Databook

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Air to Water Modular Heat Pump

EWYK-QZ A

For cooling and heating applications

- **Natural refrigerant R290 (Propane)**
- **Modular design**
- **Full inverter technology**
- **Daikin Safety Shield**

R290



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1. General Characteristics

A new approach to system design

The new Daikin EWYK-QZ series adopts a modular system architecture that offers a highly flexible solution for system sizing and layout. It is based on base modules combinations to create array of units with higher capacity.

This modular concept allows the installed capacity to be precisely matched to project requirements, while minimizing installation footprint and facilitating handling, transportation, and on-site assembly. Each module is equipped with independent refrigeration circuits, ensuring high operational reliability and simplifying servicing activities.

Modules can be interconnected in modular arrays of up to four units, allowing the system capacity to be scaled according to application needs.
The modular configuration enables efficient use of available installation space and provides a significant advantage in terms of future expandability. System capacity can be increased over time by adding additional modules, allowing investment costs to be distributed progressively in line with demand growth.

Compared with a single large packaged unit, the total refrigerant charge is distributed across multiple smaller circuits. This enhances overall system safety, which is particularly relevant when using refrigerants such as propane (R290).
Pump modules are available to support the creation of a complete and fully coordinated hydronic system. Electrical power supply can be provided individually to each module or shared among multiple modules, with a single power connection supporting configurations of up to four modules plus a pump module, corresponding to a total installed capacity of up to 540 kW.
Up to 16 modules can be combined on controls side to reach up to 2160kW capacity.



(Array configuration – Front view)

Low environmental impact

The use of natural refrigerants is a key step towards reducing the environmental impact of heating and cooling systems. Propane (R290) is a hydrocarbon refrigerant with a negligible Ozone Depletion Potential (ODP = 0) and a very low Global Warming Potential (GWP = 0,02), making it one of the most environmentally friendly options currently available.

F-GAS regulations, which entered into force in 2015, have progressively phased down high-GWP HFC refrigerants. By switching to R290, the carbon footprint of the unit is drastically reduced due to its minimal contribution to global warming. Despite being a hydrocarbon, R290 offers high energy efficiency, contributing to lower indirect CO_2 emissions from electricity consumption.

R290 is classified as A3 according to ISO 817, meaning it is flammable but non-toxic. This requires careful design and adherence to safety standards, yet it can be safely used in a wide range of applications, including air-to-water heat pumps, with proper system design, leak detection, and ventilation measures. Being a pure, single-component refrigerant, R290 is also easy to reclaim, recycle, and reuse, further enhancing its environmental benefits.

Daikin has long promoted the reduction of environmental impact across heating, cooling, and refrigeration systems. With extensive expertise in both refrigerant handling and equipment design, the company leverages natural refrigerants like R290 to provide high-efficiency solutions with a minimal carbon footprint.

Compared to other low-GWP alternatives to HFCs, R290 offers an unmatched combination of very low direct emissions, high energy efficiency, and excellent thermodynamic performance. While it requires adherence to safety standards due to flammability, its environmental benefits make it a preferred choice for sustainable cooling and heating applications.

Outstanding reliability

Each module is equipped with two refrigerant circuits. When multiple modules are combined, the system effectively has separate circuits for each module, ensuring fully independent operation. This design allows the system to continue functioning even if a module is offline and enables individual modules to be removed or replaced without interrupting the performance of the remaining units.

Code requirements – Safety and observant of laws/directives

All units are designed and manufactured in accordance with the following directives and harmonized standards:

Low voltage directive	DIRECTIVE 2014/35/EU
Electromagnetic compatibility (EMC)	DIRECTIVE 2014/30/EU
Machinery directive	DIRECTIVE 2006/42/EC
Pressure equipment design	DIRECTIVE 2014/68/EU
Ecodesign	DIRECTIVE 2009/125/EC Regulation 813/2013
Safety of machinery	IEC EN 60335-2-40
EMC - Part 6-2	EN 61000-6-2
EMC - Part 6-4	EN 61000-6-4
Electrical and safety standards	EN 60335-2-40 / EN 378
Methods for calculation pressure relief devices.	EN 13136

Certifications

Units are CE marked, complying with European directives in force, concerning manufacturing and safety.

Compressors

Hermetic orbiting and **inverter driven scroll** type optimized for R290 operation and complete with motor over-temperature and over-current protection devices. Each compressor is equipped with an oil heater that keeps the oil from being diluted with the refrigerant when the chiller is not running. Each compressor is mounted on rubber antivibration mounts for a quite operation. Unit is delivered with complete oil charge.

Water side heat exchanger

The unit is equipped with a direct expansion plate-to-plate type evaporator optimized for R290 refrigerant operation. This heat exchanger is made of stainless-steel brazed plates and is covered with 20mm closed cell insulation material. The exchanger is manufactured in accordance with Directive 2014/68/EU. The evaporator flow switch is provided as standard feature, the water filter is available as accessory.

Air Side Heat Exchanger

The Air Side Heat Exchanger is manufactured with internally enhanced seamless copper tubes arranged in a staggered row pattern and mechanically expanded into lanced and rippled aluminum Air Side Heat Exchanger fins with full fin collars.

Air Side Heat Exchanger fans

Fans are propeller type with high efficiency design blades developed by Daikin to maximize performances. Fan is rated IP55. Standard units are equipped with EC motors to enhance efficiency at part load, reduce sound and extend operating range towards negative ambient temperatures.

Electronic expansion valve

The unit is equipped with electronic expansion valves to achieve precise control of R290 refrigerant mass flow. As today's systems require improved energy efficiency, accurate temperature control, wide range of operating conditions, the application of electronic expansion valves becomes mandatory.
Electronic expansion valves have unique features: short opening and closing time, high resolution, positive shut-off function to eliminate use of additional solenoid valve, continuous modulation of mass flow without stress in the refrigerant circuit and corrosion resistance stainless steel body. If compared to traditional thermostatic valves, electronic expansion valves allow the system to work with low condenser pressure (wintertime) without any refrigerant flow problems and the perfect control of the chilled water temperature.

Refrigerant circuit

Each unit has two refrigerant circuits and each one includes:

- Compressor
- Refrigerant
- Air side heat exchanger
- Electronic expansion valve
- Filter drier
- Charging valves
- High pressure switch
- High pressure transducers
- Low pressure transducers
- Oil pressure transducer
- Suction temperature sensor

Electrical panel

Power and control are in the main panel that is manufactured to ensure protection against all weather conditions. The electrical panel is IP54 and (when opening the doors) internally protected against possible accidental contact with live parts. The main panel is fitted with a main switch interlocked door that shuts off power supply when opening.

MicroTech 4 controller

The MicroTech 4 controller is installed as standard.
It gives the possibility to check the most relevant control parameters and modify unit set-points. Additionally, temperatures and pressures of water, refrigerant and air, programmable values, set points can be accessed based on a preset list of user profiles. A sophisticated software with adaptive logic, selects the most energy efficient combination of compressors, EEXV and fans to keep stable operating conditions to maximize unit energy efficiency and reliability.
MicroTech 4 protects critical components based on external signals from onboard sub-system (such as motor temperatures, refrigerant and oil pressures and temperatures, correctness of phase sequence, pressure switches and freezing of heat exchanger).
The input coming from high-pressure switches cuts all digital output from the controller in less than 50ms, as an additional security for the equipment. Floating point calculations supported for increased accuracy in Pressure / Temperature conversions.

Control main features

- Control system has the following features:
- Management of compressors and fans modulation
- Control of cooling or heating leaving water temperatures
- Management of cooling and heating capacities according to the load
- Switch of operating modes in less than 1 minute
- Return reset (set point reset based on return water temperature)
- Set point reset (optional)
- Unit operation in partial failure condition
- Managed operations during critical conditions:
- High ambient temperature
- High thermal load
- Startup with high and low differential operating conditions
- Startup with high entering water temperature in cooling mode
- Startup with low entering water temperature in heating mode
- Optimized management of compressor load
- Optimized fan management according to condensing pressure
- General faults alarm relay
- Automatic re-start in case of power failure
- Rapid Restart to recover full load in the shortest possible time for Data Centre application.
- ICM Standard control for multiple units' management (optional)
- Soft load (optimized management of the compressor load during the start-up)
- Start at high cold heat exchanger water temperature.

Visualization of:

- cooling and heating entering/leaving water temperature of heat exchangers
- outdoor ambient temperature
- condensing-evaporating temperature and pressure, suction, and discharge superheat for each circuit
- hours and starts counter for compressors and pumps.
- status safety devices

Control additional features

- System upgrade with commercial SD cards
- Save/Restore of configuration parameters with a commercial SD card.
- Ethernet port for remote or local servicing using standard web browsers.
- Daikin on Site connectivity for cloud based.

Safety device / logic for each refrigerant circuit. The following devices / logics are available:

- high pressure (pressure switch)
- high pressure (transducer)
- low pressure (transducer)
- fans circuit breakers
- high compressor discharge temperature
- high motor winding temperature
- phase monitor
- low pressure ratio
- high oil pressure drops.
- low oil pressure
- no pressure changes at start

System security

The following securities are available:

- phase monitor (available as option)
- low ambient temperature lock-out
- freeze protection.

Regulation type

Proportional integral derivative regulation on the cold heat exchanger leaving water output probe.
Supervising systems MicroTech 4 remote communication (on request).
MicroTech 4 can communicate to BMS (Building Management System) based on the most common protocols as:

- Modbus RTU (Native)
- BACnet BTP certified over IP and MS/TP (class 4) (Native)
- Ethernet TCP/IP (Native)

2. F-Gas Information

Additional information related to F-GAS REGULATION (EU) 2024/573 of the European parliament and of the council of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014.

Model	Ref. type	Ref. GWP	N° of circuits	Ref. charge circuit #1 [kg]	Ref. charge circuit #1 [TCO2Eq]	Ref. charge circuit #2 [kg]	Ref. charge circuit #2 [TCO2Eq]
EWYK100QZXSA2	R290	0,02	2	3,04	0	3,04	0
EWYK135QZXSA2	R290	0,02	2	3,30	0	3,30	0

The above data are referred to the unit without additional optional.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing Refrigerant charge values are for indication only and not considered binding. Refer to unit nameplate for specific unit refrigerant charge.

3. Daikin Safety Shield

The use of propane (R290) as a natural refrigerant offers outstanding environmental performance but requires a rigorously engineered safety approach.
For this reason, the modular reversible air-to-water heat pump range is designed according to an advanced, multi-layer safety concept that ensures maximum protection for people, property, and equipment throughout the entire product life cycle.
This safety philosophy goes beyond regulatory compliance, embedding risk prevention directly into product design, manufacturing, installation, operation, and end-of-life management.
Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).

Life-Cycle Safety Approach
Unlike conventional safety strategies that focus mainly on unit operation, the Daikin safety concept for R290 modular heat pumps is based on a holistic, life-cycle-oriented methodology.
Safety measures are implemented at every critical stage:

- **Manufacturing**

Assembly and testing are performed in dedicated R290-certified production areas, equipped with continuous gas detection systems and controlled ventilation to prevent refrigerant accumulation.

- **Transport and Storage**

Units are shipped in a secure condition, with refrigerant safely contained in dedicated onboard tanks, minimizing risks during logistics and handling.

- **Installation and Commissioning**

Commissioning procedures are restricted to trained and certified personnel. System activation requires authorized tools and digital access (E-Care App), ensuring correct installation, parameter configuration, and safety verification.

- **Operation and Maintenance**

Continuous monitoring of safety devices is ensured during normal operation. Critical safety systems remain active even during power outages, maintaining protection under all conditions.

➢ **Service and Troubleshooting**

The modular design allows safe access to electrical and refrigerant components while preserving physical separation and containment of flammable refrigerant zones.

➢ **Decommissioning and Recycling**

Dedicated procedures are defined for safe refrigerant recovery, component disassembly, and environmentally responsible disposal at end of life.

This comprehensive approach guarantees consistent safety integrity from factory to recycling.

➢ **Integrated Safety Architecture**

Each module of the reversible air-to-water heat pump is equipped with multiple, redundant safety components, designed to prevent ignition risks and ensure early detection of any propane leakage.

Key safety features include:

- **Compressor box extraction fan**
  Provides continuous ventilation and effective dilution in the event of refrigerant leakage.



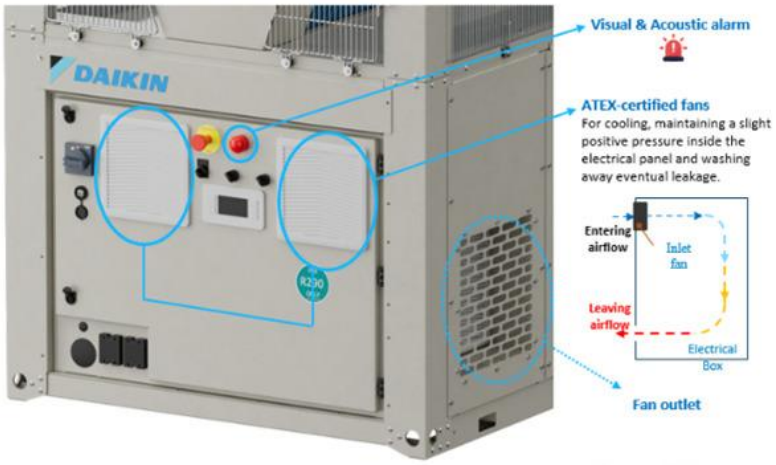
(Compressor Box - Rear View)

- **Electrical panel extraction fans**
  Prevents gas accumulation within electrical panel.

- **Redundant gas leak detectors**
  Installed in critical zones such as the compressor box and electrical panel to ensure early detection.

- **Pressurized electrical cabinet**
  Prevents ingress of refrigerant into electrical cabinet.

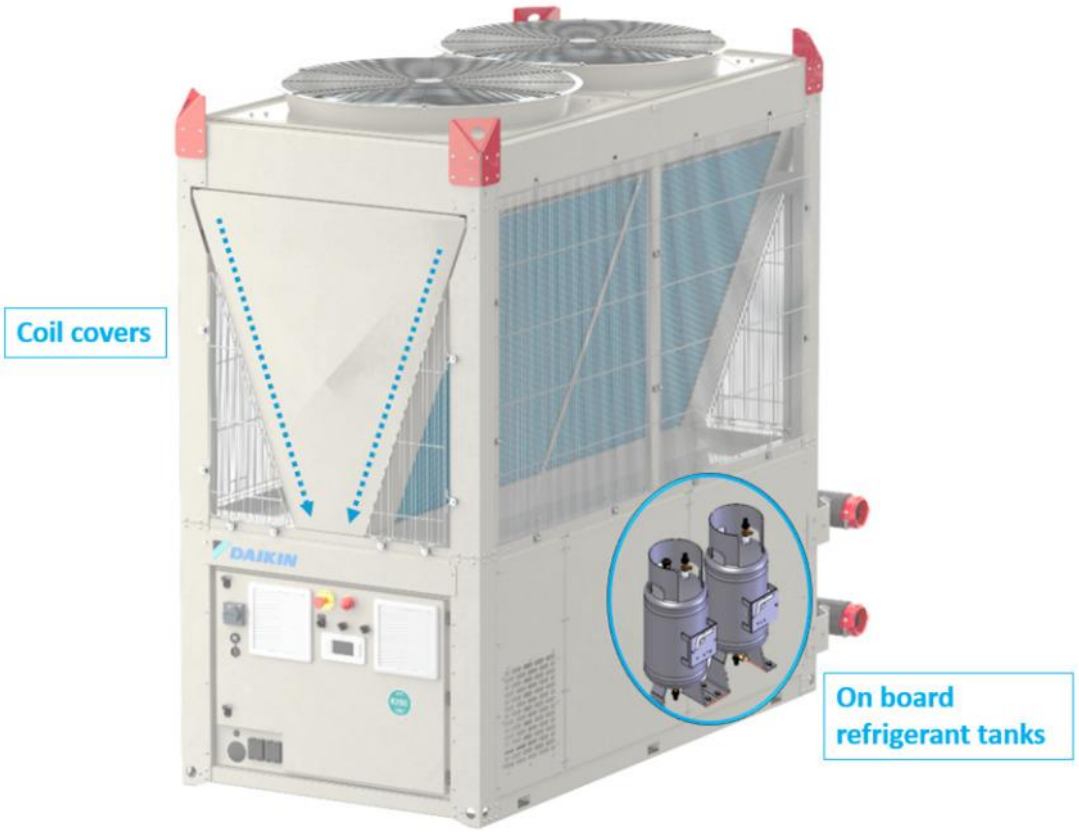
- **Visual and audible alarm system**
  Ensures immediate local warning in case of detected leakage.



(Electrical Box - Front View)

- **Coil covers**
  Complete isolation of the Coil distributor and its brazing points to convey any eventual leakage to the compressor box to be detected by the leak detector.

- **Sealed refrigerant tanks (On board)**
  Ensure safe containment of propane during transport, installation, and commissioning.



- **Protections against freezing**

Freeze protection measures as standard
To prevent freezing of the plate heat exchanger, the unit is equipped with below protection measures:

- **Flow switch** – The flow switch is set to stop the unit before the water flow rate drops to a level that could lead to freezing conditions inside the plate heat exchanger (please check IOM for flow switch setting);

- **Evaporator electric heater** – An electric heater installed on the plate heat exchanger to prevent freezing.

- **Pump recirculation logic** – Automatic pump enabling to recirculate water in case of critical water temperature (close to freezing point).

These measures are designed to prevent freezing during normal system operation.

- **Gas separator**

Confined safety box integrating a gas vent and propane gas detector, powered by a dedicated supply with UPS backup, **designed to detect leakage with NO FLOW in the heat exchange, so when the water pump is turned OFF.**

It provides an additional independent safety layer to detect **propane presence in the water circuit** in the unlikely event of plate heat exchanger breakdown (i.e. water freezing of the heat exchanger)**.**

Without this device, in case of heat exchanger breakdown, due for example to water freezing in case of abnormal system operation, refrigerant may migrate in the water circuit. Mixture of water and refrigerant may reach the internal units.

The Gas Separator integrates:

- **Gas vent**, allowing separation of possible refrigerant from the water circuit (See IOM manual for dedicated instructions).

- **Refrigerant leak detector**, designed to detect the presence of propane inside the box (confined volume).

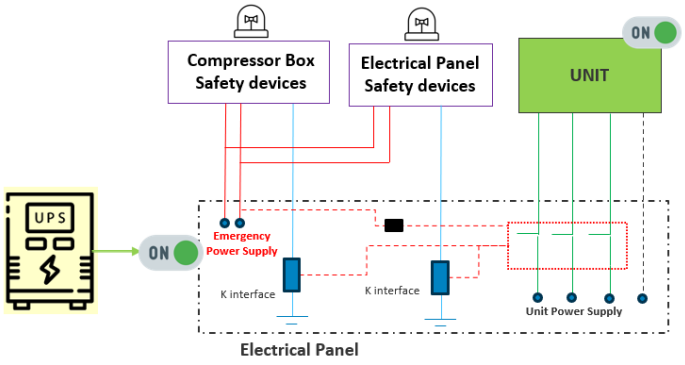
- **Automatic shut off valve**, designed to isolate the unit when the leak is detected from the water loop (standard item, shipped loose to be mounted and cabled on site).

Customer Value
Enhanced system safety through **early detection of refrigerant leakage** into the hydraulic circuit, when the unit is not powered and no water circulation is present **(Pump turned OFF – NO WATER FLOW CONDITION).**
Although there are no current regulations requiring manufacturers to equip/supply an automatic refrigerant-water separation system on board the unit, Daikin products have been designed with a dedicated system for this purpose.
Furthermore, unlike what is typically offered on the market, **Daikin equips this system as a standard**.
If additional requirements are present, the customer will need to implement an appropriate system solution to ensure separation of any potential gas leakage from the water supplied to the terminals.
The installer will have to adopt any additional solution or component in the plant if the safety features provided by the factory are not in line with the project requirements (i.e. detection of refrigerant leakage into the hydraulic circuit, when the unit is powered and water circulation is present).
To ensure continuous operation under all conditions, the leak detector included in the gas separator box is **powered by a dedicated power supply as all safety devices of the unit**.

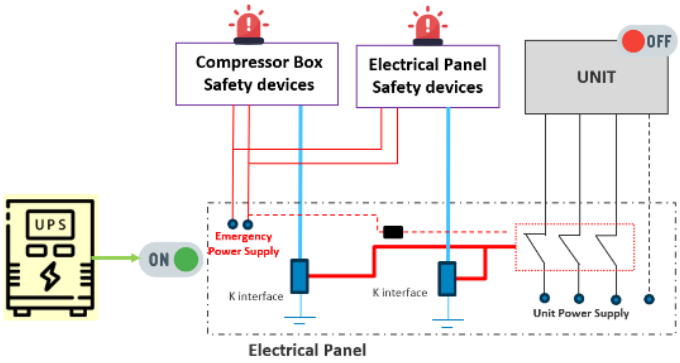
- **Dedicate power supply for safety devices**

All safety devices must always be powered by an independent 230V power supply provided by the customer trough a UPS for each module (Uninterruptible Power Supply, not provided by Daikin) connected to the power inlet of each module in order to guarantee proper operation under all conditions, including emergency situations or main unit power failures.
This dedicated power line always ensures continuous monitoring and activation of the safety systems.
In the event that the power supply to the safety devices is not active, interrupted, or improperly connected, the unit will not start and will remain in a safe standby condition to prevent unsafe operation.
Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).

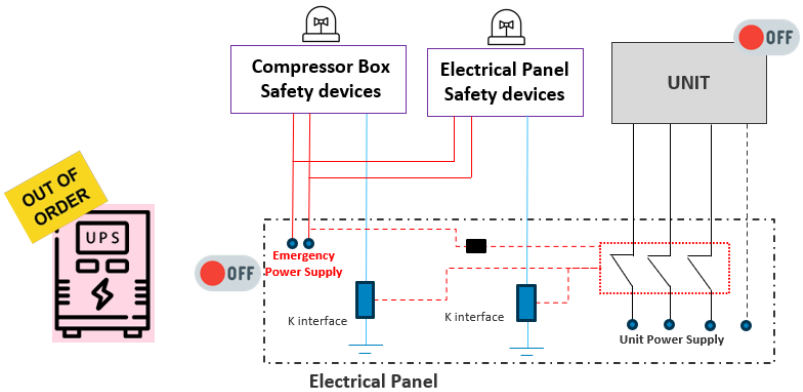
Unit Running – No Alarms



Propane Leak – Safety System Activation



UPS not available – Unit shut down / Startup blocked



Safety Beyond Regulatory Compliance

The safety concept for R290 modular heat pumps is developed according to proactive safety engineering principles and:

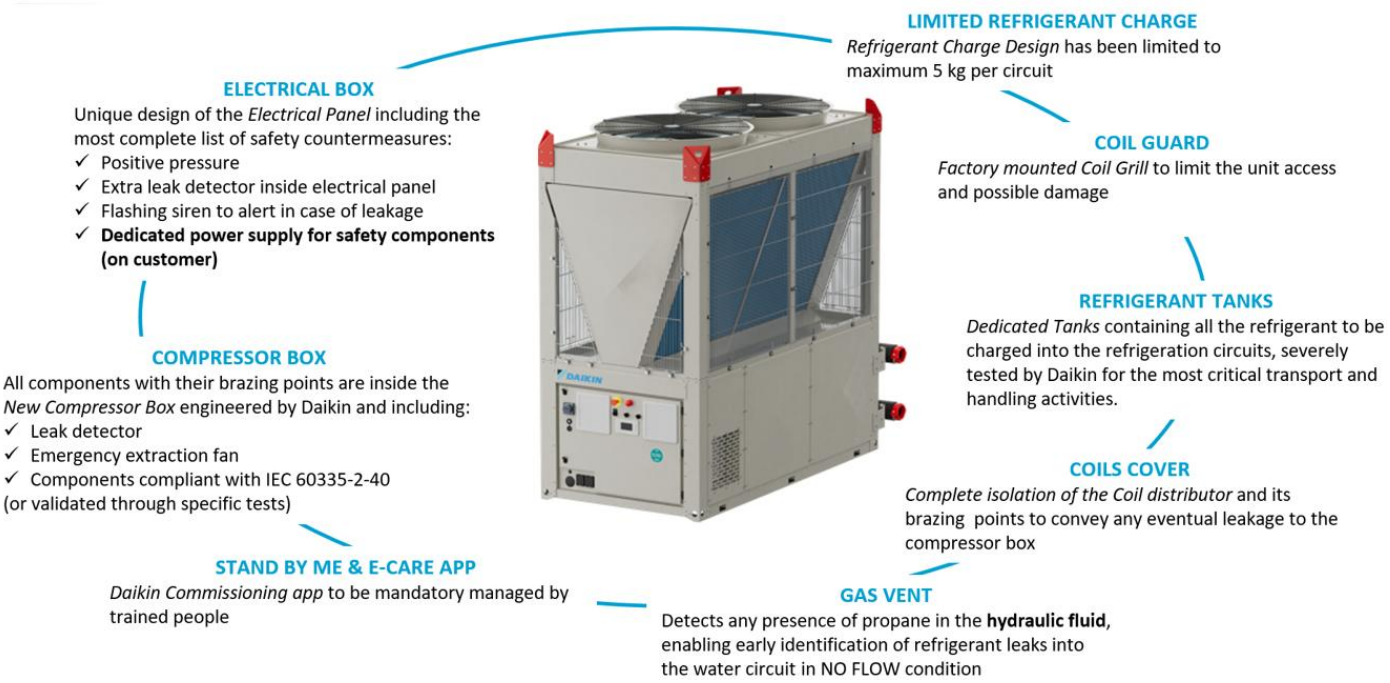
- fully complies with EN 378 and IEC 60335-2-40 standards.
- is derived from a structured Health Hazard Assessment (HHA) methodology, ensuring that risk mitigation is embedded from design to operation.
- reflects a zero-compromise approach to safety, reliability, and product quality.

Certified peace of mind

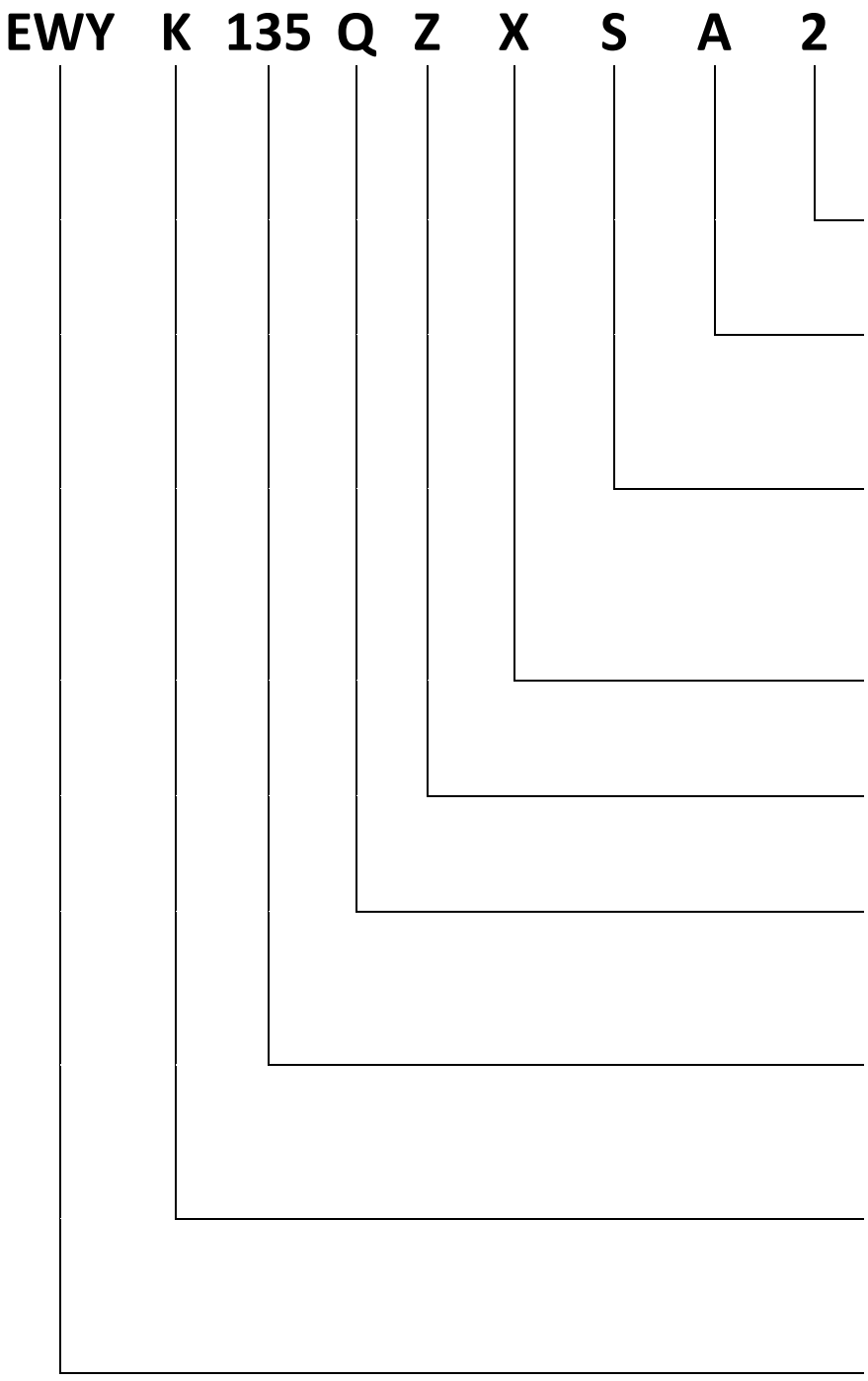
By combining natural refrigerant efficiency with an advanced safety architecture, the modular reversible air-to-water heat pump range delivers:

- Industry-leading safety performance
- High operational reliability
- Full regulatory compliance
- Maximum environmental benefit of R290 refrigerant

This results in certified peace of mind for designers, installers, and end users, making the system a benchmark solution for sustainable and safe heating and cooling applications.
Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).



4. Nomenclature



Digit 13: Number of independent refrigerant circuit

2 = Dual circuits

Digit 12: series revision

A = first revision

Digit 11: Sound Configuration

S = Standard Sound

Digit 10: Efficiency tier

X = Gold

Digit 9: Compressor control

Z = with VFD

Digit 8: Range

Q = Modular Scroll

Digit 5 -7: capacity in kW at standard conditions

100, 135

Digit 4: Refrigerant

K = R290

Digit 1 – 3: Unit type

EWY = Air to water heat pump

5. Options

Options provided as standard

OPT 10 - Double setpoint
Allows switching between two different Leaving Water Temperature (LWT) setpoints in both cooling and heating modes. The unit can operate in different applications, such as ice production with an evaporator leaving water temperature below 4°C and comfort cooling with a higher setpoint.

OPT 14 - Inverter compressor starter
Variable Frequency Drive (VFD) applied to scroll compressors to optimize performance at both full load and part-load conditions. Compressor capacity is continuously modulated according to system demand.

OPT 15 - Under/Over voltage control
Automatic device that monitors and displays the power supply voltage. The module is stopped in case of phase loss, incorrect phase sequence, voltage outside the permitted range, or voltage imbalance. This option provides protection against phase failure and phase reversal.

OPT 29 - 20mm evaporator insulation
The brazed plate heat exchanger is insulated with 20 mm closed-cell insulation material to improve thermal insulation and reduce heat losses.

OPT 43 - Coil guards
Factory-installed protective grilles designed to prevent accidental access to the coils and reduce the risk of mechanical damage.

OPT 57 - Evaporator electric heater
Electric heating element controlled by a thermostat and temperature sensor.
This option protects the evaporator against freezing during winter operation.

OPT 58 - Evaporator flow switch
Paddle-type flow switch installed on the evaporator water piping to detect loss of water flow.
In case of no flow, a signal is sent to the controller, generating an alarm and stopping the unit to prevent damage.

OPT 60 - Electronic expansion valve
Electronic expansion valve provides precise refrigerant flow regulation and accurate suction superheat control. This ensures stable water heat exchanger operating conditions and improved efficiency across all operating conditions.

OPT 68 - Hour run meter
Displays the operating hours of each compressor on the controller. This information supports maintenance planning and periodic service activities.

OPT 69 - General fault contactor
Digital output that closes a contact when a general unit fault occurs. This allows remote monitoring and transmission of alarm information.

OPT 76-C - Soundproof system on compressors
Sound shell made of insulation material is placed upon the compressors (factory mounted).
No metal sheets are used.

OPT 90 - Set-point reset and demand limit
The Set-point reset function allows automatic adjustment of the water setpoint according to selected control strategies:

- Reset based on Outside Air Temperature (OAT);
- Reset based on an external 4–20 mA signal;
- Reset based on evaporator ΔT (return water temperature)

This option helps reduce energy consumption while maintaining optimal comfort conditions.
The demand limit function allows the unit to be limited to a specified maximum capacity.

OPT 97 - Main switch interlock door
Mechanical interlock connected to the main switch that prevents access to the electrical power section while the panel is energized. This option increases operator safety during maintenance activities.

OPT 102 - Ground fault relay
Detects ground faults caused by unintended current paths between the electrical system and ground.
Upon detection, the device sends a signal to the controller, which activates the appropriate safety actions.
This option improves personnel safety and protects equipment from electrical damage.

OPT 121 - Electrical panel & Compressors' box leak detectors
Each module is equipped with three propane-calibrated gas detectors installed in the compressor enclosure, electrical panel, and gas vent box. In the event of a gas leak, an alarm is immediately triggered and the unit is automatically shut down to ensure safe operation. Even after shutdown, all safety devices remain fully operational thanks to a dedicated power supply for the safety instrumentation, backed up by the UPS system.

OPT 141 - Side panels on coils end
Protective panels installed on both sides of the air section of each module. Together with the coil cover above the compressor box, they help direct any propane leakage toward the monitored area, improving leak detection effectiveness.

OPT 223 - Finned tubes Cu-Al Blue fins condenser
Condenser equipped with copper tubes and aluminum fins coated with an acrylic protective layer, providing increased resistance against mild corrosive environments.

OPT 229 - Brushless fans
Unit equipped with EC fans. This solution improves part-load efficiency and enables silent mode operation through time scheduling or external control signals, reducing noise emissions when required.

OPT 257 - Energy tracking (Including current limit)
The Energy Tracking option enables monitoring of the unit's power consumption (including pumps, compressors, and fans) without the installation of an energy meter, as all data is retrieved via Modbus.
This option also includes a Current Limit function, which manages power consumption by maintaining the total current draw below a user-specified threshold.

OPT 259 - MUSE (Modular Unit SEquencer)
As a standard feature, MUSE enables the sequencing and staging of up to four modules within a single array.
When MUSE is enabled, an additional system probe must be installed on the common supply line and connected to the Master module.

OPT 261 - Mobile App
The Daikin Mobile App provides a mobile HMI interface for Daikin Applied Europe chillers. Available for Android and iOS devices, it allows users to connect and interact with the unit controller using a local Wi-Fi connection established by the dedicated WLAN stick.

Options on demand

OPT 91 - Double pressure relief valve
Each unit is equipped with pressure relief valves installed on both suction and discharge lines to protect the refrigerant circuit against overpressure conditions. If the pressure exceeds the calibrated safety threshold, the corresponding valve opens and safely releases refrigerant gas.
A diverter valve allows one relief valve to remain in service while isolating the other for inspection or maintenance. This option enables periodic testing or replacement of a relief valve without interrupting unit operation.

OPT 95 - Compressors circuit breakers
Magneto-thermal circuit breakers provide both thermal and electrical protection for compressor motors against overload, overcurrent, and short-circuit conditions. When this option is selected, compressor line fuses are no longer required. This option enhances the protection of compressors and electrical components against accidental electrical faults.

OPT 117 - Blygold coil treatment
Special polyurethane coating with metallic pigments applied to the condenser coil fins to provide long-term corrosion protection in aggressive environments. This treatment extends the service life of the heat exchanger while maintaining thermal performance. The coating is UV-resistant, chemically resistant, highly heat conductive, does not create additional air-side pressure drops, and adds negligible weight to the coil.

OPT 182 - BACNet IP
Software option to enable BACNet IP communication protocol on the unit controller.

OPT 184 - iCM Standard
iCM can be combined with MUSE, allowing for multi-array configurations that enable the sequencing and staging of up to 8 arrays. This control solution allows for a mix of screw and scroll compressor air-cooled units with arrays of R290 modular units. Beyond basic sequencing, this system provides advanced plant-level control solutions.

OPT 186 - Performance monitoring
This software option estimates unit performance using onboard sensors.
The energy data can be accessed directly via the unit's HMI or through a Building Automation System (BAS).

OPT 188 - Heating only
Allowing the unit to operate in heating mode only. Cooling mode operation is not supported.

OPT 260 - Modbus TCP-IP
Software option to enable Modbus TCP-IP communication protocol on the unit controller.

OPT 266 - Evaporator DP sensor for Variable Primary Flow
This option allows the array to modulate water flow according to the differential pressure measured at a critical point in the plant. A differential pressure sensor is mounted on each module to ensure minimum flow requirements are met. To implement the Variable Primary Flow (VPF) strategy, a field differential pressure transducer (also available as factory with EKSCDP accessory) must be installed on site and connected to the pump module. This option is to be ordered only when pump module is present in the order.
In case of multi-array configuration, iCM option (OPT 184) must be selected on each module.

6. Accessories

EKRUBAVM – UNIT RUBBER ANTIVIBRATION MOUNTS
Rubber antivibration mounts to be positioned under the base of the unit during installation. Ideal to reduce the vibrations when the unit is floor mounted. This accessory is shipped loose.
Quantity:
1x EKRUBAVM for each module in the order.

EKPMPRUBAVM – PUMP MODULE RUBBER ANTI VIBRATION MOUNTS
Rubber antivibration mounts to be positioned under the base of the pump module during installation.
This accessory is shipped loose.
Quantity:
1x EKPMPRUBAVM for each pump module in the order, only when EKRUBAVM is ordered for each modular unit.

EKSPRAVM – SPRING ANTIVIBRATION MOUNTS
Spring antivibration mounts to be positioned under the base of the unit during installation. Ideal for dampening vibrations for installation on roofs and metallic structures. This accessory is shipped loose.
Quantity:
1x EKSPRAVM for each module in the order.

EKPMPSPRAVM – PUMP MODULE SPRING ANTI VIBRATION MOUNTS
Spring antivibration mounts to be positioned under the base of the pump module during installation.
This accessory is shipped loose.
Quantity:
1x EKPMPSPRAVM for each pump module in the order, only when EKSPRAVM is ordered for each modular unit.

EKCONTKIT – CONTAINER KIT
Components are designed to ease loading/unloading into the container and to reduce risk of impact and damage.
This accessory is unit mounted.
Quantity:
1x EKCONTKIT for each module in the order.

EKTRANSKIT – TRANSPORT KIT
Transport kit characterized by a polyethylene foam, that offers the unit additional shock-absorption during transportation. It is a special material that is located below the unit.
This accessory is unit mounted.
Quantity:
1x EKTRANSKIT for each module in the order.

EKWTRFLTR3 – WATER FILTER 3"
EKWTRFLTR5 – WATER FILTER 5"
Water filter available in 3” and 5” sizes, designed to protect the modules by removing impurities from the system. For further information, please see dedicated section in this databook (Chapter 15). The selection between 3” and 5’’ is guided by selection software based on water flow (step 4 – Configuration).
Quantity:
1x EKWTRFLTR3 (or EKWTRFLTR5) for each array of units.

EKMNFLD3 – MANIFOLD MODULE 3"
EKMNFLD5 – MANIFOLD MODULE 5"
To simplify the connection between multiple modules, Daikin offers a self-standing manifold kit that allows up to 4 units to be connected.
Two sizes are available: 3” and 5”. The manifold size selection between 3 and 5’’ is guided by selection software based on water flow (step 4 – Configuration).
The manifold can be supplied to facilitate installation but is not mandatory. The customer or installer may choose to provide the interconnections between the modules independently, provided that all IOM requirements are respected (800mm minimum distance between modules).
This accessory is shipped loose.
Quantity:
1x EKMNFLD3 or EKMNFLD5 for each module in the order.
(EKMODPAR3 or EKMODPAR5 or EKMODSER3 are mandatory in case of array configuration, please see next descriptions).



(Module with Manifold Kit accessory – Rear view)

EKMODPAR3 – PARALLEL MODULAR KIT 3"
EKMODPAR5 – PARALLEL MODULAR KIT 5"
Connection kit consisting of 800 mm pipe sections (3’’ or 5’’) designed to interconnect the modules’ manifolds.
This accessory allows easy access for maintenance of all components without the need to move the units during servicing, reducing the risk of damage.
This accessory is shipped loose.
Quantity:
Accessory required between each pair of adjacent modules in the array, selection between 3” and 5” is guided by selection software based on water flow (step 4 – Configuration).
Examples:
Array with 2 base modules → 1x EKMODPAR3 (or EKMODPAR5) required
Array with 3 base modules → 2x EKMODPAR3 (or EKMODPAR5) required
Array with 4 base modules → 3x EKMODPAR3 (or EKMODPAR5) required



(Array in Parallel arrangement – Rear View)

EKMODSER3 – SERIES MODULAR KIT 3"

To enable series connection between multiple modules (3'' size), an 800mm series connection kit is available to increase the achievable temperature difference in heat pump operation at low ambient.

The kit allows modules to be hydraulically connected in series, with each module contributing to the overall system ΔT, up to 40 K.

This accessory is shipped loose.

Quantity:

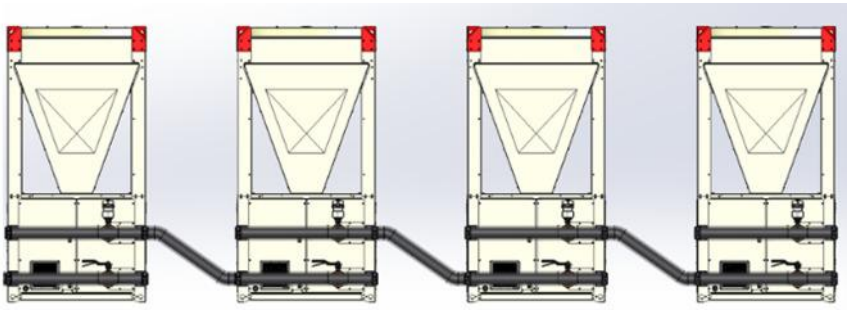
Accessory required between each pair of adjacent modules in the array.

Examples:

Array with 2 base modules → 1x EKMODSER3 required

Array with 3 base modules → 2x EKMODSER3 required

Array with 4 base modules → 3x EKMODSER3 required



(Array in Series arrangement – Rear View)

EKPMPLOW – ONE CENTRIFUGAL PUMP (LOW LIFT) + VFD

EKPMPHGH – ONE CENTRIFUGAL PUMP (HIGH LIFT) + VFD

Pump modules are available as accessories to create a complete package. The pump modules are connected directly to the array (parallel or series configuration) or to a single base module.

Each pump module features a single pump with VFD, a dedicated electrical panel and protective panels.

The module is available in low- or high-lift versions and . An 18 L expansion vessel is included as standard feature.

Selection is based on the system flow rate. Please refer to CSS for the selection.

Quantity:

1x EKPMPLOW (or EKPMPHGH) for each array of units. This accessory can be ordered also for a single base module on order (Pump module accessory selection based on water flow).

For further information, please see dedicated section in this databook (Chapter 16).



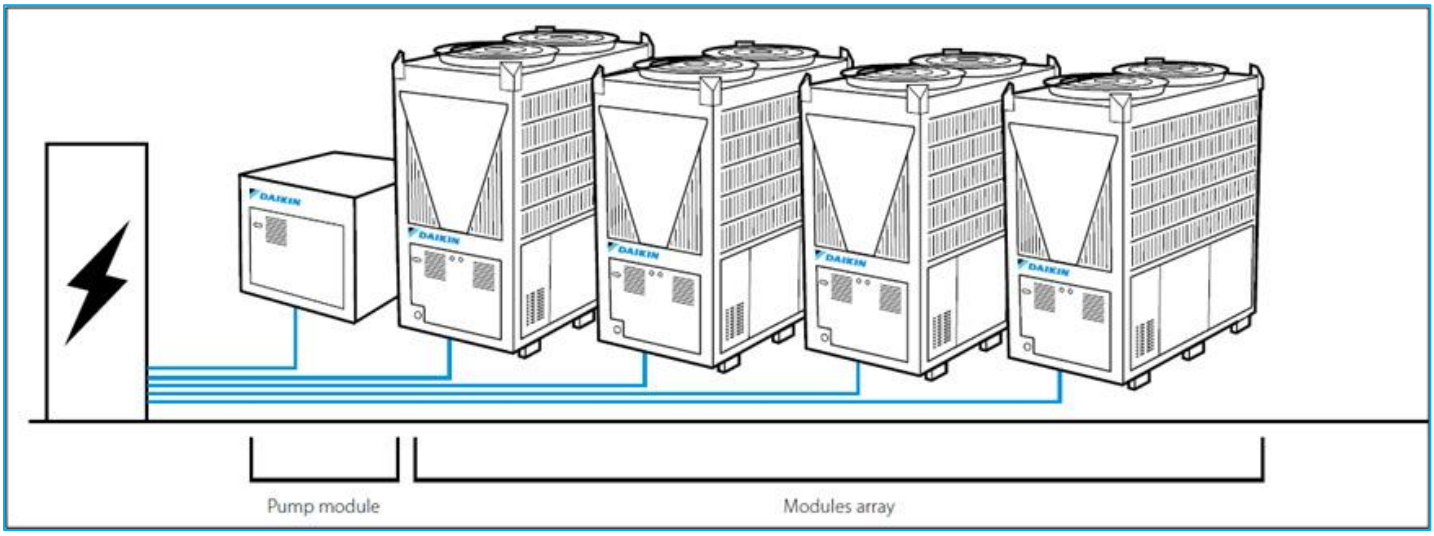
(Single module with pump module – Front view)

EKCONNPMP3 – PUMP CONNECTION KIT 3"
EKCONNPMP5 – PUMP CONNECTION KIT 5"
Hydraulic connection kit for interfacing a modular unit with a pump module. Available in 3” and 5” sizes.
This accessory is shipped loose.
The selection between 3” and 5” is guided by selection software based on water flow (step 4 – Configuration).
Quantity:
1x EKCONNPMP3 (or EKCONNPMP5) for each pump module in the order.



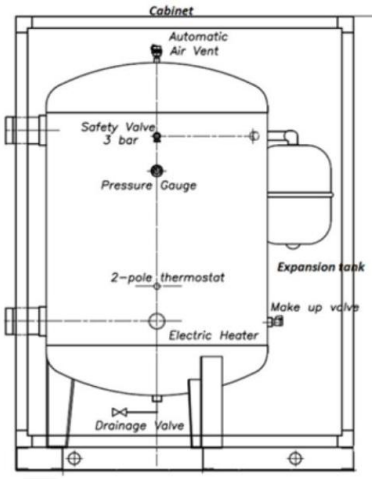
(Array in Parallel arrangement with pump module and panels mounted – Rear View)

EKPWSPLY – SINGLE POWER SUPPLY KIT UP TO 4 MODULES + PUMP
Dedicated freestanding electrical distribution panel designed to supply power to up to four modular units and one pump module from a single connection point (**electrical connection cables not provided by Daikin**).
This accessory is shipped loose.
Quantity:
1x EKPWSPLY for each array of units.



EKTANK500 – EXTERNAL TANK WITHOUT CABINET (500 L)
EKTANK1000 – EXTERNAL TANK WITHOUT CABINET (1000 L)
EKTANK500C – EXTERNAL TANK WITH CABINET (500 L)
EKTANK1000C – EXTERNAL TANK WITH CABINET (1000 L)
Free standing inertial water storage with following accessories:

- 500 or 1000 liters insulated tank
- Expansion tank [18L volume in case of EKTANK500(C) | 25L volume in case of EKTANK1000(C)]
- Make up valve
- Drainage valve
- Pressure gauge
- Safety valve 3 bar
- Automatic air vent
- Electric heater with 2 pole thermostat
- Cabinet (for EKTANK500**C** and EKTANK1000**C**)



(Tank with cabinet – Representative image)

EKCM200J – MODBUS RTU MSTP
Additional communication module to enable Modbus RTU communication protocol on the unit.
Quantity:
1x EKCM200J to be ordered on the master module to integrate master module data and partial data from slave modules.
1x EKCM200J to be ordered for each module for full data integration.

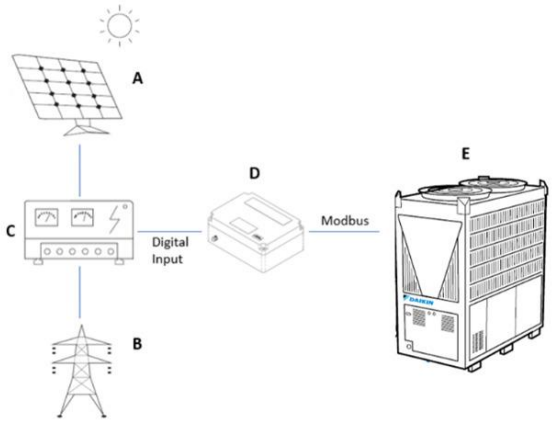
EKCMBACMSTP – BACnet MSTP
Additional communication module to enable BACnet MSTP communication protocol on the unit.
Quantity:
1x EKCMBACMSTP to be ordered on the master module to integrate master module data and partial data from slave modules.
1x EKCMBACMSTP to be ordered for each module for full data integration.

EKCMBACIP – BACnet/IP COMMUNICATION MODULE
Additional communication module to enable BACnet IP communication protocol on the unit.
Quantity:
1x EKCMBACIP to be ordered on the master module to integrate master module data and partial data from slave modules.
1x EKCMBACIP to be ordered for each module for full data integration.

EKRSCSMP – KIT DoS ROUTER WITH ANTENNA FOR MODULAR UNIT
Additional router 4G connected to the unit to enable the connection to Daikin on Site cloud.
This accessory is not compatible with EKRTPH – REMOTE TOUCH PANEL 15,6'' (INCLUDING ETHERNET SWITCH).
A subscription is needed.
Quantity:
1x EKRSCSMP to be ordered on the master module to monitor master module data and partial data from slave modules.
1x EKRSCSMP to be ordered for each module for full data monitoring.

EKTSMSP – TEMPERATURE SENSOR FOR MUSE AND iCM CONF
Temperature sensor to be connected to the master unit in case of MUSE and iCM configuration.
Quantity:
1x EKTSMSP to be ordered for each array (on master base module).
In case iCM configuration, it is necessary an additional EKTSMSP accessory on iCM Master module.

EKCMSGW – SMART GRID READY BOX
The Smart Grid Box is an accessory that allows the integration of the heat pump control for a Smart Grid application.
Before the installation, make sure that the heat pump system is compatible with the Smart Grid Application.
To integrate the Smart Grid Box into a Daikin Applied Heat Pump, the system layout should be designed to be compatible with the new control functionalities.



A: Solar panels
B: Grid
C: Interface-compatible system components (Solar inverter / energy management system)
D: Smart Grid Box
E: Heat Pump

Interface-compatible system components are those devices that can transmit digital signals to a heat pump in accordance with the smart grid specifications, in order to control it with regard to energy consumption or another target variable. The interface can also be used, for example, to achieve the highest possible self-consumption in combination with a photovoltaic system. The Smart Grid Box allows the connection of the Daikin Heat Pumps system to a solar inverter/energy management system and enables it to run in various Smart Grid operation modes.

In this way, all system components work together to limit the injection of (self-generated) power into the grid, instead of converting this power into thermal energy by making use of the heat pump's thermal storage capacity. This is called "energy buffering".
The system can buffer energy in the following ways:

- Heat up the domestic hot water tank.
- Heat up the water leaving temperature.

The Smart Grid application is controlled by the solar inverter/energy management system, that monitors the grid, and sends commands to the Smart Grid Box. The box is connected to the solar inverter/energy management system (digital outputs) via connectors (digital inputs). **For further information on this accessory, please refer to the dedicated IOM for smart grid box.**
Quantity:
1x EKCMSGW to be ordered on the master unit for each array.

EKSCDP – DIFFERENTIAL PRESSURE TRASDUCER VPF (MTO)
Differential pressure sensor placed on the most disadvantaged terminal of the plant for Variable Primary Flow application.
Quantity:
1x EKSCDP to be ordered for each primary system together with OP266 for each module and pump module for each array.

EKDIPM05 – INTELLIGENT PUMP MANAGER FOR ICM 5 PUMPS
External control panel to manage up to 5 manifolded pumps.
Quantity:
1x EKDIPM05 for each plant to control up to five manifolded pumps in case of iCM configuration (pump skid must not be selected). iCM must be selected for each module.

EKDIPM10 – INTELLIGENT PUMP MANAGER FOR ICM 10 PUMPS
External control panel to manage up to 10 manifolded pumps.
Quantity:
1x EKDIPM10 for each plant to control up to ten manifolded pumps in case of iCM configuration (pump skid must not be selected). iCM must be selected for each module.

EKDISM – INTELLIGENT SECONDARY MANAGER FOR ICM
External control panel that can manage secondary water circuit devices such as Pumps, Bypass Valves, Sensors and Energy Meters in a building water distribution system.
Quantity:
1x EKDISM for each plant to control up to four pump groups or up to eight pumps on the secondary water circuit.

EKRTPH – REMOTE TOUCH PANEL 15,6'' (INCLUDING ETHERNET SWITCH)
Additional touch panel to control and monitor the units in the array.
This accessory is not compatible with EKRSCSMP – KIT DoS ROUTER WITH ANTENNA FOR MODULAR UNIT.
Quantity:
1x EKRTPH for each array.

EKSCTDH – TEMPERATURE SENSOR FOR DHW
Temperature sensor to be connected to the master unit for DHW applications.
Quantity:
In case of MUSE configuration, 1x EKSCTDH connected on master base module.
In case of iCM configuration, 1x EKSCTDH connected on iCM master base module.

EKIODHW – ADDITIONAL MODULE FOR DHW AND HEATING APPLICATION
Additional board to enable DHW features.
Quantity:
In case of MUSE configuration, 1x EKIODHW connected on master base module.
In case of iCM configuration, 1x EKIODHW connected on iCM master base module.

7. Accessory combinations

	ACCESSORY CODE COMBINATIONS Including Low Lift Pump Modules											
Pump Module Code	**EKPMPLOW1**		**EKPMPLOW2**		**EKPMPLOW3**		**EKPMPLOW4**		**EKPMPLOW5**		**EKPMPLOW6**	
Water flow range [l/s]	From	To	From	To	From	To	From	To	From	To	From	To
	1,69	4,78	4,78	9,31	9,31	13,4	13,4	17,9	17,9	26,3	26,3	31,7
Manifold Module	**EKMNFLD3**								**EKMNFLD5**			
Connection Kit between Units (Series Conf.)	**EKMODSER3**								**N/A**			
Connection Kit between Units (Parallel Config.)	**EKMODPAR3**								**EKMODPAR5**			
Connection Kit with Pump Module	**EKCONNPMP3**								**EKCONNPMP5**			
Water Filter	**EKWTRFLTR3**								**EKWTRFLTR5**			

	ACCESSORY CODE COMBINATIONS Including High Lift Pump Modules Accessories													
Pump Module	**EKPMPHGH1**		**EKPMPHGH2**		**EKPMPHGH3**		**EKPMPHGH4**		**EKPMPHGH5**		**EKPMPHGH6**		**EKPMPHGH7**	
Water flow range [l/s]	From	To	From	To	From	To	From	To	From	To	From	To	From	To
	1,69	2,86	2,86	6,47	6,47	7,89	7,89	13,1	13,1	17,9	17,9	21,5	21,5	31,7
Manifold Module	**EKMNFLD3**										**EKMNFLD5**			
Connection Kit between Units (Series Conf.)	**EKMODSER3**										**N/A**			
Connection Kit between Units (Parallel Config.)	**EKMODPAR3**										**EKMODPAR5**			
Connection Kit with Pump Module	**EKCONNPMP3**										**EKCONNPMP5**			
Water Filter	**EKWTRFLTR3**										**EKWTRFLTR5**			

The above combination tables are implemented in selection software logic (Step 4 - Configuration).

8. Technical data

	EWYK-QZ XS A | Gold Efficiency, Standard Sound | 400 V / 3ph / 50 Hz	Size	100	135
Cooling only mode performances	Cooling Capacity (1)	kW	91,3	128,3
	Power input - cooling (1)	kW	30,43	48,42
	Cooling Efficiency – EER (1)	kW/kW	3,00	2,65
	Seasonal Energy Efficiency Ratio - SEER (1)(2)	kW/kW	5,06	4,81
	$\eta_{s,c}$ (3)	%	199,4	189,4
	Seasonal Energy Performance Ratio - SEPR (1)(4)	kW/kW	6,27	6,82
	IPLV (5)	kW/kW	6,24	5,94
	Water flow rate (1)	l/s	4,30	5,95
	Water pressure drop (1)(6)	kPa	16,1	18,0
	Sound Power (11) – Lw	dB(A)	86,3	90,9
	Nominal air flow	m^3/s	12,60	14,16
Heating only mode performances	Heating Capacity (7)	kW	101,0	134,5
	Power input - Heating (7)	kW	30,42	40,27
	Heating Efficiency – COP (7)	kW/kW	3,32	3,34
	Seasonal Coefficient Of Performance Low Temp.– SCOP LT (7) (8)	kW/kW	4,28	4,32
	$\eta_{s,h\ LT}$ (9)(8)	%	168,6	169,8
	Seasonal Coefficient Of Performance Medium Temp.– SCOP MT (7) (9)	kW/kW	3,37	3,33
	$\eta_{s,h\ MT}$ (9)(10)	%	132,2	130,2
	Seasonal Coefficient Of Performance High Temp.– SCOP HT (7) (15)	kW/kW	2,96	2,92
	$\eta_{s,h\ MT}$ (9)(10)	%	115,4	113,8
	Water flow rate (7)	l/s	4,87	6,44
	Water pressure drop (7)(6)	kPa	21,4	21,0
	Sound Power (12) – Lw	dB(A)	77,7	79,5
	Sound Power (13) – Lw	dB(A)	86,3	90,0
	Nominal air flow	m^3/s	12,60	14,16
General	Number of circuits | Compressors | Fans	#	2 | 2 | 2	2 | 2 | 2
	Compressor capacity control	-	Inverter	Inverter
	Fans control	-	EC Brushless	EC Brushless
	Air heat exchanger	-	Cu-Al Blue fins	Cu-Al Blue fins
	Water heat exchanger	-	Brazed plate	Brazed plate
	Refrigerant charge per module	kg	6,08	6,60
	Length x Width x Height including manifold kit	mm	1207 x 2653 x 2382	1207 x 2653 x 2382
	Shipping/Operating weight(14)	kg	1166/1195	1239/1272

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing and unit nameplate.

(1) Standard Rating Conditions for Air to water chillers according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 35°C at sea level; Indoor heat exchanger inlet water temperature 12°C, outlet water temperature 7°C. Fluid: water, Fouling factor = 0

(2) Seasonal Energy Efficiency Ratio as defined in EN14825, part load condition in cooling for Air to Water units, fan coil application, variable outlet, variable flow.

(3) The seasonal space cooling energy efficiency ηs,c is calculated as defined in Regulation (EU) 2016/2281

(4) Seasonal Energy Performance Ratio as defined in EN14825, part load condition in cooling for Air to Water units, high temperature application.

(5) Based on AHRI conditions

(6) Fluid: water, not including filter pressure drop. The installation of the filter is mandatory.

(7) Standard Rating Conditions for Air to water heat pumps according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 7°C at sea level; Indoor heat exchanger inlet water temperature 40°C, outlet water temperature 45°C. Fluid: water, Fouling factor = 0

(8) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Low temperature application, variable outlet, variable flow.

(9) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, medium temperature application, variable outlet, variable flow.

(10) The seasonal space cooling energy efficiency ηs,h is calculated as defined in Regulation (EU) 2016/2281

(11) Sound power level measured in accordance with ISO9614, according to EN14511:2 for cooling only mode water IN/OUT 12/7°C and 35°C Amb, full load operation.

(12) Sound power level measured in accordance with ISO9614, according to EN12102 for heating only mode.

(13) Sound power level measured in accordance with ISO9614, according to EN14511:2 for heating only mode water IN/OUT 40/45°C and 7°C Amb, full load operation.

(14) These are intended as guideline only and referred for unit without options and accessories. Refer to dedicated unit drawing and nameplate for specific values.

(15) Seasonal Coefficient of performance calculated as defined in EN14825, part load condition in heating for Air-to-Water units, high temperature application, variable outlet, variable flow.

Eurovent certified data

9. Electrical data

EWYK QZ XS | Standard unit				
MODEL	notes		100	135
Phases	(3)	n	3	
Frequency	(3)	Hz	50	
Voltage	(3)	V	400	
Tolerances Min/Max	(3)	%	-10/+10	
EMERGENCY DEVICES POWER SUPPLY	(6)			
Phases	(3)	n	1	
Frequency	(3)	Hz	50	
Voltage	(3)	V	230	
Tolerances Min/Max	(3)	%	-10/+10	
Power consumption		W	200	
Compressor starting method		-	Variable Frequency Drive	
Starting current	(2)	A	0	
Nominal Running Current C/O	(1) (3)	A	52,1	82,8
Max. running current	(3) (4)	A	122	142
Max. current for wire sizing	(3) (5)	A	134	156
Auxiliary circuit	(3)	A	1,25	1,25
Entry cross section cable		q.ty x mm2	3x70mm2 + PE 35mm2	3x70mm2 + PE 35mm2
Main switch size		A	160	160
SCC Icw 1 Sec.		kA eff.	20	20
Fan starting method		-	EC Brushless	
Running current per fan	(1) (3)	A	3,75	5,20
Total fans running current per base module	(1) (3)	A	7,50	10,40

1) Standard conditions Air to water - Cooling Only) evaporator water in/out = 12/7°C; ambient = 35.0°C, unit at full load operation in Cooling Only; operating fluid: Water; fouling factor = 0°C/W
2) In case of Variable frequency drive starting method, the inrush current is equal to zero
3) Data subject to change in case of options or unit with customizations. Refer to unit's name plate for actual value.
4) Maximum current absorbed by the unit (compressors and fans) @400 Volts
5) Calculated as Max. running current x 1,1
6) All safety devices must always be powered by an independent 230V power supply provided by the customer trough UPS (Uninterruptible Power Supply not provided by Daikin) in order to guarantee proper operation under all conditions, including emergency situations or main unit power failures. This dedicated power line always ensures continuous monitoring and activation of the safety systems. In the event that the power supply to the safety devices is not active, interrupted, or improperly connected, the unit will not start and will remain in a safe standby condition to prevent unsafe operation. **Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).**

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice.
For updated information on project base refer to Chiller Selection Software and unit's certified drawing and wiring diagram.

10. Sound data

Sound data Heating only mode (According to EN12102)

EWYK QZ XS | Standard unit - Heating only mode (according to EN12102)										
Model	Sound pressure Lp @1 m from the unit (rif. 2 x10^{-5} Pa)								Sound pressure Lp @1 m	Sound power Lw
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
	[dB]								[dB(A)]	[dB(A)]
100	49,9	52,6	52,4	58,5	45,4	40,2	34,9	57,8	**59,5**	**77,7**
135	51,7	54,4	54,2	60,3	47,2	42,0	36,7	59,6	**61,3**	**79,5**

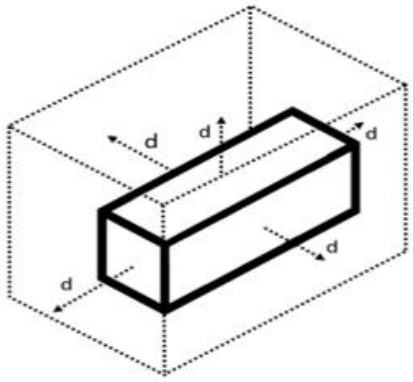
Model	Sound pressure - Lp @									
	1 m	2 m	3 m	4 m	5 m	6 m	7m	8 m	9 m	10 m
	[dB(A)]									
100	**59,5**	56,3	54,0	52,2	50,8	49,5	48,4	47,4	46,5	45,8
135	**61,3**	58,1	55,8	54,0	52,6	51,3	50,2	49,2	48,3	47,6

i) The above data are referred to the unit without additional optional.
ii) The above data are referred the unit installed in compliancy with installation prescription.
iii) All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software.

Rating conditions according to EN12102. Part load ("C" point) of SCOP profile.
Sound Power levels are measured in accordance with ISO 9614.
Sound Pressure at levels 1 meter are measured in accordance with ISO 3744.
NOTE: The sound data in the Octave band spectrum is based on calculation, thus intended as general guideline, and not considered binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.

All above data are referred to base unit without options. Options may affect sound data, contact factory Daikin representative for additional info.
Sound pressure at distance > 1 meter is calculated from the sound power as follows:

Lp = Lw – 10 x Log10(Ad)



where Ad being the surface around the chiller calculated at the specific distance d

Sound data Cooling only mode (Full Capacity)

EWYK QZ XS | Standard unit - Cooling only mode										
Model	Sound pressure Lp @1 m from the unit (rif. 2 x10^{-5} Pa)								Sound pressure Lp @1 m	Sound power Lw
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
	[dB]								[dB(A)]	[dB(A)]
100	68,5	66,7	65,8	65,8	63,2	60,7	53,8	48,2	**68,1**	**86,3**
135	80,1	70,3	69,5	69,3	66,6	63,5	65,7	56,8	**72,7**	**90,9**

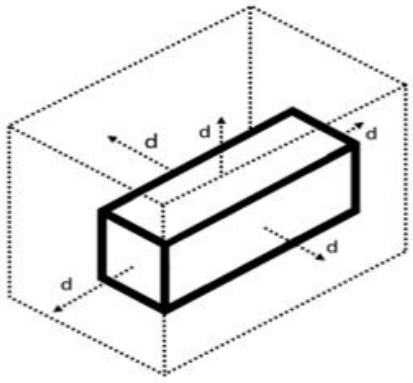
Model	Sound pressure - Lp @									
	1 m	2 m	3 m	4 m	5 m	6 m	7m	8 m	9 m	10 m
	[dB(A)]									
100	**68,1**	64,9	62,6	60,8	59,4	58,1	57,0	56,0	55,1	54,4
135	**72,7**	69,5	67,2	65,4	64,0	62,7	61,6	60,6	59,7	59,0

i) The above data are referred to the unit without additional optional.
ii) The above data are referred the unit installed in compliancy with installation prescription.
iii) All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software.

Standard Rating Conditions at full load according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 35°C at sea level; Indoor heat exchanger inlet water temperature 12°C, outlet water temperature 7°C. Fluid: water, Fouling factor = 0.
Sound Power levels are measured in accordance with ISO 9614.
Sound Pressure at levels 1 meter are measured in accordance with ISO 3744.
NOTE: The sound data in the Octave band spectrum is based on calculation, thus intended as general guideline, and not considered binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.

All above data are referred to base unit without options. Options may affect sound data, contact factory Daikin representative for additional info.
Sound pressure at distance > 1 meter is calculated from the sound power as follows:

Lp = Lw – 10 x Log10(Ad)



where Ad being the surface around the chiller calculated at the specific distance d

Sound data Heating only mode (Full Capacity)

EWYK QZ XS | Standard unit - Heating only mode (Full capacity)										
Model	Sound pressure Lp @1 m from the unit (rif. 2 x10^{-5} Pa)								Sound pressure Lp @1 m	Sound power Lw
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
	[dB]								[dB(A)]	[dB(A)]
100	68,5	66,7	65,8	65,8	63,2	60,7	53,8	48,2	**68,1**	**86,3**
135	78,5	68,7	67,9	68,0	65,4	63,4	65,3	57,0	**71,8**	**90**

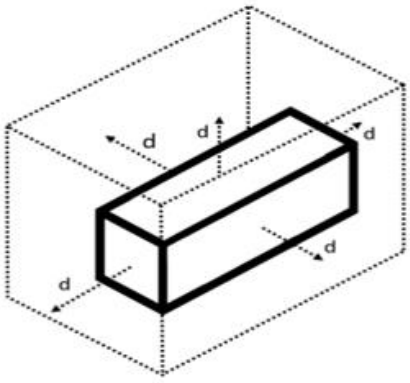
Model	Sound pressure - Lp @									
	1 m	2 m	3 m	4 m	5 m	6 m	7m	8 m	9 m	10 m
	[dB(A)]									
100	**68,1**	65,0	62,7	60,9	59,5	58,2	57,1	56,1	55,2	54,5
135	**71,8**	68,6	66,3	64,5	63,1	61,8	60,7	59,7	58,8	58,1

i) The above data are referred to the unit without additional optional.
ii) The above data are referred the unit installed in compliancy with installation prescription.
iii) All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software.

Rating Conditions at full load according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 7°C at sea level; Indoor heat exchanger inlet water temperature 40°C, outlet water temperature 45°C. Fluid: water, Fouling factor = 0.
Sound Power levels are measured in accordance with ISO 9614.
Sound Pressure at levels 1 meter are measured in accordance with ISO 3744.
NOTE: The sound data in the Octave band spectrum is based on calculation, thus intended as general guideline, and not considered binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.

All above data are referred to base unit without options. Options may affect sound data, contact factory Daikin representative for additional info.
Sound pressure at distance > 1 meter is calculated from the sound power as follows:

$$Lp = Lw - 10 \times Log10(Ad)$$



where Ad being the surface around the chiller calculated at the specific distance d

11. System data

The base modules can be combined to meet required capacity and installed to optimize footprint.
The below data are calculated at Standard Rating Conditions for Air-to-Water units according to EN14511:2.
Please refer to chiller configurator software for array configuration performance.

Two modules (Parallel arrangement)

Models		100 + 100	100 + 135	135 + 135
Cooling Capacity	**kW**	181,9	219,1	256,5
Power Input – Cooling	**kW**	60,64	78,81	96,7
Cooling Efficiency – EER	**kW/kW**	3,00	2,78	2,65
Heating Capacity	**kW**	202,2	235,7	269,3
Power Input – Heating	**kW**	60,86	70,79	80,7
Heating Efficiency – COP	**kW/kW**	3,32	3,33	3,34
Sound power according to EN12102 – Lw	**dB(A)**	80,7	81,7	82,5
Number of circuits / Compressors	**#**	4 / 4	4 / 4	4 / 4
Number of fans	**#**	4	4	4
Running Current	**A**	104	135	162
Max Running Current	**A**	243	263	283
Max Current Wires Sizing	**A**	268	290	312
Max Inrush Current	**A**	0	0	0
Operating Weight	**kg**	2390	2405	2544

Layout		
	**Length* [mm]**	3214
	Width [mm]**	2653
	Height [mm]	2382

* Including connection tubes n.1 x kit EKMODPAR3/5 and Victaulic joints
** Including manifold kit n.2 x EKMNFLD3/5

Three modules (Parallel arrangement)

Models		100 + 100 + 100	100 + 100 + 135	100 + 135 + 135	135 + 135 + 135
Cooling Capacity	kW	272,9	309,9	360,5	384,7
Power Input – Cooling	kW	90,97	109,5	119,4	145,1
Cooling Efficiency – EER	kW/kW	3,00	2,83	3,02	2,65
Heating Capacity	kW	303,3	336,9	370,4	403,9
Power Input – Heating	kW	91,36	101,2	111,2	121,0
Heating Efficiency – COP	kW/kW	3,32	3,33	3,33	3,34
Sound power according to EN12102 – Lw	dB(A)	82,5	83,2	83,7	84,3
Number of circuits / Compressors	#	6 / 6	6 / 6	6 / 6	6 / 6
Number of fans	#	6	6	6	6
Running Current	A	156	188	218	243
Max Running Current	A	365	385	405	427
Max Current Wires Sizing	A	401	423	445	465
Max Inrush Current	A	0	0	0	0
Operating Weight	kg	3585	3662	3739	3816

Layout



Length* [mm]	5221
Width [mm]**	2653
Height [mm]	2382

* Including connection tubes n.1 x kit EKMODPAR3/5 and Victaulic joints

** Including manifold kit n.2 x EKMNFLD3/5

Four modules (Parallel arrangement)

Models		100 + 100 + 100 + 135	100 + 100 + 135 + 135	100 + 135 + 135 + 135	135 + 135 + 135 + 135
Cooling Capacity	**kW**	399,7	438,1	475,6	513,0
Power Input – Cooling	**kW**	139,3	158,2	175,5	193,5
Cooling Efficiency – EER	**kW/kW**	2,87	2,77	2,71	2,65
Heating Capacity	**kW**	438,0	471,5	505,0	538,6
Power Input – Heating	**kW**	131,5	141,6	151,7	161,3
Heating Efficiency – COP	**kW/kW**	3,33	3,33	3,33	3,34
Sound power according to EN12102 – Lw	**dB(A)**	84,2	84,7	85,1	85,6
Number of circuits / Compressors	**#**	8 / 8	8 / 8	8 / 8	8 / 8
Number of fans	**#**	8	8	8	8
Running Current	**A**	240	270	301	324
Max Running Current	**A**	507	527	547	567
Max Current Wires Sizing	**A**	557	579	601	623
Max Inrush Current	**A**	0	0	0	0
Operating Weight	**kg**	4857	4934	5011	5088

Layout



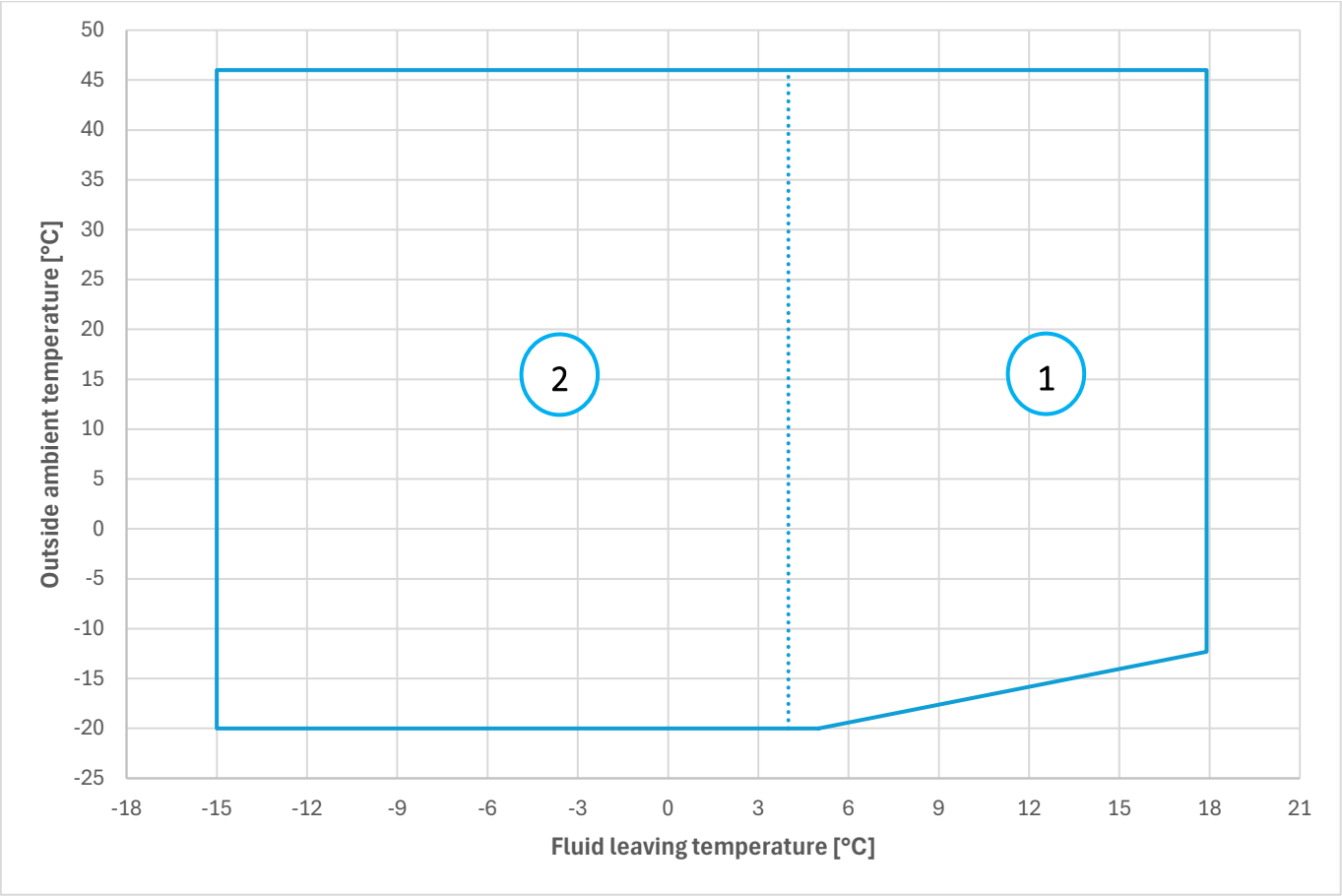
Length* [mm]	7228
Width [mm]**	2653
Height [mm]	2382

* Including connection tubes n.1 x kit EKMODPAR3/5 and Victaulic joints

** Including manifold kit n.2 x EKMNFLD3/5

12. Operating Limits

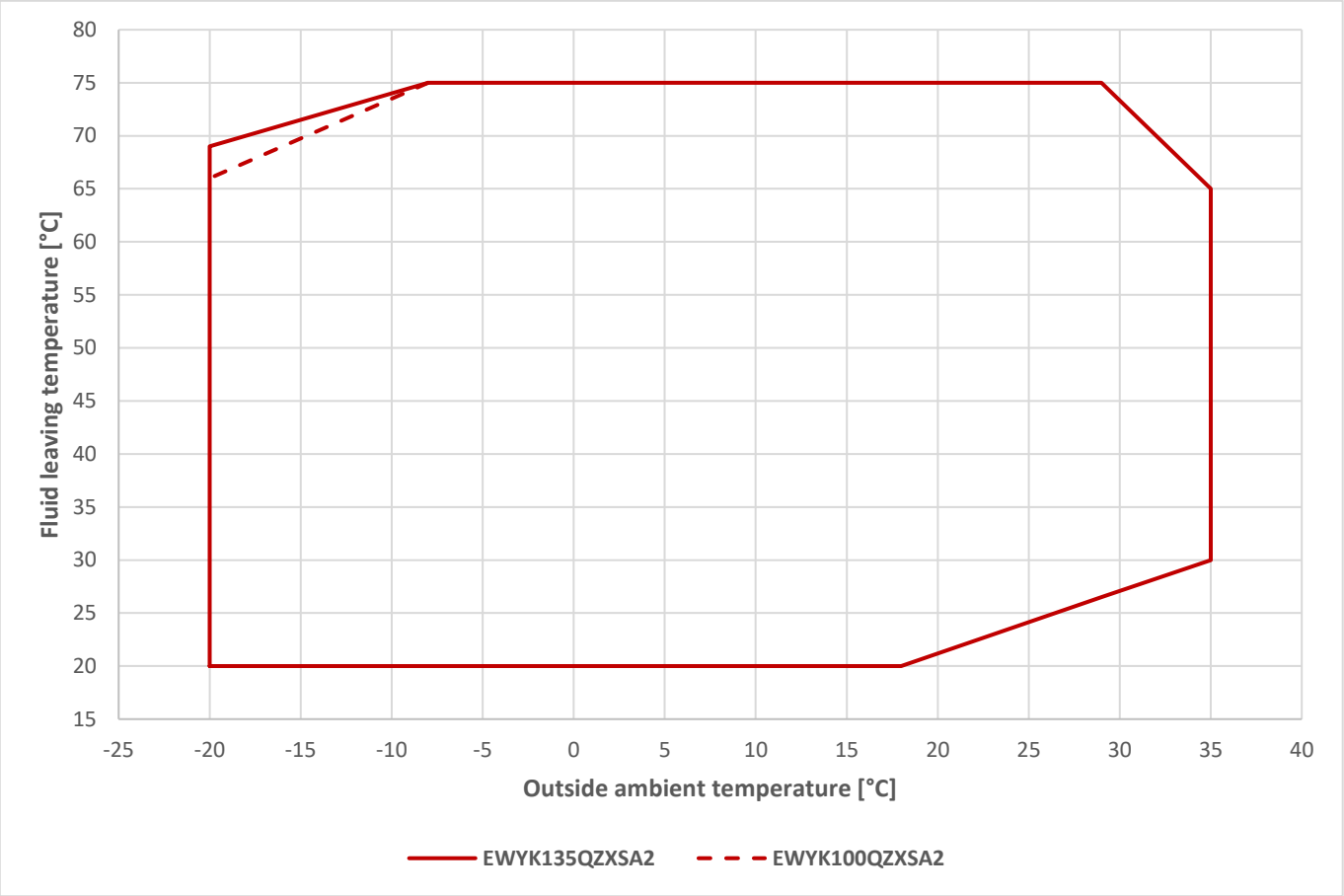
Cooling only envelope



Ref. 1 - Standard unit (No options).
Ref. 2 - Standard unit (No options)**.** For operation with fluid leaving temperature below 4°C, the unit **must** operate with **glycol mixture**. The glycol percentage must be provided according to the fluid leaving temperature needed.

Note:
The above graphic represents a guideline about the operating limits of the range. Please refer to the latest Chiller Configurator Software for real operating limits working conditions for each size.

Heating only envelope



Note:

- The above graphic represents a guideline about the operating limits of the range.
- Arrays including at least one size 100 module are subject to the operating envelope of size 100.
- Please refer to the latest Chiller Configurator Software for real operating limits working conditions for each size.

Correction factors with external static pressure on air section

External static pressure [Pa]	0	50	100
Cooling capacity correction factors	1,00	0,993	0,979
Power input correction factors in cooling mode	1,00	1,014	1,039
Max OAT reduction in cooling mode	0,00	-1,00	-2,00
Heating capacity correction factors	1,00	0,994	0,985
Power input correction factors in heating mode	1,00	1,004	1,01
Min OAT increase in heating mode	0,00	+0,25	+0,6

Transportation and Storage temperature	Min [°C]	Max [°C]
	-20	48

The values above are intended as guidelines, refer to unit selection on project base for actual values.

Flow rate in variable flow applications	Minimum flow [l/s]	Maximum flow [l/s]
EWYK100QZXSA2	1,36	19,7
EWYK135QZXSA2	1,50	19,7

All above values are intended as guidelines which may change according to specific unit configurations.

NOTES

All data are referred to installation of the unit at sea level. For information on operation of the unit please refer to Chiller Selection Software.

- For installation where ambient can reach temperature below +4°C, freeze protection is mandatory.
- Installation of filter at chiller inlet is mandatory.
- Performance of the unit are available with Water, Ethylene glycol and Propylene glycol. In case different substance is required, contact factory to evaluate compatibility and performances.
- All data and information on unit operation refers to the unit installed in compliance with Installation requirements (refer to Installation and Operation manual).
- Installation conditions may have impact on the above operating conditions, refer to Daikin representative for confirmation.

Unit options and/or special execution may affect operating limit. Contact factory for specific information.
All data and information are subject to change without notice. Always refer to latest information available from factory on project base.

13. Water quality and content

Water quality requirements	
Ph (25 °C)	7.5 – 9.0
Electrical conductivity [µS/cm] (25°C)	< 500
Chloride ion [mg Cl^- / l]	< 70 (HP) < 300 (CO)
Sulphate ion [mg SO_4^{2-} / l]	< 100
Alkalinity [mg $CaCO_3$ / l]	< 200
Total Hardness [mg $CaCO_3$ / l]	75 ÷ 150
Iron [mg Fe / l]	< 0.2
Ammonium ion [mg NH^{4+} / l]	< 0.5
Silica [mg SiO_2 / l]	-
Chlorine molecular (mg Cl_2/l)	< 0.5

The values above are intended as guidelines and not exhaustive for a complete analysis on compatibility with unit components.
All data and information are subject to change without notice. Always refer to latest information available from factory on project base.

Plant water content

Cooling Mode

The chilled water content of the systems should have a minimum water amount to avoid excessive stress (start and stops) on the compressors.
Design considerations for water volume are the minimum cooling load, the water temperature setpoint differential and the cycle time for the compressors.
As a general indication, the system water content should not be less than the values deriving from the following formula:

$$\textit{Single circuit Unit} \rightarrow 5\ \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

$$\textit{Dual circuit Unit} \rightarrow 3{,}5\ \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

$kW_{nominal}$ = Cooling capacity at 12/7°C OAT=35°C

The above rule of thumb derives from the following formula, as the relative volume of water capable of maintaining the water temperature setpoint differential during the minimum load transient avoiding an excessive starts and stops of the compressor itself (which depends on the compressor technology):

$$\textit{Water Volume} = \frac{CC\ [W]\ x\ Min\ load\ \%\ x\ DNCS[s]}{FD\ \left[\frac{g}{L}\right] * SH\left[\frac{J}{g°C}\right] * (DT)[°C]}$$

CC = Cooling Capacity
DNCS = Delay to next Compressor Start
FD = Fluid Density
SH = Specific Heat
DT = Water Temperature Setpoint Differential

A properly designed storage tank should be added if the system components do not provide sufficient water volume.
By default, the unit is set to have a water temperature setpoint differential in line with Comfort Cooling application which allows to operate with the minimum volume mentioned in the previous formula.
However, if a smaller temperature differential is set, as in the case of Process Cooling applications where temperature fluctuations must be avoided, a larger minimum water volume will be required.
To ensure proper operation of the unit when changing the value of setting, the minimum water volume must be corrected.
In case of more than one installed unit, the overall capacity of the installation must be considered in the calculation so summing the water content of each unit.

Heating Mode

The heating water content of the systems should have a minimum water amount to avoid excessive decrease of the water setpoint during the defrost cycle to guarantee the proper environmental comfort.
As a general indication the system water content should not be less than the values deriving from the following fomula:

$$\textit{Single circuit Unit} \rightarrow 16 \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

$$\textit{Dual circuit Unit} \rightarrow 8 \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

$kW_{nominal}$ = Heating capacity at 40/45°C OAT=7°C

The above rule of thumb derives from the following formula, as the relative volume of water capable of maintaining the system temperature within an acceptable ΔT (which depends on the heating application) during the defrost transient:

$$Water\ Volume = \frac{CC\ [W]\ x\ \text{MDD}[s]}{FD\left[\frac{g}{L}\right] * SH\ \left[\frac{J}{g°C}\right] *\ DT[°C]}$$

CC = Cooling Capacity during defrost operation
MDD = Max Defrost Duration
FD = Fluid Density
SH = Specific Heat
DT = Acceptable Water Temperature Differential

The water temperature difference is considered acceptable for the Comfort Heating application which allows to operate with the minimum volume mentioned in the previous formula.
However, if a smaller water temperature difference is considered acceptable, a larger minimum water volume will be required.
A properly designed storage tank should be added if the system components do not provide sufficient water volume.

In case of more than one installed unit, the overall capacity of the installation must be considered in the calculation so summing the water content of each unit.

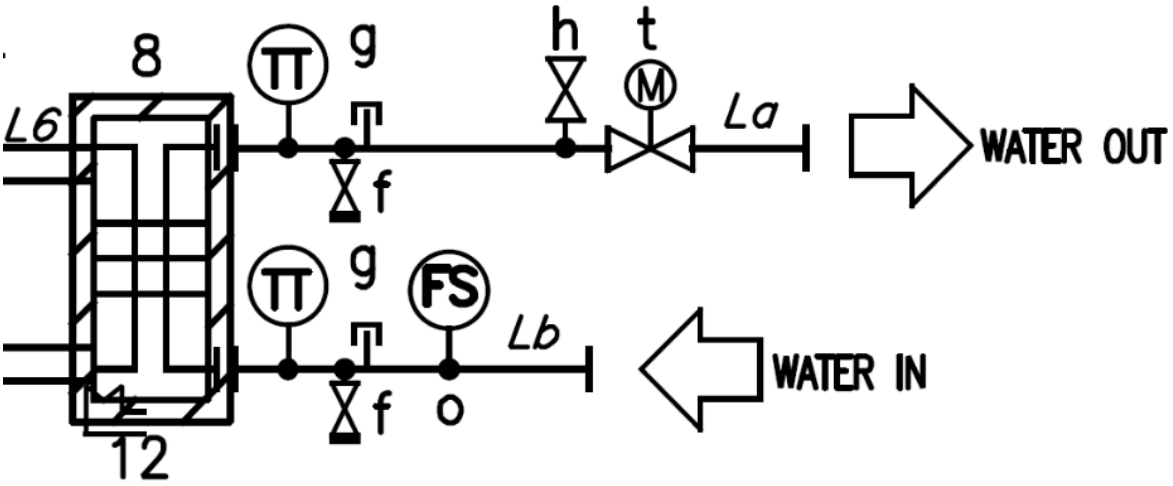
Note: The indication is intended as a general guideline and not intended to substitute the evaluation made by qualified technical personnel or by HVAC engineers. For more detailed analysis is better to consider the use of other more detailed approach.
These considerations refer to the water volume always flowing through the unit. If there are bypasses, branch of the system that can be excluded, that parts should not be accounted in the water content calculation.

14. Hydronics

Heat exchangers water volume and connection size

Brazed plate heat exchanger	Volume [lt]	Connection size [mm/inch]
EWYK100QZXSA2	24,5	88,9 / 3
EWYK135QZXSA2	29,0	88,9 / 3

Base module hydraulic scheme



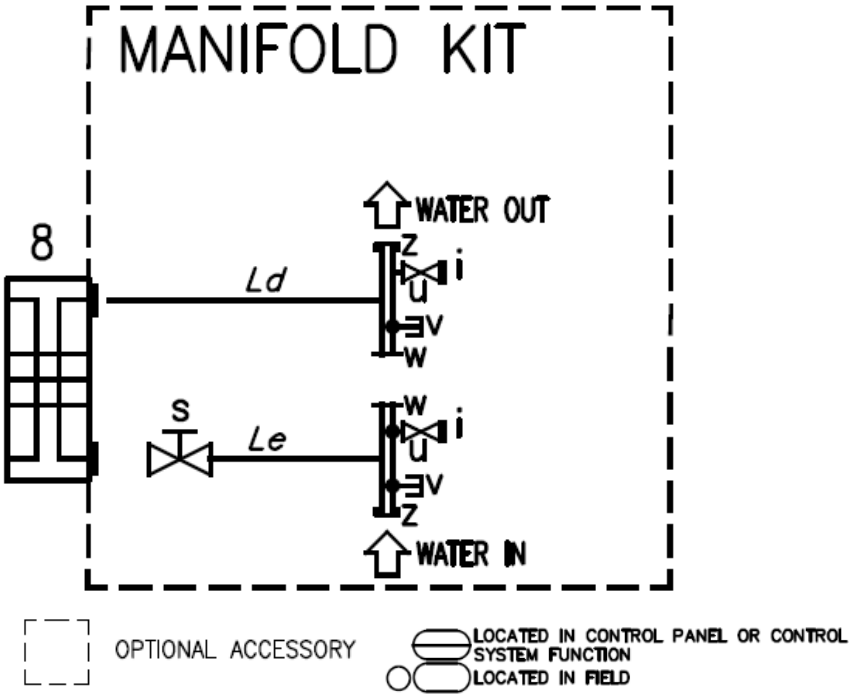
Line

ID	DESCRIPTION	THERMAL INSULATION
L6	BPHE EXCHANGER	YES (13 mm)
La,Lb	WATER OUT/IN DN80	YES (19 mm)

Equipment/Instrument

ID	DESCRIPTION
8	HEAT EXCHANGER (BPHE) with Thermal Insulation
12	ELECTRICAL HEATER
g	PLUGGED FITTING ¼" NPT
f	DRAIN ¼" G
h	AUTOMATIC AIR VENT ½" G
t	MOTOR ACTUATED VALVE
TT	TEMPERATURE TRANSDUCER
FS	FLOW SWITCH (SHIPPED LOOSE)

Base module hydraulic scheme with manifold kit (accessory EKMNFLD3/5)



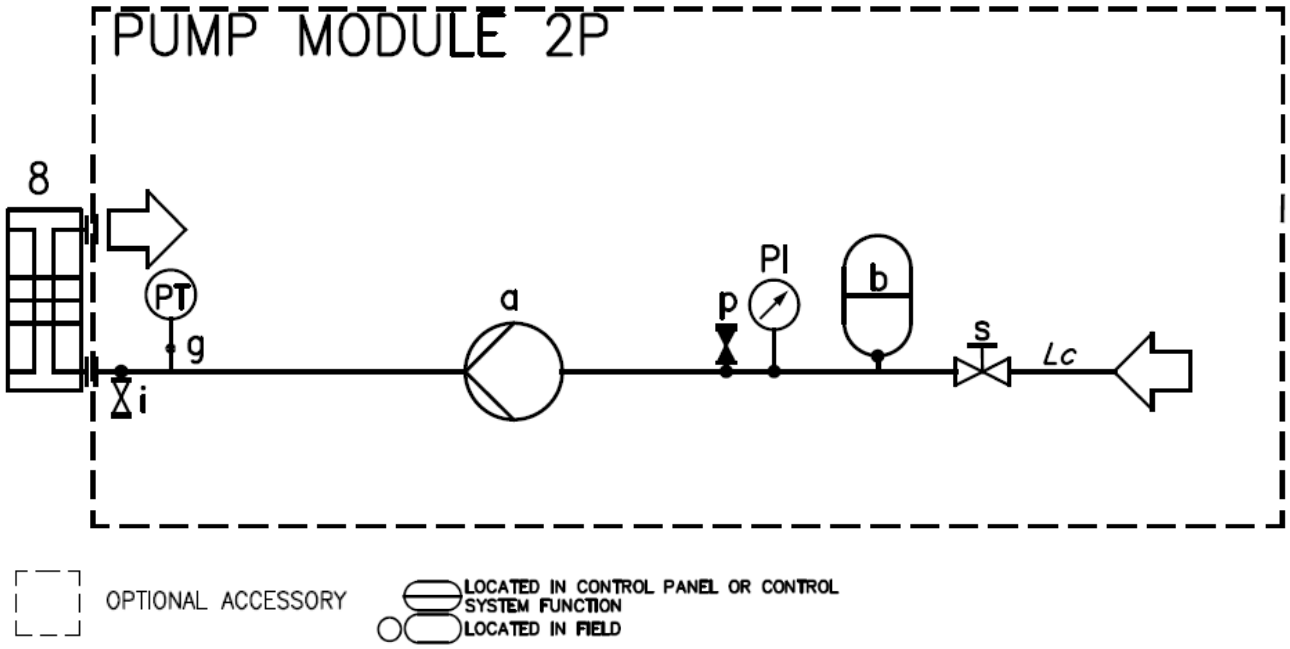
Line

ID	DESCRIPTION	THERMAL INSULATION
Ld,Le	STEEL PIPE WATER OUT/IN DN80	YES (19 mm)

Equipment/Instrument

ID	DESCRIPTION
8	HEAT EXCHANGER (BPHE) with Thermal Insulation
i	DRAIN ½" NPT
s	MANUAL ACTUATED VALVE
v	PROBE HOLDER ¼"
w	VICTAULIC JOINT
z	VICTAULIC ENDCAP

Pump module hydraulic scheme (accessory EKPMPHGH/LOW)



Line

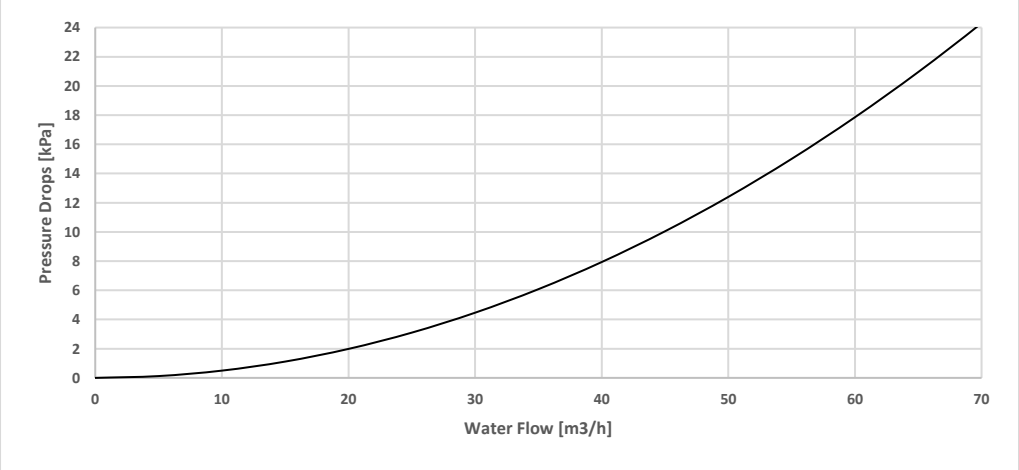
ID	DESCRIPTION	THERMAL INSULATION
Lc	STEEL PIPE WATER IN DN80 or DN125	YES (19 mm)

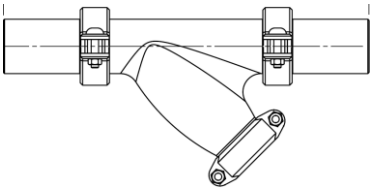
Equipment/Instrument

ID	DESCRIPTION
8	HEAT EXCHANGER (BPHE) with Thermal Insulation
i	DRAIN ½" NPT
s	MANUAL ACTUATED VALVE
b	EXPANSION TANK 18L
p	AUTOMATIC FILLING VALVE FITTING ½"
a	SINGLE PUMP
g	PLUGGED FITTING ¼"NPT
PI	PRESSURE GAUGE
PT	PRESSURE TRANSDUCER

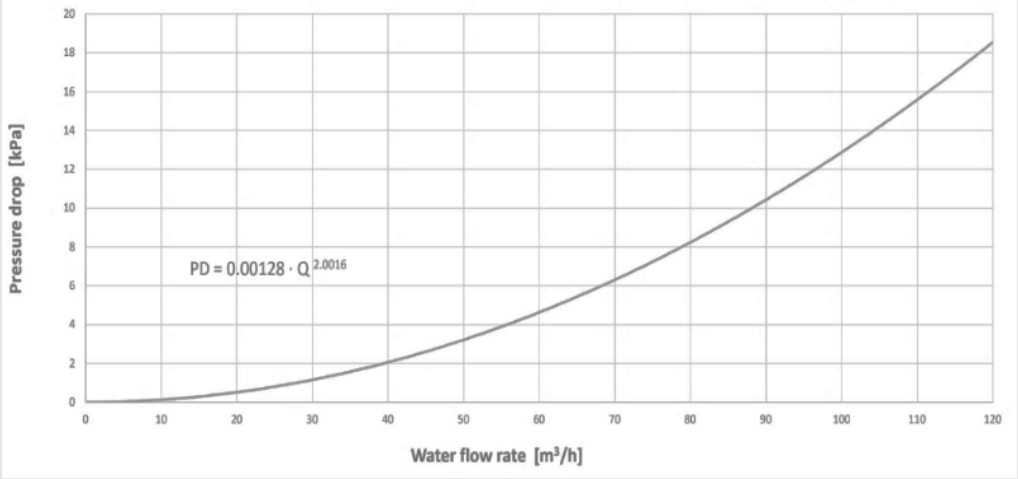
15. Water filter technical data

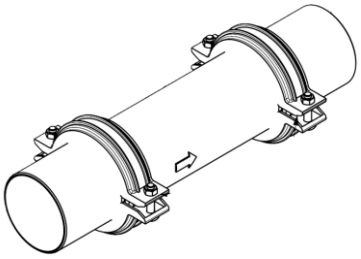
Accessory Code: EKWTRFLTR3 - WATER FILTER 3"





Accessory Code: EKWTRFLTR5 – WATER FILTER 5"





In case where the filter provided from factory is replaced with other type of filters the above curves are not applicable. The installation of the filter is mandatory.
The pressure drop value showed in Chiller configurator software refers to unit's water heat exchanger only.
The filters is shipped loose.
Note: when using mixture of water and glycol please contact factory as above specification could change.

16. Pump Modules technical data and curves

The module integrates a single circulation pump, available in Low Lift or High Lift version, controlled as standard by a variable frequency drive (VFD) to modulate flow rate and available head according to system demand.
The pumps are designed in compliance with EN IEC 60335-2-40 safety requirements, specifically subclauses 22.116 (protection of ignition sources) and 22.117 (surface temperature limits), for applications involving flammable refrigerants. An expansion vessel with a nominal volume of 18 liters is integrated within the module. The inverter kit is pre-installed and wired to the module control system. The pump motor is electrically protected by a dedicated circuit breaker located in the control panel.

Each pump module is equipped with its own electrical control panel, installed in an elevated position and outside potential refrigerant accumulation zones. This layout reduces exposure in the unlikely event of propane leakage, as R290 is heavier than air and naturally tends to accumulate at lower levels.

The Low Lift version provides an average available head of approximately 100 to 150 kPa or higher under unit standard operating conditions. The High Lift version provides an average available head of approximately 200 to 250 kPa or higher under unit standard operating conditions. For detailed hydraulic performance, reference shall be made to the corresponding pump characteristic curves.

An optional pump connection kit can be ordered together with the pump module to allow hydraulic connection to a single base module or to an array configuration. The kit is available with nominal connection sizes of 3" or 5".

The selection of the appropriate pump module and connection size for other accessories shall be based on the required water flow rate, as determined by the selection software and the reference tables provided in the dedicated accessory combination section (Chapter 6). Being reversible heat pumps units, the water flow could be different between cooling only mode and heating only mode, the pump module suggestion by chiller configurator (step 4 – configuration) is based on the higher water flow rate between the two operating modes.



(Pump Module without protective panels to show internal components – Front view)

Technical data

Accessory code	Type	Motor size	Power supply(1)	Motor protection
EKPMPLOW1	VFD Single Pump - Low Lift	1,5 kW	400V-3ph-50Hz	IP55
EKPMPLOW2	VFD Single Pump - Low Lift	2,2 kW	400V-3ph-50Hz	IP55
EKPMPLOW3	VFD Single Pump - Low Lift	4,0 kW	400V-3ph-50Hz	IP55
EKPMPLOW4	VFD Single Pump - Low Lift	7,5 kW	400V-3ph-50Hz	IP55
EKPMPLOW5	VFD Single Pump - Low Lift	7,5 kW	400V-3ph-50Hz	IP55
EKPMPLOW6	VFD Single Pump - Low Lift	11,0 kW	400V-3ph-50Hz	IP55
EKPMPHGH1	VFD Single Pump - High Lift	2,2 kW	400V-3ph-50Hz	IP55
EKPMPHGH2	VFD Single Pump - High Lift	3,0 kW	400V-3ph-50Hz	IP55
EKPMPHGH3	VFD Single Pump - High Lift	4,0 kW	400V-3ph-50Hz	IP55
EKPMPHGH4	VFD Single Pump - High Lift	7,5 kW	400V-3ph-50Hz	IP55
EKPMPHGH5	VFD Single Pump - High Lift	7,5 kW	400V-3ph-50Hz	IP55
EKPMPHGH6	VFD Single Pump - High Lift	7,5 kW	400V-3ph-50Hz	IP55
EKPMPHGH7	VFD Single Pump - High Lift	11,0 kW	400V-3ph-50Hz	IP55

(1) 400V power supply with ±10% tolerance on Voltage, Voltage unbalance between phases must be within ±3%

Physical data

Accessory code	Weight	Length	Width	Height
EKPMPLOW1	180 kg	1207 mm	913 mm	1545 mm
EKPMPLOW2	185 kg			
EKPMPLOW3	205 kg			
EKPMPLOW4	245 kg			
EKPMPLOW5	255 kg			
EKPMPLOW6	260 kg			
EKPMPHGH1	185 kg	1207 mm	913 mm	1545 mm
EKPMPHGH2	200 kg			
EKPMPHGH3	205 kg			
EKPMPHGH4	245 kg			
EKPMPHGH5	250 kg			
EKPMPHGH6	255 kg			
EKPMPHGH7	260 kg			



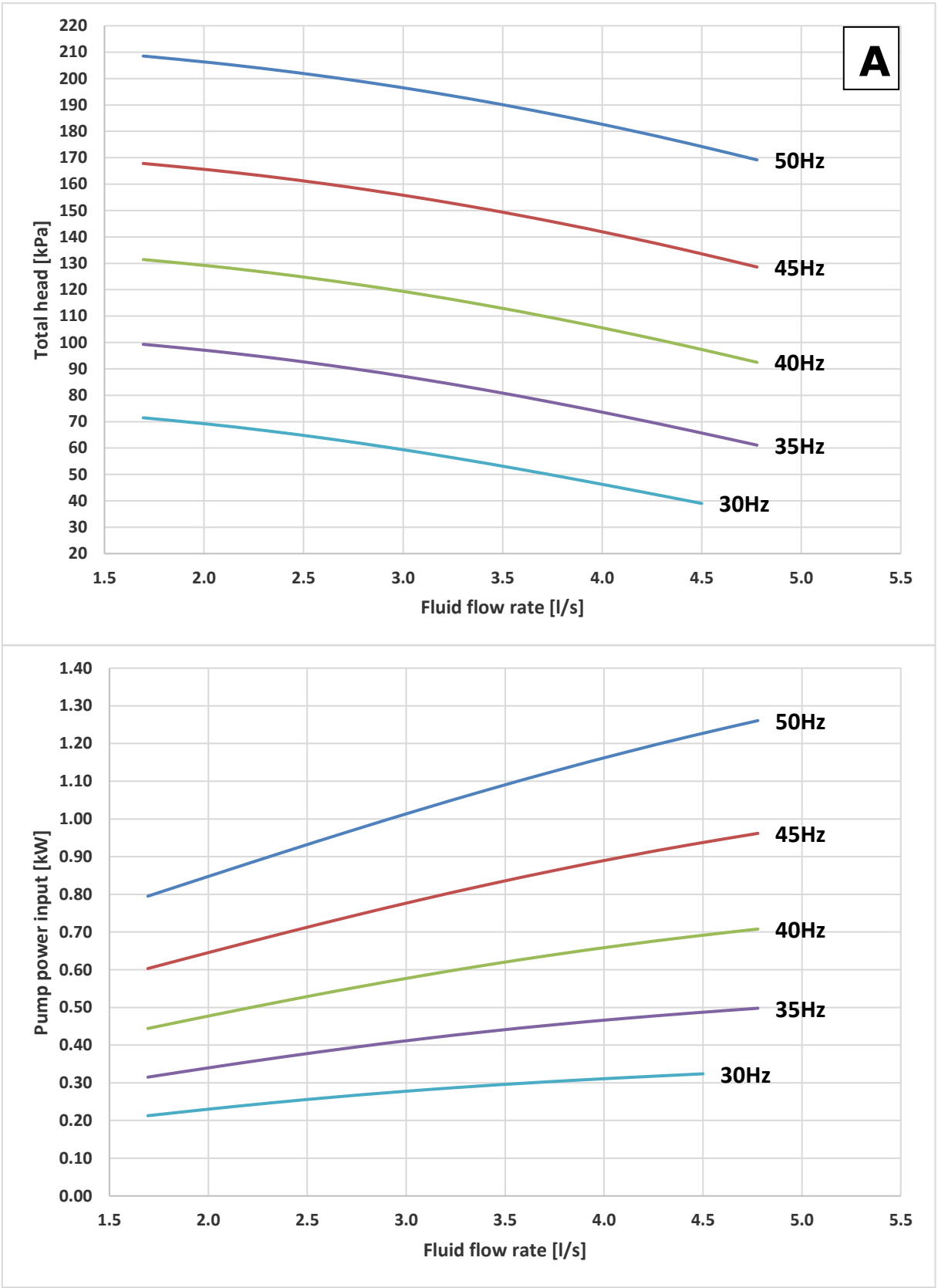
(Array with pump module with protective panels mounted – Front View)

Curve reference

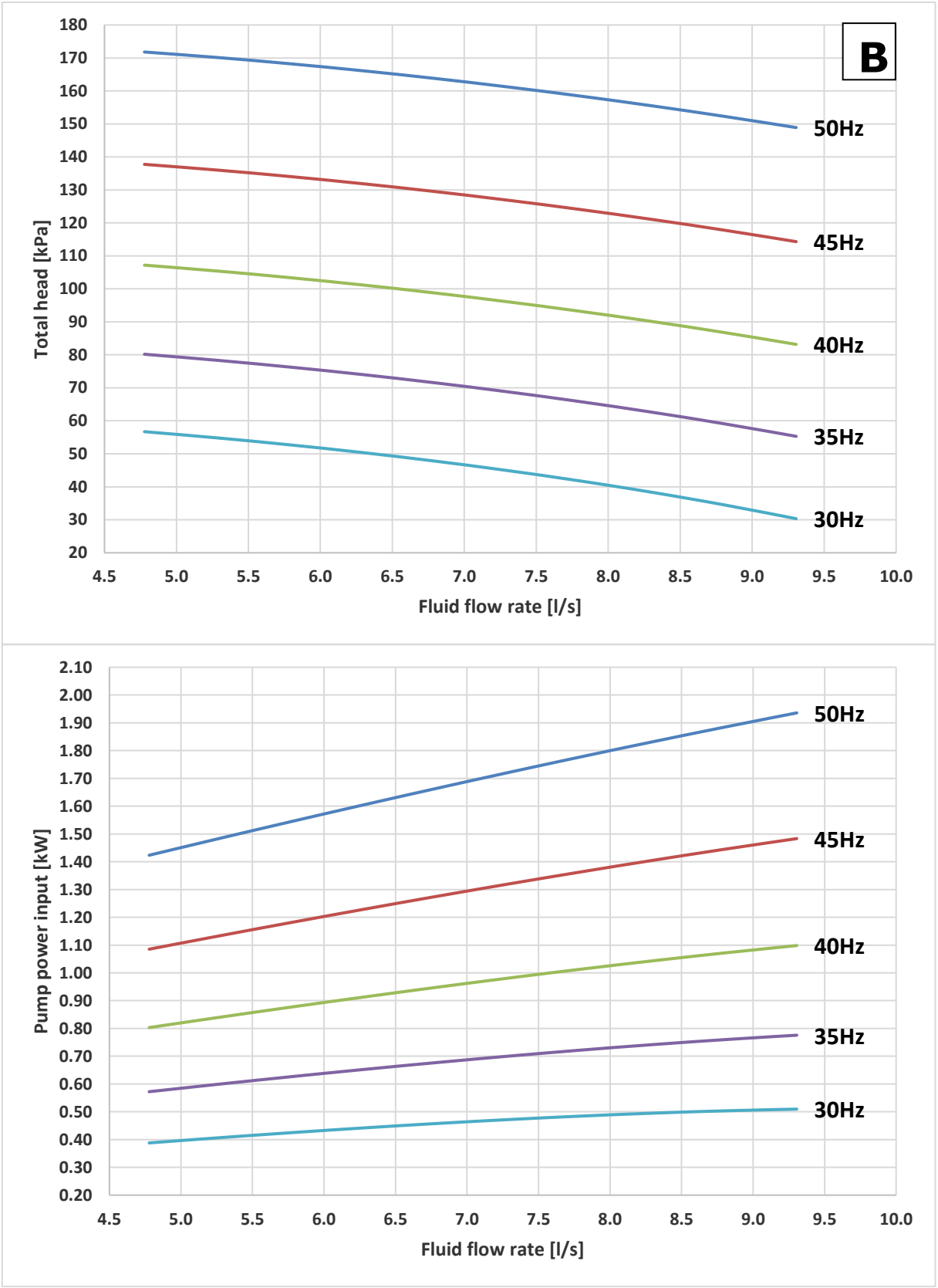
Pump Module Code	EKPMPLOW1		EKPMPLOW2		EKPMPLOW3		EKPMPLOW4		EKPMPLOW5		EKPMPLOW6	
Water flow range [l/s]	From	To	From	To	From	To	From	To	From	To	From	To
	1,69	4,78	4,78	9,31	9,31	13,4	13,4	17,9	17,9	26,3	26,3	31,7
Curve reference	A		B		C		D		E		F	

Pump Module	EKPMPHGH1		EKPMPHGH2		EKPMPHGH3		EKPMPHGH4		EKPMPHGH5		EKPMPHGH6		EKPMPHGH7	
Water flow range [l/s]	From	To	From	To	From	To	From	To	From	To	From	To	From	To
	1,69	2,86	2,86	6,47	6,47	7,89	7,89	13,1	13,1	17,9	17,9	21,5	21,5	31,7
Curve reference	G		H		I		L		M		N		O	

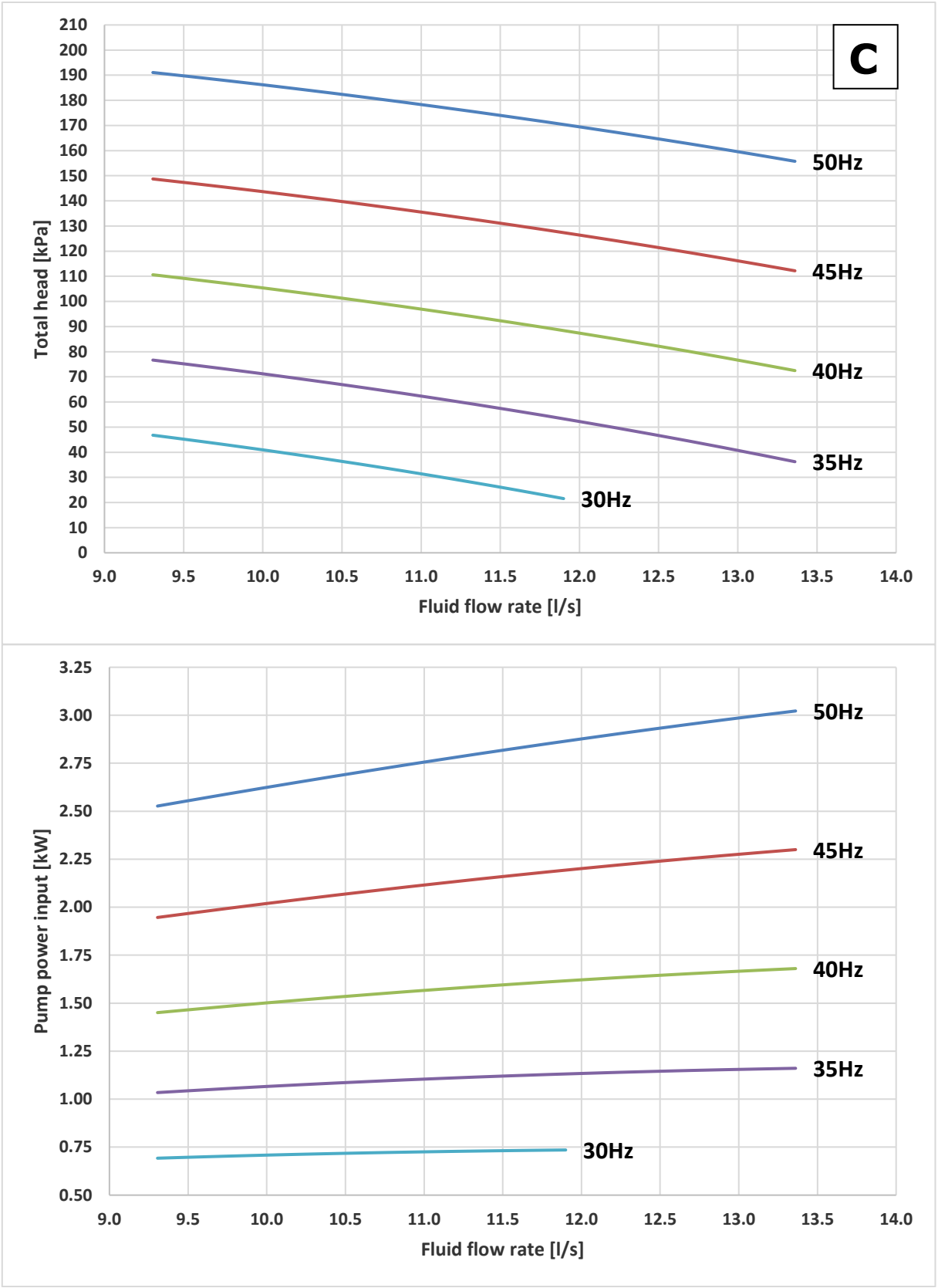
Pump curves



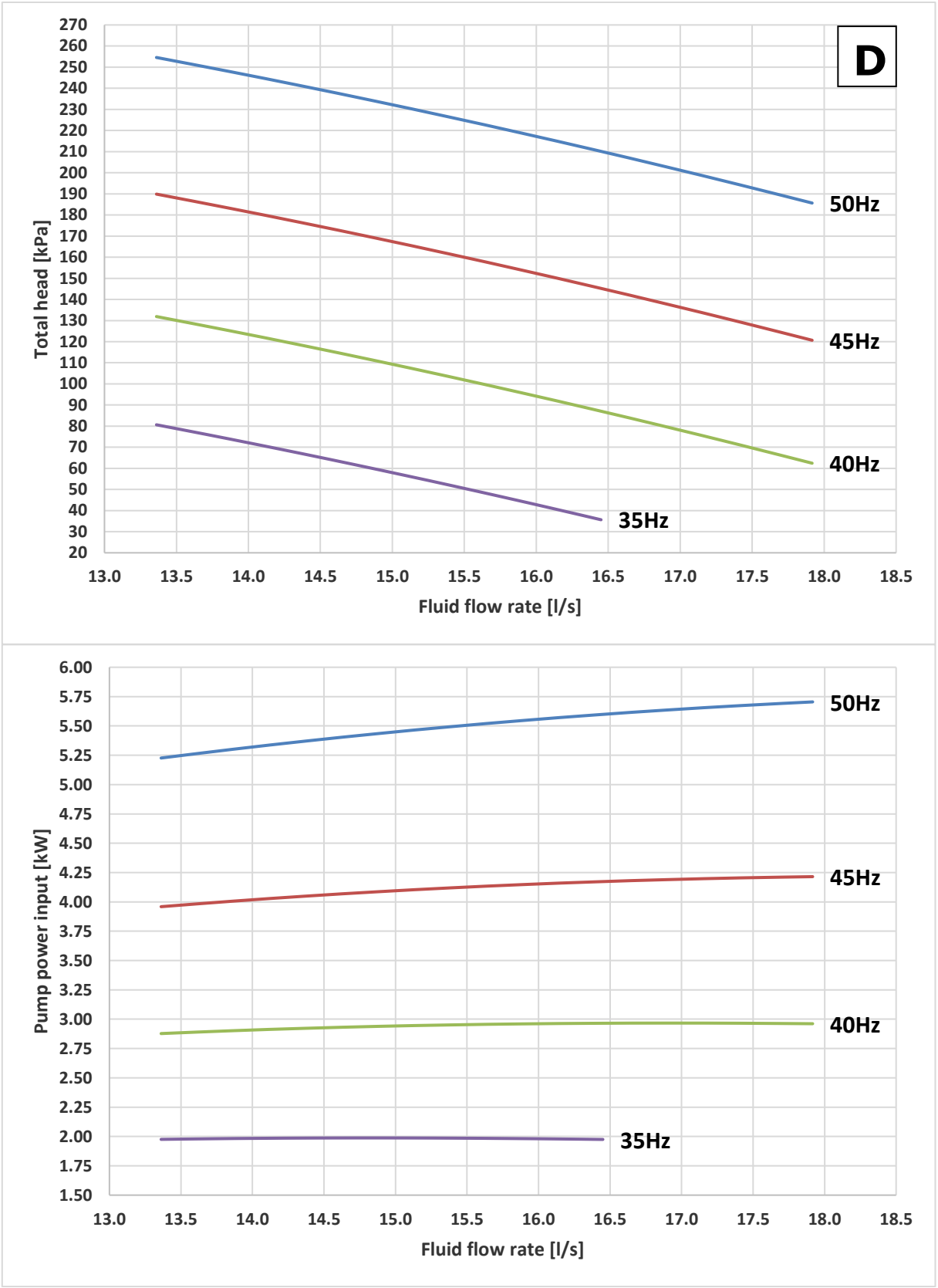
1) Pump performances are valid for liquids with density ρ = 1,0 Kg/dm3 and kinematic viscosity v = 1 mm2/sec.
2) All the data are subject to change without notice. For updated information on project base refer to Chiller configurator software and unit/pump nameplate
3) Fluid: water, not including unit and filter pressure drops. The installation of the filter is mandatory.
4) In case of glycol mixture (with brine conditions) .
5) The above data are referred the unit installed in compliance with installation prescription.



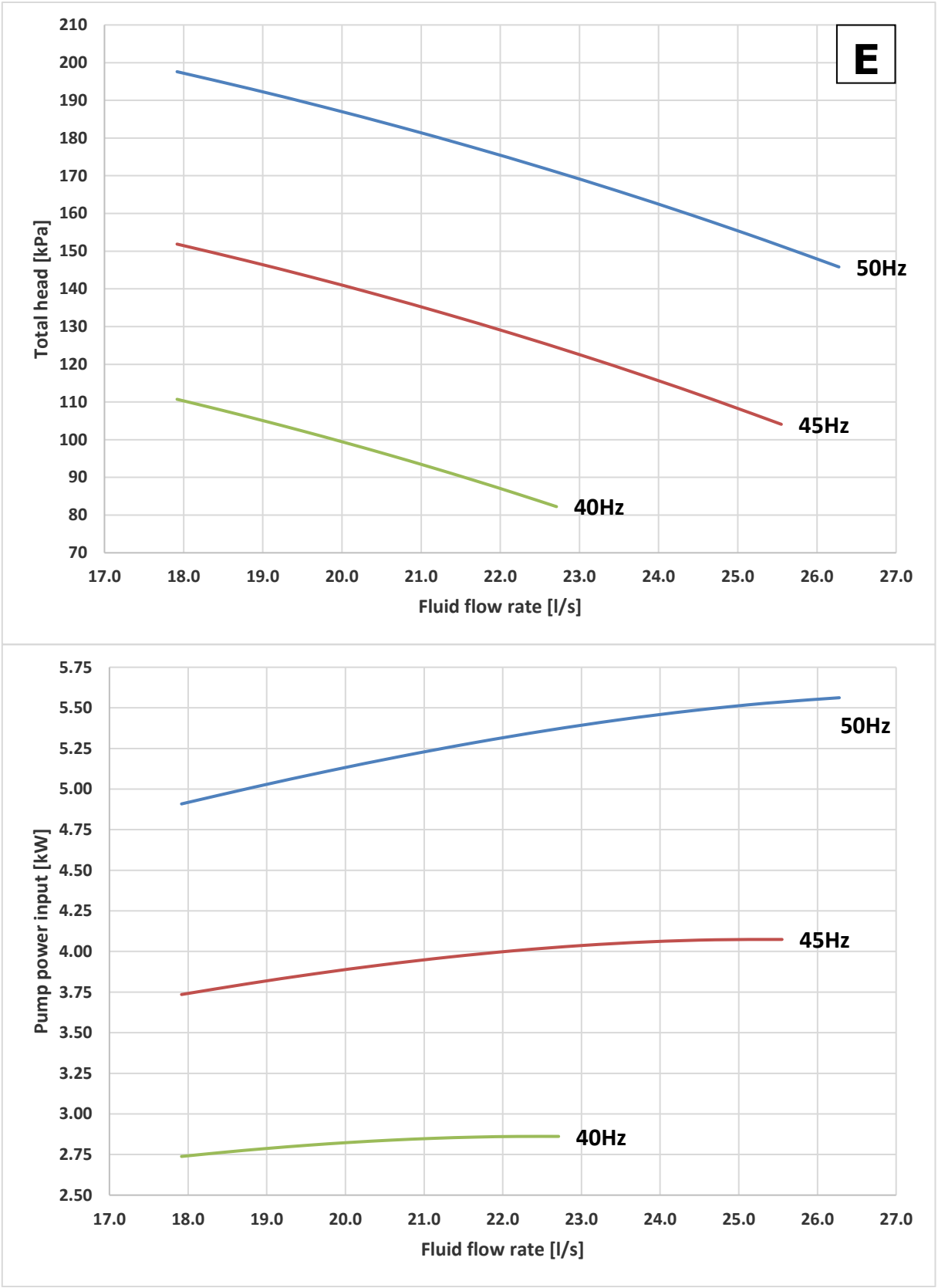
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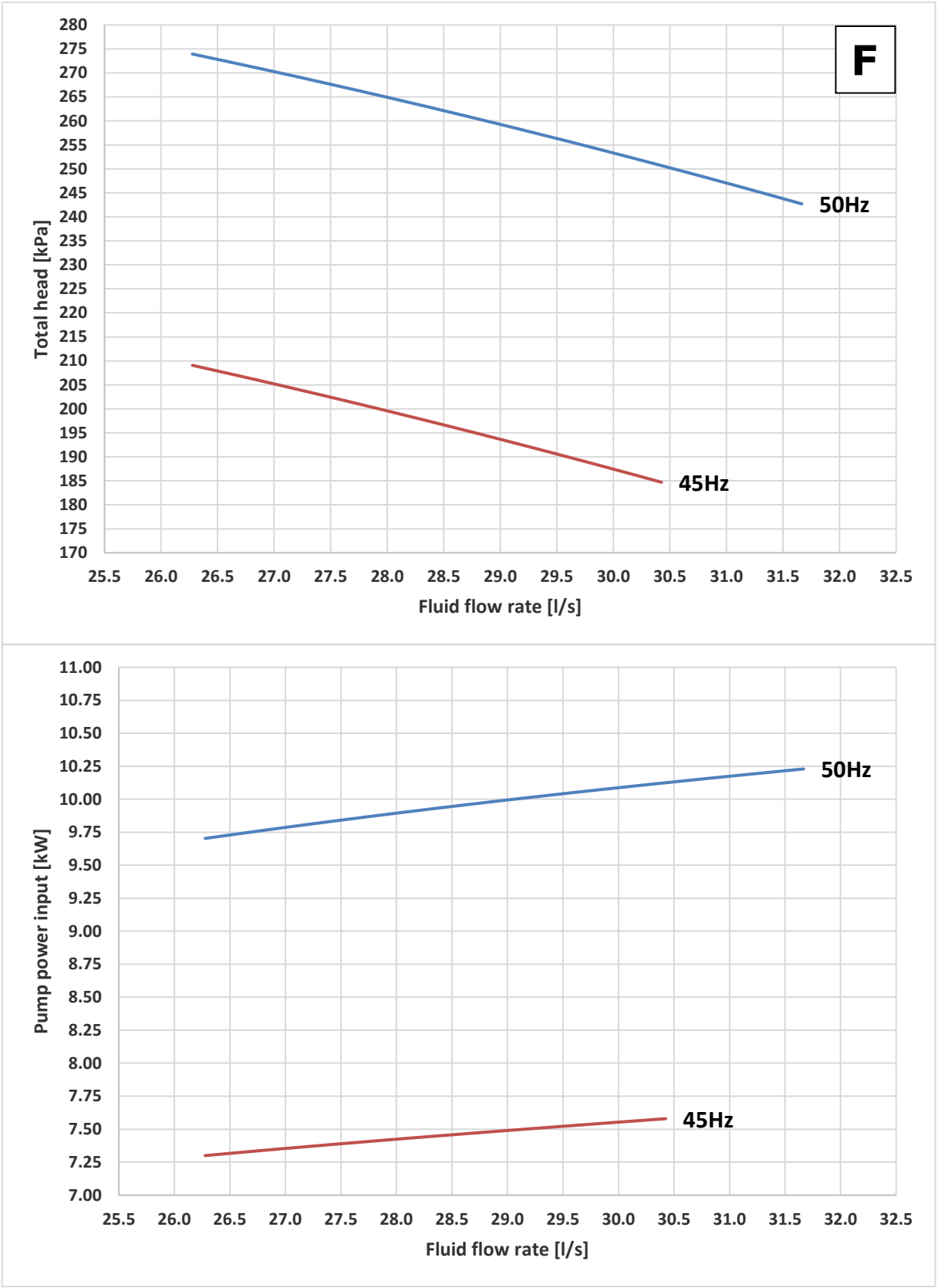
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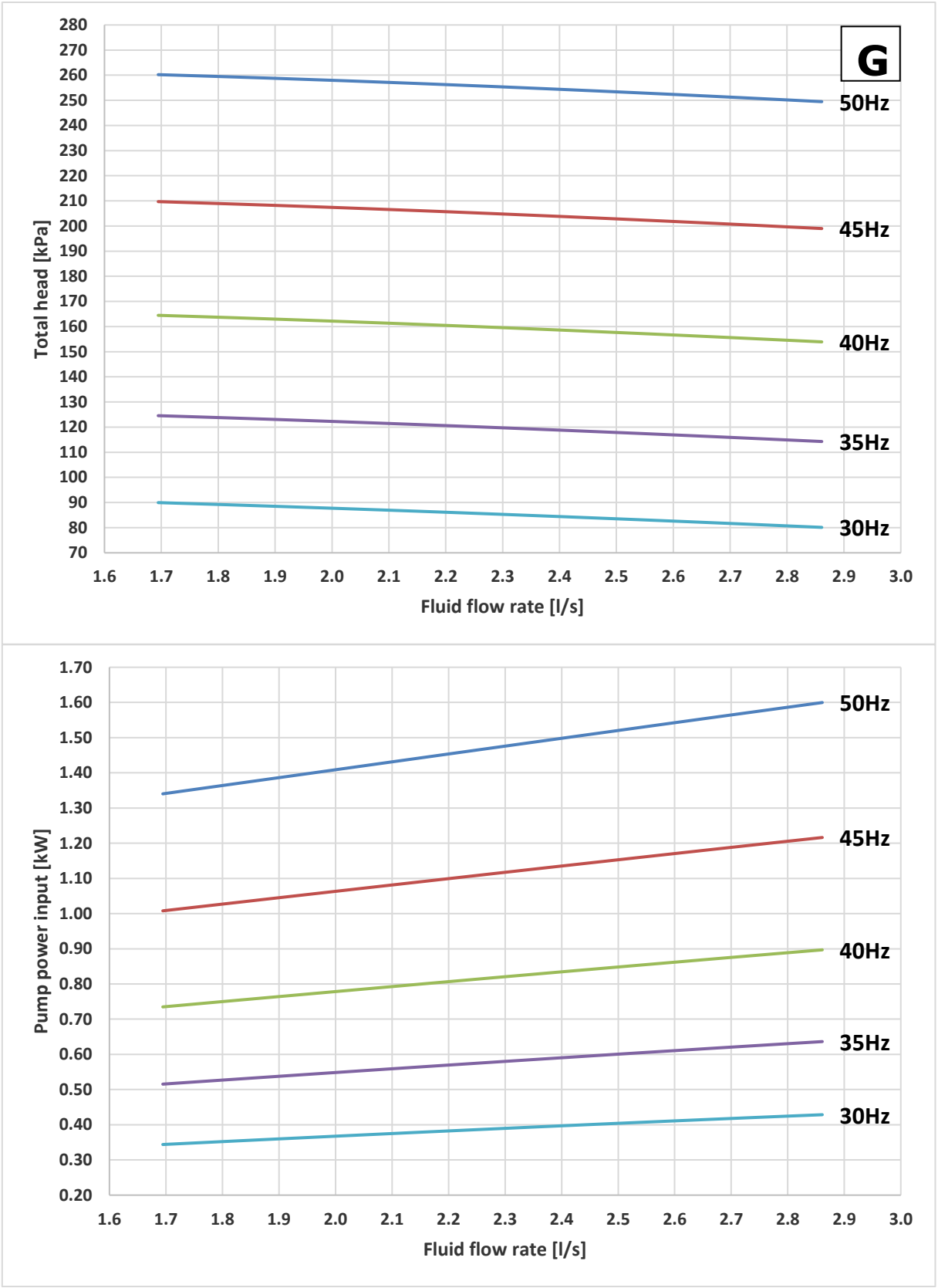
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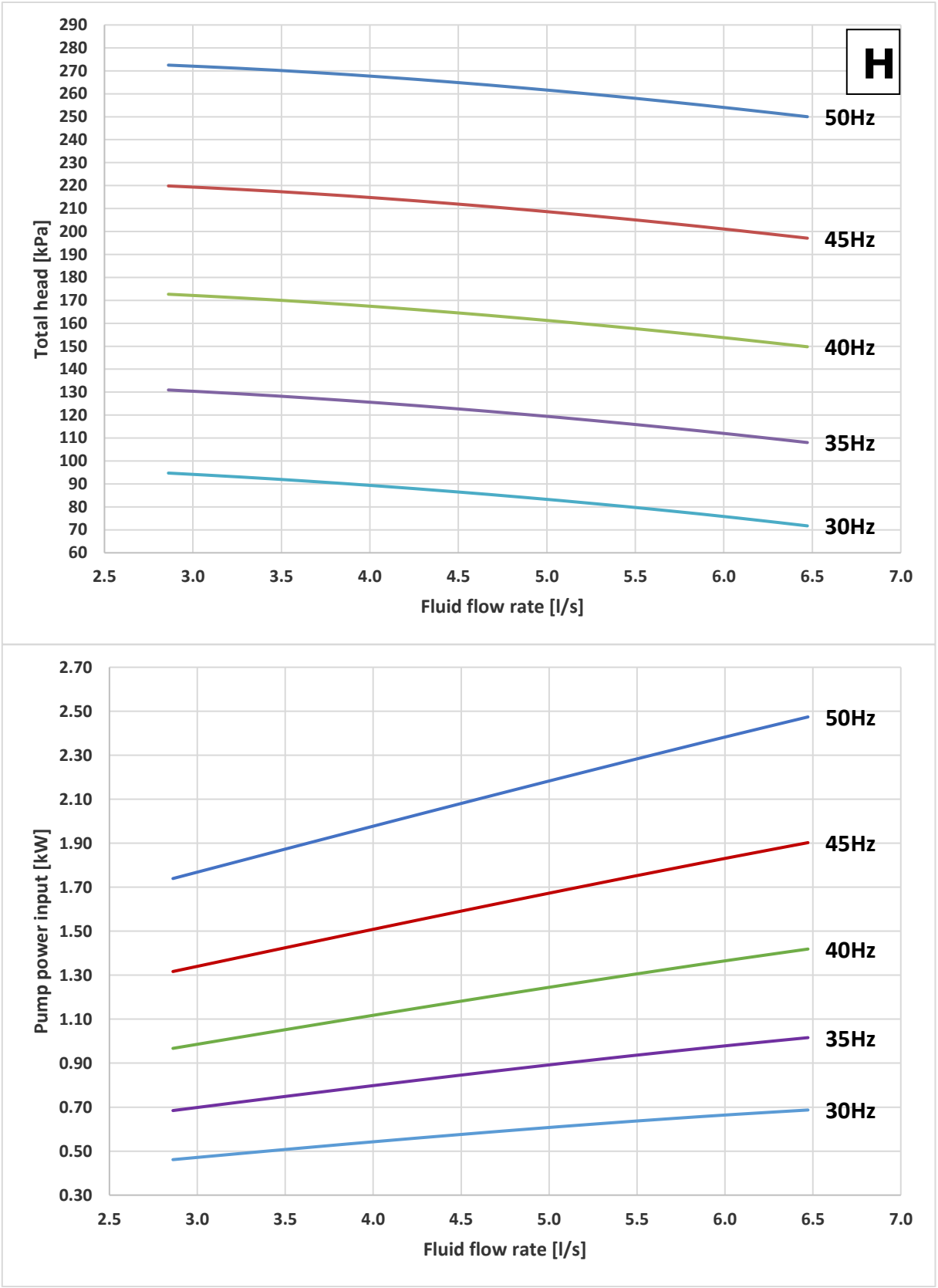
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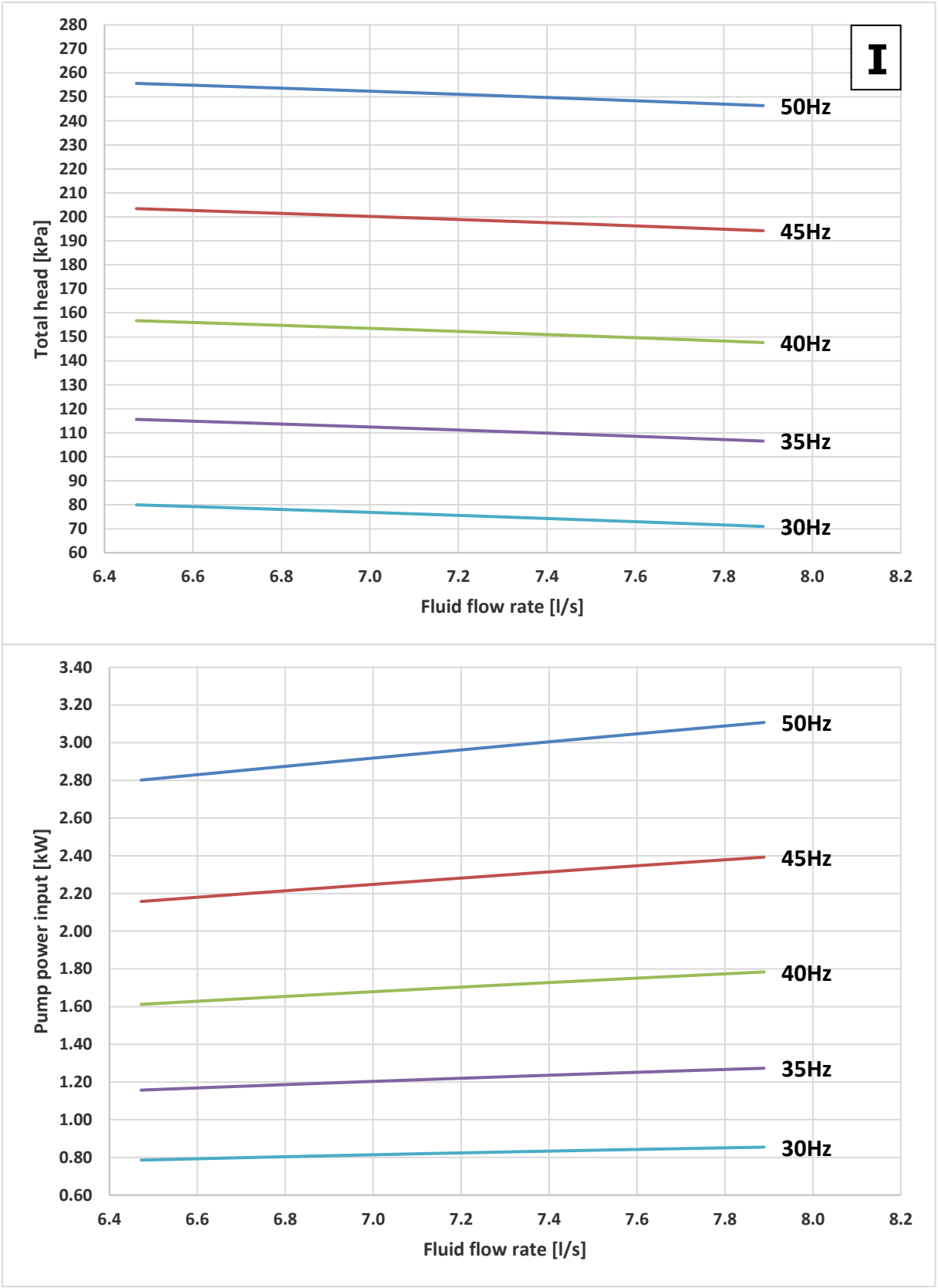
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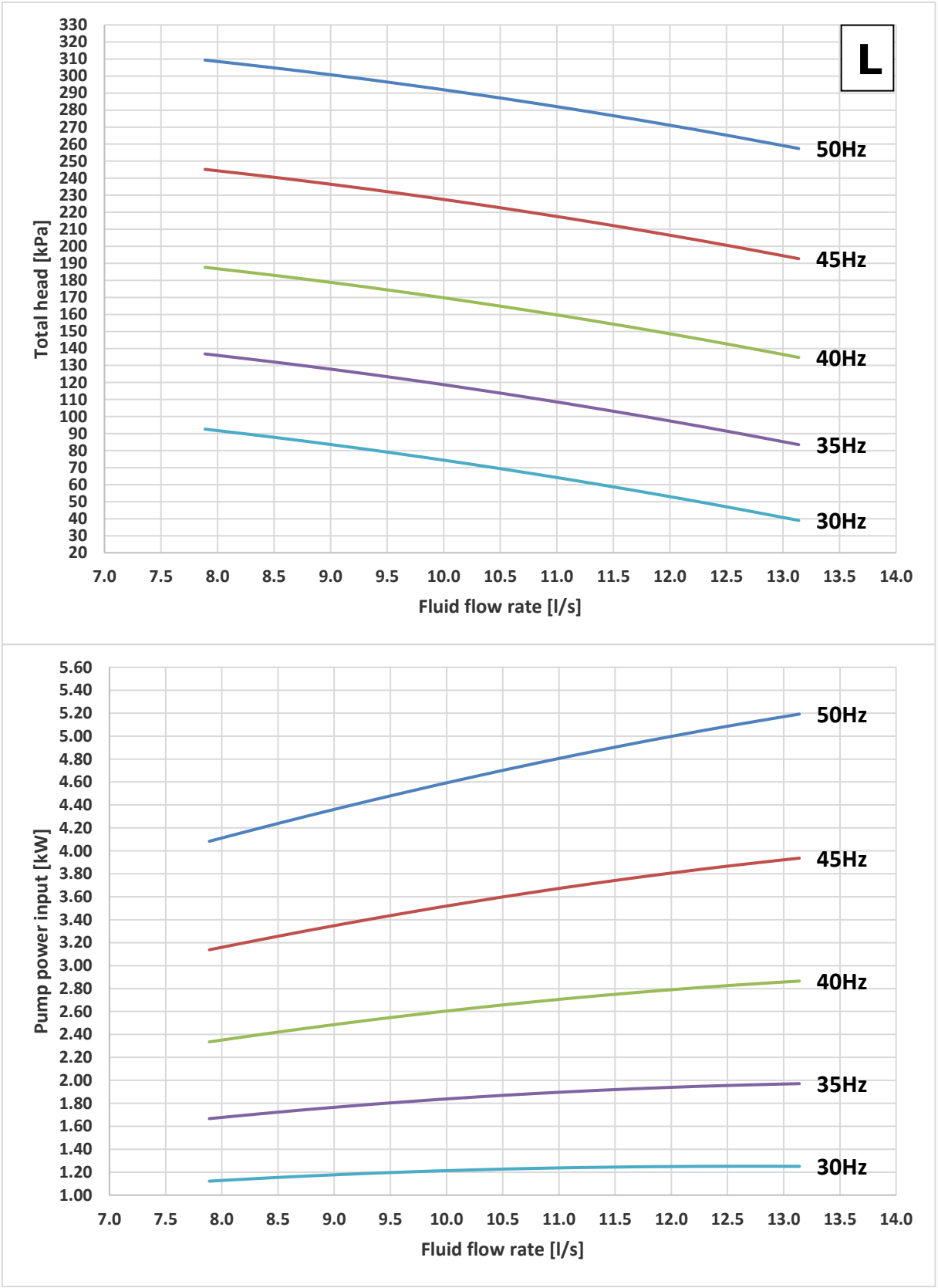
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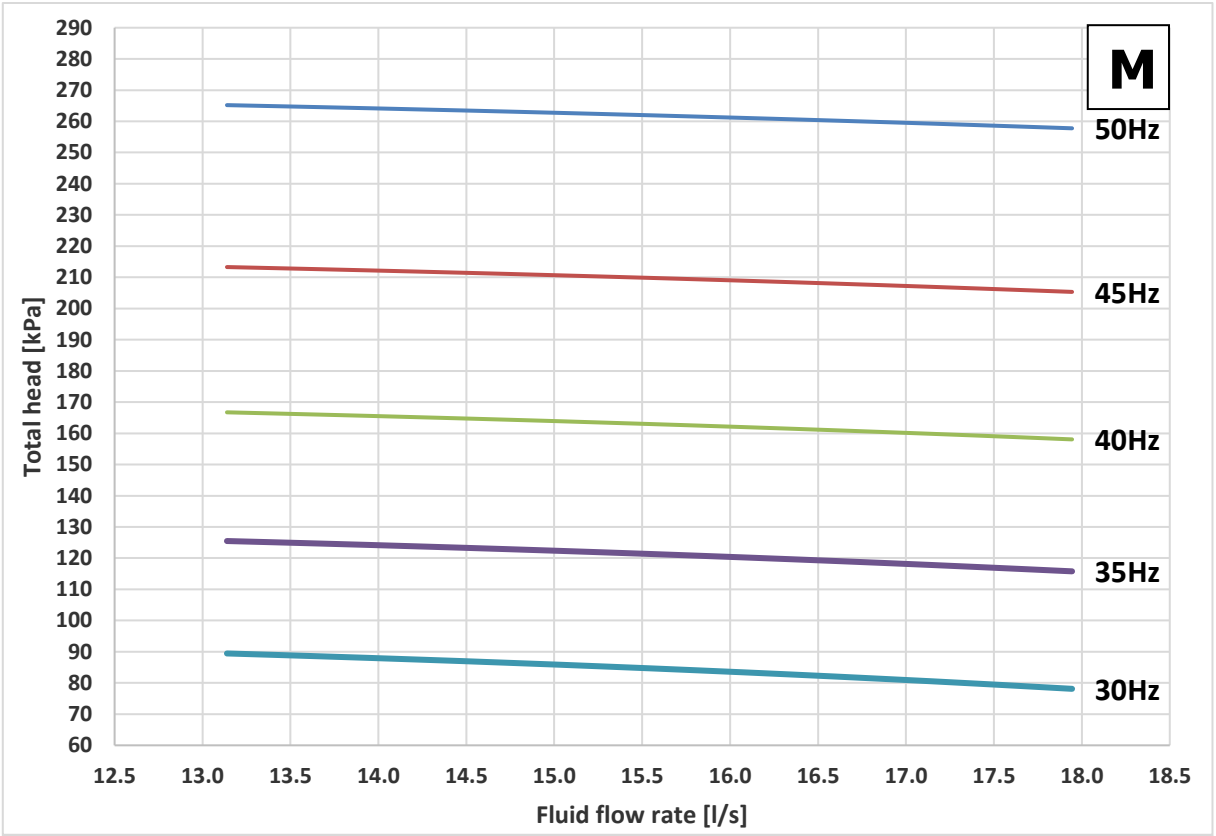
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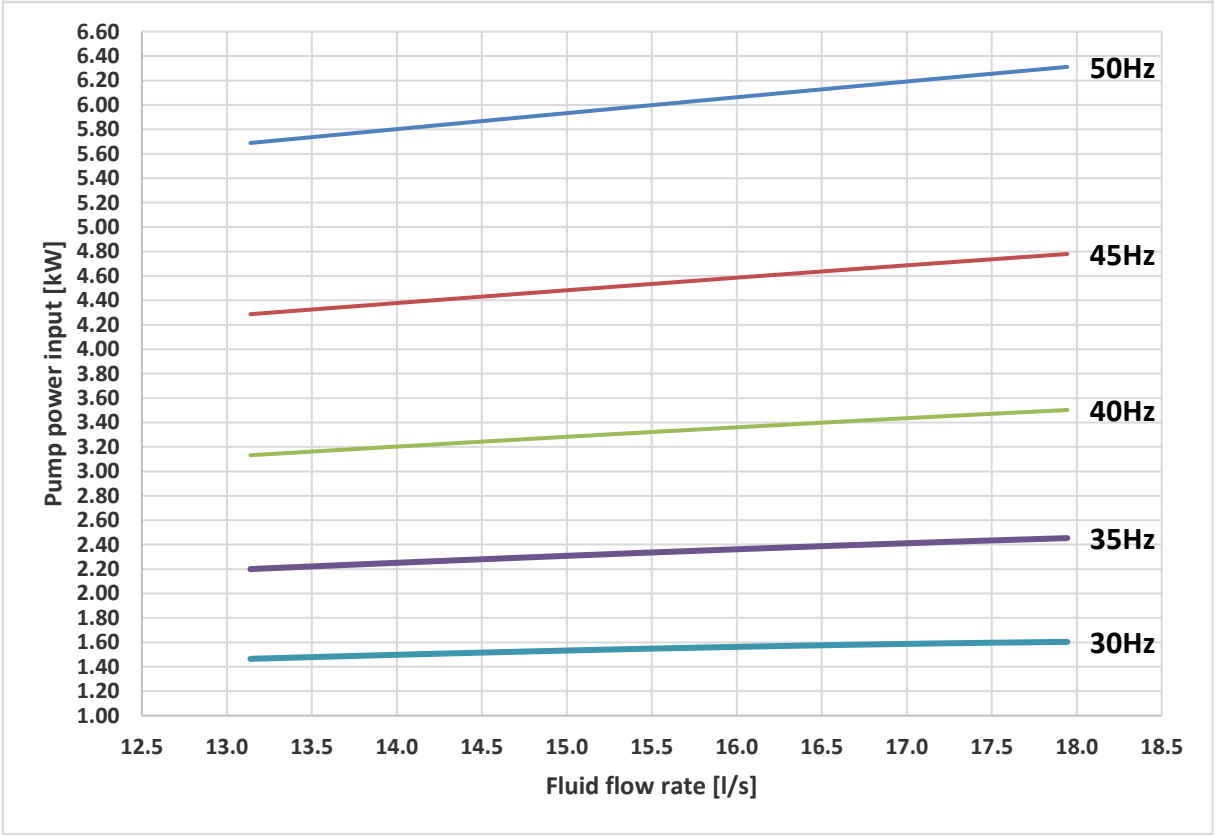


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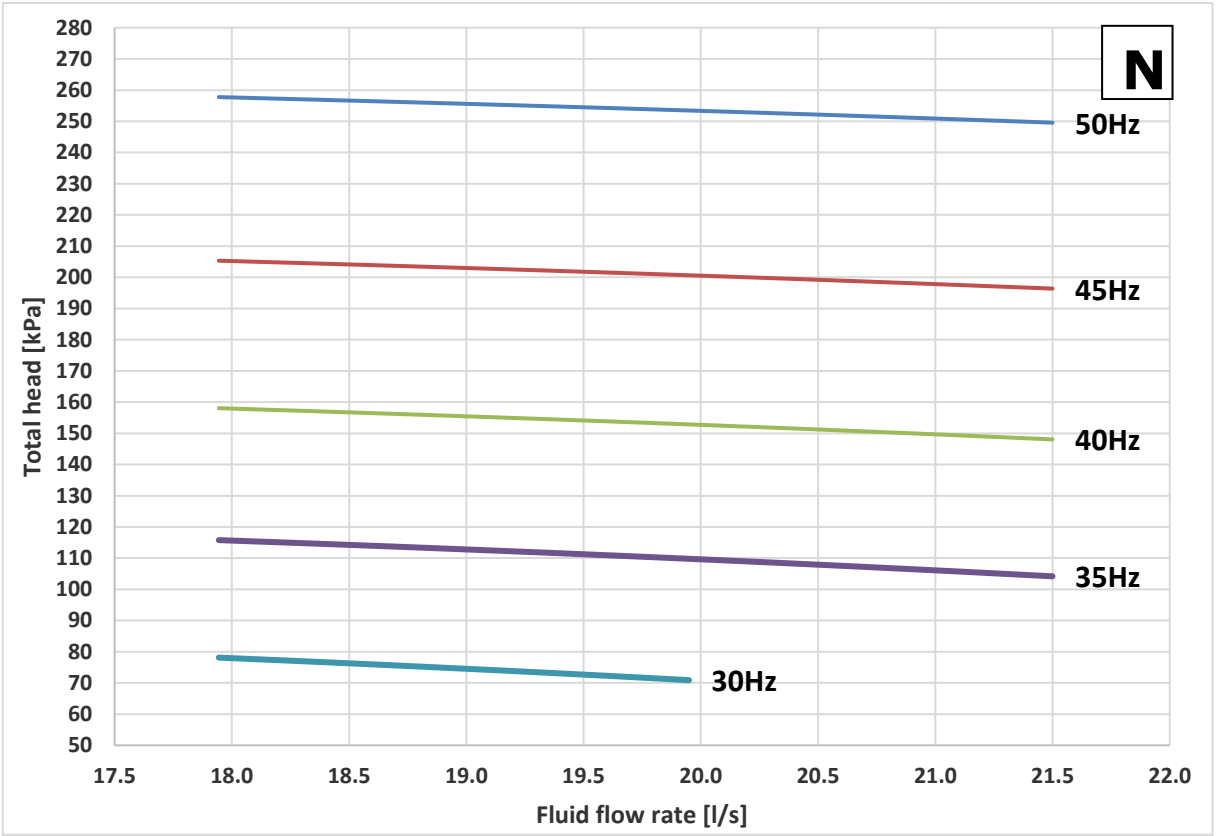


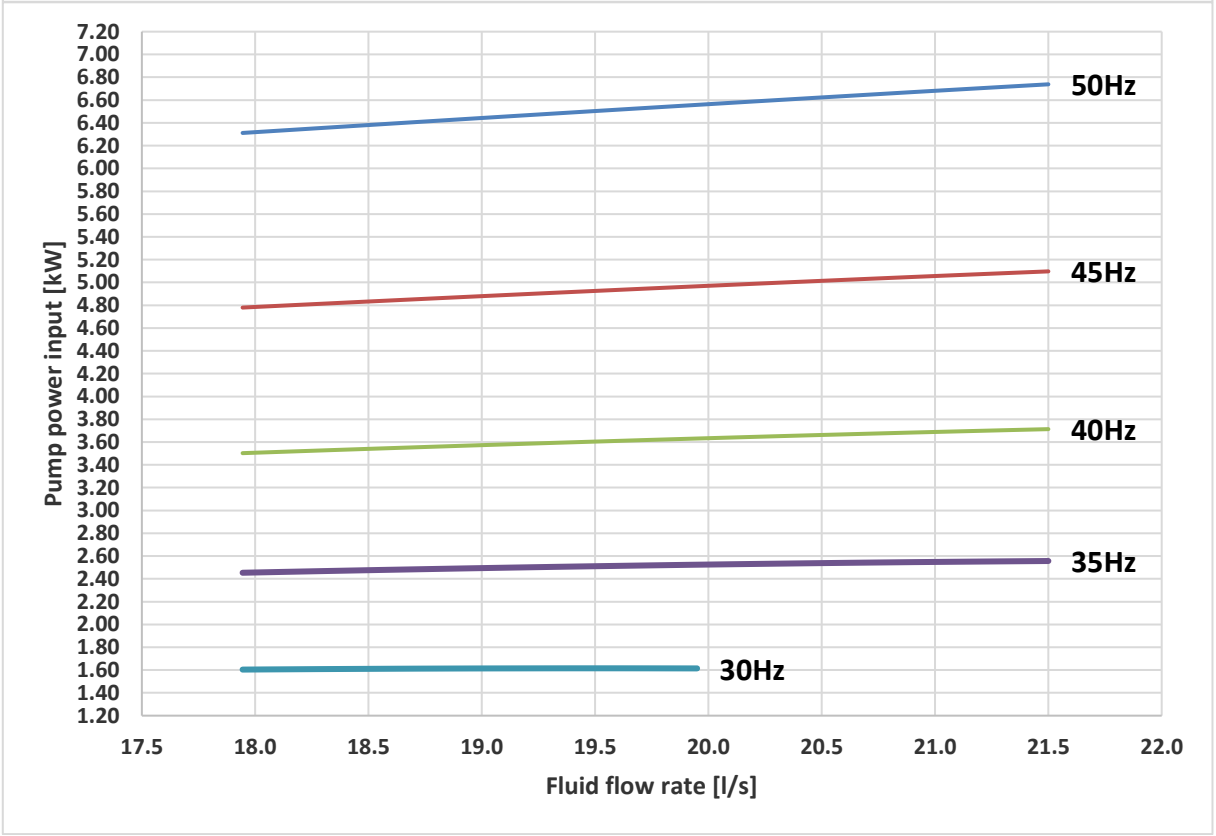
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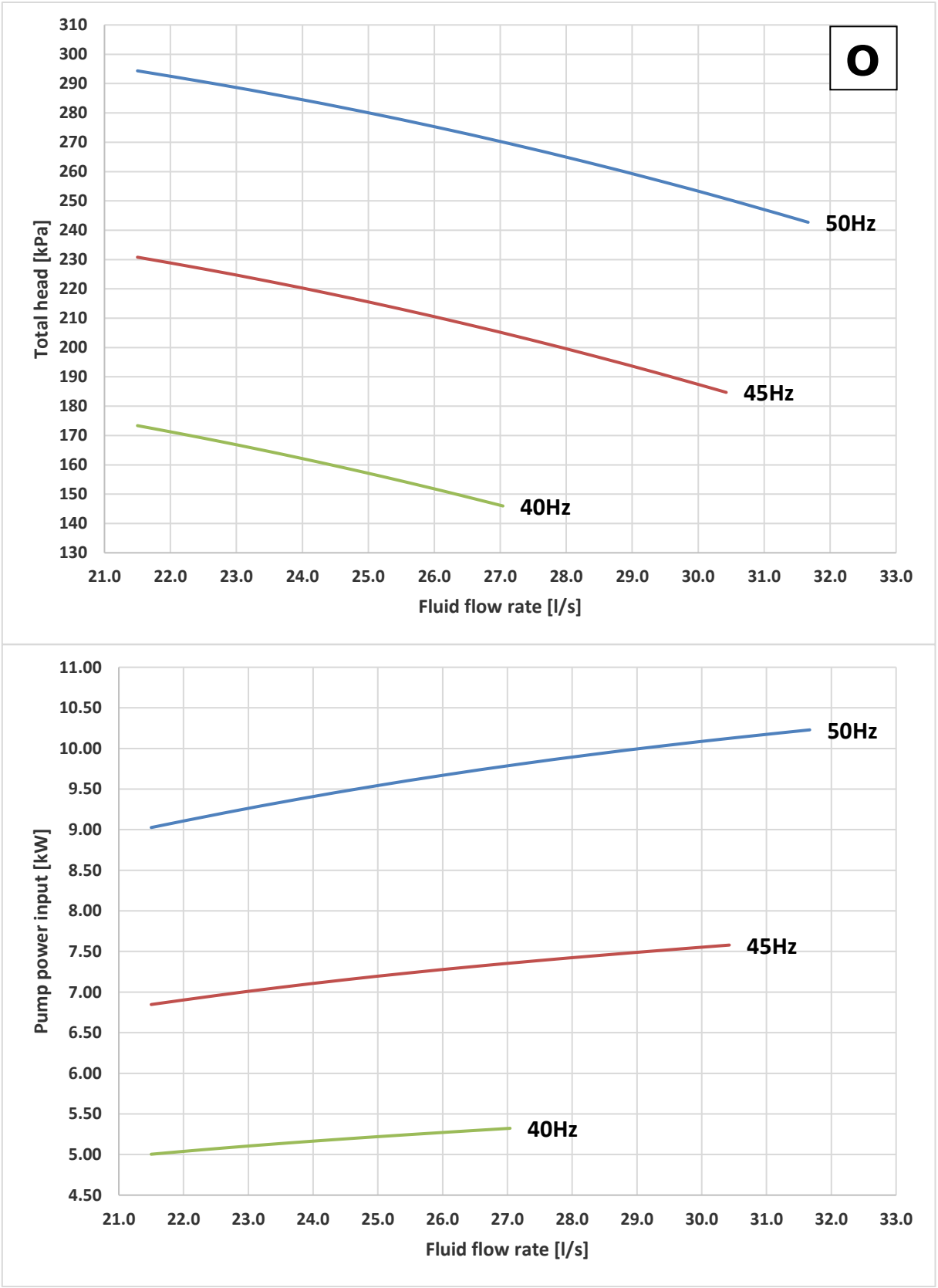


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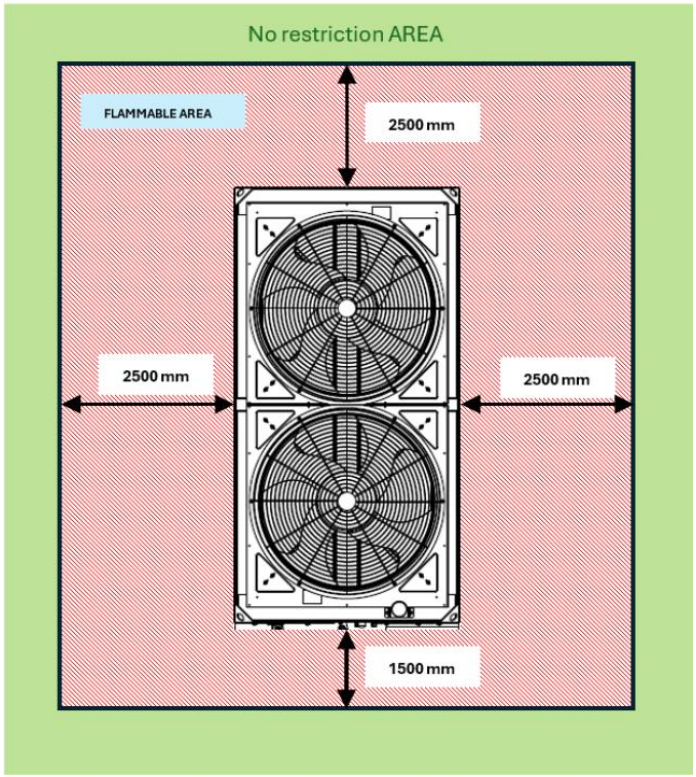
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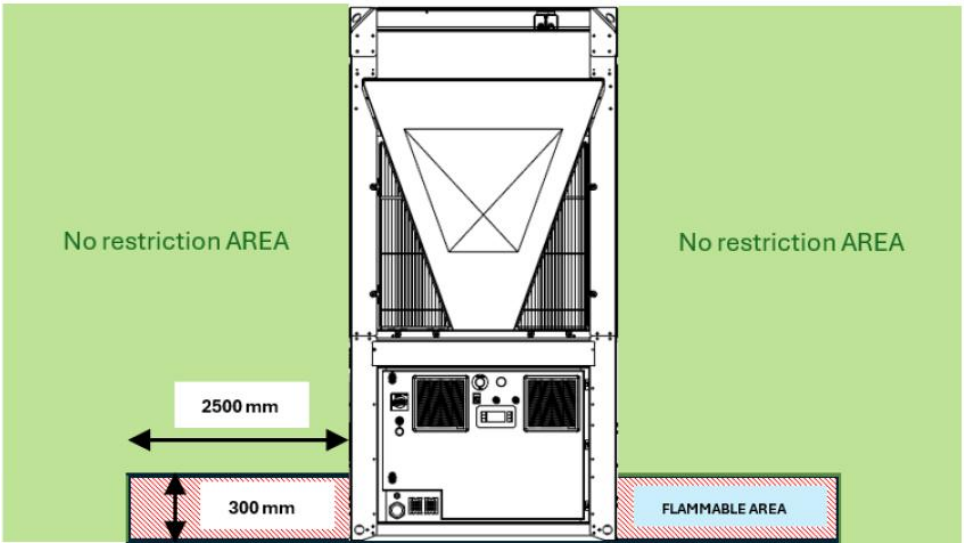
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4) In case of glycol mixture (with brine conditions) and/or water flow out of range please contact factory.
5) The above data are referred the unit installed in compliance with installation prescription.

17. Safety distance

The unit contains R290 refrigerant, which belongs to "Safety class A3" as defined in ISO817 and used in EN378. This means that you must comply with extra installation site requirements (= "flammable zone") to ensure safety in the unlikely event of a refrigerant leak. Openings such as stairs, doors, roof window, down pipe and ventilation duct must not be located in this area. Do not install in basements/semi-basements/garages/along driveways.
The flammable zone for these series is to be considered starting from the module and extends for 1500 mm from the electrical panel side and for 2500 mm from the remaining three sides. In addition, it develops 300 mm from the base plane of the unit as shown in the figure below (single module scenario).



(Single module Top View)

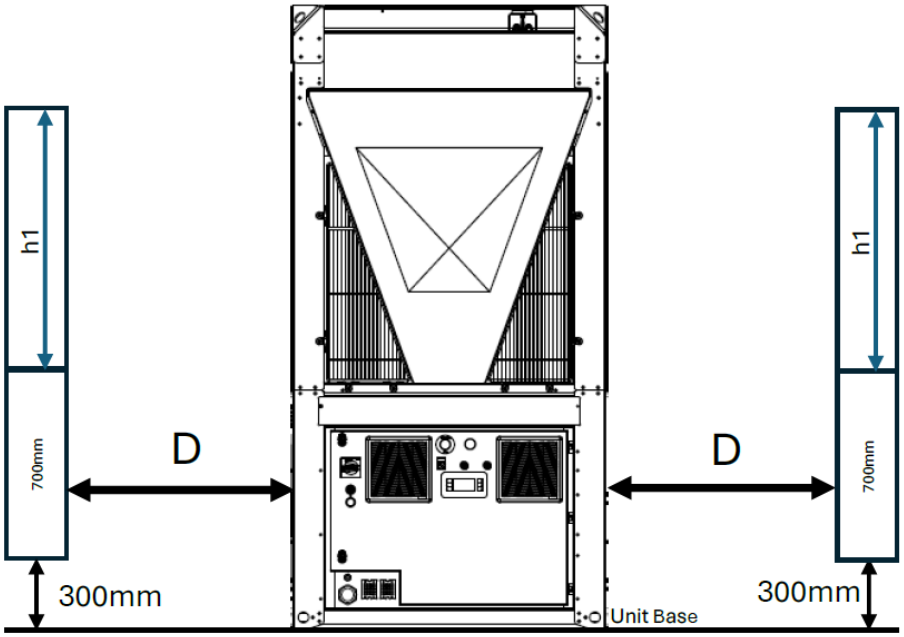


(Single module Front View)

In the case of walls, guardrails, bulkheads or similar obstacles, these may only be present outside the flammable zone. In case of presence inside the flammable zone (D < 2500 mm) these must be positioned at least 300mm above the unit base plan and must respect the service space.
It is fundamental to respect minimum distances on all units to ensure optimum ventilation to the coils.
When deciding where to position the unit and to ensure proper air flow, the following factors must be taken into consideration:

- avoid any warm air recirculation.
- avoid insufficient air supply to the air-cooled heat exchanger.

Both these conditions can cause a reduction of energy efficiency and refrigerating capacity.



If the obstacle has $h_1 > 0$ then the distance D must comply with the following formula:

$$\boldsymbol{If\ h_1 > 0 \rightarrow D > Service\ Space + \frac{h_1}{2}\ [mm]}$$

If the unit is installed in confined outdoor spaces, covered areas, partially enclosed spaces, or provided with acoustic enclosures, the customer shall ensure that refrigerant accumulation cannot occur.
For units installed outside in a location where a release of refrigerant can stagnate then the installation shall comply with the requirements for gas detection and ventilation of machinery rooms.
The risk assessment related to the installation of the equipment shall in all cases remain the responsibility of the customer.
If the unit is installed on a grid platform, the entire area underneath the platform down to the ground is considered a flammable zone.

Please refer to the official installation and operation manual (IOM) for further information regarding safety distance around the units including array configuration as well as for details on storage, handling and installation of the modules.
Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).

18. Technical Specifications

General information

The chiller will be designed and manufactured in accordance with the following European directives:

Low voltage directive	DIRECTIVE 2014/35/EU
Electromagnetic compatibility (EMC)	DIRECTIVE 2014/30/EU
Machinery directive	DIRECTIVE 2006/42/EC
Pressure equipment design	DIRECTIVE 2014/68/EU
Ecodesign	DIRECTIVE 2009/125/EC Regulation 813/2013
Safety of machinery	IEC EN 60335-2-40
EMC - Part 6-2	EN 61000-6-2
EMC - Part 6-4	EN 61000-6-4
Electrical and safety standards	EN 60335-2-40 / EN 378
Methods for calculation pressure relief devices.	EN 13136

The unit will be tested in the factory. The chiller will be delivered to the job site completely assembled and charged with refrigerant and oil.
The installation of the chiller must comply with the manufacturer's instructions for rigging and handling equipment. **Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).**

The unit will be able to start up and operate (as standard) at full load with:

- Design outdoor ambient temperature between..... °C and..... °C
- Evaporator leaving fluid temperature between..... °C and..... °C

Refrigerant

R290

Performance

Chiller shall supply the following performances:

Number of units		unit(s)
Fluid		type
Cooling capacity		kW
Power input		kW
Evaporator Entering Temperature (EET)		°C
Evaporator Leaving Temperature (ELT)		°C
Evaporator Water Flow rate		l/s
Design outdoor temperature		°C
Minimum full load efficiency (EER)		kW/kW
Minimum part load efficiency (SEER)		kW/kW
Minimum part load efficiency (SEPR)		kW/kW
Minimum part load efficiency (IPLV)		kW/kW

Operating voltage range should be 400V ±10%, 3ph, 50Hz, voltage unbalance maximum 10%, without neutral conductor.

Unit description

The unit shall include as standard: two refrigerant circuits per module, each of them equipped with inverter driven rotary scroll compressors, thermal expansion device, refrigerant direct expansion plate to plate heat exchanger, R290 refrigerant, motor starting components, control system and all components necessary for a safe and stable unit operation. The unit will be factory assembled on a robust base frame made of galvanized steel, protected by epoxy paint.

Sound level and vibrations

Sound power level shall not exceed ……dB(A). The sound power levels must be rated in accordance with ISO 9614 (other types of rating cannot be used).

Dimensions

Unit dimensions shall not exceed following indications:

- Unit length..... mm
- Unit width..... mm
- Unit height..... mm

Compressors

The units shall be equipped with:
High performance hermetic scroll compressors optimized to work with R290, with reduced vibration and sound emissions.

- High efficiency values shall be guaranteed by:
- High volumetric efficiency in the whole range of application, through the continuous contact between the fixed and the orbiting scroll deleting the dead space and the re-expansion of the refrigerant gas;
- Low pressure drops due to the absence of inlet and discharge valves and to the uniform compression cycle;
- Reduction of the heat exchange between the gas during suction and discharge due to the separation of gas flows;

- The reduced noise shall be obtained by:
- The absence of the inlet and discharge valves
- The uniform compression cycles
- The absence of pistons which ensures reduced vibration and pulsation of the refrigerant

- The engine shall be cooled by the suction refrigerant fluid.
- Shall be present a thermal protection for the three phases complete with sensors on the stator windings to avoid overheating caused by lack of phase, insufficient cooling, mechanical locks, power supply out of tolerance;
- The compressors shall be fitted on rubber antivibration mounts.
- The compressors shall be provided complete with oil charge.

Evaporator (PHE) The units shall be equipped with a direct expansion plate to plate type evaporator. The evaporator will be made of stainless steel brazed plates closed cell with thermal insulation material.

- The evaporator will have 2 refrigerant circuit.
- The evaporator will be manufactured in accordance to PED approval.
- Flow switch installed by factory.
- Water filter must be installed on plant.

Refrigerant circuit The unit shall have two refrigerant circuits per module according to the capacity.

Electrical control panel Power and control Power and control sections shall be located into the main electrical panel. The power section shall include Main switch, auxiliary and control cut-outs, transformers, control fuses, relay and auxiliary relay, sensors, unit digital controller. The main panel doors shall be interlocked to the main switch to guarantee safe operations when the doors are open.

Controller
The controller will be installed as standard and it will be used to modify unit set-points and check control parameters.
- A sophisticated software with predictive logic, will select the most energy efficient combination of compressors and EEXV to keep stable operating conditions to maximize unit energy efficiency and reliability;
- The controller will be able to protect critical components based on external signals received from the unit itself.

Controller features
Controller shall be guarantee following minimum functions:

- Management of the compressors;
- Full routine operation at condition of high evaporator entering water temperature (start-up);
- Leaving water evaporator temperature regulation;
- Display of Status Safety Devices;
- Number of starts and compressor working hours;
- Optimized management of unit load;
- Start at high evaporator water temperature;
- Master / Slave (provided as standard) ;
- Variable primary Flow (available as accessory).

The present document is drawn up by way of information only and does not constitute an offer binding upon Daikin Applied Europe. Daikin Applied Europe has compiled the contend of this document to the best of its knowledge. No express or implied warranty is given for the completeness, accuracy, reliability of fitness to particular purpose of its content and the products and services presented therein. Specifications are subject to change without prior notices. Daikin Applied Europe explicitly rejects any liability for any direct or indirect damage, in the broadest sense, arising from or related to the use and/or interpretation of this document.

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