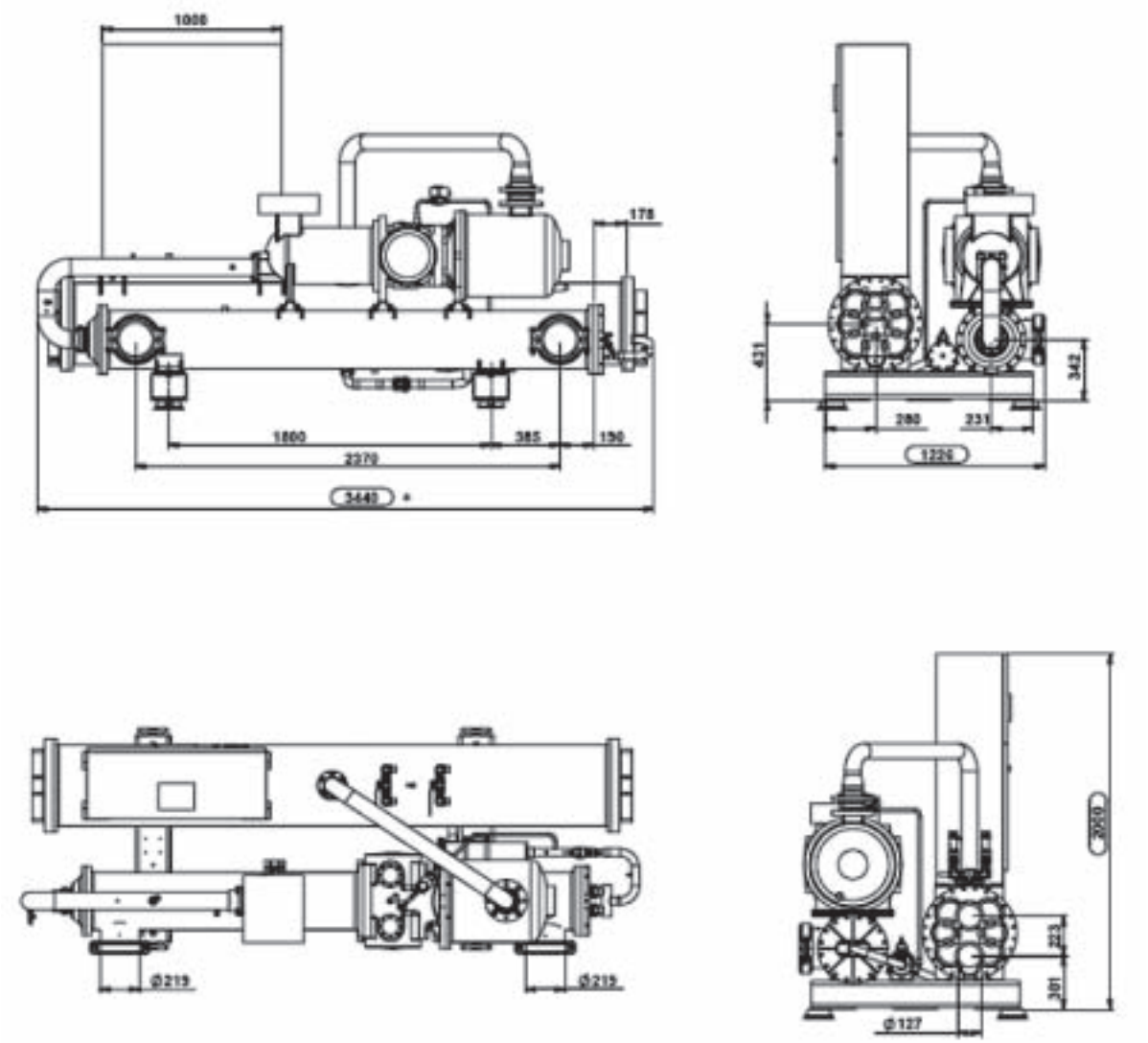


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ600AJYNN

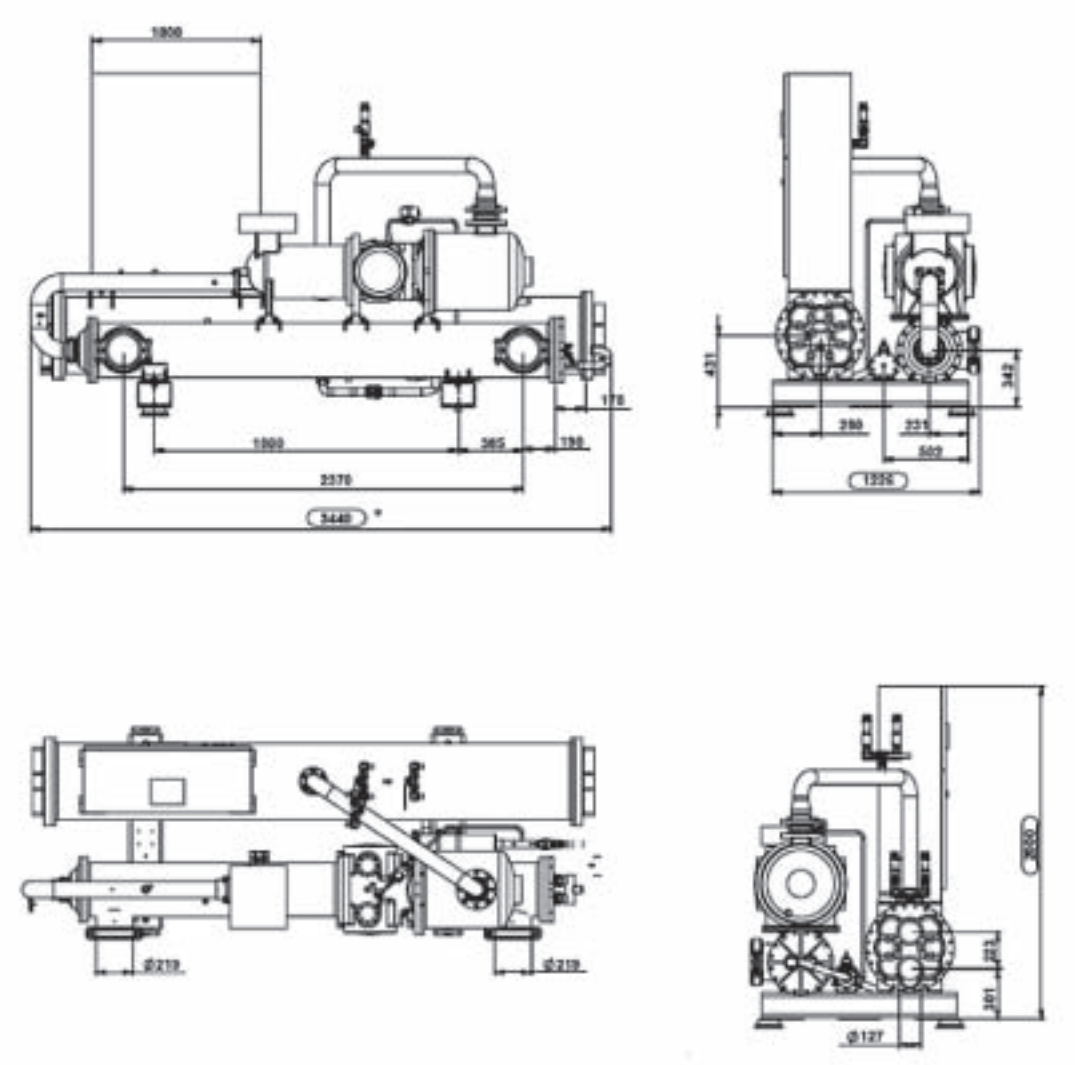


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ650AJYNN

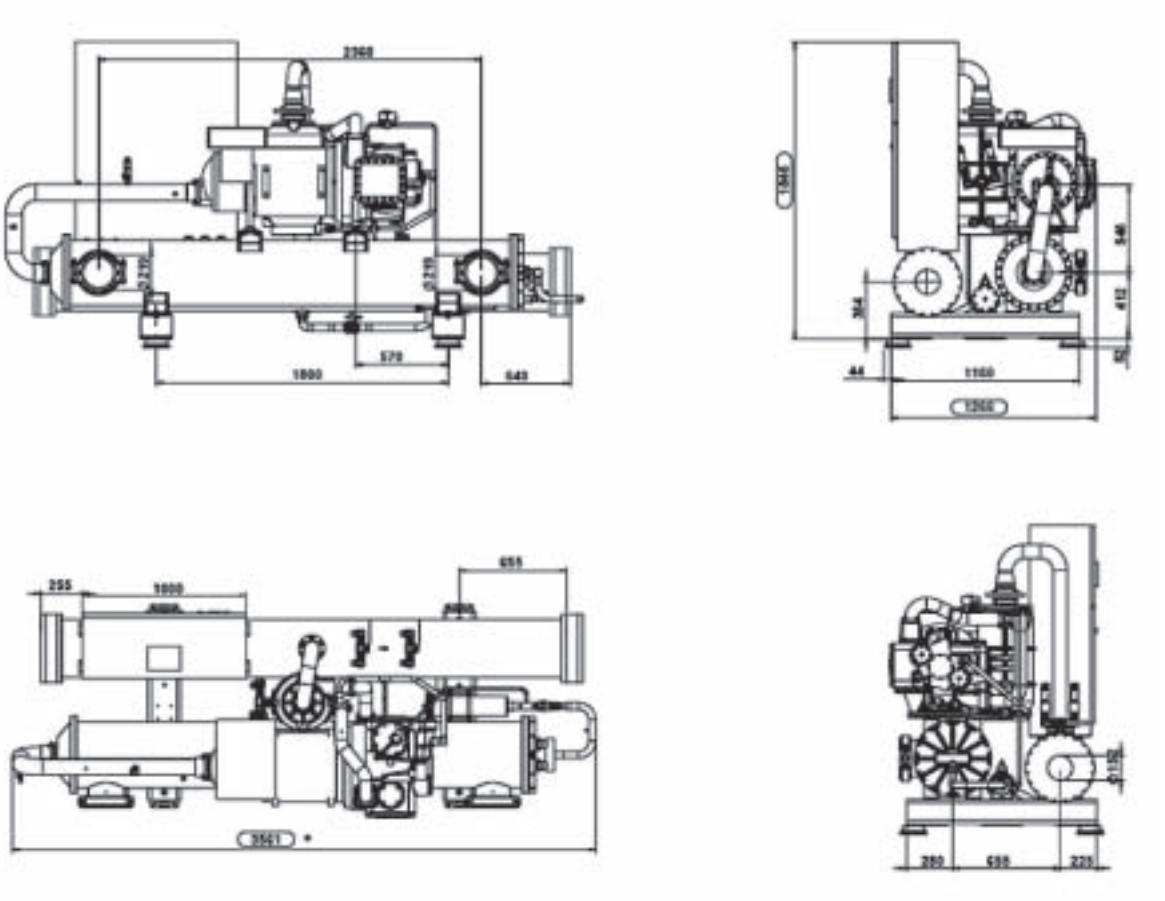


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ750-850AJYNN

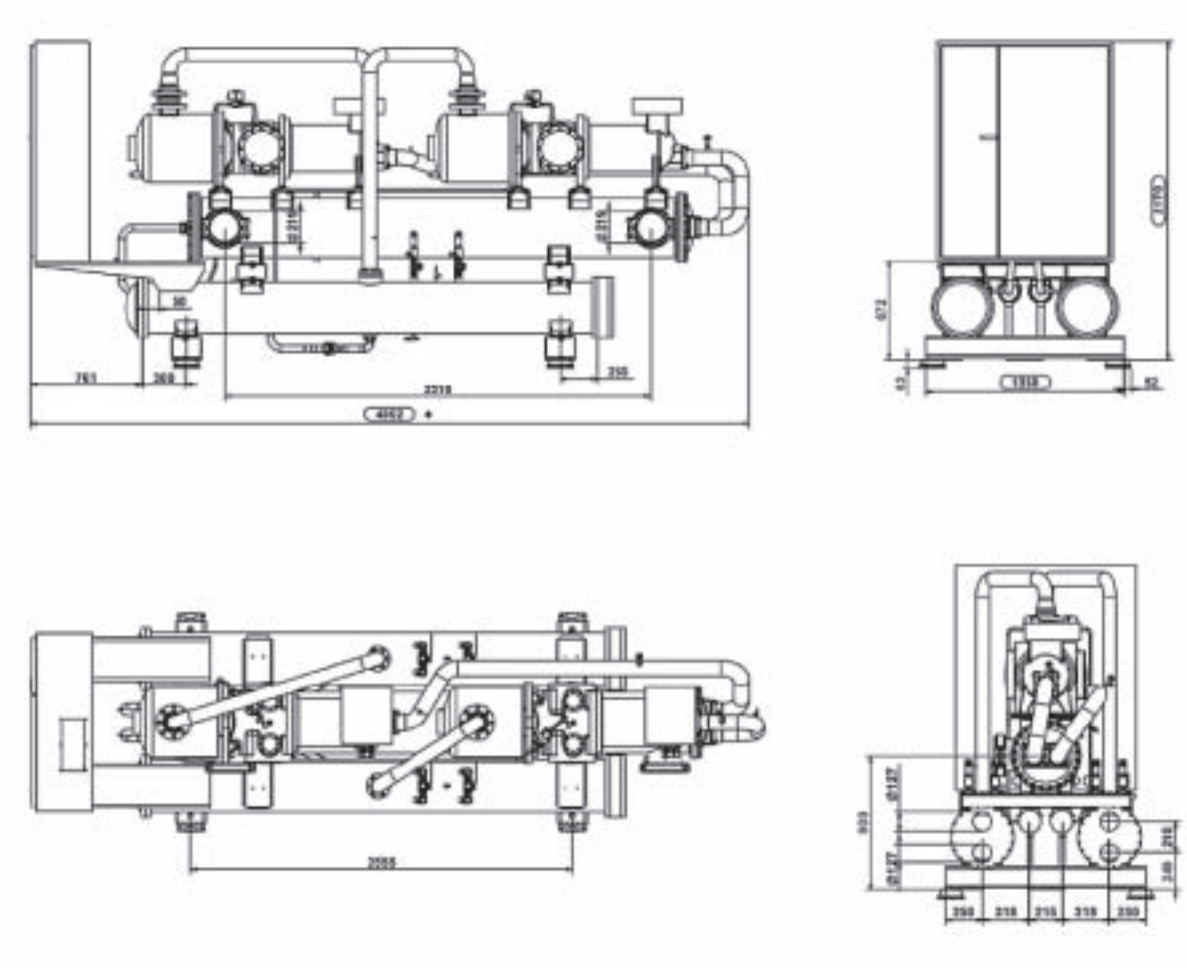


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ800-900-C10AJYNN

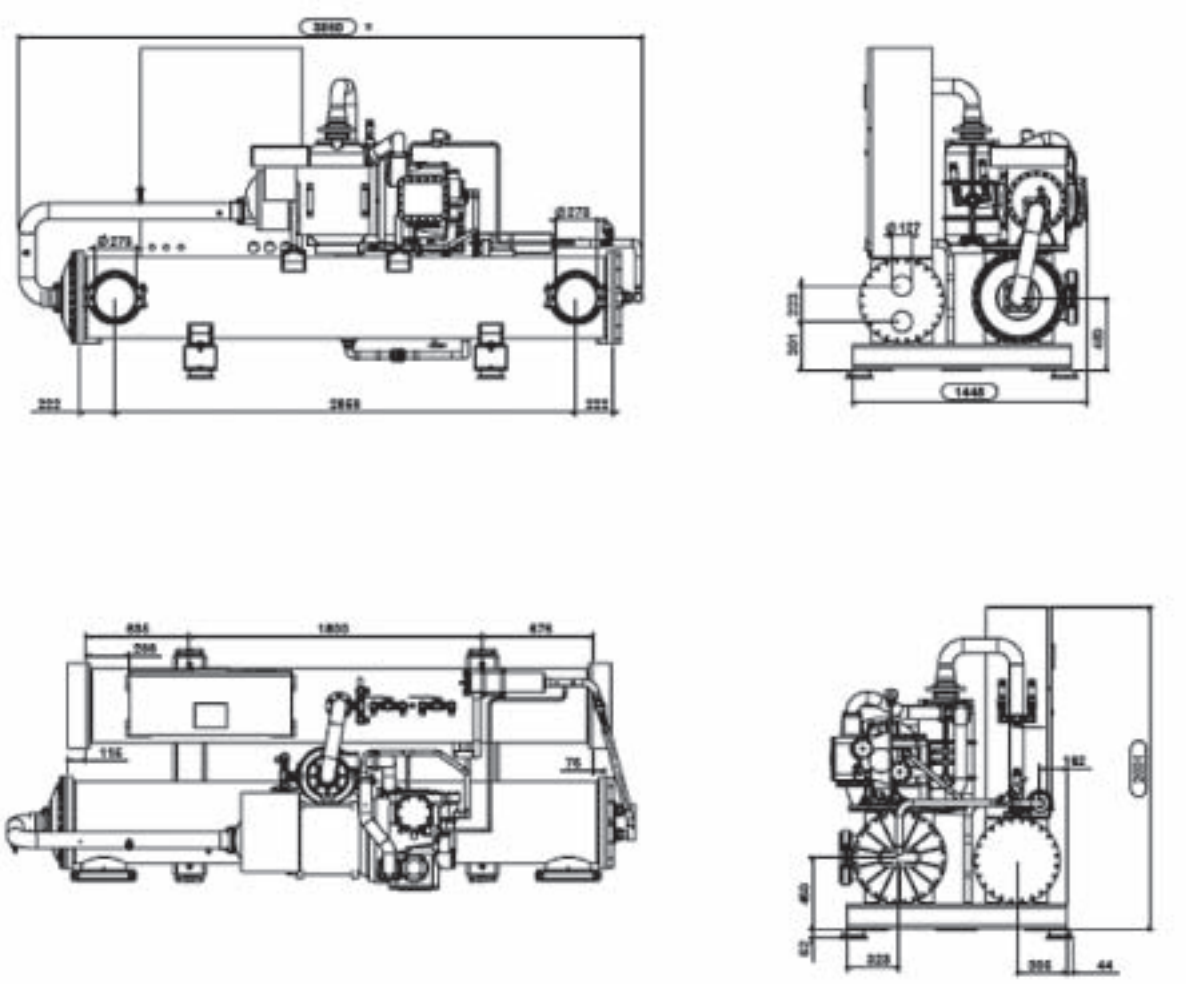


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC11AJYNN

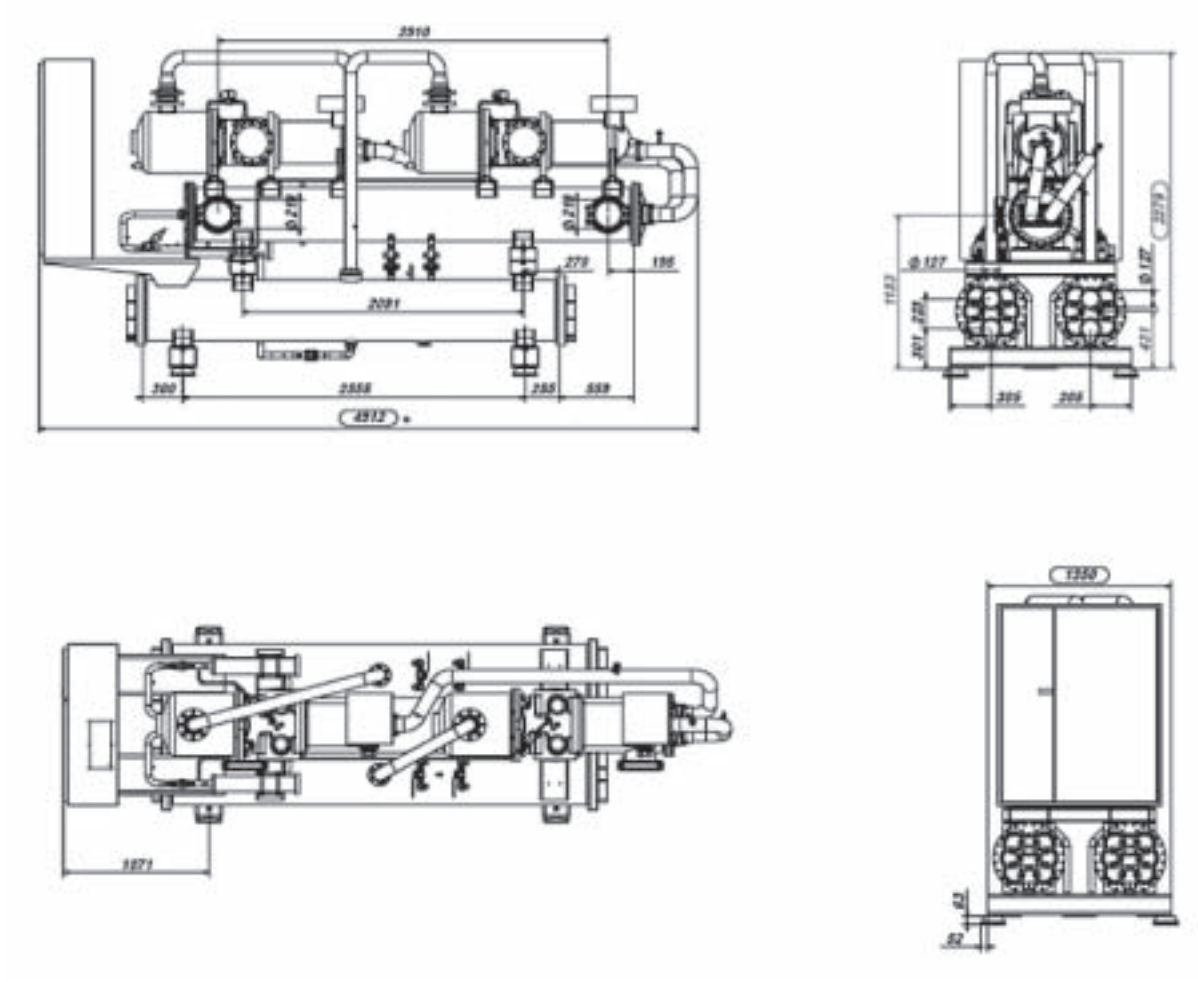


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC12AJYNN

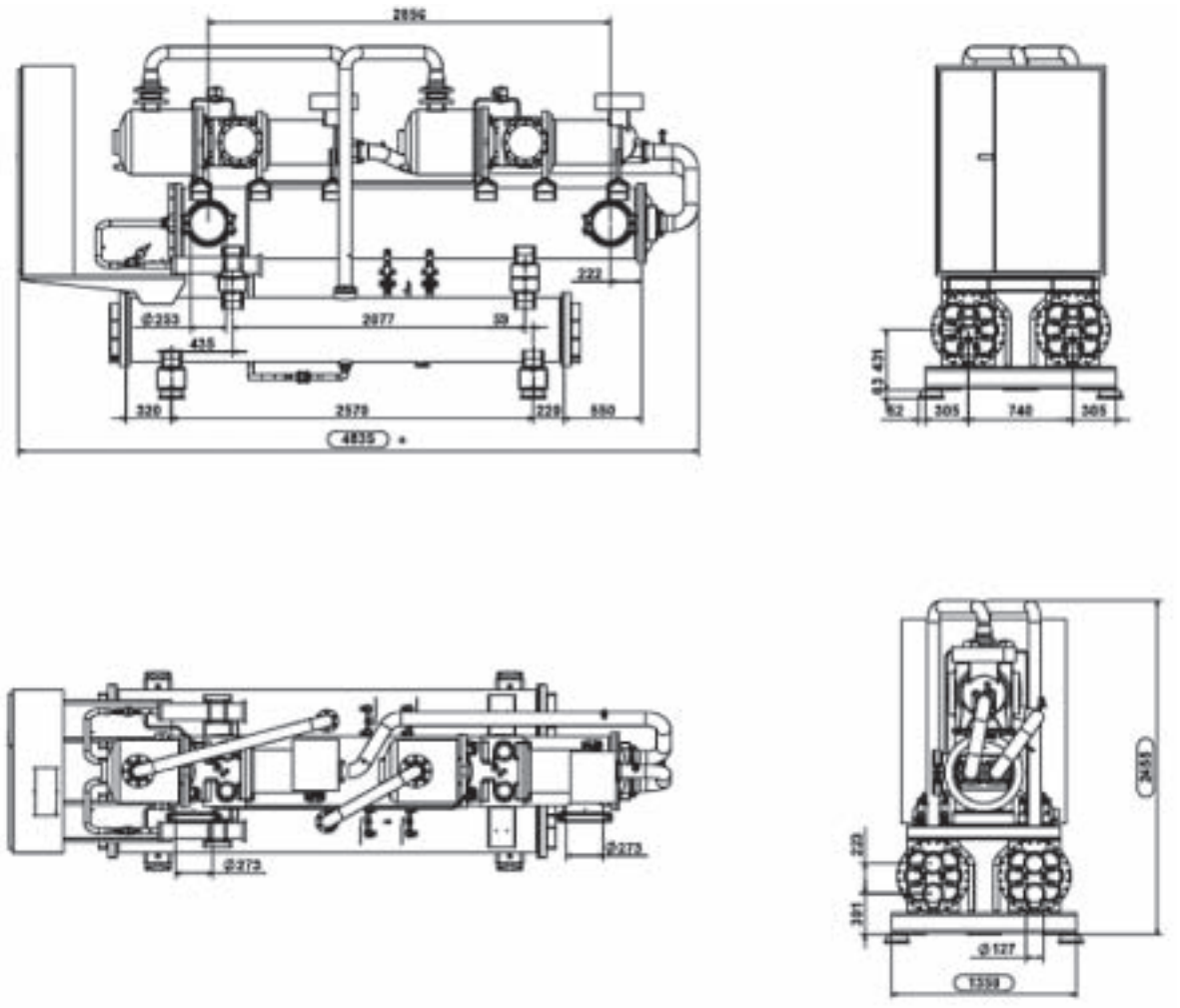


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC13AJYNN

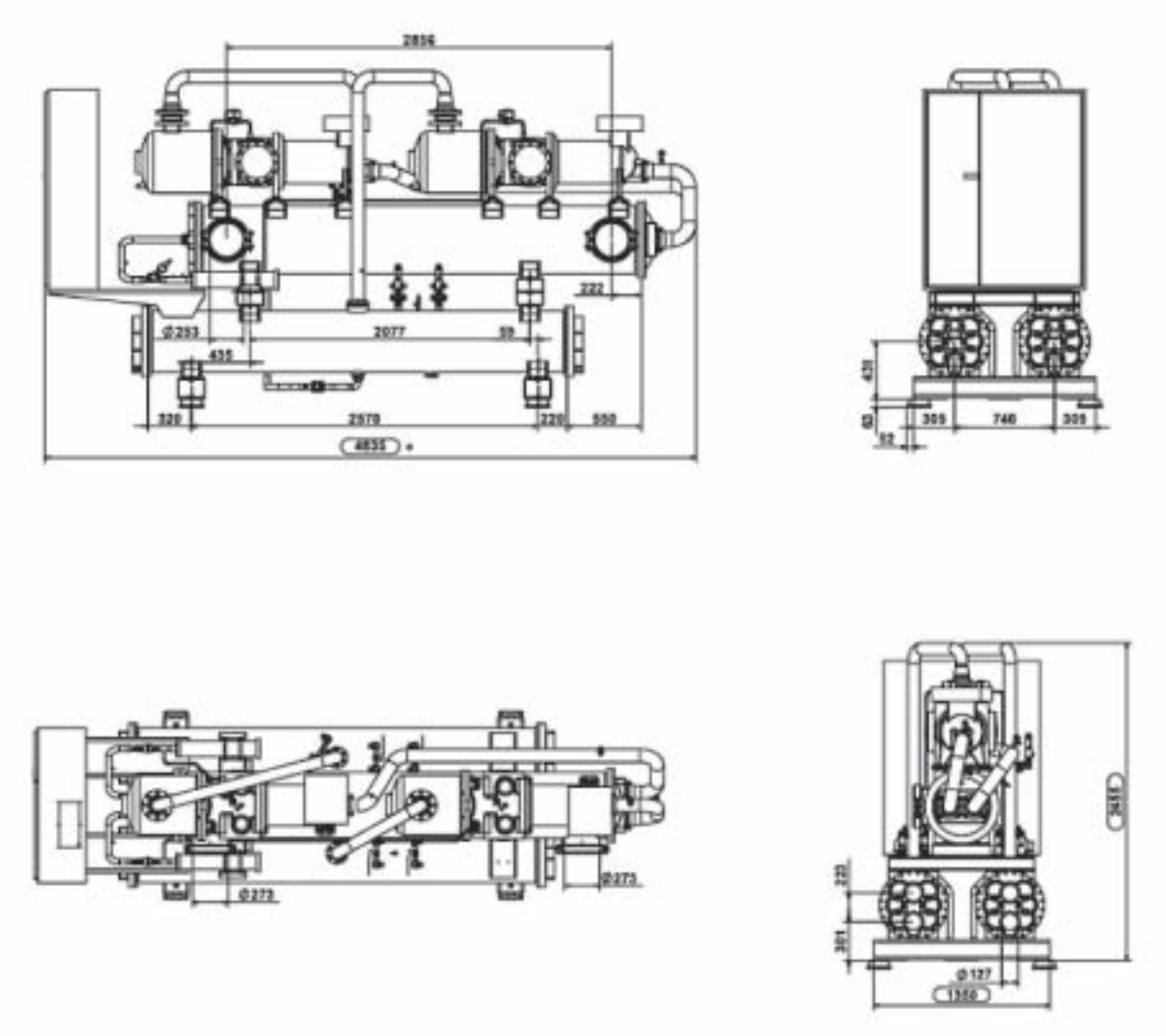


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC14AJYNN

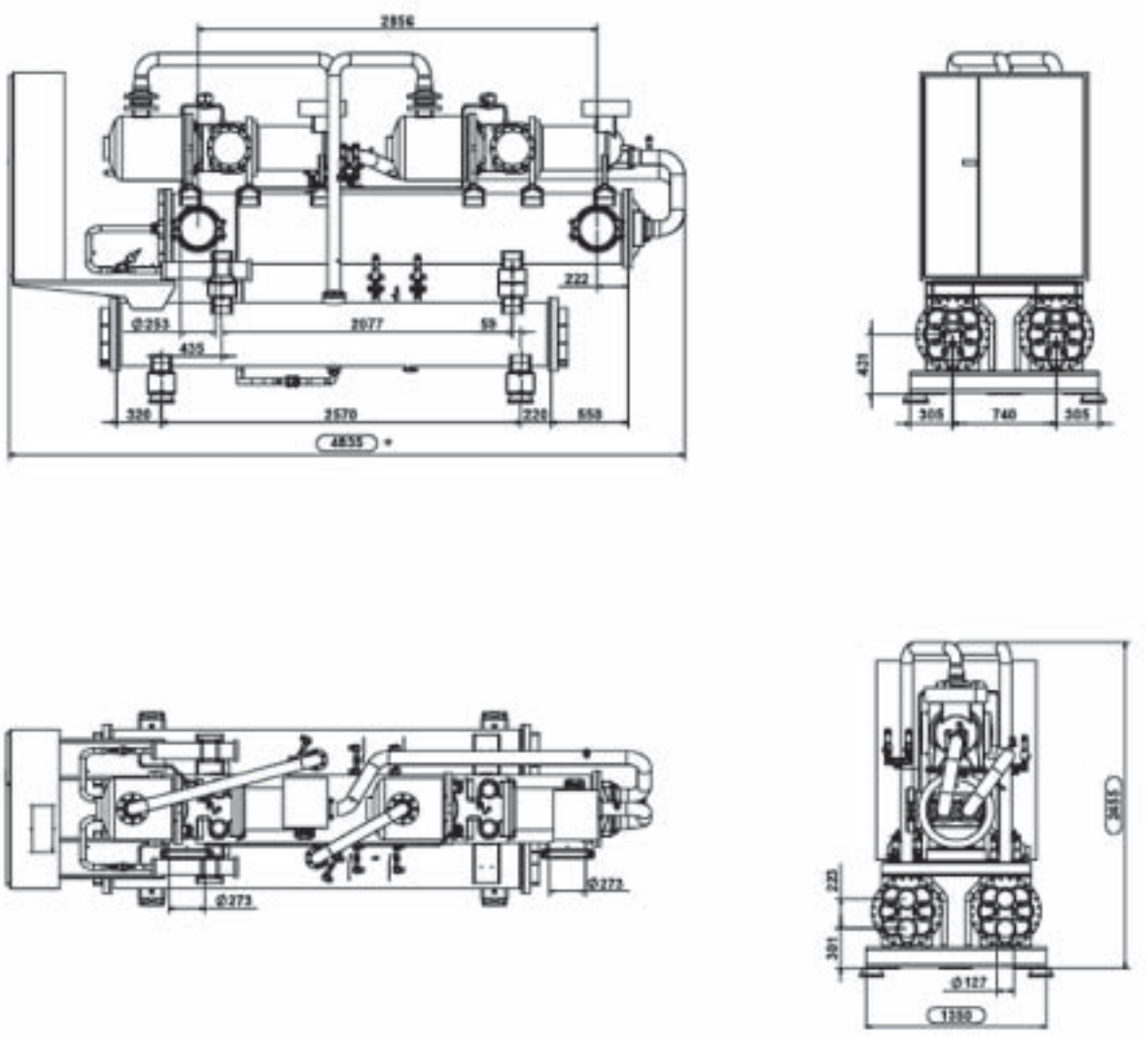


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC15AJYNN

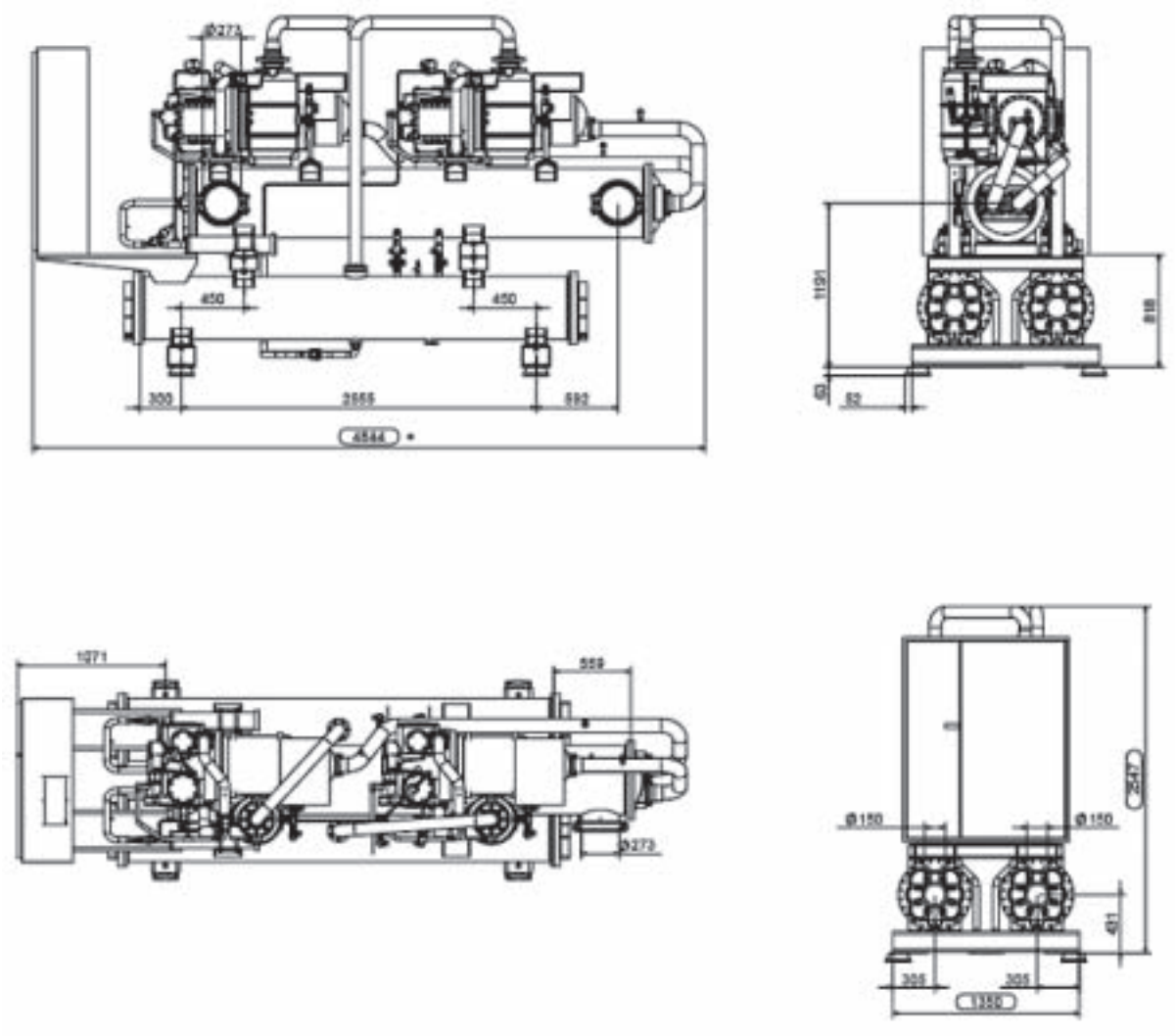


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC16-C18AJYNN

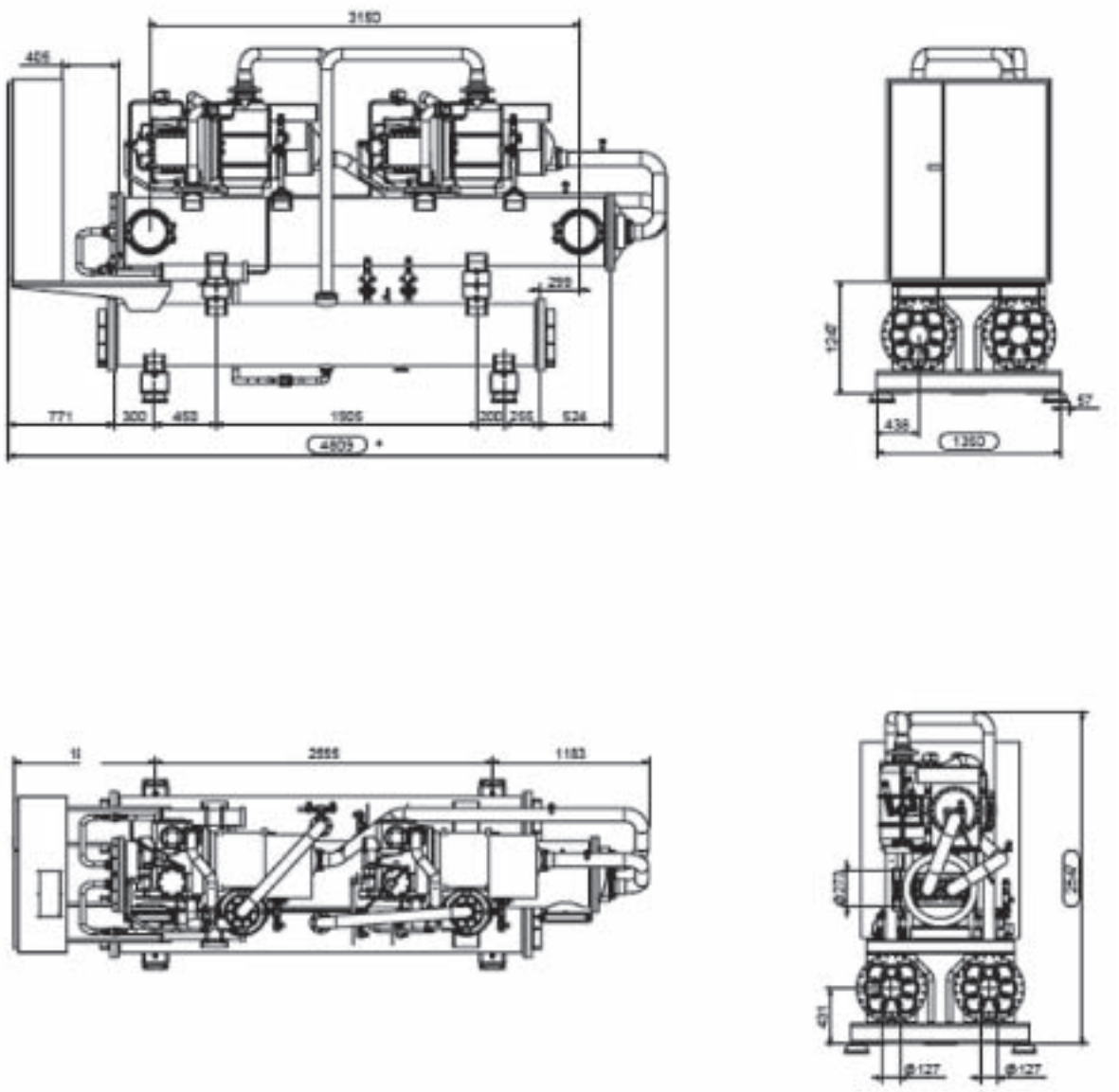


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC19AJYNN

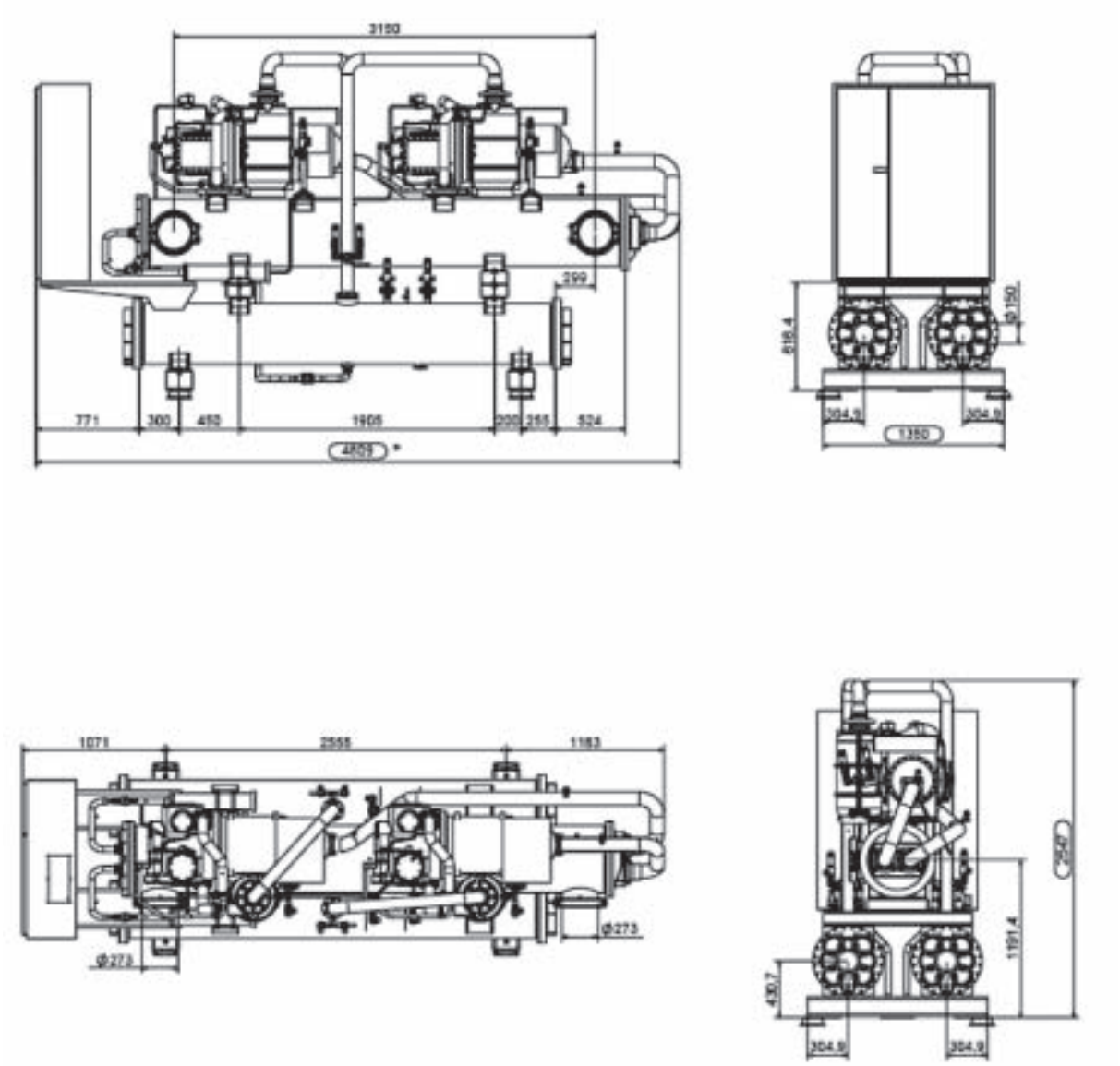


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC20AJYNN



* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

7 Sound data

7 - 1 Sound pressure spectrum

SOUND PRESSURE LEVEL EWWQ-AJYNN

Unit size	Sound pressure level at 1 m from the unit in semispheric free field (rif. 2 x 10^{-5} Pa)									power
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
400	55.1	59.4	71.6	84.1	71.9	72.5	58.5	53.2	82.2	100.2
480	55.9	60.2	72.4	84.9	72.7	73.3	59.3	54	83.0	101.2
600	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.3
650	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.3
750	56,1	60,4	72,6	85,1	72,9	73,5	59,5	54,2	83,2	101.5
800	56,9	61,2	73,4	85,9	73,7	74,3	60,3	55,0	84,0	104.7
850	57,8	62,1	74,3	86,8	74,6	75,2	61,2	55,9	84,9	102.3
900	58.1	62.4	74.6	87.1	74.9	75.5	61.5	56.2	85.2	104.7
C10	58.1	62.4	74.6	87.1	74.9	75.5	61.5	56.2	85.2	105.1
C11	58.5	62.8	75	87.5	75.3	75.9	61.9	56.6	85.6	103.2
C12	58.9	63.2	75.4	87.9	75.7	76.3	62.3	57	86.0	104.7
C13	59.4	63.7	75.9	88.4	76.2	76.8	62.8	57.5	86.5	105.2
C14	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C15	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C16	59,1	63,4	75,6	88,1	75,9	76,5	62,5	57,2	86,2	105.8
C17	59,5	63,8	76,0	88,5	76,3	76,9	62,9	57,6	86,6	106.2
C18	59,9	64,2	76,4	88,9	76,7	77,3	63,3	58,0	87,0	106.6
C19	60,4	64,7	76,9	89,4	77,2	77,8	63,8	58,5	87,5	107.1
C20	60,8	65,1	77,3	89,8	77,6	78,2	64,2	58,9	87,9	107.5

Note: The values are according to ISO3744 and are referred to: evaporator 12/7° C, condensor 30/35° C, full load operation.

SOUND PRESSURE LEVEL EWWQ-AJYNN/A

Unit size	Sound pressure level at 1 m from the unit in semispheric free field (rif. 2 x 10^{-5} Pa)									power
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
440	55.1	59.4	71.6	84.1	71.9	72.5	58.5	53.2	82.2	100.9
550	55.9	60.2	72.4	84.9	72.7	73.3	59.3	54	83.0	101.7
650	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.6
750	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.7
800	56,1	60,4	72,6	85,1	72,9	73,5	59,5	54,2	83,2	102.0
950	56,9	61,2	73,4	85,9	73,7	74,3	60,3	55,0	84,0	102.9
C10	58.5	62.8	75	87.5	75.3	75.9	61.9	56.6	85.6	105.2
C11	57,8	62,1	74,3	86,8	74,6	75,2	61,2	55,9	84,9	103.8
C12	58.9	63.2	75.4	87.9	75.7	76.3	62.3	57.0	86.0	105.6
C13	59.4	63.7	75.9	88.4	76.2	76.8	62.8	57.5	86.5	106.1
C14	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C15	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C16	59,1	63,4	75,6	88,1	75,9	76,5	62,5	57,2	86,2	105.8
C18	59,5	63,8	76,0	88,5	76,3	76,9	62,9	57,6	86,6	106.2
C19	59,9	64,2	76,4	88,9	76,7	77,3	63,3	58,0	87,0	106.6
C20	60,4	64,7	76,9	89,4	77,2	77,8	63,8	58,5	87,5	107.1
C22	60,8	65,1	77,3	89,8	77,6	78,2	64,2	58,9	87,9	107.5

Note: The values are according to ISO3744 and are referred to: evaporator 12/7° C, condensor 30/35° C, full load operation.

7 Sound data

7 - 2 Sound pressure correction factors for different distances

EWWQ-AJYNN

Unit size	Distance (m)					
	1	5	10	15	20	25
400	0	-7.9	-12.7	-15.8	-18.1	-19.8
480	0	-7.9	-12.7	-15.8	-18.1	-19.8
600	0	-7.9	-12.7	-15.8	-18.1	-19.8
650	0	-7.9	-12.7	-15.8	-18.1	-19.8
750	0	-7.9	-12.7	-15.8	-18.1	-19.8
800	0	-7.5	-12.2	-15.3	-17.5	-19.3
850	0	-7.9	-12.7	-15.8	-18.1	-19.8
900	0	-7.5	-12.2	-15.3	-17.5	-19.3
C10	0	-7.5	-12.2	-15.3	-17.5	-19.3
C11	0	-7.9	-12.7	-15.8	-18.1	-19.8
C12	0	-7.5	-12.2	-15.3	-17.5	-19.3
C13	0	-7.5	-12.2	-15.3	-17.5	-19.3
C14	0	-7.5	-12.2	-15.3	-17.5	-19.3
C15	0	-7.5	-12.2	-15.3	-17.5	-19.3
C16	0	-7.5	-12.2	-15.3	-17.5	-19.3
C17	0	-7.5	-12.2	-15.3	-17.5	-19.3
C18	0	-7.5	-12.2	-15.3	-17.5	-19.3
C19	0	-7.5	-12.2	-15.3	-17.5	-19.3
C20	0	-7.5	-12.2	-15.3	-17.5	-19.3

Note: The values are dB(A) (pressure level).

EWWQ-AJYNN/A

Unit size	Distance (m)					
	1	5	10	15	20	25
440	0	-7.9	-12.7	-15.8	-18.1	-19.8
550	0	-7.9	-12.7	-15.8	-18.1	-19.8
650	0	-7.9	-12.7	-15.8	-18.1	-19.8
750	0	-7.9	-12.7	-15.8	-18.1	-19.8
800	0	-7.9	-12.7	-15.8	-18.1	-19.8
950	0	-7.9	-12.7	-15.8	-18.1	-19.8
C10	0	-7.5	-12.2	-15.3	-17.5	-19.3
C11	0	-7.9	-12.7	-15.8	-18.1	-19.8
C12	0	-7.5	-12.2	-15.3	-17.5	-19.3
C13	0	-7.5	-12.2	-15.3	-17.5	-19.3
C14	0	-7.5	-12.2	-15.3	-17.5	-19.3
C15	0	-7.5	-12.2	-15.3	-17.5	-19.3
C16	0	-7.5	-12.2	-15.3	-17.5	-19.3
C18	0	-7.5	-12.2	-15.3	-17.5	-19.3
C19	0	-7.5	-12.2	-15.3	-17.5	-19.3
C20	0	-7.5	-12.2	-15.3	-17.5	-19.3
C22	0	-7.5	-12.2	-15.3	-17.5	-19.3

Note: The values are dB(A) (pressure level).

8 Installation

8 - 1 Installation method

Warning

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

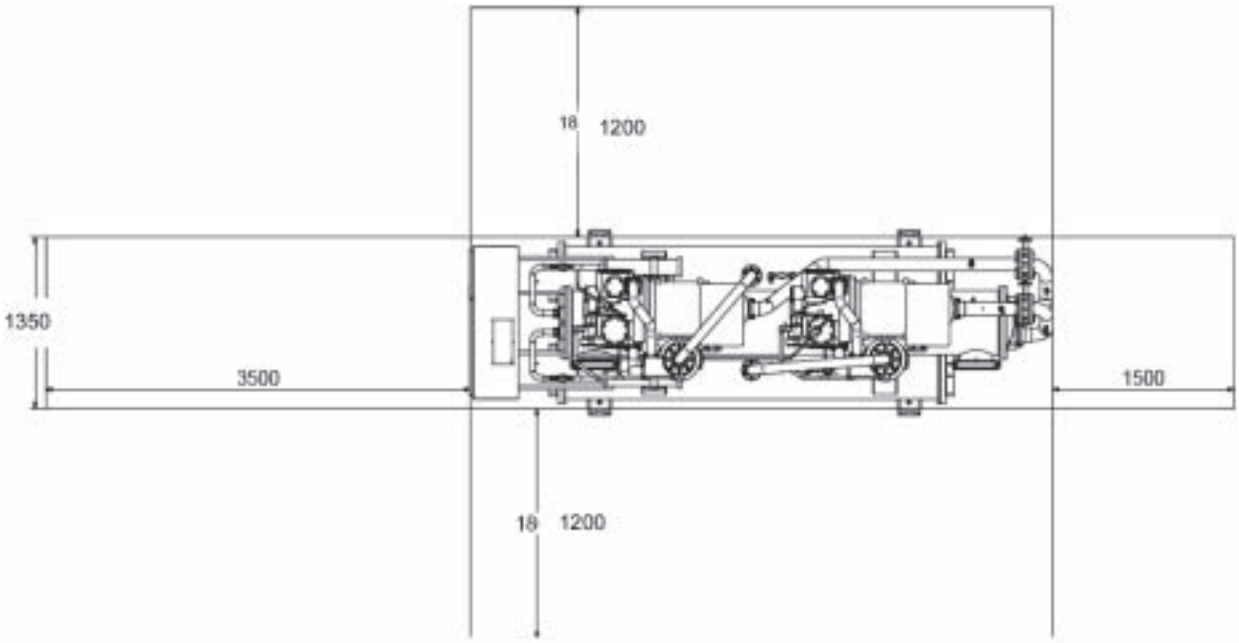
Handling

The chiller is mounted on heavy wooden skids to protect the unit from accidental damage and to permit easy handling and moving. It is recommended that all moving and handling be performed with the skids under the unit when possible and that the skids not be removed until the unit is in the final location.
Spreader bars must be used to protect the control cabinet and the other areas of the chiller.

Location

A levelled and sufficiently strong floor is required. A levelled and sufficiently strong floor is required. If necessary, additional structural members should be provided to transfer the weight of the unit to the 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 are recommended to avoid straining the piping and transmitting vibration and noise.

Minimum space requirements



8 Installation

8 - 2 Water charge, flow and quality

Water content in cooling circuits

The cooled water distribution circuits should have a minimum water content to avoid excessive compressor's starts and stops.
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, Daikin has 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 installation water content envisaged should be calculated with a certain approximation using this simplified formula:

(1) $Q = 35{,}83 \times \frac{P\ (kW)}{T\ (°C)} \times \frac{1}{N}$

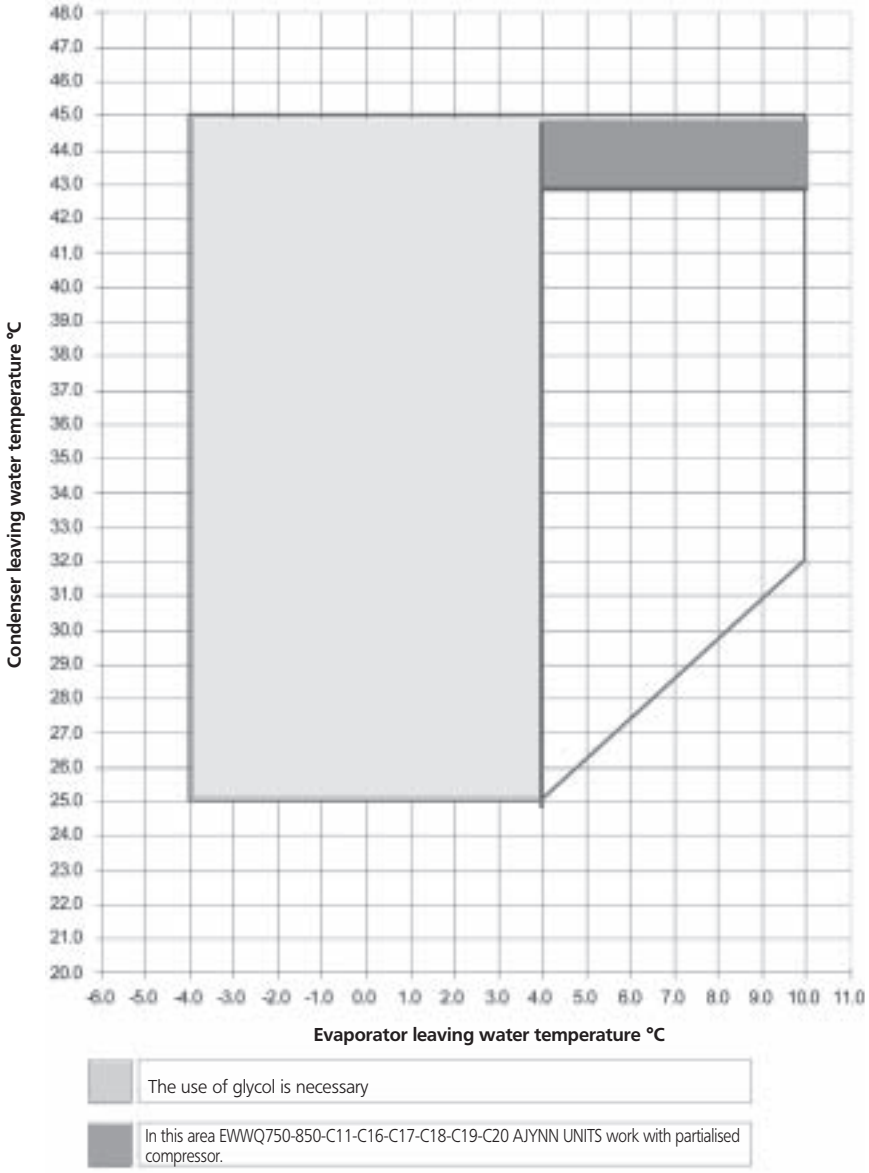
where:
Q = Minimum content of the plant expressed in litres
P = Cooling capacity of the plant expressed in kW
$\triangle T$ = Entering/leaving water temperature difference of the evaporator expressed in °C
N = Number of compressors.

This should be the minimum quantity of water through the chiller in each operating condition, also when therminal hydronic units are switched off.

Therefore for a more accurate determination of the water quantity, it is advisable to contact the designer of the plant.

9 Operation range

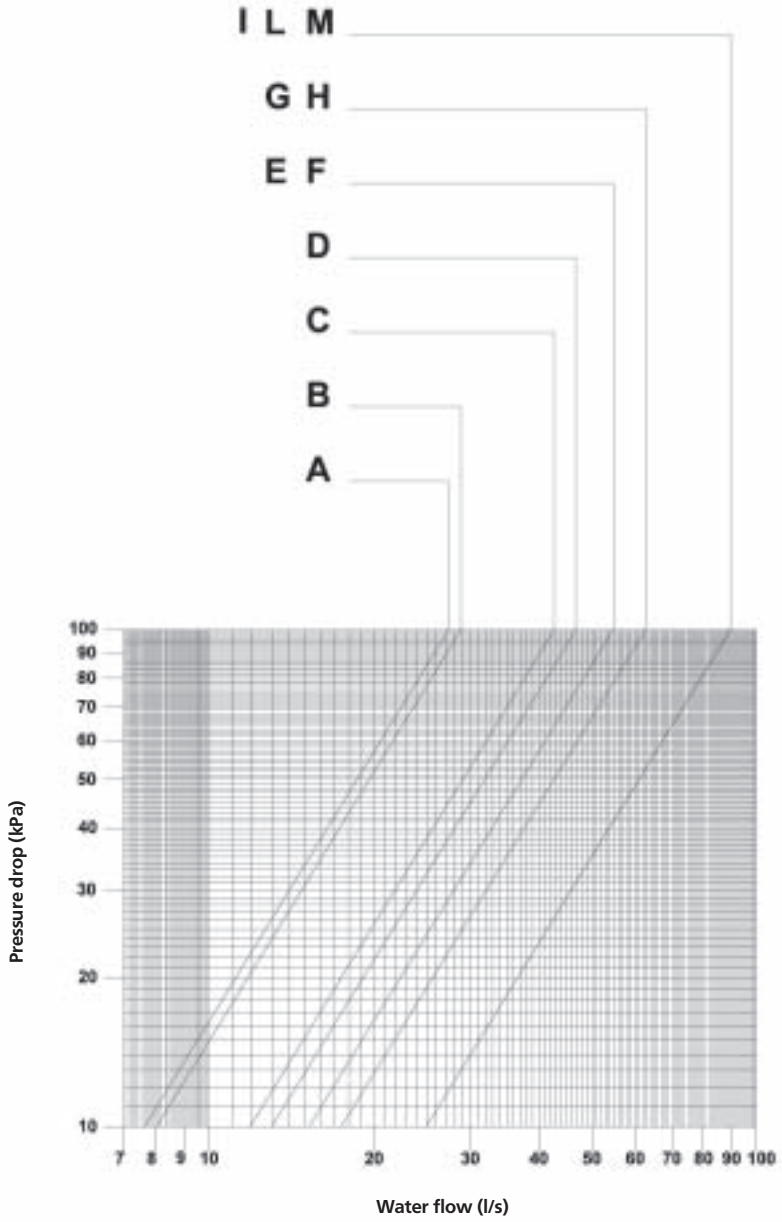
EWWQ-AJYNN & AJYNN/A



10 Hydraulic performance

10 - 1 Water pressure drop curve evaporator

EWWQ-AJYNN

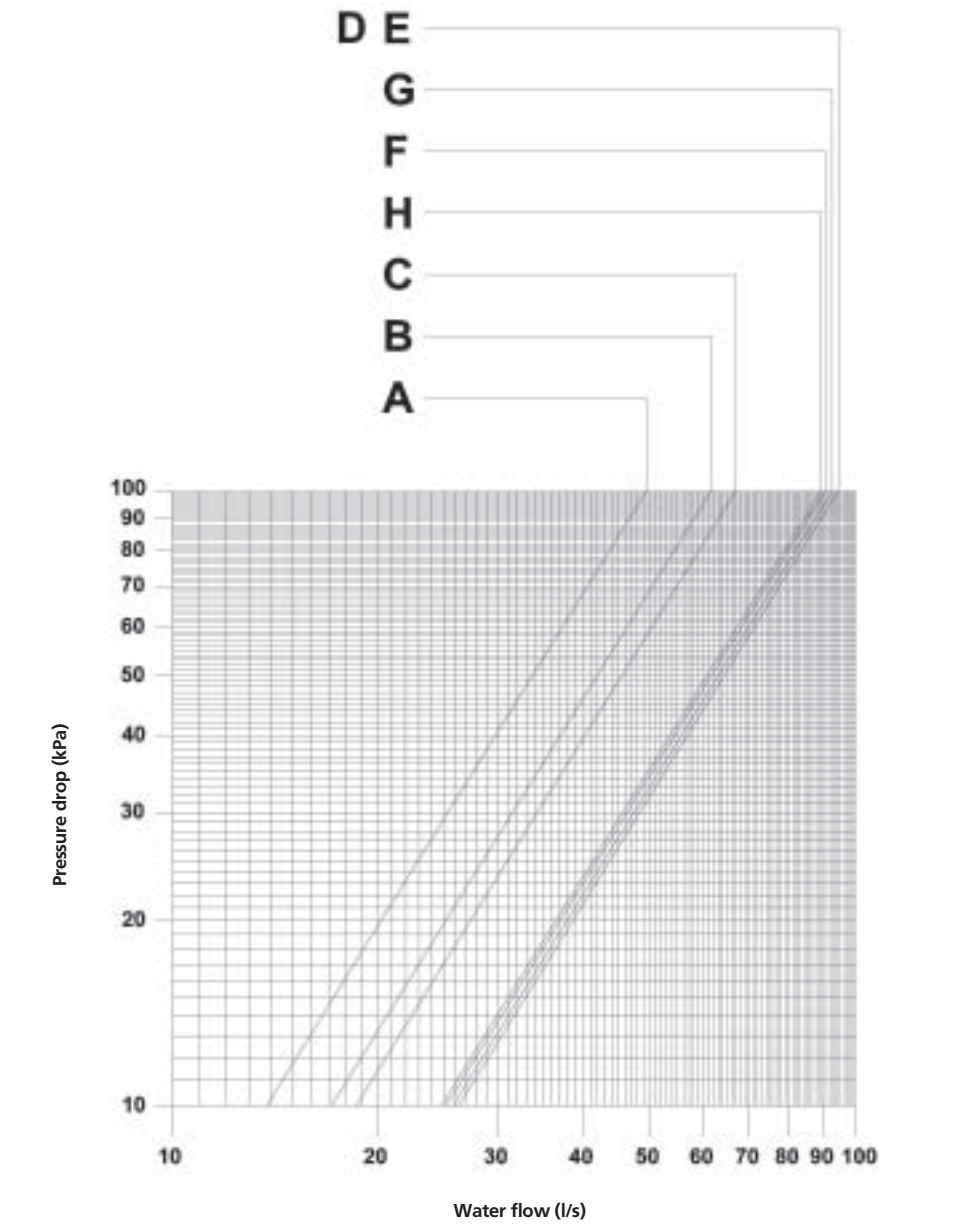


A. EWWQ400AJYNN	G. EWWQC10AJYNN
B. EWWQ480AJYNN	H. EWWQC12AJYNN
C. EWWQ600AJYNN	I. EWWQC13AJYNN
D. EWWQ650AJYNN	L. EWWQC14AJYNN
E. EWWQ800AJYNN	M. EWWQC15AJYNN
F. EWWQ900AJYNN	

10 Hydraulic performance

10 - 1 Water pressure drop curve evaporator

EWWQ-AJYNN

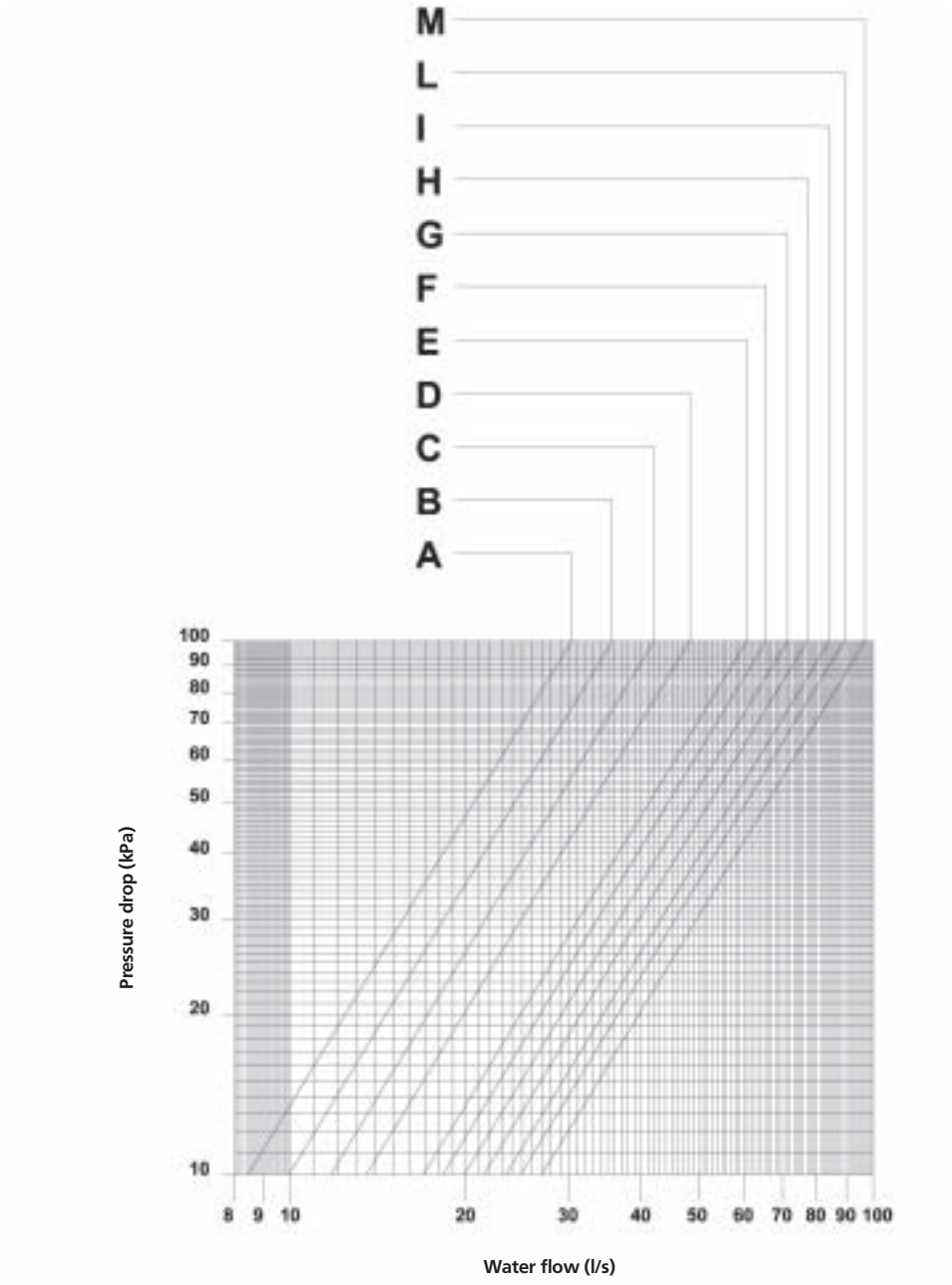


A. EWWQ750AJYNN	E. EWWQC17AJYNN
B. EWWQ850AJYNN	F. EWWQC18AJYNN
C. EWWQC11AJYNN	G. EWWQC19AJYNN
D. EWWQC16AJYNN	H. EWWQC20AJYNN

10 Hydraulic performance

10 - 2 Water pressure drop curve condenser

EWWQ-AJYNN

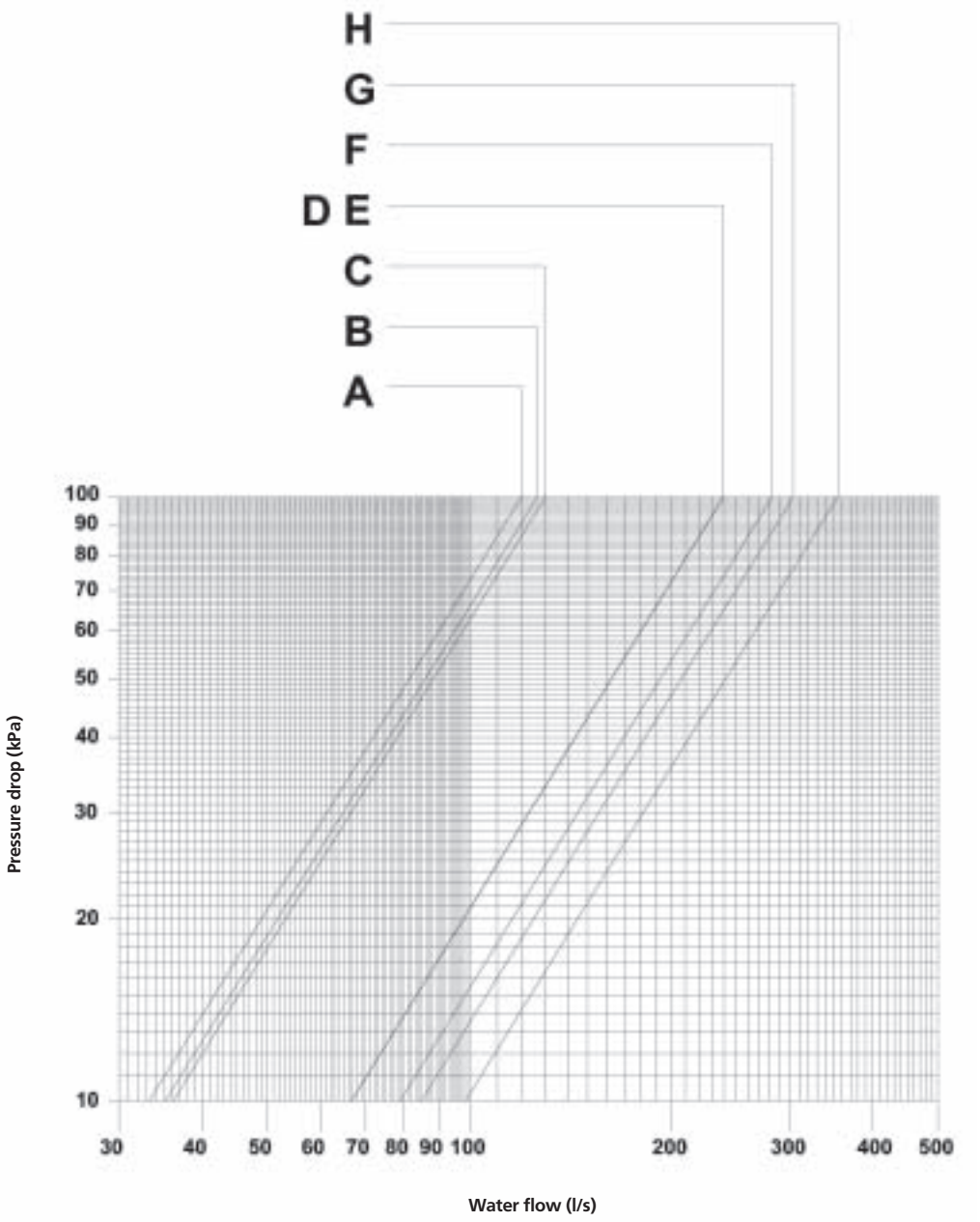


A. EWWQ400AJYNN	G. EWWQC10AJYNN
B. EWWQ480AJYNN	H. EWWQC12AJYNN
C. EWWQ600AJYNN	I. EWWQC13AJYNN
D. EWWQ650AJYNN	L. EWWQC14AJYNN
E. EWWQ800AJYNN	M. EWWQC15AJYNN
F. EWWQ900AJYNN	

10 Hydraulic performance

10 - 2 Water pressure drop curve condenser

EWWQ-AJYNN



A. EWWQ750AJYNN	E. EWWQC17AJYNN
B. EWWQ850AJYNN	F. EWWQC18AJYNN
C. EWWQC11AJYNN	G. EWWQC19AJYNN
D. EWWQC16AJYNN	H. EWWQC20AJYNN

10 Hydraulic performance

10 - 3 Partial heat recovery ratings

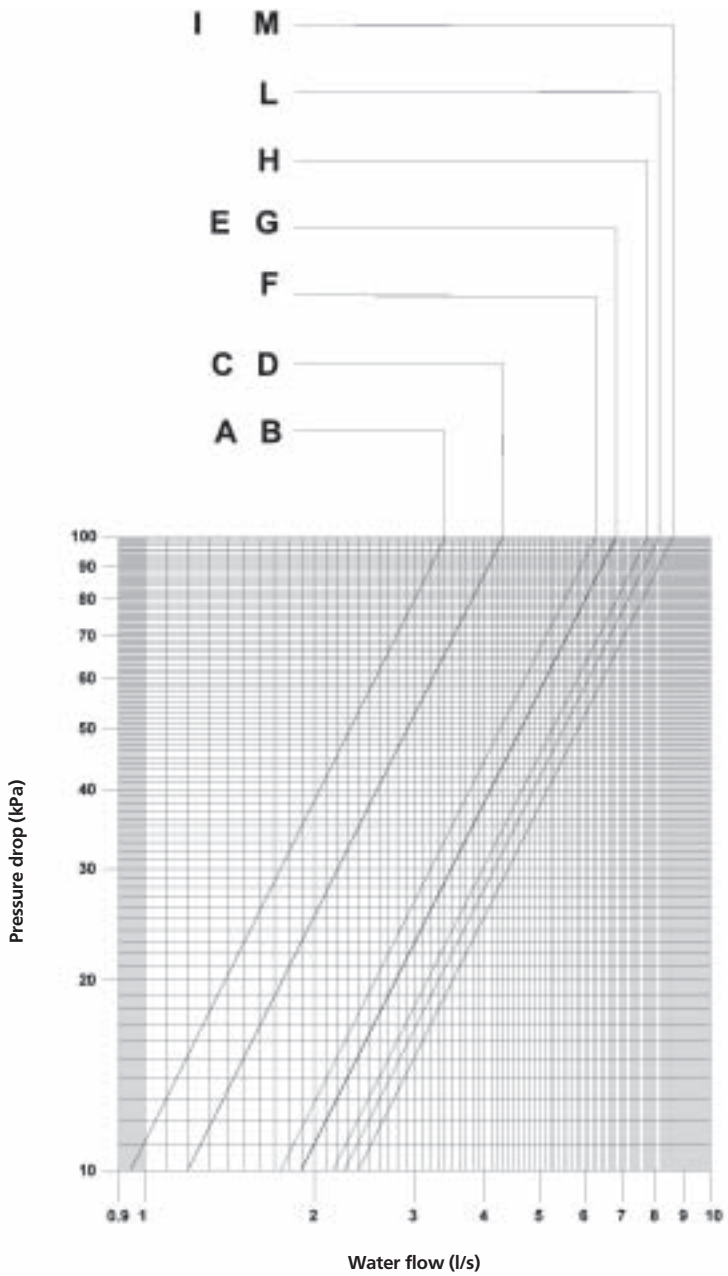
EWWQ-AJYNN

Unit size		Heat recovery leaving water temperature (△T=5°C)		
		45	50	55
		Heating capacity	Heating capacity	Heating capacity
400	Evaporator leaving water temperature 7°C - △T 5°C Condenser leaving water temperature 35°C	54.2	38.5	23.6
480		66.2	48.0	30.6
600		83.0	60.3	38.5
650		88.9	64.6	41.1
750		119.3	89.7	61.4
800		114.3	81.4	49.9
850		145.5	112.5	79.9
900		129.3	93.9	60.2
C10		137.2	99.3	63.0
C11		174.5	136.9	100.7
C12		157.4	114.8	74.1
C13		172.3	122.0	74.1
C14		185.3	134.7	86.6
C15		194.0	137.5	83.7
C16		254.4	191.1	131.3
C17		282.0	214.1	149.7
C18		301.0	226.6	155.9
C19		318.7	240.6	166.4
C20		344.4	257.9	175.7

10 Hydraulic performance

10 - 4 Heat recovery pressure drop

EWWQ-AJYNN

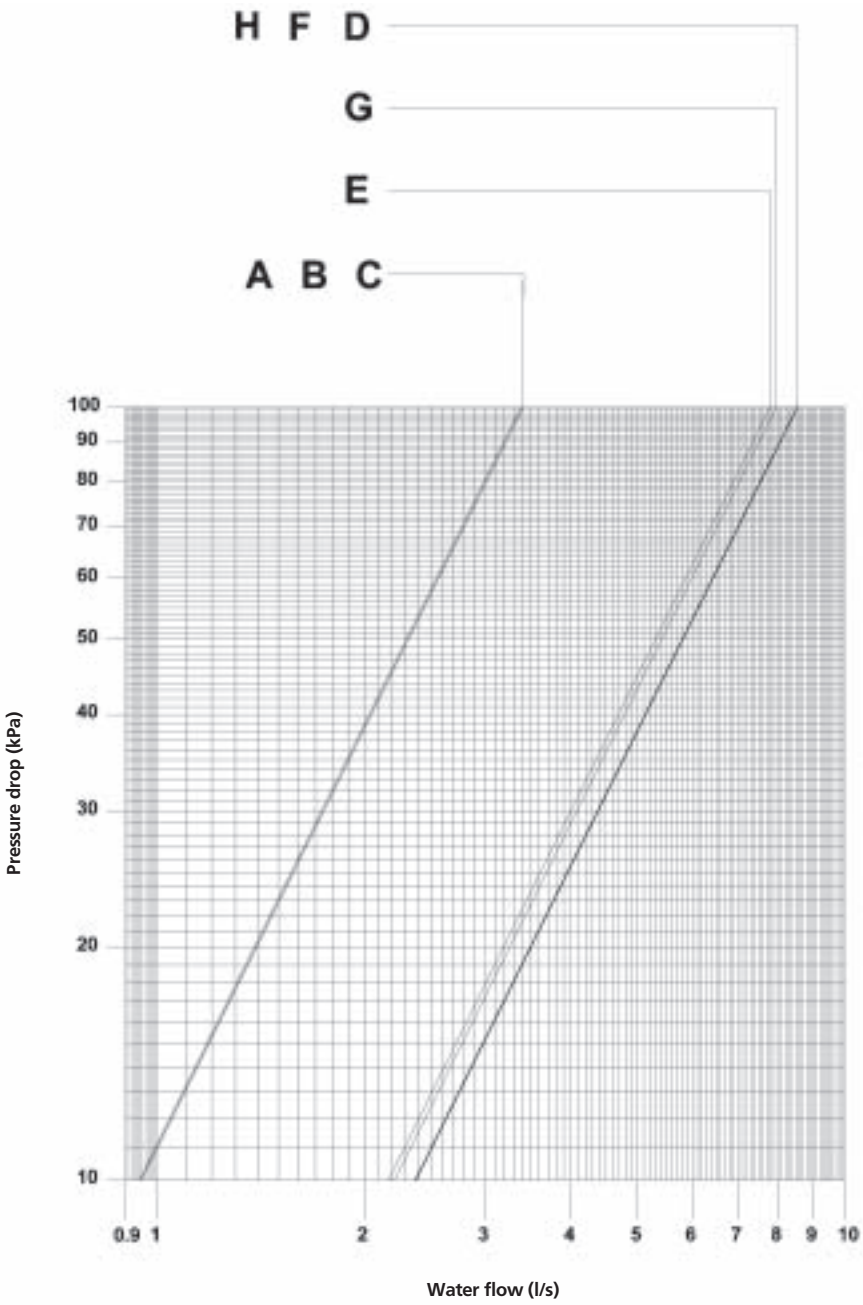


A. EWWQ400AJYNN	G. EWWQC10AJYNN
B. EWWQ480AJYNN	H. EWWQC12AJYNN
C. EWWQ600AJYNN	I. EWWQC13AJYNN
D. EWWQ650AJYNN	L. EWWQC14AJYNN
E. EWWQ800AJYNN	M. EWWQC15AJYNN
F. EWWQ900AJYNN	

10 Hydraulic performance

10 - 4 Heat recovery pressure drop

EWWQ-AJYNN



A. EWWQ750AJYNN	E. EWWQC17AJYNN
B. EWWQ850AJYNN	F. EWWQC18AJYNN
C. EWWQC11AJYNN	G. EWWQC19AJYNN
D. EWWQC16AJYNN	H. EWWQC20AJYNN

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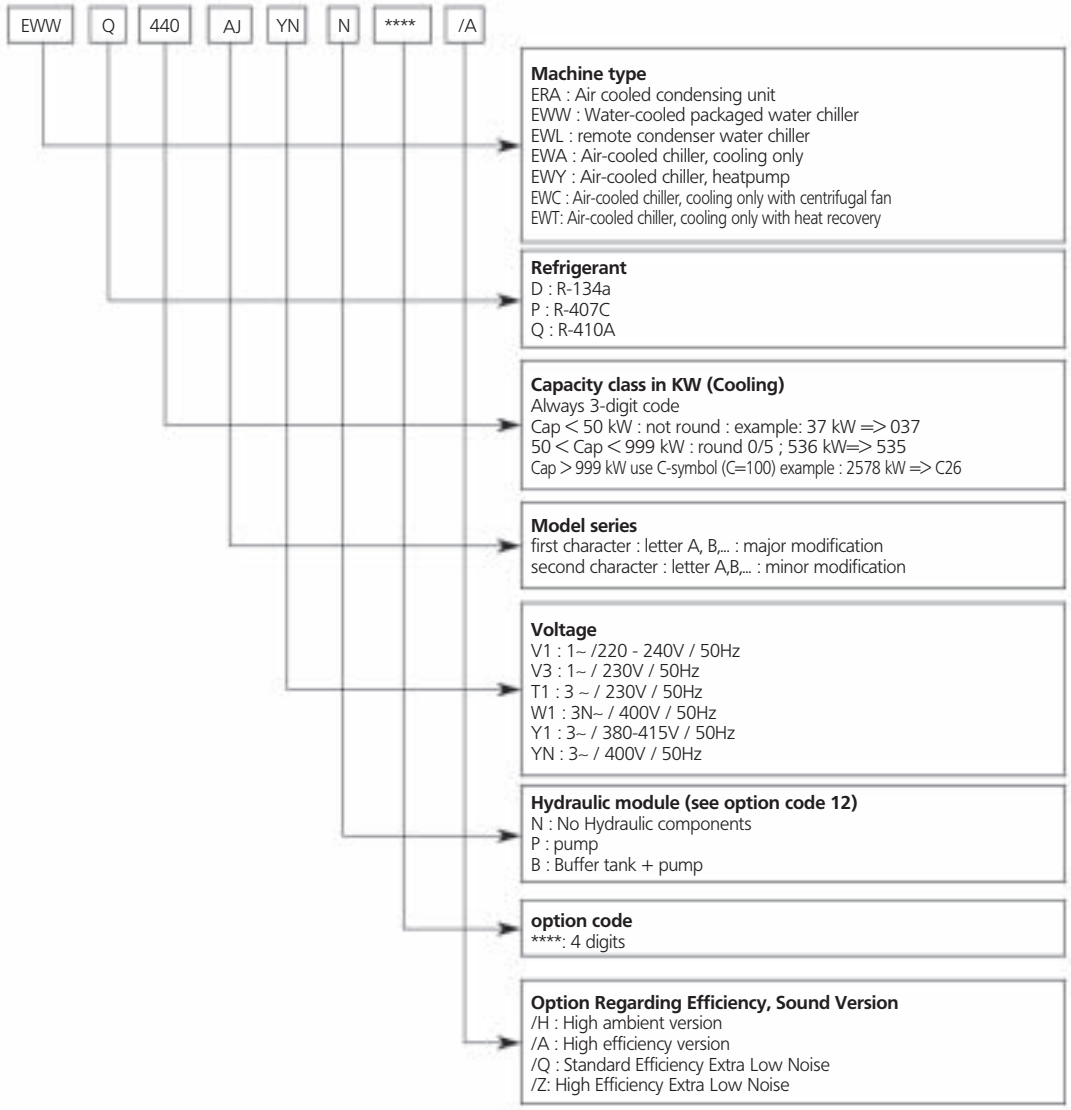
1 Nomenclature



2 Specifications text

GENERAL CHARACTERISTICS

Structure

The chiller is equipped with brackets directly installed on heat exchangers. The evaporator and the suction piping are appropriately insulated to prevent condensation. Unit is provided with lifting holes.

Screw compressors

The Stargate™ single-screw compressor has a well balanced compression mechanism which gives main bearing design life of 3-4 times greater than twin-screws and eliminates expensive and complicated thrust balancing schemes.
Oil injection is used for these compressors in order to get high EER at high condensing pressure. The oil supplied to the compressor performs three basic functions: oil for capacity control actuation, oil for bearing lubrication, oil for sealing. The oil is injected via fixed ports in the casing around the rotor.
Compressors have an infinitely variable capacity control down to 25% of its total capacity. This control is made by means of capacity slides controlled by microprocessors.
The unit is furnished with an external (for Frame 4) or integrated (for Frame 3200) high efficiency oil separator to maximise oil extraction.
The compressor is provided with a liquid injection circuit to reach oil cooling.
Standard start is star-delta type.

Evaporator

The units are supplied with optimised shell and tubes evaporator pass that allows a perfect oil circulation and so a perfect oil return to the compressor. It is direct expansion with refrigerant inside the tubes and water outside (shell side) with carbon steel tube sheets, with straight copper tubes that are spirally wound internally for higher efficiencies, expanded on the tube plates. The external shell is covered with a closed cell insulation material.
Each evaporator has 1 or 2 circuits, one for each compressor and is manufactured in accordance to PED approval. The evaporator water outlet connections are provided with Victaulic Kit.

Condensers

Condensers are shell and tubes cleanable, through-tube type. The unit has indenpendent condensers, one per circuit. Each condenser has a carbon steel and seamless, integrally finned high efficiency copper tubes, roll expanded into heavy carbon steel tube sheets. Water heads are removable and include vent and drain plugs. Condensers come complete with liquid shut-off valve, spring loaded relief valve.

Electronic expansion valve (EEV)

EWWQAJYNN-AJYNN/A water cooled chiller is equipped with the most advanced electronic expansion valve 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.
EEV strength point is the capacity to work with lower DP 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. This feature becomes more important in EWWQAJYNN-AJYNN/A that works with R-410A: the research indicates a favourable energy consumption when this refrigerant is used with low condensing temperatures.

Refrigerant circuit

Each unit has 1 or 2 independent refrigerant circuits with one compressor per circuit, including:

- High and low pressure switches
- Moisture liquid indicator
- High efficiency oil separator
- Replaceable core filter-drier
- Electronic expansion valve

Electrical control panel

Power and control are located into two sections of the main panel that is manufactured to insure protection for all weather conditions.
The power panel is fitted with an interlocked door main isolator to prevent access while power supply is on. Electrical panel is IP54.

Power section includes

The power section includes contactors, all compressors fuses and control circuit transformer.
Additional space is provided for an easy installation of the various optional accessories provided to enhance the EWWQ-AJYNN & AJYNN/A units capabilities.

2 Specifications text

MicroTech II C Plus controller

MicroTech II C Plus controller is installed as standard on all the units; it can be used to modify unit set points and check control parameters. A display illustrates the machine's operating status, programmable values and setpoints e.g. temperatures, and pressures of fluids (water, refrigerant). Device controls maximise the Daikin chillers energy efficiency and reliability characteristics. It uses sophisticated software with predictive logic to select the most energy efficient combination of compressor, expansion device and condenser fan to keep stable operating conditions and maximise energy efficiency. The compressors are automatically rotated to ensure equal operating hours. MicroTech II C Plus protects critical components in response to external signals from its system sensors measuring: motor temperatures, refrigerant gas and oil pressures, correct phases sequence and phase loss.

Control section - main features:

- Chillers enabled to work in partial failure condition thanks to the distributed multiprocessor logic system
- Management of the compressor capacity slide and the EEV valve according to the distributed multiprocessor logic system
- Full routine operation at condition of:
  - High pressure value
  - 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 and discharge superheating temperature for each circuit
- Leaving water cooled temperature regulation. Temperature tolerance ± 0,1°C
- Compressors and evaporator/condenser pumps hours counter
- Display of Status Safety Devices
- Start up numbers and compressors working hours equalization
- Excellent management of compressors load
- Cooling tower's fans management according to condensing pressure
- Automatic re-start in case of power supply interruption (adjustable)
- Soft Load
- Return Reset
- AOT Reset (optional)
- Setpoint Reset (optional)
- Demand limit or Current limit (optional)

Safety for each refrigerant circuit

- High pressure (pressure switch)
- Compressor overload (optional)
- High discharge temperature on the compressor
- Phase monitor
- Star/delta transition failed
- Low delta pressure between suction and discharge
- Low pressure ratio
- High oil pressure drop
- Low oil pressure

2 Specifications text

Compressor overload (optional)

- Phase monitor
- Freeze protection
- An evaporator's flow controller input (stops the unit)
- Remote on/off input
- Emergency stop (shuts down all compressors)

Regulation type

Proportional + integral + derivative regulation on the input probe of the evaporator water leaving temperature.

MicroTech II C Plus terminal

The MicroTech II C Plus terminal has following features:

- 4-lines by 20-character liquid crystal display back lighted
- Key-pad consisting of 15 keys " clear language display "
- Memory to protect the data
- General faults alarm led
- 4-level password access to modify the setting
- Service report displaying all running hours and general conditions
- Memorized alarm history to facilitate the fault's analysis
- Remote full featured versions of the LCD terminal are available for a comfortable check and control of the unit over RS488 line.

2 Specifications text

SPECIFICATIONS - EWWQ-AJYNN & AJYNN/A

To supply and install, where specified in the project n° . . . . . unit(s) water cooled chiller with cooling capacity of . . . . . kW, to cool . . . . . l/sec. of water from . . . . . °C to . . . . . °C,, condenser entering water temperature . . . . . °C, condenser leaving water temperature . . . . . °C.
The unit should work with electricity at . . . . . V, 3ph, 50Hz. The electrical power absorbed should not exceed . . . . . kW. The units EER will be at least . . . . . at the working conditions of the project. Part load EER will be at least . . . . . at the working conditions of the project.
The units will have 1 or 2 independent refrigerant circuits, and the respective electronic microprocessor will allow the starting of the compressors. Each chiller will be factory assembled and protected by an epoxy paint.
The unit will be tested at full load in the factory at the nominal working conditions and water temperatures. Before shipment a full test will be held to avoid any losses. Chiller will be delivered to the job site completely assembled and charged with refrigerant and oil.
Comply with the manufacturer instructions for rigging and handling equipment.

General

All units should be designed and manufactured in accordance with applicable selections of the following which are equivalent to American Air-conditioning industry applicable codes:

Rating of chillers	EN 12055
Construction of pressure vessel	Pressure Equipment 97/23/EC (PED)
Machinery Directive	98/37/EC
Low Voltage Directive	2006/95/ES
Electromagnetic Compatibility Directive	2004/108/EC
Electrical & Safety Codes	IEC 60204-1
Manufacturing Quality Stds	ISO 9001:2000

Refrigerant

Will be accepted only R-410A.

UNIT DESCRIPTION

Each chiller consist of single or multiple semi-hermetic rotary screw compressor, direct expansion evaporator, water-cooled condenser section, control system and all components necessary for safe and controlled unit operation.

NOISE LEVEL AND VIBRATIONS

Sound pressure level at 1 meter distance in free field, semispheric conditions, shall not exceed . . . . . dBA. The sound pressure levels must be rated in accordance to ISO 9614-2. Other types of rating unacceptable. Vibration level should not exceed 2 mm/s.

Dimensions

Unit length shall not exceed . . . . . mm, unit width shall not exceed . . . . . .mm, unit height shall not exceed . . . . . mm.

2 Specifications text

CHILLER COMPONENTS

Compressors

- The compressors shall be field serviceable, semi-hermetic, single-screw type with one main helical rotor meshing with two opposed gaterotor. Twin-screw compressor will no be accepted because of the large bearing loads inherent with this design. For a Single-screw compressor the two exactly opposed gaterotors create two exactly opposed compression cycles which results in balanced forces acting on the rotor compressor. The gaterotors will be constructed of a carbon impregnated engineered composite material. The gaterotor supports will be constructed of cast iron.
- The oil injection shall be used for these compressors in order to get high EER also at high condensing pressure and low sound pressure levels in each load condition.
- Refrigerant system differential pressure shall provide oil flow through service replaceable, 0.5 micron, full flow, cartridge type oil filter internal to compressor. Filter bypass or oil pump not acceptable.
- The compressor's oil cooling must be realized by liquid injection. External dedicated heat exchanger and additional piping to carry the oil from the compressor to heat exchanger and viceversa will be not accepted.
- The compressor shall be direct electrical drive, without gear transmission between the screw and the electrical motor. The motor's compressor shall be designed for star/delta. Soft start should be available as option.
- Shall be present two thermal protection realized by a thermistor for high temperature protection to motor and a thermistor for discharge gas high temperature protection.
- The compressor shall be provided with an automatic spring return of capacity control valve to the minimum load position to ensure compressor starting always at minimum motor load so with the minimum mechanical stress.
- The compressor discharge connection shall be fitted with a check valve and with a stop valve.
- The compressor discharge shall be fitted with a head pressure control valve.

Evaporator

- The units shall be supplied with shell and tubes counter-flow evaporator single refrigerant pass. It will be direct expansion with refrigerant inside the tubes and water outside (shell side) with carbon steel tube sheets, with straight copper tubes that are spirally wound internally for higher efficiencies, expanded on the tube plates.
- The external shell, shall be linked with an electrical heater (option on request) to prevent freezing up to -28 C ambient temperature, commanded by a thermostat and shall be insulated with flexible, closed cell polyurethane insulation material.
- The evaporator will have 1 or 2 circuits, one for each compressor and shall be single refrigerant pass to ensure a simpler oil circulation so to ensure always a perfect oil return to the compressor.
- Evaporator is manufactured in accordance to PED approval.

Condensers

- Condensers will be shell and cleanable, through-tube type.
- The unit will have one condensers per circuit.
- Each condenser shall have a carbon steel and seamless, integrally finned high efficiency copper tubes, roll expanded into heavy carbon steel tube sheets.
- Water heads shall be removable and include vent and drain plugs.
- Condensers will come complete with liquid shut-off valve, spring loaded relief valve.

Refrigerant circuit

- The unit must have refrigerant circuits completely independent of each other with one compressor per circuit.
- Each circuit shall include: an electronic expansion valve, external high efficiency oil separator, a liquid line shut-off valve with charging connection, replaceable core filter-drier, sight glass with moisture indicator and insulated suction line. Suction line and discharge line shut-off valves are available as option.

Regulation of cooling capacity

- Each unit will have a microprocessor for the control of compressor slide valve's position (2 slide valves, one for each compressor's cycles).
- The slides shall have a stepless motion that allows a unit's operation with infinitely variable capacity control down to 25% (1 compressor) or down to 12,5% (2 compressors) of the cooling capacity. The chiller shall be capable of stable operation to a minimum of 25% (1 compressor) or to a minimum of 12,5% (2 compressors) of full load without hot gas bypass.
- Step unloading unacceptable because of evaporator leaving water temperature fluctuation and low compressor's efficiency at partial load.
- The system shall stage the unit based on the leaving water temperature.

2 Specifications text

Electronic expansion valve

- Electronic expansion valve allows a simple and perfect control system that quickly interacts at load variations. This valve combines two functions: liquid solenoid and electronic expansion valve.
- It is managed directly by a microprocessor to match exactly the plant thermal load.
- Thermostatic valve unacceptable because of:
    - Its limited load range
    - Higher refrigerant pressure drop
    - Because of leaving evaporator water temperature control less good than an electronic device
    - Thermal expansion device needs a higher differential pressure between high pressure side and low pressure side to work correctly. This doesn't allow to work with low condensing pressure and therefore doesn't allow to reach the money saving that is possible to have with these chiller working conditions.

Control panel

- Field power connections, control interlock terminals, and unit control system should be centrally located in an electric panel (IP 54).
- The Power components and control equipment shall be separately mounted in different compartments of the control panel.
- The Compressor starting method will be star/delta, with an option for Softstart.
- Power and starting controls should include fuses and contactors for the compressor.
- Operating and safety controls should include energy saving; emergency stop switch; thermal overload protection for each compressor motor; high and low pressure cut-out switch (for each refrigerant circuit); anti-freeze thermostat; cut-out switch for each
- All of the information regarding the unit shall be shown on a display with a built-in calendar and clock that will provide unit scheduling throughout the year.
- The following features and functions shall be included:
    - Resetting chilled water temperature by controlling the return water temperature or by a remote 4-20 mA DC signal:
    - Soft load function to prevent the system from operating at full load during the chilled fluid pulldown period
    - Password protection of critical parameters of control
    - Start-to-start and stop-to-start timers to provide minimum compressor off-time with maximum motor protection
    - Communication capability with a PC or remote monitoring
    - Lead-lag selection by manual or automatically by circuit run hours
    - Double set point for brine unit version
    - Scheduling via internal time clock to allow programming of a yearly start-stop schedule accommodating weekends and holidays

Display Capabilities

The controller as a minimum shall be capable of monitoring and displaying the following data:

Operating Conditions

Ent./ Lvg. Evaporator fluid Temp.
Entering Condenser fluid Temp.
Operating Chilled Fluid Setpoint
Oil / Discharge gas Press. (per comp.)
Condensing Press. (per comp.)
Evaporator Press. (per comp.)
Unit Enabled
Compressor Enabled
Water Setpoint Reset
Demand Limit or Current Limit
(Site Selectable)

Alarms

Phase monitor
Freeze protection
Evaporator Flow
Low Gas Pressure (per comp.)
Transition Fault, (per comp.)
Oil Diff. press. (per comp.)
Low Oil Pressure (per comp.)
High Gas Pressure Trip (per comp.)
Motor Overload, (per comp.)
Transducer faults
Units Off-Line
External fault
Processor Faults
Maintenance requirements

2 Specifications text

Standard Customer Interfaces

The controller as a minimum shall be capable of providing the following interlocks:

Chiller Enable Signal: Digital Input, customer contact must be capable of handling 24Volts, 50HZ, 1 Amp.

Chiller Common Fault: Volt free, normally open, digital contact, must be capable of switching 250 V, 50 HZ, 10 Amp.

Pump Enable Signal: Volt free, normally open, digital contact, must be capable of switching 250 V, 50 HZ, 10 Amp.

Setpoint Override: 4 - 20 mA DC analoque input signal.

Demand Limit: 4 - 20 mA DC analoque input signal.

or

Current Limit: 4 - 20 mA DC analoque input signal.

Optional Customer Interfaces

Compressor Running Signals: Volt free, normally open, digital contact, capable of switching 250 V, 50 HZ, 10 Amp.

Optional High Level Communications Interface

Using ModBus, Lonworks or Bacnet protocols.

3 Specifications

3-1 TECHNICAL SPECIFICATIONS				EWWQ440 AJYNN/A	EWWQ550 AJYNN/A	EWWQ650 AJYNN/A	EWWQ750 AJYNN/A	EWWQ800 AJYNN/A	EWWQ950 AJYNN/A	EWWQC10 AJYNN/A	EWWQC11 AJYNN/A
Capacity (Eurovent)	Cooling	Nominal	kW	431	527	653	740	818	993	1,059	1,139
Capacity Steps			%	25-100 (stepless)	25-100 (stepless)	25-100 (stepless)	25-100 (stepless)	25-100 (stepless)	25-100 (stepless)	12.5-100 (stepless)	25-100 (stepless)
Nominal input (Eurovent)	Cooling		kW	86.67	104.72	128.28	145.95	162.04	196.57	209.49	232.06
EER				4.97	5.03	5.09	5.07	5.05	5.05	5.06	4.91
ESEER				5.58	5.61	5.69	5.67	5.64	5.39	5.89	5.28
Casing	Colour			RAL7032							
	Material			Galvanized and painted steel sheet							
Dimensions	Unit	Height	mm	2,000	2,000	2,000	2,001	2,000	2,001	2,453	2,001
		Width	mm	1,211	1,211	1,211	1,218	1,266	1,448	1,350	1,448
		Depth	mm	3,987	3,987	3,987	3,855	3,854	3,891	4,985	3,891
Weight	Unit		kg	2,322	2,403	2,403	2,738	2,407	2,427	4,775	2,457
	Operating Weight		kg	2,594	2,685	2,745	3,158	2,815	3,056	5,431	3,086
Water Heat Exchanger	Type			Shell and tube							
	Minimum water volume in the system (Formula)			The minimum water content per unit should be calculated with a certain approximation using this simplified formula: Q= 35.83/N x P(kW)/Delta T(°C); where: Q = minimum water content per unit expressed in litres; P = minimum cooling capacity of the unit expressed in kW; Delta T = evaporator entering / leaving water temperature difference expressed in °C; N = number of compressors; For more accurate determination of quantity of water, it is advisable to contact the designer of the plant.							
Water Heat Exchanger Evaporator	Type			Shell and tube							
	Water volume		l	220	213	200	334	325	538	587	538
	Water flow rate	Nominal	l/min	1197	1463.4	1813.2	2058	2272.8	2760	2944.2	3164.4
	Nominal water pressure drop	Cooling	kPa	55.77	68.81	71.54	64.27	57.46	53.85	53.69	68.89
	Insulation material			Closed cell foam elastomer							
Water Heat Exchanger Condenser	Type			Shell and tube							
	Water volume		l	52	69	81	86	83	91	69 /70	91
	Water flow rate	Nominal	l/min	1457.4	1778.4	2199	2496.6	2760	3350.4	3573.6	3861
	Nominal water pressure drop	Cooling	kPa	50.16	39.75	42.38	46.94	59.79	64.73	40.10	83.56
	Insulation material			Expanded elastomer							
	Model	Quantity		1	1	1	1	1	1	2	1
Compressor	Type			Semi-hermetic single screw compressor							
	Refrigerant oil charge		l	16	16	16	16	16	16	32	16
	Model	Quantity		1	1	1	1	1	1	2	1
Sound level	Sound Power	Cooling	dBA	100.9	101.7	102.6	102.7	102.0	102.9	105.2	103.8
	Sound Pressure	Cooling	dBA	82.2	83.0	83.9	83.9	83.2	84.0	85.6	84.9
Operation Range	Evaporator	Min	°CDB	-4	-4	-4	-4	-4	-4	-4	-4
		Max	°CDB	10	10	10	10	10	10	10	10
	Condensor	Min	°CDB	25	25	25	25	25	25	25	25
		Max	°CDB	45	45	45	45	45	45	45	45
Refrigerant circuit	Refrigerant type			R-410A							
	Refrigerant charge		kg	95	95	95	95	110	130	120	130
			kg							120	
	No of circuits			1	1	1	1	1	1	2	1
	Refrigerant control			Electronic expansion valve							
Piping connections	Evaporator water inlet/outlet			219.1mm	219.1mm	219.1mm	219.1mm	219.1mm	273.0mm	273.0mm	273.0mm
	Condensor water inlet/outlet			5''	5''	5''	5''	5''	5''	5"	5"
Safety Devices				High pressure switch							
				Low pressure switch							
				Emergency stop							
				High discharge temperature on the compressor							
				Phase monitor							
				Low pressure ratio							
				High oil pressure drop							
				Low oil pressure							
Notes				Nominal cooling capacity and power input at Eurovent conditions: Evaporator 12/7°C; Condenser 30/35°C							

3 Specifications

3-1 TECHNICAL SPECIFICATIONS				EWWQC12 AJYNN/A	EWWQC13 AJYNN/A	EWWQC14 AJYNN/A	EWWQC15 AJYNN/A	EWWQC16 AJYNN/A	EWWQC18 AJYNN/A	EWWQC19 AJYNN/A	EWWQC20 AJYNN/A
Capacity (Eurovent)	Cooling	Nominal	kW	1,182	1,297	1,397	1,479	1,605	1,769	1,901	2,061
Capacity Steps			%	12.5-100 (stepless)							
Nominal input (Eurovent)	Cooling		kW	233.11	257.54	274.77	291.86	321.48	356.36	390.31	425.94
EER				5.07	5.04	5.08	5.07	4.99	4.96	4.87	4.84
ESEER				5.87	5.88	5.98	5.93	5.67	5.71	5.48	5.50
Casing	Colour			RAL7032							
	Material			Galvanized and painted steel sheet							
Dimensions	Unit	Height	mm	2,453	2,453	2,453	2,453	2,547	2,547	2,547	2,547
		Width	mm	1,350							
		Depth	mm	4,985	4,985	4,985	4,985	4,844	4,844	4,809	4,809
Weight	Unit		kg	4,831	4,873	4,919	4,969	5,117	5,117	5,388	5,408
	Operating Weight		kg	5,479	5,512	5,546	5,606	5,794	5,843	6,110	6,118
Water Heat Exchanger	Type			Shell and tube							
	Minimum water volume in the system (Formula)			The minimum water content per unit should be calculated with a certain approximation using this simplified formula: Q= 35.83/N x P(kW)/Delta T(°C); where: Q = minimum water content per unit expressed in litres; P = minimum cooling capacity of the unit expressed in kW; Delta T = evaporator entering / leaving water temperature difference expressed in °C; N = number of compressors; For more accurate determination of quantity of water, it is advisable to contact the designer of the plant.							
Water Heat Exchanger Evaporator	Type			Shell and tube							
	Water volume		l	575	563	551	551	495	484	535	527
	Water flow rate	Nominal	l/min	3286.2	3606	3882.6	4108.8	4459.8	4915.8	5283	5727
	Nominal water pressure drop	Cooling	kPa	64.23	55.13	67.85	75.14	70.1	89.12	91.3	113.04
	Insulation material			Closed cell foam elastomer							
Water Heat Exchanger Condenser	Type			Shell and tube							
	Water volume		l	73 / 76	76 / 76	75 / 86	86 / 86	91 / 91	91 / 91	91 / 91	91 / 91
	Water flow rate	Nominal	l/min	3986.4	4380	4708.8	4986	5425.2	5985.6	6454.8	7005.6
	Nominal water pressure drop	Cooling	kPa	47.93	48.17	49.20	46.82	44.26	61.21	60.50	79.00
	Insulation material			Expanded elastomer							
	Model	Quantity		2	2	2	2	2	2	2	2
Compressor	Type			Semi-hermetic single screw compressor							
	Refrigerant oil charge		l	32	32	32	32	32	32	32	32
	Model	Quantity		2	2	2	2	2	2	2	2
Sound level	Sound Power	Cooling	dBA	105.6	106.1	106.5	106.5	105.8	106.2	106.6	107.1
	Sound Pressure	Cooling	dBA	86.0	86.5	86.9	86.9	86.2	86.6	87.0	87.5
Operation Range	Evaporator	Min	°CDB	-4	-4	-4	-4	-4	-4	-4	-4
		Max	°CDB	10	10	10	10	10	10	10	10
	Condensor	Min	°CDB	25	25	25	25	25	25	25	25
		Max	°CDB	45	45	45	45	45	45	45	45
Refrigerant circuit	Refrigerant type			R-410A							
	Refrigerant charge		kg	120	120	120	120	130	130	130	130
			kg	120	120	120	120	130	130	130	130
	No of circuits			2	2	2	2	2	2	2	2
	Refrigerant control			Electronic expansion valve							
Piping connections	Evaporator water inlet/outlet			273.0mm	273.0mm	273.0mm	273.0mm	273.0mm	273.0mm	273.0mm	273.0mm
	Condensor water inlet/outlet			5"							
Safety Devices				High pressure switch							
				Low pressure switch							
				Emergency stop							
				High discharge temperature on the compressor							
				Phase monitor							
				Low pressure ratio							
				High oil pressure drop							
				Low oil pressure							
Notes				Nominal cooling capacity and power input at Eurovent conditions: Evaporator 12/7°C; Condenser 30/35°C							

3 Specifications

3-1 TECHNICAL SPECIFICATIONS				EWWQC22AJYNN/A
Capacity (Eurovent)	Cooling	Nominal	kW	2,196
Capacity Steps			%	12.5-100 (stepless)
Nominal input (Eurovent)	Cooling		kW	460.72
EER				4.77
ESEER				5.38
Casing	Colour			RAL7032
	Material			Galvanized and painted steel sheet
Dimensions	Unit	Height	mm	2,547
		Width	mm	1,350
		Depth	mm	4,809
Weight	Unit		kg	5,414
	Operating Weight		kg	6,124
Water Heat Exchanger	Type			Shell and tube
	Minimum water volume in the system (Formula)			The minimum water content per unit should be calculated with a certain approximation using this simplified formula: Q= 35.83/N x P(kW)/Delta T(°C); where: Q = minimum water content per unit expressed in litres; P = minimum cooling capacity of the unit expressed in kW; Delta T = evaporator entering / leaving water temperature difference expressed in °C; N = number of compressors; For more accurate determination of quantity of water, it is advisable to contact the designer of the plant.
Water Heat Exchanger Evaporator	Type			Shell and tube
	Water volume		l	527
	Water flow rate	Nominal	l/min	6103.8
	Nominal water pressure drop	Cooling	kPa	126.77
	Insulation material			Closed cell foam elastomer
Water Heat Exchanger Condenser	Type			Shell and tube
	Water volume		l	91 / 91
	Water flow rate	Nominal	l/min	7485.6
	Nominal water pressure drop	Cooling	kPa	79.00
	Insulation material			Expanded elastomer
	Model	Quantity		2
Compressor	Type			Semi-hermetic single screw compressor
	Refrigerant oil charge		l	32
	Model	Quantity		2
Sound level	Sound Power	Cooling	dBA	107.5
	Sound Pressure	Cooling	dBA	87.9
Operation Range	Evaporator	Min	°CDB	-4
		Max	°CDB	10
	Condensor	Min	°CDB	25
		Max	°CDB	45
Refrigerant circuit	Refrigerant type			R-410A
	Refrigerant charge		kg	130
			kg	130
	No of circuits			2
	Refrigerant control			Electronic expansion valve
Piping connections	Evaporator water inlet/outlet			273.0mm
	Condensor water inlet/outlet			5"
Safety Devices				High pressure switch
				Low pressure switch
				Emergency stop
				High discharge temperature on the compressor
				Phase monitor
				Low pressure ratio
				High oil pressure drop
				Low oil pressure
Notes				Nominal cooling capacity and power input at Eurovent conditions: Evaporator 12/7°C; Condenser 30/35°C

3 Specifications

3-2 ELECTRICAL SPECIFICATIONS				EWWQ440 AJYNN/A	EWWQ550 AJYNN/A	EWWQ650 AJYNN/A	EWWQ750 AJYNN/A	EWWQ800 AJYNN/A	EWWQ950 AJYNN/A	EWWQC10 AJYNN/A	EWWQC11 AJYNN/A
Power Supply	Name			YN							
	Phase			3~							
	Frequency		Hz	50	50	50	50	50	50	50	50
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
Unit	Starting Current		A	455	455	455	455	656	656	455	656
	Maximum starting current		A	455	455	455	455	656	656	636	656
	Nominal Running Current Cooling		A	148	173	208	235	263	315	347	367
	Power factor at nominal conditions		A	0.85	0.87	0.89	0.90	0.89	0.90	0.87	0.91
	Maximum Running Current		A	178	211	256	291	316	376	422	442
	Max unit current for wires sizing		A	195	232	282	320	348	414	464	486
	Recommended fuses according to IEC standard 269-2			440 A gG	400 A gG	500 A gG	630 A gG	630 A gG	800 A gG	400 A gG	800 A gG
Compressor	Phase			3~							
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
	Starting current		A	455	455	455	455	656	656	455	656
	Nominal running current (RLA)		A	148	173	208	235	263	315	173 / 173	367
	Maximum Running Current		A	189	225	274	310	325	388	225 / 225	458
	Starting Method			Open Star-Delta							
	Recommended fuses			250 A gG	250 A gG	315 A gG	355 A gG	355 A gG	500 A gG	250 A gG / 250 A gG	630 A gG
Control Circuit	Phase			1~							
	Voltage		V	115	115	115	115	115	115	115	115
	Recommended fuses			4 A gG							
	Crankcase heater (E1/2HC)		W	250	250	250	250	400+140	400+140	250	400+140
Notes				Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.							
				Nominal current in cooling mode is referred to installation with 25kA short circuit current and is based on the following conditions: evaporator 12/7°C, condenser 30/35°C							
				Recommended fuses (IEC 269-2: 1.6 times largest compressor fuse size)							
				Maximum starting current: starting current of biggest compressor + current of the other compressor at 75 % of maximum load							
				Maximum current for wires sizing: (compressors full load ampere + fans current) x 1.1							

3-2 ELECTRICAL SPECIFICATIONS				EWWQC12 AJYNN/A	EWWQC13 AJYNN/A	EWWQC14 AJYNN/A	EWWQC15 AJYNN/A	EWWQC16 AJYNN/A	EWWQC18 AJYNN/A	EWWQC19 AJYNN/A	EWWQC20 AJYNN/A
Power Supply	Name			YN							
	Phase			3~							
	Frequency		Hz	50	50	50	50	50	50	50	50
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
Unit	Starting Current		A	455	455	455	455	656	656	656	656
	Maximum starting current		A	674	674	702	702	925	979	979	1,032
	Nominal Running Current Cooling		A	381	417	444	470	522	575	627	678
	Power factor at nominal conditions		A	0.88	0.89	0.89	0.90	0.89	0.89	0.90	0.91
	Maximum Running Current		A	467	514	548	581	629	689	749	814
	Max unit current for wires sizing		A	514	566	603	639	692	758	824	895
	Recommended fuses according to IEC standard 269-2			400 A gG	400 A gG	500 A gG	500 A gG	800 A gG	800 A gG	1,000 A gG	1,000 A gG

3 Specifications

3-2 ELECTRICAL SPECIFICATIONS				EWWQC12 AJYNN/A	EWWQC13 AJYNN/A	EWWQC14 AJYNN/A	EWWQC15 AJYNN/A	EWWQC16 AJYNN/A	EWWQC18 AJYNN/A	EWWQC19 AJYNN/A	EWWQC20 AJYNN/A
Compressor	Phase			3~							
	Voltage		V	400	400	400	400	400	400	400	400
	Voltage Tolerance	Minimum	%	-10%							
		Maximum	%	+10%							
	Starting current		A	455	455	455	455	656	656	656	656
	Nominal running current (RLA)		A	173 / 208	208 / 208	208 / 235	235 / 235	263 / 263	263 / 315	315 / 315	315 / 367
	Maximum Running Current		A	225 / 274	274 / 274	274 / 310	310 / 310	325 / 325	325 / 388	388 / 388	388 / 458
	Starting Method			Open Star-Delta							
	Recommended fuses			250 A gG / 315 A gG	315 A gG / 315 A gG	315 A gG / 355 A gG	355 A gG / 355 A gG	355 A gG / 355 A gG	355 A gG / 500 A gG	500 A gG / 500 A gG	500 A gG / 630 A gG
Control Circuit	Phase			1~							
	Voltage		V	115	115	115	115	115	115	115	115
	Recommended fuses			4 A gG							
	Crankcase heater (E1/2HC)		W	250	250	250	250	400+140	400+140	400+140	400+140
Notes				Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.							
				Nominal current in cooling mode is referred to installation with 25kA short circuit current and is based on the following conditions: evaporator 12/7°C, condenser 30/35°C							
				Recommended fuses (IEC 269-2: 1.6 times largest compressor fuse size)							
				Maximum starting current: starting current of biggest compressor + current of the other compressor at 75 % of maximum load							
				Maximum current for wires sizing: (compressors full load ampere + fans current) x 1.1							

3-2 ELECTRICAL SPECIFICATIONS				EWWQC22AJYNN/A
Power Supply	Name			YN
	Phase			3~
	Frequency		Hz	50
	Voltage		V	400
	Voltage Tolerance	Minimum	%	-10%
		Maximum	%	+10%
Unit	Starting Current		A	656
	Maximum starting current		A	1,032
	Nominal Running Current Cooling		A	729
	Power factor at nominal conditions		A	0.91
	Maximum Running Current		A	877
	Max unit current for wires sizing		A	965
	Recommended fuses according to IEC standard 269-2			1,000 A gG
Compressor	Phase			3~
	Voltage		V	400
	Voltage Tolerance	Minimum	%	-10%
		Maximum	%	+10%
	Starting current		A	656
	Nominal running current (RLA)		A	367 / 367
	Maximum Running Current		A	458 / 458
	Starting Method			Open Star-Delta
	Recommended fuses			630 A gG / 630 A gG
Control Circuit	Phase			1~
	Voltage		V	115
	Recommended fuses			4 A gG
	Crankcase heater (E1/2HC)		W	400+140
Notes				Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.
				Nominal current in cooling mode is referred to installation with 25kA short circuit current and is based on the following conditions: evaporator 12/7°C, condenser 30/35°C
				Recommended fuses (IEC 269-2: 1.6 times largest compressor fuse size)
				Maximum starting current: starting current of biggest compressor + current of the other compressor at 75 % of maximum load
				Maximum current for wires sizing: (compressors full load ampere + fans current) x 1.1

4 Options

Standard Configuration (furnished on basic unit)

Star Delta Compressors starter - For low inrush current and reduced starting torque.
Phase monitor - The phase monitor controls phase sequence and phase loss.
Evaporator connection water side Victaulic - Hydraulic joint with gasket for an easy and quick water connection.
Double Set Point version (CB) - Dual leaving glycol mixture temperature setpoints.The lower setpoint can go down to 0°C.
This option needs 20mm thicked evaporator insulation (option on request).
1 pass condensers for EWWQ750-850-C11AJYNN units and EWWQC16-C20AJYNN.
2 passes condensers for EWWQ400-650AJYNN UNITS and EWWQ800-C15AJYNN, and for EWWQ-AJYNN/A units.
Hour run meter - Digital compressors hour run meter.
General fault relay - Contactor for the alarm warning.
Alarm from external device - Microprocessor is able to receive an alarm signal from an external device (pump, etc...). User can decide if this alarm signal will stop the unit or not.
Discharge line check valves

Options (on request)

Partial heat recovery - Enabled through a shell & tubes heat exchanger sited between the compressor and the condenser, completely dedicated to the heat recovery. This allows hot water to be produced up to a maximum temperature of 58°C, and to provide a very economic solution.
Evaporator electric heater - Electric heater controlled by a thermostat to protect the evaporator from freezing down to -28°C ambient temperature.
Compressor thermal overload relays - Safety devices against compressor motor overloading in addition to the normal protection envisaged by the electrical windings.
Amp and Volt Meter - Digital meters of unit drawn amperes and voltage values, installed on the electrical control panel.
Power factor correction - Installed on the electrical control panel to ensure it complies with the plant rules. (Daikin advises maximum 0,9).
Flow switch - Supplied separately to be wired and installed on the evaporator water piping (by the customer).
Suction line shut-off valves - Suction shut-off valve installed on the suction part of the compressor to facilitate maintenance operations. The valve implies an increase of length equal to 150mm
Discharge line shut-off valves - Discharge shut-off valve installed on the discharge part of the compressor to facilitate maintenance operations.
Cu-Ni 90-10 condenser - To work with sea water the heat exchangers are fitted with Cu-Ni tubes and special protection inside the end covers.
Rubber type antivibration mounts - Supplied separately, these are positioned under the base of the unit for "floor" installation.
Sound proof cabinet - Made of sheet metal and internally insulated, the cabinet is "integral kind" (around the whole chiller, not only around the compressors) to reach the best performance in noise reduction.

4 Options

Current Limit / Display - This option allows to monitor the chiller absorbed current with possibility to set a limit value. This option excludes the Demand Limit.
20mm thicked evaporator insulation - Useful in really heavy operating conditions.
2 passes condensers working with 9-12 °C water ΔT for EWWQ750-850-C11AJYNN and EWWQC16-C19AJYNN units.
4 passes condensers working with 9-12 °C water ΔT for EWWQ400-650AJYNN and EWWQ800-C15, and for EWWQ-AJYNN/A units.
Witness tests - The units are normally tested at the test bench prior to the shipment. On request, a second test can be carried out, at customer's presence, in accordance with the procedures indicated on the test form. (Not available for units with Glycol mixtures).
Soft start - Electronic starting device to prevent mechanical stress of the motor. An overload protection is included (no need of compressors thermal relays); soft start causes an increase of length equal to 100mm only on the following versions: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A
Over / Under Voltage - Phase monitor to control the minimum and maximum voltage value that the user can set.

Supervising systems (on request)

PlantVisor™:

Solution for tele-maintenance and supervisory
MicroTech II C Plus can be monitored locally or via modem or GSM by PlantVisor™ supervision program.
PlantVisor™ is compatible with all Windows based systems.
It allows the followings functions:

- Unit status monitoring
- Circuits status monitoring
- Set-points modification
- Alarms display

MicroTech II C Plus remote control

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

- CARELNative
- 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 and SNM.

Chiller Sequencing

MicroTech II control family allows an easy plug-in sequencing technology based on digital or serial field panel.
CSC II (Chiller System Controller II)
Serial sequences for up to 5 MTII chillers. Full featured field serial device to sequence, optimize and monitor a small group of Daikin chillers (check your catalogue for compatibility and features). Monitorable by Plant Visor.

5 Capacity tables

5 - 1 Cooling capacity tables

EWWQ440-950AJYNN/A

Unit size	Leaving chilled water temp. °C	Entering condenser water temperature (△T=5°C)									
		20		25		30		35		40	
		Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)
440	4	442.0	67.7	418.1	76.8	391.1	86.3	361.8	96.3	330.9	106.9
	5	456.0	67.8	431.6	76.9	404.1	86.4	374.2	96.4	342.7	107.0
	6	470.2	67.9	445.4	77.0	417.3	86.5	386.8	96.5	354.6	107.2
	7	484.7	67.9	459.4	77.1	430.7	86.7	399.6	96.7	366.9	107.3
	8	499.6	67.9	473.7	77.2	444.5	86.8	412.8	96.8	379.5	107.4
	9	514.7	68.0	488.2	77.3	458.6	86.9	426.3	97.0	392.2	107.6
	10	530.0	68.0	503.1	77.4	472.8	87.0	440.0	97.1	405.3	107.7
550	4	539.3	81.8	510.7	92.8	478.0	104.3	442.5	116.5	405.1	129.5
	5	556.3	81.8	527.3	92.9	493.9	104.5	457.6	116.6	419.4	129.6
	6	573.6	81.9	543.8	93.0	510.1	104.6	473.2	116.8	434.1	129.8
	7	591.2	81.9	560.9	93.1	526.6	104.7	488.9	116.9	449.2	129.9
	8	609.2	81.9	578.2	93.2	543.3	104.8	505.1	117.1	464.5	130.0
	9	627.6	81.9	596.0	93.2	560.3	104.9	521.5	117.2	480.2	130.1
	10	646.1	81.9	614.0	93.3	577.6	105.0	538.2	117.3	496.3	130.3
650	4	668.3	100.1	632.7	113.7	592.6	127.8	548.9	142.7	502.8	158.7
	5	689.6	100.2	653.1	113.8	612.1	127.9	567.6	142.9	520.7	158.9
	6	711.3	100.3	674.0	113.9	632.1	128.1	586.7	143.1	538.8	159.0
	7	733.6	100.3	695.4	114.0	652.5	128.3	606.3	143.3	557.3	159.2
	8	756.2	100.3	717.2	114.1	673.4	128.4	626.1	143.4	576.3	159.3
	9	779.3	100.3	739.4	114.2	694.7	128.6	646.4	143.6	595.6	159.5
	10	802.7	100.3	762.1	114.3	716.6	128.7	667.2	143.8	615.4	159.7
750	4	758.7	114.0	718.0	129.3	672.1	145.3	622.2	162.3	569.8	180.4
	5	782.8	114.1	741.3	129.5	694.4	145.5	643.5	162.5	590.0	180.6
	6	807.3	114.1	765.0	129.6	717.2	145.7	665.3	162.7	610.7	180.8
	7	832.3	114.2	789.2	129.8	740.4	145.9	687.5	162.9	631.8	181.0
	8	857.9	114.2	813.7	129.9	764.1	146.1	710.2	163.1	653.3	181.2
	9	883.9	114.3	838.7	130.0	788.3	146.3	733.3	163.4	675.4	181.4
	10	910.4	114.3	864.4	130.1	812.8	146.5	756.8	163.6	697.8	181.6
800	4	826.2	128.0	786.2	144.0	743.6	159.9	698.5	176.2	651.3	193.6
	5	852.1	128.5	811.3	144.7	767.9	160.7	721.9	177.1	673.6	194.5
	6	878.5	129.0	837.0	145.3	792.6	161.4	745.7	177.9	696.4	195.3
	7	905.3	129.4	863.0	145.9	817.8	162.0	769.9	178.5	719.6	196.0
	8	932.6	129.7	889.5	146.3	843.5	162.5	794.6	179.1	743.1	196.6
	9	960.3	129.8	916.4	146.5	869.5	162.9	819.7	179.5	767.1	197.0
	10	988.4	129.8	943.8	146.6	896.0	163.0	845.1	179.7	791.6	197.2
950	4	1005.1	156.9	953.4	174.5	899.2	193.2	842.1	212.5	782.0	231.5
	5	1038.1	157.7	985.3	175.4	929.9	194.4	871.5	213.8	809.8	232.9
	6	1071.9	158.4	1017.8	176.4	961.1	195.5	901.4	215.1	838.2	234.3
	7	1106.2	159.0	1051.1	177.2	993.0	196.6	931.8	216.3	867.3	235.6
	8	1139.9	159.5	1084.9	178.0	1025.5	197.5	962.9	217.4	896.7	236.8
	9	1174.1	159.9	1118.7	178.6	1058.6	198.4	994.6	218.4	926.8	237.9
	10	1208.8	160.3	1152.3	179.2	1092.2	199.1	1026.7	219.2	957.4	238.9

Note: C.C. (cooling capacity) and P.I. (unit power input) are referred to 0,0176m² °C/kW evaporator fouling factor and 0,0440m² °C/kW condenser fouling factor. Rated conditions are for compressors running at nominal frequency. Shaded values are referred to part load operation.

5 Capacity tables

5 - 1 Cooling capacity tables

EWWQC10-C15AJYNN/A

Unit size	Leaving chilled water temp. °C	Entering condenser water temperature (△T=5°C)									
		20		25		30		35		40	
		Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)
C10	4	1085.5	163.6	1027.3	185.7	961.5	208.7	889.8	233.1	814.3	259.1
	5	1120.1	163.7	1060.7	185.9	993.4	209.0	920.4	233.3	843.4	259.3
	6	1155.4	163.7	1094.7	186.1	1026.1	209.2	951.5	233.6	873.0	259.6
	7	1191.3	163.8	1129.5	186.2	1059.5	209.5	983.4	233.9	903.3	259.8
	8	1227.9	163.8	1164.7	186.4	1093.6	209.7	1016.0	234.2	934.2	260.1
	9	1265.1	163.8	1200.7	186.5	1128.3	209.9	1049.2	234.4	965.8	260.3
	10	1303.2	163.8	1237.3	186.6	1163.5	210.1	1083.1	234.7	998.2	260.6
C11	4	1152.9	185.4	1096.5	205.7	1034.1	227.6	968.8	250.3	901.3	272.7
	5	1188.6	186.5	1131.4	206.9	1068.8	229.1	1002.0	252.0	932.9	274.5
	6	1225.1	187.5	1166.6	208.2	1104.2	230.6	1035.8	253.6	965.1	276.3
	7	1263.4	188.5	1202.4	209.4	1138.7	232.1	1070.3	255.3	998.0	278.1
	8	1303.0	189.5	1239.0	210.6	1173.7	233.5	1105.3	256.9	1031.4	279.9
	9	1343.2	190.4	1277.7	211.9	1209.4	234.9	1139.5	258.5	1065.4	281.6
	10	1384.2	191.4	1317.3	213.1	1246.2	236.3	1174.3	260.0	1100.1	283.3
C12	4	1211.2	182.0	1146.7	206.6	1073.6	232.2	994.0	259.3	910.0	288.3
	5	1249.6	182.1	1183.7	206.8	1109.2	232.5	1027.9	259.6	942.3	288.6
	6	1288.8	182.2	1221.5	207.0	1145.5	232.8	1062.7	260.0	975.4	288.9
	7	1328.8	182.3	1260.0	207.2	1182.4	233.1	1098.2	260.3	1009.1	289.2
	8	1369.4	182.3	1299.2	207.4	1220.1	233.4	1134.3	260.6	1043.6	289.5
	9	1410.6	182.3	1339.3	207.6	1258.7	233.6	1171.2	260.9	1078.8	289.8
	10	1452.6	182.3	1379.9	207.7	1298.0	233.9	1208.8	261.2	1114.8	290.1
C13	4	1329.7	201.2	1258.6	228.2	1178.2	256.4	1091.0	286.3	999.1	318.3
	5	1371.8	201.3	1299.1	228.5	1217.2	256.8	1128.2	286.7	1034.4	318.6
	6	1414.6	201.5	1340.5	228.8	1256.9	257.2	1166.2	287.1	1070.6	319.0
	7	1458.3	201.6	1382.7	229.0	1297.5	257.5	1204.9	287.5	1107.5	319.3
	8	1502.9	201.7	1425.6	229.3	1338.8	257.9	1244.5	287.9	1145.2	319.7
	9	1548.1	201.7	1469.4	229.5	1380.9	258.2	1284.9	288.2	1183.6	320.1
	10	1594.1	201.8	1514.0	229.7	1423.8	258.5	1326.1	288.6	1222.9	320.4
C14	4	1431.7	214.6	1355.0	243.4	1268.4	273.6	1174.5	305.5	1075.5	339.7
	5	1477.1	214.8	1398.7	243.8	1310.5	274.0	1214.6	305.9	1113.6	340.0
	6	1523.3	214.9	1443.4	244.1	1353.3	274.4	1255.6	306.3	1152.6	340.4
	7	1570.3	215.0	1489.0	244.3	1397.1	274.8	1297.4	306.7	1192.4	340.7
	8	1618.4	215.1	1535.2	244.6	1441.7	275.1	1340.0	307.1	1233.0	341.1
	9	1667.3	215.1	1582.4	244.8	1487.1	275.5	1383.6	307.5	1274.5	341.5
	10	1716.9	215.2	1630.5	245.0	1533.4	275.8	1428.1	307.9	1316.9	341.9
C15	4	1514.7	227.9	1434.1	258.6	1342.9	290.6	1243.7	324.6	1139.4	360.9
	5	1562.5	228.1	1480.2	258.9	1387.1	291.1	1286.1	325.0	1179.6	361.2
	6	1610.8	228.3	1527.3	259.2	1432.3	291.5	1329.3	325.4	1220.8	361.6
	7	1660.2	228.4	1575.0	259.5	1478.5	291.9	1373.4	325.8	1262.8	362.0
	8	1710.4	228.5	1623.4	259.8	1525.5	292.2	1418.4	326.3	1305.6	362.4
	9	1761.6	228.5	1672.8	260.0	1573.2	292.6	1464.4	326.7	1349.3	362.8
	10	1813.7	228.5	1723.1	260.2	1621.5	292.9	1511.2	327.1	1394.0	363.2

Note: C.C. (cooling capacity) and P.I. (unit power input) are referred to 0,0176m² °C/kW evaporator fouling factor and 0,0440m² °C/kW condenser fouling factor. Rated conditions are for compressors running at nominal frequency. Shaded values are referred to part load operation.

5 Capacity tables

5 - 1 Cooling capacity tables

EWWQC16-C22AJYNN/A

Unit size	Leaving chilled water temp. °C	Entering condenser water temperature (△T=5°C)									
		20		25		30		35		40	
		Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)	Cool. cap. (kW)	Pow. Input (KW)
C16	4	1620.4	253.4	1539.9	285.3	1453.9	316.8	1362.6	349.2	1265.6	383.7
	5	1672.9	254.6	1590.7	286.8	1503.4	318.5	1410.7	351.1	1311.7	385.7
	6	1726.3	255.6	1642.7	288.1	1553.4	320.1	1459.0	352.8	1359.0	387.5
	7	1780.4	256.5	1695.7	289.3	1604.5	321.5	1508.3	354.3	1406.8	389.1
	8	1835.4	257.1	1749.1	290.2	1656.7	322.6	1558.3	355.6	1454.7	390.4
	9	1891.4	257.5	1803.5	290.9	1709.5	323.5	1609.2	356.6	1503.5	391.4
	10	1948.2	257.5	1858.8	291.2	1762.9	324.0	1661.0	357.2	1553.0	392.1
C18	4	1787.7	282.9	1698.4	316.2	1603.8	350.7	1503.9	386.1	1398.7	422.5
	5	1845.0	284.3	1754.3	318.0	1657.8	352.7	1555.7	388.4	1448.2	424.8
	6	1903.6	285.5	1811.0	319.6	1712.7	354.6	1608.7	390.5	1498.5	427.0
	7	1963.2	286.6	1868.8	321.0	1768.7	356.3	1662.3	392.4	1549.9	429.1
	8	2023.5	287.4	1927.5	322.3	1825.4	357.9	1717.1	394.2	1602.3	431.0
	9	2084.7	288.1	1987.3	323.3	1883.1	359.2	1772.7	395.7	1655.4	432.6
	10	2146.7	288.5	2047.6	324.0	1941.8	360.2	1829.1	396.9	1709.5	434.0
C19	4	1922.3	311.6	1827.4	346.3	1727.4	383.6	1621.5	422.1	1508.8	460.1
	5	1983.0	313.2	1886.2	348.2	1784.3	385.9	1676.1	424.6	1561.4	462.9
	6	2044.0	314.6	1946.1	350.1	1842.2	388.2	1731.8	427.2	1614.6	465.6
	7	2105.6	316.0	2007.1	352.0	1900.9	390.3	1788.6	429.6	1668.8	468.3
	8	2168.4	317.2	2067.8	353.6	1960.7	392.3	1846.1	431.9	1723.9	470.7
	9	2232.0	318.3	2129.5	355.1	2021.3	394.2	1904.4	434.0	1779.9	473.1
	10	2295.8	319.3	2192.3	356.5	2081.8	395.9	1963.7	436.0	1836.7	475.2
C20	4	2085.0	340.4	1982.5	377.7	1873.9	418.3	1758.6	460.2	1637.6	501.7
	5	2149.5	342.1	2046.0	380.0	1935.0	420.9	1817.8	463.1	1694.1	504.9
	6	2215.1	343.8	2110.2	382.1	1997.3	423.4	1877.7	466.0	1751.7	507.9
	7	2281.9	345.5	2174.8	384.2	2060.7	425.9	1938.7	468.8	1810.4	511.0
	8	2349.8	347.0	2240.6	386.2	2124.5	428.3	2000.6	471.5	1869.8	513.9
	9	2418.4	348.5	2307.4	388.1	2189.0	430.6	2063.6	474.1	1930.0	516.7
	10	2487.6	349.8	2375.3	389.9	2254.5	432.8	2126.8	476.5	1991.2	519.4
C22	4	2222.5	368.5	2115.1	408.4	1999.8	452.1	1877.6	497.5	1750.2	542.4
	5	2289.9	370.4	2181.7	410.9	2064.1	455.0	1940.1	500.7	1810.0	545.9
	6	2358.4	372.4	2248.8	413.4	2129.5	457.9	2003.2	503.9	1871.0	549.3
	7	2428.1	374.3	2316.3	415.8	2196.2	460.7	2067.2	507.1	1933.0	552.8
	8	2499.2	376.2	2384.9	418.1	2262.8	463.5	2132.3	510.2	1995.6	556.2
	9	2571.4	378.1	2454.7	420.5	2330.1	466.3	2198.5	513.3	2059.0	559.5
	10	2643.9	379.9	2525.7	422.8	2398.5	469.0	2264.7	516.3	2123.3	562.8

Note: C.C. (cooling capacity) and P.I. (unit power input) are referred to 0,0176m² °C/kW evaporator fouling factor and 0,0440m² °C/kW condenser fouling factor. Rated conditions are for compressors running at nominal frequency. Shaded values are referred to part load operation.

5 Capacity tables

5 - 2 Capacity correction factor

Operating limits

EWWQ-AJYNN & AJYNN/A		R–410A
Max evaporator water △T	°C	6
Min evaporator water △T	°C	4
Max condenser water △T	°C	8
Min condenser water △T	°C	4

Evaporator fouling factors

Fouling factors m^2 °C/ kW	Cooling capacity correction factor	Power input correction factor	EER Correction factor
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

Condenser fouling factors

Fouling factors m^2 °C/kW	Cooling capacity correction factor	Power input correction factor	EER Correction factor
0,044	1,000	1,000	1,000
0,088	0,990	1,018	0,973
0,132	0,981	1,036	0,945

Ethylene glycol and low ambient temperature correction factors

Air ambient temperature (°C)	-3	-8	-15	-23	-35
% of ethylene glycol by weight	10	20	30	40	50
Cooling capacity correction factor	0,991	0,982	0,972	0,961	0,946
Power input correction factor	0,996	0,992	0,986	0,976	0,966
Flow rate correction factor	1,013	1,040	1,074	1,121	1,178
Water pressure drops correction factor	1,070	1,129	1,181	1,263	1,308

Low temperature operation performance factors

Ethylene glycol/water leaving temperature °C	3	2	0	-2	-4	-6	-8
Min. % of ethylene glycol	10	10	20	20	30	30	30
Cooling capacity correction factor	0,882	0,853	0,799	0,747	0,697	0,650	0,604
Power input compressors correction factor	0,977	0,971	0,960	0,947	0,934	0,919	0,903

5 Capacity tables

5 - 3 Partial heat recovery ratings

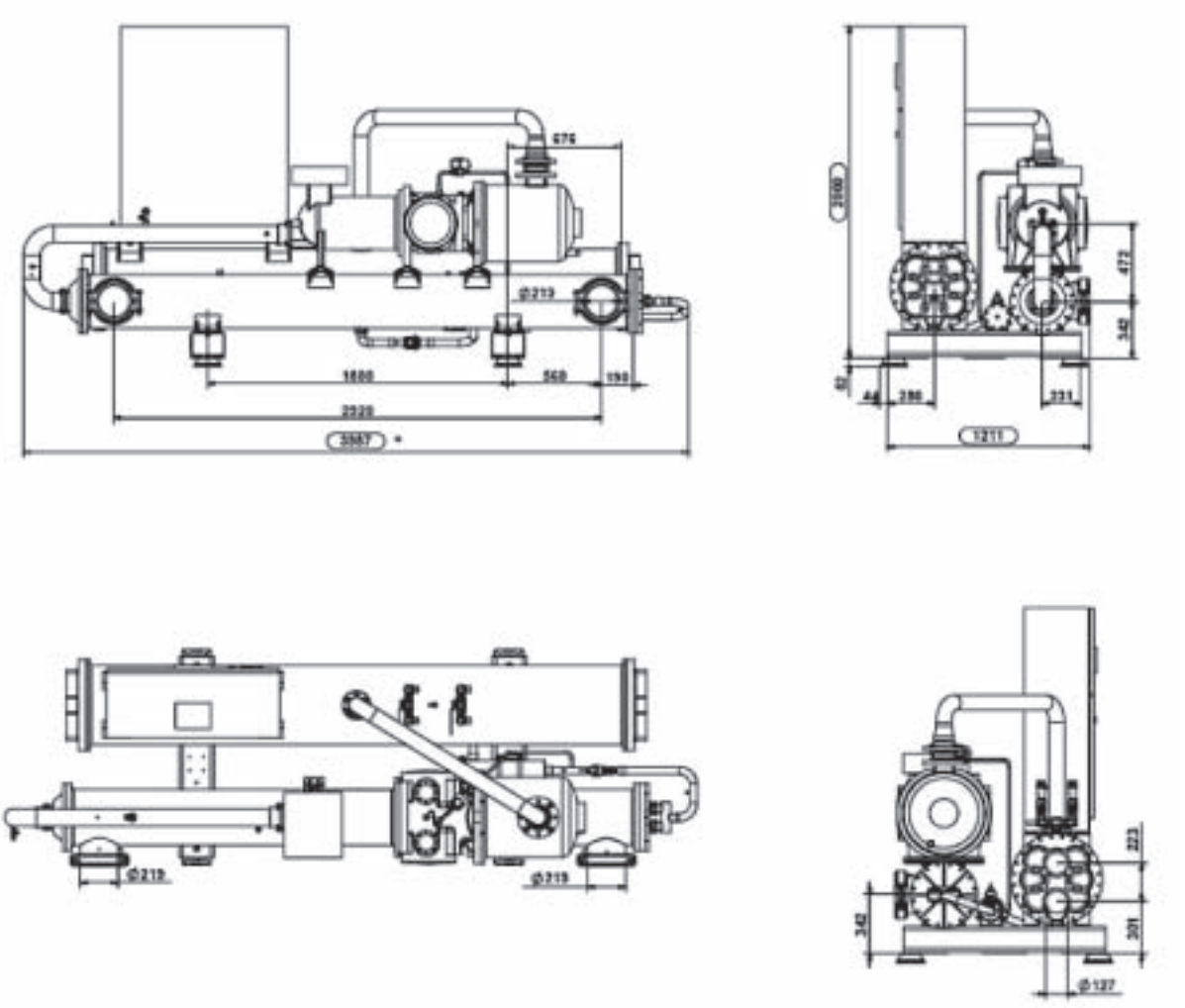
EWWQ-AJYNN/A

Unit size		Heat recovery leaving water temperature (△T=5°C)		
		45	50	55
		Heating capacity (kW)	Heating capacity (kW)	Heating capacity (kW)
440	Evaporator leaving water temperature 7°C - △T 5°C Condenser leaving water temperature 35°C	54.4	37.5	21.3
550		65.5	45.9	27.1
650		77.4	52.4	28.5
750		93.6	65.3	38.3
800		106.3	76.0	47.1
950		125.3	86.0	48.5
C10		131.5	89.7	50.0
C11		152.4	109.8	69.1
C12		148.8	103.5	60.4
C13		163.3	111.9	63.0
C14		175.4	122.2	71.5
C15A		182.5	123.6	67.5
C16		203.2	139.9	79.6
C18		228.4	161.7	98.1
C19		253.3	177.7	105.7
C20		276.1	199.1	125.6
C22		301.7	216.9	135.9

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ440-650AJYNN/A

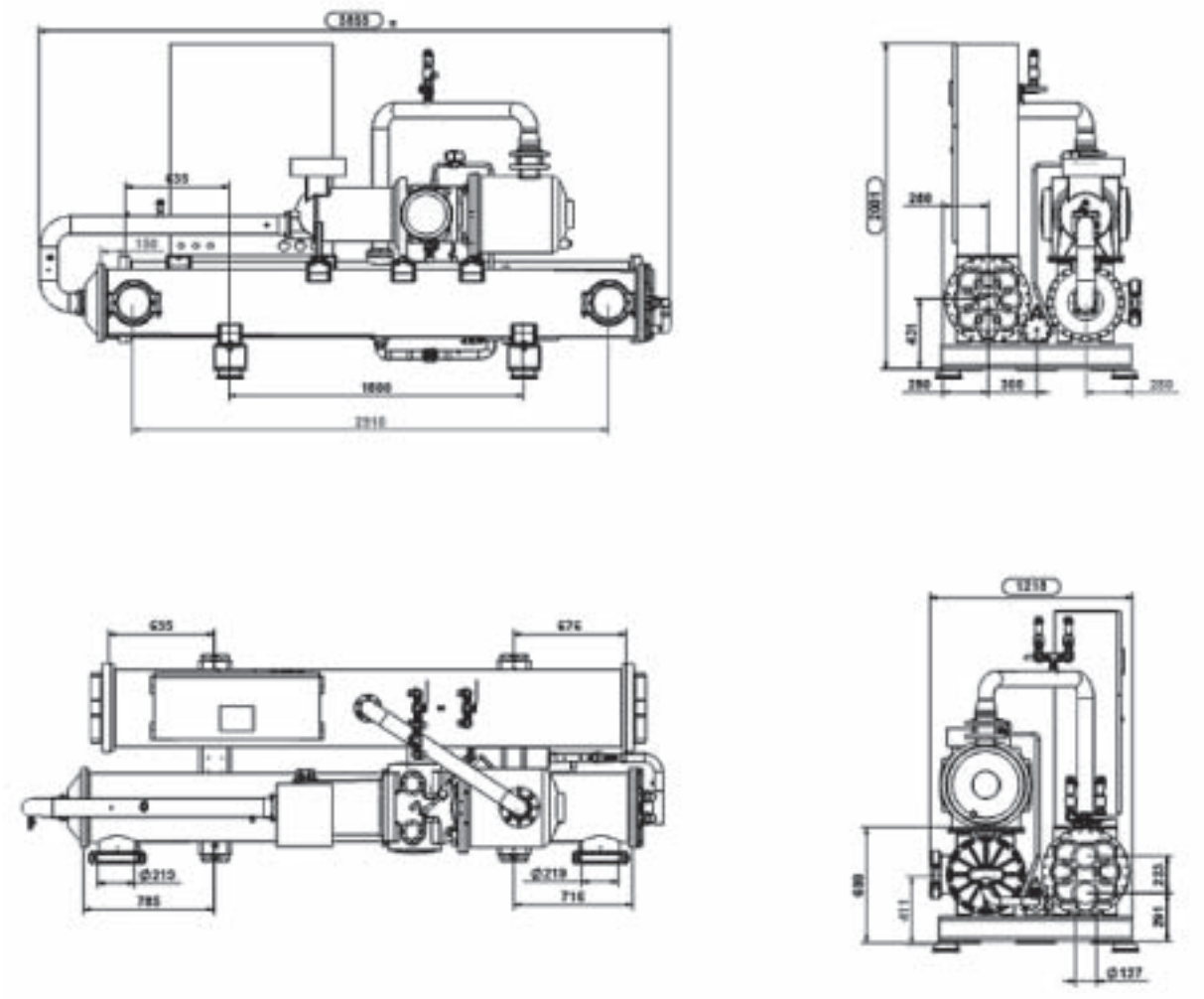


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ750AJYNN/A

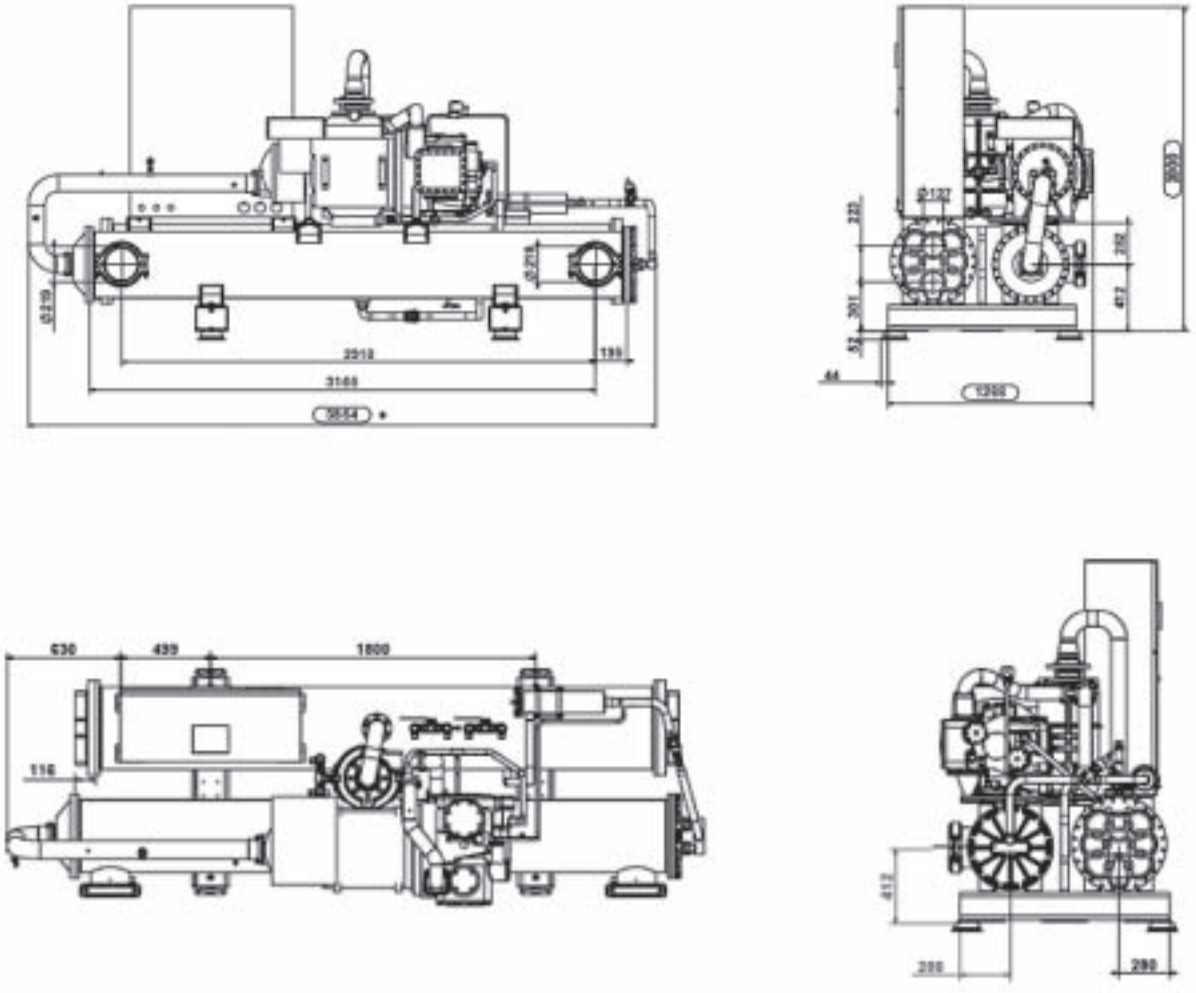


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ800AJYNN/A

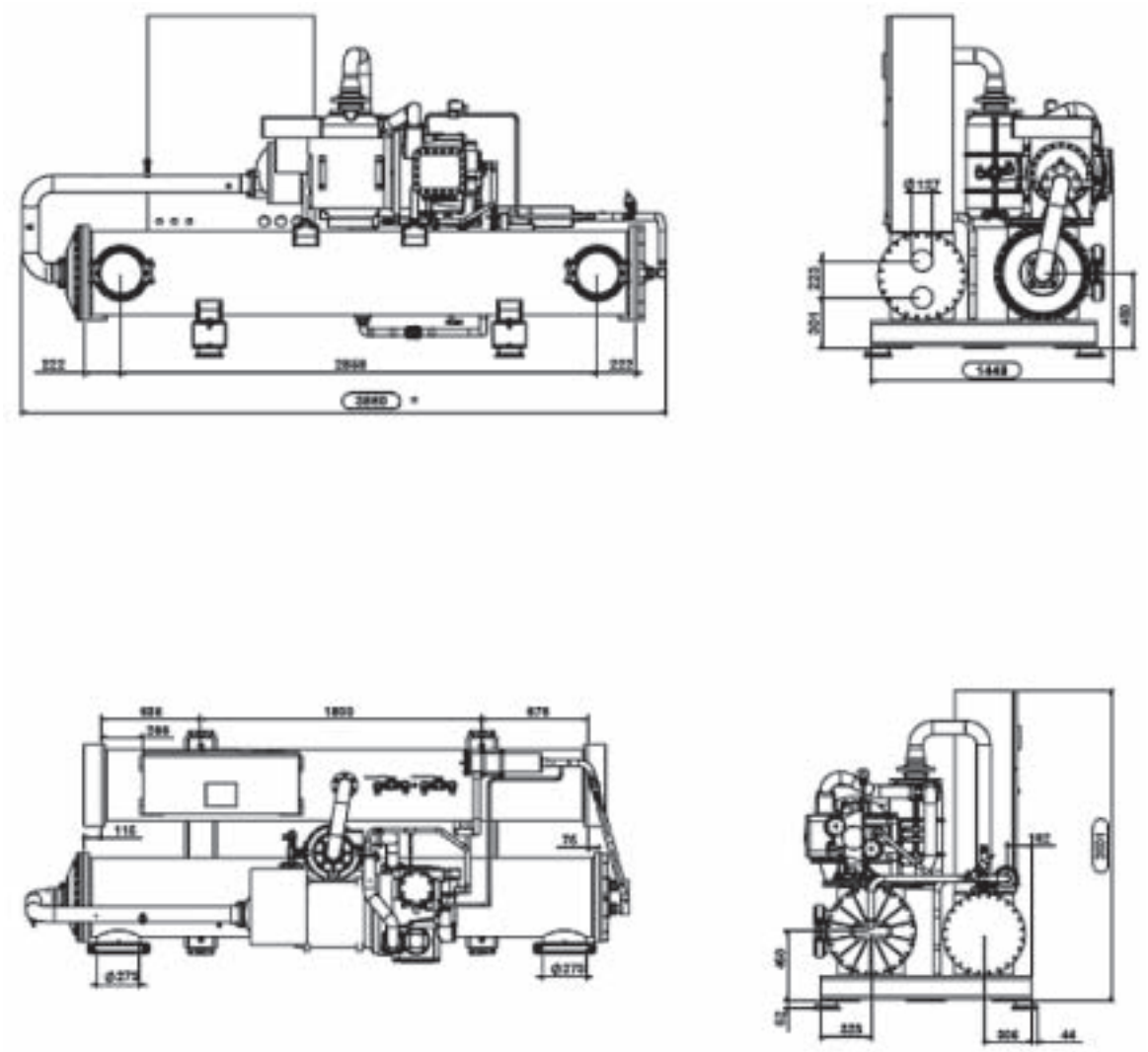


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQ950AJYNN/A

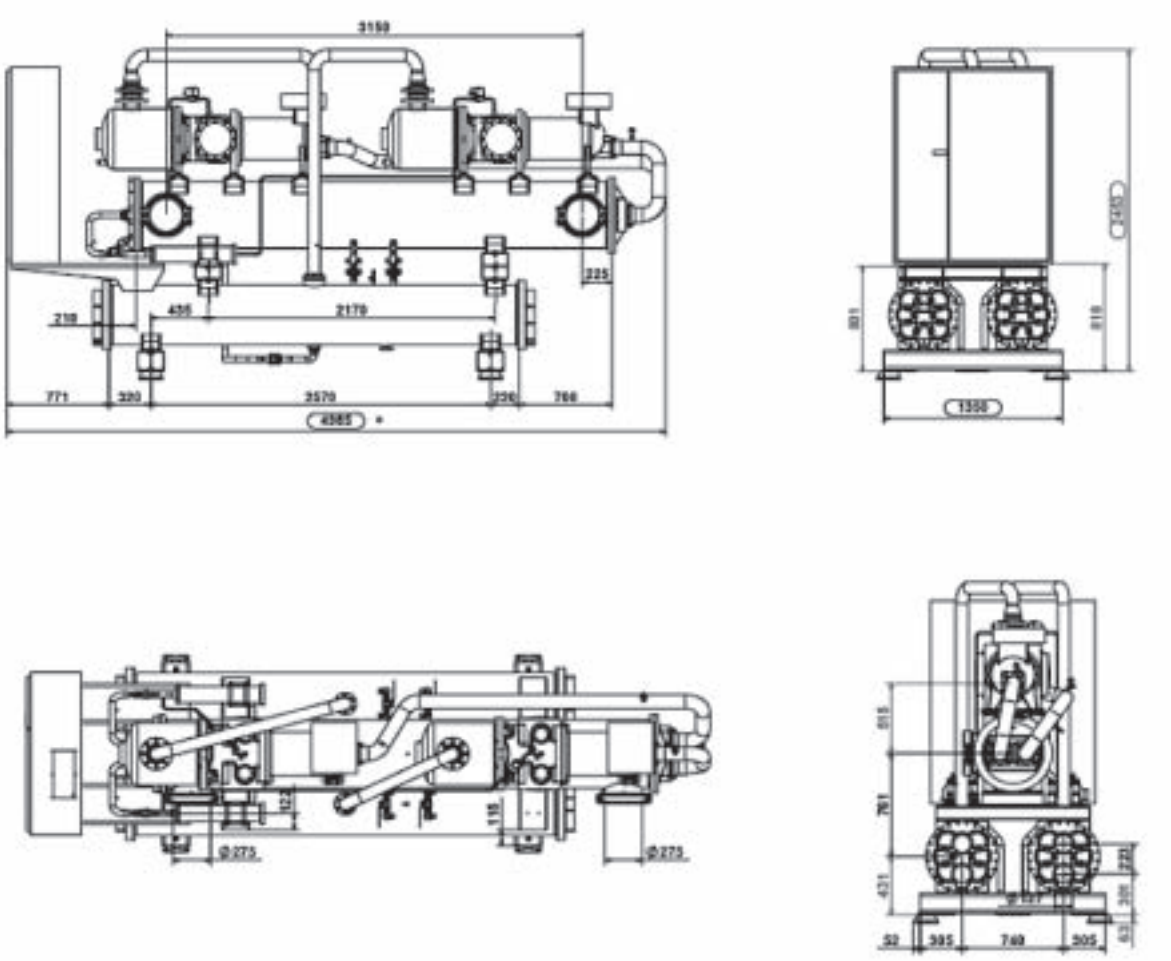


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC10-C12-C13AJYNN/A

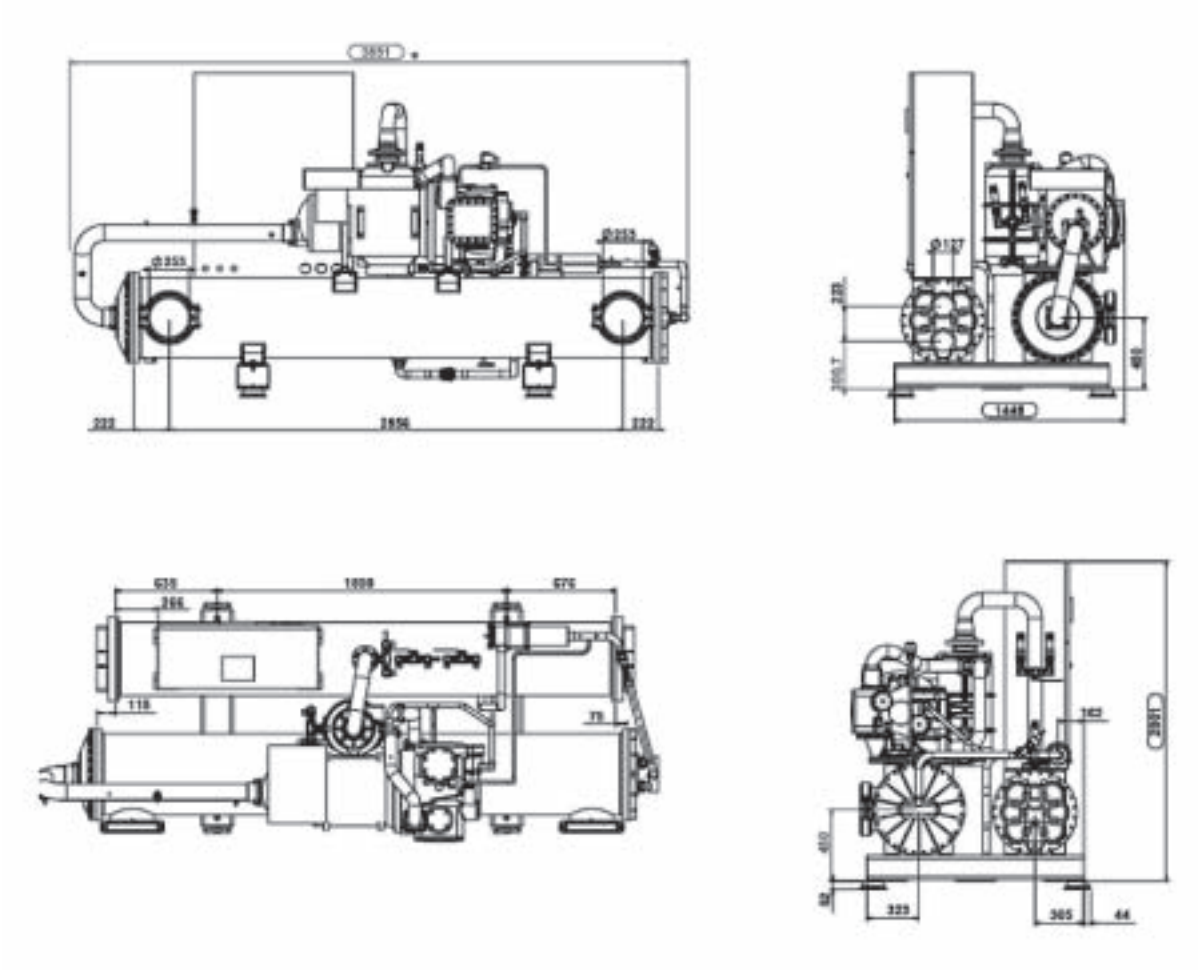


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC11AJYNN/A

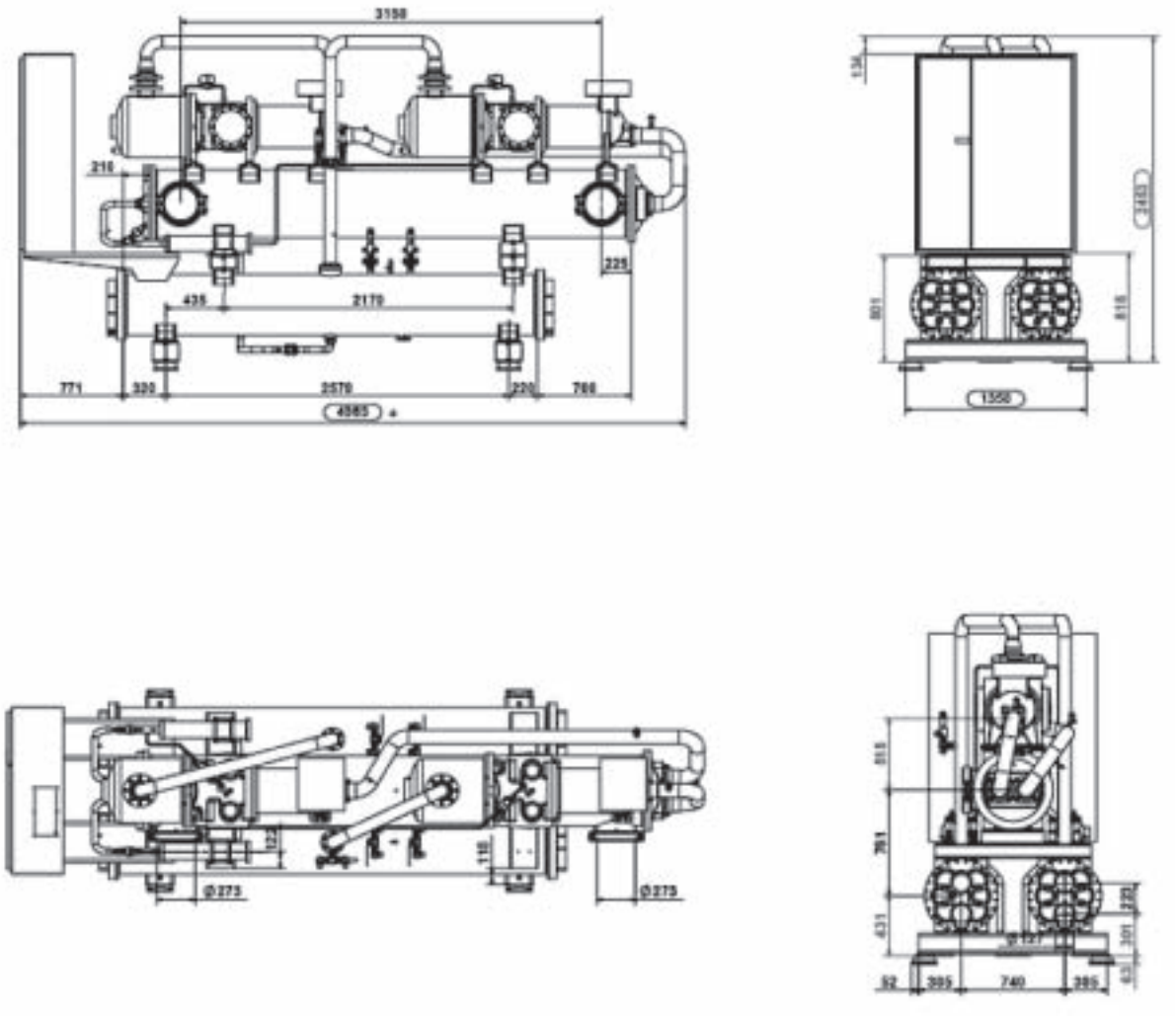


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC14AJYNN/A

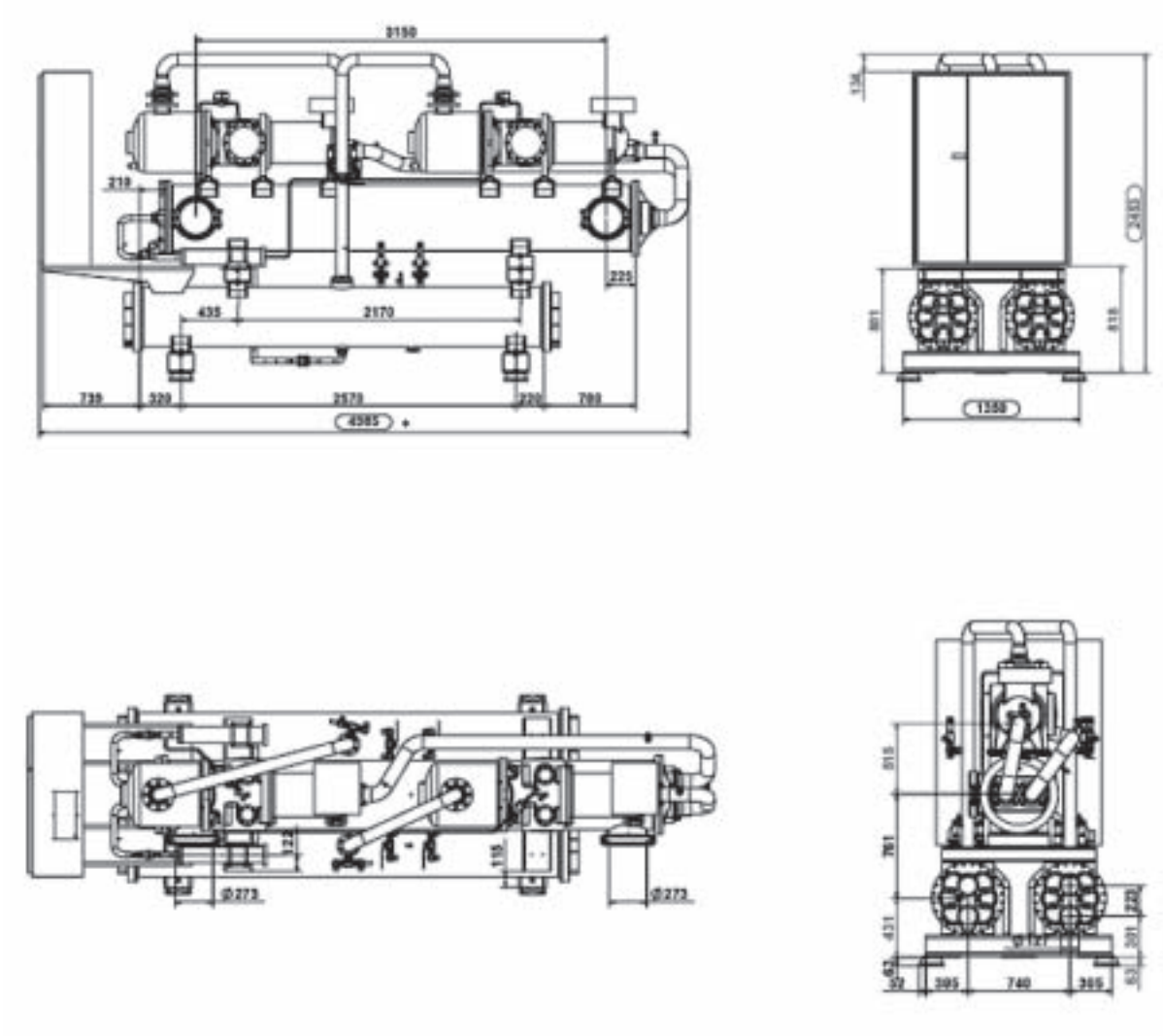


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC15AJYNN/A

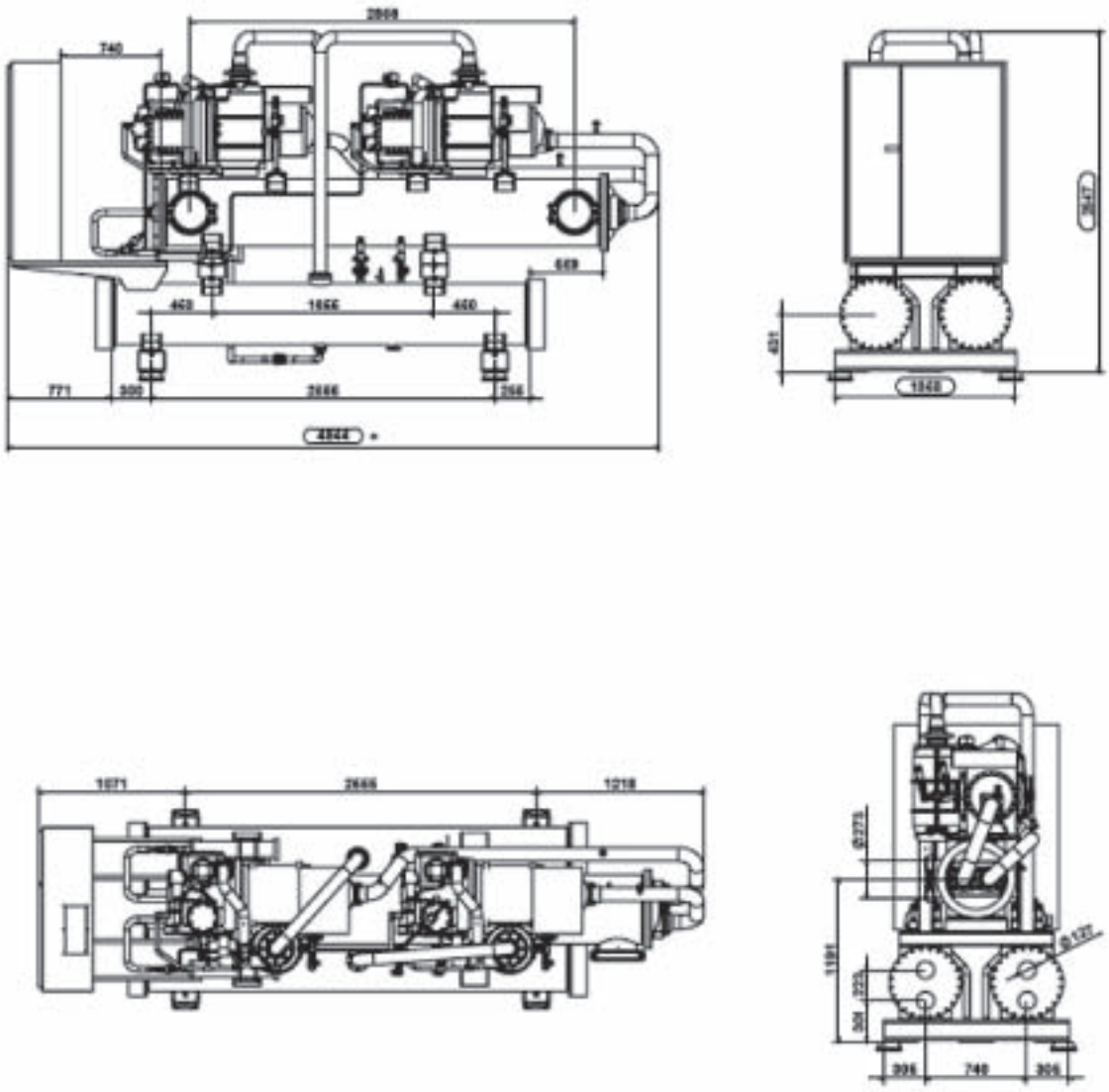


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC16-C18AJYNN/A

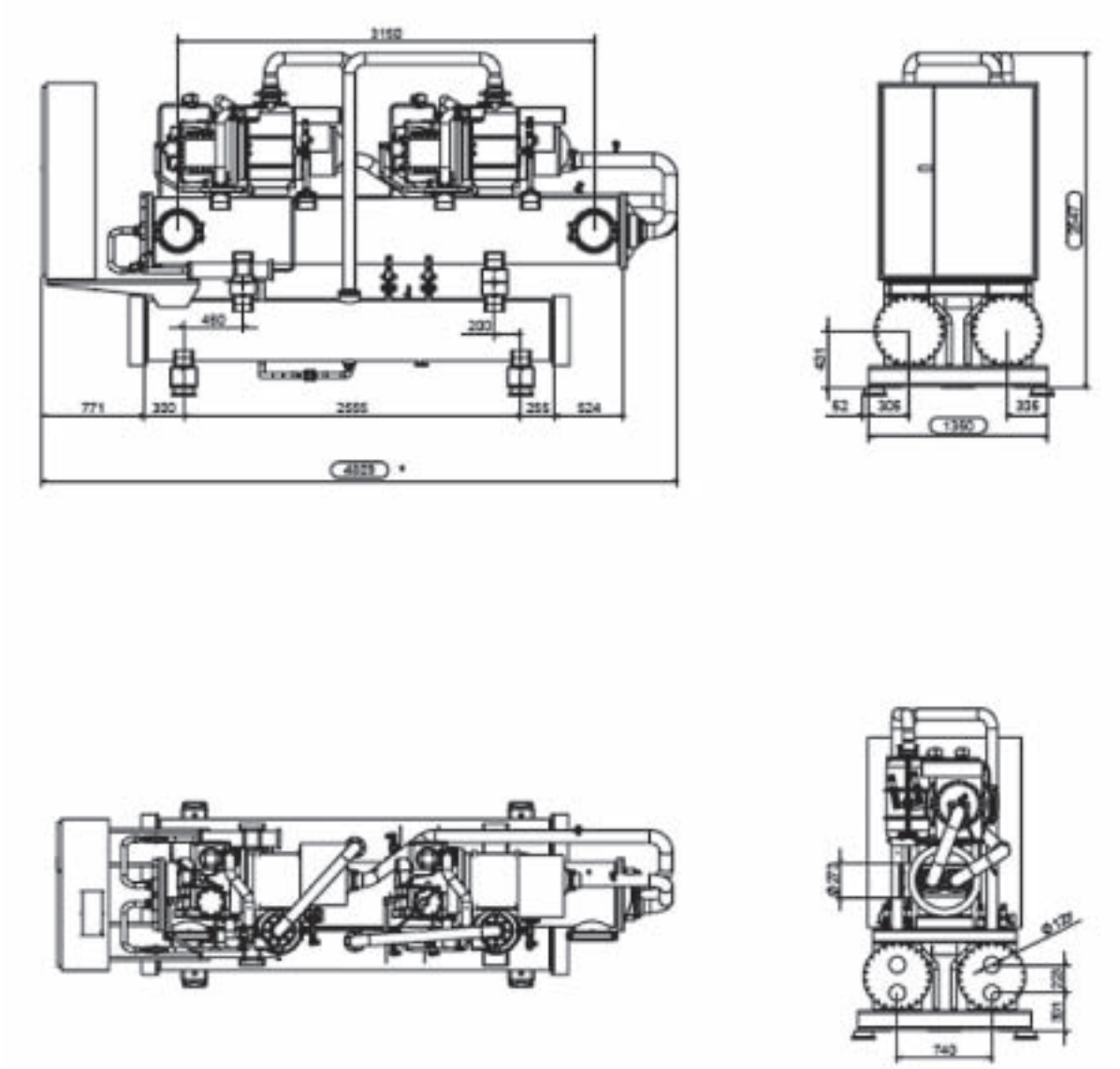


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC19AJYNN/A

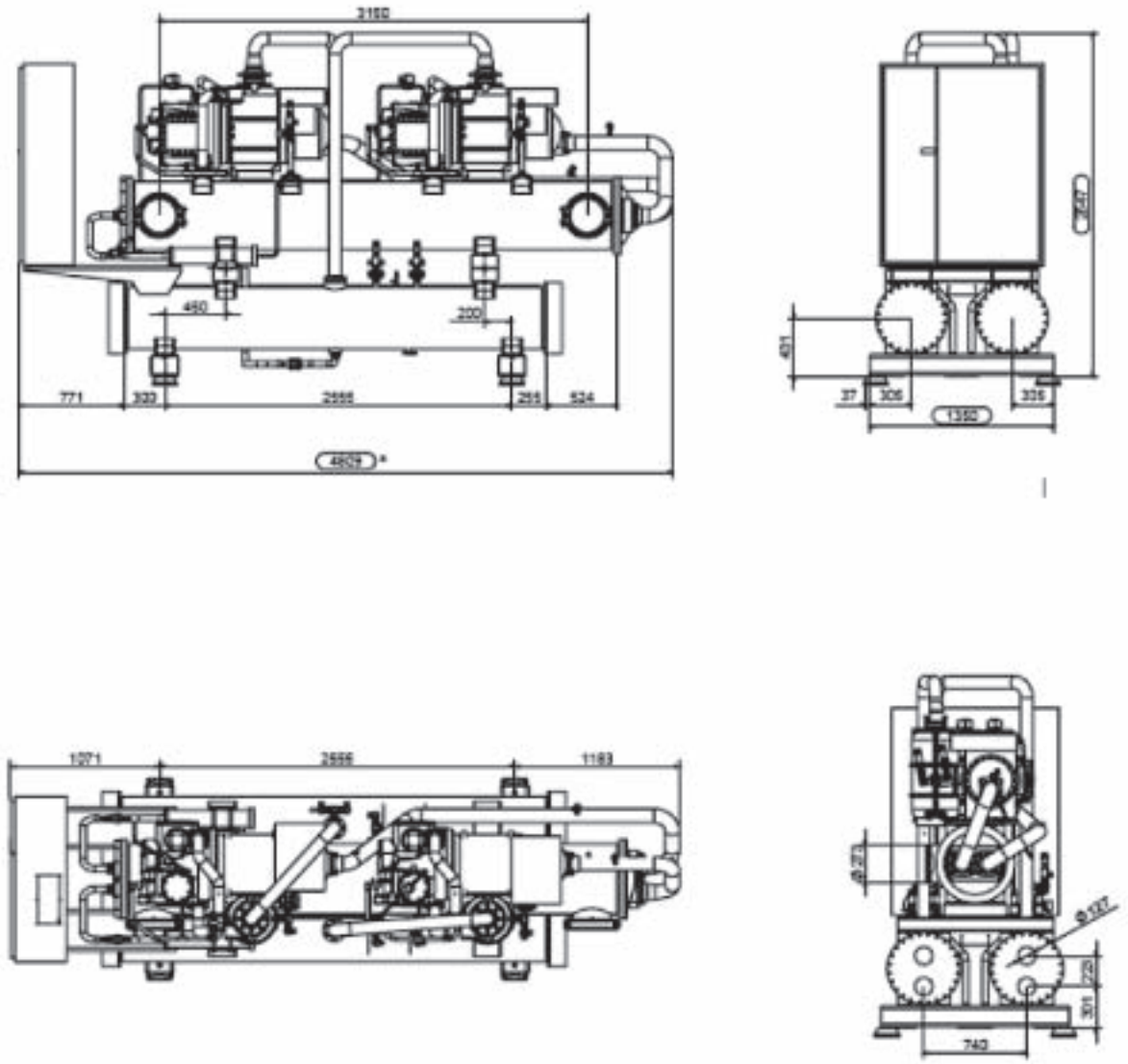


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC20AJYNN/A

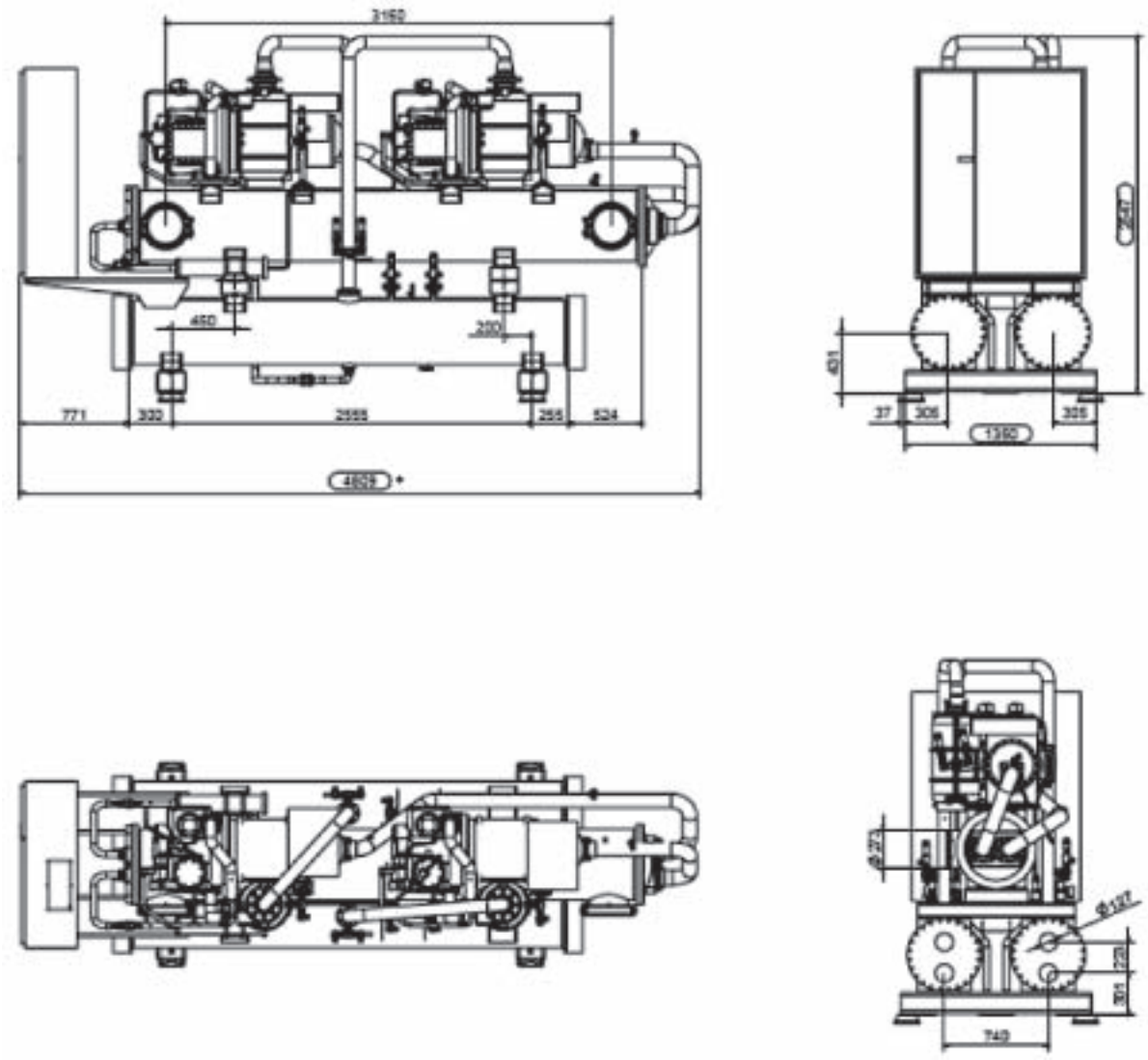


* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

6 Dimensional drawing

6 - 1 Dimensional drawing

EWWQC22AJYNN/A



* Length is related to Standard version: the options suction shut-off valve and soft start can imply an increase of length as shown below:
Suction shut-off valve: **+ 150mm**
Soft start: **+ 100mm** (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)
Suction shut-off valve+Soft start: **+ 150mm**
+ 250mm (only for: C19AJYNN, C20AJYNN, C19AJYNN/A, C20AJYNN/A, C22AJYNN/A)

7 Sound data

7 - 1 Sound pressure spectrum

SOUND PRESSURE LEVEL EWWQ-AJYNN

Unit size	Sound pressure level at 1 m from the unit in semispheric free field (rif. 2 x 10^{-5} Pa)									power
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
400	55.1	59.4	71.6	84.1	71.9	72.5	58.5	53.2	82.2	100.2
480	55.9	60.2	72.4	84.9	72.7	73.3	59.3	54	83.0	101.2
600	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.3
650	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.3
750	56,1	60,4	72,6	85,1	72,9	73,5	59,5	54,2	83,2	101.5
800	56,9	61,2	73,4	85,9	73,7	74,3	60,3	55,0	84,0	104.7
850	57,8	62,1	74,3	86,8	74,6	75,2	61,2	55,9	84,9	102.3
900	58.1	62.4	74.6	87.1	74.9	75.5	61.5	56.2	85.2	104.7
C10	58.1	62.4	74.6	87.1	74.9	75.5	61.5	56.2	85.2	105.1
C11	58.5	62.8	75	87.5	75.3	75.9	61.9	56.6	85.6	103.2
C12	58.9	63.2	75.4	87.9	75.7	76.3	62.3	57	86.0	104.7
C13	59.4	63.7	75.9	88.4	76.2	76.8	62.8	57.5	86.5	105.2
C14	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C15	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C16	59,1	63,4	75,6	88,1	75,9	76,5	62,5	57,2	86,2	105.8
C17	59,5	63,8	76,0	88,5	76,3	76,9	62,9	57,6	86,6	106.2
C18	59,9	64,2	76,4	88,9	76,7	77,3	63,3	58,0	87,0	106.6
C19	60,4	64,7	76,9	89,4	77,2	77,8	63,8	58,5	87,5	107.1
C20	60,8	65,1	77,3	89,8	77,6	78,2	64,2	58,9	87,9	107.5

Note: The values are according to ISO 3744 and are referred to: evaporator 12/7° C, condensor 30/35° C, full load operation.

SOUND PRESSURE LEVEL EWWQ-AJYNN/A

Unit size	Sound pressure level at 1 m from the unit in semispheric free field (rif. 2 x 10^{-5} Pa)									power
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
440	55.1	59.4	71.6	84.1	71.9	72.5	58.5	53.2	82.2	100.9
550	55.9	60.2	72.4	84.9	72.7	73.3	59.3	54	83.0	101.7
650	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.6
750	56.8	61.1	73.3	85.8	73.6	74.2	60.2	54.9	83.9	102.7
800	56,1	60,4	72,6	85,1	72,9	73,5	59,5	54,2	83,2	102.0
950	56,9	61,2	73,4	85,9	73,7	74,3	60,3	55,0	84,0	102.9
C10	58.5	62.8	75	87.5	75.3	75.9	61.9	56.6	85.6	105.2
C11	57,8	62,1	74,3	86,8	74,6	75,2	61,2	55,9	84,9	103.8
C12	58.9	63.2	75.4	87.9	75.7	76.3	62.3	57.0	86.0	105.6
C13	59.4	63.7	75.9	88.4	76.2	76.8	62.8	57.5	86.5	106.1
C14	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C15	59.8	64.1	76.3	88.8	76.6	77.2	63.2	57.9	86.9	106.5
C16	59,1	63,4	75,6	88,1	75,9	76,5	62,5	57,2	86,2	105.8
C18	59,5	63,8	76,0	88,5	76,3	76,9	62,9	57,6	86,6	106.2
C19	59,9	64,2	76,4	88,9	76,7	77,3	63,3	58,0	87,0	106.6
C20	60,4	64,7	76,9	89,4	77,2	77,8	63,8	58,5	87,5	107.1
C22	60,8	65,1	77,3	89,8	77,6	78,2	64,2	58,9	87,9	107.5

Note: The values are according to ISO 3744 and are referred to: evaporator 12/7° C, condensor 30/35° C, full load operation.

7 Sound data

7 - 2 Sound pressure correction factors for different distances

EWWQ-AJYNN

Unit size	Distance (m)					
	1	5	10	15	20	25
400	0	-7.9	-12.7	-15.8	-18.1	-19.8
480	0	-7.9	-12.7	-15.8	-18.1	-19.8
600	0	-7.9	-12.7	-15.8	-18.1	-19.8
650	0	-7.9	-12.7	-15.8	-18.1	-19.8
750	0	-7.9	-12.7	-15.8	-18.1	-19.8
800	0	-7.5	-12.2	-15.3	-17.5	-19.3
850	0	-7.9	-12.7	-15.8	-18.1	-19.8
900	0	-7.5	-12.2	-15.3	-17.5	-19.3
C10	0	-7.5	-12.2	-15.3	-17.5	-19.3
C11	0	-7.9	-12.7	-15.8	-18.1	-19.8
C12	0	-7.5	-12.2	-15.3	-17.5	-19.3
C13	0	-7.5	-12.2	-15.3	-17.5	-19.3
C14	0	-7.5	-12.2	-15.3	-17.5	-19.3
C15	0	-7.5	-12.2	-15.3	-17.5	-19.3
C16	0	-7.5	-12.2	-15.3	-17.5	-19.3
C17	0	-7.5	-12.2	-15.3	-17.5	-19.3
C18	0	-7.5	-12.2	-15.3	-17.5	-19.3
C19	0	-7.5	-12.2	-15.3	-17.5	-19.3
C20	0	-7.5	-12.2	-15.3	-17.5	-19.3

Note: The values are dB(A) (pressure level).

EWWQ-AJYNN/A

Unit size	Distance (m)					
	1	5	10	15	20	25
440	0	-7.9	-12.7	-15.8	-18.1	-19.8
550	0	-7.9	-12.7	-15.8	-18.1	-19.8
650	0	-7.9	-12.7	-15.8	-18.1	-19.8
750	0	-7.9	-12.7	-15.8	-18.1	-19.8
800	0	-7.9	-12.7	-15.8	-18.1	-19.8
950	0	-7.9	-12.7	-15.8	-18.1	-19.8
C10	0	-7.5	-12.2	-15.3	-17.5	-19.3
C11	0	-7.9	-12.7	-15.8	-18.1	-19.8
C12	0	-7.5	-12.2	-15.3	-17.5	-19.3
C13	0	-7.5	-12.2	-15.3	-17.5	-19.3
C14	0	-7.5	-12.2	-15.3	-17.5	-19.3
C15	0	-7.5	-12.2	-15.3	-17.5	-19.3
C16	0	-7.5	-12.2	-15.3	-17.5	-19.3
C18	0	-7.5	-12.2	-15.3	-17.5	-19.3
C19	0	-7.5	-12.2	-15.3	-17.5	-19.3
C20	0	-7.5	-12.2	-15.3	-17.5	-19.3
C22	0	-7.5	-12.2	-15.3	-17.5	-19.3

Note: The values are dB(A) (pressure level).

8 Installation

8 - 1 Installation method

Warning

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

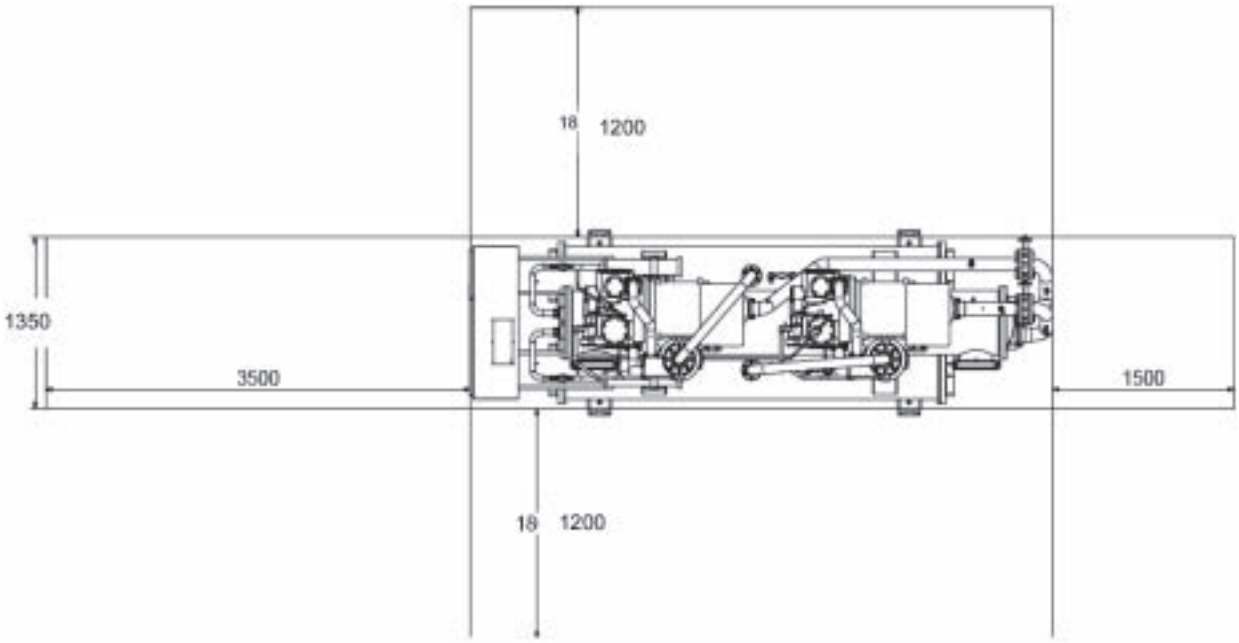
Handling

The chiller is mounted on heavy wooden skids to protect the unit from accidental damage and to permit easy handling and moving. It is recommended that all moving and handling be performed with the skids under the unit when possible and that the skids not be removed until the unit is in the final location.
Spreader bars must be used to protect the control cabinet and the other areas of the chiller.

Location

A levelled and sufficiently strong floor is required. A levelled and sufficiently strong floor is required. If necessary, additional structural members should be provided to transfer the weight of the unit to the 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 are recommended to avoid straining the piping and transmitting vibration and noise.

Minimum space requirements



8 Installation

8 - 2 Water charge, flow and quality

Water content in cooling circuits

The cooled water distribution circuits should have a minimum water content to avoid excessive compressor's starts and stops.
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, Daikin has 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 installation water content envisaged should be calculated with a certain approximation using this simplified formula:

(1) $Q = 35{,}83 \times \frac{P\ (kW)}{T\ (°C)} \times \frac{1}{N}$

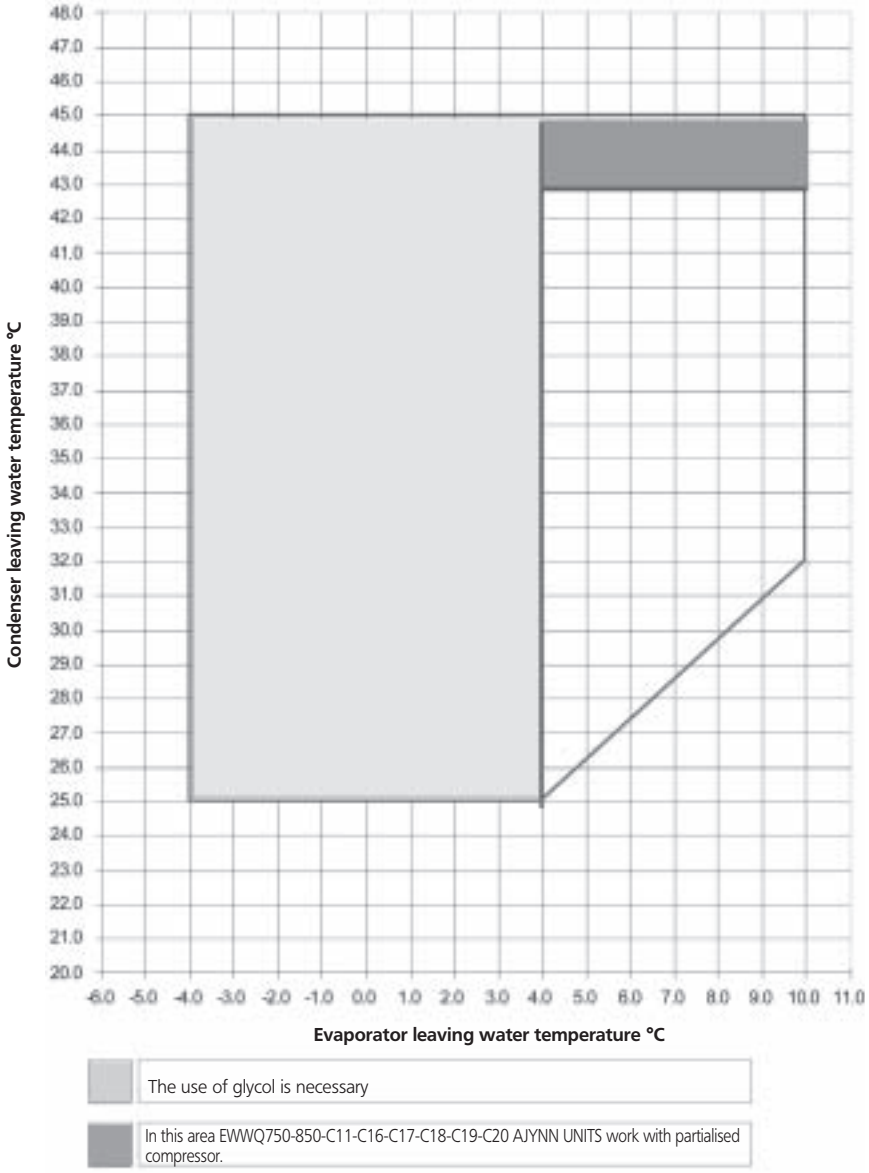
where:
Q = Minimum content of the plant expressed in litres
P = Cooling capacity of the plant expressed in kW
$\triangle T$ = Entering/leaving water temperature difference of the evaporator expressed in °C
N = Number of compressors.

This should be the minimum quantity of water through the chiller in each operating condition, also when therminal hydronic units are switched off.

Therefore for a more accurate determination of the water quantity, it is advisable to contact the designer of the plant.

9 Operation range

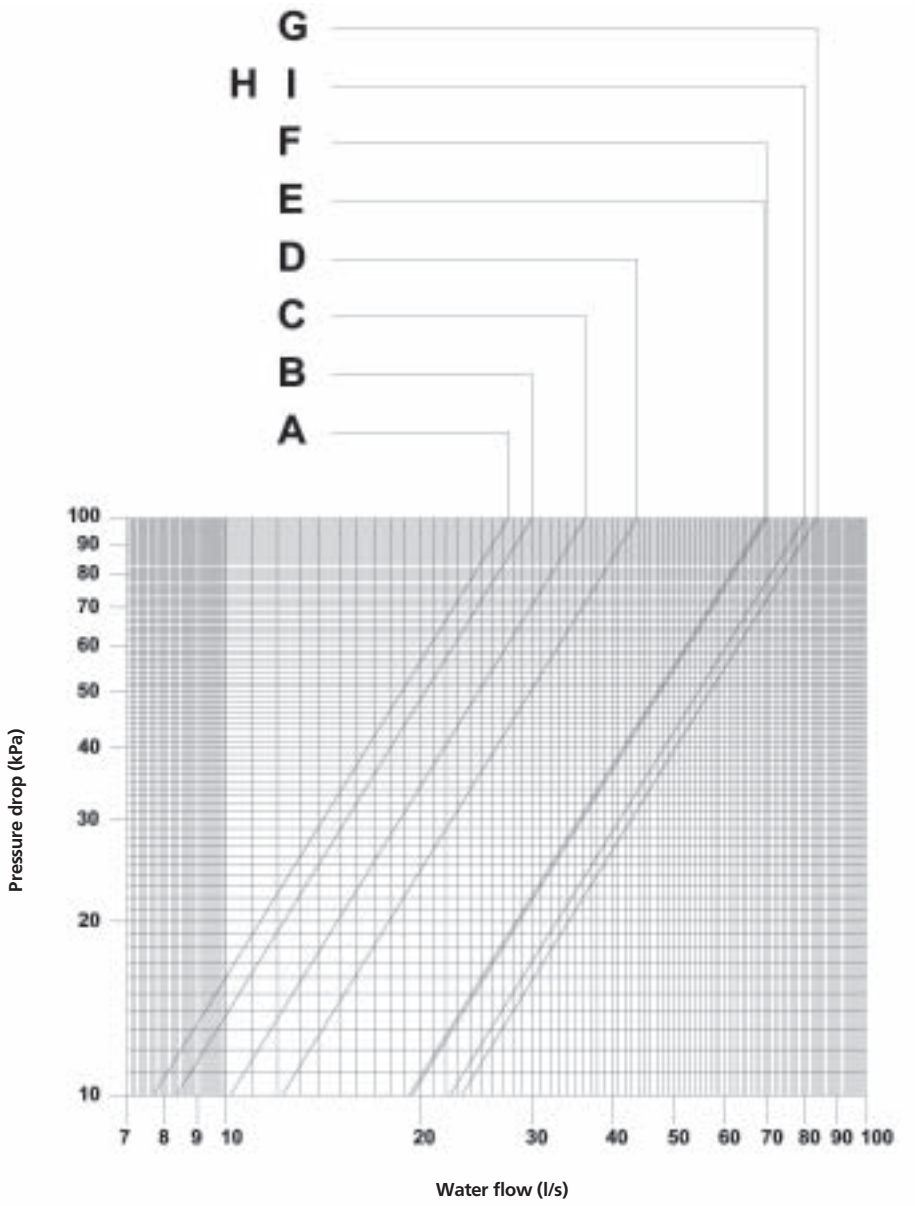
EWWQ-AJYNN & AJYNN/A



10 Hydraulic performance

10 - 1 Water pressure drop curve evaporator

EWWQ-AJYNN/A

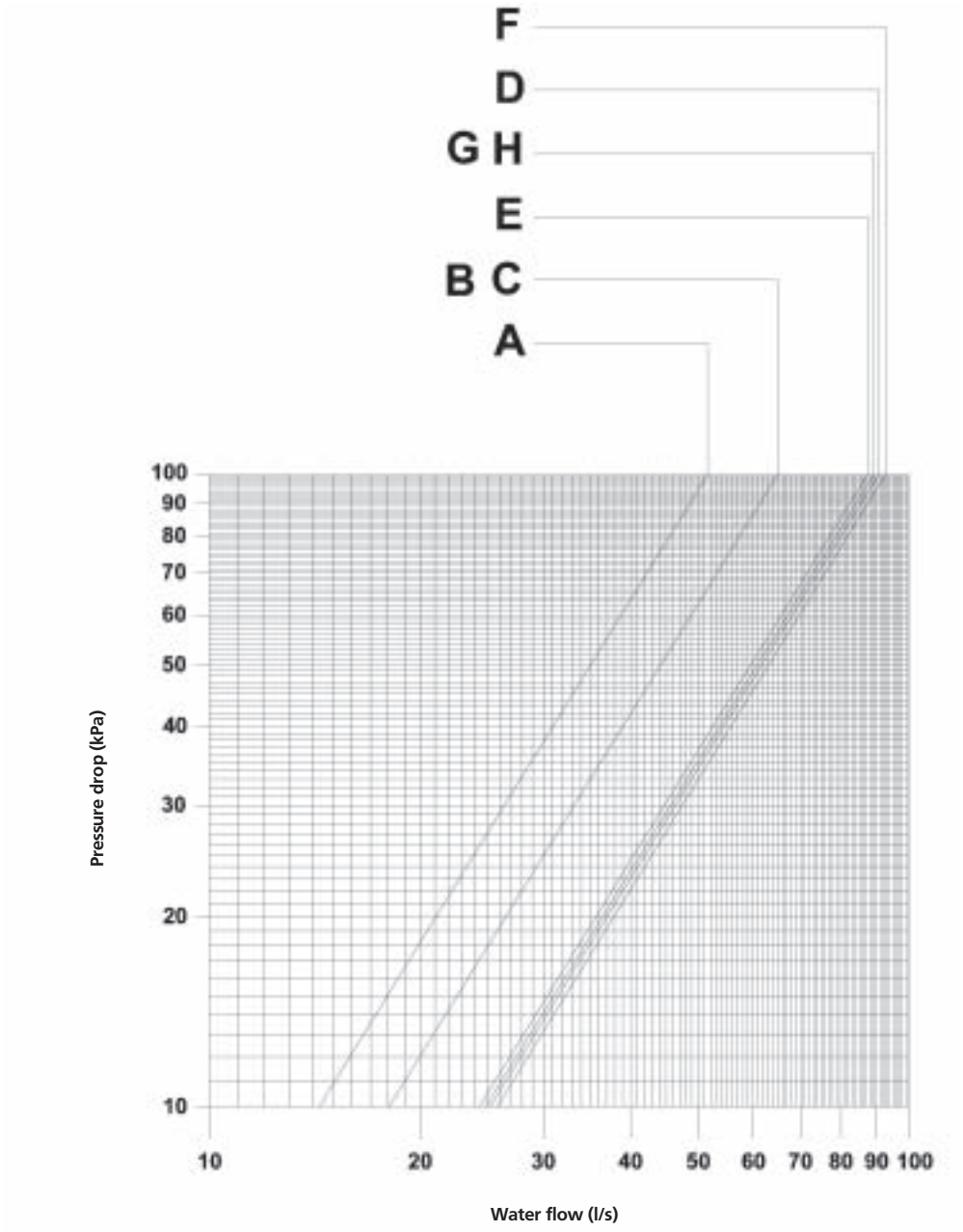


A. EWWQ440AJYNN/A	F. EWWQC12AJYNN/A
B. EWWQ550AJYNN/A	G. EWWQC13AJYNN/A
C. EWWQ650AJYNN/A	H. EWWQC14AJYNN/A
D. EWWQ750AJYNN/A	I. EWWQC15AJYNN/A
E. EWWQC10AJYNN/A	

10 Hydraulic performance

10 - 1 Water pressure drop curve evaporator

EWWQ-AJYNN/A

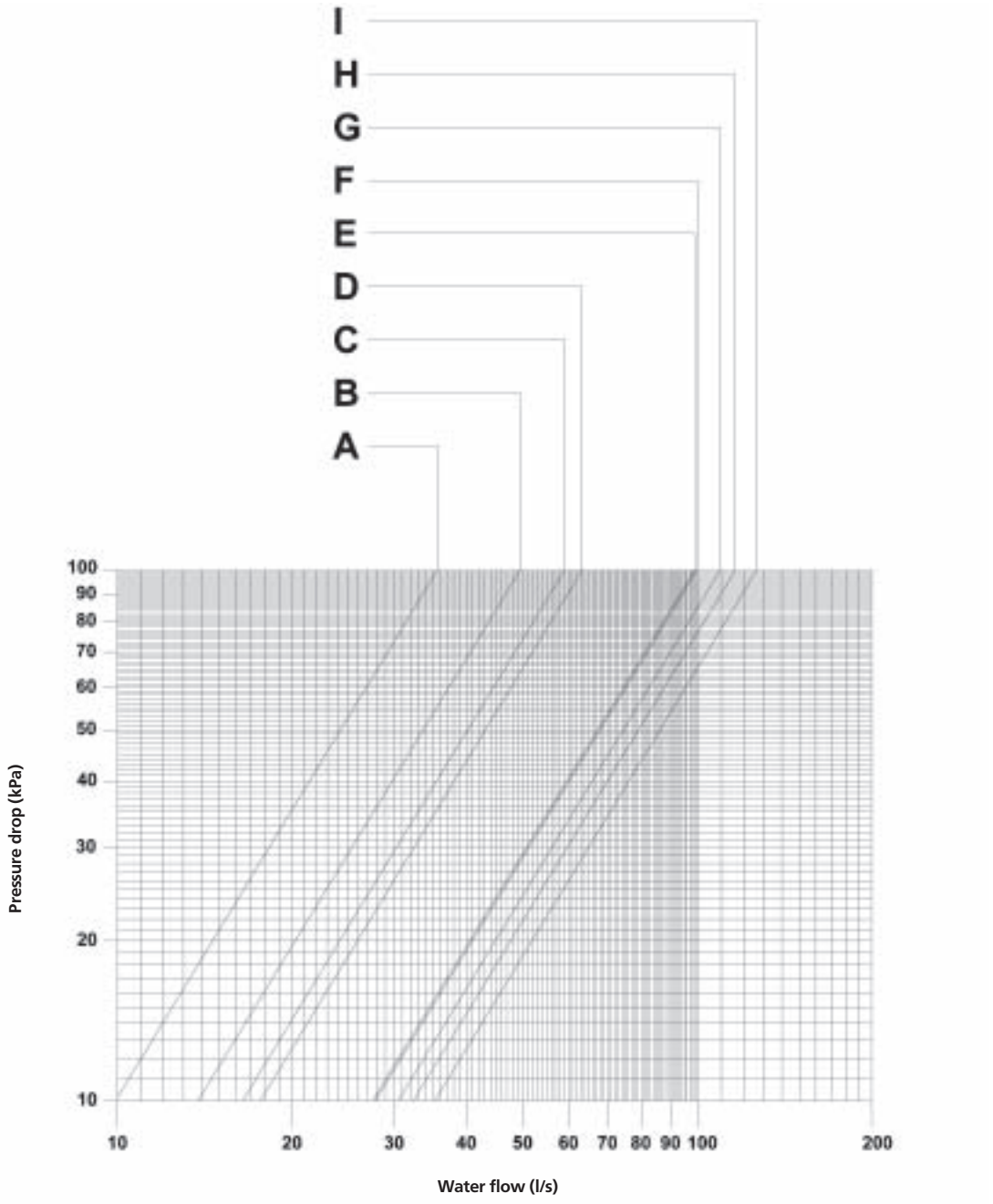


A. EWWQ800AJYNN/A	E. EWWQC18AJYNN/A
B. EWWQ950AJYNN/A	F. EWWQC19AJYNN/A
C. EWWQC11AJYNN/A	G. EWWQC20AJYNN/A
D. EWWQC16AJYNN/A	H. EWWQC22AJYNN/A

10 Hydraulic performance

10 - 2 Water pressure drop curve condenser

EWWQ-AJYNN/A

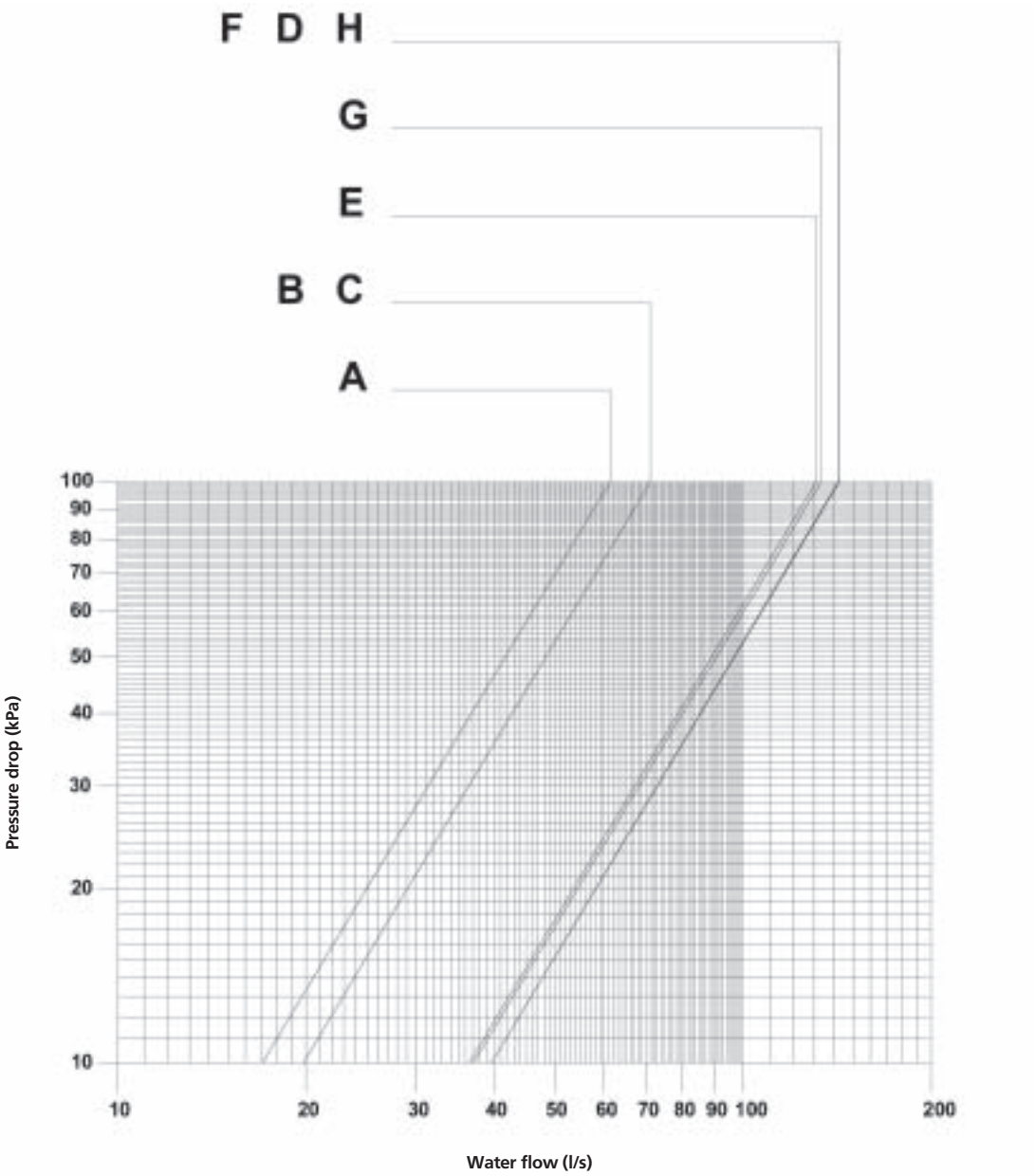


A. EWWQ440AJYNN/A	F. EWWQC12AJYNN/A
B. EWWQ550AJYNN/A	G. EWWQC13AJYNN/A
C. EWWQ650AJYNN/A	H. EWWQC14AJYNN/A
D. EWWQ750AJYNN/A	I. EWWQC15AJYNN/A
E. EWWQC10AJYNN/A	

10 Hydraulic performance

10 - 2 Water pressure drop curve condenser

EWWQ-AJYNN/A



A. EWWQ800AJYNN/A	E. EWWQC18AJYNN/A
B. EWWQ950AJYNN/A	F. EWWQC19AJYNN/A
C. EWWQC11AJYNN/A	G. EWWQC20AJYNN/A
D. EWWQC16AJYNN/A	H. EWWQC22AJYNN/A

10 Hydraulic performance

10 - 3 Partial heat recovery ratings

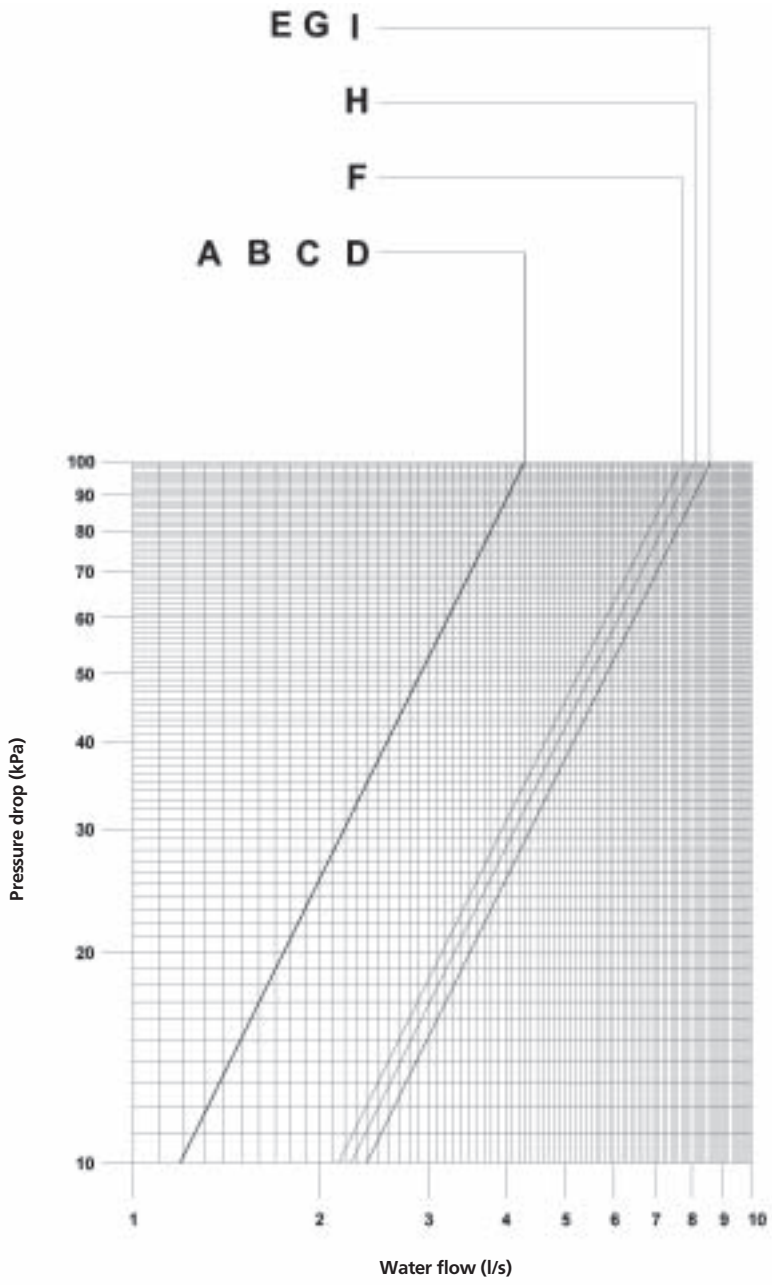
EWWQ-AJYNN/A

Unit size		Heat recovery leaving water temperature (△T=5°C)		
		45	50	55
		Heating capacity (kW)	Heating capacity (kW)	Heating capacity (kW)
440	Evaporator leaving water temperature 7°C - △T 5°C Condenser leaving water temperature 35°C	54.4	37.5	21.3
550		65.5	45.9	27.1
650		77.4	52.4	28.5
750		93.6	65.3	38.3
800		106.3	76.0	47.1
950		125.3	86.0	48.5
C10		131.5	89.7	50.0
C11		152.4	109.8	69.1
C12		148.8	103.5	60.4
C13		163.3	111.9	63.0
C14		175.4	122.2	71.5
C15A		182.5	123.6	67.5
C16		203.2	139.9	79.6
C18		228.4	161.7	98.1
C19		253.3	177.7	105.7
C20		276.1	199.1	125.6
C22		301.7	216.9	135.9

10 Hydraulic performance

10 - 4 Heat recovery pressure drop

EWWQ-AJYNN/A

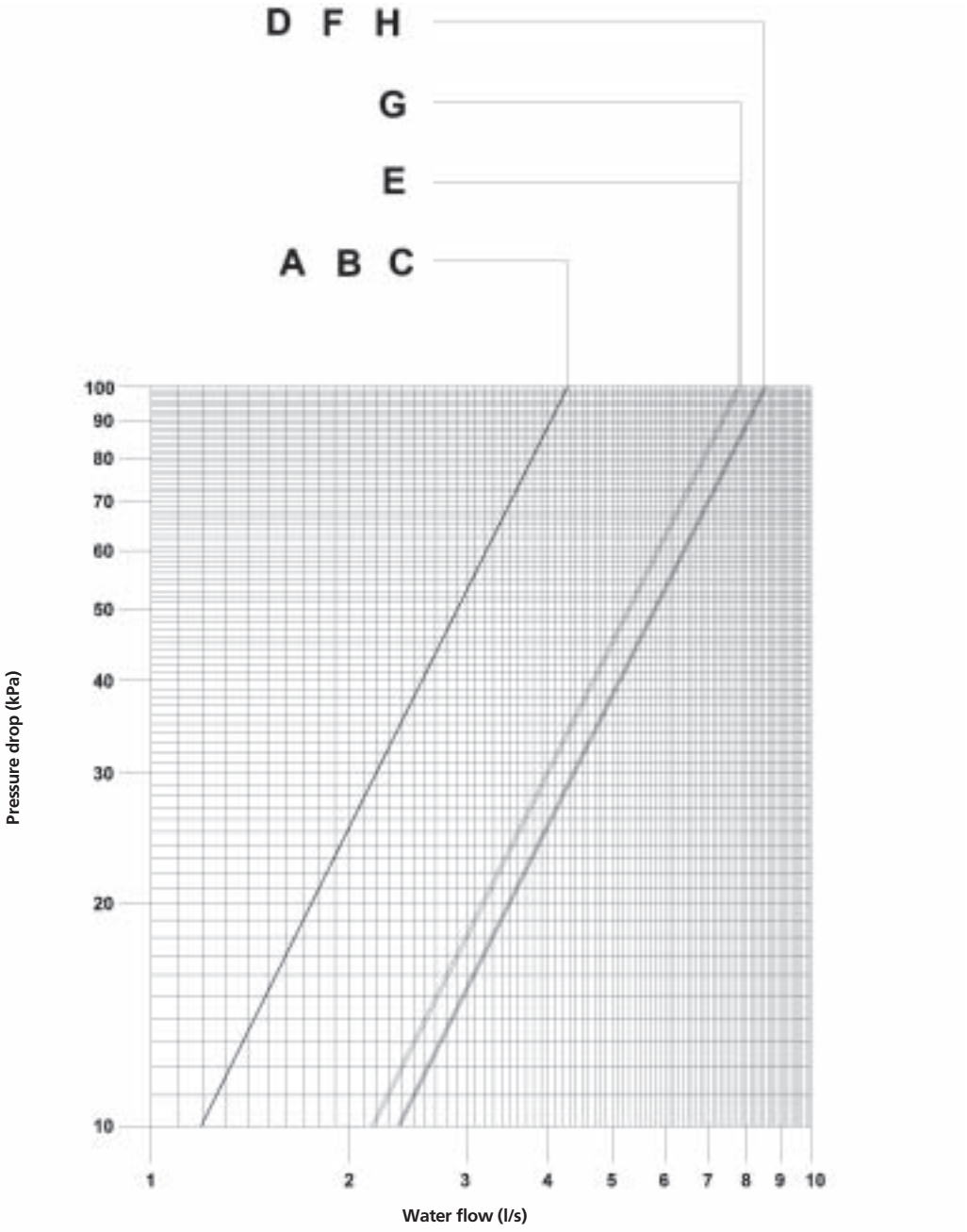


A. EWWQ440AJYNN/A	F. EWWQC12AJYNN/A
B. EWWQ550AJYNN/A	G. EWWQC13AJYNN/A
C. EWWQ650AJYNN/A	H. EWWQC14AJYNN/A
D. EWWQ750AJYNN/A	I. EWWQC15AJYNN/A
E. EWWQC10AJYNN/A	

10 Hydraulic performance

10 - 4 Heat recovery pressure drop

EWWQ-AJYNN/A



A. EWWQ800AJYNN/A	E. EWWQC18AJYNN/A
B. EWWQ950AJYNN/A	F. EWWQC19AJYNN/A
C. EWWQC11AJYNN/A	G. EWWQC20AJYNN/A
D. EWWQC16AJYNN/A	H. EWWQC22AJYNN/A

Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.

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