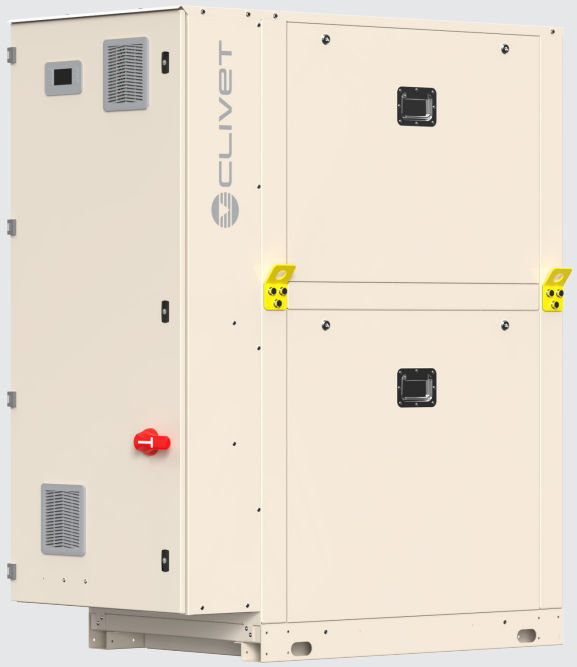
GROUND EVO

WSH-YEE 16.2 ÷ 130.4 RANGE

Water-cooled liquid chiller for indoor installation



ErP

R-32

TECHNICAL BULLETIN

SIZE	16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2	75.4	85.4	100.4	110.4	120.4	130.4
Cooling capacity kW	43,4	52,4	61,5	69,0	84,9	96,7	110	125	155	192	221	246	283	307	350	374
Heating capacity kW	49,1	58,9	68,3	76,6	94,1	107	123	138	171	212	246	274	314	341	405	444

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Features

GROUND EVO is the new generation of Clivet liquid chillers featuring on-off Scroll compression technology: high energy efficiency, great operational reliability, and maximum versatility of choice, with numerous versions and models for various system applications.

WSH-YEE 16.2 ÷ 65.2

Water-to-water heat pump for indoor installation

- Range 43 ÷ 192 kW
- Seasonal efficiency (SEER) up to 7,66
- Leaving water temperatures up to 60 °C on the hot side and down to -8 °C on the cold side
- Operation: cooling only (OCO), heating only (OHO), and hydraulic circuit reversibility (OHI)
- Refrigeration architecture: single-circuit configuration with 2 compressors.
- Easy installation: compact dimensions, with a width of 804 mm



R-32

WSH-YEE 75.4 ÷ 130.4

Water-to-water heat pump for indoor installation

- WSH-YEE 75.4 ÷ 130.4
- Seasonal efficiency (SEER) up to 7,63
- Leaving water temperatures up to 60 °C on the hot side and down to -8 °C on the cold side
- Operation: cooling only (OCO), heating only (OHO), and hydraulic circuit reversibility (OHI)
- Refrigeration architecture: dual-circuit configuration with 4 compressors.
- Easy installation: compact dimensions, with a width of 886 mm



R-32

Standard unit technical specifications

Compressor

On-off orbiting spiral hermetic Scroll compressors, complete with integrated motor protections against overtemperatures, overcurrents, and excessive discharge gas temperatures. The compressors are mounted on anti-vibration rubber mounts and supplied complete with initial oil charge. An automatic electric oil heater (crankcase heater) prevents oil dilution by the refrigerant during standstill phases. Motor starting is direct-on-line (DOL) on all sizes in the series.

The mechanical setup is divided into two macro-series:

- **Single-circuit**: 2 compressors connected in tandem configuration on a single refrigerant circuit, equipped with a two-phase oil equalization line;
- **Dual-circuit**: 4 compressors divided into 2 tandem configurations on two completely independent refrigerant circuits, each equipped with its own two-phase oil equalization line between the respective compressors.

Structure

Load-bearing structure made of zinc-magnesium sheet metal, designed to ensure high mechanical strength and lasting resistance to the corrosive action of external agents.

Panelling

External perimeter paneling made of prepainted zinc-magnesium sheet metal in RAL 9001 shade, fitted on the inside with a thermal-insulating and sound-absorbing mat. Each individual panel is completely removable via dedicated fasteners, ensuring full and direct accessibility to all internal components during routine and extraordinary maintenance operations.

Cooling side exchanger

Direct-expansion brazed plate heat exchanger (PHE) in high thermal efficiency AISI 316 stainless steel, externally coated with a layer of closed-cell anti-condensation thermal insulation. In dual-circuit versions, a single dual-circuit plate heat exchanger is installed (two independent refrigerant circuits against a single water pass).

The hydraulic connections are equipped with Victaulic grooved couplings.

Heating side exchanger

Direct-expansion brazed plate heat exchanger (PHE) in high heat-exchange surface AISI 316 stainless steel, externally coated with closed-cell anti-condensation thermal insulation. In dual-circuit versions, a single dual-circuit plate heat exchanger is installed.
The hydraulic connections are equipped with Victaulic grooved couplings.

Refrigeration circuit

Each independent refrigerant circuit (single for the single-circuit macro-series, doubled for the dual-circuit macro-series) includes:

- solid-core anti-acid filter drier
- liquid flow and moisture sight glass (supplied as standard exclusively on sizes 65.2, 110.4, 120.4, and 130.4)
- electronic expansion valve (EEV)
- automatic-reset high-pressure safety pressure switch
- low-pressure side pressure transducer
- high-pressure side pressure transducer
- high-pressure side safety valve
- low-pressure side safety valve
- full charge of R-32 refrigerant carried out and verified at the factory
- Refrigerant leak detector

Water circuit

Cold side

- Victaulic-type connection couplings
- standard water-side differential pressure switch for protection against lack of flow
- water drain cock
- minimum system charge pressure switch (present only with the hydronic assembly option)
- hydraulic safety valve (present only with the hydronic assembly option)
- air vent valves (present only with the hydronic assembly option)

Hot side

- Victaulic-type hydraulic connection couplings
- standard water-side differential pressure switch for protection against lack of flow
- water drain cock
- minimum system charge pressure switch (present only with the hydronic assembly option)
- hydraulic safety valve (present only with the hydronic assembly option)
- air vent valves (present only with the hydronic assembly option)

Electrical panel

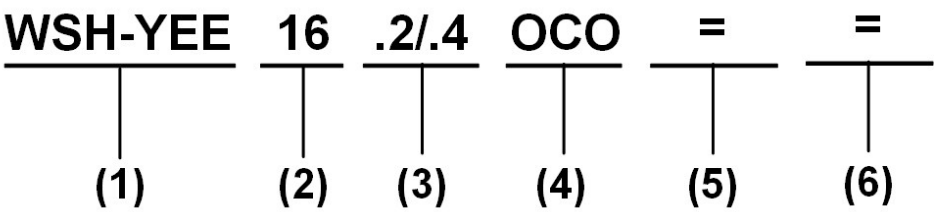
The power section includes:

- standard three-phase power supply 400V / 3ph / 50Hz (without neutral conductor)
- main disconnecting switch with door lock
- isolation transformer for separate power supply of the auxiliary circuits
- complete electrical protections for the compressors consisting of motor protection circuit breakers, fuses, and dedicated thermal-magnetic circuit breakers
- electromechanical power contactors for control and direct-on-line starting of the compressors
- multifunction phase monitor relay for monitoring the presence and correct sequence of the power supply phases
- identification numbering of all wiring conductors

The control section includes:

- unit-mounted user interface equipped with graphic display and dedicated physical navigation keys
- screens for viewing and modifying parameters for set-point values, alarm log, and operating variable index
- dedicated keys for start/stop (ON/OFF) control, heating/cooling operating mode changeover, and alarm reset
- proportional-integral (PID) water temperature thermoregulation algorithm, freely configurable via software with control on inlet probe (return) or outlet probe (supply)
- time programmer clock with daily and weekly calendar for setting unit set-points and ON/OFF time bands
- automatic hydraulic set-point compensation function via 0-10 V analog signal
- unit start/stop command management via local or remote control
- integrated water-side antifreeze protection function for both plate heat exchangers
- integrated compressor timing protection (minimum run time, stop time, and delay between consecutive starts)
- pre-alarm management with preventive thresholds for water freezing risk and high refrigerant pressure
- permanent self-diagnostic system with immediate on-display indication of the specific fault code
- automatic compressor start sequence rotation management (FIFO) aimed at perfectly balancing operating hours
- operating hour counter display for each compressor
- dedicated digital input for remote ON/OFF command
- volt-free contact for remote selection of summer / winter operating mode
- potential-free volt-free contacts for remote cumulative alarm signaling
- volt-free contacts for remote signaling of the operating status (running) of individual compressors
- analog input for the Demand Limit function (forced limitation of absorbed electrical power based on an external 0-10 V signal)
- digital input for enabling the dual set-point function via remote contact
- ECOSHARE function included as standard for integrated cascade management of up to 7 units (1 Master unit and up to 6 Slave units)
- Ethernet port with Modbus TCP/IP communication protocol supplied as standard on the control board (other serial modules dedicated to BMS protocols available as a separate option)
- enabling and priority management for Domestic Hot Water (DHW) production upon receipt of a remote enable signal
- control software logic predisposition for managing the system in Natural Cooling mode
- on-board predisposition for controlling a single user-side pump and a single source-side pump, configurable in both ON/OFF mode and modulating mode with a 0-10 V signal

Unit configuration



(1) Range

WSH = Water-cooled heat pump for indoor installation

(2) Size

16 = Nominal compressor capacity (HP)

(3) Compressors

.2/.4= Compressor quantity

(4) Operation

OCO = Cooling-only operation (standard)
OHO = Heating-only operation
OHI = Operation with hydraulic circuit reversibility

(5) Cold side hydronic assembly

(-) Not required (standard)
HYGC1V = Cold side hydronic assembly with 1 inverter pump
1P1SBC = Cold side hydronic assembly with 1+1 inverter pump
HYGC1 = Cold side hydronic assembly with 1 on/off pump
1P1SBCO = Cold side hydronic assembly with 1+1 on/off pump

(6) Hot side hydronic assembly

(-) Not required (standard)
HYGH1V = Hot side hydronic assembly with 1 inverter pump
1P1SBH = Hot side hydronic assembly with 1+1 inverter pump
HYGH1 = Hot side hydronic assembly with 1 on/off pump
1P1SBHO = Hot side hydronic assembly with 1+1 on/off pump

Built-in options

MOBMAG **Oversized cabinet**

The oversized cabinet is a configuration that is automatically selected in combination with any hydronic assembly (user side and source side) and with any valve (2-way or 3-way modulating).

QRCD **Residual current device**

The device detects earth leakage currents and trips the power supply to the unit when the intervention threshold is reached.

TT System — Typical of direct supply from the public low-voltage grid
The grid neutral is earthed by the distributor, while the unit's exposed conductive parts are connected to the user's earthing system. In a TT system, the unit's power supply circuit must be protected by a residual current device. Clivet recommends providing a dedicated residual current protection for the unit. Protection can be supplied by Clivet inside the electrical panel with the QRCD option or provided by the Customer.

TN System — Typical of systems supplied by a private MV/LV substation
When power is supplied from the public grid at medium voltage, the private substation steps it down to low voltage. If a TN system is adopted downstream of the transformer, the unit's exposed conductive parts are connected to the source earthing point via the protective conductor. **For installations in TN systems, the QRCD option inside the electrical panel is not available.**

SFSTR **Disposal for inrush current reduction**

Electronic device that automatically starts the compressors gradually, reducing the current peak generated during star-delta starts and thus reducing mechanical stress on the motor as well as electrodynamic stress on the power supply cables and electrical grid.

CONTA3 **M-bus total electricity meter**

It allows to view and keep a record of the unit's main electrical parameters. The data can be displayed with the user interface on the unit or via the supervisor through the variable protocol specifications.
The following can be monitored: supply voltage (V), current input (A), frequency (Hz), cosfi, power input (kW), energy input (kWh), electrical parameters of the built-in pumping units.
The device is installed and wired on the unit.

CONTA4 **Total electricity meters and m-bus pump group**

It allows to view and keep a record of the unit's main electrical parameters. The data can be displayed with the user interface on the unit or via the supervisor through the variable protocol specifications.
The following can be monitored: supply voltage (V), current input (A), frequency (Hz), cosfi, power input (kW), energy input (kWh), electrical parameters of the built-in pumping units.
The device is installed and wired on the unit.

Built-in options

CMSC11 **Serial communication module for BACnet/IP supervisor**

This enables the serial connection of the supervision system, using BACnet/IP as the communication protocol. It enables access to the complete list of operational variables, commands and alarms. Using this accessory every unit can dialogue with the main supervision systems.
The device is installed and wired on the unit.

⚠ The configuration and management activities for the BACnet networks are the responsibility of the client.

CMSC12 **Serial communication module for BACnet MS/TP supervisor**

Allows serial connection to the building management system via the BACnet MS/TP protocol and provides access to all operating variables, commands, and alarms. Thanks to this accessory, each unit can communicate with the main supervision systems.
The device is installed and wired inside the unit.

⚠ Configuration and management of BACnet networks are the responsibility of the customer.
The total length of each serial line must not exceed 1,000 m. The connection must be made using a bus topology (daisy-chain).

CMSC15 **Modbus TCP-IP**

Allows network connection to building management systems, using Modbus TCP/IP over Ethernet port as the communication protocol. Provides access to the complete list of operating variables, commands, and alarms. With this accessory, each unit can communicate with the main supervision systems. The device is installed and wired inside the unit.

⚠ Configuration and operation activities of the Ethernet/IP network are the responsibility of the Customer.
⚠ The wired network run to the switch must not exceed 100 meters.

CMSC9 **Serial communication module for Modbus supervisor**

Allows serial connection to building management systems, using Modbus over RS485 line as the communication protocol. Provides access to the complete list of operating variables, commands, and alarms. With this accessory, each unit can communicate with the main supervision systems. The device is installed and wired inside the unit.

⚠ The total length of each individual serial line must not exceed 1000 m and the line must be connected in bus type (input/output).

PFCP **Power factor correction capacitors (cosfi > 0.9)**

The component is necessary to lower the phase difference between current and voltage in the electromagnetic components of the unit (e.g. asynchronous motors). The component allows to put the cosfi power factor to values on average higher than 0.9, reducing the network reactive power. This often leads to an economic benefit which the energy provider grants to the final user.

IOTI

IoT industrial module for cloud based interoperability & services



This device allows the monitoring and the remote control the unit via Clivet Eye, the supervision cloud system for Clivet units.
With IoT module (i-LINK) it will be possible to monitor and manage the unit through the mobile app Clivet Eye and the dedicated web page.
Among the main functions, for all monitored units they allow to:

- display the main working parameters;
- display the alarms;
- switch on/off the unit;
- change the setpoint;
- change the operating mode;
- set the daily/weekly start-up or power-off programming of the unit;
- create charts of main system parameters trend (via web interface);
- display in a map the units monitored by Clivet Eye (via web interface).

Web interface at www.cliveteye.com.
Clivet Eye app available in Google Play and Apple Store

⚠ IoT module to be provided for each unit to be remotely monitored.
⚠ Internet ethernet connection in charge of customer.
⚠ Clivet Eye management is alternative to an external BMS supervision system.
⚠ Installation is a responsibility of the Customer.

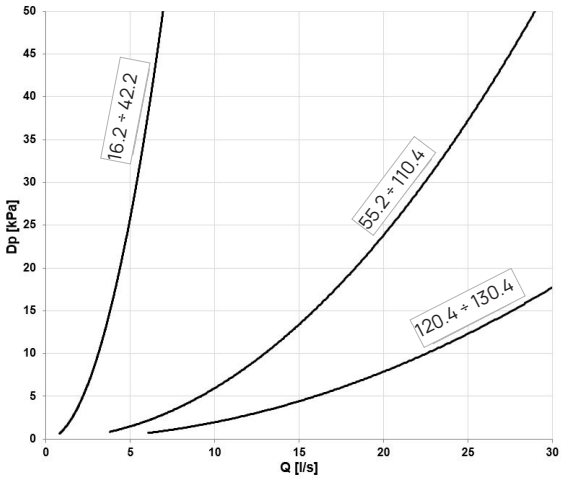
Accessories separately supplied

IFWX **Steel mesh strainer on the water side**

The device prevents fouling of the heat exchanger by any impurities present in the hydraulic circuit. The stainless steel mesh mechanical strainer must be positioned on the water inlet line. It must be easily removable for periodic maintenance and cleaning.
The IFWX accessory includes two water-side strainers, one for the cold-side hydraulic circuit and one for the hot-side hydraulic circuit.

⚠ Check for the presence of the necessary hydraulic shut-off valves on the system to carry out periodic maintenance

Steel mesh strainer pressure drops



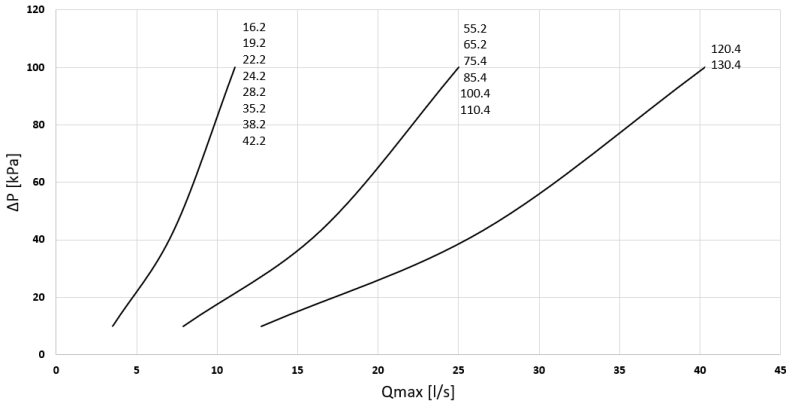
Q = Water flow-rate[l/s]
DP = Pressure drops [kPa]

VACSX **DHW switching valve**

The diverting valve for diverting the water flow towards a domestic hot water storage tank is supplied separately. If the DHW temperature falls below the set-point, GROUND EVO switches to DHW production mode (priority over other operating modes is configurable).
The machine controller closes a digital output driving the flow switching valve from the system to the water tank until it reaches the ACS set-point set on the user interface.
The water connections are 2" Victaulic for sizes 16.2 ÷ 42.2, 3" for sizes 55.2 ÷ 110.4, and 4" for sizes 120.4 ÷ 130.4.

⚠ The maximum DHW set-point that can be set is 5°C lower than the maximum set point that the unit can achieve, to account for heat exchange through the DHW coil or the DHW exchanger installed and sized by the customer.

DHW switching valve pressure drops



Qmax = Water flow-rate[l/s]
Δp = Water side pressure drops [kPa]

AMRX

Anti-vibration mount support

The rubber antivibration mounts are attached in special housing on the support frame and serve to smooth the vibrations produced by the unit thus reducing the noise transmitted to the support structure.

- ⚠ Installation is a responsibility of the Customer.

RCMRX

Remote control via microprocessor control

This option allows to have full control over all the unit functions from a remote position.
It can be easily installed on the wall and has the same aspect and functions of the user interface on the unit.

- ⚠ All device functions can be repeated with a normal portable PC connected to the unit with an Ethernet cable and equipped with an internet navigation browser.
- ⚠ The device must be installed on the wall with suitable plugs and connected to the unit (installation and wiring to be conducted by the Customer). Maximum remote control distance 350 m without auxiliary power supply.
- ⚠ For distances greater than 350 m and in any case less than 700 m it is necessary to install the 'PSX - Mains power unit' accessory.
- ⚠ Data and power supply serial connection cable n.1 twisted and shielded pair. Diameter of the individual conductor 0.8 mm.
- ⚠ Installation is a responsibility of the Customer.

METX

Thermal energy meter supplied separately

The temperature probes measure the instantaneous capacity of the unit through direct reading of the flow-rates and temperature differential.

SPCX

Set-point compensation with outdoor air probe

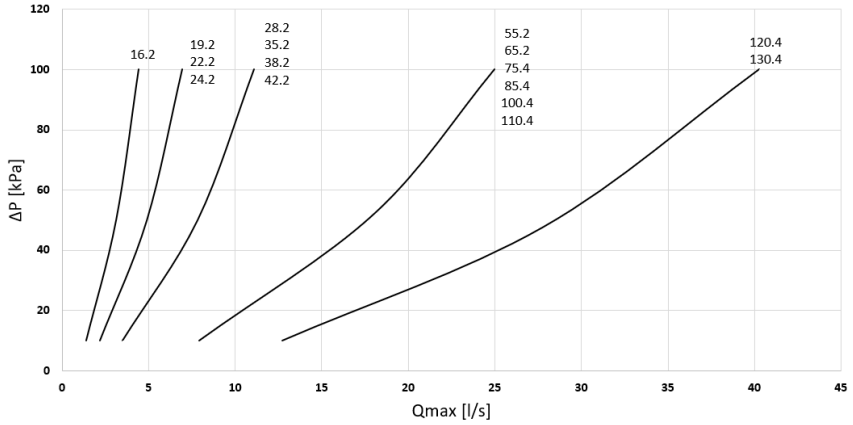
Set-point compensation with air probe varies the set-point calibration according to the outdoor air temperature, allowing energy savings. The probe is connected to the unit's main control module and the maximum connection cable length is 20 meters. The sensor must not be affected by factors that could falsify its reading (e.g., direct sunlight, contact with external heat sources, etc.) and must therefore be placed in a sheltered location.

Accessories separately supplied

VS2MCX **Cold side two-way modulating valve**

VS2MHX **Hot side two-way modulating valve**

The 2-way cold side / hot side modulating valve, installed on the source side exchanger outlet, modulates the flow of water in response to a 0-10 V signal from the unit's controller.

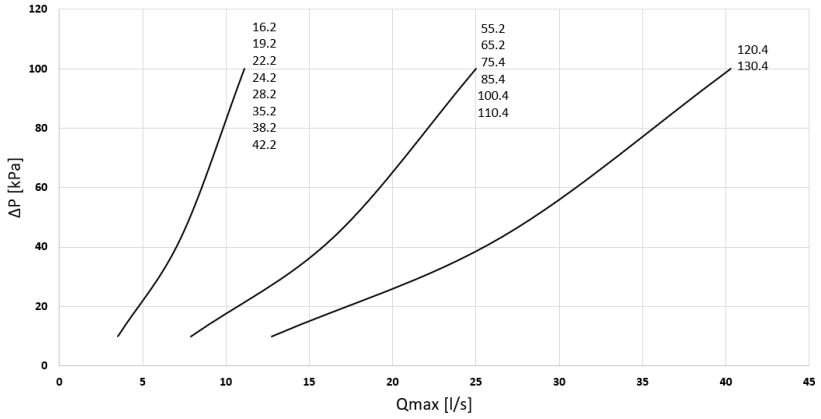


Qmax = Water flow-rate[l/s]
Δp = Water side pressure drops [kPa]

VS3MCX **Cold side three-way modulating valve**

VS3MHX **Hot side three-way modulating valve**

The 3-way cold side / hot side modulating valve connects the hot side exchanger inlet and outlet, thus bypassing the exchanger and reducing the flow of water inside it, while keeping the machine's delivery flow constant.
The valve modulation is managed by a 0-10V signal generated by the unit electronic control.



Qmax = Water flow-rate[l/s]
Δp = Water side pressure drops [kPa]

Technical data

Performances

Size			16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2	75.4	85.4	100.4	110.4	120.4	130.4
Radiant panels																		
Only heating operation																		
Heating capacity (EN14511:2022)	1	kW	54,2	66,7	74,7	83,9	103	117	134	153	190	232	270	300	346	351	420	458
Total power input (EN14511:2022)	2	kW	10,6	12,5	14,0	15,9	19,2	21,9	25,6	28,7	34,5	41,9	50,6	56,5	64,8	70,3	77,3	85,0
COP (EN 14511:2022)	3		5,09	5,32	5,33	5,26	5,37	5,34	5,24	5,32	5,50	5,53	5,33	5,30	5,34	4,99	5,43	5,40
Only cooling operation																		
Cooling capacity (EN14511:2022)	6	kW	61,7	74,2	87,1	97,5	119	136	154	176	217	270	310	343	397	429	487	524
Total power input (EN14511:2022)	2	kW	9,75	11,6	12,9	14,7	17,8	20,4	24,1	27,6	33,0	39,1	47,8	54,6	62,7	69,8	72,9	81,4
EER (EN 14511:2022)	7		6,33	6,38	6,76	6,61	6,67	6,70	6,38	6,39	6,56	6,90	6,48	6,28	6,33	6,15	6,69	6,43
Terminal Unit																		
Only heating operation																		
Heating capacity (EN14511:2022)	4	kW	49,1	58,9	68,3	76,6	94,1	107	123	138	171	212	246	274	314	341	405	444
Total power input (EN14511:2022)	2	kW	13,3	15,6	17,5	19,7	23,8	26,8	31,4	35,0	42,2	51,4	62,4	69,7	79,3	86,6	95,2	104
COP (EN 14511:2022)	3		3,69	3,78	3,90	3,89	3,96	3,99	3,92	3,95	4,06	4,12	3,94	3,94	3,96	3,94	4,25	4,28
Only cooling operation																		
Cooling capacity (EN14511:2022)	8	kW	43,4	52,4	61,5	69,0	84,9	96,7	110	125	155	192	221	246	283	307	350	374
Total power input (EN14511:2022)	2	kW	10,3	12,1	13,6	15,4	18,6	21,2	24,7	27,7	33,7	41,0	49,4	55,0	63,0	68,9	74,5	82,9
EER (EN 14511:2022)	7		4,21	4,32	4,51	4,47	4,56	4,55	4,44	4,50	4,61	4,69	4,48	4,47	4,49	4,46	4,69	4,52
SEER	9		6,51	6,79	7,19	6,95	7,15	7,32	6,73	6,91	7,00	7,66	7,14	7,13	7,56	7,38	7,55	7,63
Radiators																		
Only heating operation																		
Heating capacity (EN14511:2022)	5	kW	47,7	57,0	65,9	74,1	90,9	103	119	134	165	204	239	265	303	330	392	428
Total power input (EN14511:2022)	2	kW	16,4	19,1	21,7	24,4	29,4	32,9	38,2	43,0	51,9	62,7	76,3	85,2	96,6	106	116	126
COP (EN 14511:2022)	3		2,91	2,98	3,04	3,04	3,10	3,15	3,12	3,12	3,18	3,26	3,13	3,11	3,13	3,12	3,38	3,39

1. Data referred to the following conditions: Hot side exchanger water temperature 30/35°C. Cold side exchanger water temperature 10/7°C. Performance data calculated with reference to EN14511:2022
2. 2, The total power draw is calculated by adding the compressor's power draw + the draw required to overcome the internal service and source side pressure drops + the control circuit power draw
3. COP (EN 14511:2022) heating performance coefficient. Ratio between delivered heating capacity and power input in compliance with EN 14511:2022
4. Data referred to the following conditions: Cold side exchanger water temperature 40/45°C. Hot side exchanger water temperature 10/7°C. Performance data calculated with reference to EN14511:2022
5. Data referred to the following conditions: Cold side exchanger water temperature 50/55°C. Hot side exchanger water temperature 10/7°C. Performance data calculated with reference to EN14511:2022
6. Data referred to the following conditions: Cold side exchanger water temperature 23/18°C. Hot side exchanger water temperature 30/35 °C. Performance data calculated with reference toEN14511:2022
7. EER (EN 14511:2022) cooling performance coefficient. Ratio between delivered cooling capacity and power input in compliance with EN 14511:2022
8. Data referred to the following conditions: Cold side exchanger water temperature 12/7°C. Hot side exchanger water temperature 30/35 °C. Performance data calculated with reference to EN14511:2022
9. Data calculated in compliance with Standard EN 14825:2022

Technical data

Technical specifications

Size			16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2	75.4	85.4	100.4	110.4	120.4	130.4
Compressor																		
Type of compressors			Scroll															
Refrigerant			R-32															
N° compressors		Nr	2										4					
Std Capacity control steps		Nr	3	3	3	3	3	3	3	3	3	3	8	8	8	4	12	8
Oil charge		l	6,0	6,3	6,3	6,6	6,9	9,4	9,7	9,7	12,2	12,2	19,4	19,4	24,4	24,4	24,4	24,4
Refrigerant charge		kg	4,1	4,3	5,2	5,3	6,9	8,3	8,7	8,8	12,0	15,6	21,4	24,6	26,9	27,0	34,4	41,0
Refrigeration circuits		Nr	1										2					
Cold side exchanger																		
Type of exchanger	1		PHE															
No. Exchanger		Nr	1															
Water flow rate (Cold side)	2	l/s	2,06	2,49	2,93	3,28	4,04	4,6	5,22	5,93	7,38	9,15	10,5	11,7	13,5	14,6	16,6	17,8
Hot side exchanger																		
Type of exchanger	1		PHE															
No. Exchanger		Nr	1															
Water flow rate (Hot side)	2	l/s	2,58	3,09	3,06	4,04	4,96	5,65	6,44	7,28	9,07	11,2	13,0	14,4	16,6	18,0	20,3	21,9
Connections																		
Water fittings (Standard units)			2"										3"				4"	
Water circuit																		
Maximum water side pressure	3	MPa	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum system water content		l	400	500	600	700	800	900	1100	1200	1500	1900	1200	1300	1500	1600	1800	2000
Power supply																		
Standard power supply		V	400V / 3~ / 50Hz															

1. PHE = plate exchanger
2. Data referred to the following conditions: Cold side exchanger water temperature 12/7°C. Hot side exchanger water temperature 30/35 °C. Performance data calculated with reference to EN14511:2022
3. Conditions for cold-side and hot-side circuits. In configurations with hydronic assemblies, the maximum water-side pressure is 6 bar

Electrical data

Power supply: 400/3/50 Hz.

Size		16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2	75.4	85.4	100.4	110.4	120.4	130.4
F.L.A. - Full load current at max admissible conditions																	
F.L.A. - Total	A	33,4	37,6	42,6	47,6	58,0	63,3	73,6	82,3	99,1	120,2	146,3	163,7	179,9	197,3	218,3	239,3
F.L.I. - Full load power input at max admissible conditions																	
F.L.I. - Total	kW	19,3	22,0	25,2	28,3	34,1	38,7	44,5	49,7	61,0	73,4	88,4	98,9	111,1	121,5	133,9	146,3
M.I.C. Maximum inrush current																	
M.I.C. - Value	A	115,2	159,9	164,9	170,0	222,7	245,0	255,3	296,3	313,1	430,4	327,9	377,6	393,8	411,2	528,5	549,5
M.I.C. with soft start accessory	A	33,4	37,6	42,6	47,6	58,0	63,3	73,6	82,3	99,1	120,2	146,3	163,7	179,9	197,3	218,3	239,3

Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations.
Power supply 400/3/50 +/- 10%
Voltage unbalance between phases: max 2 %
For non standard voltage please contact Clivet technical office
Units are in compliance with the europeans law CEI EN 60204 and CEI EN 60335

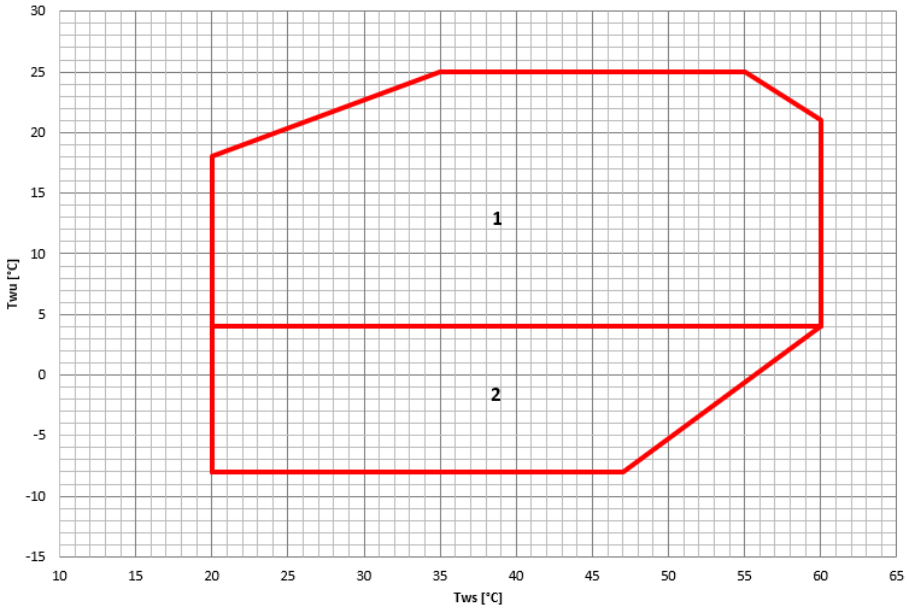
Sound levels

Size	Sound power level (dB)								level Power Sound	level Sound pressure
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
16.2	67	56	49	55	63	52	54	49	**64**	**47**
19.2	66	57	51	57	65	55	57	52	**67**	**50**
22.2	64	57	50	58	65	52	57	52	**67**	**50**
24.2	69	56	53	59	67	52	59	54	**69**	**52**
28.2	67	57	56	68	68	58	60	55	**71**	**54**
35.2	68	53	60	74	71	61	61	59	**75**	**58**
38.2	66	54	61	75	72	62	61	59	**75**	**59**
42.2	66	54	59	73	70	62	60	56	**74**	**57**
55.2	65	54	59	75	71	64	63	59	**75**	**58**
65.2	69	58	63	81	74	71	67	64	**80**	**63**
75.4	69	57	64	78	75	66	64	62	**78**	**61**
85.4	69	57	62	76	73	65	63	59	**77**	**59**
100.4	70	60	64	79	75	67	67	64	**79**	**62**
110.4	68	57	62	78	74	67	66	62	**78**	**61**
120.4	70	60	64	82	76	71	69	65	**81**	**64**
130.4	72	61	66	84	77	74	70	67	**83**	**66**

Sound levels refer to units with full load under nominal test conditions.
The sound pressure level refers to a distance of 1 meter from the outer surface of the unit operating in open field.
Measurements are carried out in compliance with UNI EN ISO 9614-1
The sound power data is not certified by Eurovent.
Data referred to the following conditions:
User-side heat exchanger inlet / outlet water temperature 12/7 °C
Entering / leaving exchanger water temperature source side 30/35°C

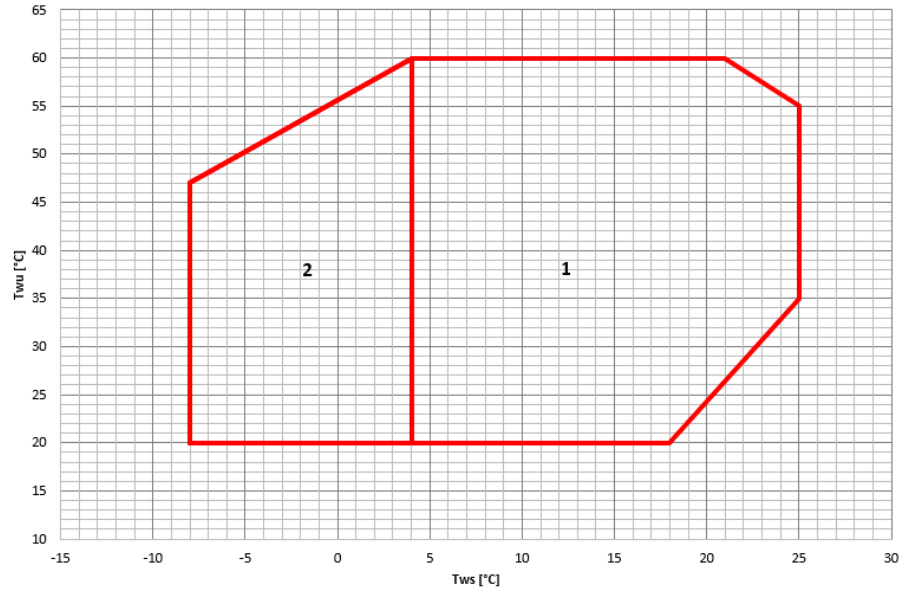
Technical data

Operating Range (Cooling)



Twu [°C] = Cold-side leaving water temperature
Tws [°C] = Hot-side leaving water temperature
1. Standard unit operating range
2. Operating range with antifreeze

Operating Range (Heating)



Twu [°C] = Hot-side leaving water temperature
Tws [°C] = Cold-side leaving water temperature
1. Standard unit operating range
2. Operating range with antifreeze

Correction factors for glycol use

% ETHYLENE GLYCOL BY WEIGHT		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19,0	-23,4	-27,8	-32,7
Safety temperature	°C	3	1	-1	4	-6	-10	-14	-19	-23,8	-29,4
Cooling Capacity Factor (evaporator)	-	0,997	0,994	0,990	0,986	0,981	0,976	0,970	0,964	0,957	0,950
Compressor power input Factor (evaporator)	-	0,999	0,999	0,998	0,997	0,996	0,996	0,995	0,994	0,993	0,993
Glycol solution flow rate factor (evaporator)	-	1,017	1,036	1,055	1,075	1,097	1,119	1,143	1,168	1,195	1,224
Pressure drop factor (evaporator)	-	1,016	1,035	1,056	1,080	1,106	1,135	1,166	1,200	1,236	1,275
Cooling Capacity Factor (condenser)	-	0,998	0,997	0,995	0,993	0,991	0,99	0,988	0,986	0,984	0,983
Compressor power input Factor (condenser)	-	1,002	1,004	1,006	1,008	1,01	1,012	1,014	1,016	1,018	1,02
Glycol solution flow rate factor (condenser)	-	1,016	1,032	1,049	1,067	1,086	1,106	1,127	1,148	1,171	1,196
Pressure drop factor (condenser)	-	1,015	1,032	1,051	1,072	1,096	1,122	1,15	1,18	1,213	1,248

% propylene glycol by weight		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19,0	-23,4	-27,8	-32,7
Safety temperature	°C	3	1	-1	4	-6	-10	-14	-19	-23,8	-29,4
Cooling Capacity Factor (evaporator)	-	0,995	0,990	0,983	0,976	0,968	0,960	0,950	0,939	0,928	0,916
Compressor power input Factor (evaporator)	-	0,999	0,997	0,995	0,993	0,991	0,988	0,986	0,983	0,98	0,977
Glycol solution flow rate factor (evaporator)	-	1,020	1,041	1,062	1,085	1,109	1,134	1,161	1,188	1,218	1,249
Pressure drop factor (evaporator)	-	1,027	1,058	1,093	1,133	1,176	1,224	1,276	1,332	1,393	1,457
Cooling Capacity Factor (condenser)	-	0,996	0,992	0,988	0,983	0,978	0,973	0,967	0,961	0,954	0,948
Compressor power input Factor (condenser)	-	1,003	1,005	1,008	1,01	1,013	1,015	1,018	1,02	1,023	1,025
Glycol solution flow rate factor (condenser)	-	1,019	1,038	1,058	1,079	1,101	1,123	1,147	1,172	1,198	1,225
Pressure drop factor (condenser)	-	1,024	1,052	1,084	1,119	1,159	1,202	1,248	1,299	1,353	1,412

Fattori di correzione incrostazioni

	Evaporator		Condenser	
m^2 °C / W	F1	FK1	F2	FK2
0.44 x 10 (-4)	1	1	1	1
0.88 x 10 (-4)	0.97	0.99	0.97	1.08
1.76 x 10 (-4)	0.94	0.98	0.92	1.05

F = Cooling capacity correction factor
FK = Compressor power input correction factor

Technical data

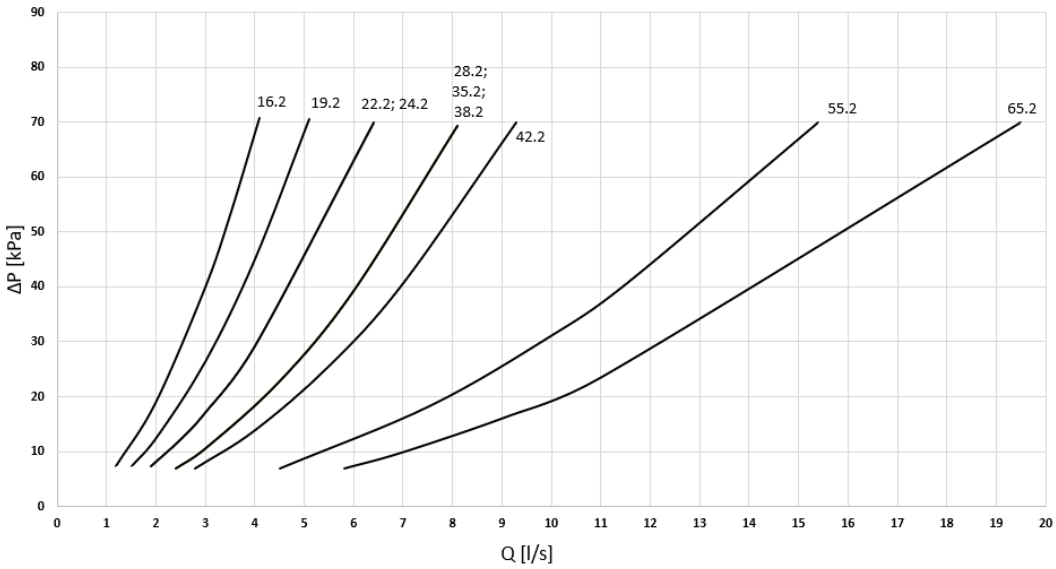
Overload and control device calibrations

		Intervention	Reset	Value
High pressure switch (gas side)	[kPa]	4230	3300	-
Low pressure alarm (gas side)	[kPa]	300	470	-
Antifreeze protection	[°C]	4	6	-
High pressure safety valve (gas side)	[kPa]	-	-	4700
Low pressure safety valve (gas side)	[kPa]	-	-	3000
Max no. of compressor starts per hour (gas side)	[n°]	-	-	6
Differential pressure switch (water side)	[kPa]	5	8	-
Max. pressure without hydronic assembly (water side)	[kPa]	-	-	1000
Max. pressure with hydronic assembly (water side)	[kPa]	-	-	600
Safety valve calibration (water side) (1)	[kPa]	-	-	600

(1) Available only with hydronic assembly option

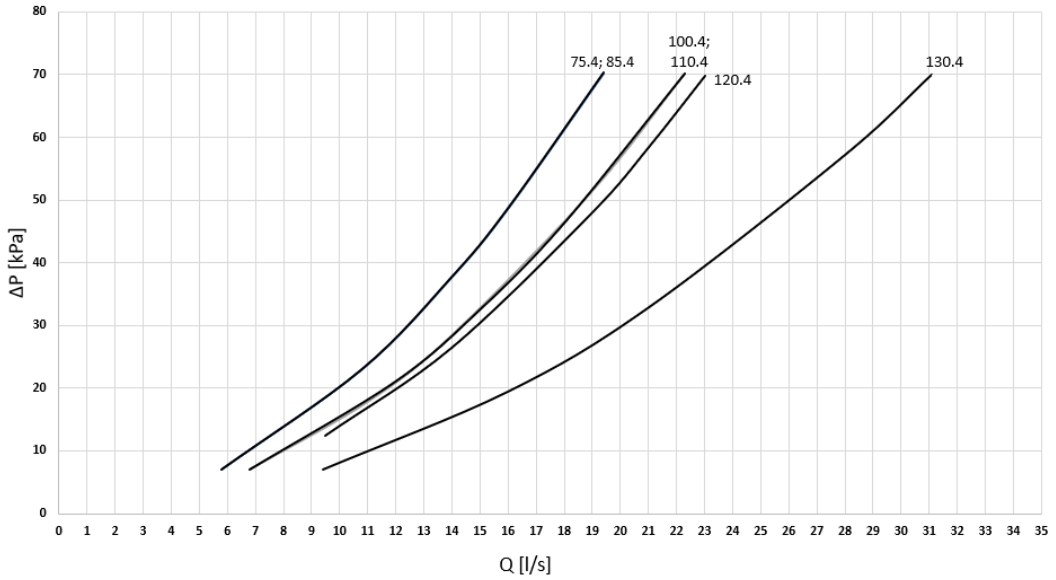
Exchanger pressure drops - Cold side

Single-circuit (16.2 ÷ 65.2)



ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Dual-circuit (75.4 ÷ 130.4)



ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Admissible water flow-rates

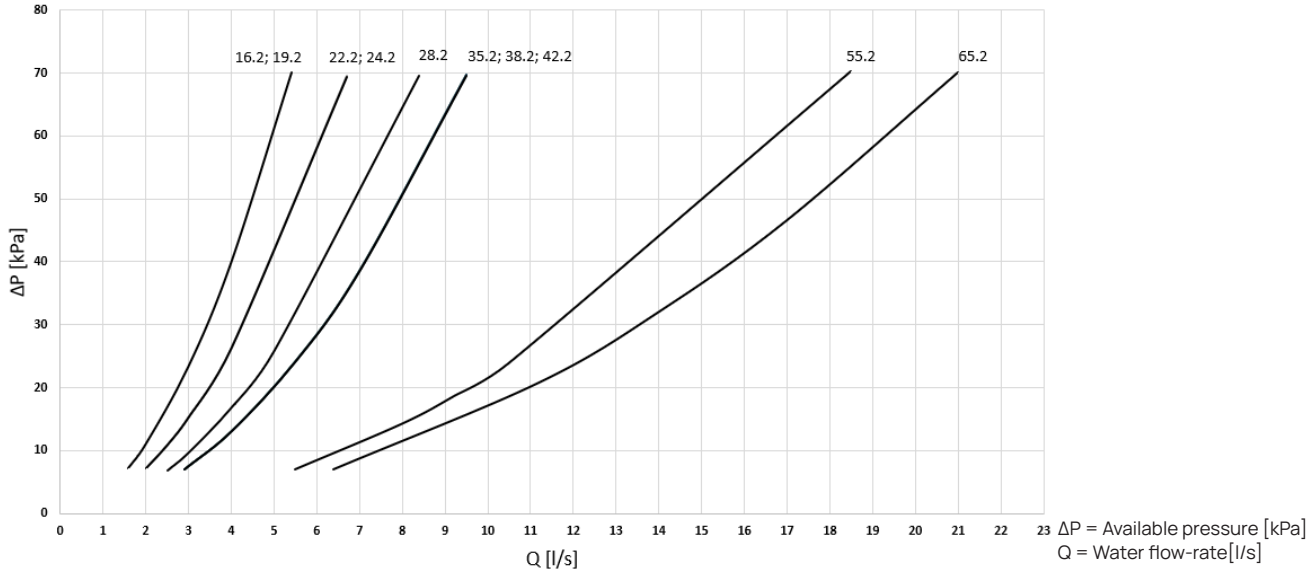
Minimum (Qmin) and maximum (Qmax) admissible water flow-rates for correct operation of the unit.

Size		16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2	75.4	85.4	100.4	110.4	120.4	130.4
Qmin	l/s	1,2	1,5	1,3	1,3	2,4	2,4	2,4	2,8	4,5	5,8	5,8	5,8	6,8	6,8	7,1	9,4
Qmax	l/s	4,1	5,1	6,4	6,4	8,1	8,1	8,1	9,9	15,4	19,5	19,4	19,4	22,9	22,9	23,8	31,1

Technical data

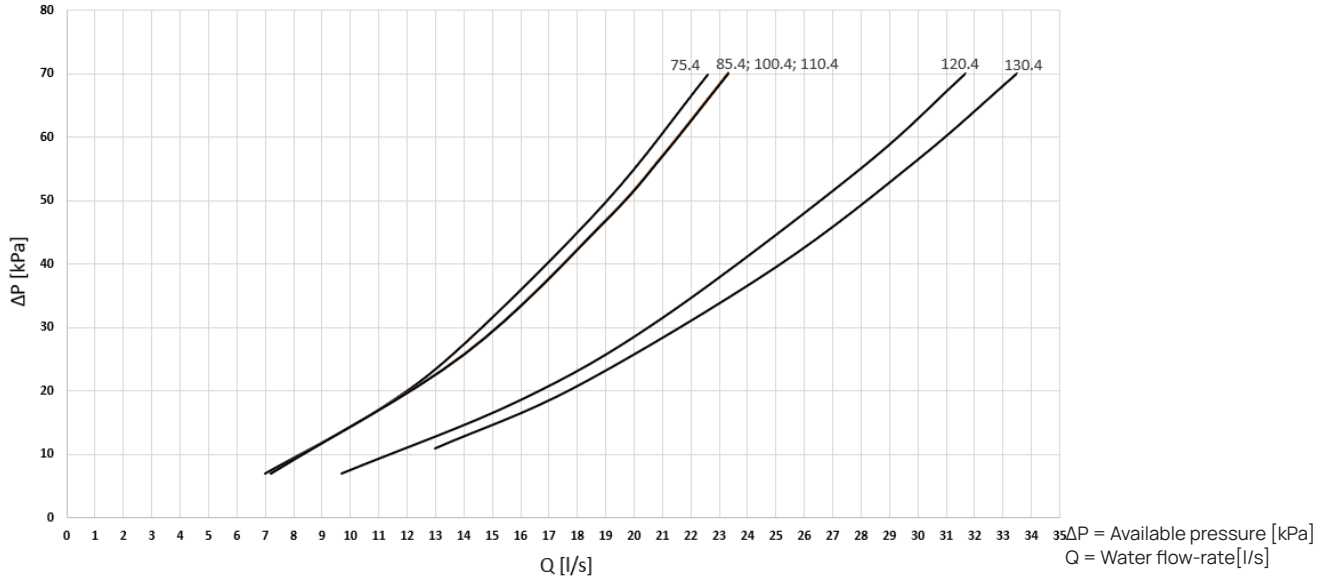
Exchanger pressure drops - Hot side

Single-circuit (16.2 ÷ 65.2)



ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Dual-circuit (75.4 ÷ 130.4)



ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Admissible water flow-rates

Minimum (Qmin) and maximum (Qmax) admissible water flow-rates for correct operation of the unit.

Size		16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2	75.4	85.4	100.4	110.4	120.4	130.4
Qmin	l/s	1,6	1,6	2	2	2,5	2,9	2,9	2,9	5,5	6,4	7	7,2	7,2	7,2	9,7	10,3
Qmax	l/s	5,4	5,4	6,7	6,7	8,4	9,5	9,5	9,5	18,5	21	22,6	23,3	23,3	23,3	31,7	33,5

Natural Cooling functions

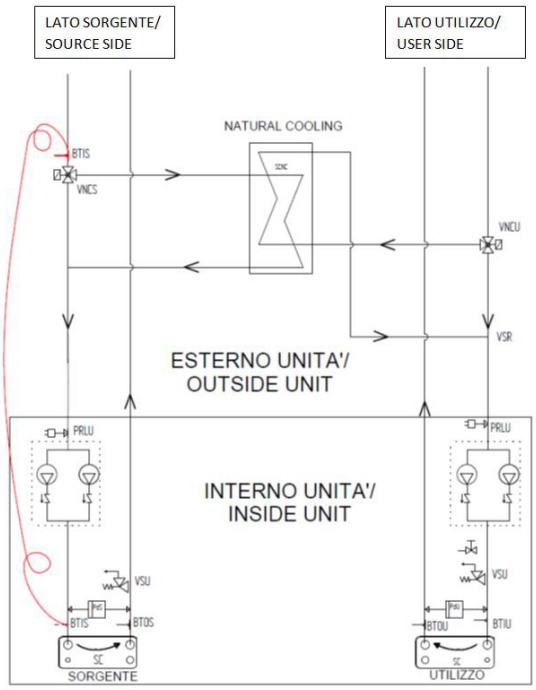
Enabling the Natural Cooling functions, the unit is able to independently manage a system for cold production using source water in the event the temperature conditions of the fluid are favorable.
In this case, the source is managed as if it were the first unit available capacity step and can be used to cover the 100% of the cooling load or also, in integration to the compressors, to cover a part of the cold demand by resetting or reducing the compressor power input.
The Natural Cooling installation should include the following additional components (not supplied by Clivet):

1. Natural Cooling water/water exchanger (SCNC in the main scheme): this exchanger shall be suitably dimensioned according to the fluid temperature, user and source side, and according to the pressure drop of the remaining part of the installation and to the unit available static pressure if pumps are not built-in.
2. Two 3-way on/off or equivalent valves (VNCS and VNCU in the main scheme): one on the source circuit and one on the user circuit. Also these have to be suitably dimensioned according to the expected flow rates. For the correct operation of the Natural Cooling function, the set point control must be set on supply (parameter 436 Tiporeg).

In the installation set up phase it will be necessary to remotely the probe on the source input water upstream of the switching valve source side (VNCS).
The unit can be selected with or without hydronic assemblies user and source side: the system must be able to absorb/manage the flow rate/head variations due to the heater change after the Natural Cooling exchanger insertion and exclusion.
The unit control provides an on/off signal to enable the Natural Cooling by switching the valves.
The Natural Cooling is enabled if the two following conditions are satisfied:

1. the entering water temperature, source side, must be lower than the cooling set point plus a delta defined by parameter 365 DeltaNC (the value can be positive or negative) [Tws_in < (Set_cooling + DeltaNC)]
2. the entering water temperature, user side, must be higher than the entering water temperature, source side, plus a delta defined by parameter 366 IsteresiStopNC (the value can be only positive) [Tws_in < (Twu_in + IsteresiStopNC)]

If one of these two conditions is not satisfied the Natural Cooling is disabled.



PDU	Differential pressure switch, user side
PDS	Differential pressure switch, source side
PRLU	Installaton load pressure switch adjusted at 0.5 bar
SC	Plate heat exchanger
VSU	Safety valve adjusted at 6 bar (only if pumps or valves are present)
VSR	Exhaust valve
BTIS	Entering temperature probe, source side (to remotely)
BTOS	Leaving temperature probe, source side
BTIU	Entering temperature probe, user side
BTOU	Leaving temperature probe, user side
VNCS	Natural Cooling valve, source side (provided by the Customer)
VNCU	Natural Cooling valve, user side (provided by the Customer)
SCNC	Natural Cooling exchanger (provided by the Customer)

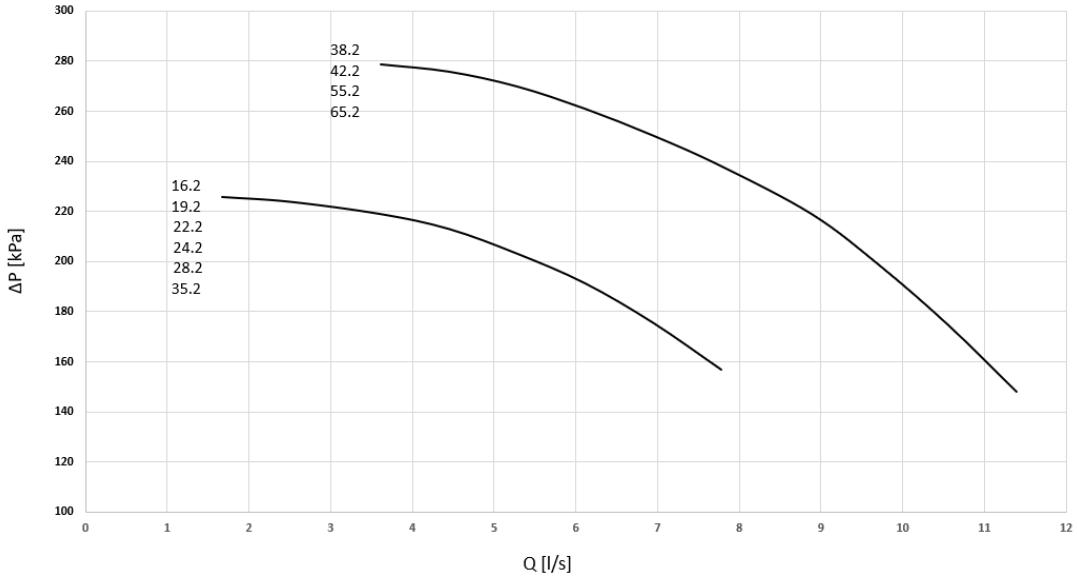
Hydronic groups

HYGC1 / HYGH1 - Hot side / Cold side hydronic assembly with 1 on-off pump

1P1SBCO / 1P1SBHO- Hot side / Cold side hydroni assembly 1+1 on-off pump

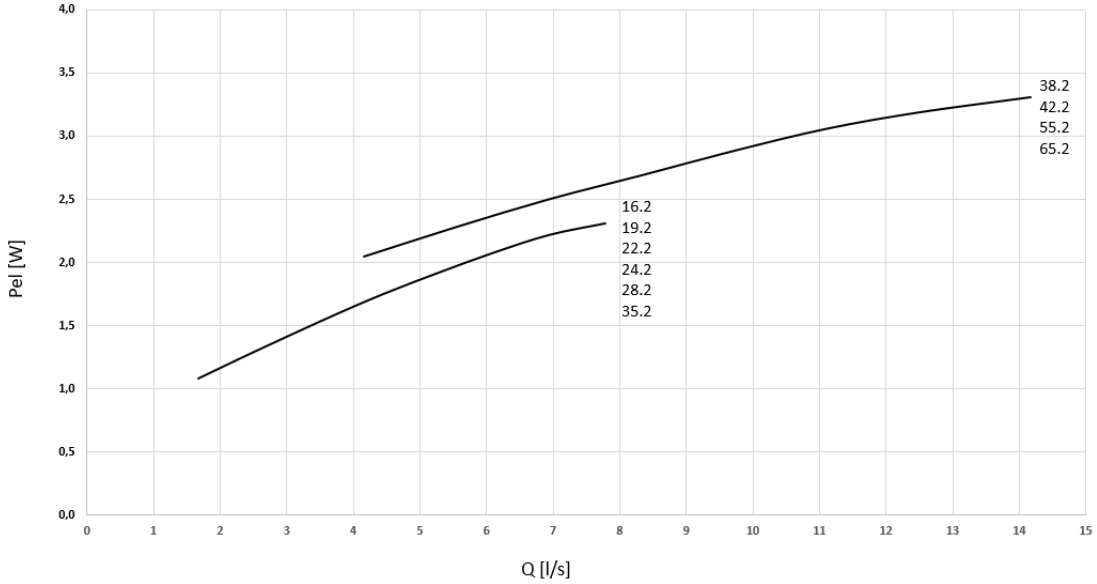
Configuration with one or two fixed-speed centrifugal pumps with ON/OFF control. The pump casing and impeller are made of AISI 304 stainless steel. In the two-pump configuration, one pump is in service and the other serves as a standby pump. All hydraulic connections are Victaulic-type.
Each pump is fitted with a three-phase electric motor rated IP55 and a thermoformed insulating shell.

Available head - Sizes 16.2 ÷ 65.2



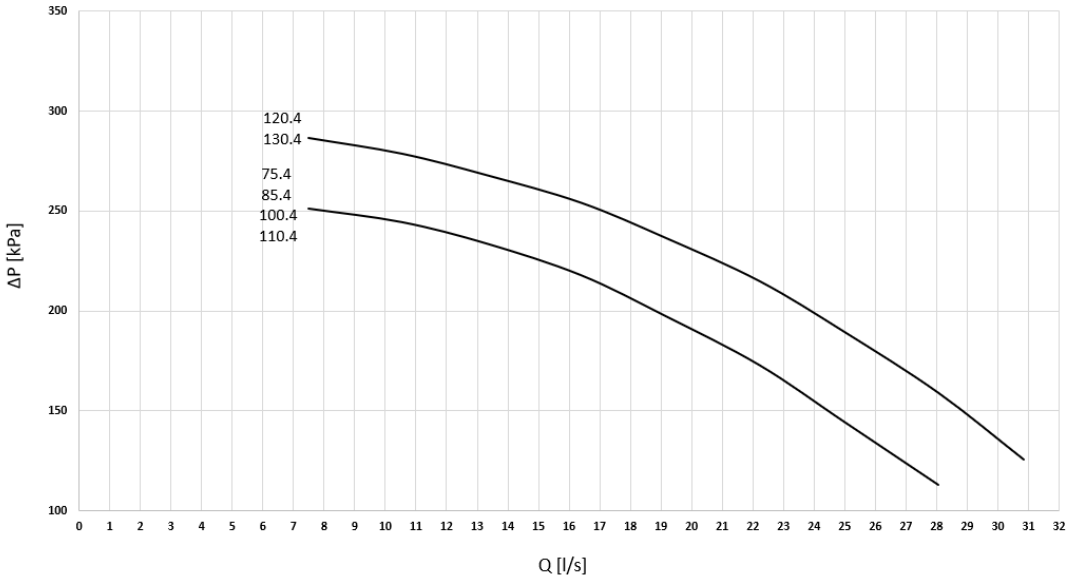
ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Power input - Sizes 16.2 ÷ 65.2



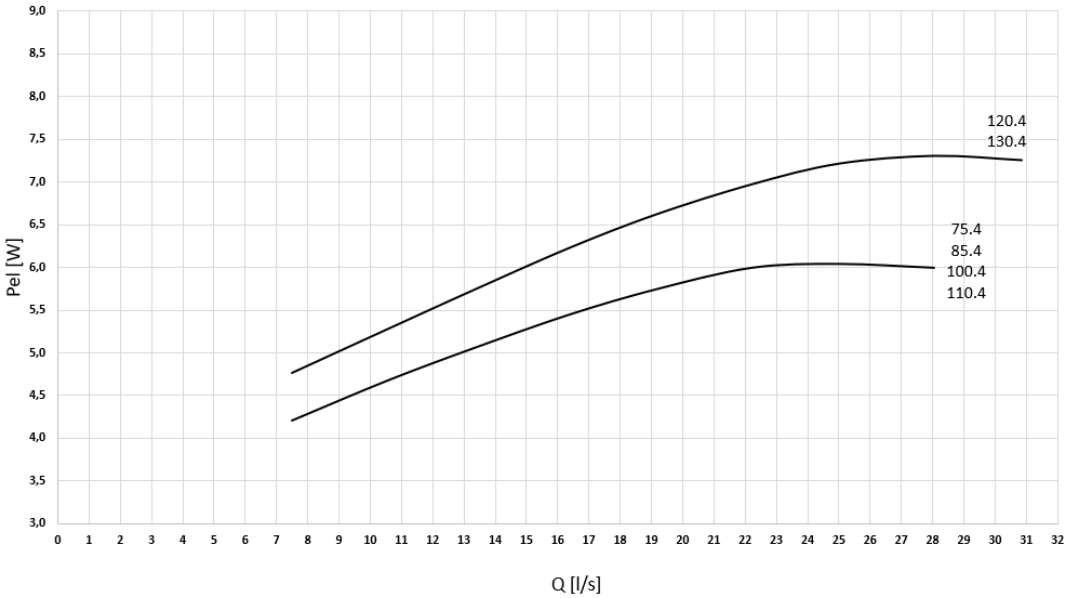
Pel = Electrical power input [W]
Q = Water flow-rate[l/s]

Head - Size 75.4 ÷ 130.4



ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Power input - Size 75.4 ÷ 130.4



Pel = Electrical power input [W]
Q = Water flow-rate[l/s]

Electrical data

Size		16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2	75.4	85.4	100.4	110.4	120.4	130.4
FLI	A	2,2	2,2	2,2	2,2	2,2	2,2	3,0	3,0	3,0	3,0	5,5	5,5	5,5	5,5	7,5	7,5
FLA	kW	5,1	5,1	5,1	5,1	5,1	5,1	7,0	7,0	7,0	7,0	11,5	11,5	11,5	11,5	15,4	15,4

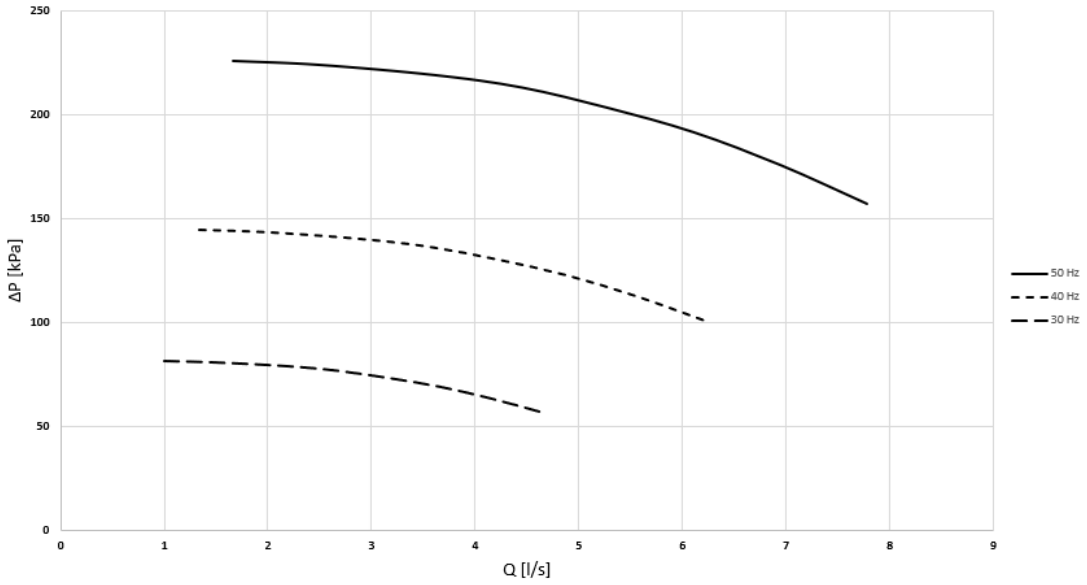
Hydronic groups

HYGC1V / HYGH1V - Hot side / Cold side hydronic assembly with 1 inverter pump

1P1SBC / 1P1SBH - Hot side / Cold side hydronic assembly 1+1 inverter pump

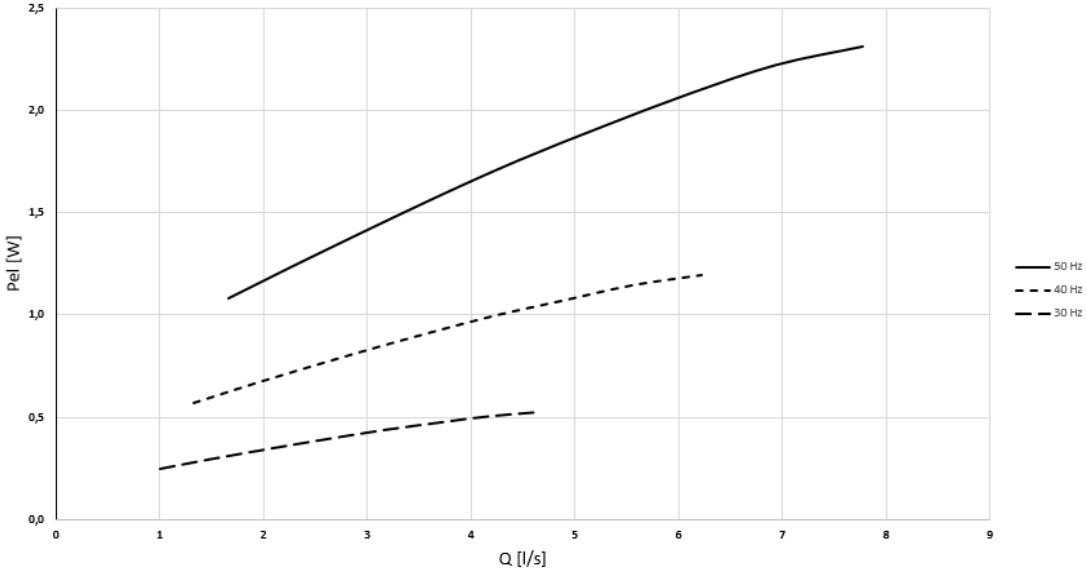
Configuration with one or two inverter-driven centrifugal pumps. The pump casing and impeller are made of AISI 304 stainless steel. In the two-pump configuration, one pump is in service and the other serves as a standby pump. All hydraulic connections are Victaulic-type.
Each pump is fitted with a three-phase electric motor rated IP55 and a thermoformed insulating shell.
The controller modulates the water flow rate to maintain a constant temperature difference (ΔT) between the water inlet and outlet. Under critical water temperature conditions, the controller automatically reduces the flow rate to extend the unit's operating range.

Head - Size 16.2 ÷ 35.2



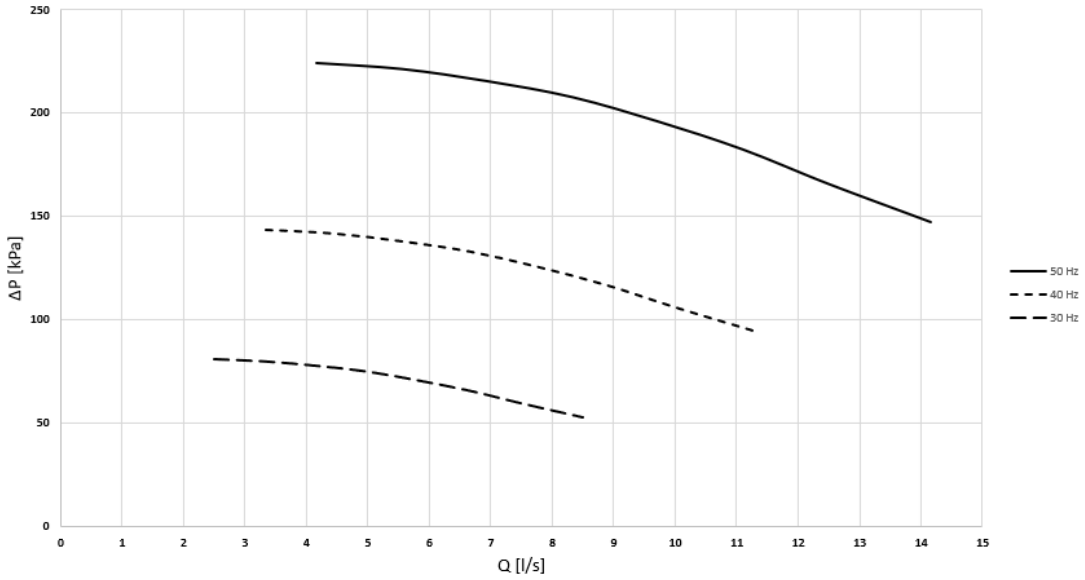
ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Power input - Size 16.2 ÷ 35.2



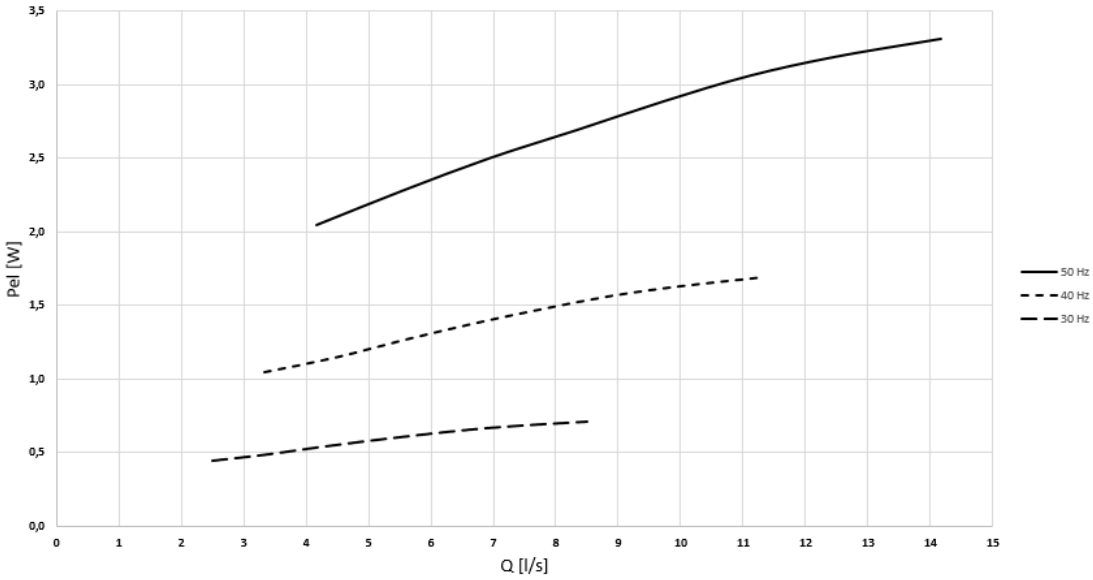
Pel = Electrical power input [W]
Q = Water flow-rate[l/s]

Head - Size 38.2 ÷ 55.2



ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Power input - Size 38.2 ÷ 65.2



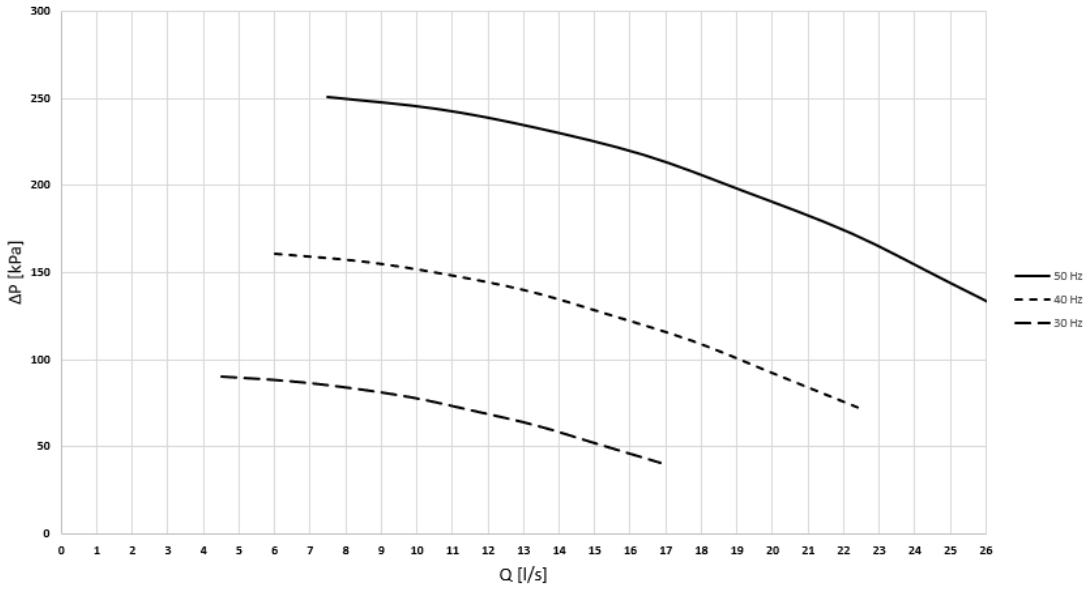
Pel = Electrical power input [W]
Q = Water flow-rate[l/s]

Electrical data

Size		16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2
FLI	A	2,2	2,2	2,2	2,2	2,2	2,2	3,0	3,0	3,0	3,0
FLA	kW	5,1	5,1	5,1	5,1	5,1	5,1	7,0	7,0	7,0	7,0

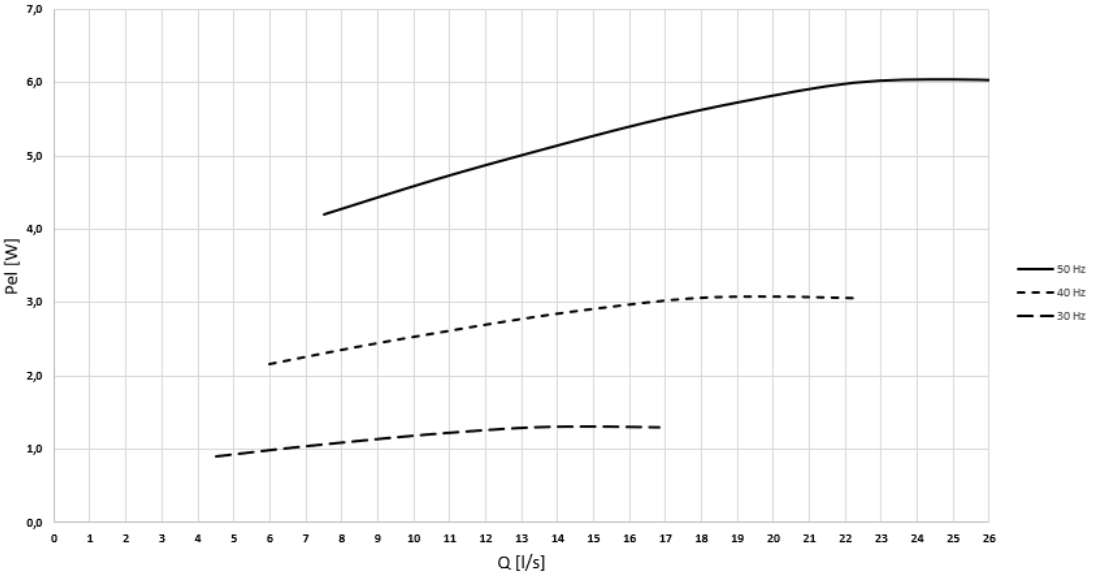
Hydronic groups

Head - Size 75.4 ÷ 110.4



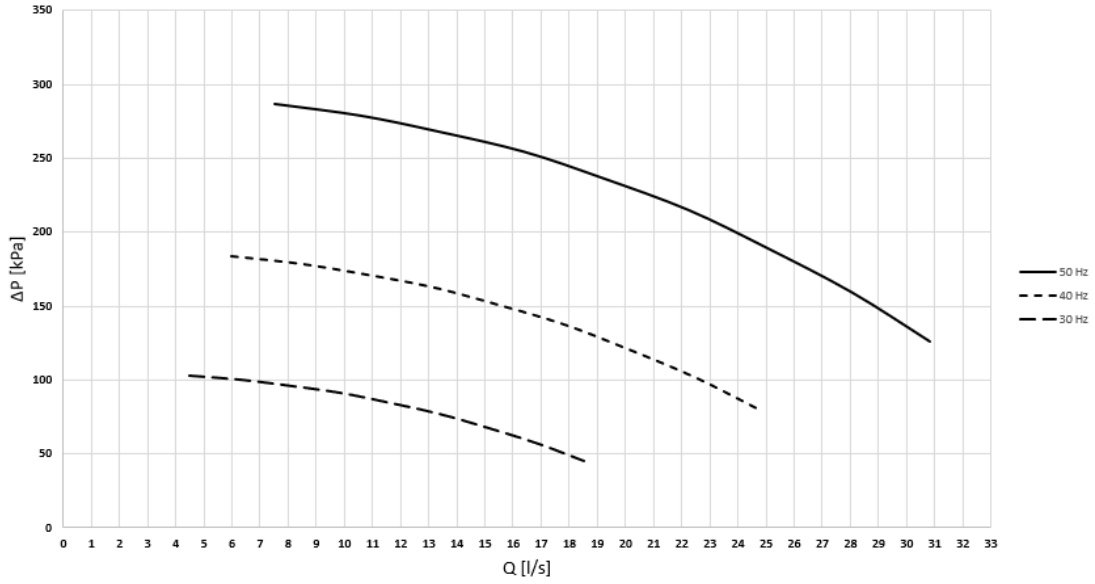
ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Power input - Size 75.4 ÷ 110.4



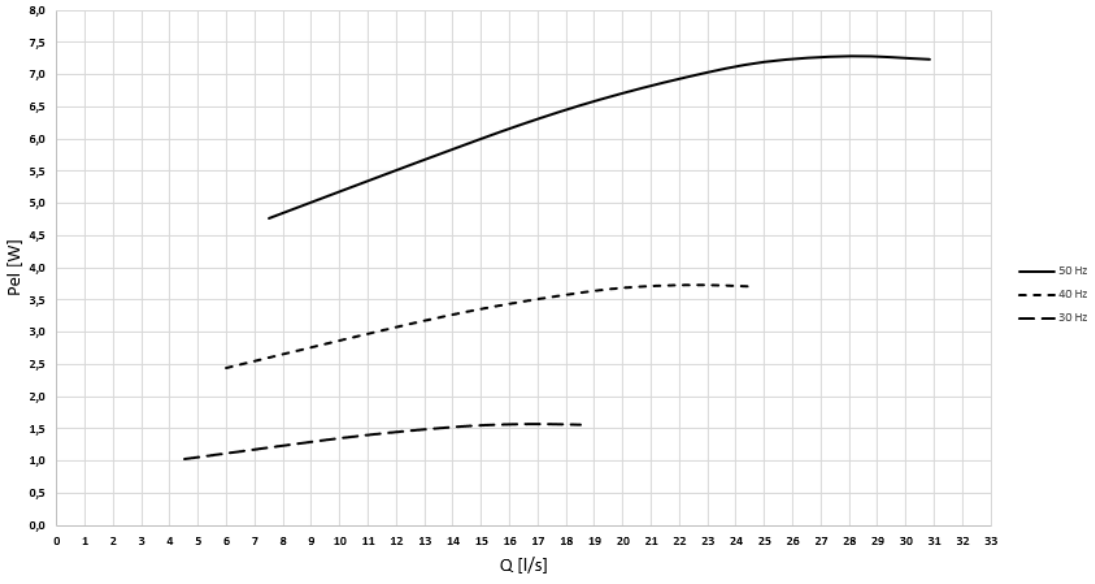
Pel = Electrical power input [W]
Q = Water flow-rate[l/s]

Head - Size 120.4 ÷ 130.4



ΔP = Available pressure [kPa]
Q = Water flow-rate[l/s]

Power input - Size 120.4 ÷ 130.4



Pel = Electrical power input [W]
Q = Water flow-rate[l/s]

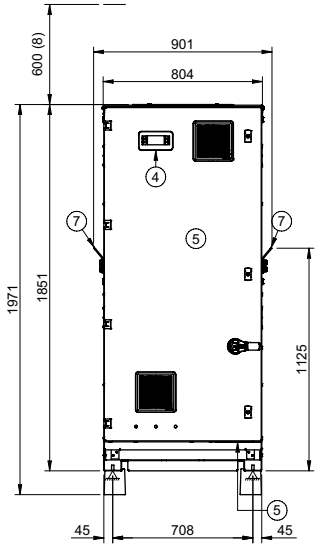
Electrical data

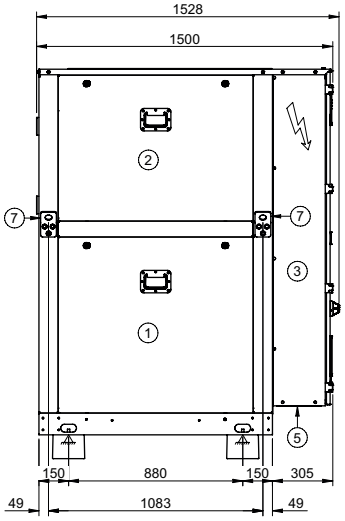
Size		75.4	85.4	100.4	110.4	120.4	130.4
FLI	A	5,5	5,5	5,5	5,5	7,5	7,5
FLA	kW	11,5	11,5	11,5	11,5	15,4	15,4

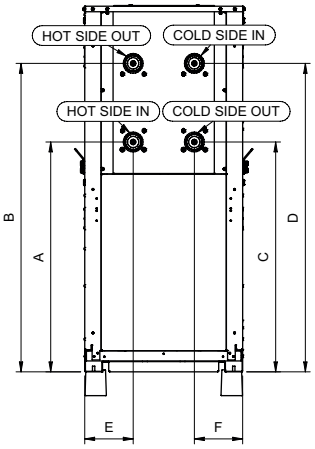
Dimensional drawings

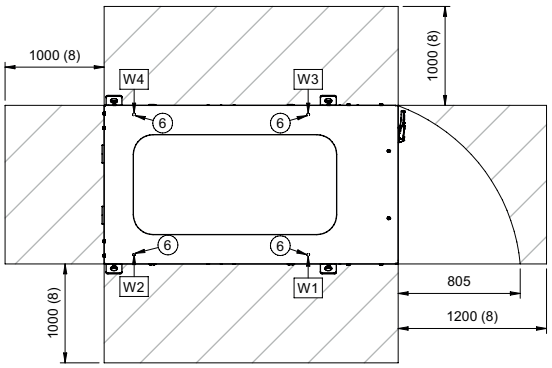
Standard version - Sizes 16.2 ÷ 65.2

16127160021585_A
DATA/DATE 25/08/2026







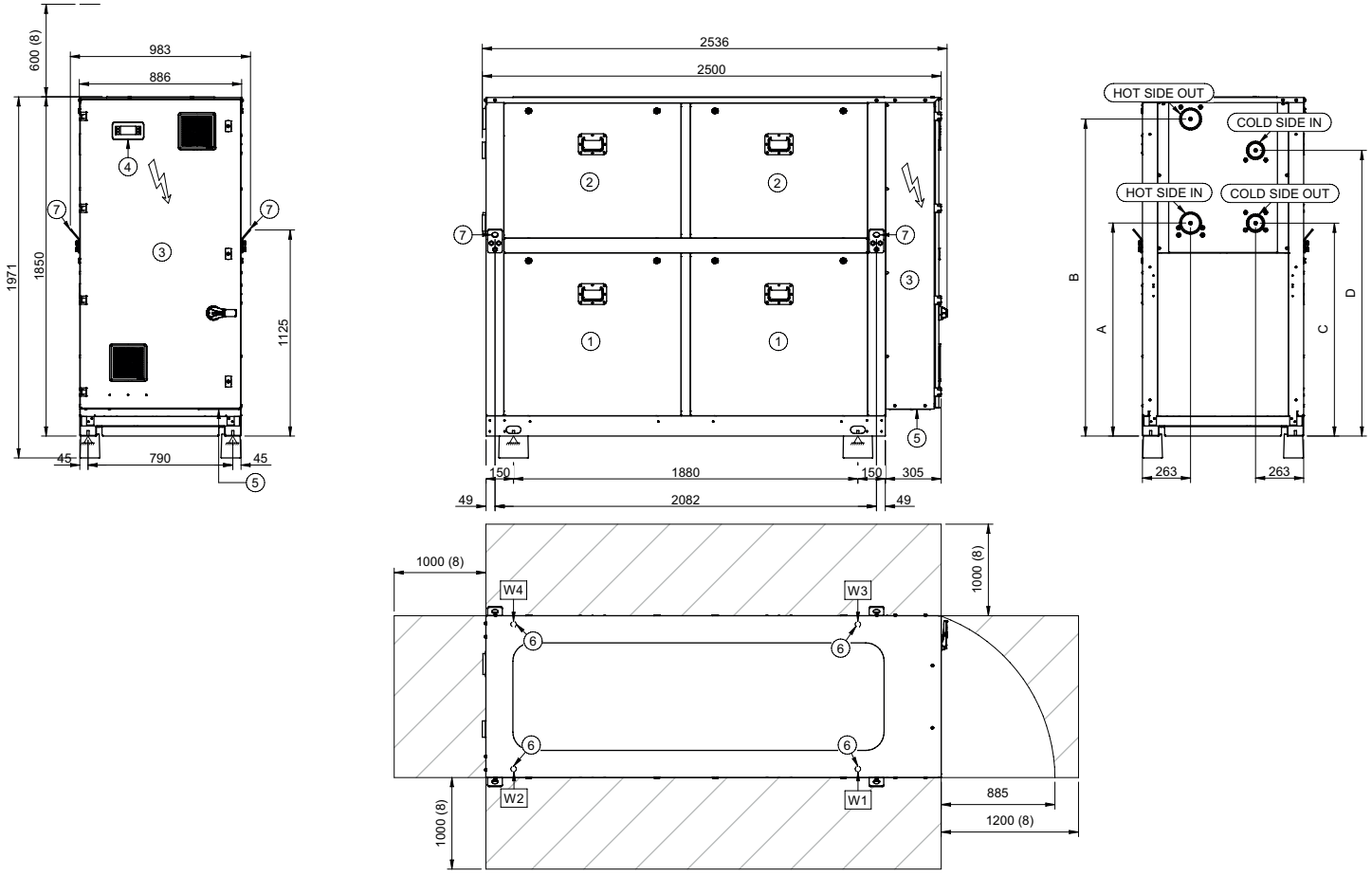


1. Compressor enclosure
2. Refrigeration circuit enclosure
3. Electrical panel
4. Control keypad
5. Power input
6. Unit fixing holes
7. Lifting brackets (Removable)
8. Functional space

SIZE		16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2
Length	mm	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528
Depth	mm	804	804	804	804	804	804	804	804	804	804
Height	mm	1851	1851	1851	1851	1851	1851	1851	1851	1851	1851

Standard version - Sizes 75.4 ÷ 130.4

16127160021583_A
DATA/DATE 25/08/2026



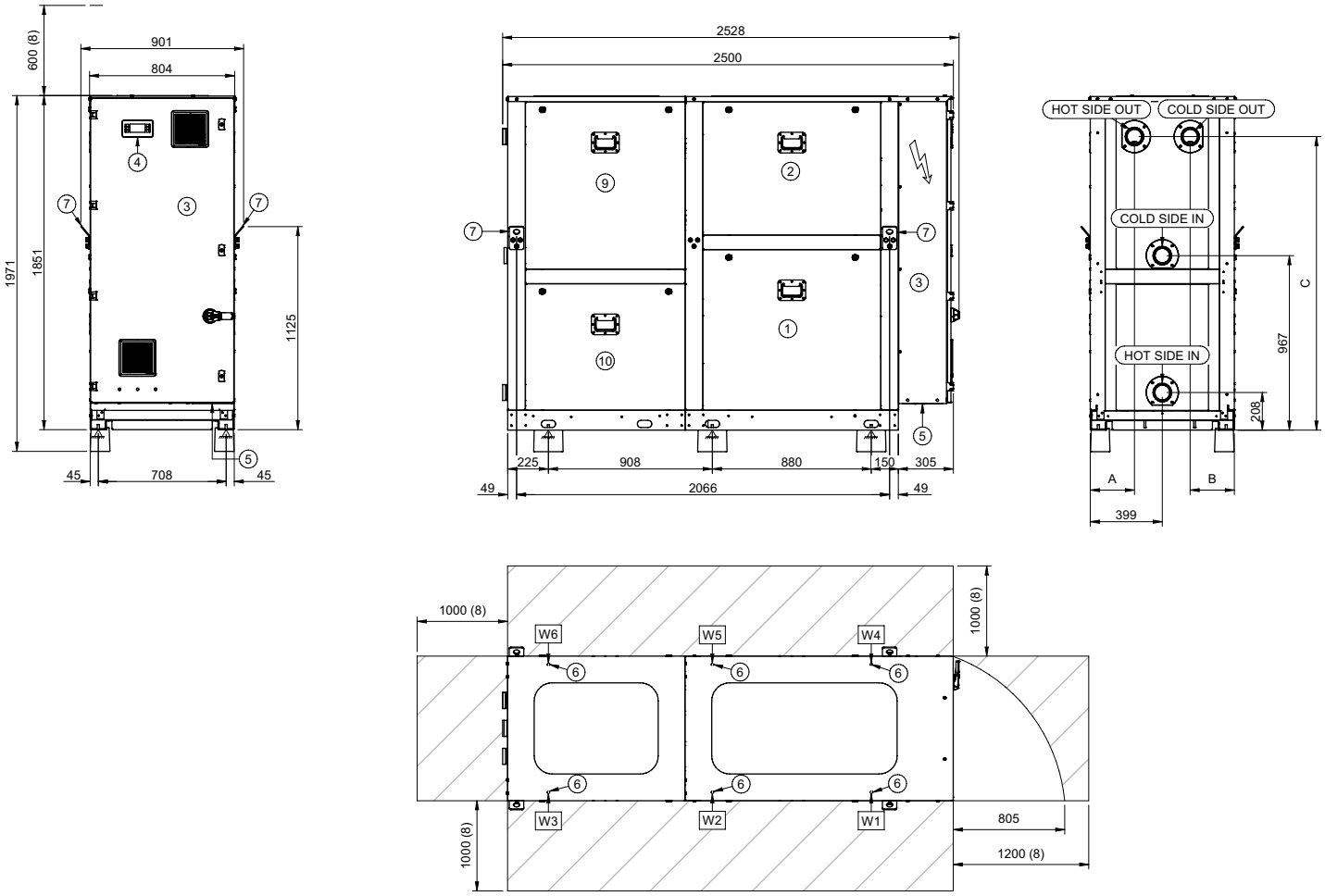
1. Compressor enclosure
2. Refrigeration circuit enclosure
3. Electrical panel
4. Control keypad
5. Power input
6. Unit fixing holes
7. Lifting brackets (Removable)
8. Functional space

SIZE		75.4	85.4	100.4	110.4	120.4	130.4
Length	mm	2536	2536	2536	2536	2536	2536
Depth	mm	886	886	886	886	886	886
Height	mm	1851	1851	1851	1851	1851	1851

Dimensional drawings

Version with pumps - Sizes 16.2 ÷ 65.2

16127160021563_A
DATA/DATE 25/08/2026

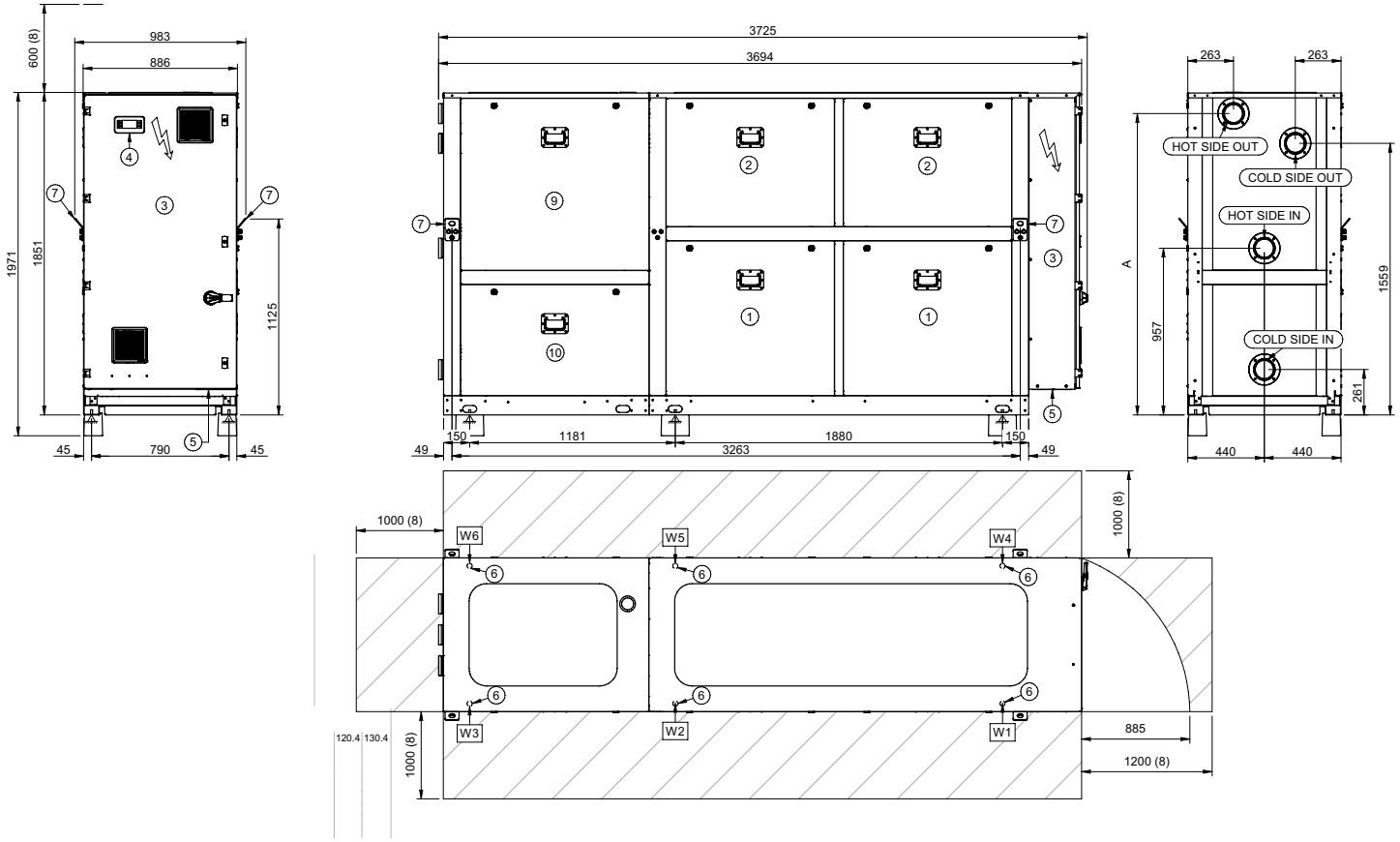


1. Compressor enclosure
2. Refrigeration circuit enclosure
3. Electrical panel
4. Control keypad
5. Power input
6. Unit fixing holes
7. Lifting brackets (Removable)
8. Functional space
9. Cold side pumps enclosure
10. Hot side pumps enclosure

SIZE		16.2	19.2	22.2	24.2	28.2	35.2	38.2	42.2	55.2	65.2
Length	mm	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528
Depth	mm	804	804	804	804	804	804	804	804	804	804
Height	mm	1851	1851	1851	1851	1851	1851	1851	1851	1851	1851

Version with pumps - Sizes 75.4 ÷ 130.4

16127160021601_A
DATA/DATE 25/08/2026



1. Compressor enclosure
2. Refrigeration circuit enclosure
3. Electrical panel
4. Control keypad
5. Power input
6. Unit fixing holes
7. Lifting brackets (Removable)
8. Functional space
9. Cold side pumps enclosure
10. Hot side pumps enclosure

SIZE		75.4	85.4	100.4	110.4	120.4	130.4
Length	mm	3725	3725	3725	3725	3725	3725
Depth	mm	886	886	886	886	886	886
Height	mm	1851	1851	1851	1851	1851	1851

For over 35 years we have been offering solutions to ensure sustainable comfort and the well-being of people and the environment

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