

Climaveneta Technical Bulletin
i-NX 0151P - 0502P_201801_EN HFC R410A
ELCA_Engine ver.3.9.3.3



i-NX 0151P - 0502P

43,9-129 kW

| Chiller, air source for outdoor installation



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

- HIGH EFFICIENCY
- ErP READY
- VARIABLE PRIMARY FLOW (OPTION)
- INTEGRATED HYDRONIC MODULE
- ELECTRONIC EXPANSION VALVE SUPPLIED STANDARD
- ALUMINIUM MICRO-CHANNEL HEAT EXCHANGERS
- WIDE OPERATING RANGE



CERTIFICATIONS

Product certifications



Voluntary product certifications

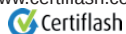


Check ongoing validity of certificate:

www.eurovent-certification.com

or

www.certiflash.com



System certifications



MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

Quality System complying with the requirements of UNI EN ISO 9001:2008 regulation

Environmental Management System complying with the requirements of UNI EN ISO 14001:2004 regulation

Occupational Health and Safety Management System complying with the requirements of BS OHSAS 18001:2007

1.1	PRODUCT PRESENTATION	pg.1.1.1 / 1.1.3
2.1	UNIT STANDARD COMPOSITION	pg.2.1.1 / 2.1.2
4.1	GENERAL TECHNICAL DATA	pg.4.1.1 / 4.1.2
5.1	OPERATING LIMITS	pg.5.1.1 / 5.1.2
6.1	HYDRAULIC DATA	pg.6.1.1 / 6.1.1
7.1	ELECTRICAL DATA	pg.7.1.1 / 7.1.2
8.1	FULL LOAD SOUND LEVEL	pg.8.1.1 / 8.1.2
9.1	DIMENSIONAL DRAWINGS	pg.9.1.1 / 9.1.2
10.1	HYDRONIC GROUP	pg.10.1.1 / 10.1.16

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The units highlighted in this publication contain HFC R410A [GWP₁₀₀ 2088] fluorinated greenhouse gases.

LEGEND

Functions



Cooling

Refrigerant



R-410A

Compressors



Scroll compressor

Fan



Axial fan

Exchangers



Plates

Other features



Eurovent



Inverter Driven Compressor



VPF



Electronic Expansion Valve

1.1 PRODUCT PRESENTATION

1.2 GREEN CERTIFICATION RELEVANT

Climaveneta, as a brand of Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. 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's 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



1.3 NOMENCLATURE

i-NX /D /SL 0302 P

	Heat Exchanger	P	- Plates Heat Exchanger
	Size	0151 0182-0502	- 1 Inverter compressors - 1 Inverter + 1on/off comp.
	Version	--- /SL	- Standard noise level - Super Low Noise
	Configuration	--- /D	- Without heat recovery - Partial heat recovery
	Name	NX	- Chiller, air source for outdoor installation
	Technology	i	- Inverter Driven Scroll compressor

PRODUCT PRESENTATION

Outdoor unit for the production of chilled water with fixed speed and variable speed (Inverter Driven) Scroll compressors, optimized for R410A in a single-circuit configuration, axial-flow fans, micro-channel full-aluminum air coils and electronic expansion valve as standard equipment.

Flexible and reliable unit; it easily adapts itself to different thermal load conditions thanks to the precise temperature control together with the use of inverter technology. The high performance's level, both full and partial load, is achieved thanks to the accurate unit's design and to the use of fixed speed motor together with variable speed (inverter) motor.

1.3 HIGH EFFICIENCY

Unit with high efficiency and reduced energy consumption, thanks to the inverter technology, contributing to lower operating costs and therefore achieving a quick return on investment.

1.4 ErP READY

The highest level of efficiency at part load, thanks to the inverter technology, can meet and exceed the minimum seasonal efficiency for cooling, SEER, according with the eco-sustainable design requirements for all products using energy. The units already comply with the minimum seasonal energy efficiency requirements that will start from 2021. For this reason, the unit represents the best choice for all the hydronic application on the residential and commercial markets. The unit is suitable also for industrial market, satisfying the seasonal energy performance ratio SEPR.

1.5 VARIABLE PRIMARY FLOW (OPTION)

Energy saving due to variable pump speed management based on load demand and the variable flow assures the functioning of the units also with critical working conditions.

1.6 INTEGRATED HYDRONIC MODULE

The built-in hydronic module already contains the main water circuit components; it is available as option with single or twin in-line pump, for achieving low or high head, fixed or variable speed and buffer tank.

1.7 ELECTRONIC EXPANSION VALVE SUPPLIED STANDARD

The use of the electronic expansion valve generates considerable benefits, especially in cases of variable demand and at different working conditions. It guaranteed energy saving due to efficiency optimization in various different working conditions. The electronic thermostatic valve allows you to obtain speed in reaching machine stability and an extension of the operating limits.

1.8 ALUMINIUM MICRO-CHANNEL HEAT EXCHANGERS

This new range of chiller uses aluminum micro-channel condensers that ensure a premium level of efficiency. This solution also allows to reduce the refrigerant charge with respect to traditional copper/aluminium coils and to reduce the weight of the unit.

1.9 WIDE OPERATING RANGE

Full load operation is ensured with outdoor air temperature up to 48°C during summer. Dedicated accessories allow the unit operation down to -20°C of outdoor air temperature during winter.

Production of evaporator leaving water temperature from -10°C to 20°C.

2.1 UNIT STANDARD COMPOSITION

2.2 Chiller, air source for outdoor installation

Outdoor unit for the production of chilled water with fixed speed and variable speed (Inverter Driven) Scroll compressors, optimized for R410A in a single-circuit configuration, axial-flow fans, micro-channel full-aluminum air coils and electronic expansion valve as standard equipment.

Flexible and reliable unit; it easily adapts itself to different thermal load conditions thanks to the precise temperature control together with the use of inverter technology. The high performance's level, both full and partial load, is achieved thanks to the accurate unit's design and to the use of fixed speed motor together with variable speed (inverter) motor.

- The unit is supplied fully refrigerant charged and factory tested. On site installation only requires power and hydraulic connection.

2.3 Structure

Structure in hot-galvanised shaped sheet steel with a suitable thickness. All parts polyester-powder painted RAL 7035. The self-supporting frame is built to guarantee maximum accessibility for servicing and maintenance operations.

2.4 Panelling

The external paneling made from hot galvanised metal plate and painted with epoxy powder coat RAL 7035. The panels are easy to remove for quick and easy access to the inside components from either side of the unit.

2.5 Compressors

Hermetic scroll compressors driven by constant-speed and variable-speed motors (inverters) designed to ensure high performance in any load condition (size 0151 only, with single inverter driven compressor in a single-circuit configuration).

The logic adjusting the use of resources (1+i) has been specifically worked out so that, when the unit is started, the inverter compressor is always the first one to start, with consequent reduction of the starting currents, and it is also the last one to cut out.

In this way, the requested cooling capacity is continuously supplied and the perfect stability of outlet water temperature is ensured.

Added to this, depending on the required load condition, the logic privileges the most efficient combination between constant-speed compressor and variable-speed compressor (thanks to the continuous adjustment of the inverter compressor and to the step adjustment of the constant-speed compressor).

2.6 Constant-speed compressor

Hermetic scroll compressors complete with an oil sump heater, electronic overheating protection with centralised manual reset and a two-pole electric motor.

2.7 Variable-speed compressor

The inverter scroll compressor uses a brushless Interior Permanent Magnet (IPM) design to give you higher efficiency across a wider range of applications and with an oil sump heater.

Inverter logic ensures a soft start that reduces inrush current. The frequency converter is designed with built-in harmonic filters, making it easy to install in the electrical panel while complying with industry standards.

Hybrid manifolding systems use the dynamic system for oil balance. The suction connections between the two individual compressors are interconnected by a special suction separator design that allows most of oil feed into variable speed compressors.

An optical-electrical oil level sensor fixed in a variable speed compressor monitors the compressor oil level. If the oil level drops below the limit, the main controller W3000TE activates the oil management logic to protect the compressors.

2.8 Refrigerant circuit

Main components of the cooling circuit:

- R410A refrigerant
- liquid line solenoid valve
- electronic expansion valve
- high and low pressure safety valve
- refrigerant line sight glass with humidity indicator
- safety switching device for limiting the pressure
- high and low pressure transducers
- crankcase heater on each compressor

2.9 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 -10°C.

2.10 Source side heat exchanger

Microchannel coils ideally positioned on a "V" block structure to optimize airflow and heat transfer. Made entirely in aluminum, the coils are not subjected to galvanic corrosion.

Channel small section favor refrigerant fluid turbulence, which enhances the heat exchange. Tube geometry maximize the surface touched by the air, thus allowing compact dimension and refrigerant charge reduction.

2.11 Fan section source side

Axial electric fans, protected to IP 54, with external rotor and plastic-coated aluminium blades. Housed in aerodynamic hoods complete with safety grille. Electric motor with built-in overload protection.

Fans diameter: 450 mm, 800 mm or 910 mm according to the unit's size and version.

Electric motor with 4 poles or 6 poles according to the unit's size and version.

-Variable Speed low-temperature Device (DVV) to control condensation adjusting the rotational speed by phase-cut devices, is standard for the models i-NX 0151-0302 and i-NX /SL 0151-0262.

-Variable Speed low-temperature Device (DVV) to control condensation adjusting the rotational speed with voltage steps (auto-transformer) is standard for the models i-NX 0352-0502 and i-NX /SL 0302-0502.

2.12 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)
- numbered cables (2 compressor units)
- terminals for cumulative alarm block
- remote ON/OFF terminals
- remote demand limit contact
- relays for remote pump(s) activation for both circuits (only for units without hydronic pumps)
- Electronic control W3000TE
- Power supply 400V/3ph/50Hz+N+PE for units:
 - versions i-NX, sizes 0151P..0302P
 - versions i-NX /SL, sizes 0151P..0262P
- Power supply 400V/3ph/50Hz+PE for units:
 - versions i-NX, sizes 0352P..0502P
 - versions i-NX /SL, sizes 0302P..0502P

2.13 Certification and applicable directives

The unit complies with the following directives and relative amendments:

- CE Declaration of conformity certificate for the European Union
- EAC Product quality certificate for Russian Federation
- Machine directive 2006/42/EC
- 2014/30/EC EMC Directive
- 2014/35/EC Low Voltage Directive
- PED Directive 2014/68/EC
- ErP Directive 2009/125/EC
- ISO 9001 Company's Quality Management System certification
- ISO 14001 Company's Environmental Management System certification

2.14 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.

2.15 Electronic control W3000TE

The brand new W3000TE controller offers advanced functions and

UNIT STANDARD COMPOSITION

algorithms.

The keypad W3000 Compact, as standard equipment, features function controls and a complete LCD display for viewing data and activating the unit, via a multilevel menu, with settable display language. In addition to or as an alternative, the KiPlink is available - Keyboard In Your Pocket - is the innovative user interface based on WiFi technology that allows one to operate on the unit directly from the smartphone or tablet. Using KiPlink, it is possible to turn the unit on and off, adjust the set-point, plot the main operating variables, monitor in detail the status of the refrigerant circuits, the compressors, the fans and the pumps (if present) and display and reset the possible alarms.

The regulation features the continuous modulation of capacity, based on sequential adjustment + DIP referring to the leaving water temperature.

Diagnostics include complete alarm management, with "blackbox" functions (via PC) and alarm log (display or PC) for best analysis of unit behaviour.

The built-in clock can be used to create an operating profile containing up to 4 typical days and 10 time bands, essential for efficient programming of energy production.

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 is available with different options, using proprietary devices or by integration into third party systems using ModBus, BACnet, BACnet-over-IP and Echelon LonWorks protocols.

A dedicated wall-mounted keypad can be used for remote control of all the functions.

Optionally (VPF package), capacity modulation can be integrated with hydraulic flow modulation, thanks to inverter-driven pumps and to specific resources for the hydraulic circuit.



2.15 KiPlink - Keyboard In your Pocket (option 6196)

KiPlink - Keyboard In Your Pocket - is the innovative user interface based on WiFi technology that allows one to operate on the unit directly from the smartphone or tablet. Using KiPlink, it is possible to turn the unit on and off, adjust the set-point, plot the main operating variables, monitor in detail the status of the refrigerant circuits, the compressors, the fans (if present) and the pumps (if present) and display and reset the possible alarms.

2.15 Climatic curve (option 5941)

Available as option an outside air temperature probe to control the system water temperature set point based on cooling and heating (reversible units) climatic curves.

2.15 U.L.C. - User limit control (option 4960)

Guaranteed the start-up of the units with the option U.L.C. even when the critical working condition could generate an alarm.

The W3000TE controller can manage a 3way mixing valve (not provided from MEHITS) by 0-10V signal for ensuring a dynamic control of the water temperature on user heat exchanger according to the operating limits allowed. This ensures the start-up and correct functioning of the unit into the envelope, also even critical whether condition.

2.15 Night mode (option 1430)

Night mode is a system setting to limit maximum noise level of the unit. Noise level is reduced limiting maximum compressor frequency and fan speed.



2.16 Versions

- Basic version

Standard unit

/SL - Super Low noise

This configuration features a special soundproofing for the compressor compartment and the pumps (if present), a reduced fan speed and an oversized condensing section.

The fan speed is automatically increased in case of particularly tough environmental conditions.

2.17 Configurations

- , standard unit

Standard unit for production of chilled water

/D, unit with partial heat recovery

Unit for the production of chilled water, equipped with an auxiliary heat exchanger (desuperheater) on the compressor discharge for superheat recovery. The recovered heat is approximately the 20% of the total cooling capacity and can be used for domestic hot water production or other secondary uses, such as the integration of an existing boiler.

2.18 Fan structure and control

The following table shows the fan diameters (mm), the fan motor type and the standard ventilation control device of all the available NX sizes/version:

Version	0151	0182	0202	0262	0302	0352	0402	0502
- Base	Ø450 4 poles	Ø450 4 poles	Ø450 4 poles	Ø450 4 poles	Ø450 4 poles	Ø800 6 poles	Ø800 6 poles	Ø800 6 poles
/SL	Ø450 4 poles	Ø450 4 poles	Ø450 4 poles	Ø450 4 poles	Ø800 6 poles	Ø800 6 poles	Ø910 6 poles	Ø910 6 poles

DVV (p.c.)	Fan speed controlled by phase-cut devices
DVV (a.t.)	Fan speed controlled by autotransformers

Note:

The unit's operating limit depends on its ventilation control.

Optional devices are available to enlarge the operating limits.

Please refer to the dedicated bulletin section and to ElcaSTUDIO selection software.

4.1 GENERAL TECHNICAL DATA

i-NX

[SI System]

i-NX			0151P	0182P	0202P	0262P	0302P	0352P	0402P	0502P
Power supply		V/ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3/50	400/3/50	400/3/50
PERFORMANCE										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)	kW	43,9	52,9	63,1	72,1	83,8	101	120	129
Total power input	(1)	kW	15,7	18,8	21,4	25,0	29,2	35,2	41,9	46,8
EER	(1)	kW/kW	2,80	2,81	2,95	2,88	2,87	2,87	2,86	2,76
ESEER	(1)	kW/kW	4,56	4,55	4,51	4,54	4,51	4,66	4,58	4,53
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)	kW	43,6	52,6	62,7	71,7	83,4	100	119	129
EER	(1)(2)	kW/kW	2,73	2,75	2,88	2,82	2,82	2,82	2,80	2,72
ESEER	(1)(2)	kW/kW	4,27	4,19	4,17	4,23	4,24	4,36	4,27	4,25
Cooling energy class		C	C	C	C	C	C	C	C	C
COOLING WITH PARTIAL RECOVERY										
Cooling capacity	(3)	kW	45,5	54,8	65,5	74,8	87,0	105	124	134
Total power input	(3)	kW	15,2	18,2	20,7	24,1	28,2	34,0	40,6	45,3
Desuperheater heating capacity	(3)	kW	13,3	15,7	17,7	20,9	24,4	29,3	33,8	38,2
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)	l/s	2,10	2,53	3,02	3,45	4,01	4,82	5,73	6,18
Pressure drop	(1)	kPa	37,2	41,2	42,3	39,4	35,0	36,2	42,9	38,9
PARTIAL RECOVERY USER SIDE IN REFRIGERATION										
Water flow	(3)	l/s	0,64	0,76	0,86	1,01	1,18	1,41	1,63	1,85
Pressure drop	(3)	kPa	9,46	13,1	16,8	11,5	15,7	22,5	21,2	27,1
REFRIGERANT CIRCUIT										
Compressors nr.		N°	1	2	2	2	2	2	2	2
Number of capacity steps		N°	0	0	0	0	0	0	0	0
No. Circuits		N°	1	1	1	1	1	1	1	1
Regulation			STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS							
Min. capacity step		%	30	22	19	22	19	23	20	18
Refrigerant			R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7,00	7,20	8,90	9,40	9,50	12,5	12,9	13,5
Oil charge		kg	3,50	6,10	6,40	6,70	7,00	13,4	13,4	13,4
Rc (ASHRAE)	(4)	kg/kW	0,16	0,14	0,14	0,13	0,11	0,13	0,11	0,11
FANS										
Quantity		N°	4	4	5	5	6	2	2	2
Air flow		m³/s	3,77	5,07	6,57	6,57	7,66	9,08	11,53	11,53
Fans power input		kW	0,20	0,30	0,30	0,30	0,30	1,20	2,00	2,00
NOISE LEVEL										
Sound Pressure	(5)	dB(A)	51	52	53	53	54	55	57	57
Sound power level in cooling	(6)(7)	dB(A)	83	84	85	85	86	87	89	89
SIZE AND WEIGHT										
A	(8)	mm	2000	2000	2625	2625	2625	3250	3250	3250
B	(8)	mm	1350	1350	1350	1350	1350	1350	1350	1350
H	(8)	mm	2070	2070	2070	2070	2070	2170	2170	2170
Operating weight	(8)	kg	600	660	750	780	810	1060	1070	1080

Notes:

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

2 Values in compliance with EN14511-3:2013.

3 Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger air (in) 35,0°C; Plant (side) heat exchanger recovery water (in/out) 40,0°C/45,0°C.

4 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).

5 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

6 Sound power on the basis of measurements made in compliance with ISO 9614.

7 Sound power level in cooling, outdoors.

8 Unit in standard configuration/execution, without optional accessories.

- Not available

Certified data in EUROVENT

GENERAL TECHNICAL DATA

i-NX / SL

[SI System]

i-NX / SL			0151P	0182P	0202P	0262P	0302P	0352P	0402P	0502P
Power supply		V/ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)	kW	42,6	51,2	60,1	68,1	81,2	96,7	115	124
Total power input	(1)	kW	14,4	17,8	20,9	24,5	28,3	33,9	39,3	44,3
EER	(1)	kW/kW	2,96	2,88	2,88	2,78	2,87	2,85	2,93	2,81
ESEER	(1)	kW/kW	4,48	4,58	4,49	4,55	4,54	4,75	4,78	4,70
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)	kW	42,3	50,9	59,8	67,7	80,8	96,3	115	124
EER	(1)(2)	kW/kW	2,89	2,81	2,81	2,73	2,82	2,80	2,88	2,76
ESEER	(1)(2)	kW/kW	4,21	4,26	4,20	4,25	4,26	4,48	4,50	4,43
Cooling energy class		C	C	C	C	C	C	C	C	C
COOLING WITH PARTIAL RECOVERY										
Cooling capacity	(3)	kW	44,2	53,1	62,3	70,6	84,3	100	119	129
Total power input	(3)	kW	13,9	17,2	20,2	23,6	27,3	32,8	38,0	42,8
Desuperheater heating capacity	(3)	kW	12,0	15,0	17,6	20,8	23,6	28,3	33,0	37,5
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)	l/s	2,04	2,45	2,87	3,26	3,88	4,62	5,50	5,95
Pressure drop	(1)	kPa	35,1	38,7	38,3	35,2	32,9	33,2	39,6	36,0
PARTIAL RECOVERY USER SIDE IN REFRIGERATION										
Water flow	(3)	l/s	0,58	0,72	0,85	1,00	1,14	1,37	1,59	1,81
Pressure drop	(3)	kPa	7,63	12,0	16,5	11,3	14,7	21,1	20,2	26,0
REFRIGERANT CIRCUIT										
Compressors nr.		N°	1	2	2	2	2	2	2	2
Number of capacity steps		N°	0	0	0	0	0	0	0	0
No. Circuits		N°	1	1	1	1	1	1	1	1
Regulation			STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS STEPLESS							
Min. capacity step		%	30	23	20	23	20	24	21	19
Refrigerant			R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	8,10	8,30	8,70	9,20	11,8	12,3	14,7	15,2
Oil charge		kg	3,50	6,10	6,40	6,70	7,00	13,4	13,4	13,4
Rc (ASHRAE)	(4)	kg/kW	0,19	0,16	0,15	0,14	0,15	0,13	0,13	0,12
FANS										
Quantity		N°	5	5	6	6	2	2	2	2
Air flow		m³/s	4,28	5,03	5,73	5,73	7,37	8,41	10,47	10,47
Fans power input		kW	0,20	0,20	0,20	0,20	0,90	1,10	1,15	1,15
NOISE LEVEL										
Sound Pressure	(5)	dB(A)	45	45	46	46	47	48	50	50
Sound power level in cooling	(6)(7)	dB(A)	77	77	78	78	79	80	82	82
SIZE AND WEIGHT										
A	(8)	mm	2625	2625	2625	2625	3250	3250	3875	3875
B	(8)	mm	1350	1350	1350	1350	1350	1350	1350	1350
H	(8)	mm	2070	2070	2070	2070	2170	2170	2170	2170
Operating weight	(8)	kg	700	760	790	820	980	1090	1180	1200

Notes:

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

2 Values in compliance with EN14511-3:2013.

3 Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger air (in) 35,0°C; Plant (side) heat exchanger recovery water (in/out) 40,0°C/45,0°C.

4 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).

5 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

6 Sound power on the basis of measurements made in compliance with ISO 9614.

7 Sound power level in cooling, outdoors.

8 Unit in standard configuration/execution, without optional accessories.

- Not available

Certified data in EUROVENT

i-NX 0151P - 0502P

-

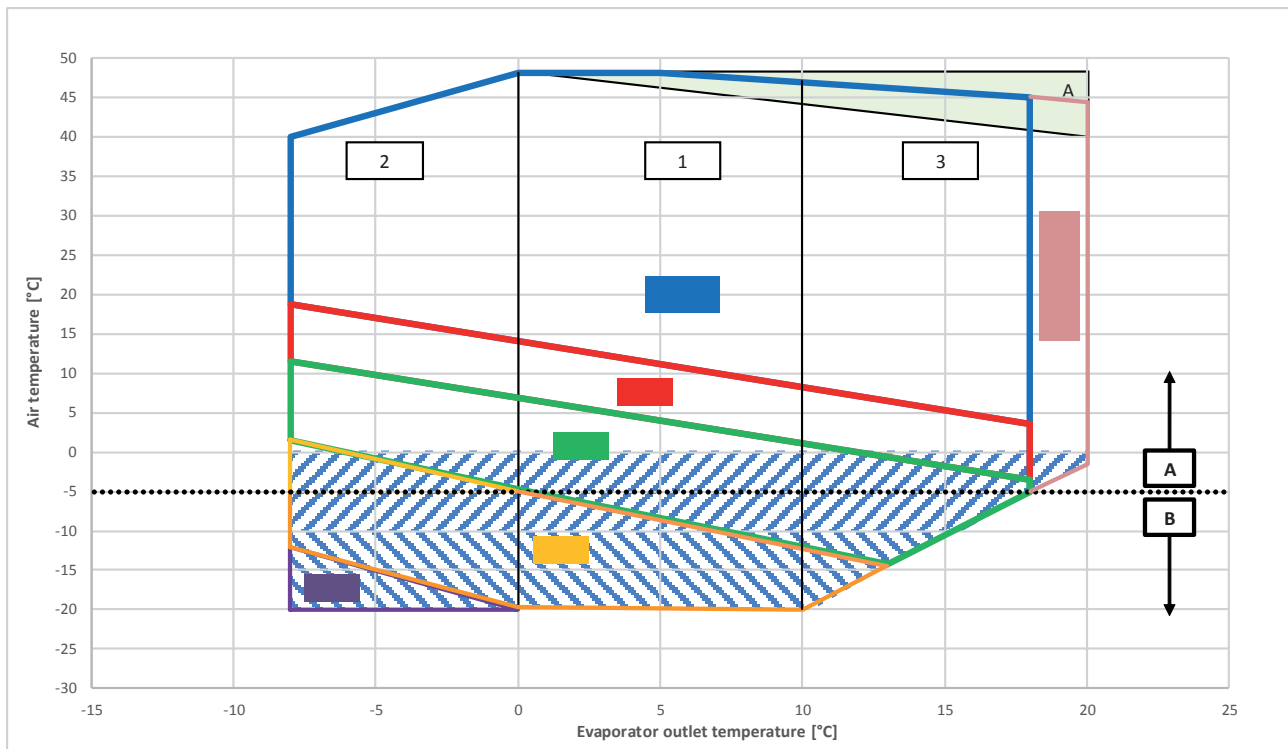
Suitable device for wind protected installations
For windy installations RFQ

NOTES

RFQ: Request for quotation

Wind protected installations: wind speed lower than 0,5 m/s - 1,64 ft/s)

i-NX /D 0151-0502P _ i-NX /D /SL 0151-0502P (WITH PARTIAL HEAT RECOVERY)



- 1 Evaporator outlet water temperature: $0^{\circ}\text{C} \leq \text{TH2O} \leq 10^{\circ}\text{C}$ (codice 87B), standard
- 2 Evaporator outlet water temperature: $-10^{\circ}\text{C} \leq \text{TH2O} < 0^{\circ}\text{C}$ (codice 87A)
- 3 Evaporator outlet water temperature: $10^{\circ}\text{C} < \text{TH2O} \leq 18^{\circ}\text{C}$ (codice 87C)
- 1 2 EEV for double water set point (codice 87D)
- DVV device (code 802)
Standard for i-NX and i-NX /SL
- DWF device (code 819)
- DVV2F device (code 821)
version i-NX 0151-0182-0202-0262-0302
version i-NX /SL 0151-0182-0202-0262
- DWF + DBF device (code 823)
version i-NX 0352-0402-0502
version i-NX /SL 0302-0352-0402-0502
- DVV2F + DBF device (code 824)
- RFQ device for windy installations or for wind protected installations
- RFQ for extending operating limits, evaporator leaving water temperature up to 20°C
- Antifreeze heaters on pipes, pumps*, and buffer tank* (code 2432 or 2433)
*if present
- Extra insulation on heat exchangers, pipes, pumps* and buffer tank* (RFQ)
Extra antifreeze heaters on heat exchangers, pipes, pumps* and buffer tank* (RFQ)
*if present
- A Version /SL: non silent mode operating area
- A Suitable device for wind protected installations or for windy installations
- B Suitable device for wind protected installations
For windy installations RFQ

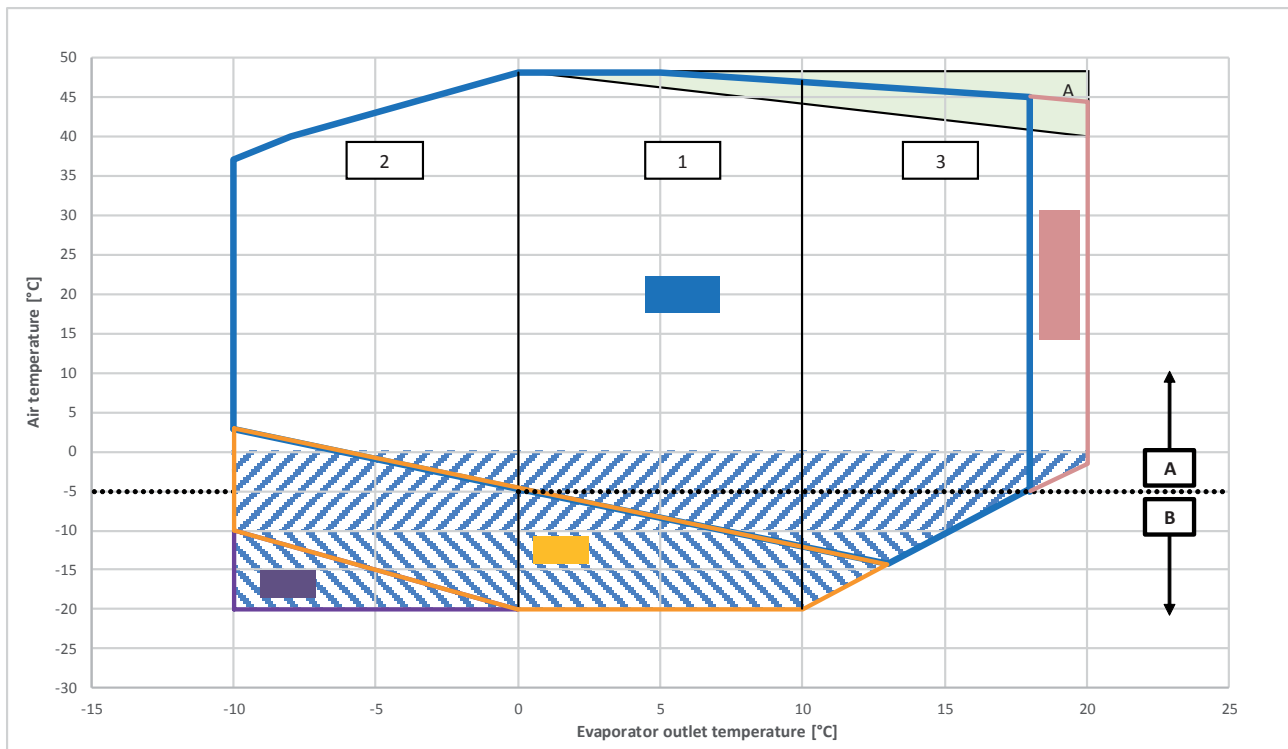
NOTES

For the temperature limits of each size please refer to the selection software (the diagram over 38°C could vary according to the size and the version of the selected unit)

RFQ: Request for quotation

Wind protected installations: wind speed lower than $0,5 \text{ m/s}$ - $1,64 \text{ ft/s}$

i-NX 0151-0502P _ i-NX /SL 0151-0502P (EC FAN)



- 1 Evaporator outlet water temperature: $0^{\circ}\text{C} \leq \text{TH2O} \leq 10^{\circ}\text{C}$ (codice 87B), standard
- 2 Evaporator outlet water temperature: $-10^{\circ}\text{C} \leq \text{TH2O} < 0^{\circ}\text{C}$ (codice 87A)
- 3 Evaporator outlet water temperature: $10^{\circ}\text{C} < \text{TH2O} \leq 18^{\circ}\text{C}$ (codice 87C)
- 1 2 EEV for double water set point (codice 87D)
- EC Fans (code 808)
- EC Fans + DBF device
- RFQ device for windy installations or for wind protected installations
- RFQ for extending operating limits, evaporator leaving water temperature up to 20°C
- Antifreeze heaters on pipes, pumps*, and buffer tank* (code 2432 or 2433)
*if present
- Extra insulation on heat exchangers, pipes, pumps* and buffer tank* (RFQ)
Extra antifreeze heaters on heat exchangers, pipes, pumps* and buffer tank* (RFQ)
*if present
- A Version /SL: non silent mode operating area
- A Suitable device for wind protected installations or for windy installations
- B Suitable device for wind protected installations
For windy installations RFQ

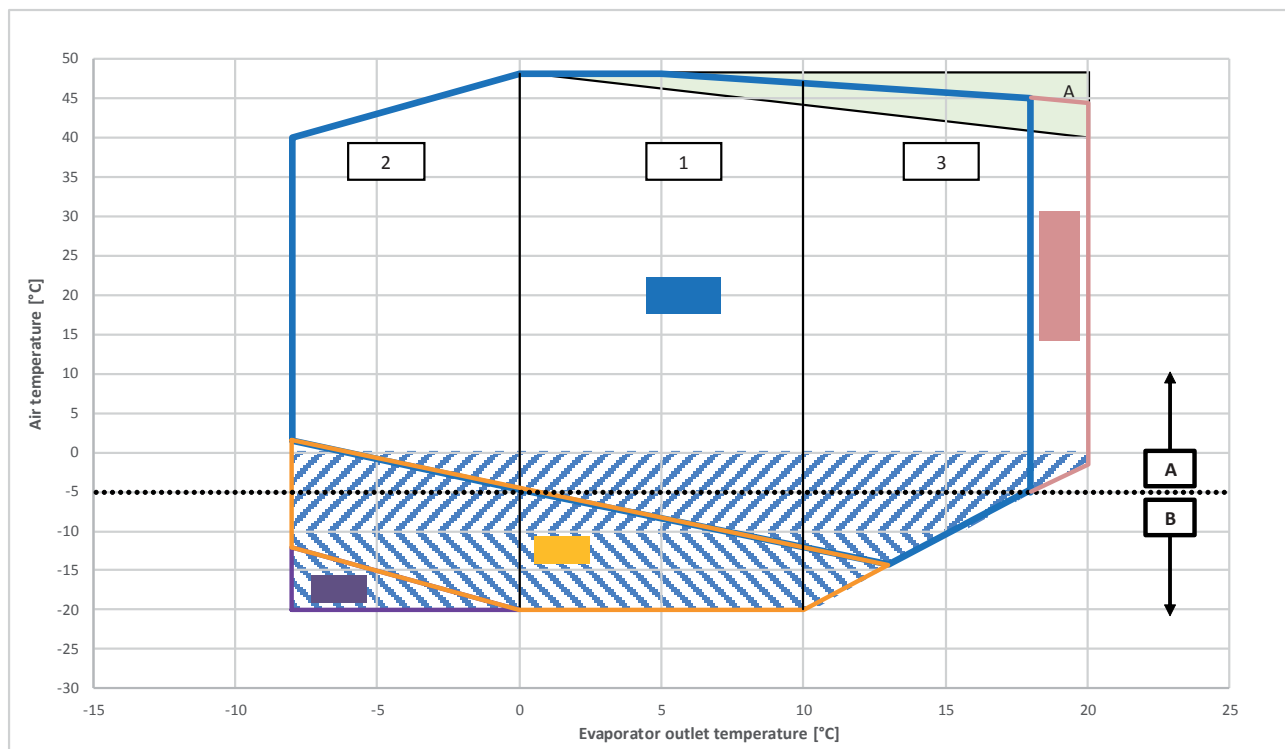
NOTES

For the temperature limits of each size please refer to the selection software (the diagram over 38°C could vary according to the size and the version of the selected unit)

RFQ: Request for quotation

Wind protected installations: wind speed lower than $0,5 \text{ m/s}$ - $1,64 \text{ ft/s}$)

i-NX 0151-0502P _ i-NX /SL 0151-0502P (EC FAN)



1 Evaporator outlet water temperature: $0^{\circ}\text{C} \leq \text{TH2O} \leq 10^{\circ}\text{C}$ (codice 87B), standard

2 Evaporator outlet water temperature: $-10^{\circ}\text{C} \leq \text{TH2O} < 0^{\circ}\text{C}$ (codice 87A)

3 Evaporator outlet water temperature: $10^{\circ}\text{C} < \text{TH2O} \leq 18^{\circ}\text{C}$ (codice 87C)

1 2 EEV for double water set point (codice 87D)

EC Fans (code 808)

EC Fans + DBF device

RFQ device for windy installations or for wind protected installations

RFQ for extending operating limits, evaporator leaving water temperature up to 20°C

Antifreeze heaters on pipes, pumps*, and buffer tank* (code 2432 or 2433)
*if present

Extra insulation on heat exchangers, pipes, pumps* and buffer tank* (RFQ)
Extra antifreeze heaters on heat exchangers, pipes, pumps* and buffer tank* (RFQ)
*if present

A Version /SL: non silent mode operating area

A Suitable device for wind protected installations or for windy installations

B Suitable device for wind protected installations
For windy installations RFQ

NOTES

For the temperature limits of each size please refer to the selection software (the diagram over 38°C could vary according to the size and the version of the selected unit)

RFQ: Request for quotation

Wind protected installations: wind speed lower than $0,5 \text{ m/s}$ - $1,64 \text{ ft/s}$

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 (m ² °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 x 10 ⁻⁵	1,000	1,000	0,0	1,000	1,000	0,0	1,000
VARIOUS	4,40 x 10 ⁻⁵	1,000	1,000	0,0	0,990	1,030	1,0	0,990
VARIOUS	8,80 x 10 ⁻⁵	0,960	0,990	0,7	0,980	1,040	1,5	0,980
VARIOUS	13,20 x 10 ⁻⁵	0,944	0,985	1,0	0,964	1,050	2,3	0,964
VARIOUS	17,20 x 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:

$$Q = P / (4,186 \times \Delta t)$$

Q: water flow (l/s)

Δt : difference between inlet and outlet water temp. (°C)

P: heat exchanger capacity (kW)

Pressure drop is given by:

$$\Delta p = K \times (3,6 \times Q)^2 / 1000$$

Q: water flow (l/s)

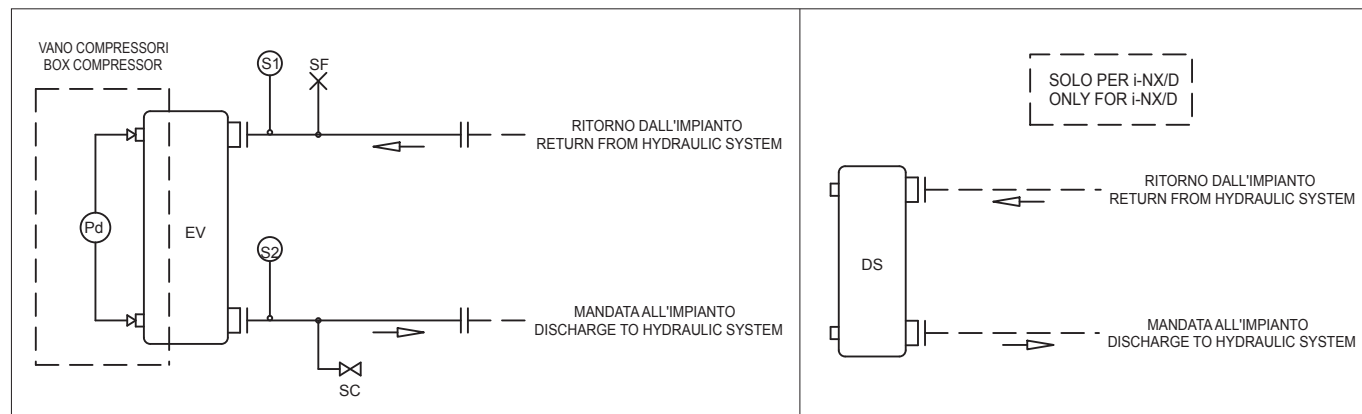
Δp : pressure drop (kPa)

K: unit size ratio

SIZE	Power supply V/ph/Hz	HEAT EXCHANGER USER SIDE					HEAT RECOVERY EX. USER 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
i-NX /0151P	400/3+N/50	652	1,03	3,53	3,10	154	-	-	-	-
i-NX /0182P	400/3+N/50	498	1,22	4,25	3,50	185	-	-	-	-
i-NX /0202P	400/3+N/50	358	1,47	4,72	4,30	221	-	-	-	-
i-NX /0262P	400/3+N/50	256	1,69	4,72	5,20	252	-	-	-	-
i-NX /0302P	400/3+N/50	168	1,97	6,69	5,50	293	-	-	-	-
i-NX /0352P	400/3/50	120	2,39	8,08	6,30	354	-	-	-	-
i-NX /0402P	400/3/50	101	2,83	9,58	7,10	420	-	-	-	-
i-NX /0502P	400/3/50	78,6	3,06	10,31	8,10	452	-	-	-	-
i-NX /D /0151P	400/3+N/50	652	1,03	3,53	3,10	154	1767	-	0,86	0,43
i-NX /D /0182P	400/3+N/50	498	1,22	4,25	3,50	185	1767	-	1,00	0,43
i-NX /D /0202P	400/3+N/50	358	1,47	4,72	4,30	221	1767	-	1,14	0,43
i-NX /D /0262P	400/3+N/50	256	1,69	4,72	5,20	252	871	-	1,33	0,61
i-NX /D /0302P	400/3+N/50	168	1,97	6,69	5,50	293	871	-	1,53	0,61
i-NX /D /0352P	400/3/50	120	2,39	8,08	6,30	354	871	-	1,83	0,61
i-NX /D /0402P	400/3/50	101	2,83	9,58	7,10	420	613	-	2,11	0,73
i-NX /D /0502P	400/3/50	78,6	3,06	10,31	8,10	452	613	-	2,36	0,73
i-NX /SL /0151P	400/3+N/50	652	1,00	3,42	3,10	149	-	-	-	-
i-NX /SL /0182P	400/3+N/50	498	1,19	4,11	3,50	179	-	-	-	-
i-NX /SL /0202P	400/3+N/50	358	1,42	4,72	4,30	210	-	-	-	-
i-NX /SL /0262P	400/3+N/50	256	1,61	4,72	5,20	238	-	-	-	-
i-NX /SL /0302P	400/3/50	168	1,92	6,50	5,50	284	-	-	-	-
i-NX /SL /0352P	400/3/50	120	2,28	7,72	6,30	338	-	-	-	-
i-NX /SL /0402P	400/3/50	101	2,72	9,19	7,10	403	-	-	-	-
i-NX /SL /0502P	400/3/50	78,6	2,94	9,89	8,10	434	-	-	-	-
i-NX /D /SL /0151P	400/3+N/50	652	1,00	3,42	3,10	149	1767	-	0,86	0,43
i-NX /D /SL /0182P	400/3+N/50	498	1,19	4,11	3,50	179	1767	-	1,00	0,43
i-NX /D /SL /0202P	400/3+N/50	358	1,42	4,72	4,30	210	1767	-	1,14	0,43
i-NX /D /SL /0262P	400/3+N/50	256	1,61	4,72	5,20	238	871	-	1,33	0,61
i-NX /D /SL /0302P	400/3/50	168	1,92	6,50	5,50	284	871	-	1,53	0,61
i-NX /D /SL /0352P	400/3/50	120	2,28	7,72	6,30	338	871	-	1,83	0,61
i-NX /D /SL /0402P	400/3/50	101	2,72	9,19	7,10	403	613	-	2,11	0,73
i-NX /D /SL /0502P	400/3/50	78,6	2,94	9,89	8,10	434	613	-	2,36	0,73

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

Base unit hydraulic diagram



7.1 ELECTRICAL DATA

i-NX

[SI System]

SIZE	Power supply V/ph/Hz	Maximum values								
		Compressor				Fans (1)		Total (1)(2)		
		n	F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
0151P	400/3+N/50	1	1x22.3	1x34.3	0	0,30	1	23,5	39	4
0182P	400/3+N/50	2	1x16.9 + 1x9	1x25.9 + 1x15.3	1x37.5 + 1x98	0,30	1	27,1	46	118
0202P	400/3+N/50	2	1x16.9 + 1x11.9	1x25.9 + 1x20.1	1x37.5 + 1x142	0,30	1	30,2	52	164
0262P	400/3+N/50	2	1x22.3 + 1x13.7	1x34.3 + 1x23	1x44 + 1x147	0,30	1	37,5	63	174
0302P	400/3+N/50	2	1x22.3 + 1x17.3	1x34.3 + 1x29.1	1x44 + 1x197	0,30	1	41,4	70	225
0352P	400/3/50	2	1x32.4 + 1x17.5	1x49.9 + 1x28.7	1x61 + 1x170	2,00	4	53,9	87	198
0402P	400/3/50	2	1x32.4 + 1x23.3	1x49.9 + 1x37.1	1x61 + 1x215	2,00	4	59,7	96	243
0502P	400/3/50	2	1x32.4 + 1x28.22	1x49.9 + 1x46.5	1x61 + 1x260	2,00	4	64,6	104	288

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) Values calculated referring to the version with the maximum number of fans working at the max absorbed current

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

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 air (in) 35,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Give the typical operating conditions of units designed for outdoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class 4K4H: air temperature range from -20 up to 55°C (*), relative humidity range from 4 up to 100%, with possible precipitations, at air pressure from 70 and 106 kPa and a maximum solar radiation of 1120 W/m2

- special climatic conditions negligible

- biological conditions class 4B1 and 4C2: locations in a generic urban area

- mechanically active substances class 4S2: locations in areas with sand or dust representative of urban areas

- mechanical conditions class 4M1: locations protected from significant vibrations or shocks

The required protection level for safe operation, according to reference document IEC 60529, is IP43XW (protection against access, to the most critical unit's parts, of external devices with diameter larger than 1 mm and rain).

The unit can be considered IP44XW protected, i.e. protected against access of external devices (with diameter larger than 1 mm) and water in general.

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

ELECTRICAL DATA

i-NX / SL

[SI System]

SIZE	Power supply V/ph/Hz	Maximum values								
		Compressor				Fans (1)		Total (1)(2)		
		n	F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
0151P	400/3+N/50	1	1x22.3	1x34.3	0	0,30	1	23,8	40	6
0182P	400/3+N/50	2	1x16.9 + 1x9	1x25.9 + 1x15.3	1x37.5 + 1x98	0,30	1	27,4	47	120
0202P	400/3+N/50	2	1x16.9 + 1x11.9	1x25.9 + 1x20.1	1x37.5 + 1x142	0,30	1	30,5	53	165
0262P	400/3+N/50	2	1x22.3 + 1x13.7	1x34.3 + 1x23	1x44 + 1x147	0,30	1	37,8	64	175
0302P	400/3/50	2	1x22.3 + 1x17.3	1x34.3 + 1x29.1	1x44 + 1x197	2,00	4	43,6	71	226
0352P	400/3/50	2	1x32.4 + 1x17.5	1x49.9 + 1x28.7	1x61 + 1x170	2,00	4	53,9	87	198
0402P	400/3/50	2	1x32.4 + 1x23.3	1x49.9 + 1x37.1	1x61 + 1x215	1,84	4	59,3	95	242
0502P	400/3/50	2	1x32.4 + 1x28.22	1x49.9 + 1x46.5	1x61 + 1x260	1,84	4	64,3	104	287

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) Values calculated referring to the version with the maximum number of fans working at the max absorbed current

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

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 air (in) 35,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Give the typical operating conditions of units designed for outdoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class 4K4H: air temperature range from -20 up to 55°C (*), relative humidity range from 4 up to 100%, with possible precipitations, at air pressure from 70 and 106 kPa and a maximum solar radiation of 1120 W/m2

- special climatic conditions negligible

- biological conditions class 4B1 and 4C2: locations in a generic urban area

- mechanically active substances class 4S2: locations in areas with sand or dust representative of urban areas

- mechanical conditions class 4M1: locations protected from significant vibrations or shocks

The required protection level for safe operation, according to reference document IEC 60529, is IP43XW (protection against access, to the most critical unit's parts, of external devices with diameter larger than 1 mm and rain).

The unit can be considered IP44XW protected, i.e. protected against access of external devices (with diameter larger than 1 mm) and water in general.

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

8.1 FULL LOAD SOUND LEVEL

i-NX

SOUND POWER									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
0151P	84	84	80	79	79	76	68	56	83
0182P	85	85	81	80	80	77	69	57	84
0202P	86	86	82	81	81	78	70	58	85
0262P	86	86	82	81	81	78	70	58	85
0302P	87	87	83	82	82	79	71	59	86
0352P	88	88	84	83	83	80	72	60	87
0402P	90	90	86	85	85	82	74	62	89
0502P	90	90	86	85	85	82	74	62	89

Working conditions

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

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
0151P	52	52	48	47	47	44	36	24	51
0182P	53	53	49	48	48	45	37	25	52
0202P	54	54	50	49	49	46	38	26	53
0262P	54	54	50	49	49	46	38	26	53
0302P	55	55	51	50	50	47	39	27	54
0352P	56	56	52	51	51	48	40	28	55
0402P	58	58	54	53	53	50	42	30	57
0502P	58	58	54	53	53	50	42	30	57

Working conditions

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

Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

FULL LOAD SOUND LEVEL

i-NX / SL

SOUND POWER									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
0151P	81	80	76	74	74	67	61	57	77
0182P	81	80	76	74	74	67	61	57	77
0202P	82	81	77	75	75	68	62	58	78
0262P	82	81	77	75	75	68	62	58	78
0302P	83	82	78	76	76	69	63	59	79
0352P	84	83	79	77	77	70	64	60	80
0402P	86	85	81	79	79	72	66	62	82
0502P	86	85	81	79	79	72	66	62	82

Working conditions

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

Add 1 dB(A) for the units supplied with hydronic group.

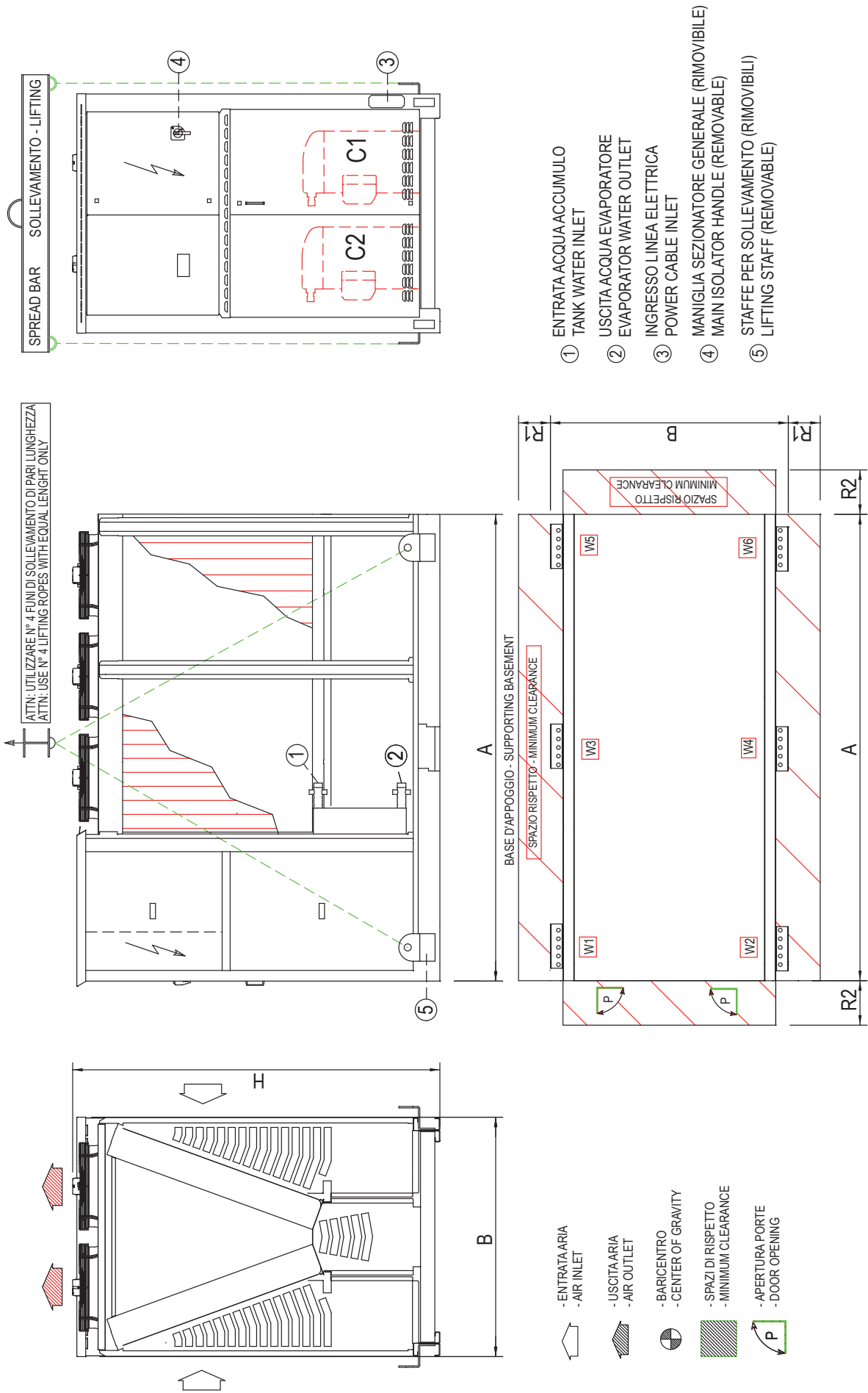
SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
0151P	49	48	44	42	42	35	29	25	45
0182P	49	48	44	42	42	35	29	25	45
0202P	50	49	45	43	43	36	30	26	46
0262P	50	49	45	43	43	36	30	26	46
0302P	51	50	46	44	44	37	31	27	47
0352P	52	51	47	45	45	38	32	28	48
0402P	54	53	49	47	47	40	34	30	50
0502P	54	53	49	47	47	40	34	30	50

Working conditions

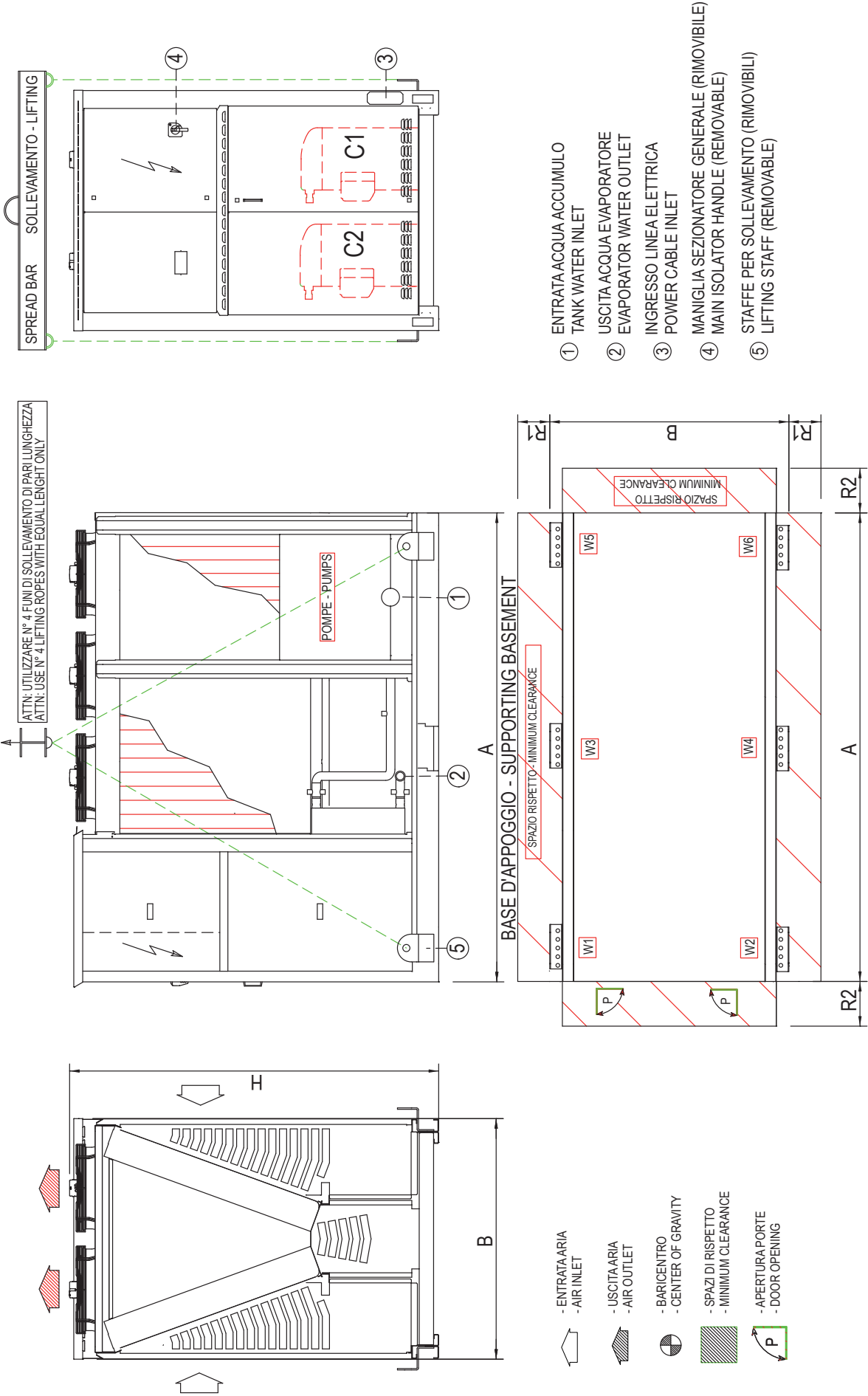
Plant (side) cooling exchanger water (in/out) 12,0°C/7,0°C; Source (side) heat exchanger air (in) 35,0°C.

Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

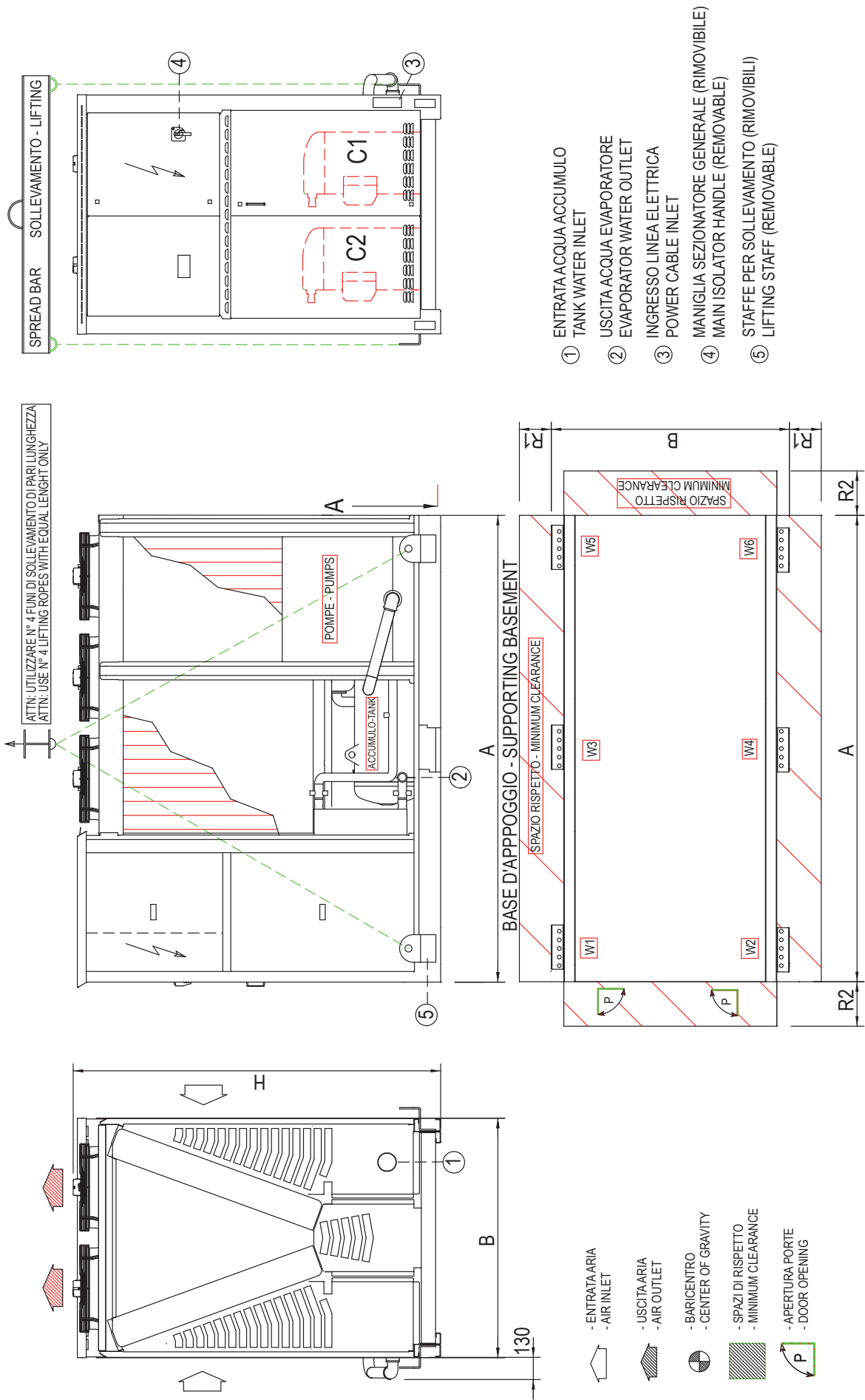
Add 1 dB(A) for the units supplied with hydronic group.



REMARKS: For installation purposes, please refer to the documentation sent after the purchase contract. This technical data should be considered as indicative. Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. may modify them at any moment. Data valid for standard units without any additional option.



REMARKS: For installation purposes, please refer to the documentation sent after the purchase contract. This technical data should be considered as indicative. Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. may modify them at any moment. Data valid for standard units without any additional option.



REMARKS: For installation purposes, please refer to the documentation sent after the purchase contract. This technical data should be considered as indicative. Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. may modify them at any moment. Data valid for standard units without any additional option.

DIMENSIONAL DRAWINGS

[SI System]

i-NX 0151P - 0502P

SIZE	DIMENSIONS AND WEIGHTS				CLEARANCE				HEAT EXCHANGER USER SIDE	HEAT RECOVERY EX. USER 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
i-NX /0151P	2000	1350	2070	600	1000	1000	1000	1000	VICTAULIC	1" 1/2	-	-
i-NX /0182P	2000	1350	2070	660	1000	1000	1000	1000	VICTAULIC	1" 1/2	-	-
i-NX /0202P	2625	1350	2070	750	1000	1000	1000	1000	VICTAULIC	1" 1/2	-	-
i-NX /0262P	2625	1350	2070	780	1000	1000	1000	1000	VICTAULIC	2"	-	-
i-NX /0302P	2625	1350	2070	810	1000	1000	1000	1000	VICTAULIC	2"	-	-
i-NX /0352P	3250	1350	2170	1060	1000	1000	1000	1000	VICTAULIC	2"	-	-
i-NX /0402P	3250	1350	2170	1070	1000	1000	1000	1000	VICTAULIC	2" 1/2	-	-
i-NX /0502P	3250	1350	2170	1080	1000	1000	1000	1000	VICTAULIC	2" 1/2	-	-
i-NX /D /0151P	2000	1350	2070	600	1000	1000	1000	1000	VICTAULIC	1" 1/2	GAS	1" 1/4
i-NX /D /0182P	2000	1350	2070	660	1000	1000	1000	1000	VICTAULIC	1" 1/2	GAS	1" 1/4
i-NX /D /0202P	2625	1350	2070	750	1000	1000	1000	1000	VICTAULIC	1" 1/2	GAS	1" 1/4
i-NX /D /0262P	2625	1350	2070	780	1000	1000	1000	1000	VICTAULIC	2"	GAS	1" 1/4
i-NX /D /0302P	2625	1350	2070	810	1000	1000	1000	1000	VICTAULIC	2"	GAS	1" 1/4
i-NX /D /0352P	3250	1350	2170	1060	1000	1000	1000	1000	VICTAULIC	2"	GAS	1" 1/4
i-NX /D /0402P	3250	1350	2170	1070	1000	1000	1000	1000	VICTAULIC	2" 1/2	GAS	1" 1/4
i-NX /D /0502P	3250	1350	2170	1080	1000	1000	1000	1000	VICTAULIC	2" 1/2	GAS	1" 1/4
i-NX /SL /0151P	2625	1350	2070	700	1000	1000	1000	1000	VICTAULIC	1" 1/2	-	-
i-NX /SL /0182P	2625	1350	2070	760	1000	1000	1000	1000	VICTAULIC	1" 1/2	-	-
i-NX /SL /0202P	2625	1350	2070	790	1000	1000	1000	1000	VICTAULIC	1" 1/2	-	-
i-NX /SL /0262P	2625	1350	2070	820	1000	1000	1000	1000	VICTAULIC	2"	-	-
i-NX /SL /0302P	3250	1350	2170	980	1000	1000	1000	1000	VICTAULIC	2"	-	-
i-NX /SL /0352P	3250	1350	2170	1090	1000	1000	1000	1000	VICTAULIC	2"	-	-
i-NX /SL /0402P	3875	1350	2170	1180	1000	1000	1000	1000	VICTAULIC	2" 1/2	-	-
i-NX /SL /0502P	3875	1350	2170	1200	1000	1000	1000	1000	VICTAULIC	2" 1/2	-	-
i-NX /D /SL /0151P	2625	1350	2070	700	1000	1000	1000	1000	VICTAULIC	1" 1/2	GAS	1" 1/4
i-NX /D /SL /0182P	2625	1350	2070	760	1000	1000	1000	1000	VICTAULIC	1" 1/2	GAS	1" 1/4
i-NX /D /SL /0202P	2625	1350	2070	790	1000	1000	1000	1000	VICTAULIC	1" 1/2	GAS	1" 1/4
i-NX /D /SL /0262P	2625	1350	2070	820	1000	1000	1000	1000	VICTAULIC	2"	GAS	1" 1/4
i-NX /D /SL /0302P	3250	1350	2170	980	1000	1000	1000	1000	VICTAULIC	2"	GAS	1" 1/4
i-NX /D /SL /0352P	3250	1350	2170	1090	1000	1000	1000	1000	VICTAULIC	2"	GAS	1" 1/4
i-NX /D /SL /0402P	3875	1350	2170	1180	1000	1000	1000	1000	VICTAULIC	2" 1/2	GAS	1" 1/4
i-NX /D /SL /0502P	3875	1350	2170	1200	1000	1000	1000	1000	VICTAULIC	2" 1/2	GAS	1" 1/4

10.1 HYDRONIC GROUP

10.1 HYDRONIC MODULE

The i-NX units can be fitted with the hydronic module includes the main water circuit components, thus optimizing water circuit and electrical installation space, times and costs.

The built-in hydronic module is available as option with single or twin in-line pump, for achieving low head or high head, fixed or variable speed and with buffer tank.

The hydronic module is available with only terminals, ON/OFF or modulating.

For the hydronic modules with only terminals, the factory-mounted components are:

- Terminals for external pumps control (only relays or relays + 0-10V signal)
- Differential pressure switch (on heat exchanger)

For the hydronic modules with pumps, the factory-mounted components are:

- 1 or 2 pumps, 2 poles, low head or high head, fixed or variable speed
- differential pressure switch (on heat exchanger)
- discharge valves on exchanger
- One-way valve (Clapet type for in-line pumps)
- purge valve
- safety valve (10 bar)
- pump valve

For the hydronic modules with pumps, the factory-mounted components are:

- 1 or 2 pumps, 2 poles, low head or high head, fixed or variable speed
- buffer tank covered by a 20 mm thick of insulation lining in closed-cell reticulated foam
- differential pressure switch (on heat exchanger)
- discharge and suction valves
- One-way valve (Clapet type for in-line pumps)
- purge valve
- safety valve (10 bar)
- pump valve
- expansion tank
- pressure gauge

Each of the components of the hydraulic group has been designed to optimise hydraulic and electrical installation space, time and costs.

The second pump operates in stand-by to the first.

The relative operating hours of the two pumps are balanced. In case the operating pump breaks down, the reserve pump is automatically enabled.

The electrical panel of the unit is protected with fuses and contactors with thermals cut-out.

Suction, volute and discharge of each pump and all the water pipes are covered with an insulation lining in closed-cell reticulated foam in PE, CFC and HCFC-free.

The hydronic group is protected by a self-ventilated enclosure. In silenced units (/SL versions and units with Low Noise kit (code 2672)), the enclosure is acoustically insulated by a 15 mm thick lining of polyester fibers (Fiberform).

Note: the use of the pumps in /SL versions increases the sound power by 1 dB(A).

10.2 IN-LINE PUMP SPECIFICATION IN SINGLE OR TWIN VERSION AT FIXED SPEED

Centrifugal pumps with in-line suction and delivery flanges, in single or twin versions. Pump body and impeller in cast-iron, entirely laser technology welded. Mechanical seal with components in ceramics, carbon and EPDM elastomers. Three-phase electric motor protected to IP55, insulation class F, suitable for continuous service. "Back pull-out" design, impeller, adapter, and motor can be extracted without disconnecting the pump body from the piping system.



10.3 IN-LINE PUMP SPECIFICATION IN SINGLE OR TWIN VERSION AT VARIABLE SPEED

The pumps with 2-pole motors are fitted with permanent-magnet and electronically speed-controlled which have an efficiency that exceeds the IE4 demands, including the energy consumption of the integrated frequency converter. The resulting in energy savings of up to 50% compared to conventional pumps.

Grundfos single and twin-head pumps, are single-stage, close-coupled pumps with in-line suction and discharge ports of identical diameter. Motor and pump shafts are connected via a rigid two-part coupling. The pumps are equipped with an unbalanced mechanical shaft seal.

The pumps are of the "top-pull-out" design, i.e. the power head (motor, pump head and impeller) can be removed for maintenance or service while the pump housing remains in the pipework.

The twin-head pumps are designed with two parallel power heads. A non-return flap valve in the common discharge port is opened by the flow of the pumped liquid and prevents backflow of liquid into the idle pump head.



10.4 SPECIAL PUMPS

For pumps with different configurations, please contact our sales department.

10.5 OTHER COMPONENTS

The hydronic kits do not include the following accessories though these are recommended to ensure correct system operation:

- Flow-out switch
- Pressure gauges upline and downline from the unit
- Flexible joints on piping
- On-off valves

HYDRONIC GROUP

- Outlet control thermometer
- Mains filter.

10.6 MECHANICAL WATER FILTER (optional)

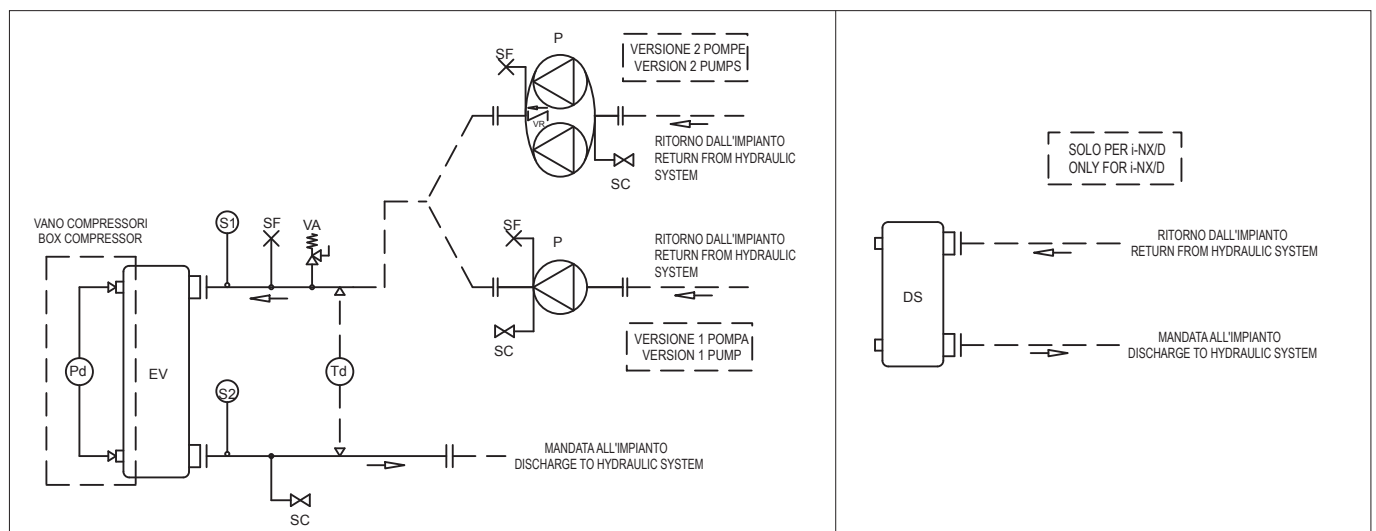
“Y” filter designed and built to trap the impurities in the water circuit. Fitted with stainless steel mesh cartridge and 0.9 mm openings, it can be replaced without removing the valve body from the piping. This accessory is recommended to ensure correct system operation.

Possible configurations

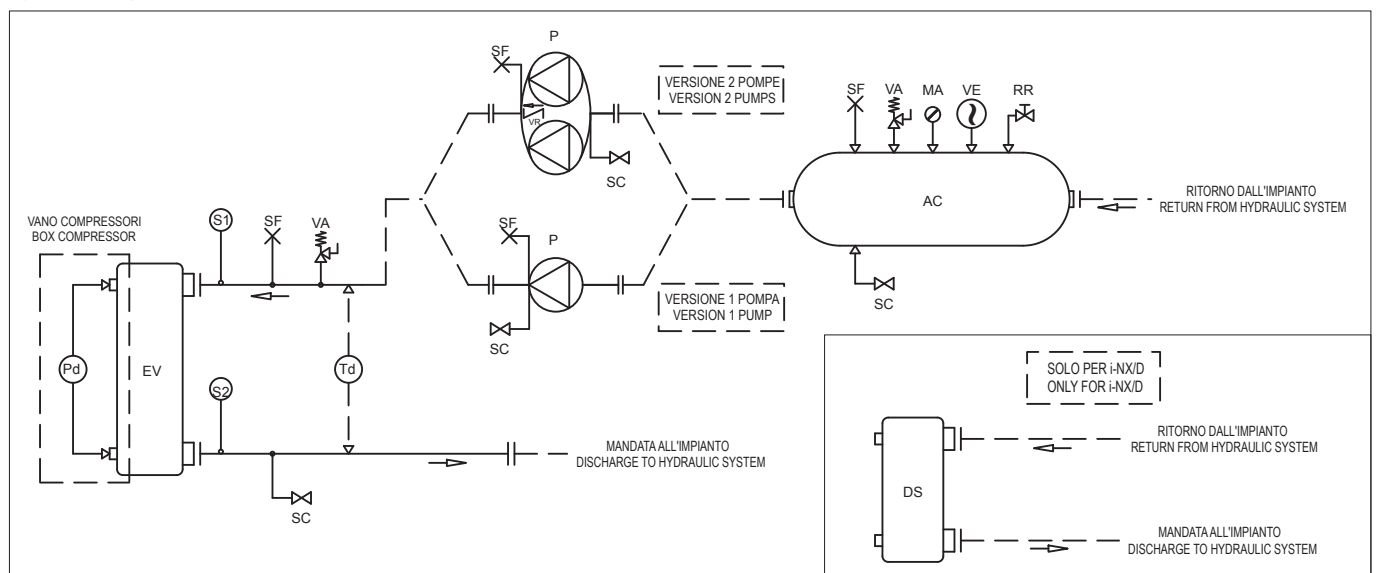
PUMP GROUP	Versions	
		SL
EV - 1 PUMP 2P BP (FIX SPEED)(4706)	X	X
EV - 1 PUMP 2P HH (FIX SPEED)(4707)	X	X
EV - 2 PUMPS 2P BP (FIX SPEED)(4711)	X	X
EV - 2 PUMPS 2P HH (FIX SPEED)(4712)	X	X
EV - 1 PUMP 2P BP (VAR SPEED)(4717)	X	X
EV - 2 PUMPS 2P BP (VAR SPEED)(4722)	X	X

Size	Version	Buffer Tank [l]	Safety valve [kPa]	Expansion tank [l]
0151	-	90	600	5
	SL	140		8
0182	-	90	600	5
	SL	140		8
0202	-	140	600	8
	SL	140		8
0262	-	140	600	8
	SL	140		8
0302	-	140	600	8
	SL	140		8
0352	-	140	600	8
	SL	140		8
0402	-	140	600	8
	SL	200		8
0502	-	140	600	8
	SL	200		8

Hydraulic diagram with 1-2 pumps



Hydraulic diagram with 1-2 pumps + buffer tank



HYDRONIC GROUP

Hydronic kit positioning

	Version	EV - 1 PUMP 2P BP (FIX SPEED) (4706)				EV - 1 PUMP 2P HH (FIX SPEED) (4707)				EV - 2 PUMPS 2P BP (FIX SPEED) (4711)				EV - 2 PUMPS 2P HH (FIX SPEED) (4712)			
		extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]
0151P		/	/	/	94	/	/	/	94	/	/	/	130	/	/	/	130
	SL	/	/	/	98	/	/	/	98	/	/	/	134	/	/	/	134
0182P		/	/	/	94	/	/	/	94	/	/	/	132	/	/	/	132
	SL	/	/	/	98	/	/	/	98	/	/	/	134	/	/	/	134
0202P		/	/	/	96	/	/	/	96	/	/	/	132	/	/	/	132
	SL	/	/	/	98	/	/	/	98	/	/	/	134	/	/	/	134
0262P		/	/	/	100	/	/	/	100	/	/	/	138	/	/	/	138
	SL	/	/	/	102	/	/	/	102	/	/	/	140	/	/	/	140
0302P		/	/	/	100	/	/	/	100	/	/	/	136	/	/	/	136
	SL	/	/	/	102	/	/	/	102	/	/	/	138	/	/	/	138
0352P		/	/	/	103	/	/	/	103	/	/	/	142	/	/	/	142
	SL	/	/	/	104	/	/	/	104	/	/	/	143	/	/	/	143
0402P		/	/	/	113	/	/	/	113	/	/	/	152	/	/	/	152
	SL	/	/	/	114	/	/	/	114	/	/	/	153	/	/	/	153
0502P		/	/	/	113	/	/	/	113	/	/	/	153	/	/	/	153
	SL	/	/	/	114	/	/	/	114	/	/	/	154	/	/	/	154

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 H	Unit's extra weight (pumps and piping)
EV - 1 PUMP 2P BP (FIX SPEED)	EV - 1 PUMP 2P BP (FIX SPEED)
EV - 1 PUMP 2P HH (FIX SPEED)	EV - 1 PUMP 2P HH (FIX SPEED)
EV - 2 PUMPS 2P BP (FIX SPEED)	EV - 2 PUMPS 2P BP (FIX SPEED)
EV - 2 PUMPS 2P HH (FIX SPEED)	EV - 2 PUMPS 2P HH (FIX SPEED)
-	Not available

HYDRONIC GROUP

Hydronic kit positioning

	Version	EV - 1 PUMP 2P BP (VAR SPEED) (4717)				EV - 2 PUMPS 2P BP (VAR SPEED) (4722)											
		extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]
0151P		/	/	/	94	/	/	/	130								
	SL	/	/	/	98	/	/	/	134								
0182P		/	/	/	94	/	/	/	132								
	SL	/	/	/	98	/	/	/	134								
0202P		/	/	/	96	/	/	/	132								
	SL	/	/	/	98	/	/	/	134								
0262P		/	/	/	100	/	/	/	138								
	SL	/	/	/	102	/	/	/	140								
0302P		/	/	/	100	/	/	/	136								
	SL	/	/	/	102	/	/	/	138								
0352P		/	/	/	103	/	/	/	142								
	SL	/	/	/	104	/	/	/	143								
0402P		/	/	/	113	/	/	/	152								
	SL	/	/	/	114	/	/	/	153								
0502P		/	/	/	113	/	/	/	153								
	SL	/	/	/	114	/	/	/	154								

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 H	Unit's extra weight (pumps and piping)
EV - 1 PUMP 2P BP (VAR SPEED)	EV - 1 PUMP 2P BP (VAR SPEED)
EV - 2 PUMPS 2P BP (VAR SPEED)	EV - 2 PUMPS 2P BP (VAR SPEED)
-	Not available

HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - EV - 1 PUMP 2P BP (FIX SPEED)

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]
0151P		43,9	2,10	A1	LNEE 40-125/11/2	2	2	1,10	103
	SL	42,6	2,04						105
0182P		52,9	2,53	A2					96,6
	SL	51,2	2,45						99,7
0202P		63,1	3,02	A3					91,6
	SL	60,1	2,87						97,1
0262P		72,1	3,45	A4					94,3
	SL	68,1	3,26						101
0302P		83,8	4,01	A5					90,6
	SL	81,2	3,88						94,7
0352P		101	4,82	B1	LNEE 40-125/15/2	2	3	1,50	113
	SL	96,7	4,62						120
0402P		120	5,73	B2					92,5
	SL	115	5,50						101
0502P		129	6,18	C1	LNEE 50-125/22/2	2	5	2,20	122
	SL	124	5,95						127

(1) Values refer to nominal conditions

CH Cooling mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

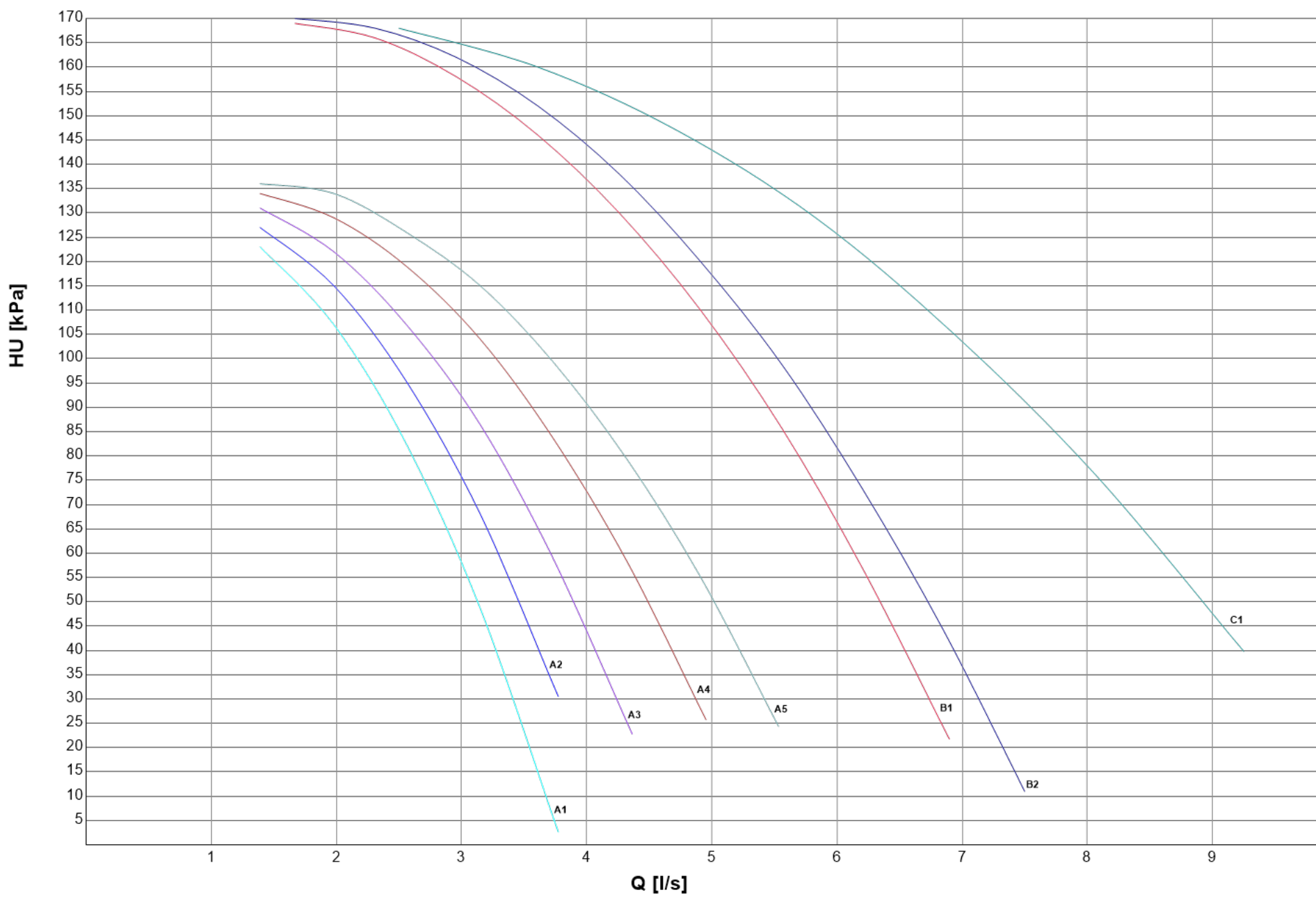
Q Plant (side) exchanger water flow

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 - EV - 1 PUMP 2P BP (FIX SPEED)



HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - EV - 1 PUMP 2P BP (VAR SPEED)

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]
0151P		43,9	2,10	A1	TPE2 32-180-N	2	1	0,55	112
	SL	42,6	2,04						116
0182P		52,9	2,53	A2					95,0
	SL	51,2	2,45						99,9
0202P		63,1	3,02	B1	TPE2 32-200-N	2	2	0,75	119
	SL	60,1	2,87						128
0262P		72,1	3,45	B2					113
	SL	68,1	3,26						123
0302P		83,8	4,01	B3					98,9
	SL	81,2	3,88						105
0352P		101	4,82	C1	TPE2 50-180-N	2	2	1,10	112
	SL	96,7	4,62						118
0402P		120	5,73	C2					95,7
	SL	115	5,50						102
0502P		129	6,18	D1	TPE2 50-200-N	2	3	1,50	135
	SL	124	5,95						142

(1) Values refer to nominal conditions

CH Cooling mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

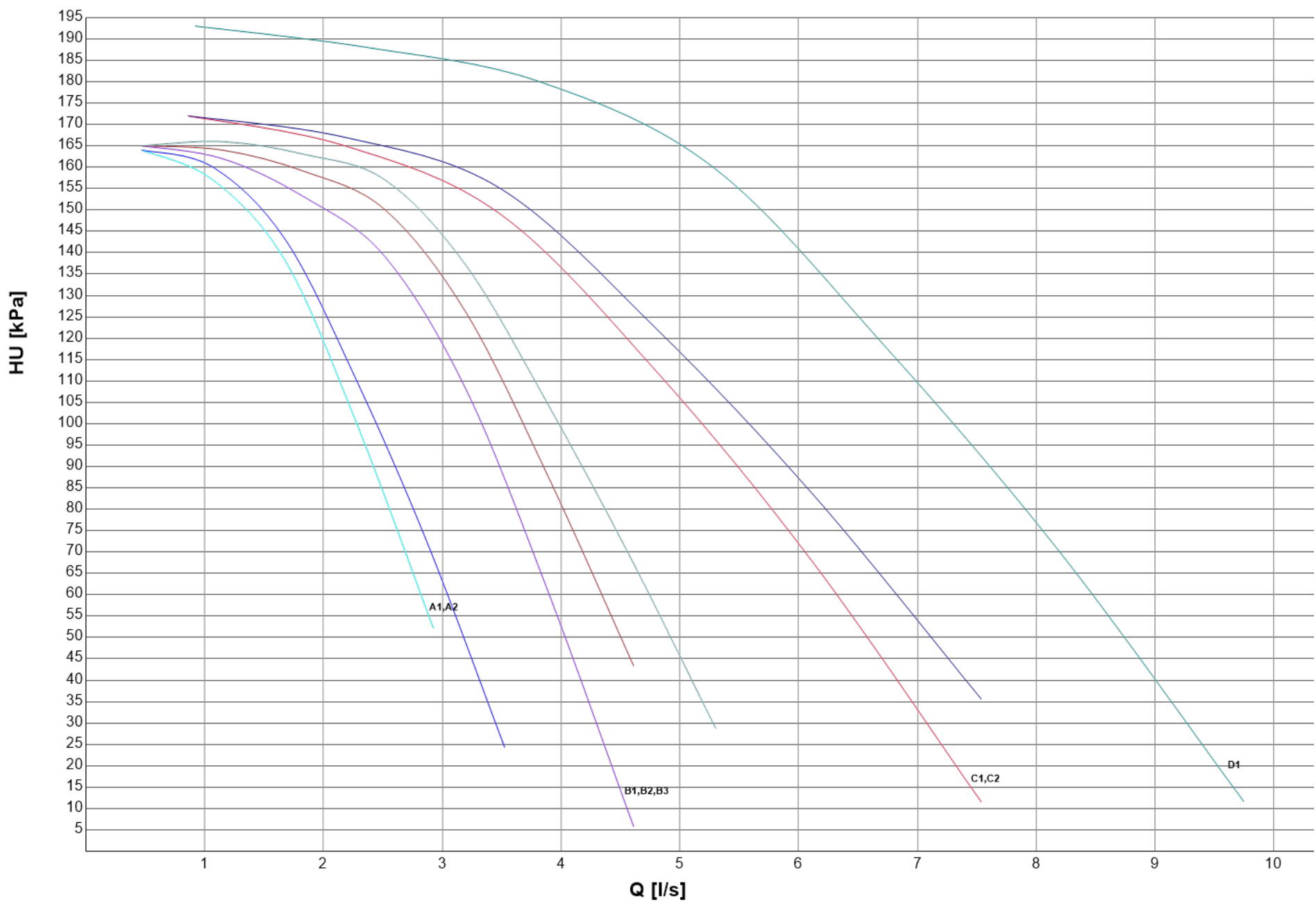
Q Plant (side) exchanger water flow

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 - EV - 1 PUMP 2P BP (VAR SPEED)



HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - EV - 1 PUMP 2P HH (FIX SPEED)

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]
0151P		43,9	2,10	A1	LNEE 40-160/22/2	2	5	2,20	205
	SL	42,6	2,04						208
0182P		52,9	2,53	A2					199
	SL	51,2	2,45						202
0202P		63,1	3,02	A3					195
	SL	60,1	2,87						200
0262P		72,1	3,45	A4					198
	SL	68,1	3,26						203
0302P		83,8	4,01	A5					197
	SL	81,2	3,88						200
0352P		101	4,82	B1	LNEE 40-125/30	2	6	3,00	222
	SL	96,7	4,62						228
0402P		120	5,73	B2					208
	SL	115	5,50						215
0502P		129	6,18	C1	LNEE 40-160/30/2	2	6	3,00	224
	SL	124	5,95						230

(1) Values refer to nominal conditions

CH Cooling mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

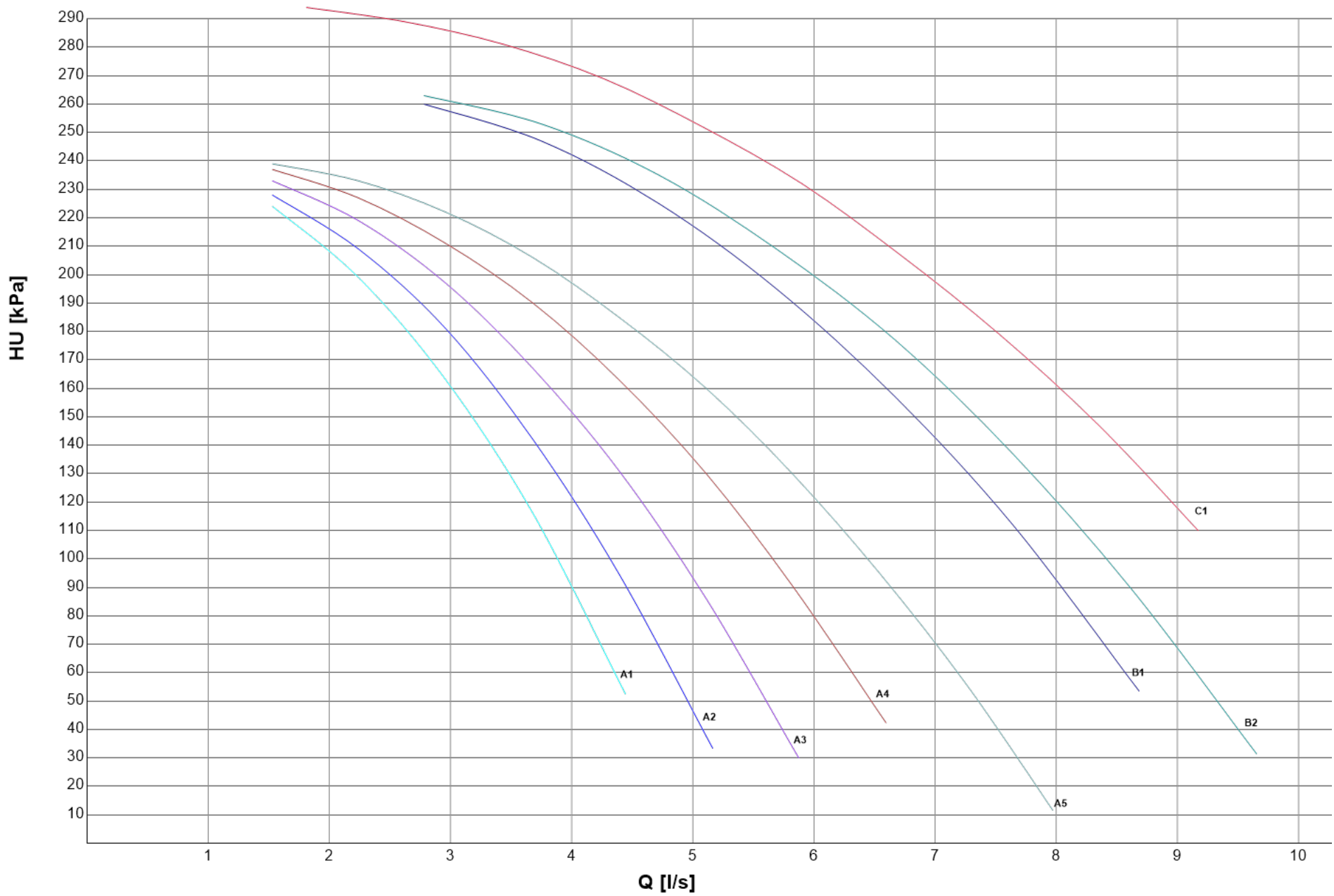
Q Plant (side) exchanger water flow

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 - EV - 1 PUMP 2P HH (FIX SPEED)



HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - EV - 2 PUMPS 2P BP (FIX SPEED)

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
						[kW] (1)	[l/s] (1)	Pole	[A]
0151P		43,9	2,10	A1	LNTE 32-160/11/2	2	0	1,10	122
	SL	42,6	2,04						124
0182P		52,9	2,53	A2					111
	SL	51,2	2,45						115
0202P		63,1	3,02	A3					101
	SL	60,1	2,87						108
0262P		72,1	3,45	A4					98,8
	SL	68,1	3,26						107
0302P		83,8	4,01	B1	LNTE 40-125/15 /2	2	3	1,50	118
	SL	81,2	3,88						123
0352P		101	4,82	B2					99,7
	SL	96,7	4,62						107
0402P		120	5,73	C1	LNTE 50-125/22/2	2	5	2,20	112
	SL	115	5,50						117
0502P		129	6,18	C2					112
	SL	124	5,95						117

(1) Values refer to nominal conditions

CH Cooling mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

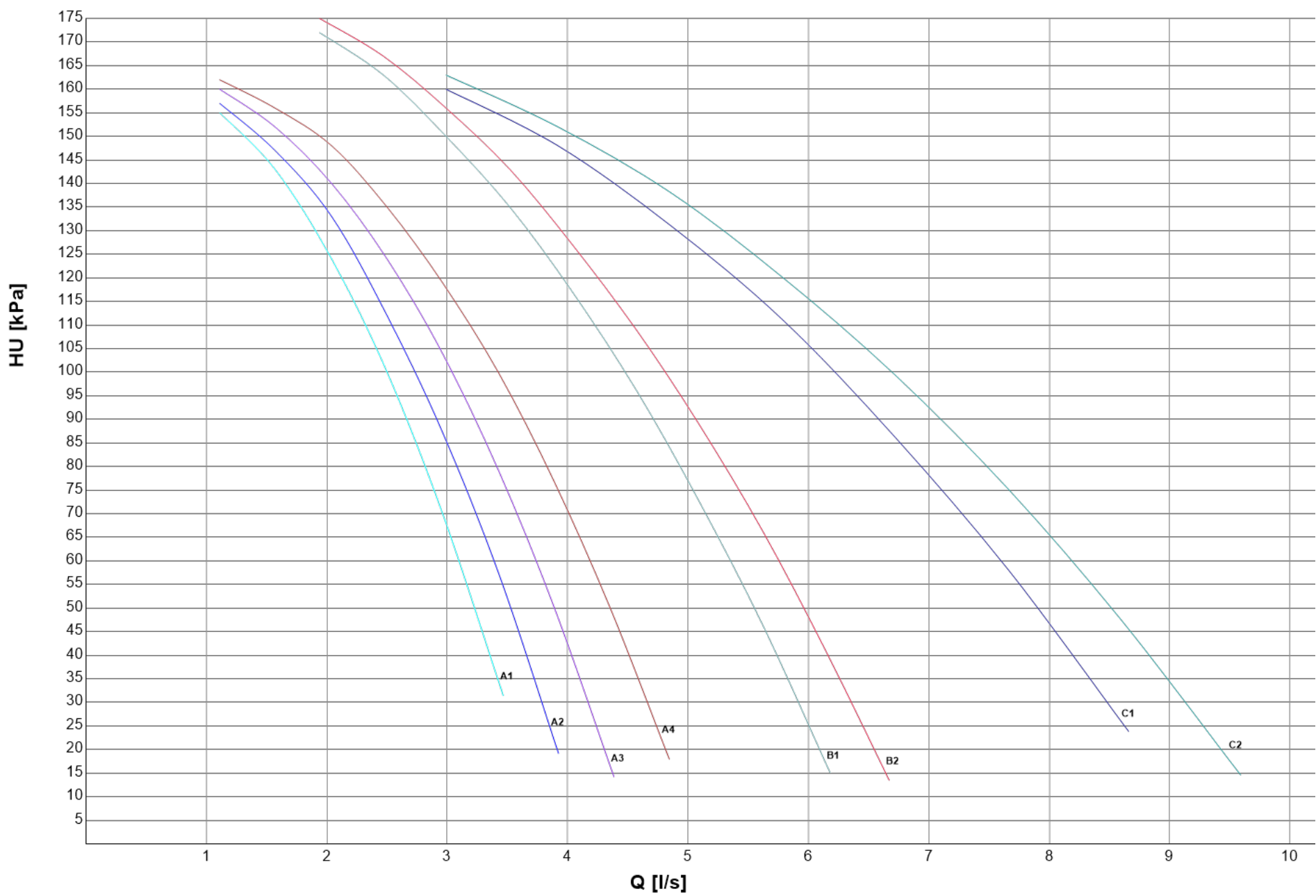
Q Plant (side) exchanger water flow

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 - EV - 2 PUMPS 2P BP (FIX SPEED)



HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - EV - 2 PUMPS 2P BP (VAR SPEED)

SIZE		CH		PUMP					CH
		Pfgross	Qfgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU
						[kW] (1)	[l/s] (1)	Pole	[A]
0151P		43,9	2,10	A1	TPE2 D 32-180-N	2	1	0,55	107
	SL	42,6	2,04						111
0182P		52,9	2,53	A2					89,0
	SL	51,2	2,45						94,2
0202P		63,1	3,02	B1	TPE2 D 32-200-N	2	2	0,75	110
	SL	60,1	2,87						120
0262P		72,1	3,45	B2					103
	SL	68,1	3,26						114
0302P		83,8	4,01	B3					86,3
	SL	81,2	3,88						93,1
0352P		101	4,82	C1	TPE2 D 50-180-N	2	2	1,10	110
	SL	96,7	4,62						117
0402P		120	5,73	C2					92,3
	SL	115	5,50						99,5
0502P		129	6,18	D1	TPE2 D 50-200-N	2	3	1,50	131
	SL	124	5,95						138

(1) Values refer to nominal conditions

CH Cooling mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

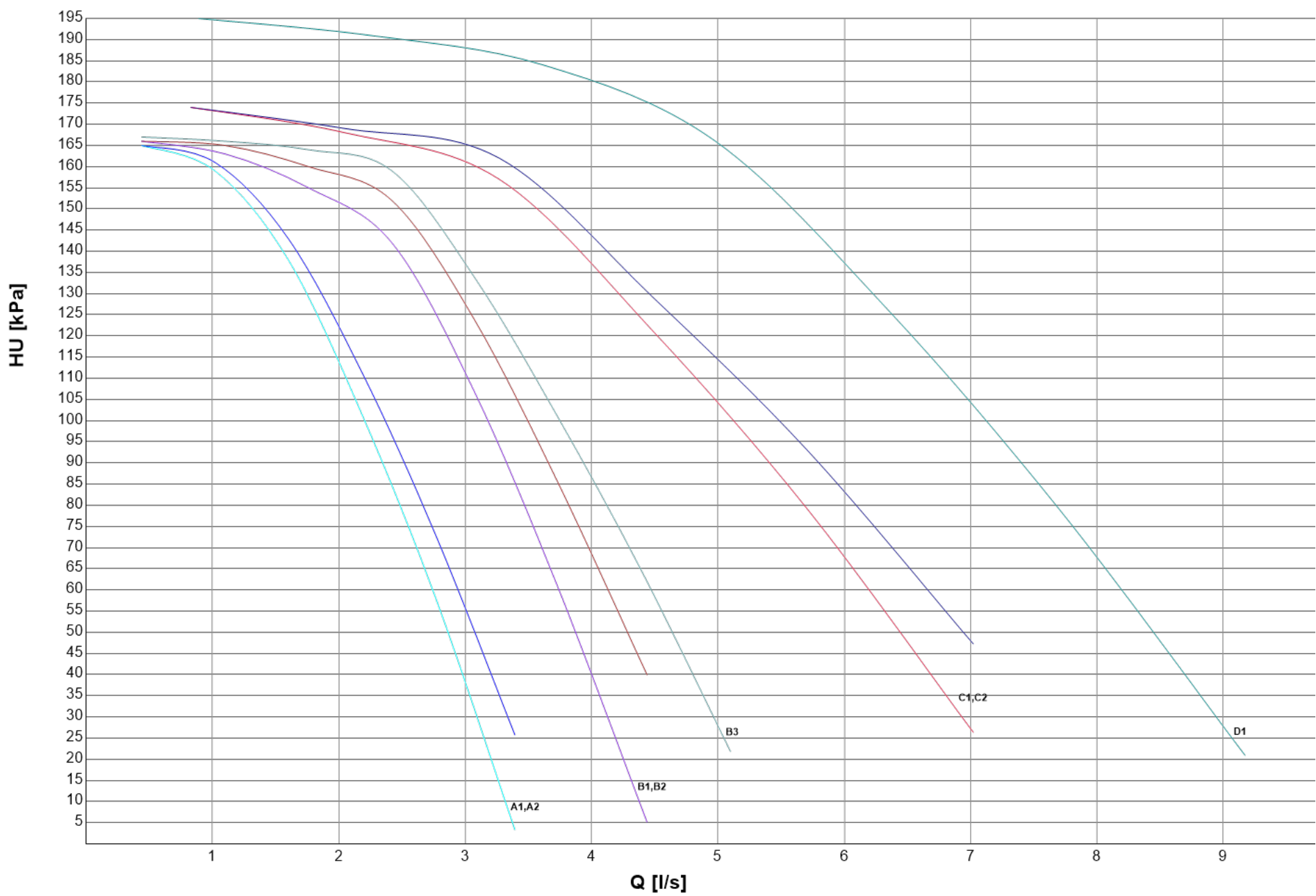
Q Plant (side) exchanger water flow

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 - EV - 2 PUMPS 2P BP (VAR SPEED)



HYDRONIC GROUP

HEAT EXCHANGER USER SIDE - EV - 2 PUMPS 2P HH (FIX SPEED)

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]
0151P		43,9	2,10	A1	LNTE 32-160/22/2	2	0	2,20	223
	SL	42,6	2,04						226
0182P		52,9	2,53	A2					214
	SL	51,2	2,45						217
0202P		63,1	3,02	A3					204
	SL	60,1	2,87						211
0262P		72,1	3,45	A4					203
	SL	68,1	3,26						211
0302P		83,8	4,01	A5					195
	SL	81,2	3,88						200
0352P		101	4,82	B1	LNTE 40-125/30	2	6	3,00	215
	SL	96,7	4,62						221
0402P		120	5,73	B2					199
	SL	115	5,50						206
0502P		129	6,18	C1	LNTE 40-160/30/2	2	6	3,00	216
	SL	124	5,95						223

(1) Values refer to nominal conditions

CH Cooling mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

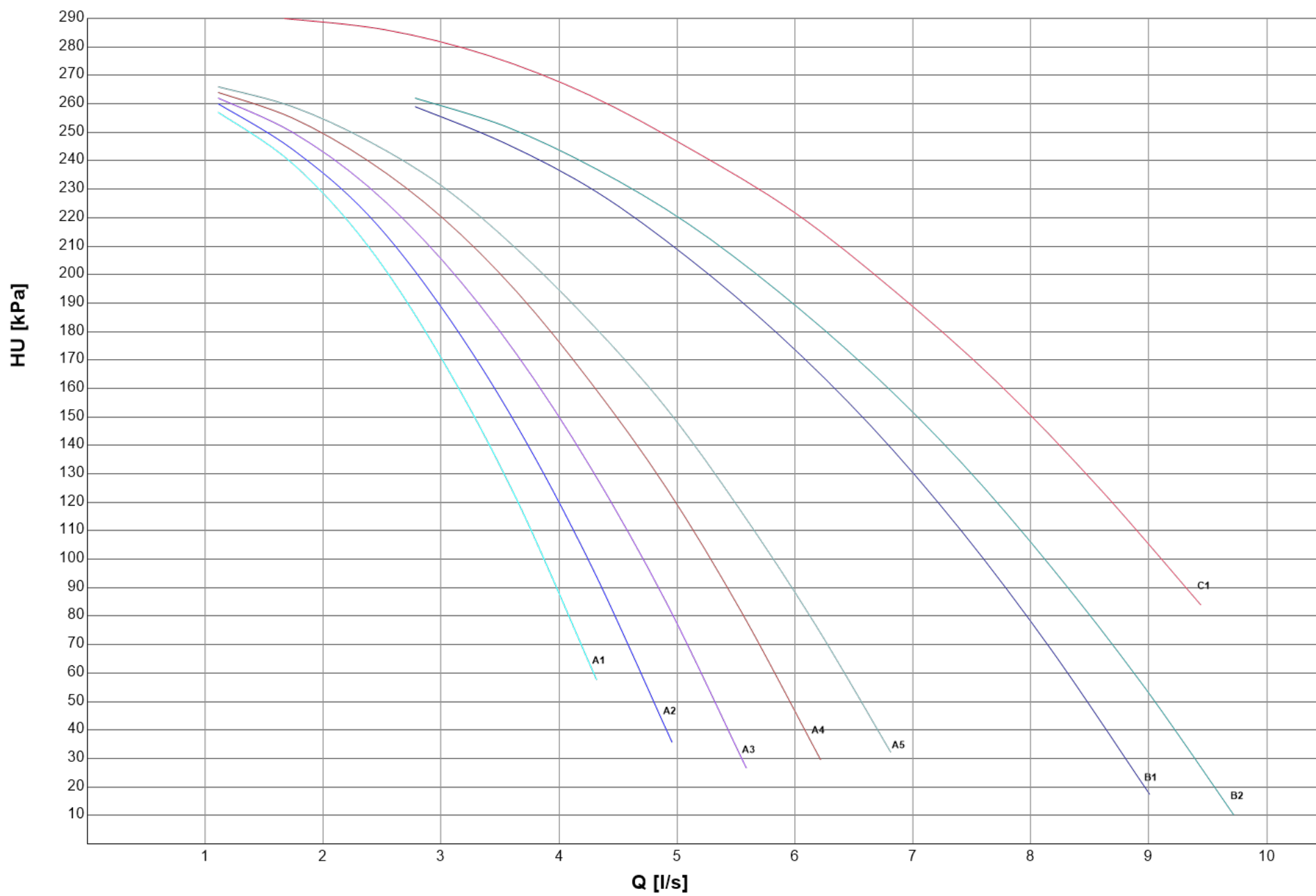
Q Plant (side) exchanger water flow

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 - EV - 2 PUMPS 2P HH (FIX SPEED)





for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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