NECS-W 0152 - 1204

43,4-371 kW

Water cooled chiller

(The photo of the unit is indicative and may vary depending on the model)

- TOTAL VERSATILITY
- INTEGRATED HYDRONIC MODULE ON COOLER/CONDENSER SIDE
- INTEGRATED CONDENSATION´S CONTROL

CLIMAVENETA
SUSTAINABLE COMFORT
A Group Company of MITSUBISHI ELECTRIC

CERTIFICATIONS

Product certifications

Certificate Number MCS HP0005
Heat Pumps

Voluntary product certifications

Check ongoing validity of certificate:
www.eurovent-certification.com
or
www.certiflash.com

System certifications

Certificate Number MCS HP0005
Heat Pumps

Climaveneta S.p.A.:

Quality System complying with the requirements of UNI EN ISO9001:2008 regulation

Environmental Management System complying with the requirements of UNI EN ISO14001:2004 regulation

LEGEND

Functions

Cooling

Refrigerant

R-410A

Compressors

Scroll compressor

Exchangers

Plates

Other features

Eurovent

1.1 PRODUCT PRESENTATION

2.1 GREEN CERTIFICATION RELEVANT

Climaveneta as a major player in the world HVAC market and a leading manufacturer of energy efficient, sustainable HVAC solutions, recognizes and supports the diffusion of green certification systems, as an effective way to deliver high performance buildings and improve the quality and the sustainability of the built environment.

Since the first certification system was introduced at the beginning of the 1990s, the demand for certified buildings has grown considerably, as well as the number of standards, rating and certification programs. Operating worldwide Climaveneta has extensive experience with many of them and is active member of Green Building Council Italy.

Climaveneta commitment to develop responsible and sustainable HVAC solutions, is reflected by a full range of premium efficiency products and systems, designed with special care to improve building energy performance ratings, according to major certification protocols, including LEED, BREAM, GREENSTAR, BCA, NABERS, DNGB, HQE and BEAM.

To find out more about how our products contribute to enhanced green certification rating and energy performance of a building, please refer to:
http://www.climaveneta.com/GLOBAL/Company/Green-Certifications/
QR code

Water to water indoor unit for the production of chilled water with hermetic rotary scroll compressors, braze-welded plate-type exchanger and thermal expansion valve. External panels in pre-clad sheet steel (simil-Peraluman) and structure in galvanised steel with paint finish. The range includes the single-circuit two-compressor versions and the dual circuit four-compressor versions.

1.3 TOTAL VERSATILITY

Climaveneta has designed the NECS-W units with a range of integral accessories in mind for operation with total water loss (well, groundwater, etc.), dry cooler or cooling tower so as to satisfy all service system and installation requirements.

1.4 INTEGRATED HYDRONIC MODULE ON COOLER/CONDENSER SIDE

The built-in hydronic module includes the main water circuit components; it is available in various configurations with one or two pumps with high or low head both on the evaporator and the condenser side.

1.5 INTEGRATED CONDENSATION´S CONTROL

The electronics of the units manages the most suitable condensing control for each type of application: pressure-controlled valve, two or three-way modulating valve and inverter control for the pumps

STRUCTURE UNIT

The NECS-W family is developed on two different structures:

NECS-W 0152 - 0612		NECS-W 0604 - 1204
		

2.2 Water cooled chiller
Water to water indoor unit for the production of chilled/hot water with hermetic rotary scroll compressors, braze-welded plate-type exchanger and thermal expansion valve. External panels in pre-clad sheet steel (simil-Peraluman) and structure in galvanised steel with paint finish. The range includes the single-circuit two-compressor versions and t10 dB(A circuit four-compressor versions.
- The unit is supplied fully refrigerant charged and factory tested. On site installation only requires power and hydraulic connection.

2.3 Structure
Frame in polyester-painted galvanized steel.
The self-supporting frame is built to guarantee maximum accessibility for servicing and maintenance operations.

2.4 Panelling
2 compressor units: the external paneling, from pre-clad sheet steel offers maximum ease of access to the internal components.
A 30 mm thick fiberform soundproofing insulation on the compressors section is available as an accessory and ensueres a noise reduction of 4 dB(A).
4 compressor units: the chiller is provided without paneling. The paneling, with a 30 mm thick fiberform soundproofing insulation, is available as an accessory and ensueres a noise reduction of 10 dB(A).

2.5 Compressor
Hermetic scroll compressors in tandem layout complete with oil sump heater, electronic overheating protection with centralised manual reset and a two-pole electric motor.

2.6 Plant side heat exchanger
Braze welded AISI 316 steel plate heat exchanger. The heat exchangers are lined on the outside with closed-cell neoprene lagging. When the unit is not operating, these are protected against formation of ice on the inside by an electric heater with thermostat, while when the unit is operating protection is ensured by a differential pressure switch on the water side. The unit can also operate with non-freezing mixes, down to heat exchanger outlet temperatures of -8°C.

2.7 Source side heat exchanger
Braze welded AISI 316 plate heat exchanger.

2.8 Refrigerant circuit
Main components of the cooling circuit:
- single circuit in tandem compressors
- R410A refrigerant
- plate heat exchanger
- drier filter with replaceable cartridge
- refrigerant line sight glass with humidity indicator
- mechanical thermostatic expansion valves
- high and low pressure transducers
- high and low pressure safety valve
- safety switching device for limiting the pressure
- crankcase heater on each compressor

2.9 Electrical and control panel
Electrical and control panel built to EN60204-1 and EC204-1 standards, complete with:
- general door lock isolator
- control circuit transformer
- automatic circuit breakers on electric loads (2 compressor units)
- fuses and contactors on electric loads (4 compressor units)
- remote ON/OFF terminals
- terminals for cumulative alarm block
- relays for remote pump(s) activation for both circuits (only for units without hydronic pumps)
- electronic controller
- Power supply: 400V~ ±10% 3ph 50Hz PE

2.10 Certification and applicable directives
The unit complies with the following directives and relative amendments:
- EUROVENT Certification program
- CE Declaration of conformity certificate for the European Union
- EAC Product quality certificate for Russian Federation
- Machine directive 2006/42/EC
- ElectroMagnetic compatibility directive 89/336/EEC + 2004/108/EC
- Low Voltage directive 2006/95/EC
- PED Directive 2014/68/EC
- ISO 9001 Company´s Quality Management System certification
- ISO 14001 Company´s Environmental Management System certification

2.11 Tests
Tests performed throughout the production process, as indicated in ISO9001.
Performance or noise tests can be performed by highly qualified staff in the presence of customers.
Performance tests comprise the measurement of:
- electrical data
- water flow rates
- working temperatures
- power input
- power output
- pressure drops on the water-side exchanger both at full load (at the conditions of selection and at the most critical conditions for the condenser) and at part load conditions.

During performance testing it is also possible to simulate the main alarm states.
Noise tests are performed to check noise emissions according to ISO9614.

2.12 W3000 / W3000SE electronic controller
The controller is available in two different versions according to the unit's model: the sizes 0152-0612 are equipped with the W3000 electronic controller, the sizes 0604-1204 with the W3000SE electronic controller.
W3000 : electronic controller with Base keyboard. It features an easy-to-use interface that allows consulting and intervening on the unit by means of a multi-level menu.
The Compact keyboard (optional) has a complete LCD display with an interface available in three languages: Italian, English and a further language among French, Spanish, German, Russian and Swedish. The alarm history display function can be enable by installing a real-time clock (optional) (only with Compact keyboard).
W3000TE : electronic controller with Compact keyboard. It features an easy-to-use interface and a complete LCD display that allows consulting and intervening on the unit by means of a multi-language menu (19 languages are available). The diagnostics includes a complete alarm management, with the "black-box" and the alarm history display for enhanced analysis of the unit operation. The programmable timer manages a weekly schedule organised into time bands to optimise unit performance by minimising power consumption during periods of inactivity. Up to 10 daily time bands can be associated with different operating set points.
Both the controllers offer advanced functions and algorithms.
The regulation is based on the patented "Quickmind" water temperature regulation logic uses self-adapting control to maintain flow temperatures and optimise performance even in low water content scenarios. As an alternative, the proportional or proportional-integral regulations are also available.
Optional proprietary devices can perform the adjustment of the resources in systems made of several units. Consumption metering and performance measurement are possible as well.
Supervision can be easily developed via proprietary devices or the integration in third party systems by means of the most common protocols as ModBus, Bacnet, Bacnet-over-IP (W3000SE only), LonWorks.
Compatibility with the remote keyboard (up to 8 units) (only with Compact keyboard).

2.13 Versions
/B – Basic version
Standard unit

2.14 Configurations
< >, Standard unit
Standard unit for production of chilled water

3.1 ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
PF413 **WATER CONNECTION KIT**			
F4005140 Water manifolds	Water manifolds for the 4 compressor unit heat exchangers. For the correct kit selection please refer to the price list.		ALL
F4005142 Water manifolds	Water manifolds for the 4 compressor unit heat exchangers. For the correct kit selection please refer to the price list.		ALL
F4005144 Water manifolds	Water manifolds for the 4 compressor unit heat exchangers. For the correct kit selection please refer to the price list.		ALL
PF417 **LIFTINGS SPREAD BAR**			
H9334482 Lifting spread bars			ALL
PF416 **WATER CONNECTIONS**			
F4005359 Groovelock Water Connection Kit	Grooved coupling kit (grooved lock with threaded counter-pipe user side). For the correct kit selection please refer to the price list.		ALL
F4005361 Groovelock Water Connection Kit	Grooved coupling kit (grooved lock with threaded counter-pipe user side). For the correct kit selection please refer to the price list.		ALL
F4005362 Groovelock Water Connection Kit	Grooved coupling kit (grooved lock with threaded counter-pipe user side). For the correct kit selection please refer to the price list.		ALL
F4005363 Groovelock Water Connection Kit	Grooved coupling kit (grooved lock with threaded counter-pipe user side). For the correct kit selection please refer to the price list.		ALL
F4005364 Groovelock Water Connection Kit	Grooved coupling kit (grooved lock with threaded counter-pipe user side). For the correct kit selection please refer to the price list.		ALL
380 **NUMBERED WIRING**			
381 NUMBERED WIRING ON EL. BOARD			ALL
2410 **PHASE SEQUENCE RELAY**			
2411 WITH EXTERNAL PHASE SEQUENCE RELAY	Relay for checking mains phase-sequence	Protects loads against faults due to incorrect connection of mains	ALL
3410 **AUTOMATIC CIRCUIT BREAKERS**			
3412 AUTOM. CIRCUIT BREAK. ON LOADS	Over-current switch on the major electrical loads.	In case of overcurrent allows resetting of the switch without the replacement of relative fuses.	ALL
3600 **ON/OFF COMPRESSOR SIGNAL**			
3601 COMPRESSOR OPERATION SIGNAL	Auxiliary contacts providing a voltage-free signal.	Allows remote signalling of compressor's activation or remote control of any auxiliary loads.	ALL

ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
4180 **REMOTE CONNECTION ARRANGEMENT**			
4181 SERIAL CARD MODBUS	Interface module for ModBUS protocols.	Allows integration with BMS operating with ModBUS protocol.	ALL
4182 SERIAL CARD FOR LONWORKS	Interface module for Echelon systems.	Allows integration with BMS operating with LonWorks protocols	ALL
4184 SERIAL CARD BACNET MS/TP RS485	Interface module for BACnet protocols.	Allows integration with BMS operating with BACnet protocol.	ALL
4185 SERIAL CARD FOR BACNET OVER IP	Interface module for BACnet OVER-IP protocols.	Allows to interconnect BACnet devices over Internet Protocol within wide-area networks.	**NECS-W**: 0604, 0704, 0804, 0904, 1004, 1104, 1204.
6160 **AUXILIARY INPUT**			
6161 AUXILIARY SIGNAL 4-20mA	4-20 mA analog input	Allows to change the operating set-point according to the value of current applied to the analogue input.	**NECS-W**: 0604, 0704, 0804, 0904, 1004, 1104, 1204.
6162 REMOTE SIGNAL DOUBLE SP	Allows to activate the Energy Saving set-point.	Allows to change the operating set-point according to a remote switch	**NECS-W**: 0604, 0704, 0804, 0904, 1004, 1104, 1204.
6163 AUX 4-20mA REMOTE D L.C.	4-20 mA analog input + demand limit remote input	The 4-20 mA analog input allows to change the operating set-point according to the value of current applied to the analogue input. The demand limit remote input permits to limit the unit's power absorption for safety reasons	**NECS-W**: 0152, 0182, 0202, 0252, 0262, 0302, 0352, 0412, 0452, 0512, 0552, 0612.
6170 **DEMAND LIMIT**			
6171 INPUT REMOTE DEMAND LIMIT	Digital input (voltage free)	It permits to limit the unit's power absorption for safety reasons or in temporary situation.	**NECS-W**: 0604, 0704, 0804, 0904, 1004, 1104, 1204.
6190 **TYPE OF VISUAL DISPLAY**			
6192 W3000 COMPACT VISUAL DISPLAY	Keyboard with LCD display	Features a multi-language menu (with the W3000 software there are 3 languages available). Allows the connection of the remote keyboard. When equipped with a real time clock (optional), enables the alarm history display function.	ALL
1510 **SOFT-STARTER**			
1511 SOFT-STARTER FOR THREE-PHASE POWER SUPPLY	Electronic device adopted to manage the inrush current.	Break down of the inrush current compared to the direct motor start, lower motor windings' mechanical wear, avoidance of mains voltage fluctuations during starting, favourable sizing for the electrical system.	ALL
600 **LIQUID LINE SOLENOID VALVE**			
601 LIQUID LINE SOLENOID VALVE	Solenoid valve on the refrigerant liquid line, between the condenser and the expansion valve.	Prevent liquid from migrating towards the compressors when the unit is turned off.	**NECS-W**: 0604, 0704, 0804, 0904, 1004, 1104, 1204.
1400 **HP AND LP GAUGES**			
1401 HP AND LP GAUGES	High and low pressure gauges	Allows immediate reading of the pressure values on both low and high pressure circuits	ALL

ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
1900 **COMPRESSOR SUCTION VALVE**			
1901 COMPRESSOR SUCTION VALVE	Shut-off valve on compressor's suction circuit.	Simplifies maintenance activities	ALL
1910 **COMPRESSOR DISCHARGE VALVE**			
1911 COMPR. DISCHARGE LINE VALVE	Shut-off solenoid valve on compressor discharge circuit	Simplifies maintenance activities	ALL
1240 **CONDENSING PRESSURE CTRL DEV**			
1241 PRESSOSTATIC WATER VALVE	Pressostatic valve with grey cast iron body. It's used for regulating the flow of water as a function of the condensing pressure, maintaining it constant during operation. When the refrigeration plant is stopped, the cooling water flow is shut off automatically. The valve is selected and tested by Climaveneta during the unit's test. Recommended for applications with low temperature water, for example groundwater, where it's request the condensation pressure's control and it's possible to work with variable flow on the rejection circuit (Separately supplied, not mounted)		**NECS-W**: 0152, 0182, 0202, 0252, 0262.
1242 WITH 2 WAY MODULATING VALVE	Two way servo-motorized valve with steel body. It's recommended in case of inverter pumps and water flow modulation.		ALL
1243 WITH 3 WAY MODULATING VALVE	3 way modulating valve in grey cast iron with diverting function. Recommended for geo-thermal applications, in which constant waterflow is necessary. (supplied lose, not factory mounted)		ALL
1244 WITH INVERTER (1 PUMP)	Twin inverter pumps to control the condensation by adjusting the condenser waterflow.		ALL
1245 WITH INVERTER (2 PUMPS)	Inverter pump to control the condensation by adjusting the condenser waterflow.		ALL
3280 **EVAPORATOR HYDRONIC KIT**			
3281 EVAP.KIT 1 PUMP LH	Hydronic group (see dedicated section).		ALL
3282 EVAP.KIT 1 PUMP HH	Hydronic group (see dedicated section).		ALL
3283 EVAP.KIT 2 PUMPS LH	Hydronic group (see dedicated section).		ALL
3284 EVAP.KIT 2 PUMPS HH	Hydronic group (see dedicated section).		ALL
3290 **CONDENSER HYDRONIC KIT**			
3291 COND.KIT 1 PUMP LH	Hydronic group (see dedicated section).		ALL
3292 COND.KIT 1 PUMP HH	Hydronic group (see dedicated section).		ALL
3293 COND.KIT 2 PUMPS LH	Hydronic group (see dedicated section).		ALL
3294 COND.KIT 2 PUMPS HH	Hydronic group (see dedicated section).		ALL

ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
2960 **WATER CONNECTIONS ORIENTATION**			
2962 TOP WATER CONNECTIONS	Upward external water connection, on the roof of the unit	Simplify the installation in case of reduced clearance.	**NECS-W**: 0152, 0182, 0202, 0252, 0262, 0302, 0352, 0412, 0452, 0512, 0552, 0612.
2340 **TYPE OF ENCL.**			
2313 INTEGRAL ACOUST.ENCL.BASE	Enclosure realized with peraluman panels lined with an acoustic insulation made by polyester fiber of thickness 30 mm.		**NECS-W**: 0604, 0704, 0804, 0904, 1004, 1104, 1204.
2620 **ACOUSTICAL ENCLOSURE**			
2621 EXTRA INSUL.ON COMPR. SECTION	Increased soundproofing enclosure for compressor section	Noise emission reduction of 4 dB(A)	**NECS-W**: 0152, 0182, 0202, 0252, 0262, 0302, 0352, 0412, 0452, 0512, 0552, 0612.
2100 **ANTIVIBRATION MOUNTING**			
2101 RUBBER TYPE ANTIVIBR.MOUNTING			ALL
2102 SPRING TYPE ANTIVIBR.MOUNTING			**NECS-W**: 0704, 0804, 0904, 1004, 1104, 1204.
9970 **PACKING**			
9969 NYLON + WOODEN CRATE PACKING	Unit provided with wooden cage and covered with nylon		ALL
9972 WOODEN BOX PACKING	Unit provided with wooden box		ALL
9974 MARINE PACKING	Unit provided with barrier bag and wooden cage		ALL
9979 CONTAINER PACKING	Unit provided with container slides and covered with nylon		ALL
9995 METAL BARS, SUPPORTS AND NYLON	Unit provided with base metal bars, plastic supports and covered with nylon		**NECS-W**: 0604, 0704, 0804, 0904, 1004, 1104, 1204.
9999 SUPPORTS AND NYLON	Unit provided with plastic supports and covered with nylon		**NECS-W**: 0152, 0182, 0202, 0252, 0262, 0302, 0352, 0412, 0452, 0512, 0552, 0612.

ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
PF0 **Generic accessory**			
C5140131 Evaporator water flow switch	Flow switch with stainless scoop AISI 316L and IP65 protection suitable for installation in industrial plant pipes. It should be installed in a straight pipe without filters, valves, etc., long at least 5 times its diameter, both upstream and downstream. ADVANTAGES: signaling of lack of or	Signaling of lack of or excessive reduction of flow, it generates an alarm that is in automatic or manual reset depending on n ° alarms per hour and the maximum time of operation of the pump under conditions of low flow rate.	NECS-W: 0152, 0182, 0202, 0252, 0262, 0302, 0352, 0412, 0452, 0512, 0552, 0612, 0604, 0704, 0804, 0904.
C5140120 Evaporator water flow switch	Flow switch with stainless scoop AISI 316L and IP65 protection suitable for installation in industrial plant pipes. It should be installed in a straight pipe without filters, valves, etc., long at least 5 times its diameter, both upstream and downstream. ADVANTAGES: signaling of lack of or	Signaling of lack of or excessive reduction of flow, it generates an alarm that is in automatic or manual reset depending on n ° alarms per hour and the maximum time of operation of the pump under conditions of low flow rate.	NECS-W: 1004, 1104, 1204.

ACCESSORY NOTES

381 – Numbered wiring on electrical
Standard feature on 2 compressor units (sizes 0152 - 0612)

3412 – Automatic circuit breakers
Standard feature on 2 compressor units (sizes 0152 - 0612)

6161 – Auxiliary signal 4-20 mA
Standard feature on 4 compressor units (sizes 0604 - 1204)

1401 – High and low pressure gauges
Standard feature on 4 compressor units (sizes 0604 - 1204)

Chiller Plant Control with Active Optimization System

ClimaPRO System Manager

ClimaPRO System Manager represents the state-of-the-art platform for chiller plant management and control.
ClimaPRO ensures to actively optimize the entire chiller plant by managing and adjusting each component directly involved in the production and the distribution of the heating and the cooling energies, therefore involving chillers and heat pumps, pumping groups as well as the source-side devices like, for example, the cooling towers.

In particular, ClimaPRO measures in real-time all the operating variables from the field, for each individual device and each of the main system branche, by using serial communication lines as well as dedicated analogue signals.

The acquired data are then compared with the design data of each single unit at any different working conditions, thus allowing to implement control strategies based on dynamic algorithms which take into account the real operating conditions.

On the basis of these values, an advanced diagnostic module also allows to assess the level of efficiency for each individual unit, translating data into easy-to-read information in order to simplify and optimize the maintenance activities.

The “Chart Builder” software module allows to display the trends of the main operating variables. The “Reporting” module allows to send reports to selected users, including data and system’s status of the main devices as well as to perform calculation of the energy indexes for each single unit and for the entire chiller plant.

The accessibility to ClimaPRO System Manager is ensured by an integrated web server that makes it visible from any computer equipped with a web browser, either locally or remotely.

4.1 GENERAL TECHNICAL DATA NECS-W / B

[SI System]

NECS-W / B			0152	0182	0202	0252	0262	0302	0352	0412	0452	0512
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE												
COOLING ONLY (GROSS VALUE)												
Cooling capacity	(1)	**kW**	**43,4**	**50,1**	**58,9**	**66,4**	**72,6**	**86,7**	**101**	**115**	**129**	**144**
Total power input	(1)	kW	10,0	11,3	13,0	15,2	16,6	19,5	22,7	25,9	28,9	32,2
EER	(1)	kW/kW	4,34	4,43	4,53	4,37	4,37	4,45	4,46	4,43	4,45	4,46
ESEER	(1)	kW/kW	5,81	5,98	6,01	5,69	5,59	5,66	5,80	5,71	5,79	5,78
COOLING ONLY (EN14511 VALUE)												
Cooling capacity	(1)(2)	**kW**	**43,0**	**49,7**	**58,5**	**66,0**	**72,1**	**86,3**	**101**	**114**	**128**	**143**
EER	(1)(2)	kW/kW	4,04	4,15	4,24	4,10	4,08	4,23	4,26	4,22	4,25	4,27
ESEER	(1)(2)	kW/kW	4,98	5,17	5,22	5,02	4,88	5,13	5,23	5,19	5,24	5,29
Cooling energy class			D	D	D	D	D	D	C	D	C	C
EXCHANGERS												
HEAT EXCHANGER USER SIDE IN REFRIGERATION												
Water flow	(1)	l/s	2,07	2,40	2,82	3,18	3,47	4,14	4,84	5,48	6,15	6,86
Pressure drop	(1)	kPa	57,8	49,4	49,5	47,0	56,2	34,3	32,8	42,1	39,7	38,5
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION												
Water flow	(1)	l/s	2,54	2,92	3,43	3,88	4,24	5,05	5,90	6,69	7,50	8,36
Pressure drop	(1)	kPa	35,9	37,5	42,0	44,1	52,8	36,7	36,0	36,0	36,4	33,5
REFRIGERANT CIRCUIT												
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2
Number of capacity		N°	2	2	2	2	2	2	2	2	2	2
No. Circuits		N°	1	1	1	1	1	1	1	1	1	1
Regulation			STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS
Min. capacity step		%	50	50	50	50	50	50	50	50	50	50
Refrigerant			R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	4	5	6	6	6	9	10	10	12	13
Oil charge		kg	5	7	7	7	7	8	9	9	12	14
Rc (ASHRAE)	(3)	kg/kW	0,094	0,102	0,095	0,095	0,090	0,100	0,096	0,089	0,095	0,092
NOISE LEVEL												
Noise Pressure	(4)	dB(A)	58	59	59	59	60	60	61	61	62	62
Sound power level in cooling	(5)(6)	dB(A)	73	74	74	74	75	76	77	77	78	78
SIZE AND WEIGHT												
A	(7)	mm	1055	1055	1055	1055	1055	1222	1222	1222	1222	1222
B	(7)	mm	649	649	649	649	649	873	873	873	873	873
H	(7)	mm	1255	1255	1255	1255	1255	1496	1496	1496	1496	1496
Operating weight	(7)	kg	285	300	310	320	325	570	610	640	680	725

Notes:

1 Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger water (in/out) 30,0°C/35,0°C.
2 Values in compliance with EN14511-3:2013.
3 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
4 Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
5 Sound power on the basis of measurements made in compliance with ISO 9614.
6 Sound power level in cooling, indoors.
7 Unit in standard configuration/execution, without optional accessories.
- Unavailable

Certified data in EUROVENT

GENERAL TECHNICAL DATA — NECS-W / B

[SI System]

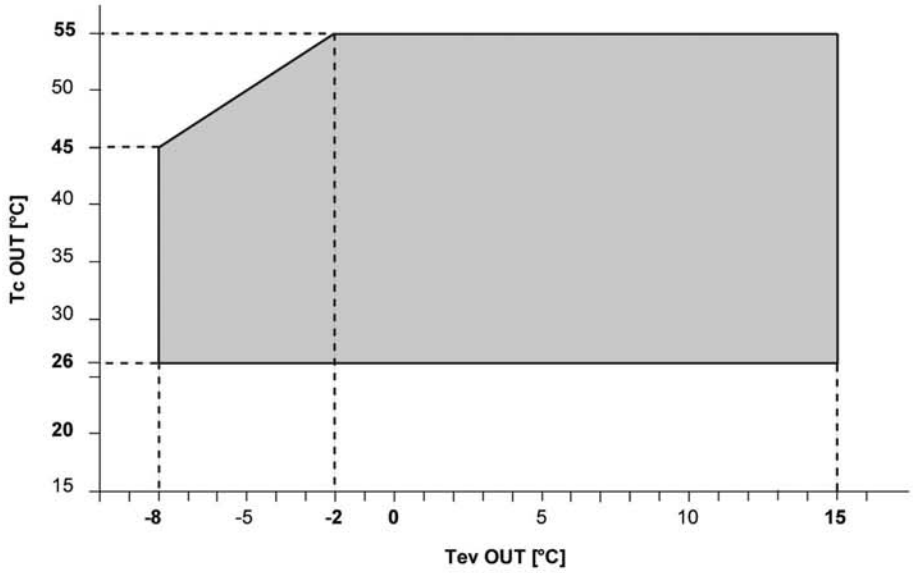
NECS-W / B			0552	0612	0604	0704	0804	0904	1004	1104	1204
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)	**kW**	**165**	**186**	**174**	**203**	**228**	**258**	**288**	**329**	**371**
Total power input	(1)	kW	36,9	41,6	38,9	45,2	51,6	58,0	64,0	74,0	83,5
EER	(1)	kW/kW	4,47	4,48	4,47	4,48	4,42	4,45	4,50	4,44	4,44
ESEER	(1)	kW/kW	5,93	5,80	5,79	5,92	5,82	5,93	5,93	5,99	5,89
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)	**kW**	**164**	**186**	**173**	**202**	**227**	**257**	**287**	**328**	**370**
EER	(1)(2)	kW/kW	4,29	4,29	4,29	4,32	4,25	4,29	4,35	4,30	4,28
ESEER	(1)(2)	kW/kW	5,40	5,30	5,20	5,33	5,27	5,34	5,40	5,47	5,33
Cooling energy class			C	C	C	C	C	C	C	C	C
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)	l/s	7,89	8,91	8,32	9,69	10,9	12,3	13,8	15,7	17,7
Pressure drop	(1)	kPa	34,6	44,2	35,0	32,9	41,6	39,4	39,4	35,2	44,9
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION											
Water flow	(1)	l/s	9,60	10,8	10,1	11,8	13,3	15,0	16,8	19,2	21,6
Pressure drop	(1)	kPa	35,8	38,1	37,0	36,1	35,5	36,6	33,7	35,6	37,9
REFRIGERANT CIRCUIT											
Compressors nr.		N°	2	2	4	4	4	4	4	4	4
Number of capacity		N°	2	2	4	4	4	4	4	4	4
No. Circuits		N°	1	1	2	2	2	2	2	2	2
Regulation			STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS
Min. capacity step		%	50	50	25	25	25	25	25	25	25
Refrigerant			R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	15	16	17	19	20	24	26	30	32
Oil charge		kg	13	13	17	18	19	23	27	26	25
Rc (ASHRAE)	(3)	kg/kW	0,090	0,088	0,100	0,095	0,089	0,095	0,092	0,093	0,088
NOISE LEVEL											
Noise Pressure	(4)	dB(A)	63	63	69	70	71	72	73	74	74
Sound power level in cooling	(5)(6)	dB(A)	79	79	86	87	88	89	90	91	91
SIZE AND WEIGHT											
A	(7)	mm	1222	1222	2227	2227	2227	2227	2227	2227	2227
B	(7)	mm	873	873	877	877	877	877	877	877	877
H	(7)	mm	1496	1496	1780	1780	1780	1780	1780	1780	1780
Operating weight	(7)	kg	770	800	1050	1125	1190	1270	1355	1445	1510

Notes:

1 Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger water (in/out) 30,0°C/35,0°C.
2 Values in compliance with EN14511-3:2013.
3 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
4 Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
5 Sound power on the basis of measurements made in compliance with ISO 9614.
6 Sound power level in cooling, indoors.
7 Unit in standard configuration/execution, without optional accessories.
- Unavailable

Certified data in EUROVENT

5.1 OPERATING LIMITS



Tc in	Source (side) cooling exchanger water [°C]
Tev out	Plant (side) cooling exchanger water [°C]

NOTE:
For the temperature limits of each size please refer to the selection software ElcaStudio

SIZE
NECS-W 0152
NECS-W 0182
NECS-W 0202
NECS-W 0252
NECS-W 0262
NECS-W 0302
NECS-W 0352
NECS-W 0412
NECS-W 0452
NECS-W 0512
NECS-W 0552
NECS-W 0612
NECS-W 0604
NECS-W 0704
NECS-W 0804
NECS-W 0904
NECS-W 1004
NECS-W 1104
NECS-W 1204

5.2 ETHYLENE GLYCOL MIXTURE

Ethylene glycol and water mixture, used as a heat-conveying fluid, cause a variation in unit performance. For correct data, use the factors indicated in the following tabel.

	Freezing point (°C)							
	0	-5	-10	-15	-20	-25	-30	-35
	Ethylene glycol percentage by weight							
	0%	12%	20%	30%	35%	40%	45%	50%
cPf	1	0,985	0,98	0,974	0,97	0,965	0,964	0,96
cQ	1	1,02	1,04	1,075	1,11	1,14	1,17	1,2
cdp	1	1,07	1,11	1,18	1,22	1,24	1,27	1,3

cPf: cooling power correction factor
cQ: flow correction factor
cdp: pressure drop correction factor

For data concerning other kind of anti-freeze solutions (e,g, propylene glycol) please contact our Sale Department.

5.3 FOULING FACTORS

Performances are based on clean condition of tubes (fouling factor = 1). For different fouling values, performance should be adjusted using the correction factors shown in the following table.

SERIES	FOULING FACTORS	EVAPORATOR			CONDENSER/RECOVERY			DESUPERHEATER
	ff (m² °CW)	F1	FK1	KE [°C]	F2	FK2	KC [°C]	R3
VARIOUS	0	1,000	1,000	0,0	1,000	1,000	0,0	1,000
VARIOUS	$1{,}80 \times 10^{-5}$	1,000	1,000	0,0	1,000	1,000	0,0	1,000
VARIOUS	$4{,}40 \times 10^{-5}$	1,000	1,000	0,0	0,990	1,030	1,0	0,990
VARIOUS	$8{,}80 \times 10^{-5}$	0,960	0,990	0,7	0,980	1,040	1,5	0,980
VARIOUS	$13{,}20 \times 10^{-5}$	0,944	0,985	1,0	0,964	1,050	2,3	0,964
VARIOUS	$17{,}20 \times 10^{-5}$	0,930	0,980	1,5	0,950	1,060	3,0	0,950

ff: fouling factors
F1 - F2: potential correction factors
FK1 - FK2: compressor power input correction factors
R3: capacity correction factors
KE: minimum evaporator outlet temperature increase
KC: maximum condenser outlet temperature decrease

6.1 HYDRAULIC DATA

[SI System]

Water flow and pressure drop

Water flow in the plant (side) exchanger is given by:
Q=P/(4,186 x Dt)
Q: water flow (l/s)
Dt: difference between inlet and outlet water temp. (°C)
P: heat exchanger capacity (kW)

Pressure drop is given by:
Dp= K x (3,6 x Q)^2/1000
Q: water flow (l/s)
Dp: pressure drop (kPa)
K: unit size ratio

SIZE	Power supply V/ph/Hz	HEAT EXCHANGER USER SIDE					HEAT EXCHANGER SOURCE SIDE			
		K	Q min l/s	Q max l/s	C.A.S. l	C.a. min l	K	Q min l/s	Q max l/s	C.A.S. l
NECS-W 0152	400/3/50	1037	1,39	3,61	-	400	430	0,83	3,33	-
NECS-W 0182	400/3/50	664	1,39	3,89	-	400	339	0,83	3,61	-
NECS-W 0202	400/3/50	481	1,67	4,72	-	500	276	1,11	4,44	-
NECS-W 0252	400/3/50	360	1,94	5,28	-	600	226	1,11	5,00	-
NECS-W 0262	400/3/50	360	2,22	5,83	-	600	226	1,39	5,28	-
NECS-W 0302	400/3/50	154	2,50	6,94	-	800	111	1,67	6,39	-
NECS-W 0352	400/3/50	108	3,06	8,06	-	900	80,0	1,67	7,50	-
NECS-W 0412	400/3/50	108	3,33	9,17	-	1000	62,0	1,94	8,33	-
NECS-W 0452	400/3/50	81,0	3,89	10,3	-	1100	50,0	2,22	9,44	-
NECS-W 0512	400/3/50	63,0	4,17	11,4	-	1200	37,0	2,50	10,6	-
NECS-W 0552	400/3/50	43,0	5,00	13,1	-	1400	30,0	3,06	11,9	-
NECS-W 0612	400/3/50	43,0	5,56	15,0	-	1600	25,0	3,33	13,6	-
NECS-W 0604	400/3/50	39,0	5,28	13,9	-	1300	27,8	3,06	12,8	-
NECS-W 0704	400/3/50	27,0	6,11	16,1	-	1500	20,0	3,61	14,7	-
NECS-W 0804	400/3/50	27,0	6,67	18,1	-	1600	15,5	4,17	16,7	-
NECS-W 0904	400/3/50	20,0	7,78	20,6	-	1900	12,5	4,72	18,9	-
NECS-W 1004	400/3/50	16,0	8,61	23,1	-	2100	9,25	5,28	21,1	-
NECS-W 1104	400/3/50	11,0	9,72	26,1	-	2400	7,50	5,83	23,9	-
NECS-W 1204	400/3/50	11,0	11,1	29,7	-	2700	6,25	6,67	27,2	-

The coefficient “K” on the source side heat exchanger is referred to its standart selection. When it’s required to move to an higher number of steps water side (with delta T >=10°C), “K” coefficient as to be multiplied for 8,5 (Knew = K x 8,5)

Q min: minimum water flow admitted to the heat exchanger

Q min: minimum water flow admitted to the heat exchanger-

Q max: maximum water flow admitted to the heat exchanger

C.a. min: minimum water content admitted in the plant

C.A.S.: Exchanger water content

7.1 ELECTRICAL DATA NECS-W / B

[SI System]

SIZE	Power supply V/ph/Hz	Maximum values						
		Compressor				Total (1)		
		n	F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
0152	400/3/50	2	2x9	2x15,3	2x95	18,0	31	110
0182	400/3/50	2	2x10,1	2x16,4	2x111	20,2	33	127
0202	400/3/50	2	2x11,8	2x20,4	2x118	23,6	41	138
0252	400/3/50	2	2x13,2	2x22,6	2x118	26,4	45	141
0262	400/3/50	2	2x14,4	2x25,5	2x140	28,8	51	166
0302	400/3/50	2	2x16,9	2x27,9	2x198	33,8	56	226
0352	400/3/50	2	1x16,9+1x22,3	1x27,9+1x36,1	1x198+1x225	39,2	64	253
0412	400/3/50	2	2x22,3	2x36,1	2x225	44,6	72	261
0452	400/3/50	2	1x22,3+1x27,4	1x36,1+1x45,8	1x225+1x272	49,7	82	308
0512	400/3/50	2	2x27,4	2x45,8	2x272	54,8	92	318
0552	400/3/50	2	1x27,4+1x35,8	1x45,8+1x58,9	1x272+1x310	63,2	105	356
0612	400/3/50	2	2x35,8	2x58,9	2x310	71,6	118	369
0604	400/3/50	4	4x16,9	4x27,9	4x198	68,0	112	282
0704	400/3/50	4	2x16,9+2x22,3	2x27,9+2x36,1	2x198+2x225	78,0	128	317
0804	400/3/50	4	4x22,3	4x36,1	4x225	89,0	144	333
0904	400/3/50	4	2x22,3+2x27,4	2x36,1+2x45,8	2x225+2x272	99,0	164	390
1004	400/3/50	4	4x27,4	4x45,8	4x272	110	183	409
1104	400/3/50	4	2x27,4+2x35,8	2x45,8+2x58,9	2x272+2x310	126	209	461
1204	400/3/50	4	4x35,8	4x58,9	4x310	143	236	487

F.L.I.: Full load power
F.L.A.: Full load current
L.R.A.: Locked rotor amperes for single compressor
S.A.: Inrush current

(1) Safety values to be considered when cabling the unit for power supply and line-protections

Electrical data valid for standard units without any additional option

Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger water (in/out) 30,0°C/35,0°C.

Voltage tolerance: 10%
Maximum voltage unbalance: 3%

Given the typical operating conditions of units designed for indoor installation, which can be associated (according to reference document IEC 60721) to the following classes:
- climatic conditions class AA4: air temperature range from 5 up to 42°C (*)
- special climatic conditions negligible
- presence of water class AD2: possibility of water dripping inside the technical room
- biological conditions class 4B1 and 4C2: negligible presence of corrosive and polluting substances
- mechanically active substances class 4S2: locations in areas with sand or dust sources

The required protection level for safe operation, according to reference document IEC 60529, is IP21 BW (protection against access of external devices with diameter larger than 12 mm and water falling vertically).
The unit can be considered IP21 CW protected, thus fulfilling the above operating conditions.

(*) for the unit's operating limits, see "selection limits" section

8.1 FULL LOAD SOUND LEVEL NECS-W / B

SOUND POWER									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
0152	74	72	69	70	70	63	59	53	**73**
0182	75	73	70	71	71	64	60	54	**74**
0202	75	73	70	71	71	64	60	54	**74**
0252	75	73	70	71	71	64	60	54	**74**
0262	76	74	71	72	72	65	61	55	**75**
0302	76	74	75	74	70	68	64	53	**76**
0352	77	75	76	75	71	69	65	54	**77**
0412	77	75	76	75	71	69	65	54	**77**
0452	78	76	77	76	72	70	66	55	**78**
0512	78	76	77	76	72	70	66	55	**78**
0552	79	77	78	77	73	71	67	56	**79**
0612	79	77	78	77	73	71	67	56	**79**
0604	75	77	81	80	82	80	74	68	**86**
0704	76	78	82	81	83	81	75	69	**87**
0804	77	79	83	82	84	82	76	70	**88**
0904	78	80	84	83	85	83	77	71	**89**
1004	79	81	85	84	86	84	78	72	**90**
1104	80	82	86	85	87	85	79	73	**91**
1204	80	82	86	85	87	85	79	73	**91**

Working conditions

Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger water (in/out) 30,0°C/35,0°C.
Sound power on the basis of measurements made in compliance with ISO 9614.
Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.
Sound power level in cooling, indoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
0152	59	57	54	55	55	48	44	38	**58**
0182	60	58	55	56	56	49	45	39	**59**
0202	60	58	55	56	56	49	45	39	**59**
0252	60	58	55	56	56	49	45	39	**59**
0262	61	59	56	57	57	50	46	40	**60**
0302	60	58	59	58	54	52	48	37	**60**
0352	61	59	60	59	55	53	49	38	**61**
0412	61	59	60	59	55	53	49	38	**61**
0452	62	60	61	60	56	54	50	39	**62**
0512	62	60	61	60	56	54	50	39	**62**
0552	63	61	62	61	57	55	51	40	**63**
0612	63	61	62	61	57	55	51	40	**63**
0604	58	60	64	63	65	63	57	51	**69**
0704	59	61	65	64	66	64	58	52	**70**
0804	60	62	66	65	67	65	59	53	**71**
0904	61	63	67	66	68	66	60	54	**72**
1004	62	64	68	67	69	67	61	55	**73**
1104	63	65	69	68	70	68	62	56	**74**

Working conditions

Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger water (in/out) 30,0°C/35,0°C.
Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

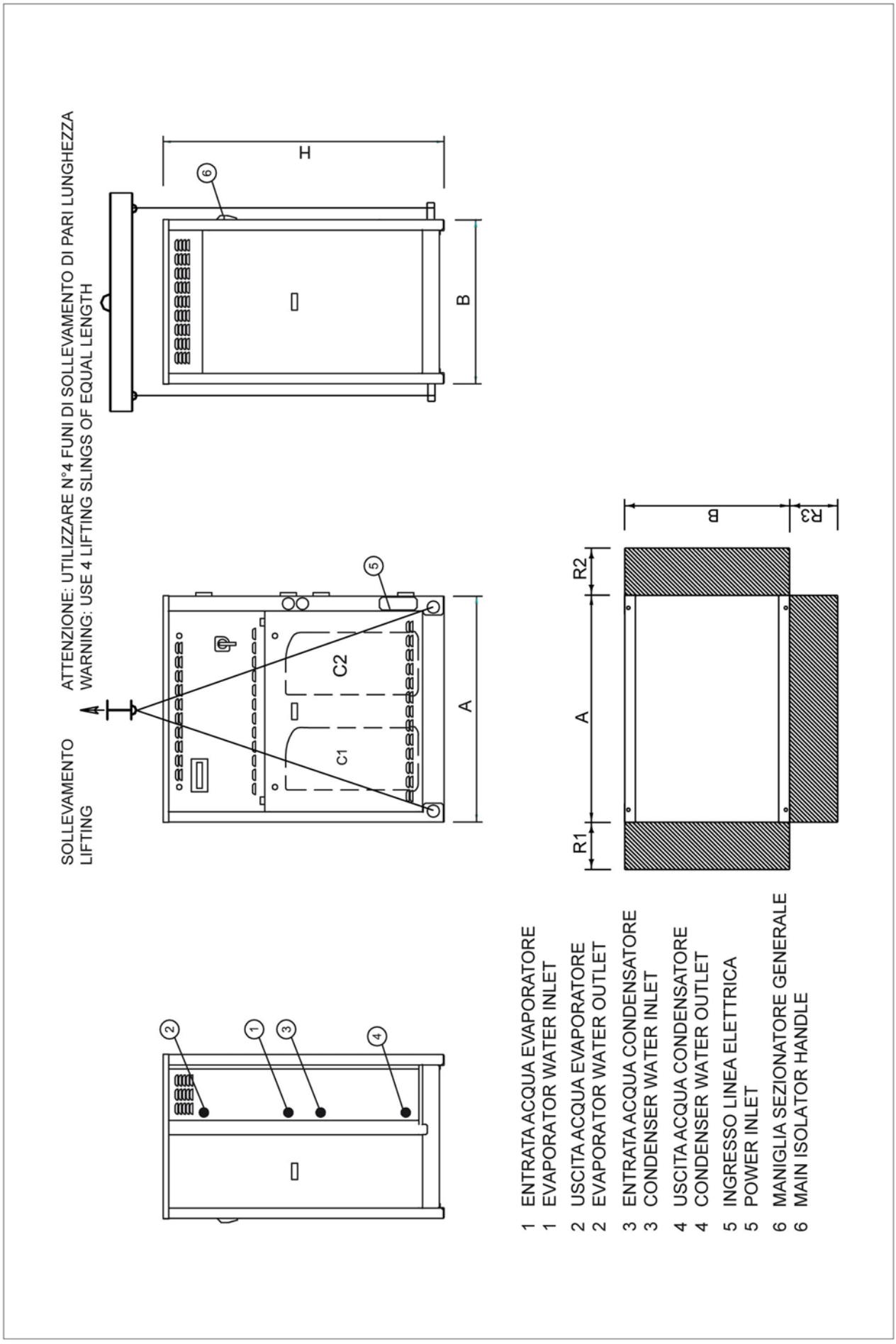
FULL LOAD SOUND LEVEL NECS-W / B

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1204	63	65	69	68	70	68	62	56	74

Working conditions

Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger water (in/out) 30,0°C/35,0°C.

Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.



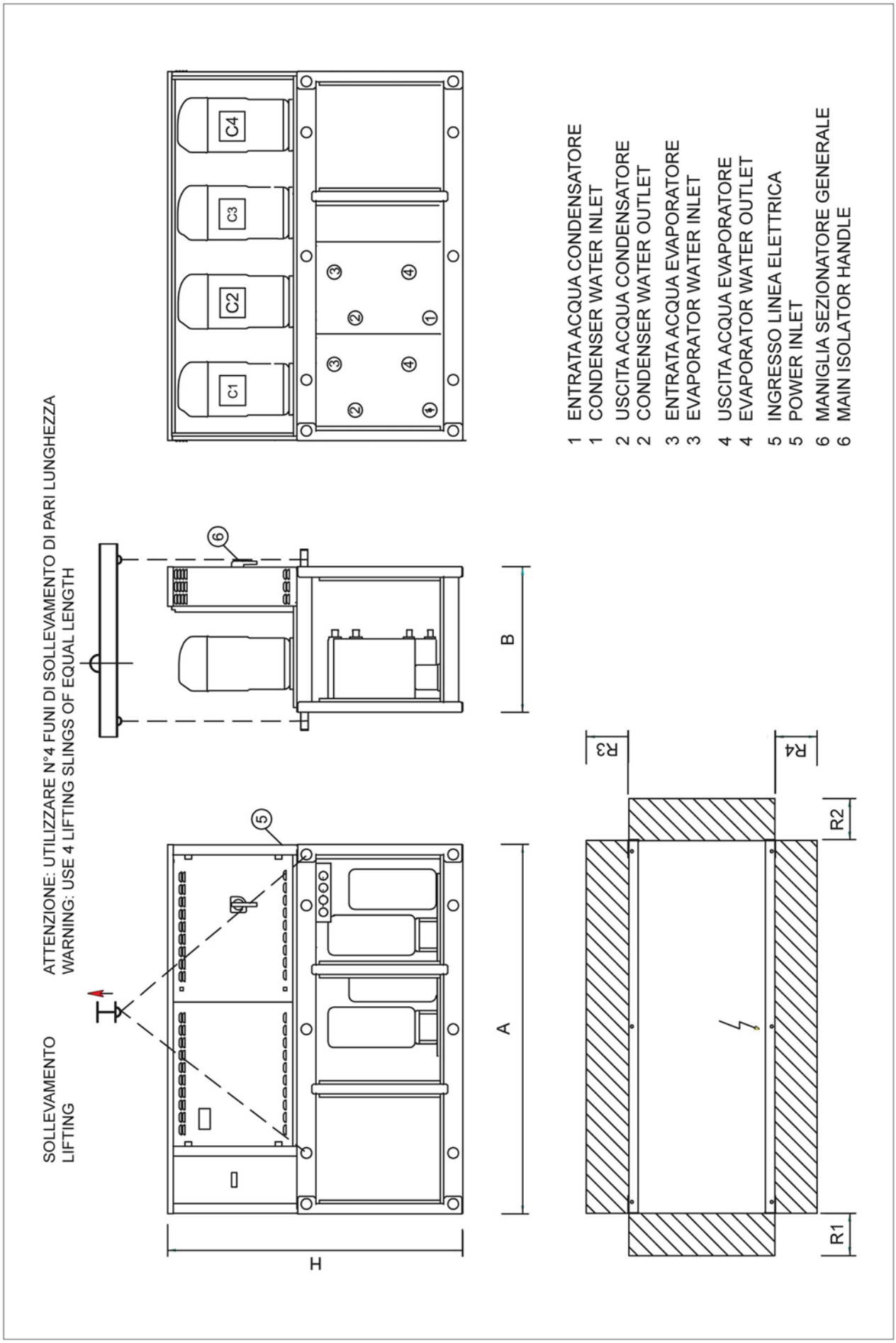
"REMARKS:
For installation purposes, please refer to the documentation sent after the purchase-contract. This technical data should be considered as indicative. CLIMAVENETA may modify them at any moment."

DIMENSIONAL DRAWINGS

NECS-W 0152 - 1204

[SI System]

SIZE	DIMENSIONS AND WEIGHTS				CLEARANCE				HEAT EXCHANGER USER SIDE		HEAT EXCHANGER SOURCE SIDE	
	A	B	H	VEIGH	R1	R2	R3	R4	IN/OUT		IN/OUT	
	[mm]	[mm]	[mm]	[kg]	[mm]	[mm]	[mm]	[mm]	TYPE	Ø	TYPE	Ø
NECS-W 0152	1055	649	1255	285	600	600	800	0	A	1"1/2	A	1"1/2
NECS-W 0182	1055	649	1255	300	600	600	800	0	A	1"1/2	A	1"1/2
NECS-W 0202	1055	649	1255	310	600	600	800	0	A	1"1/2	A	1"1/2
NECS-W 0252	1055	649	1255	320	600	600	800	0	A	1"1/2	A	1"1/2
NECS-W 0262	1055	649	1255	325	600	600	800	0	A	1"1/2	A	1"1/2
NECS-W 0302	1222	873	1496	570	600	600	800	0	A	2"1/2	A	2"1/2
NECS-W 0352	1222	873	1496	610	600	600	800	0	A	2"1/2	A	2"1/2
NECS-W 0412	1222	873	1496	640	600	600	800	0	A	2"1/2	A	2"1/2
NECS-W 0452	1222	873	1496	680	600	600	800	0	A	2"1/2	A	2"1/2
NECS-W 0512	1222	873	1496	725	600	600	800	0	A	2"1/2	A	2"1/2
NECS-W 0552	1222	873	1496	770	600	600	800	0	A	2"1/2	A	2"1/2
NECS-W 0612	1222	873	1496	800	600	600	800	0	A	2"1/2	A	2"1/2



"REMARKS:
For installation purposes, please refer to the documentation sent after the purchase-contract. This technical data should be considered as indicative. CLIMAVENETA may modify them at any moment."

DIMENSIONAL DRAWINGS NECS-W 0152 - 1204

[SI System]

SIZE	DIMENSIONS AND WEIGHTS				CLEARANCE				HEAT EXCHANGER USER SIDE		HEAT EXCHANGER SOURCE SIDE	
	A	B	H	WEIGHT	R1	R2	R3	R4	IN/OUT		IN/OUT	
	[mm]	[mm]	[mm]	[kg]	[mm]	[mm]	[mm]	[mm]	TYPE	Ø	TYPE	Ø
NECS-W 0604	2227	877	1780	1050	1000	1000	1000	1000	A	2"1/2	A	2"1/2
NECS-W 0704	2227	877	1780	1125	1000	1000	1000	1000	A	2"1/2	A	2"1/2
NECS-W 0804	2227	877	1780	1190	1000	1000	1000	1000	A	2"1/2	A	2"1/2
NECS-W 0904	2227	877	1780	1270	1000	1000	1000	1000	A	2"1/2	A	2"1/2
NECS-W 1004	2227	877	1780	1355	1000	1000	1000	1000	A	2"1/2	A	2"1/2
NECS-W 1104	2227	877	1780	1445	1000	1000	1000	1000	A	2"1/2	A	2"1/2
NECS-W 1204	2227	877	1780	1510	1000	1000	1000	1000	A	2"1/2	A	2"1/2

LEGEND OF PIPE CONNECTIONS

TYPE = A
Grooved pipe

UNI ISO 228/1

Pipe threads where pressure-tight joints are not made on the threads - Designation, dimensions and tolerances

Used terminology:

G: Pipe threads where pressure-tight joints are not made on the threads
A: Close tolerance class for external pipe threads where pressure-tight joints are not made on the threads
B: Wider tolerance class for external pipe threads where pressure-tight joints are not made on the threads
Internal threads: G letter followed by thread mark (only tolerance class)
External threads: G letter followed by thread mark and by A letter for A class external threads or by B letter for B class external threads.

UNI EN 10226-1

Pipe threads where pressure-tight joints are made on the threads - Designation, dimensions and tolerances

Used terminology:

Rp: Internal cylindrical threads where pressure-tight joints are made on the threads
Rc: Internal conical threads where pressure-tight joints are made on the threads
R: External conical threads where pressure-tight joints are made on the threads
Internal cylindrical threads: R letter followed by p letter
Internal conical threads: R letter followed by c letter
External conical threads: R letter

Designation	Description
UNI EN 10226-1 - Rp 1 1/2	Internal cylindrical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 1 1/2"
UNI EN 10226-1 - Rp 2 1/2	Internal cylindrical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 2 1/2"
UNI EN 10226-1 - Rp 3	Internal cylindrical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 3"
UNI EN 10226-1 - R 3	External conical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 3"
UNI ISO 228/1 - G 4 B	Internal cylindrical threads where pressure-tight joints are not made on the threads, defined by standard UNI ISO 228/1 Tolerance class B for external thread Conventional ø 4"
DN 80 PN 16	Flange Nominal Diameter: 80 mm Nominal Pressure: 16 bar

Notes:

Conventional diameter value [in inches] identifies short thread designation, based upon the relative standard.
All relative values are defined by standards.
As example, here below some values:

	UNI EN 10226-1	UNI ISO 228/1
Conventional ø	1"	1"
Pitch	2.309 mm	2.309 mm
External ø	33.249 mm	33.249 mm
Core ø	30.291 mm	30.291 mm
Thread height	1.479 mm	1.479 mm

CLIMAVENETA
A Group Company of MITSUBISHI ELECTRIC

10.1 HYDRONIC GROUP

The new NECS-W units can be equipped with evaporator and / or condenser hydronic kits. The kit incorporates the main hydraulic components thus optimizing hydraulic and electrical installation space, time and costs.
Moreover NECS-W can be provided with INVERTER pumps on the condenser side. This device enables the condensing pressure control, through the variable speed pump, reducing pump energy consumption.

Available configurations
Evaporator and / or condenser hydronic kit can be provided with following configurations:

Hydronic group 1 pump low head
Hydronic group 2 pumps low head
Hydronic group 1 pump high head
Hydronic group 2 pumps high head

Units can be equipped with up to 4 pumps, two on the evaporator and two on the condenser side.

2-pole pump
Low head pump with 100 kPa external static pressure.
High head pump with 200 kPa external static pressure.
Horizontal one-piece centrifuge pump with one impeller, axial suction and radial delivery, AISI 304L stainless steel pump body impeller. The section of shaft in contact with the liquid is made from stainless steel. Mechanical seal made from components in ceramics/carbon/NBR/AISI304. Three-phase electric motor protected to IP55, insulation class F, suitable for continuous service.

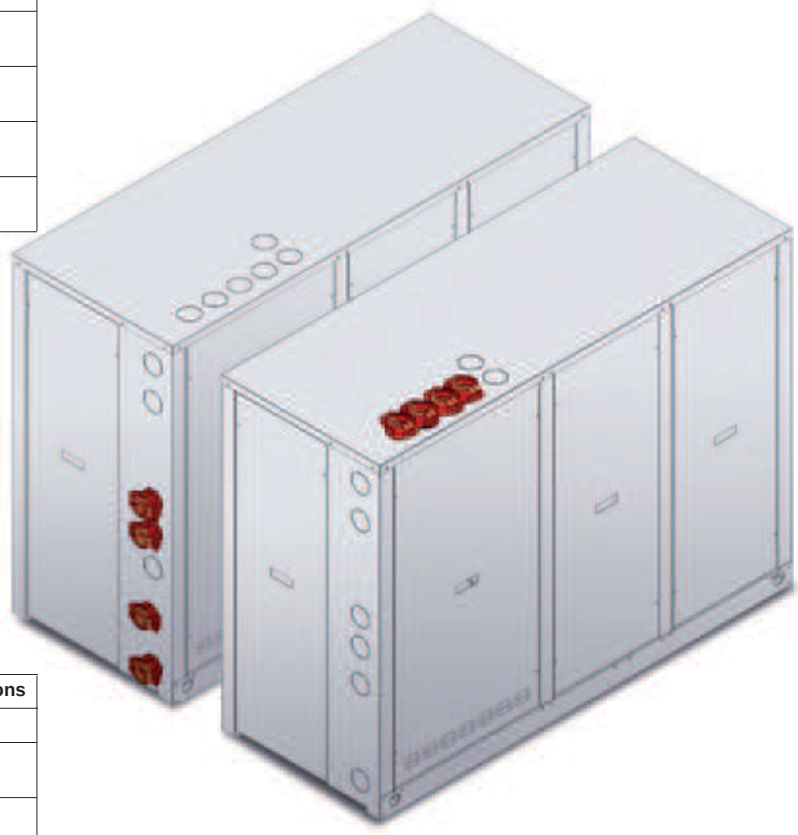
Second pump
A second stand-by pump for high or low pressures is available on request. The pumps are automatically exchanged on the basis of a rotation programme and the stand-by pump cuts in automatically if the primary pump fails. The two-pump hydronic assembly is also fitted with check valves to ensure the unit works correctly.

Water-side mechanical filter (optional)
Y-filter designed and built to capture the impurities in the hydraulic circuit. It is fitted with a 0.9 mm stainless steel mesh cartridge which can be replaced without removing the valve body from the piping.

Sideward/Upward external water connections
2 compressors NECS-W units with hydronic kit installed onboard are available with both side and up external water connections. Standard units with external side water connections, up-wards type is made to order.
Up-wards water connections type is suitable for technical rooms with room-top water piping; reduced installation spaces and saving costs will be obtained.

Possible configuration

PUMPS GROUP	Versions
KIT EVAP. 1 POMPA BP(3281)	X
KIT EVAP. 1 POMPA AP(3282)	X
KIT EVAP. 2 POMPA BP(3283)	X
KIT EVAP. 2 POMPA AP(3284)	X

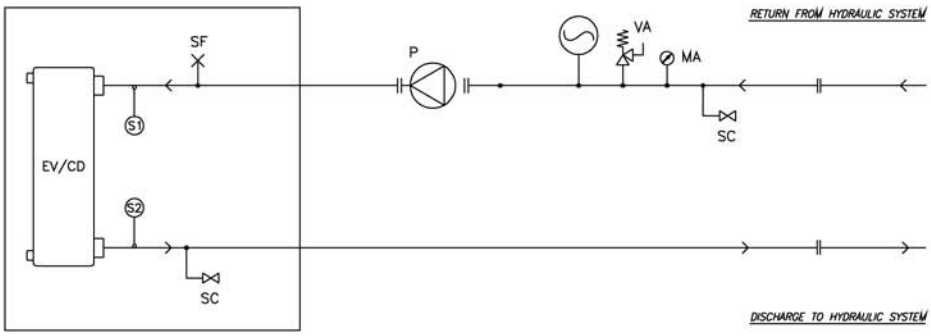


Possible configuration

PUMPS GROUP	Versions
KIT COND. 1 POMPA BP(3291)	X
KIT COND. 1 POMPA AP(3292)	X
KIT COND. 2 POMPA BP(3293)	X
KIT COND. 2 POMPA AP(3294)	X

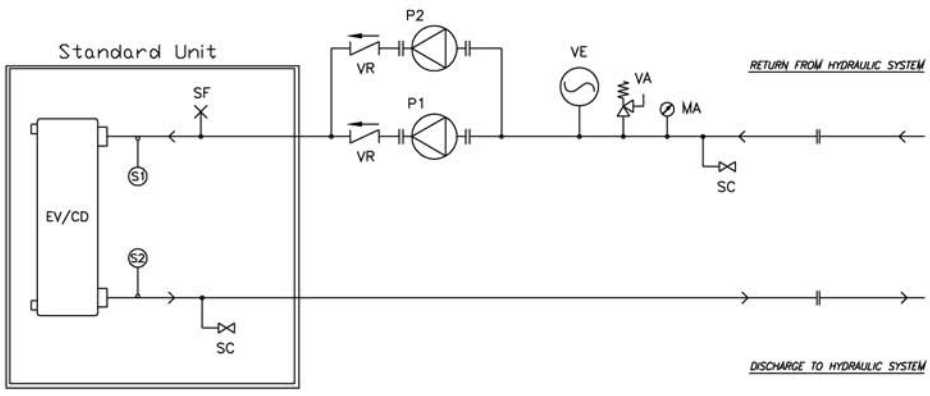
HYDRONIC GROUP

Configuration of hydronic unit with 1 pump per circuit



The hydronic group comprises:
- P Horizontal one-piece centrifuge pump
- MA Hydraulic circuit pressure gauge
- SC Discharge valve
- S1 Exchanger input water temperature probe
- S2 Exchanger outlet water temperature probe
- SF Air vent
- VA 3 bar safety valve
- VE one 8 litre expansion tank pre-pressurised to 1.5 bar

Configuration of hydronic unit with 2 pumps per circuit



The hydronic group comprises:
- P Horizontal one-piece centrifuge pump
- MA Hydraulic circuit pressure gauge
- SC Discharge valve
- S1 Exchanger input water temperature probe
- S2 Exchanger outlet water temperature probe
- SF Air vent
- VA 3 bar safety valve
- VE 8-litre expansion tanks, pre-pressurized to 1,5 bar
- VR Check valve (only if P2 is fitted)

The electrical panel of the unit is protected with Automatic circuit breakers.
The supply does not include the following accessories though these are recommended to ensure correct system operation:
- Pressure gauges upline and downline from the unit
- Flexible joints on piping
- On-off valves
- Outlet control thermometer
- Flow switch

HYDRONIC GROUP

Hydronic kit positioning

	Unit with 1 or 2 pumps (altogether)				Unit with 3 or 4 pumps (altogether)			
	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]
0152	650	/	/	150	650	/	/	220
0182	650	/	/	150	650	/	/	220
0202	650	/	/	150	650	/	/	220
0252	650	/	/	150	650	/	/	220
0262	650	/	/	150	650	/	/	220
0302	790	/	/	270	790	/	/	390
0352	790	/	/	270	790	/	/	385
0412	790	/	/	270	790	/	/	395
0452	790	/	/	275	790	/	/	395
0512	790	/	/	280	790	/	/	405
0552	790	/	/	275	790	/	/	405
0612	790	/	/	285	790	/	/	420
0604	740	/	/	300	740	/	/	540
0704	740	/	/	305	740	/	/	555
0804	740	/	/	305	740	/	/	555
0904	740	/	/	335	740	/	/	610
1004	740	/	/	340	740	/	/	620
1104	740	/	/	340	740	/	/	625
1204	740	/	/	340	740	/	/	625

extra L	Unit's extra length
extra W	Unit's extra operating width (NOT to be considered for transport)
extra H	Unit's extra height
extra WGT	Unit's extra weight (pumps and piping)

Condensing pressure control

NECS-W electronic control can manage the best suitable condensing pressure control device for every application: pressostatic valve, 2 or 3 way modulating valve and inverter on the condenser pumps.

Solutions	Draw / Well	Dry-Cooler	Geothermal probe
Pressostatic valve	X	---	---
2-way valve	X	---	---
3-way valve	---	X	X
Inverter	---	X	X

Table applicable only to valves and inverters supplied by Climaveneta.

	Pressostatic valve (1)	Modulating 2-way valve (1)			Modulating 3-way valve (2)		
size	k [-]	Dp max [kPa]	kvs [-]	k [-]	Dp max [kPa]	kvs [-]	k [-]
0152	3306	800	10	1000	400	16	391
0182	640	800	10	1000	400	16	391
0202	640	800	10	1000	400	25	160
0252	640	800	10	1000	400	25	160
0262	640	800	16	391	400	25	160
0302	640	800	16	391	400	40	63
0352	640	800	16	391	400	40	63
0412	227	800	25	160	400	40	62,5
0452	227	800	25	160	400	40	62,5
0512	226,8	800	25	160	400	63	25,2
0552	226,8	800	25	160	400	63	25,2
0612	97,7	800	40	62,5	400	63	25,2
0604	97,7	800	40	62,5	400	63	25,2
0704	97,7	800	40	62,5	400	63	25,2
0804	97,7	800	40	62,5	400	100	10,0
0904	97,7	800	40	62,5	400	100	10,0
1004	49,4	650	50	40,0	400	100	10,0
1104	49,4	650	50	40,0	400	100	10,0
1204	15,6	650	63	25,2	250	160	3,9

(1) Only suitable for condenser $\Delta T \geq 10°C$ (in case of other requirements please contact Climaveneta Sales Departme
(2) Only suitable for condenser $\Delta T \leq 5°C$ (in case of other requirements please contact Climaveneta Sales Departme
k : prssure drop coefficient

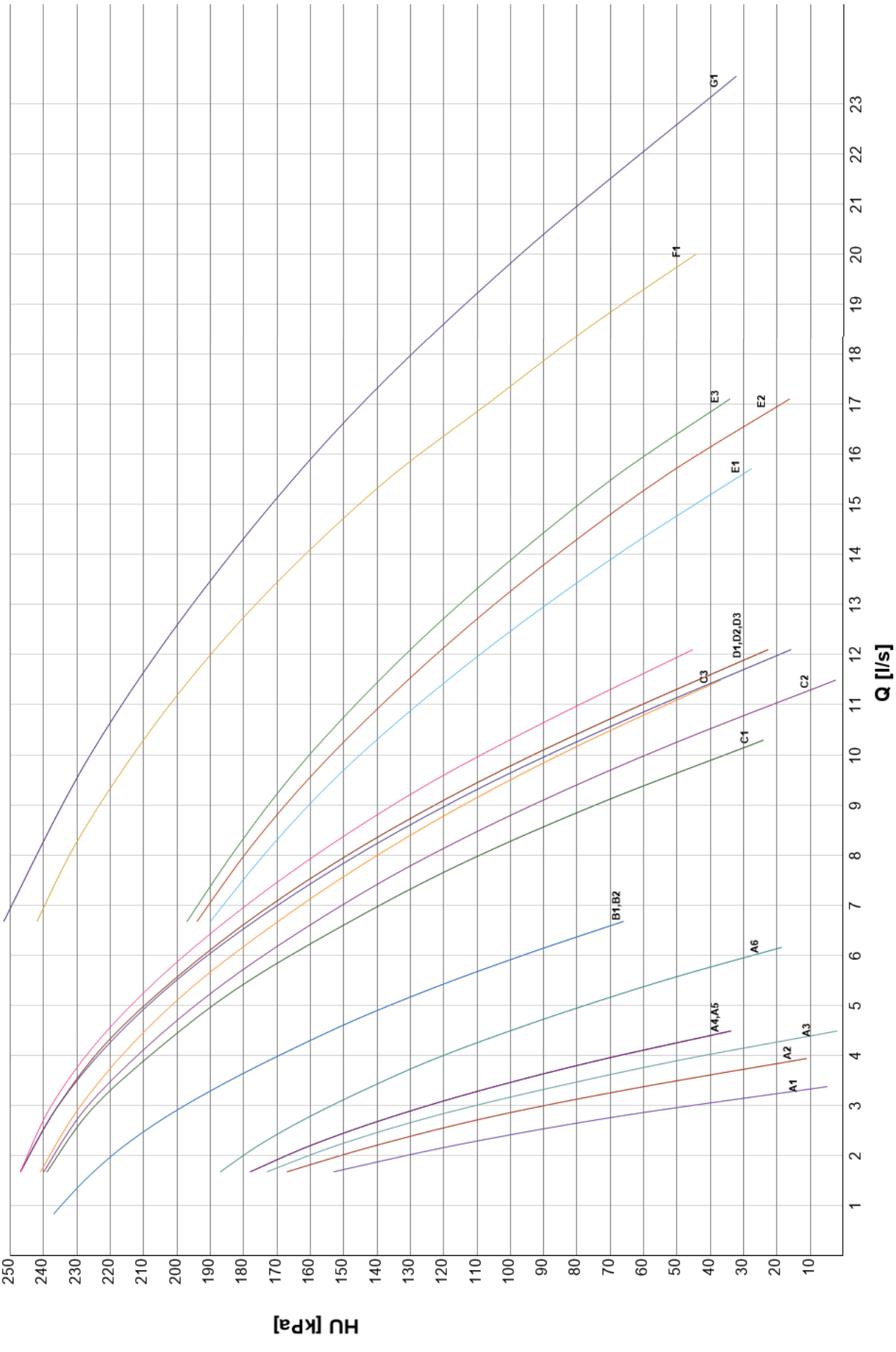
HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - KIT EVAP. 1 PUMP BP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,07	A1	DWC-V 300/1,1	2	3	1,10	127
0182		50,1	2,40	A2					129
0202		58,9	2,82	A3					120
0252		66,4	3,18	A4					115
0262		72,6	3,47	A5					99,1
0302		86,7	4,14	A6					114
0352		101	4,84	B1	DWC-V 300/1,5	2	4	1,50	141
0412		115	5,48	B2					117
0452		129	6,15	C1	DWC-V 500/2,2	2	5	2,20	162
0512		144	6,86	C2					154
0552		165	7,89	C3					143
0604		174	8,32	D1	3D 40-125/2.2	2	5	2,20	141
0612		186	8,91	D2					122
0704		203	9,69	D3					117
0804		228	10,9	E1	3D 50-125/3	2	6	3,00	129
0904		258	12,3	E2					117
1004		288	13,8	E3					101
1104		329	15,7	F1	3D 50-125/4	2	9	4,00	132
1204		371	17,7	G1	3D 65-125/5.5	2	10	5,50	133

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)

HEAT EXCHANGER USER SIDE - KIT EVAP. 1 PUMP BP

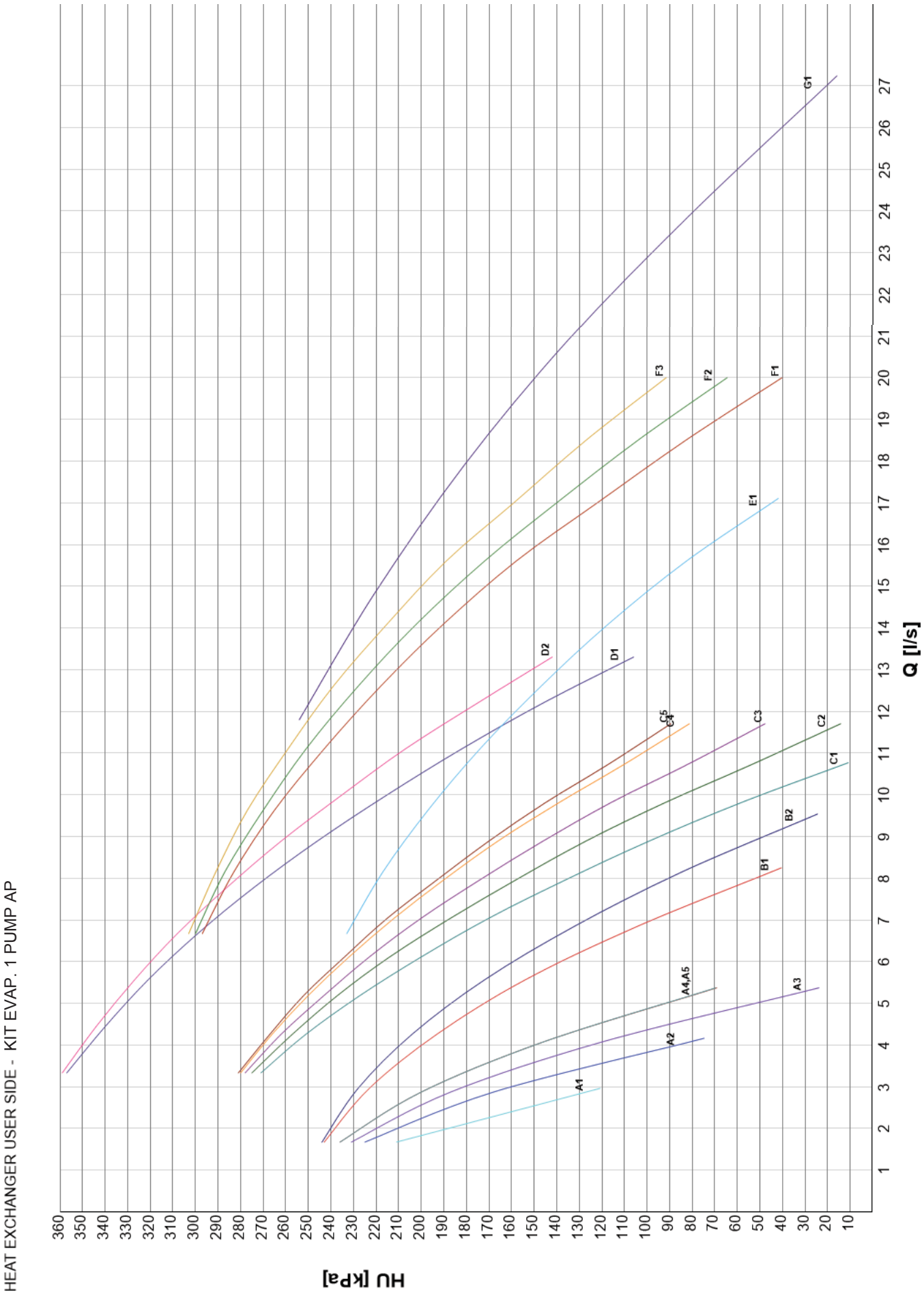


HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - KIT EVAP. 1 PUMP AP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,07	A1	DWC-V 500/3	2	6	3,00	188
0182		50,1	2,40	A2					194
0202		58,9	2,82	A3					189
0252		66,4	3,18	A4					188
0262		72,6	3,47	A5					175
0302		86,7	4,14	B1	3D 40-125/2.2	2	5	2,20	196
0352		101	4,84	B2					191
0412		115	5,48	C1	3D 40-160/3	2	6	3,00	219
0452		129	6,15	C2					212
0512		144	6,86	C3					204
0552		165	7,89	C4					192
0604		174	8,32	C5					185
0612		186	8,91	D1	3D 40-160/4	2	9	4,00	246
0704		203	9,69	D2					243
0804		228	10,9	E1	3D 50-125/4	2	9	4,00	178
0904		258	12,3	F1	3D 50-160/5.5	2	10	5,50	223
1004		288	13,8	F2					207
1104		329	15,7	F3					186
1204		371	17,7	G1	3D 65-125/7.5	2	14	7,50	183

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)



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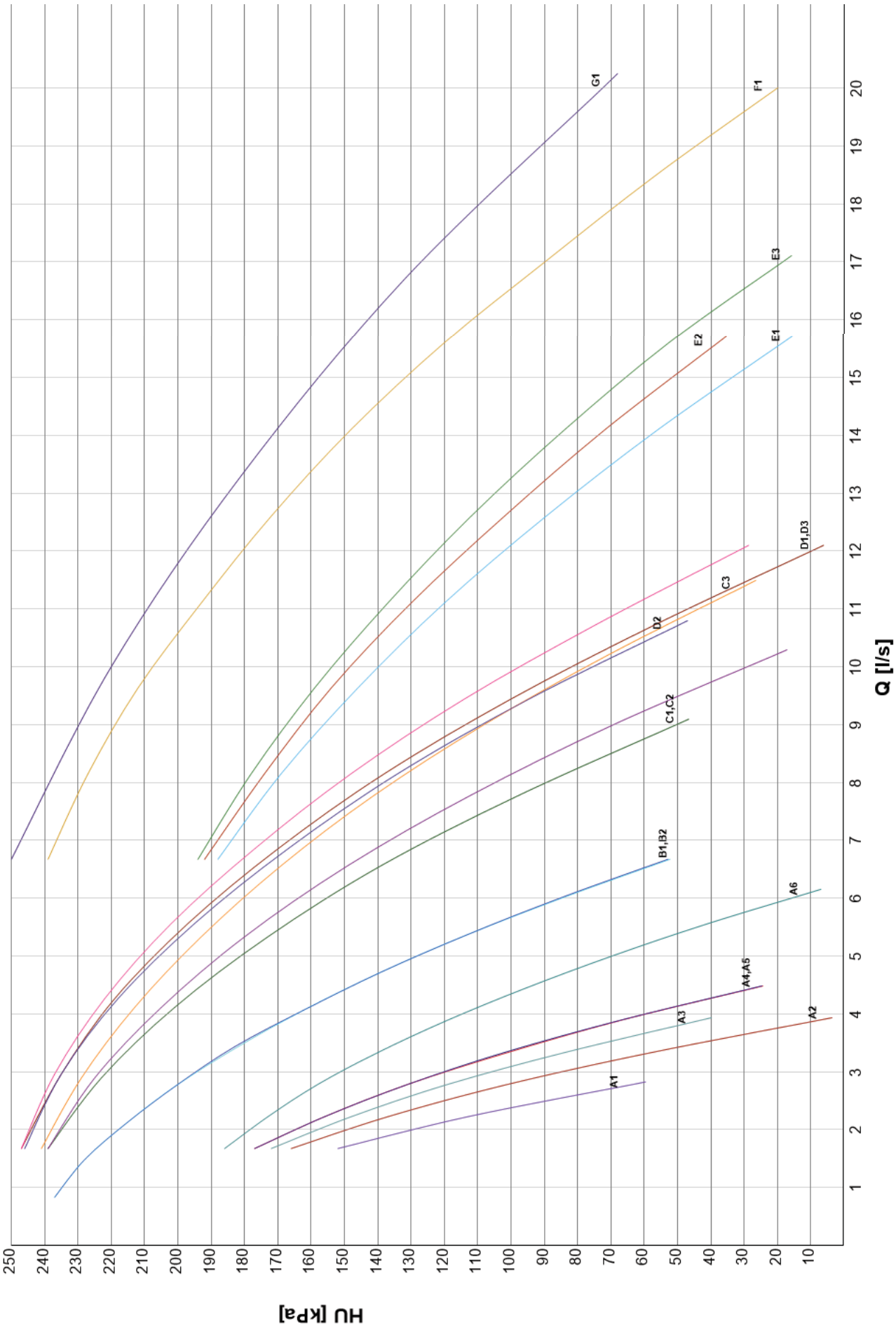
HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - KIT EVAP. 2 PUMPS BP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,07	A1	DWC-V 300/1,1	2	3	1,10	124
0182		50,1	2,40	A2					126
0202		58,9	2,82	A3					117
0252		66,4	3,18	A4					110
0262		72,6	3,47	A5					93,5
0302		86,7	4,14	A6					109
0352		101	4,84	B1	DWC-V 300/1,5	2	4	1,50	134
0412		115	5,48	B2					108
0452		129	6,15	C1	DWC-V 500/2,2	2	5	2,20	151
0512		144	6,86	C2					140
0552		165	7,89	C3					138
0604		174	8,32	D1	3D 40-125/2.2	2	5	2,20	133
0612		186	8,91	D2					111
0704		203	9,69	D3					107
0804		228	10,9	E1	3D 50-125/3	2	6	3,00	124
0904		258	12,3	E2					107
1004		288	13,8	E3					89,6
1104		329	15,7	F1	3D 50-125/4	2	9	4,00	117
1204		371	17,7	G1	3D 65-125/5.5	2	10	5,50	114

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)

HEAT EXCHANGER USER SIDE - KIT EVAP. 2 PUMPS BP

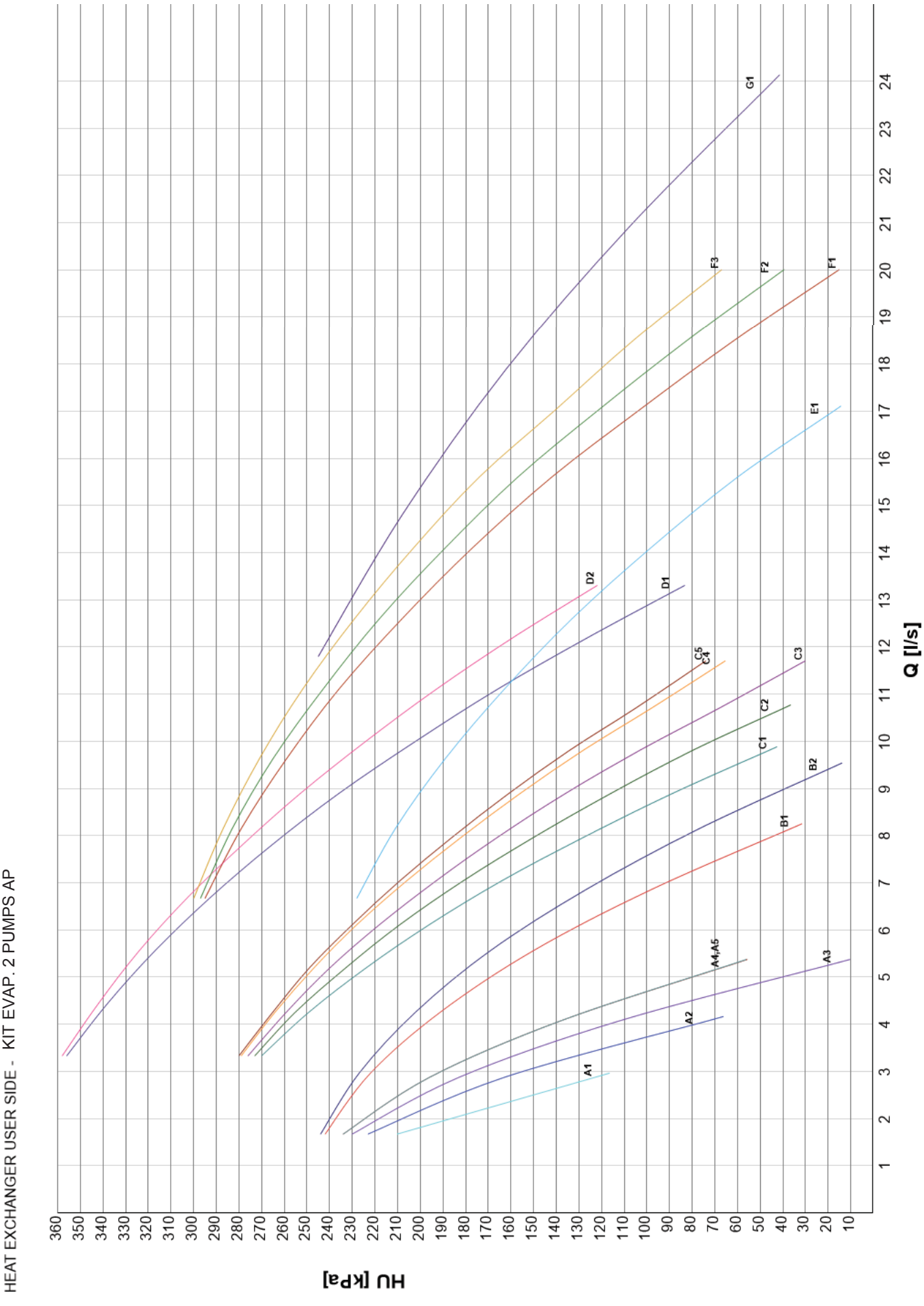


HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - KIT EVAP. 2 PUMPS AP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,07	A1	DWC-V 500/3	2	6	3,00	186
0182		50,1	2,40	A2					191
0202		58,9	2,82	A3					185
0252		66,4	3,18	A4					183
0262		72,6	3,47	A5					170
0302		86,7	4,14	B1	3D 40-125/2.2	2	5	2,20	194
0352		101	4,84	B2					188
0412		115	5,48	C1	3D 40-160/3	2	6	3,00	215
0452		129	6,15	C2					208
0512		144	6,86	C3					198
0552		165	7,89	C4					184
0604		174	8,32	C5					177
0612		186	8,91	D1	3D 40-160/4	2	9	4,00	235
0704		203	9,69	D2					232
0804		228	10,9	E1	3D 50-125/4	2	9	4,00	167
0904		258	12,3	F1	3D 50-160/5.5	2	10	5,50	213
1004		288	13,8	F2					195
1104		329	15,7	F3					171
1204		371	17,7	G1	3D 65-125/7.5	2	14	7,50	164

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)

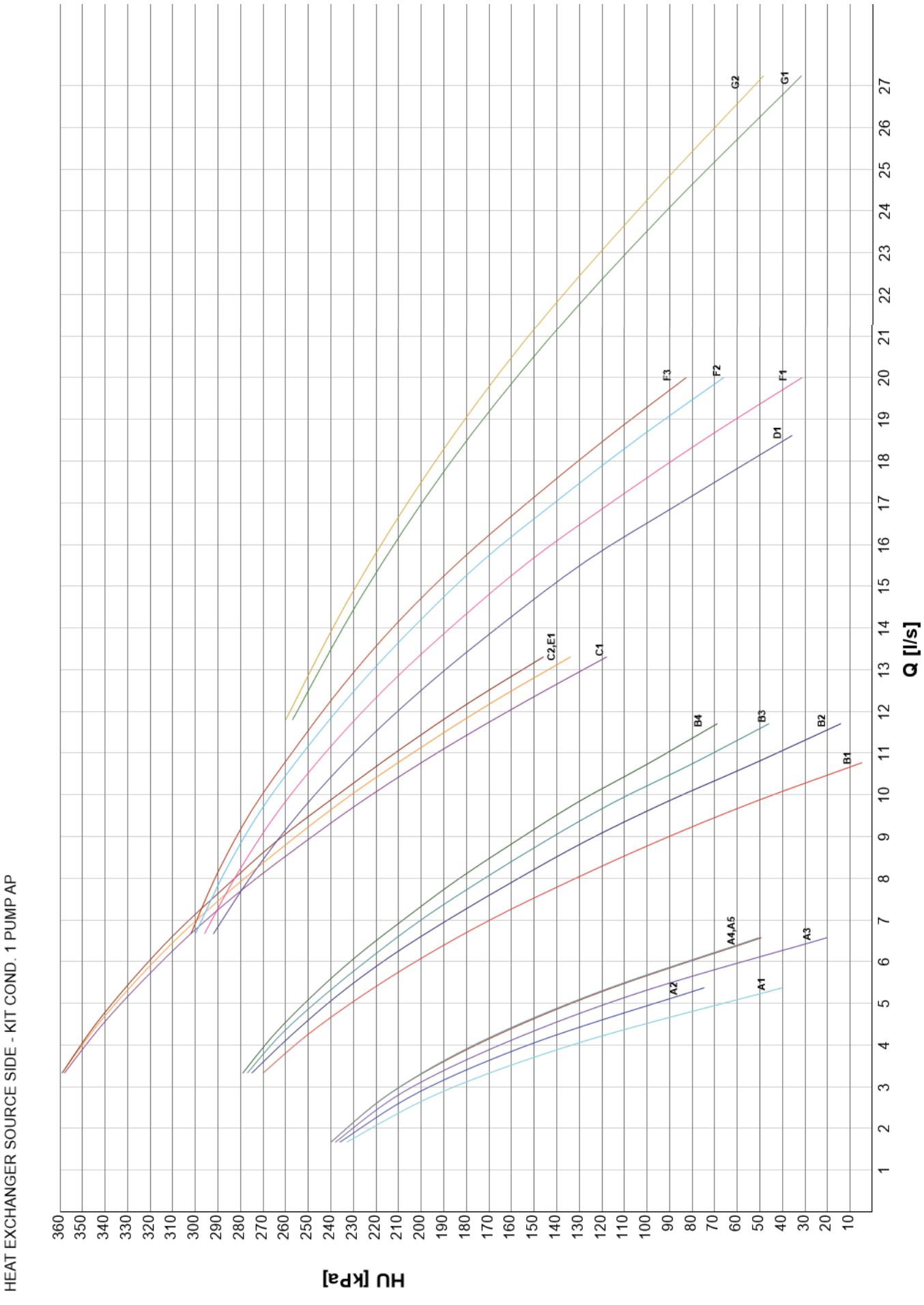

HEAT EXCHANGER USER SIDE - KIT EVAP. 2 PUMPS AP
HU [kPa]
Q [l/s]
A1
A2
A4,A5
A3
B1
B2
C1
C2
C3
C4
C5
D1
D2
E1
F1
F2
F3
G1

HYDRONIC GROUP

HEAT EXCHANGER SOURCE SIDE - KIT COND. 1 PUMP AP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,54	A1	DWC-V 500/3	2	6	3,00	205
0182		50,1	2,92	A2					199
0202		58,9	3,43	A3					188
0252		66,4	3,88	A4					181
0262		72,6	4,24	A5					167
0302		86,7	5,05	B1	3D 40-160/3	2	6	3,00	230
0352		101	5,90	B2					219
0412		115	6,69	B3					208
0452		129	7,50	B4					196
0512		144	8,36	C1	3D 40-160/4	2	9	4,00	264
0552		165	9,60	C2					241
0604		174	10,1	D1	3D 50-160/5.5	2	10	5,50	245
0612		186	10,8	E1	3D 40-160/4	2	9	4,00	216
0704		203	11,8	F1	3D 50-160/5.5	2	10	5,50	229
0804		228	13,3	F2					216
0904		258	15,0	F3					193
1004		288	16,8	G1	3D 65-125/7.5	2	14	7,50	202
1104		329	19,2	G2					178

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)

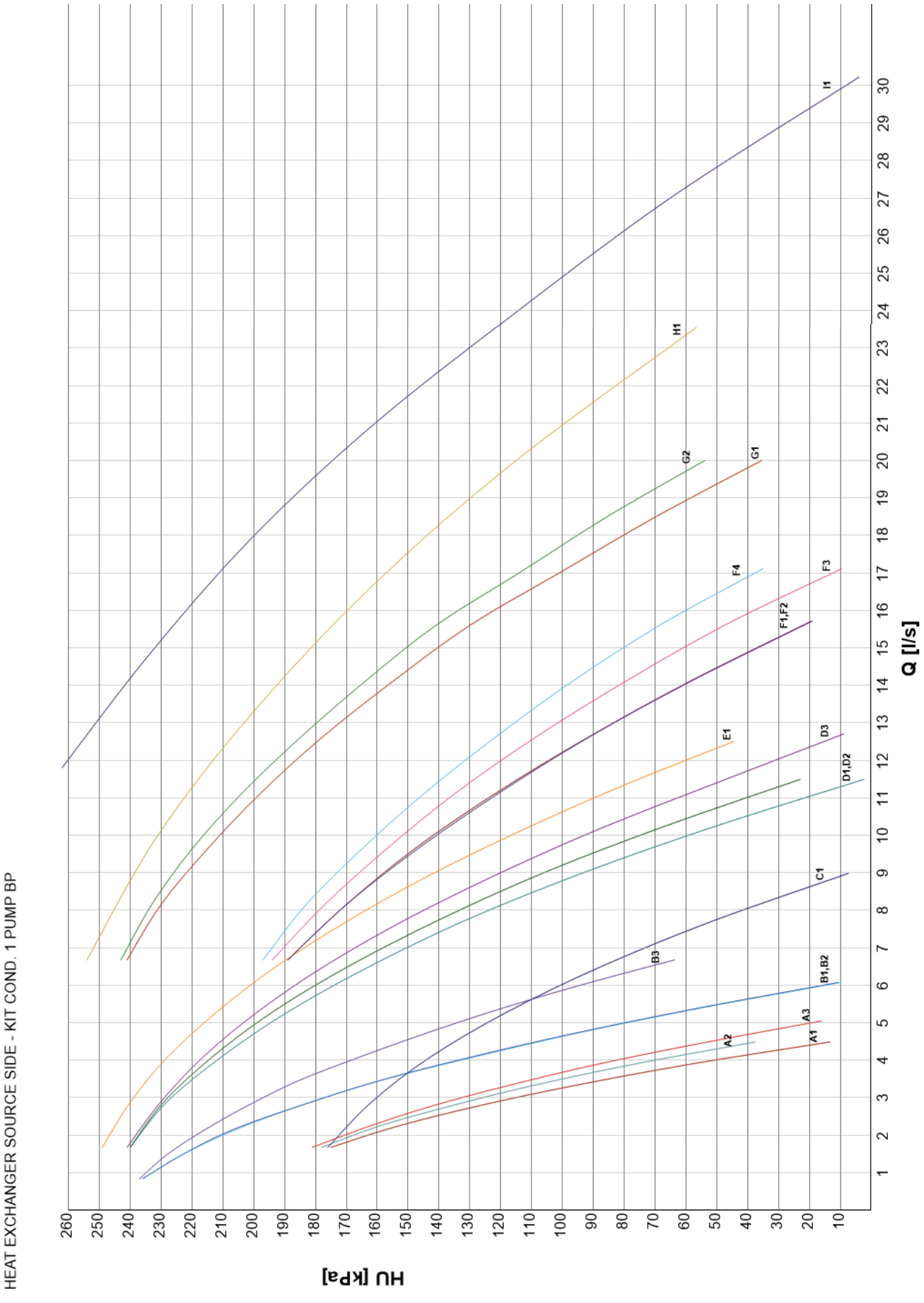

HEAT EXCHANGER SOURCE SIDE - KIT COND. 1 PUMP AP
Hu [kPa]
Q [l/s]
G2
G1
F3
F2
F1
D1
C2,E1
C1
B4
B3
B2
B1
A4,A5
A3
A2
A1

HYDRONIC GROUP

HEAT EXCHANGER SOURCE SIDE - KIT COND. 1 PUMP BP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,54	A1	DWC-V 300/1,1	2	3	1,10	139
0182		50,1	2,92	A2					130
0202		58,9	3,43	A3					113
0252		66,4	3,88	B1	DWC-V 300/1,5	2	4	1,50	139
0262		72,6	4,24	B2					121
0302		86,7	5,05	B3					132
0352		101	5,90	C1	DWC-V 500/1,5	2	4	1,50	103
0412		115	6,69	D1	DWC-V 500/2,2	2	5	2,20	158
0452		129	7,50	D2					146
0512		144	8,36	D3					136
0552		165	9,60	E1	DWC-V 500/3	2	6	3,00	127
0604		174	10,1	F1	3D 50-125/3	2	6	3,00	139
0612		186	10,8	F2					126
0704		203	11,8	F3					123
0804		228	13,3	F4					111
0904		258	15,0	G1	3D 50-125/4	2	9	4,00	139
1004		288	16,8	G2					120
1104		329	19,2	H1	3D 65-125/5.5	2	10	5,50	127
1204		371	21,6	I1	3D 65-125/7.5	2	14	7,50	151

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)

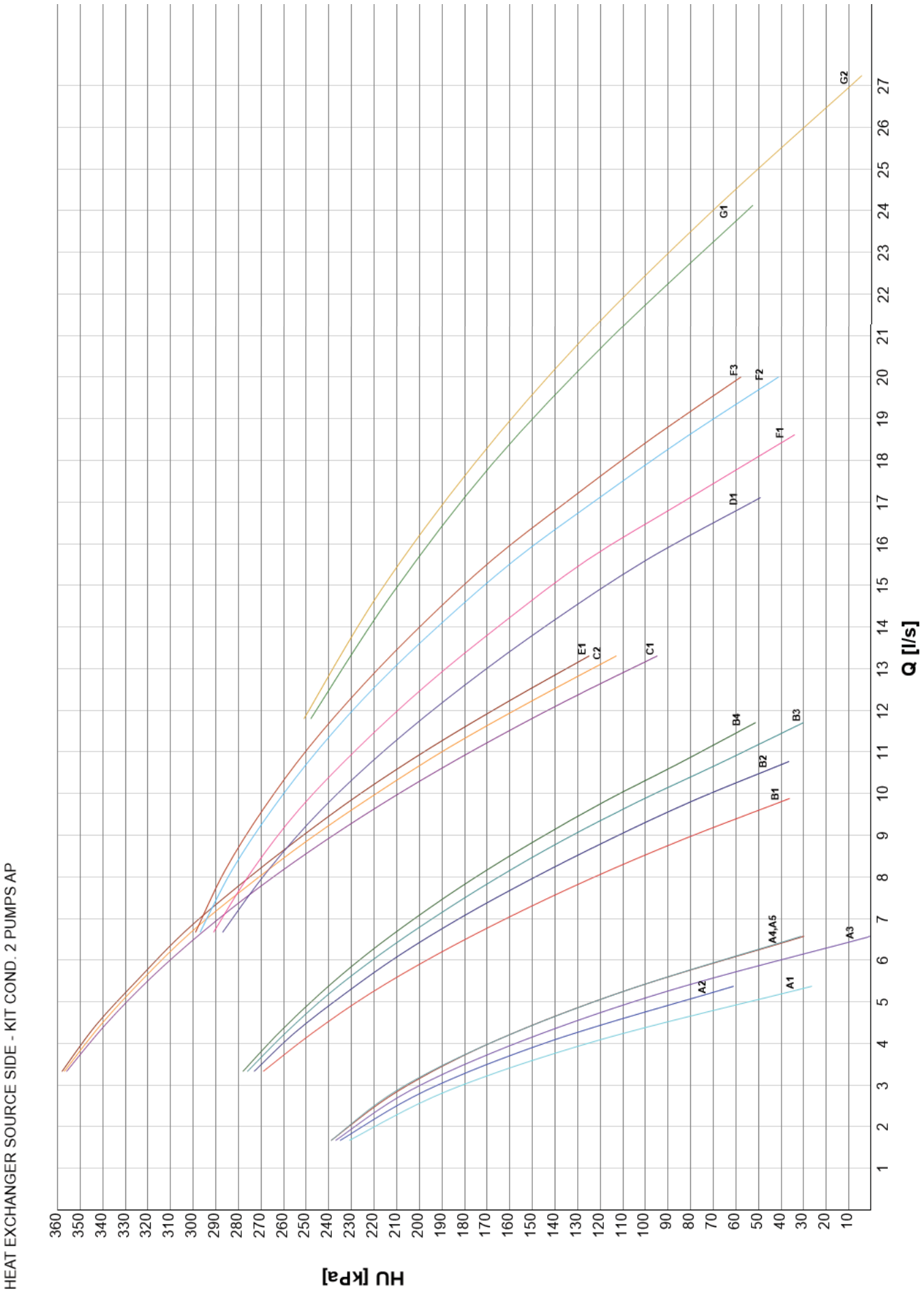

HEAT EXCHANGER SOURCE SIDE - KIT COND. 1 PUMP BP
HU [kPa]
Q [l/s]
I1
H1
G2
G1
F4
F3
F1,F2
E1
D3
D1,D2
C1
B3
B1,B2
A3
A2
A1

HYDRONIC GROUP

HEAT EXCHANGER SOURCE SIDE - KIT COND. 2 PUMPS AP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,54	A1	DWC-V 500/3	2	6	3,00	202
0182		50,1	2,92	A2					195
0202		58,9	3,43	A3					183
0252		66,4	3,88	A4					174
0262		72,6	4,24	A5					159
0302		86,7	5,05	B1	3D 40-160/3	2	6	3,00	226
0352		101	5,90	B2					215
0412		115	6,69	B3					203
0452		129	7,50	B4					189
0512		144	8,36	C1	3D 40-160/4	2	9	4,00	255
0552		165	9,60	C2					230
0604		174	10,1	D1	3D 50-160/5.5	2	10	5,50	233
0612		186	10,8	E1	3D 40-160/4	2	9	4,00	202
0704		203	11,8	F1	3D 50-160/5.5	2	10	5,50	214
0804		228	13,3	F2					205
0904		258	15,0	F3					179
1004		288	16,8	G1	3D 65-125/7.5	2	14	7,50	185
1104		329	19,2	G2					157

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)

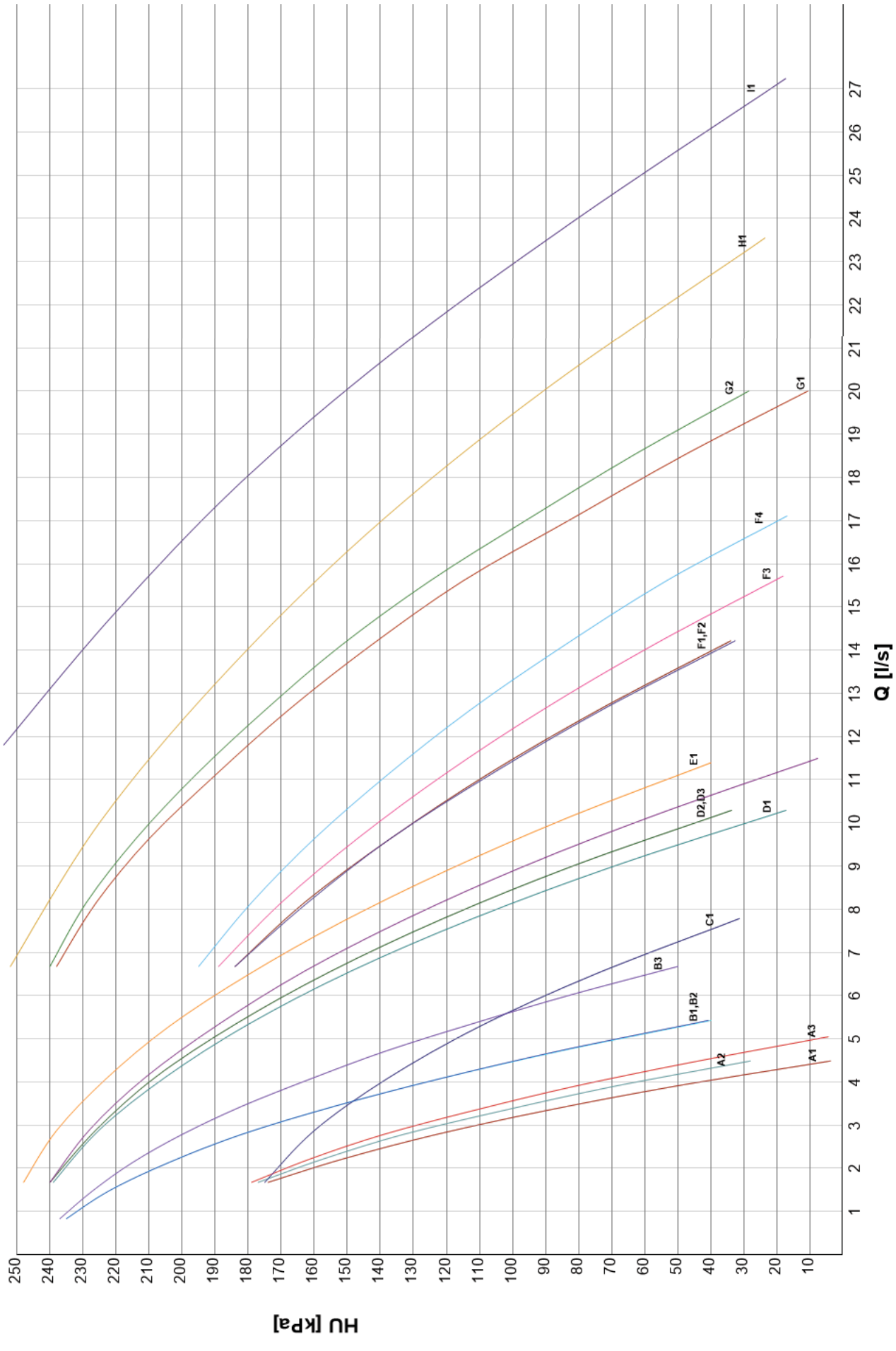

HEAT EXCHANGER SOURCE SIDE - KIT COND. 2 PUMPS AP
HU [kPa]
Q [l/s]
A1
A2
A3
A4,A5
B1
B2
B3
B4
C1
C2
D1
E1
F1
F2
F3
G1
G2

HYDRONIC GROUP

HEAT EXCHANGER SOURCE SIDE - KIT COND. 2 PUMPS BP

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
		[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]
0152		43,4	2,54	A1	DWC-V 300/1,1	2	3	1,10	136
0182		50,1	2,92	A2					126
0202		58,9	3,43	A3					107
0252		66,4	3,88	B1	DWC-V 300/1,5	2	4	1,50	132
0262		72,6	4,24	B2					113
0302		86,7	5,05	B3					124
0352		101	5,90	C1	DWC-V 500/1,5	2	4	1,50	93,0
0412		115	6,69	D1	DWC-V 500/2,2	2	5	2,20	145
0452		129	7,50	D2					129
0512		144	8,36	D3					116
0552		165	9,60	E1	DWC-V 500/3	2	6	3,00	99,1
0604		174	10,1	F1	3D 50-125/3	2	6	3,00	128
0612		186	10,8	F2					113
0704		203	11,8	F3					108
0804		228	13,3	F4					99,6
0904		258	15,0	G1	3D 50-125/4	2	9	4,00	125
1004		288	16,8	G2					102
1104		329	19,2	H1	3D 65-125/5.5	2	10	5,50	105
1204		371	21,6	I1	3D 65-125/7.5	2	14	7,50	123

(1) Values refer to nominal conditions
CH Cooling mode
Pf Cooling capacity unit (Cooling mode)
Pt Heating capacity unit (Heating mode)
Q Plant (side) exchanger water flow
F.L.I. Pump power input
F.L.A. Pump running current
HU Pump residual pressure head (Units with hydronic group without mains filter)


HEAT EXCHANGER SOURCE SIDE - KIT COND. 2 PUMPS BP
HU [kPa]
Q [l/s]
I1
H1
G2
G1
F4
F3
F1,F2
E1
D2,D3
D1
C1
B3
B1,B2
A2
A3
A1

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