EN

21.12 – 4138526_06
Translation of Original instructions

NSMI

Technical manual

50Hz R134a INVERTER 2

AIR-WATER CHILLER

Cooling capacity 285,6 ÷ 1342,6 kW

AERMEC

www.aermec.com

Dear Customer,
Thank you for wanting to learn about a product Aermec. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.
The manual you are about to read is meant to present the product and help you select the unit that best meets the needs of your system.
However, please note that for a more accurate selection, you can also use the Magellano selection program, available on our website.
Aermec Aermec, always attentive to the continuous changes in the market and its regulations, reserves the right to make all the changes deemed necessary for improving the product, including technical data.
Thank you again.

AERMEC S.p.A.

CERTIFICATIONS

COMPANY CERTIFICATIONS

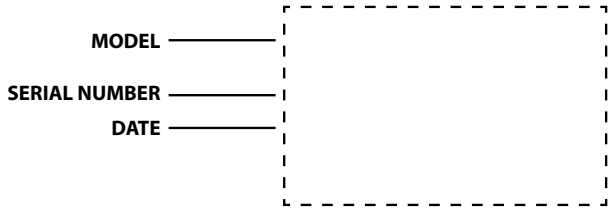
SAFETY CERTIFICATIONS

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled disposal of Waste Electrical and Electronic Equipment (WEEE), please return the device using appropriate collection systems, or contact the retailer where the product was purchased. Please contact your local authority for further details. Illegal dumping of the product by the user entails the application of administrative sanctions provided by law.

EC DECLARATION OF CONFORMITY

AERMEC S.p.A.
Via Roma, 996 - 37040 Bevilacqua (VR) - Italy
Phone +39 0442 633111
Fax +39 0442 93577
www.aermec.com - sales@aermec.com

NSMI



We, the undersigned, hereby declare under our own responsibility that the assembly in question, defined as follows:

Name: NSMI
Type: Air-water chiller
Models: NSMI 1251-5202
to which this declaration refers, complies with all the provisions related to the following directives:

Machinery Directive 2006/42/EC
Erp Directive 2009/125/CE
RoHS Directive on the restriction of the use of certain hazardous substances in EEE: 2011/65/UE
PED Directive regarding pressurised devices: 2014/68/UE
Electromagnetic Compatibility Directive EMCD: 2014/30/UE

The above-mentioned declaration complies with the harmonised European standards:
UNI EN 378-2: 2017
UNI EN ISO 12100: 2010
CEI EN 61000-6-4: 2007
CEI EN 61000-6-2: 2006
CEI EN 60335-2-40 / A2: 2009
CEI EN 60204-1: 2018

This declaration of conformity has been released under the exclusive responsibility of the manufacturer.
The person authorised to draw up the technical file is Luca Martin.

The unit complies with the project data indicated in the technical file in the paragraph Definition of the Assembly, is in agreement with Directive 2014/68/EU and satisfies the Total Guarantee procedure (form H) with certificate no. 06/270-QT33664 Rev.14 issued by the notified body no. 1131 CEC via Pisacane 46 Legnano (MI) - Italia.
The list of critical components relevant to the above factory number, in accordance with the provisions of Directive 2014/64/EU, is provided together with this Declaration of Conformity (doc. "List of components for Declaration of Conformity").

We also declare that, at the time this preloaded equipment was placed on the European market by Aermec S.p.A. (which imports or manufactures in the Union), the hydrofluorocarbons contained therein are considered in the unit system of the Union referred to in Chapter IV of EU Regulation 517/2014 as they were placed on the market by a manufacturer or importer of hydrofluorocarbons to which Article 15 of EU Regulation 517/2014 applies.

Signed for and on behalf of: AERMEC S.p.A.

Bevilacqua (VR),

Marketing manager
Luigi Zucchi

TABLE OF CONTENTS

1 PRODUCT DESCRIPTION

Air-water chiller for air conditioning systems with cold water production for cooling rooms, suitable for connection in residential, commercial complexes or industrial applications.
In the unit with desuperheater, it is also possible to produce free-hot water.

ALUMINIUM MICROCHANNEL COILS

The microchannel condensing aluminum coils ensure high levels of efficiency, reduced quantities of refrigerant and lower unit weight. The treatment "O" available as configurator it ensures high resistance to corrosion even in the most aggressive environments.

INTEGRATED HYDRONIC KIT

Integrated hydronic kit containing the main hydraulic components; available with various configurations with one or two pumps, to obtain a solution that allows you to save money and to facilitate installation.

UNIT WITH 1 / 2 COOLING CIRCUITS

Unit with 1–2 refrigerant circuits.

The single circuit units have the inverter compressor, while the dual-circuit have an asynchronous compressor on/off switch and an inverter, the combination provides both high efficiency at part load and full load.

LOW NOISE VERSION

Silenced versions "E" feature a special compressor jacket which ensures a further noise reduction of approximately 4dB.

OPERATING FIELD

Operation at full load is guaranteed up to an outside air temperature of 50 °C. The unit can produce chilled water at temperatures below zero (down to -8 °C).

VERSIONS

A High efficiency
E Silenced high efficiency

2 CONFIGURATOR

Field		Description
1,2,3,4		**NSMI**
5,6,7,8		**Size** 1251, 1601, 1801, 2352, 2652, 2802, 3202, 3402, 3802, 4102, 4402, 4802, 5202, 5702, 6102
9		**Model**
	°	Cooling only
10		**Heat recovery**
	°	Without heat recovery
	D	With desuperheater (1)
11		**Version**
	A	High efficiency
	E	Silenced high efficiency
12		**Coils**
	°	Aluminium microchannel
	O	Coated aluminium microchannel
	R	Copper pipes-copper fins
	S	Copper pipes-Tinned copper fins
	V	Copper pieps-Coated aluminium fins
13		**Fans**
	°	Standard
	J	Inverter
14		**Power supply**
	°	400V~3 50Hz with fuses
15,16		**Integrated hydronic kit**
		Without hydronic kit
	00	Without hydronic kit
		Kit with n° 1 pump
	PA	Pump A
	PB	Pump B
	PC	Pump C
	PD	Pump D
	PE	Pump E
	PF	Pump F
	PG	Pump G
	PH	Pump H
	PI	Pump I
	PJ	Pump J (2)
		Pump n° 1 pump + stand-by pump
	DA	Pump A + stand-by pump
	DB	Pump B + stand-by pump
	DC	Pump C + stand-by pump
	DD	Pump D + stand-by pump
	DE	Pump E + stand-by pump
	DF	Pump F + stand-by pump
	DG	Pump G + stand-by pump
	DH	Pump H + stand-by pump
	DI	Pump I + stand-by pump
	DJ	Pump J + stand-by pump (2)

Field		Description
		Kit with 2 pumps
	TF	Double pump F
	TG	Double pump G
	TH	Double pump H
	TI	Double pump I
	TJ	Double pump J (2)

(1) Minimum water temperature of 35 °C must always be ensured at heat exchanger inlet if working with low temperatures of water produced in the primary circuit.
(2) For all configurations including pump J please contact the factory.

3 UNIT COMPONENTS DESCRIPTION

REFRIGERANT CIRCUIT

Compressors

High-efficiency screw compressors, with silent functioning and with cooling capacity adjustment via continuous modulation.
The single circuit units have the inverter compressor, while the dual-circuit have an asynchronous compressor on/off switch and an inverter.
The combination provides both high efficiency at part load and full load.

Microchannel coils

The full range uses aluminium microchannel coils, ensuring very high levels of efficiency.
This allows using less refrigerant compared to traditional copper coils.

System side heat exchanger

Shell and tube exchanger type with dry expansion, suitably dimensioned to obtain high performance.
Steel housing with closed cell foam elastomer anti-condensation cladding.
The shell and tube is made from copper pipes with a special profile that allows high exchange associated to efficient draining.
An anti-freeze electric heater can be fitted on request (this accessory can only be installed in the factory) to protect the heat exchanger against outside temperatures down to -20°C and avoid the formation of ice in stand-by mode.
With the unit running, the protection is ensured by the output water temperature probe.

Filter drier

Hermetic-mechanical made of hygroscopic material, able to withhold impurities and any traces of humidity present in the cooling circuit.

Sight glass

Used to check the refrigerant gas load and the possible presence of humidity in the cooling circuit.

Electronic thermostatic expansion valve

Compared to the classic thermostatic expansion valve, the electronic thermostatic expansion valve stands out for its best overheating regulation. This way, the evaporator is fully exploited increasing the machine yield.
Its use in comfort dedicated applications allows to make substantial benefits especially in the presence of varying loads, because it allows you to maintain the maximum efficiency with any external air temperature.
In industrial applications, where there is often a need to make temperature changes in a wide range of environmental conditions, the use of the electronic valve is ideal because it avoids the need for continuous calibration, adapting the system to different load conditions and hence making it independent.

Flow shut-off valves

Present on liquid and pressing line to interrupt the refrigerant in the case of extraordinary maintenance.

HYDRAULIC CIRCUIT (VERSIONS WITH HYDRONIC KIT)

Pump

They provide useful static pressure to the system, excluding the unit pressure drops.

■ *If the stand-by pump or a parallel double pump is fitted, it must be managed manually.*

Expansion vessel

Membrane type precharged with nitrogen.

Air drain valve

Mounted at the highest level of the hydraulic system. The air vent is used for the release of any air pockets from the hydraulic circuit.

Pressure relief valve

STRUCTURE AND FANS

Structure

Supporting structure for outdoor installation, in hot-dipped galvanized sheet steel, with RAL 9003 polyester powder coating.
Designed to ensure the maximum access for service and maintenance.

Standard fan unit

Equipped with accident-prevention net, it consists of axial fans and 6-pole motor with external rotor and protection rating IP54.
Moreover, the motor is equipped with inner thermal protection with automatic reset.

Inverter fans

Continuous speed modulation based on condensing pressure.
High-efficiency brushless motor for greater energy savings.

CONTROL AND SAFETY COMPONENTS

Condensation control temperature

Fitted as standard with a device for electronic condensation control so that the unit can work even with low temperatures, adapting the air flow rate to the actual system request in order to reduce consumption.

Differential pressure switch

Located between the inlet and outlet of the evaporator.
Checks that water is circulating in the heat exchanger, and stops the unit if this is not the case.

Low pressure transducer

Placed on low pressure side of cooling circuit, it signals the work pressure to the control board, generating a pre-warning in case abnormal pressure occurs.

High pressure transducer

Placed on the high pressure side of the cooling circuit, signals the work pressure to control board, generating a pre-warning in case abnormal pressure occurs.

Double high pressure switch

With fixed calibration, placed on the high pressure side of the cooling circuit, it inhibits the operation of the compressor if abnormal work pressure occurs.

■ *Double = manual + tool*

Pressure relief valve for cooling circuit

Activates by discharging overpressure if abnormal pressure occurs.

■ *High pressure and low pressure*

ELECTRICAL CONTROL AND POWER PANEL

Complete with:
— door interlocked isolator
— Magnet circuit breakers and contactors for compressors and fans
— external electrical panel
— electronic controller
— All numbered cables

Door interlocked isolator

Access to the electrical panel is by operating the handle of the door interlocked isolator which removes power to the unit.
To avoid accidentally powering up the unit during maintenance the isolator is fitted with a locking mechanism.

Controller keypad

Allows complete control of the unit.
For further information refer to the user manual.

Electronic controller

The electronic adjustment consists of several control boards, one for each compressor, connected to each other in a network and a control panel with display.
For models with more compressors, the board controlling compressor n° 1 is the "MASTER" board, while the others are "SLAVE".
Relative to the compressor that controls, transducers, loads and alarms are connected to every board, while only the machine general ones are connected to the "MASTER" board.

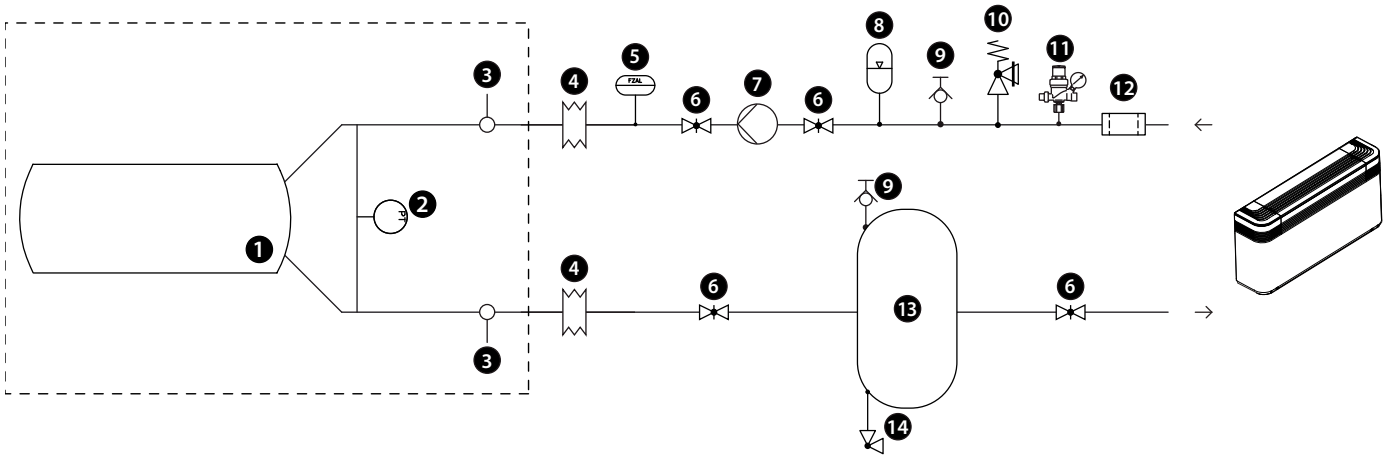
Microprocessor
— Remote on/off with voltage-free external contact
— Multi-language menu
— Phase sequence contro
— Separate control of the individual compressors
— Amperometric transformer
— Cumulative faults block signal
— Historical alarms function

— Daily/weekly programming
— Inlet/outlet water temperature display
— Alarms display
— Integral proportional regulation on the temperature of the output water
— Programmable timer function
— Function with double calibration point linked to an external contact
— Fan adjustment
— Can be interfaced with Modbus protocol (accessory)
— Pump/s control
— Compressors rotation management
— Analogue input from 4 to 20 mA
— External air temperature probe
— "Always Working" function in the case of critical conditions (e.g. an environmental temperature that is too high) the machine does not stop but can adjust itself and supply the maximum power in those conditions
— "Switching Hysteresis" self-adapting work differential to always ensure the correct work times of the compressors even in systems with low water content or insufficient flow rate. This system decreases wear of the compressors.
— AFFP "Anti-Freezing Fan Protection" system that periodically switches the fans on when external temperatures are very low
— PDC "Pull Down Control" system to prevent the activation of power steps when the water temperature quickly approaches the set-point. Optimises machine functioning when working normally and in the presence of load variations, ensuring the best machine efficiency in all conditions.

■ *For further information refer to the user manual.*

4 MAIN HYDRAULIC CIRCUITS

INTERNAL AND EXTERNAL HYDRAULIC CIRCUIT NSMI (00)



Components as standard

1 Shell and tube heat exchanger
2 Differential pressure switch
3 Water temperature sensors (IN/OUT)

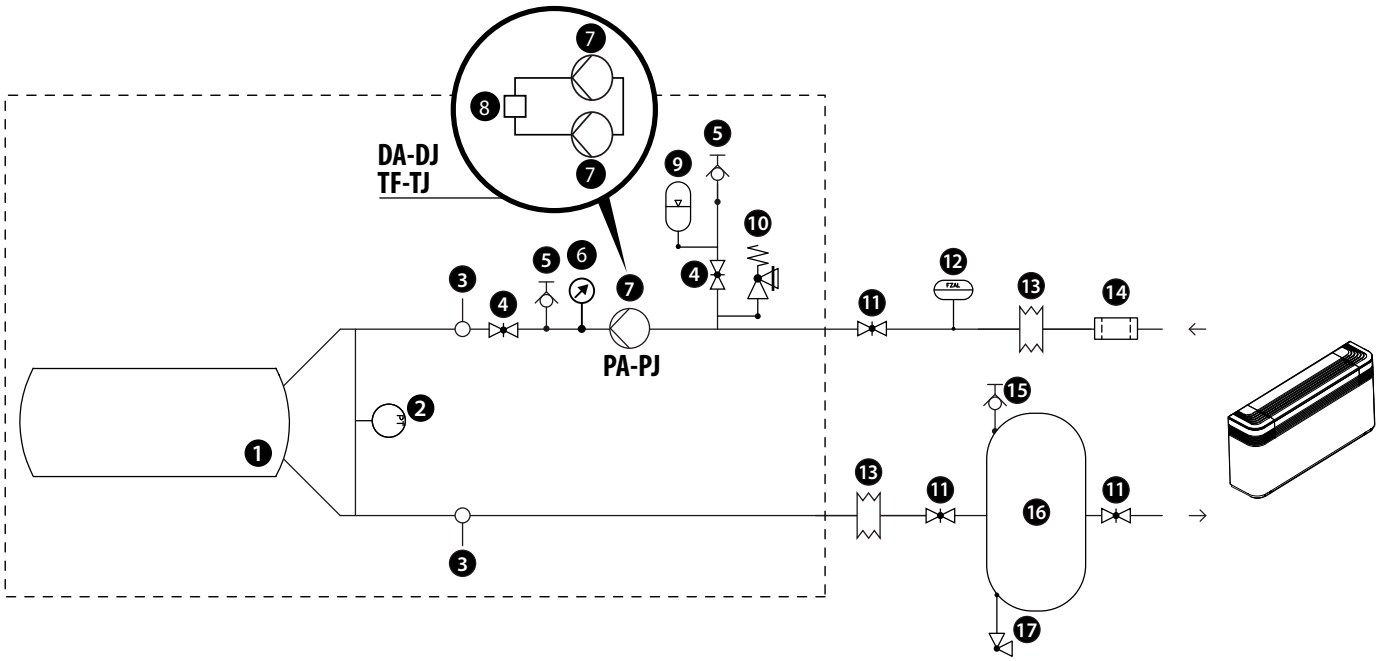
Components not provided and responsibility of the installer

4 Anti-vibration joints
5 Flow switch (MANDATORY)
6 Flow shut-off valves
7 Pump
8 Expansion vessel
9 Air drain valve
10 Pressure relief valve
11 Loading unit
12 Water filter (MANDATORY)
13 Storage tank
1 Drain valve

Water characteristics

System: Chiller with shell and tube exchanger	
PH	6,8 - 8
Electric conductivity	< 800 µS/cm
Total hardness ($CaCO_3$)	< 200 ppm
Total dissolved solids	< 15000 ppm
Max. solid particles dimension	0,5 mm
Max. glycol amount	50 %
Iron (Fe)	< 1 ppm
Copper (Cu)	< 1 ppm
Alkalinity ($CaCO_3$)	< 100 ppm
Chloride ions (Cl-)	< 150 ppm
Sulphate ions (SO42-)	< 100 ppm
Sulphide ions (S-)	None
Ammonium ions (NH_4+)	< 1 ppm
Silica (SiO_2)	< 50 ppm
Silica (SiO_2)	< 30 ppm

INTERNAL AND EXTERNAL HYDRAULIC CIRCUIT NSMI (PA-PJ / DA-DJ / TF-TJ)



Components as standard

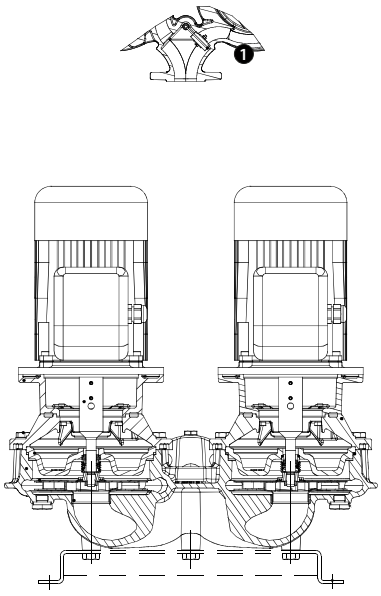
1 Shell and tube heat exchanger
2 Differential pressure switch
3 Water temperature sensors (IN/OUT)
4 Flow shut-off valves
5 Air drain valve
6 Pressure gauge
7 Pump PA-PJ (2 pumps DA-DJ and TF-TJ)
8 Clapet valve (hydronic kits DA-DJ and TF-TJ)
9 Expansion vessel
10 Pressure relief valve

Components not provided and responsibility of the installer

11 Flow shut-off valves
12 Flow switch (MANDATORY)
13 Anti-vibration joints
14 Water filter (MANDATORY)
15 Air drain valve
16 Storage tank
17 Drain valve

Water characteristics

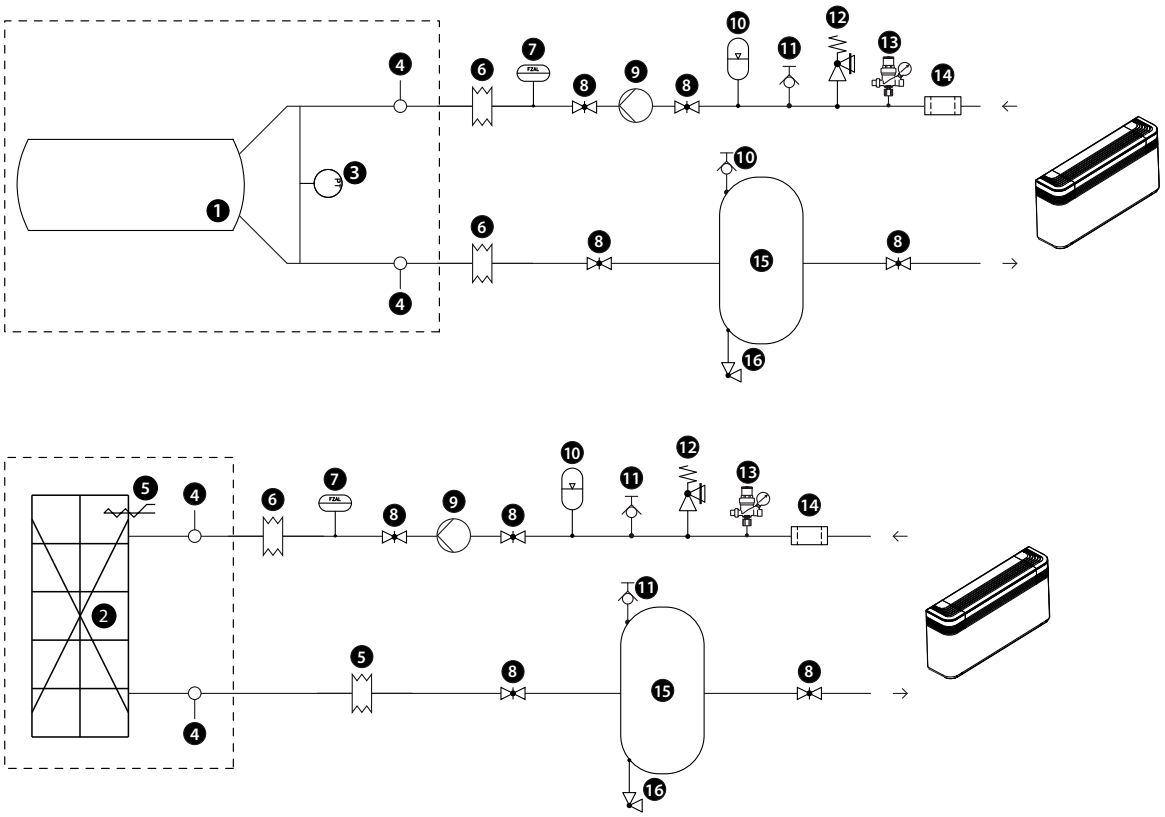
System: Chiller with shell and tube exchanger	
PH	6,8 - 8
Electric conductivity	< 800 µS/cm
Total hardness ($CaCO_3$)	< 200 ppm
Total dissolved solids	< 15000 ppm
Max. solid particles dimension	0,5 mm
Max. glycol amount	50 %
Iron (Fe)	< 1 ppm
Copper (Cu)	< 1 ppm
Alkalinity ($CaCO_3$)	< 100 ppm
Chloride ions (Cl-)	< 150 ppm
Sulphate ions (SO42-)	< 100 ppm
Sulphide ions (S-)	None
Ammonium ions (NH_4+)	< 1 ppm
Silica (SiO_2)	< 50 ppm
Silica (SiO_2)	< 30 ppm



1 Clapet valve

The unit with double pump circuit does not have one-way valves. If you choose to install two units in parallel or in cascade, it is recommended to provide one-way valves for the correct operation of the unit.

INTERNAL AND EXTERNAL HYDRAULIC CIRCUIT NSMI (00) WITH DESUPERHEATER



Components as standard

1 Shell and tube heat exchanger
2 Plate heat exchanger (desuperheater)
3 Differential pressure switch
4 Water temperature sensors (IN/OUT)
5 Antifreeze electric heater

Components not provided and responsibility of the installer

6 Anti-vibration joints
7 Flow switch (MANDATORY)
8 Flow shut-off valves
9 Pump
10 Expansion vessel
11 Air drain valve
12 Pressure relief valve
13 Loading unit
14 Water filter (MANDATORY)
15 Storage tank
16 Drain valve

Water characteristics with shell and tube heat exchanger

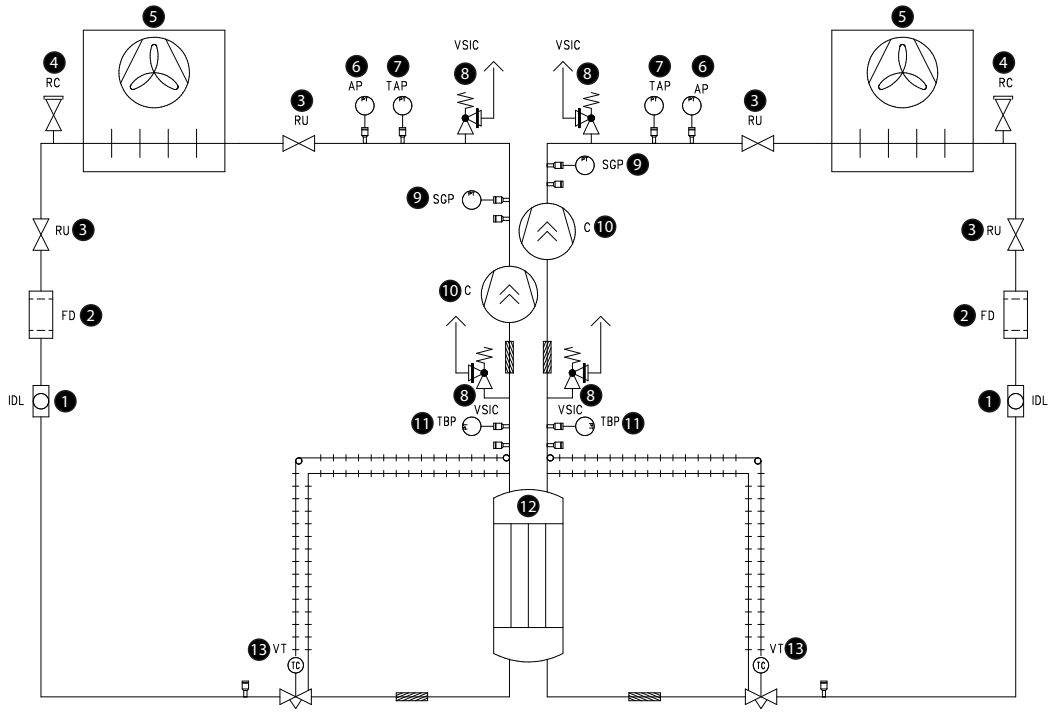
System: Chiller with shell and tube exchanger	
PH	6,8 - 8
Electric conductivity	< 800 µS/cm
Total hardness ($CaCO_3$)	< 200 ppm
Total dissolved solids	< 15000 ppm
Max. solid particles dimension	0,5 mm
Max. glycol amount	50 %
Iron (Fe)	< 1 ppm
Copper (Cu)	< 1 ppm
Alkalinity ($CaCO_3$)	< 100 ppm
Chloride ions (Cl-)	< 150 ppm
Sulphate ions (SO42-)	< 100 ppm
Sulphide ions (S-)	None
Ammonium ions (NH_4+)	< 1 ppm
Silica (SiO_2)	< 50 ppm
Silica (SiO_2)	< 30 ppm

Water characteristics with plate heat exchanger

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

5 MAIN COOLING REFRIGERANT LAYOUTS

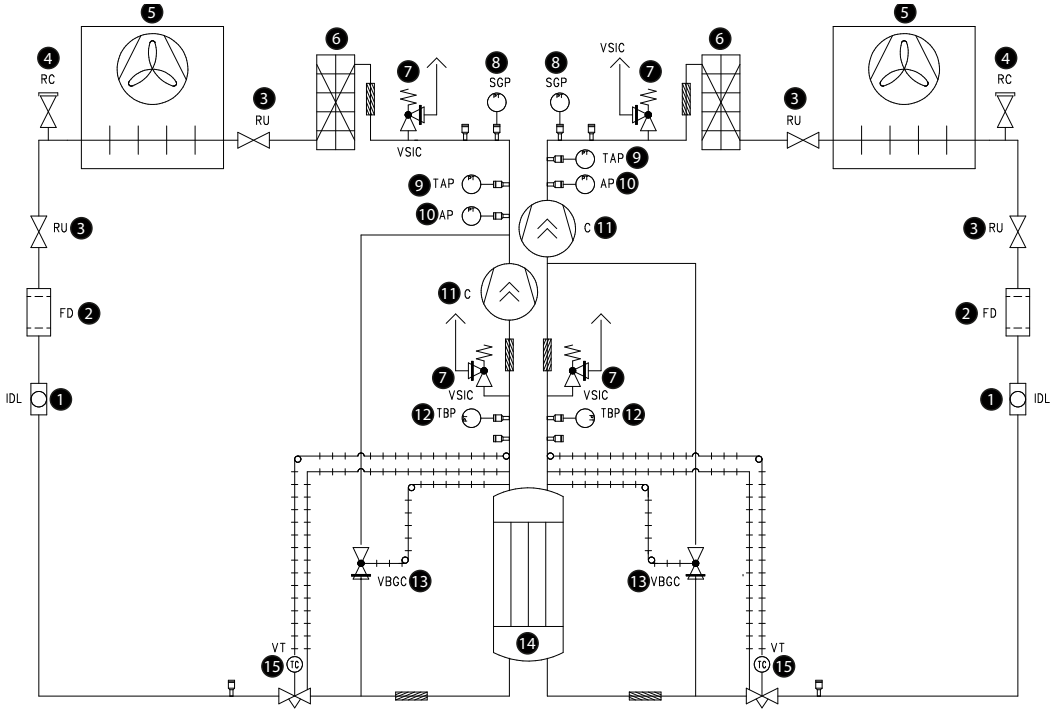
COOLING REFRIGERANT LAYOUT NSMI - VERSION °



Components

1 Sight glass
2 Filter drier
3 Isolation valve
4 Charging connection
5 Condenser
6 High pressure switch
7 High pressure transducer
8 Pressure relief valve
9 Discharge temperature sensor
10 Compressor
11 Low pressure transducer
12 Evaporator
13 Thermostatic expansion valve

COOLING REFRIGERANT LAYOUT NSMI - VERSION D



Components

1 Sight glass
2 Filter drier
3 Isolation valve
4 Charging connection
5 Condenser
6 Desuperheater
7 Pressure relief valve
8 Discharge temperature sensor
9 High pressure transducer
10 High pressure switch
11 Compressor
12 Low pressure transducer
13 Hot gas injection valve
14 Evaporator
15 Thermostatic expansion valve

6 ACCESSORIES

AER485P1: RS-485 interface for supervision systems with MODBUS protocol.
AER485P1 x n° 2: RS-485 interface for supervision systems with MODBUS protocol.
AERBACP: Ethernet communication Interface for protocols Bacnet/IP, Modbus TCP/IP, SNMP
AERNET: The device allows the control, the management and the remote monitoring of a Chiller with a PC, smartphone or tablet using Cloud connection. AERNET works as Master while every unit connected is configured as Slave (max. 6 unit); also, with a simple click is possible to save a log file with all the connected unit datas in the personal terminal for post analysis.
MULTICHILLER_EVO: Control, switch-on and switch-off system of the single chillers where multiple units are installed in parallel, always ensuring constant flow rate to the evaporators.
PRV3: Allows you to control the chiller at a distance.
AVX: Spring anti-vibration supports.

■ *Compatibility with VMF system: for more information about the system, refer to the dedicated documentation.*

FACTORY FITTED ACCESSORIES

GP_: Anti-intrusion grid kit
KRS: Electric heater for the heat exchanger

■ *Compatibility with VMF system: for more information about the system, refer to the dedicated documentation.*

ACCESSORIES COMPATIBILITY

Model	Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
AER485P1	A,E	•	•	•												
AER485P1 x n° 2 (1)	A,E				•	•	•	•	•	•	•	•	•	•	•	•
AERBACP	A,E	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
AERNET	A,E	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
MULTICHILLER_EVO	A,E	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PRV3	A,E	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

(1) x Indicates the quantity of accessories to match.

Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Integrated hydronic kit: 00															
A	AVX991	AVX992	AVX993	AVX966	AVX970	AVX995	AVX995	AVX995	AVX996	AVX998	AVX997	AVX998	AVX998	AVX998	AVX998
E	AVX991	AVX992	AVX994	AVX966	AVX970	AVX995	AVX995	AVX995	AVX996	AVX998	AVX997	AVX998	AVX998	AVX998	AVX998

Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
A,E	KRS23	KRS23	KRS23	KRS23	KRS23	KRS23	KRS23	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24

A grey background indicates the accessory must be assembled in the factory

Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
A,E	GP4V	GP4V	GP5V	GP5V	GP6V	GP7V	GP7V	GP7V	GP8V	GP9V	GP10V	GP11V	GP11V	GP11V	GP11V

A grey background indicates the accessory must be assembled in the factory

7 SELECTION CRITERIA OF THE HEAT EXCHANGERS ACCORDING TO THE PLACE OF INSTALLATION OF THE UNIT

The guide provides advice for applications. Although recommendations are given, all the details about the real world application of our products cannot be fully covered in this document.

For these reasons, this section contains the basic warnings and precautions to be taken into account in general, it being understood that:
- **The final choice of the type of exchanger according to the place of installation is left to the client (or to the professional appointed by him).**
- **In any case, it is recommended to wash the coils with adequate frequency (a maximum time interval of three months is recommended, shorter in conditions of particularly dirty and aggressive atmospheres) to preserve their condition and ensure the proper functioning of the unit.**

Potentially corrosive outdoor environments include areas near coasts, industrial sites, densely populated urban areas, certain rural areas or a combination of these environments. Other factors, including the presence of effluent gas, sewage vents or open sewage systems and the exhaust of diesel engines can all be harmful for the microchannel coil.
The purpose of this application guide is to provide general information on the mechanisms of corrosion and corrosive environments.

SEA COAST ENVIRONMENTS

Coastal or marine environments are characterized by the abundance of sodium chloride (salt) which is carried by sea spray, mist, or fog. Most importantly, this salt water can be carried more than several miles by ocean breezes and tidal currents. It's not uncommon to experience salt-water contamination as far as 10km from the coast.
For this reason, it may be necessary to protect the exchangers from electrolytes of marine origin through the appropriate choice of materials and / or appropriate protective treatment.

INDUSTRIAL ENVIRONMENTS

Industrial applications are associated with several different conditions that can potentially produce a variety of atmospheric emissions.
Contaminants from sulphur and nitrogen oxides are most often linked to high-density urban environments. The combustion of coal oils and fuel oils releases sulphur oxides (SO_2, SO_3) and nitrogen oxides (NO_x) into the atmosphere. These gases accumulate in the atmosphere and return to the ground as acid rain or low pH dew.
Industrial emissions are not only potentially corrosive: many industrial dust particles can be loaded with harmful components such as metal oxides, chlorides, sulphates, sulfuric acid, carbon and carbon compounds.
In the presence of oxygen, water or high humidity environments, these particles can be extremely corrosive and in several forms, including general and localised corrosion, such as pitting and anthill.

MIX OF SEASIDE AND INDUSTRIAL ENVIRONMENTS

Sea mist loaded with salt, associated with the harmful emissions of an industrial environment, poses a serious risk.
The combined effects of the salt loaded mist and in-dustrial emissions accelerate corrosion.
Within the manufacturing plants, corrosive gas may result from the processing of chemicals or by the typical industrial processes used in manufacturing.
Potential sources of risk to be considered are open sewage systems, exhaust vents, diesel engine exhaust, emissions from heavy traffic, landfills, aircraft and ocean-going ship engine exhaust, industrial production, chemical treatment facilities (cooling towers in the vicinity) and fossil fuel power plants.

URBAN ENVIRONMENTS

Densely populated areas generally have high levels of emissions of motor vehicles and increases in duel use for heating buildings.
Both conditions elevate sulfur oxide (SO_x) and nitrogen oxide (NO_x) concentrations.
Corrosive atmospheres may even occur in some closed areas, such as facilities with swimming pools and water treatment systems.
It is advisable to pay particular attention to the positioning of the units if it occurs in the immediate vicinity of these places, and to avoid that they are installed in the vicinity of outlets for the expulsion of air coming from them, or in any case exposed to such atmospheres.
Corrosion severity in this environment is a function of the pollution levels, which in turn depend on several factors including population density in the area.
Any equipment installed in locations immediately adjacent to diesel engine exhausts, incinerator flues, fuel-fired boiler flues, or areas exposed to fossil fuel emissions shall be considered subject to the same measures as an industrial application.

RURAL ENVIRONMENTS

Rural environments may contain high levels of pollution from ammonia and nitrogen products from animal excrements, fertilizers and high concentration of diesel engine exhaust. The approach to these environments must be entirely similar to that of industrial environments.
Local weather conditions have a major role in the concentration or disper-sion of outdoor gaseous contaminants.
Thermal inversions can trap pollutants, thereby producing serious air pollution problems.

ADDITIONAL TIPS

Although each of the above corrosive environments can be detrimental to the life of the heat exchanger, several additional factors must be considered before choosing the final design.
The local climate surrounding the site of application may be influenced by the presence of:
- wind
- dust
- road salts
- swimming pools
- diesel engines discharge / traffic
- Localised mist
- cleaning agents for domestic use
- Sewage system outlets
- many other separate contaminants

Even within 3-5 km from these particular local climates a normal environment with moderate characteristics can be classified as an environment that requires preventive corrosion measures. When these factors are directly and immediately part of the environment, their influence is further aggravating.
Only in the absence of potentially risky situations such as those indicated above can an environment be considered moderate.

Application	Tip
Severe environments	Coils with suitable protection
Moderate environments	Standard coil °

8 BASIC PRINCIPLES ON MICROCHANNEL COIL CORROSION

The main material in Aermec heat exchangers is aluminium.
Aluminum is a very reactive metal, which is easily oxidized on its surface. As long as this hard layer of aluminum oxide remains intact, the aluminum at the base will remain resistant to corrosion (unlike other materials, such as steel, where the oxide layer peels off the surface and flakes off, allowing the constant attack of the underlying metal).
However, aggressive environments can damage the oxide layer, which may not regenerate as quickly as necessary to provide the product with sufficient protection.
These harsh environments are typified by very high or very low pH levels.
Normally, aluminum's protective oxide layer is generally stable in the pH range of 4.5 to 8.5; the lack of exposure to excessively acidic or basic pH conditions is not in itself sufficient to exclude the need for appropriate protective treatments on the batteries.
The presence of salt (associated with marine environments) as well as the presence of other aggressive substances can in fact induce widespread or localized galvanic corrosion (pitting or anthill corrosion).

OTHER RISK FACTORS FOR CORROSION

The principal cause of corrosion is elevated humidity and/or temperatures in the presence of contaminant gases. These conditions alone, or in combination, accelerate the natural corrosion process in metals.

Humidity

Moisture in air can be considered the lifeblood of galvanic corrosion. A galvanic corrosion cell requires an electrolyte or current carrying media, to reach a dynamic state. The electrolyte can be water or any water-soluble substance with good conducting properties. Moisture in the air is one such electrolyte. Humid air contaminated with corrosive gasses further accelerates the corrosion rate as the air's current carrying otential increases.

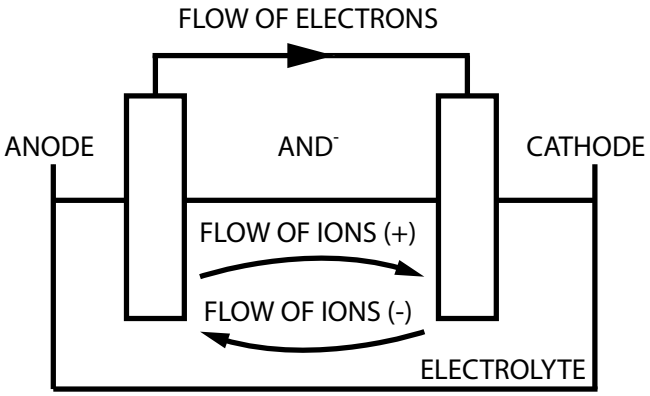
Temperature

Chemical reactions generally depend on the temperature, for reactions that involve corrosion of aluminum by an increase in temperature, faster reaction frequencies usually arise.

Corrosive gases

Not all gases cause corrosion. Specifically, we are concerned with three types of gases:
— Acidic gases, such as hydrogen sulfide, sulfur oxides, chlorides, hydrogen fluoride (HF) and nitrogen oxides;
— Caustic gases, such as ammonia;
— Oxidizing gases, such as ozone

■ *Of the gases that can cause corrosion, the acidic gases are typically the most harmful.*



9 CLEANING MICRO-CHANNEL COIL

Keeping the surfaces of the microchannel coils clean is essential to ensure the correct operation of the unit and to avoid punctures on the coil with the consequent loss of refrigerant gas which would lead to the replacement of the coil itself.

WARNING Damage to the coil due to neglect or lack of or poor cleaning is not covered by the warranty.

Dirt, grease, oil, and other foreign material must be removed periodically from the surface of the battery according to the following recommendations.
Required elements:
— Personal protective equipment
— Hot water
— High-pressure washing
Procedure:
Use a high-pressure washer with a large cast and enough force to remove all foreign material, proceed with care to avoid damage and possible wear of the louvers.
Lastly, also rinse the carpentry and the fans thoroughly to be sure that all impurities have been removed.

■ *Aermecwe assume no liability for the completeness of the information contained in this document.*

10 PERFORMANCE SPECIFICATIONS

NSMI A/E

Size		1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Cooling performance 12 °C / 7 °C (1)																
Cooling capacity	kW	285,6	382,0	464,0	519,1	605,4	659,4	725,2	802,4	842,6	948,0	1008,8	1110,4	1204,3	1253,0	1342,6
Input power	kW	91,3	120,2	149,5	167,1	194,3	212,3	232,7	257,5	269,9	304,8	324,7	356,2	397,4	415,9	454,6
Cooling total input current	A	155,0	200,0	245,0	293,0	337,0	360,0	393,0	431,0	443,0	517,0	547,0	619,0	665,0	728,0	761,0
EER	W/W	3,13	3,18	3,10	3,11	3,12	3,11	3,12	3,12	3,12	3,11	3,11	3,12	3,03	3,01	2,95
Water flow rate system side	l/h	49130	65700	79773	89247	104092	113376	124682	137945	144852	162983	173442	190903	207040	215409	230815
Pressure drop system side	kPa	45	15	21	18	25	28	33	27	30	39	45	38	44	49	55

(1) Data 14511:2018; System side water heat exchanger 12 °C/7 °C; External air 35 °C

NSMI A/E WITH DESUPERHEATER

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Cooling performances with desuperheater (1)																	
Cooling capacity	A,E	kW	285,6	382,0	464,0	519,1	605,4	659,4	725,2	802,4	842,6	948,0	1008,8	1110,4	1204,3	1253,0	1342,6
Input power	A,E	kW	91,3	120,2	149,5	167,1	194,3	212,3	232,7	257,5	269,9	304,8	324,7	356,2	397,4	415,9	454,6
Recovered heating power	A,E	kW	60,2	93,1	113,3	137,0	156,8	161,8	187,4	224,5	218,8	253,6	262,9	263,3	313,4	335,8	382,6
Pressure drop desuperheater	A,E	kPa	24	45	56	19	22	22	22	26	22	25	31	22	24	26	27
EER	A,E	W/W	3,13	3,18	3,10	3,11	3,12	3,11	3,12	3,12	3,12	3,11	3,11	3,12	3,03	3,01	2,95
Desuperheater water flow rate	A,E	l/h	10467	16189	19687	23815	27245	28121	32570	39013	38023	44076	45695	45768	54464	58358	66498
Water flow rate system side	A,E	l/h	49130	65700	79773	89247	104092	113376	124682	137945	144852	162983	173442	190903	207040	215409	230815
Pressure drop system side	A,E	kPa	45	15	21	18	25	28	33	27	30	39	45	38	44	49	55

(1) User side water heat exchanger 12 °C / 7 °C; Water desuperheater 40 °C/45 °C; Outdoor air 35 °C

■ *Minimum water temperature of 35 °C must always be ensured at heat exchanger inlet if working with low temperatures of water produced in the primary circuit.*

11 ENERGY DATA

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
SEER - 12/7 (EN14825:2018) with standard fans (1)																	
SEER	A,E	W/W	4,75	4,82	4,78	4,90	4,92	4,90	4,91	4,93	4,93	4,90	4,88	4,90	4,85	4,70	4,69
Seasonal efficiency	A,E	%	186,8%	189,7%	188,0%	193,1%	193,9%	193,0%	193,3%	194,2%	194,3%	192,8%	192,2%	192,9%	191,0%	185,1%	184,7%
SEER - (EN14825:2018) 12/7 with inverter fans (1)																	
SEER	A,E	W/W	4,95	5,04	5,00	5,01	5,03	5,01	5,02	5,04	5,04	5,00	4,99	5,00	4,96	4,81	4,80
Seasonal efficiency	A,E	%	194,9%	198,4%	196,8%	197,3%	198,1%	197,2%	197,6%	198,5%	198,5%	197,1%	196,4%	197,1%	195,3%	189,2%	188,8%
SEPR - (EN14825: 2018) High temperature with standard fans (2)																	
SEPR	A,E	W/W	5,70	5,62	5,59	6,56	6,43	6,42	6,77	6,94	7,21	6,96	7,47	6,88	7,21	6,69	7,01
SEPR - (EN14825: 2018) High temperature with inverter fans (2)																	
SEPR	A,E	W/W	5,70	5,62	5,59	6,56	6,43	6,42	6,77	6,94	7,21	6,96	7,47	6,88	7,21	6,69	7,01

(1) Calculation performed with FIXED water flow rate and VARIABLE outlet temperature.
(2) Calculation performed with FIXED water flow rate.

12 GENERAL TECHNICAL DATA

Size			1251	1601	1801	2352	2652	2802	3202	3402
Compressor										
Type	A,E	type					Screw			
Compressor regulation	A,E	Type	I	I	I	1+I	1+I	1+I	1+I	1+I
Number	A,E	no.	1	1	1	2	2	2	2	2
Circuits	A,E	no.	1	1	1	2	2	2	2	2
Partialisation of the unit with electronic thermostatic expansion valve	A,E	%	100-24	100-18	100-15	100-13	100-13	100-13	100-13	100-13
Refrigerant	A,E	type					R134a			
Refrigerant load circuit 1 (1)	A,E	kg	28,0	28,0	30,0	39,0	41,0	53,0	52,0	60,0
Refrigerant load circuit 2 (1)	A,E	kg	-	-	-	43,0	43,0	58,0	63,0	65,0
Oil	A,E	Type								
Oil charge circuit 1	A,E	kg	18,0	18,0	18,0	18,0	18,0	18,0	18,0	18,0
Oil charge circuit 2	A,E	kg	-	-	-	19,0	19,0	19,0	19,0	30,0
System side heat exchanger										
Type	A,E	type					Shell and tube			
Number	A,E	no.	1	1	1	1	1	1	1	1
Minimum water flow rate	A,E	l/h	23037	39260	39260	52945	52945	61432	71726	60400
Maximum water flow rate	A,E	l/h	86040	133200	133200	205920	205920	205920	274680	240200
Resistance	A,E	no./W								
Hydraulic connections										
Connections (in/out)	A,E	Type					Grooved joints			
Sizes (in/out)	A,E	Ø	5″	6″	6″	6″	6″	6″	6″	8″

(1) The load indicated in the table is an estimated and preliminary value. The final value of the refrigerant load is indicated on the unit's technical label. For further information contact the office.

Size			3802	4102	4402	4802	5202	5702	6102
Compressor									
Type	A,E	type				Screw			
Compressor regulation	A,E	Type				1+I			
Number	A,E	no.	2	2	2	2	2	2	2
Circuits	A,E	no.	2	2	2	2	2	2	2
Partialisation of the unit with electronic thermostatic expansion valve	A,E	%	100-13	100-13	100-13	100-13	100-13	100-13	100-13
Refrigerant	A,E	type				R134a			
Refrigerant load circuit 1 (1)	A,E	kg	61,0	68,0	68,0	89,0	89,0	94,0	94,0
Refrigerant load circuit 2 (1)	A,E	kg	67,0	76,0	84,0	97,0	97,0	101,0	101,0
Oil	A,E	Type							
Oil charge circuit 1	A,E	kg	18,0	18,0	18,0	35,0	35,0	35,0	35,0
Oil charge circuit 2	A,E	kg	30,0	30,0	30,0	30,0	32,0	32,0	32,0
System side heat exchanger									
Type	A,E	type				Shell and tube			
Number	A,E	no.	1	1	1	1	1	1	1
Minimum water flow rate	A,E	l/h	60400	60400	60400	76400	76400	76400	76400
Maximum water flow rate	A,E	l/h	240200	240200	240200	302000	302000	302000	302000
Resistance	A,E	no./W							
Hydraulic connections									
Connections (in/out)	A,E	Type				Grooved joints			
Sizes (in/out)	A,E	Ø	8″	8″	8″	10″	10″	10″	10″

(1) The load indicated in the table is an estimated and preliminary value. The final value of the refrigerant load is indicated on the unit's technical label. For further information contact the office.

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
FANS: °																	
Fan																	
Type	A,E	type								Axial							
Fan motor	A,E	type								Asynchronous with phase cut							
Number	A,E	no.	8	8	10	10	12	14	14	14	16	18	20	22	22	22	22
Air flow rate	A,E	m^3/h	128000	128000	160000	160000	192000	224000	224000	224000	256000	288000	320000	396000	396000	396000	396000
Total fan input power	A,E	kW	9,6	9,6	12,0	12,0	14,4	16,8	16,8	16,8	19,2	21,6	24,0	38,5	38,5	38,5	38,5
Total fan input current	A,E	A	20,0	20,0	25,0	25,0	30,0	35,0	35,0	35,0	40,0	45,0	50,0	79,2	79,2	79,2	79,2

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
FANS: J																	
Fan																	
Type	A,E	type								Axial							
Fan motor	A,E	type								Inverter							
Number	A,E	no.	8	8	10	10	12	14	14	14	16	18	20	22	22	22	22
Air flow rate	A,E	m^3/h	128000	128000	160000	160000	192000	224000	224000	224000	256000	288000	320000	396000	396000	396000	396000
Total fan input power	A,E	kW	17,6	17,6	22,0	22,0	26,4	30,8	30,8	30,8	35,2	39,6	44,0	48,4	48,4	48,4	48,4
Total fan input current	A,E	A	28,8	28,8	36,0	36,0	43,2	50,4	50,4	50,4	57,6	64,8	72,0	79,2	79,2	79,2	79,2

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Sound data calculated in cooling mode (1)																	
Sound power level	A	dB(A)	97,2	98,6	98,6	98,6	98,8	99,9	99,9	100,3	100,3	100,4	101,0	102,9	103,2	102,9	103,2
	E	dB(A)	92,9	95,8	95,9	94,7	95,1	96,1	96,1	97,3	97,4	97,7	98,0	99,9	99,9	99,9	99,9
Sound pressure level (10 m)	A	dB(A)	64,8	66,2	66,1	66,1	66,2	67,1	67,1	67,5	67,5	67,4	67,9	69,7	69,9	69,7	69,9
	E	dB(A)	60,6	63,4	63,4	62,1	62,5	63,3	63,3	64,6	64,5	64,7	64,8	66,7	66,7	66,7	66,7
Sound pressure level (1 m)	A	dB(A)	77,0	78,4	77,9	77,8	77,7	78,3	78,3	78,7	78,4	78,1	78,4	80,0	80,2	80,0	80,2
	E	dB(A)	72,7	75,6	75,2	73,8	74,0	74,5	74,5	75,8	75,4	75,4	75,3	77,0	77,0	77,0	77,0

(1) Sound power calculated on the basis of measurements made in accordance with UNI EN ISO 9614-2, as required for Eurovent certification. Sound pressure (cold functioning) measured in free field, 10m away from the unit external surface (in compliance with UNI EN ISO 3744).

ELECTRIC DATA

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Electric data																	
Maximum current (FLA)	A,E	A	251,3	291,3	377,7	442,0	473,0	519,4	519,4	567,4	653,8	708,1	753,5	874,8	917,2	1002,2	1036,2
Peak current (LRA)	A,E	A	51,3	51,3	57,7	571,7	605,0	651,4	651,4	775,4	861,8	989,1	1059,4	1180,2	1335,2	1420,2	1532,2

DIMENSIONS

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Dimensions and weights																	
A	A,E	mm	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
B	A,E	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
C	A,E	mm	4760	4760	5950	6400	7140	8330	8330	8330	9520	10710	11900	13090	13090	13090	13090

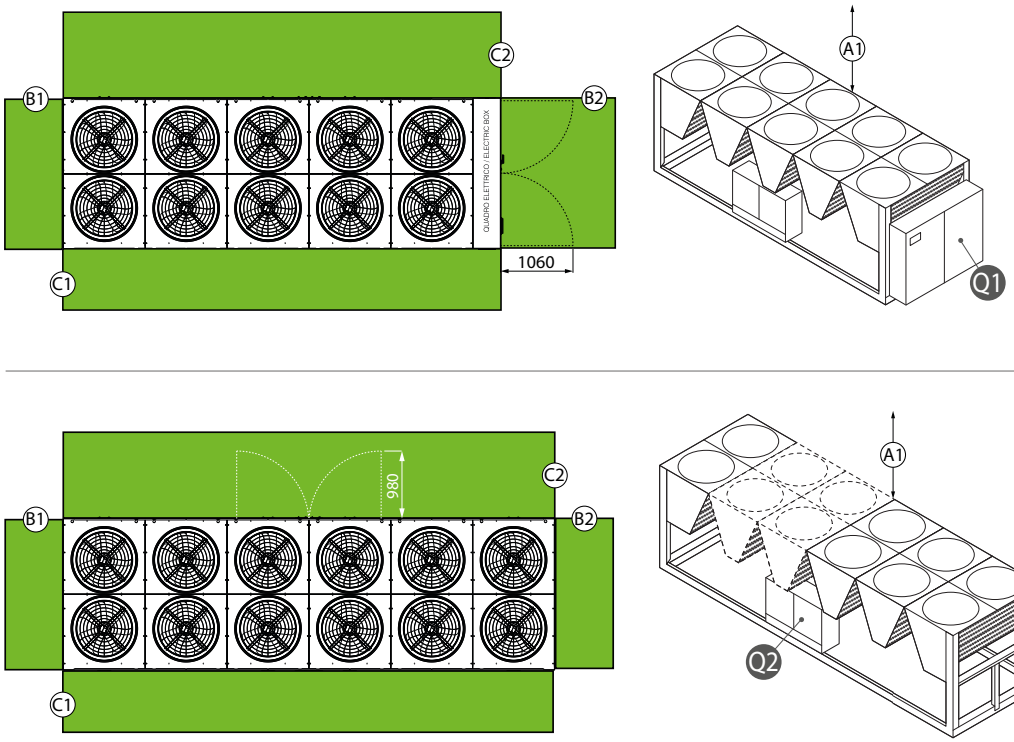
WEIGHTS (VERSION 00 AND WITH HYDRONIC KITS)

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
INTEGRATED HYDRONIC KIT: 00																	
Dimensions and weights																	
Empty weight	A	kg	3752	4162	4578	6039	6447	6896	6987	7635	8103	8872	9324	10798	10888	10918	10991
	E	kg	4054	4464	4880	6642	7050	7499	7590	8239	8706	9475	9928	11637	11727	11757	11830
Weight functioning	A	kg	3832	4416	4832	6360	6768	7206	7275	8165	8632	9389	9841	11730	11819	11835	11908
	E	kg	4134	4718	5134	6964	7371	7809	7878	8768	9236	9993	10445	12568	12658	12674	12747
INTEGRATED HYDRONIC KIT: DA																	
Dimensions and weights																	
Empty weight	A	kg	3902	4312	4728	6189	6597	7046	7137	7785	8253	9022	9474	10948	11038	11068	11141
	E	kg	4204	4614	5030	6792	7200	7649	7740	8389	8856	9625	10078	11787	11877	11907	11980
Weight functioning	A	kg	4000	4584	5000	6528	6936	7374	7443	8333	8800	9557	10009	11898	11987	12003	12076
	E	kg	4302	4886	5302	7132	7539	7977	8046	8936	9404	10161	10613	12736	12826	12842	12915
INTEGRATED HYDRONIC KIT: DB																	
Dimensions and weights																	
Empty weight	A	kg	3931	4341	4757	6218	6626	7075	7166	7814	8282	9051	9503	10977	11067	11097	11170
	E	kg	4233	4643	5059	6821	7229	7678	7769	8418	8885	9654	10107	11816	11906	11936	12009
Weight functioning	A	kg	4039	4622	5039	6566	6974	7412	7481	8371	8839	9595	10048	11936	12026	12041	12114
	E	kg	4340	4924	5340	7170	7578	8016	8084	8975	9442	10199	10651	12775	12865	12880	12953
INTEGRATED HYDRONIC KIT: DC, PF																	
Dimensions and weights																	
Empty weight	A	kg	3941	4351	4767	6228	6636	7085	7176	7824	8292	9061	9513	10987	11077	11107	11180
	E	kg	4243	4653	5069	6831	7239	7688	7779	8428	8895	9664	10117	11826	11916	11946	12019
Weight functioning	A	kg	4049	4632	5049	6576	6984	7422	7491	8381	8849	9605	10058	11946	12036	12051	12124
	E	kg	4350	4934	5350	7180	7588	8026	8094	8985	9452	10209	10661	12785	12875	12890	12963
INTEGRATED HYDRONIC KIT: DD																	
Dimensions and weights																	
Empty weight	A	kg	3959	4369	4785	6246	6654	7103	7194	7842	8310	9079	9531	11005	11095	11125	11198
	E	kg	4261	4671	5087	6849	7257	7706	7797	8446	8913	9682	10135	11844	11934	11964	12037
Weight functioning	A	kg	4067	4650	5067	6594	7002	7440	7509	8399	8867	9623	10076	11964	12054	12069	12142
	E	kg	4368	4952	5368	7198	7606	8044	8112	9003	9470	10227	10679	12803	12893	12908	12981
INTEGRATED HYDRONIC KIT: DE																	
Dimensions and weights																	
Empty weight	A	kg	4002	4412	4828	6289	6697	7146	7237	7885	8353	9122	9574	11048	11138	11168	11241
	E	kg	4304	4714	5130	6892	7300	7749	7840	8489	8956	9725	10178	11887	11977	12007	12080
Weight functioning	A	kg	4110	4693	5110	6637	7045	7483	7552	8442	8910	9666	10119	12007	12097	12112	12185
	E	kg	4411	4995	5411	7241	7649	8087	8155	9046	9513	10270	10722	12846	12936	12951	13024
INTEGRATED HYDRONIC KIT: DF, TF																	
Dimensions and weights																	
Empty weight	A	kg	4053	4463	4879	6340	6748	7197	7288	7936	8404	9173	9625	11099	11189	11219	11292
	E	kg	4355	4765	5181	6943	7351	7800	7891	8540	9007	9776	10229	11938	12028	12058	12131
Weight functioning	A	kg	4161	4744	5161	6688	7096	7534	7603	8493	8961	9717	10170	12058	12148	12163	12236
	E	kg	4462	5046	5462	7292	7700	8138	8206	9097	9564	10321	10773	12897	12987	13002	13075

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
INTEGRATED HYDRONIC KIT: DG, TG																	
Dimensions and weights																	
Empty weight	A	kg	4071	4481	4897	6358	6766	7215	7306	7954	8422	9191	9643	11117	11207	11237	11310
	E	kg	4373	4783	5199	6961	7369	7818	7909	8558	9025	9794	10247	11956	12046	12076	12149
Weight functioning	A	kg	4179	4762	5179	6706	7114	7552	7621	8511	8979	9735	10188	12076	12166	12181	12254
	E	kg	4480	5064	5480	7310	7718	8156	8224	9115	9582	10339	10791	12915	13005	13020	13093
INTEGRATED HYDRONIC KIT: DH, TH																	
Dimensions and weights																	
Empty weight	A	kg	4165	4575	4991	6452	6860	7309	7400	8048	8516	9285	9737	11211	11301	11331	11404
	E	kg	4467	4877	5293	7055	7463	7912	8003	8652	9119	9888	10341	12050	12140	12170	12243
Weight functioning	A	kg	4285	4869	5285	6813	7221	7659	7727	8618	9085	9842	10294	12182	12272	12288	12361
	E	kg	4587	5171	5587	7417	7824	8262	8331	9221	9689	10445	10898	13021	13111	13127	13200
INTEGRATED HYDRONIC KIT: DI, TI																	
Dimensions and weights																	
Empty weight	A	kg	4187	4597	5013	6474	6882	7331	7422	8070	8538	9307	9759	11233	11323	11353	11426
	E	kg	4489	4899	5315	7077	7485	7934	8025	8674	9141	9910	10363	12072	12162	12192	12265
Weight functioning	A	kg	4307	4891	5307	6835	7243	7681	7749	8640	9107	9864	10316	12204	12294	12310	12383
	E	kg	4609	5193	5609	7439	7846	8284	8353	9243	9711	10467	10920	13043	13133	13149	13222
INTEGRATED HYDRONIC KIT: DJ, PJ, TJ																	
Dimensions and weights																	
Empty weight	A,E	kg	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Weight functioning	A,E	kg	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
INTEGRATED HYDRONIC KIT: PA																	
Dimensions and weights																	
Empty weight	A	kg	3857	4267	4683	6144	6552	7001	7092	7740	8208	8977	9429	10903	10993	11023	11096
	E	kg	4159	4569	4985	6747	7155	7604	7695	8344	8811	9580	10033	11742	11832	11862	11935
Weight functioning	A	kg	3955	4539	4955	6483	6891	7329	7398	8288	8755	9512	9964	11853	11942	11958	12031
	E	kg	4257	4841	5257	7087	7494	7932	8001	8891	9359	10116	10568	12691	12781	12797	12870
INTEGRATED HYDRONIC KIT: PB																	
Dimensions and weights																	
Empty weight	A	kg	3885	4295	4711	6172	6580	7029	7120	7768	8236	9005	9457	10931	11021	11051	11124
	E	kg	4187	4597	5013	6775	7183	7632	7723	8372	8839	9608	10061	11770	11860	11890	11963
Weight functioning	A	kg	3993	4576	4993	6520	6928	7366	7435	8325	8793	9549	10002	11890	11980	11995	12068
	E	kg	4294	4878	5294	7124	7532	7970	8038	8929	9396	10153	10605	12729	12819	12834	12907
INTEGRATED HYDRONIC KIT: PC																	
Dimensions and weights																	
Empty weight	A	kg	3890	4300	4716	6177	6585	7034	7125	7773	8241	9010	9462	10936	11026	11056	11129
	E	kg	4192	4602	5018	6780	7188	7637	7728	8377	8844	9613	10066	11775	11865	11895	11968
Weight functioning	A	kg	3998	4581	4998	6525	6933	7371	7440	8330	8798	9554	10007	11895	11985	12000	12073
	E	kg	4299	4883	5299	7129	7537	7975	8043	8934	9401	10158	10610	12734	12824	12839	12912
INTEGRATED HYDRONIC KIT: PD																	
Dimensions and weights																	
Empty weight	A	kg	4007	4590	5007	6534	6942	7380	7449	8339	8807	9563	10016	11904	11994	12009	12082
	E	kg	4308	4892	5308	7138	7546	7984	8052	8943	9410	10167	10619	12743	12833	12848	12921
Weight functioning	A	kg	4007	4590	5007	6534	6942	7380	7449	8339	8807	9563	10016	11904	11994	12009	12082
	E	kg	4308	4892	5308	7138	7546	7984	8052	8943	9410	10167	10619	12743	12833	12848	12921
INTEGRATED HYDRONIC KIT: PE																	
Dimensions and weights																	
Empty weight	A	kg	3923	4333	4749	6210	6618	7067	7158	7806	8274	9043	9495	10969	11059	11089	11162
	E	kg	4225	4635	5051	6813	7221	7670	7761	8410	8877	9646	10099	11808	11898	11928	12001
Weight functioning	A	kg	4031	4614	5031	6558	6966	7404	7473	8363	8831	9587	10040	11928	12018	12033	12106
	E	kg	4332	4916	5332	7162	7570	8008	8076	8967	9434	10191	10643	12767	12857	12872	12945
INTEGRATED HYDRONIC KIT: PG																	
Dimensions and weights																	
Empty weight	A	kg	3954	4364	4780	6241	6649	7098	7189	7837	8305	9074	9526	11000	11090	11120	11193
	E	kg	4256	4666	5082	6844	7252	7701	7792	8441	8908	9677	10130	11839	11929	11959	12032
Weight functioning	A	kg	4062	4645	5062	6589	6997	7435	7504	8394	8862	9618	10071	11959	12049	12064	12137
	E	kg	4363	4947	5363	7193	7601	8039	8107	8998	9465	10222	10674	12798	12888	12903	12976
INTEGRATED HYDRONIC KIT: PH																	
Dimensions and weights																	
Empty weight	A	kg	4008	4418	4834	6295	6703	7152	7243	7891	8359	9128	9580	11054	11144	11174	11247
	E	kg	4310	4720	5136	6898	7306	7755	7846	8495	8962	9731	10184	11893	11983	12013	12086
Weight functioning	A	kg	4128	4712	5128	6656	7064	7502	7570	8461	8928	9685	10137	12025	12115	12131	12204
	E	kg	4430	5014	5430	7260	7667	8105	8174	9064	9532	10288	10741	12864	12954	12970	13043
INTEGRATED HYDRONIC KIT: PI																	
Dimensions and weights																	
Empty weight	A	kg	4019	4429	4845	6306	6714	7163	7254	7902	8370	9139	9591	11065	11155	11185	11258
	E	kg	4321	4731	5147	6909	7317	7766	7857	8506	8973	9742	10195	11904	11994	12024	12097
Weight functioning	A	kg	4139	4723	5139	6667	7075	7513	7581	8472	8939	9696	10148	12036	12126	12142	12215
	E	kg	4441	5025	5441	7271	7678	8116	8185	9075	9543	10299	10752	12875	12965	12981	13054

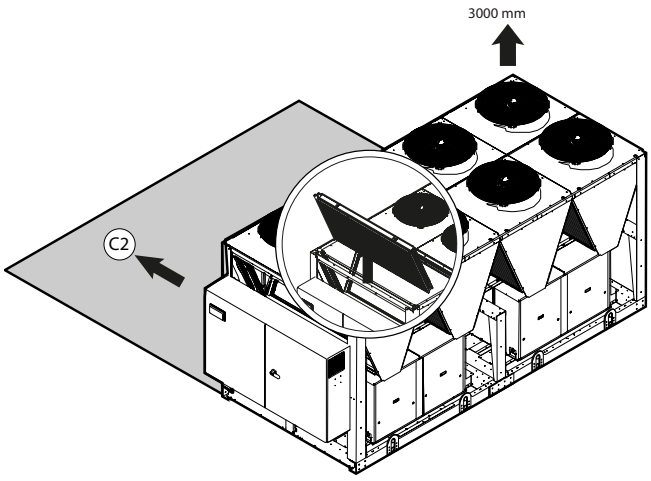
c.s. = contact the factory

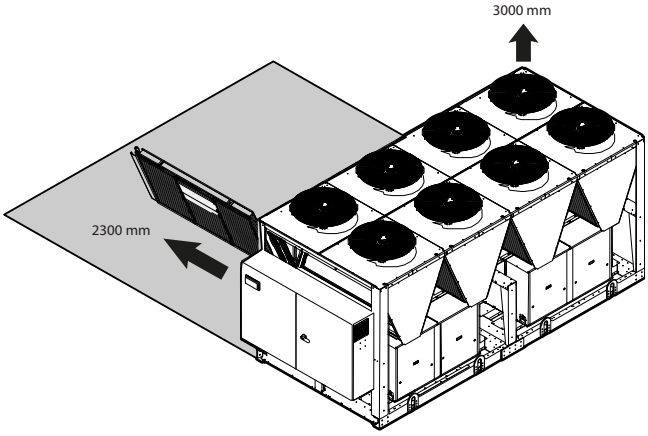
13 MINIMUM TECHNICAL SPACES



Electric power board
Q1 = External (only for 2352 size)
Q2 = Internal (980 mm doors)

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Fan																	
Number	A,E	no.	8	8	10	10	12	14	14	14	16	18	20	22	22	22	22
Minimum technical spaces																	
A1	A,E	mm	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
B1	A,E	mm	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
B2	A,E	mm	800	800	800	1100	800	800	800	800	800	800	800	800	800	800	800
C1	A,E	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
C2	A,E	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000





C2 = Minimum technical space, to be ensured in order for the chiller to work properly and for possible maintenance.

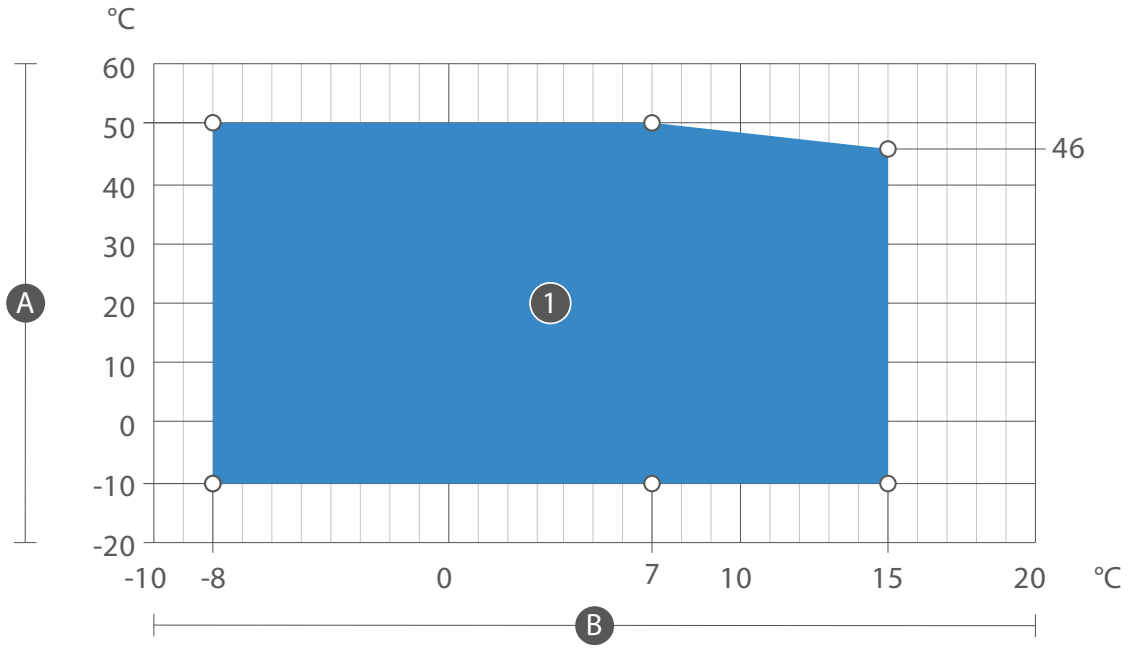
ATTENTION with this space, the condenser coil can only be pulled out from above; to pull it out from the side you must leave at least 2300 mm.

14 OPERATING LIMITS

In their standard configuration, the units are not suitable for installation in salty environments.
The values indicated in the table refer to the min. and max. limits of the unit.
If the unit operates beyond the operational limits, we recommend you first contact our technical-sales service.

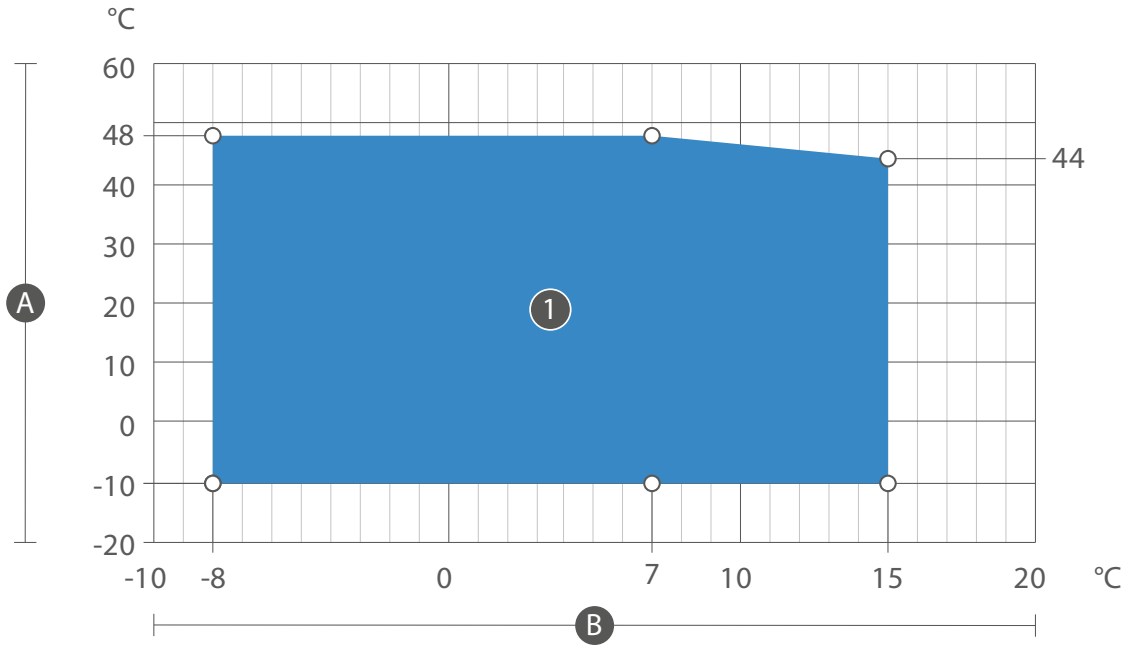
■ *Note: If the unit is installed in particularly windy areas, it is mandatory to have windbreak barriers to prevent unit malfunctions. It should be installed if wind speed is above 2,5 m/s.*

NSMI 1251



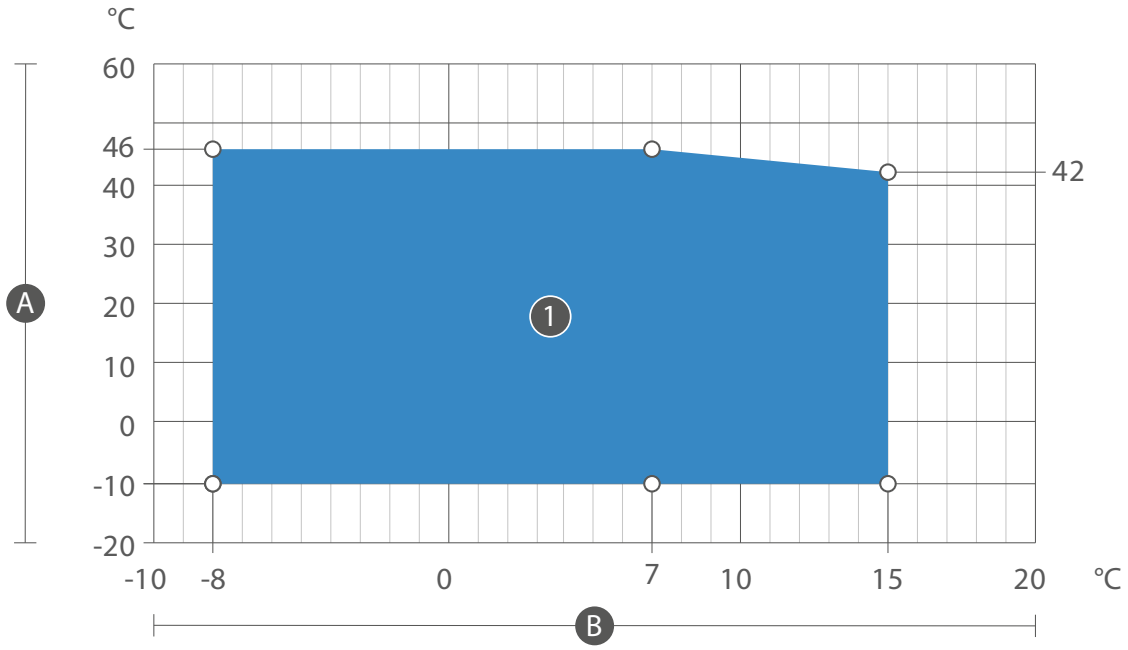
Key
A **Outdoor air temperature (°C)**
B **Water produced (°C)**
1 Standard mode

NSMI 1601-1801-2652-2802-4802-5202



Key
A **Outdoor air temperature (°C)**
B **Water produced (°C)**
1 Standard mode

NSMI 2352-3802-4102-4402-5702-6102



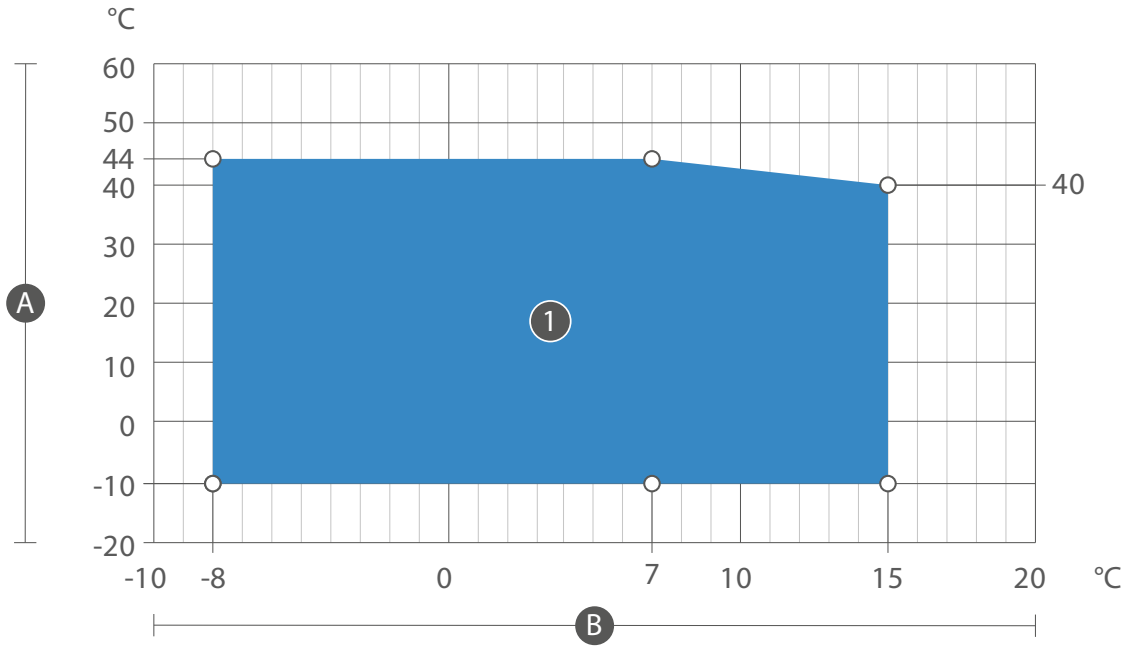
Key

A **Outdoor air temperature (°C)**

B **Water produced (°C)**

1 Standard mode

NSMI 3202-3402



Key

A **Outdoor air temperature (°C)**

B **Water produced (°C)**

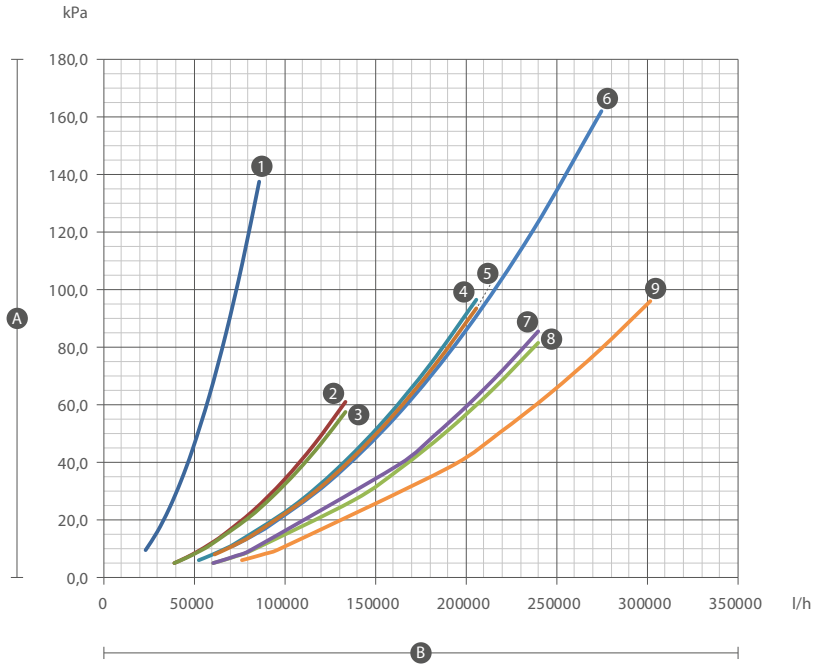
1 Standard mode

ATTENTION! If you want to produce water with negative temperature below 4°C, we kindly ask you to contact our offices to select the correct thermostatic valve and check the operating range of the unit.

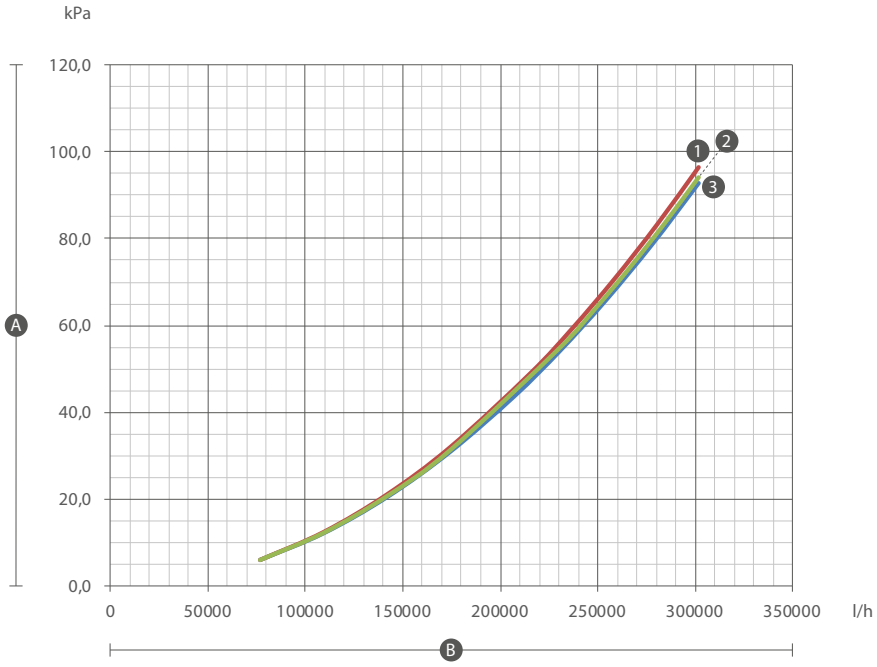
15 PRESSURE DROPS

Inlet water temperature 12 °C
Outlet water temperature 7 °C
External air temperature 35 °C
Average water temperature 10 °C

■ *ATTENTION: For average water temperature different than 10 °C refer to the chapter "Corrective factors for average water temperatures different from nominal values"*



A **Pressure drop (kPa)**
B **Water flow rate (l/h)**
1 1251
2 1601
3 1801
4 2652
5 2352-2802
6 3202
7 4102-4402
8 3402-3802
9 4802

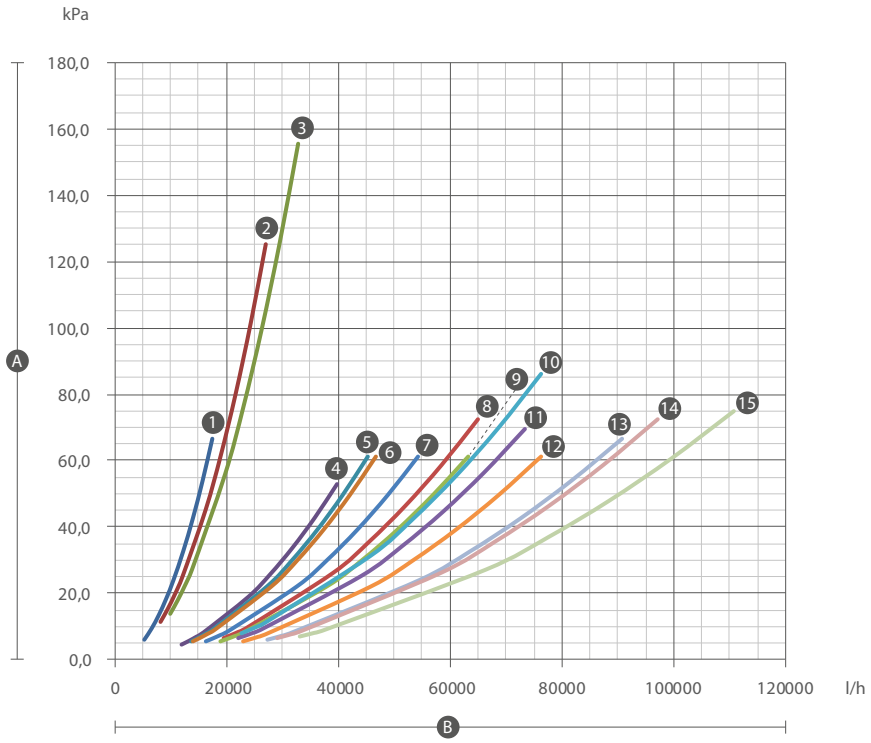


A **Pressure drop (kPa)**
B **Water flow rate (l/h)**
1 5702
2 6102
3 5202

16 DESUPERHEATER PRESSURE DROPS

Desuperheater
Inlet water temperature 40 °C
Outlet water temperature 45 °C
Average water temperature 43 °C

ATTENTION: For average water temperature different than 43 °C refer to the chapter "Corrective factors for average water temperatures different from nominal values"



A	**Pressure drop (kPa)**	8	3402
B	**Water flow rate (l/h)**	9	3802
1	1251	10	4402
2	1601	11	4102
3	1801	12	4802
4	2352	13	5202
5	2652	14	5702
6	2802	15	6102
7	3202		

When functioning, a minimum water temperature of 35 °C must always be ensured at heat exchanger inlet if working with low temperatures of water produced in the primary circuit.

17 PUMPS STATIC PRESSURE

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
PA - Pump A																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Maximum current (FLA)	A,E	A	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6
Minimum water flow rate	A,E	l/h	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000
Maximum water flow rate	A,E	l/h	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000
PB - Pump B																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42	3,42
Maximum current (FLA)	A,E	A	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3
Minimum water flow rate	A,E	l/h	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000
Maximum water flow rate	A,E	l/h	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000	47000
PC - Pump C																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45	4,45
Maximum current (FLA)	A,E	A	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6
Minimum water flow rate	A,E	l/h	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
Maximum water flow rate	A,E	l/h	61000	61000	61000	61000	61000	61000	61000	61000	61000	61000	61000	61000	61000	61000	61000
PD - Pump D																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57	5,57
Maximum current (FLA)	A,E	A	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5
Minimum water flow rate	A,E	l/h	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000
Maximum water flow rate	A,E	l/h	75000	75000	75000	75000	75000	75000	75000	75000	75000	75000	75000	75000	75000	75000	75000
PE - Pump E																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89	7,89
Maximum current (FLA)	A,E	A	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1
Minimum water flow rate	A,E	l/h	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000
Maximum water flow rate	A,E	l/h	97000	97000	97000	97000	97000	97000	97000	97000	97000	97000	97000	97000	97000	97000	97000
PF - Pump F																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05	9,05
Maximum current (FLA)	A,E	A	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2
Minimum water flow rate	A,E	l/h	27000	27000	27000	27000	27000	27000	27000	27000	27000	27000	27000	27000	27000	27000	27000
Maximum water flow rate	A,E	l/h	138000	138000	138000	138000	138000	138000	138000	138000	138000	138000	138000	138000	138000	138000	138000
PG - Pump G																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98	10,98
Maximum current (FLA)	A,E	A	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2
Minimum water flow rate	A,E	l/h	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000
Maximum water flow rate	A,E	l/h	205000	205000	205000	205000	205000	205000	205000	205000	205000	205000	205000	205000	205000	205000	205000
PH - Pump H																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49	15,49
Maximum current (FLA)	A,E	A	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6
Minimum water flow rate	A,E	l/h	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000
Maximum water flow rate	A,E	l/h	235000	235000	235000	235000	235000	235000	235000	235000	235000	235000	235000	235000	235000	235000	235000
PI - Pump I																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90	18,90
Maximum current (FLA)	A,E	A	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0
Minimum water flow rate	A,E	l/h	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000
Maximum water flow rate	A,E	l/h	257000	257000	257000	257000	257000	257000	257000	257000	257000	257000	257000	257000	257000	257000	257000
PJ - Pump J																	
Nr. poles	A,E	no.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum input power (FLI)	A,E	kW	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum current (FLA)	A,E	A	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Minimum water flow rate	A,E	l/h	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum water flow rate	A,E	l/h	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.

c.s. = contact the factory

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
DA - Pump A + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54	2,54
Maximum current (FLA)	A,E	A	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6
Minimum water flow rate	A,E	l/h	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000
Maximum water flow rate	A,E	l/h	41000	41000	41000	41000	41000	41000	41000	41000	41000	41000	41000	41000	41000	41000	41000
DB - Pump B + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12	3,12
Maximum current (FLA)	A,E	A	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3
Minimum water flow rate	A,E	l/h	18060	18060	18060	18060	18060	18060	18060	18060	18060	18060	18060	18060	18060	18060	18060

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Maximum water flow rate	A,E	l/h	59000	59000	59000	59000	59000	59000	59000	59000	59000	59000	59000	59000	59000	59000	59000
DC - Pump C + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12	4,12
Maximum current (FLA)	A,E	A	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6	7,6
Minimum water flow rate	A,E	l/h	20430	20430	20430	20430	20430	20430	20430	20430	20430	20430	20430	20430	20430	20430	20430
Maximum water flow rate	A,E	l/h	71000	71000	71000	71000	71000	71000	71000	71000	71000	71000	71000	71000	71000	71000	71000
DD - Pump D + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88	5,88
Maximum current (FLA)	A,E	A	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5
Minimum water flow rate	A,E	l/h	23670	23670	23670	23670	23670	23670	23670	23670	23670	23670	23670	23670	23670	23670	23670
Maximum water flow rate	A,E	l/h	85500	85500	85500	85500	85500	85500	85500	85500	85500	85500	85500	85500	85500	85500	85500
DE - Pump E + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14	8,14
Maximum current (FLA)	A,E	A	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1	14,1
Minimum water flow rate	A,E	l/h	22020	22020	22020	22020	22020	22020	22020	22020	22020	22020	22020	22020	22020	22020	22020
Maximum water flow rate	A,E	l/h	93000	93000	93000	93000	93000	93000	93000	93000	93000	93000	93000	93000	93000	93000	93000
DF - Pump F + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08	10,08
Maximum current (FLA)	A,E	A	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2	17,2
Minimum water flow rate	A,E	l/h	27660	27660	27660	27660	27660	27660	27660	27660	27660	27660	27660	27660	27660	27660	27660
Maximum water flow rate	A,E	l/h	120000	120000	120000	120000	120000	120000	120000	120000	120000	120000	120000	120000	120000	120000	120000
DG - Pump G + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73	10,73
Maximum current (FLA)	A,E	A	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2	20,2
Minimum water flow rate	A,E	l/h	34710	34710	34710	34710	34710	34710	34710	34710	34710	34710	34710	34710	34710	34710	34710
Maximum water flow rate	A,E	l/h	156990	156990	156990	156990	156990	156990	156990	156990	156990	156990	156990	156990	156990	156990	156990
DH - Pump H + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04	16,04
Maximum current (FLA)	A,E	A	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6	26,6
Minimum water flow rate	A,E	l/h	42150	42150	42150	42150	42150	42150	42150	42150	42150	42150	42150	42150	42150	42150	42150
Maximum water flow rate	A,E	l/h	185000	185000	185000	185000	185000	185000	185000	185000	185000	185000	185000	185000	185000	185000	185000
DI - Pump I + stand-by pump																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73	19,73
Maximum current (FLA)	A,E	A	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0	33,0
Minimum water flow rate	A,E	l/h	46230	46230	46230	46230	46230	46230	46230	46230	46230	46230	46230	46230	46230	46230	46230
Maximum water flow rate	A,E	l/h	203420	203420	203420	203420	203420	203420	203420	203420	203420	203420	203420	203420	203420	203420	203420
DJ - Pump J + stand-by pump																	
Nr. poles	A,E	no.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum input power (FLI)	A,E	kW	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum current (FLA)	A,E	A	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Minimum water flow rate	A,E	l/h	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum water flow rate	A,E	l/h	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.

c.s. = contact the factory

Hydronic kits DA-DB-DC-DD-DE-DF-DG-DH-DI-DJ have two pumps, 1 of which in operation and 1 as a spare.

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
TF - Double pump F																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15	20,15
Maximum current (FLA)	A,E	A	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4	34,4
Minimum water flow rate	A,E	l/h	55320	55320	55320	55320	55320	55320	55320	55320	55320	55320	55320	55320	55320	55320	55320
Maximum water flow rate	A,E	l/h	240000	240000	240000	240000	240000	240000	240000	240000	240000	240000	240000	240000	240000	240000	240000
TG - Double pump G																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46	21,46
Maximum current (FLA)	A,E	A	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4	40,4
Minimum water flow rate	A,E	l/h	69420	69420	69420	69420	69420	69420	69420	69420	69420	69420	69420	69420	69420	69420	69420
Maximum water flow rate	A,E	l/h	313980	313980	313980	313980	313980	313980	313980	313980	313980	313980	313980	313980	313980	313980	313980
TH - Double pump H																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08	32,08
Maximum current (FLA)	A,E	A	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2	53,2
Minimum water flow rate	A,E	l/h	84300	84300	84300	84300	84300	84300	84300	84300	84300	84300	84300	84300	84300	84300	84300
Maximum water flow rate	A,E	l/h	370000	370000	370000	370000	370000	370000	370000	370000	370000	370000	370000	370000	370000	370000	370000
TI - Double pump I																	
Nr. poles	A,E	no.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Maximum input power (FLI)	A,E	kW	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46	39,46
Maximum current (FLA)	A,E	A	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0	66,0
Minimum water flow rate	A,E	l/h	92460	92460	92460	92460	92460	92460	92460	92460	92460	92460	92460	92460	92460	92460	92460

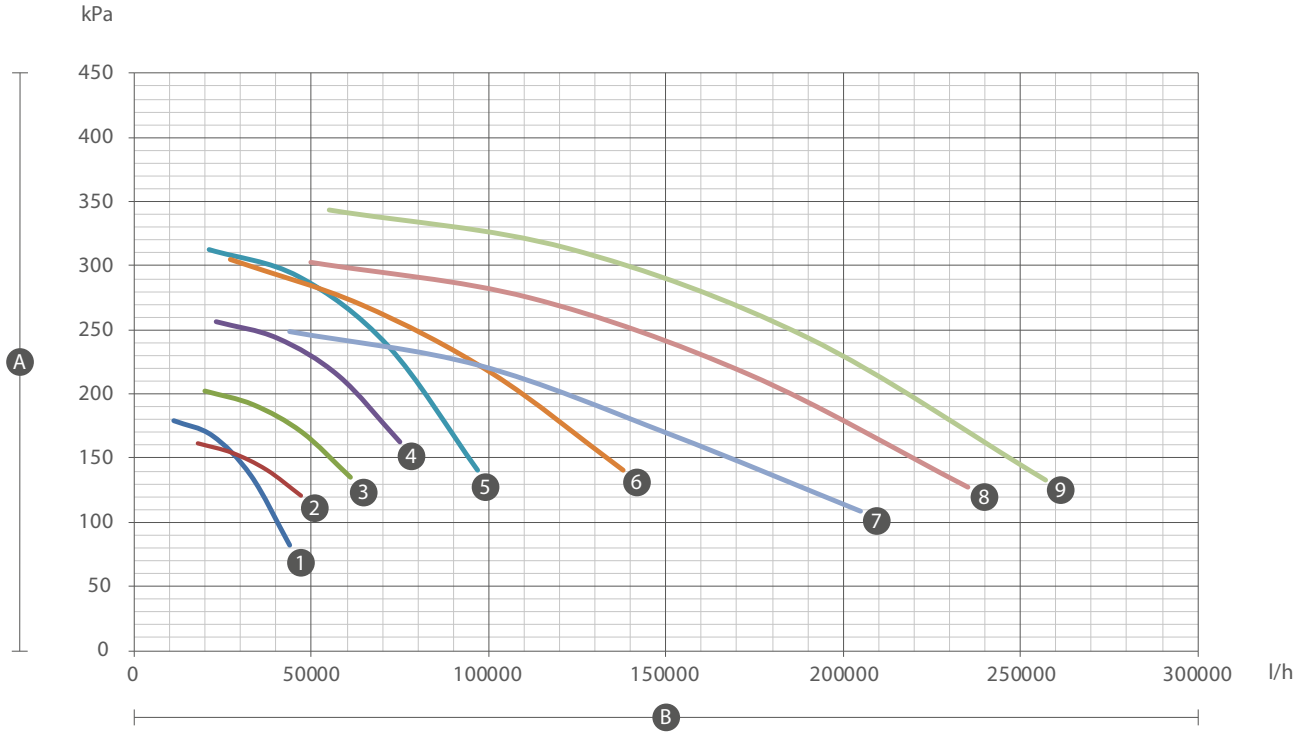
Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Maximum water flow rate	A,E	l/h	406840	406840	406840	406840	406840	406840	406840	406840	406840	406840	406840	406840	406840	406840	406840
TJ - Double pump J																	
Nr. poles	A,E	no.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum input power (FLI)	A,E	kW	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum current (FLA)	A,E	A	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Minimum water flow rate	A,E	l/h	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.
Maximum water flow rate	A,E	l/h	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.	c.s.

c.s. = contact the factory

The TF-TG-TH-TI-TJ hydronic kits have two twin pumps, both functioning.

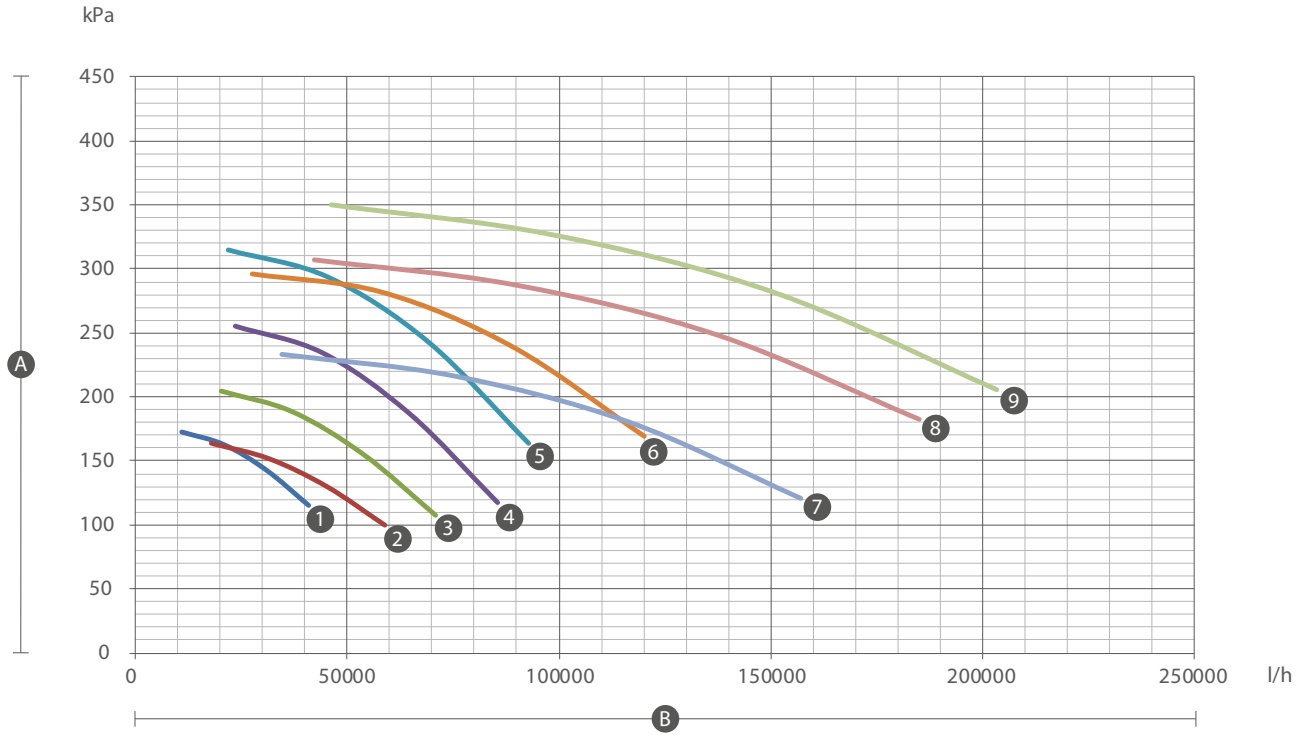
PUMP STATIC PRESSURE PA-PI

The table shows the characteristic curves of the pumps, **and therefore they do not represent the useful static pressures of the system.**
The useful static pressures of the system must be calculated by subtracting the pressure drop (Δp) of the unit from the static pressure of the pump that is read in this graph.



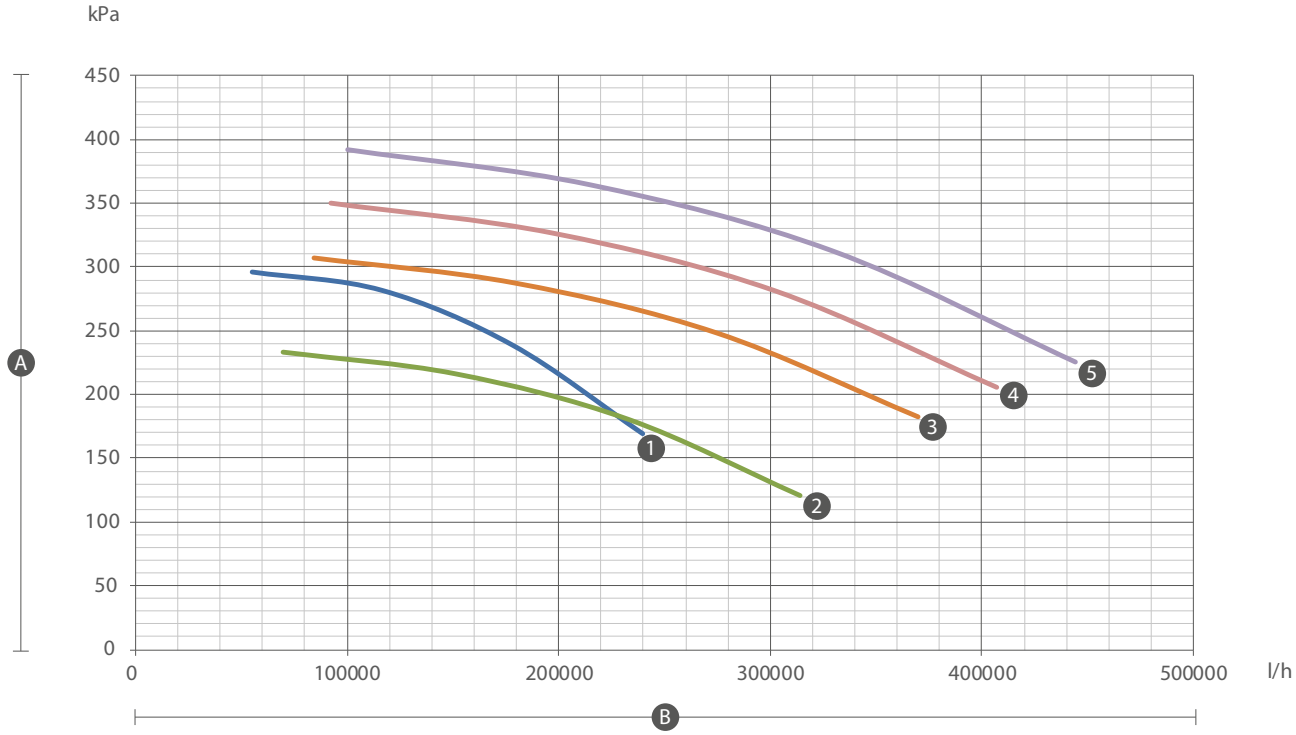
A **Pumps static pressure (kPa)**
B **Water flow rate (l/h)**
1 PA
2 PB
3 PC
4 PD
5 PE
6 PF
7 PG
8 PH
9 PI

PUMP STATIC PRESSURE DA-DI



A **Pumps static pressure (kPa)**
B **Water flow rate (l/h)**
1 DA
2 DB
3 DC
4 DD
5 DE
6 DF
7 DG
8 DH
9 DI

PUMPS STATIC PRESSURE TF-TJ



A **Pumps static pressure (kPa)**
B **Water flow rate (l/h)**
1 TF
2 TG
3 TH
4 TI
5 TJ

18 SYSTEM WATER CONTENT

MAXIMUM SYSTEM WATER CONTENT

Units with the hydronic kit mounted come standard with the expansion vessel set at 1.5 bar, the pressure relief valve, the flow switch and the water filter mounted.
The maximum system water content depends on the capacity of the expansion vessel and on the calibration of the pressure relief valve.

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Hydronic kit																	
Expansion vessel number	A,E	no.								2							
Expansion vessel capacity	A,E	l								24							

c.s. = contact the factory
The table gives an example of the maximum water content calculated at the indicated operating conditions and only to protect the unit.
If the volume of water in the system is higher, add another expansion vessel of the correct size.

System water temperature max/min	**°C**				**40/4**		
Hydraulic height	**M**	**30**	**25**	**20**	**15**	**≤12,25**
Expansion vessel pre-load	bar	3,2	2,8	2,3	1,8	1,5
Water content maximum	l	2174	2646	3118	3590	3852
System water temperature max/min	**°C**			**60/4**		
Expansion vessel pre-load	bar	3,2	2,8	2,3	1,8	1,5
Water content maximum	l	978	1190	1404	1616	1732

The data in the table refer to units with a 24 l expansion vessel.

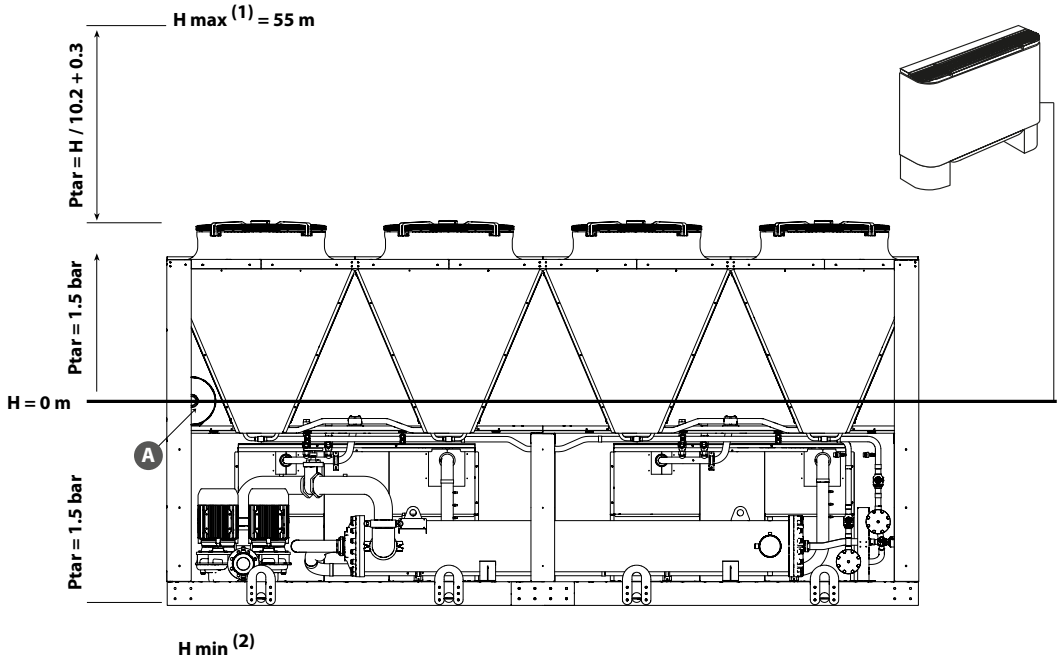
MINIMUM SYSTEM WATER CONTENT

The minimum water content of the system allows you to limit the activations and shutdowns of the compressor.
To calculate it use the formula Pc (kW) X l.

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Minimum system water content																	
Minimum water content for air conditioning	A,E	m^3	2	2	3	3	4	4	5	5	5	6	7	7	8	8	9
Minimum water content for processes	A,E	m^3	4	5	7	7	9	9	10	11	12	13	14	16	17	17	19

EXPANSION VESSEL SETTING

The expansion tank volume is 24l. The standard value of the expansion tank pre-charge pressure is 1.5 bar, but this can be calibrated up to a maximum of 6 bar.
The expansion tank pressure setting has to be adjusted based on the difference in height (H) of the installation (see figure) according to the formula: p (rating) [bar] = H [m] / 10.2 + 0.3.
For example, if the difference in height H is 20 m then the value of the expansion tank pressure setting is 2.3 bar.
If the calculated pressure setting value is less than 1.5 bar (when H < 12.25), maintain the standard pressure setting.



Key
A Expansion vessel

1 Check that highest utility is not higher than 55 metres

2 Ensure that lowest utility can withstand global pressure in that position

19 CORRECTION FACTORS

CORRECTIVE FACTORS FOR AVERAGE WATER TEMPERATURES DIFFERENT FROM NOMINAL VALUES

The pressure drops are calculated with an average water temperature of 10 °C (Cooling mode), 43 °C (Heating or recovery mode)

		System side heat exchanger														
		Cooling mode							Heating mode or recovery							
Average water temperatures	°C	5	10	15	20	30	40	50	23	28	33	38	43	48	53	58
Correction factor		1,02	1,00	0,98	0,97	0,95	0,93	0,91	1,04	1,03	1,02	1,01	1,00	0,99	0,98	0,97

FOULING: DEPOSIT CORRECTIVE FACTORS [K*M²]/[W]

	0,0	0,00005	0,0001	0,0002
Corrective factor of cooling capacity	**1,0**	**1**	0.98	0.94
Corrective factor of imput power	**1,0**	**1**	0.98	0.95

GLYCOL

Ethylene glycol

Cooling mode

CORRECTION FACTOR WITH ETHYLENE GLYCOL - COOLING MODE											
Freezing point	°C	0	–3,63	–6,10	–8,93	–12,11	–15,74	–19,94	–24,79	–30,44	–37,10
Percent ethylene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwc	–	1,000	1,033	1,040	1,049	1,060	1,072	1,086	1,102	1,120	1,141
Pc	–	1,000	0,990	0,985	0,980	0,975	0,970	0,965	0,960	0,955	0,950
Pa	–	1,000	0,996	0,994	0,992	0,990	0,988	0,986	0,984	0,982	0,980
Δp	–	1,000	1,109	1,157	1,209	1,268	1,336	1,414	1,505	1,609	1,728

Heating mode range

CORRECTION FACTOR WITH ETHYLENE GLYCOL - HEATING MODE											
Freezing Point	°C	0	–3,63	–6,10	–8,93	–12,11	–15,74	–19,94	–24,79	–30,44	–37,10
Percent ethylene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwh	–	1,000	1,027	1,038	1,050	1,063	1,078	1,095	1,114	1,135	1,158
Ph	–	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Pa	–	1,000	1,002	1,003	1,004	1,005	1,007	1,008	1,010	1,012	1,015
Δp	–	1,000	1,087	1,128	1,175	1,227	1,286	1,.353	1,428	1,514	1,610

Propylene glycol

Cooling mode

CORRECTION FACTOR WITH PROPILENE GLYCOL - COOLING MODE											
Freezing Point	°C	0	–3,43	–5,30	–7,44	–9,98	–13,08	–16,86	–21,47	–27,04	–33,72
Percent propilene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwc	–	1,000	1,007	1,006	1,007	1,010	1,015	1,022	1,032	1,044	1,058
Pc	–	1,000	0,985	0,978	0,970	0,963	0,955	0,947	0,939	0,932	0,924
Pa	–	1,000	0,996	0,994	0,992	0,990	0,988	0,986	0,984	0,982	0,980
Δp	–	1,000	1,082	1,102	1,143	1,201	1,271	1,351	1,435	1,520	1,602

Heating mode range

CORRECTION FACTOR WITH PROPILENE GLYCOL - HEATING MODE											
Freezing Point	°C	0	–3,43	–5,30	–7,44	–9,98	–13,08	–16,86	–21,47	–27,04	–33,72
Percent propilene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwh	–	1,000	1,008	1,014	1,021	1,030	1,042	1,055	1,071	1,090	1,112
Ph	–	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Pa	–	1,000	1,003	1,004	1,005	1,007	1,009	1,011	1,014	1,018	1,023
Δp	–	1,000	1,050	1,077	1,111	1,153	1,202	1,258	1,321	1,390	1,467

Attention: Avoid adding the glycol in the hydraulic circuit near the pump intake. A high concentration of glycol and additives above the permissible limits can block the pump: do not use the pump as a mixer.

Qwc Corrective factor of flow rates (middle water temperatur 9,5°C)
Qwh Corrective factor of flow rates (middle water temperatur 42,5°C)
Pc Corrective factor of cooling Capacity
Ph Corrective factor of heating Capacity
Pa Correction factor input Power
ΔP Correction factor Pressure drop

20 SOUND DATA

Size			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
Sound data calculated in cooling mode (1)																	
Sound power level	A	dB(A)	97,2	98,6	98,6	98,6	98,8	99,9	99,9	100,3	100,3	100,4	101,0	102,9	103,2	102,9	103,2
	E	dB(A)	92,9	95,8	95,9	94,7	95,1	96,1	96,1	97,3	97,4	97,7	98,0	99,9	99,9	99,9	99,9
Sound pressure level (10 m)	A	dB(A)	64,8	66,2	66,1	66,1	66,2	67,1	67,1	67,5	67,5	67,4	67,9	69,7	69,9	69,7	69,9
	E	dB(A)	60,6	63,4	63,4	62,1	62,5	63,3	63,3	64,6	64,5	64,7	64,8	66,7	66,7	66,7	66,7
Sound pressure level (1 m)	A	dB(A)	77,0	78,4	77,9	77,8	77,7	78,3	78,3	78,7	78,4	78,1	78,4	80,0	80,2	80,0	80,2
	E	dB(A)	72,7	75,6	75,2	73,8	74,0	74,5	74,5	75,8	75,4	75,4	75,3	77,0	77,0	77,0	77,0
Sound power by centre octave band dB(A)																	
125 Hz	A	dB(A)	75,3	81,8	82,1	76,3	77,2	82,5	82,5	83,1	83,2	83,3	83,5	85,4	85,3	85,3	85,2
	E	dB(A)	75,2	80,0	80,4	76,2	77,0	81,0	81,0	81,5	81,7	81,8	82,1	83,8	83,7	83,7	83,6
250 Hz	A	dB(A)	75,3	82,0	82,2	79,2	79,4	83,4	83,4	89,1	89,1	92,1	90,9	91,4	90,7	90,7	89,1
	E	dB(A)	75,2	81,4	81,6	79,2	79,4	82,6	82,6	88,5	88,5	91,6	90,3	90,8	90,1	90,1	88,5
500 Hz	A	dB(A)	84,1	94,5	94,5	88,2	89,8	95,5	95,5	95,5	95,5	94,9	95,8	98,2	98,1	98,1	98,7
	E	dB(A)	83,6	92,4	92,4	87,6	89,2	92,6	92,6	93,4	93,4	92,8	93,6	96,0	95,9	95,9	96,5
1000 Hz	A	dB(A)	96,5	93,4	93,5	97,6	97,7	95,6	95,6	96,0	96,1	95,8	97,1	98,6	99,4	99,4	99,3
	E	dB(A)	90,6	86,0	86,2	91,7	91,9	87,2	87,2	88,6	88,7	88,6	89,7	91,0	91,7	91,7	91,6
2000 Hz	A	dB(A)	85,9	91,7	91,8	88,0	87,8	92,4	92,4	92,3	92,3	92,6	92,6	95,2	95,1	95,1	95,2
	E	dB(A)	85,5	89,8	89,8	87,6	87,4	89,6	89,6	90,3	90,4	90,6	90,7	93,2	93,1	93,1	93,3
4000 Hz	A	dB(A)	80,1	85,5	85,5	80,6	80,9	85,7	85,7	86,3	86,3	85,7	86,4	88,9	88,9	88,9	89,2
	E	dB(A)	81,7	86,7	86,7	82,2	82,5	86,7	86,7	87,4	87,4	86,9	87,6	90,1	90,0	90,0	90,4
8000 Hz	A	dB(A)	69,6	71,6	71,7	70,0	70,4	72,1	72,1	72,8	72,9	72,2	73,0	75,3	75,3	75,3	75,2
	E	dB(A)	71,4	73,5	73,5	71,8	72,1	73,9	73,9	74,6	74,7	74,0	74,8	77,1	77,2	77,2	77,1

(1) Sound power calculated on the basis of measurements made in accordance with UNI EN ISO 9614-2, as required for Eurovent certification. Sound pressure (cold functioning) measured in free field, 10m away from the unit external surface (in compliance with UNI EN ISO 3744).

Data 14511:2018
System water temperature 12/7 °C (in/out)
Outside air temperature 35 °C
Standard fans
Note
For operating conditions different to those declared refer to the selection program Magellano, available on www.aermec.com

AERMEC S.p.A.
Via Roma, 996 - 37040 Bevilacqua (VR) - Italy
Phone +39 0442 633111 - Fax +39 0442 93577
sales@aermec.com - www.aermec.com

21.12 – 4138526_06