



Technical manual

NS FREE COOLING GLYCOL FREE

- CHILLER COOLING ONLY
- EXTERNAL UNIT
- HIGH EFFICIENCY
- SCREW COMPRESSOR



EN



Dear Customer,

Thank you for choosing an AERMEC product. 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.

In addition, the CE mark guarantees that our appliances fully comply with the requirements of the European Machinery Directive in terms of safety. We constantly monitor the quality level of our products, and as a result they are synonymous with Safety, Quality, and Reliability.

Product data may be subject to modifications deemed necessary for improving the product without the obligation to give prior notice.

Thank you again.
AERMEC S.p.A

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NS FREECOOLING GLYCOL FREE

SERIAL NUMBER	
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DECLARATION OF CONFORMITY

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

NAME NS FREE COOLING GLYCOL FREE

TYPE AIR - WATER CHILLER

MODEL

To which this declaration refers, complies with the following harmonised standards:

IEC EN 60335-2-40	Safety standard regarding electrical heat pumps, air conditioners and dehumidifiers.
IEC EN 61000-6-1 IEC EN 61000-6-3	Immunity and electromagnetic emissions for residential environments.
IEC EN 61000-6-2 IEC EN 61000-6-4	Immunity and electromagnetic emissions for industrial environments.
EN378	Refrigerating system and heat pumps - Safety and environmental requirements.
UNI EN 12735 UNI EN 14276	Seamless, round copper tubes for air conditioning and refrigeration. Pressure equipment for cooling systems and heat pumps.

Thereby, compliant with the essential requirements of the following directives:

- LVD Directive: 2006/95/CE
- Electromagnetic Compatibility Directive 2004/108/CE
- Machinery Directive 2006/42/CE
- PED Directive regarding pressurised devices 97/23/CE

The product, in agreement with Directive 97/23/CE, satisfies the Total quality Guarantee procedure (form H) with certificate no. 06/270-QT3664 Rev. 5 issued by the notified body n.1131 CEC via Pisacane 46 Legnano (MI) - Italy

The person authorised to constitute the technical file is: Massimiliano Sfragara - 37040 Bevilacqua (VR) Italy - Rome, 996

Bevilacqua

08/11/2010

Marketing Manager
Signature



Standards and Directives respected when designing and constructing the unit:

Safety:

Machinery Directive
2006/42/CE

Low Voltage Directive
LVD 2006/95/CE

Electromagnetic Compatibility Directive

EMC 2004/108/EC

Pressure Equipment Directive

PED 97/23/CE EN 378,
UNI EN 14276

Electric part:

EN 60204-1

Protection rating

IP24

Acoustic part:

SOUND POWER

(EN ISO 9614-2)

SOUND PRESSURE

(EN ISO 3744)

Refrigerant GAS: R134a

This unit contains fluoride gases with greenhouse effect covered by the Kyoto Protocol. Maintenance and disposal must only be performed by qualified staff.

GWP=1900

1. GENERAL WARNINGS

AERMEC NS FREECOOLING GLYCOL FREE units are constructed according to the recognised technical standards and safety regulations. They have been designed and must be used for air conditioning purposes, in accordance with their technical features. Any contractual or extracontractual liability of the Company is excluded for injury/damage to persons, animals or objects owing to installation, regulation and maintenance errors or improper use. All uses not expressly indicated in this manual are prohibited.

1.1. PRESERVATION OF THE DOCUMENTATION

The instructions along with all the related documentation must be given to the user of the system, who assumes the responsibility to conserve the instructions so that they are always at hand in case of need.

Read this sheet carefully; the execution of all works must be performed by qualified staff, according to Standards in force on this subject in different countries.

The appliance must be installed in such a way as to enable maintenance and/or repairs to be carried out.

The appliance warranty does not cover the costs for ladders, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.

Do not modify or tamper with the chiller as dangerous situations can be created and the manufacturer will not be liable for any damage caused. The validity of the warranty shall be void in the event of failure to comply with the above-mentioned indications.

1.2. WARNINGS REGARDING SAFETY AND INSTALLATION STANDARDS

- The cooler must be installed by a qualified and suitably trained technician, in compliance with the national legislation in force in the country of destination.
⚠ AERMEC will not assume any responsibility for damage due to failure to follow these instructions.
- Before beginning any operation, READ THESE INSTRUCTIONS CAREFULLY AND CARRY OUT THE SAFETY CHECKS TO AVOID ALL RISKS. All the staff involved must have thorough knowledge of the operations and any dangers that may arise at the moment in which the installation operations are carried out.

2. IDENTIFICATION OF THE PRODUCT

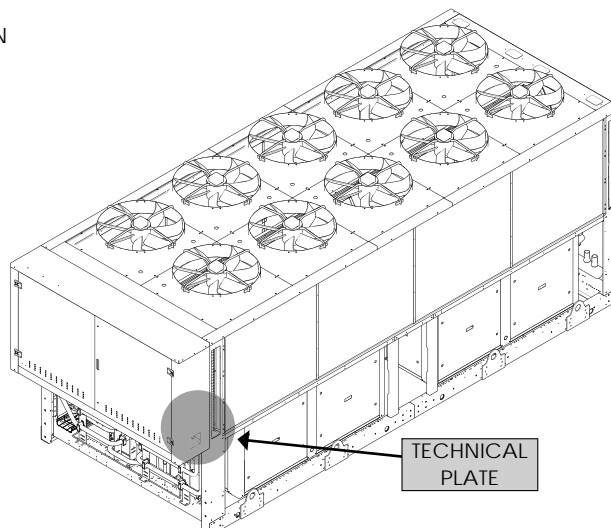
The NS-FREECOOLING GLYCOL FREE units can be identified by the following:

- PACKING LABEL
which shows the product identification data
- TECHNICAL PLATE
Positioned on the right lateral side-member (see fig.1)

⚠ ATTENTION

Tampering, removal, lack of the identification plate or other does not allow the safe identification of the product and will make any installation or maintenance operation to be performed difficult.

TECHNICAL PLATE POSITION



⚠ ATTENTION:

The drawings are merely indicative.

Fig.1

3. PRESENTATION

Water-cooled high efficiency air chillers for **outdoor installation**.

The units have **semi-hermetic screw compressors**, optimised for the use of the R134a refrigerant.

The **high unit efficiency axial fans** are regulated to optimise the air flow rates to the condensing coils.

The **air condensing coils** made with copper pipes and aluminium louvered fins are optimised for better heat exchange performance.

Water condensing coils used in free cooling operation. They are factory-tested with pressurised air.

Shell and tube heat evaporator

Direct expansion type, suitably dimensioned to obtain high performance.

The NS FREECOOLING units are supplied with refrigerant load and oil, factory-inspected and only require electric and hydraulic connections in the place of installation.

3.1. HIGH EFFICIENCY

Thanks to the technology applied, the use of the dedicated compressors and heat exchangers with high heat exchange co-efficients, allow to reach high EER values in the work conditions declared by Eurovent thereby guaranteeing lower working costs and consequently quicker return of the investment.

3.2. SILENCE

Guaranteed by the integral bonnet of the compressors and by the DCPX DEVICE, standard for all versions.

Versions E also have a **muffler** installed on the compressor flow line. Possibility of lowering noise even further using the **AKW accessory**, only available in the silenced versions (E).

3.3. MODELS

Free Cooling Glycol free (B) NS FREE COOLING GLYCOL FREE

appliances are water chillers equipped with a recovery system of the cooling capacity of outdoor air called "free cooling".

This free water cooling system (thus the name freecooling) consists in integrating, and eventually fully replacing, the cooling capacity supplied by the compressors by using an additional water coil which exploits

the low-temperature of outdoor air to cool water returning from the system. The use of an intermediate plate heat exchanger obtains two circuits:
- glycoled hydraulic circuit, with glycol added to protect the coils from freezing;

- system side hydraulic circuit, glycol free, providing greater yield.

This system makes it possible to obtain cooled water almost free of charge for all those installations where its production is required constantly and therefore also with low outdoor air temperatures, for example industrial processes, shopping centres, hospitals and other civil applications.

This solution provides considerable energy-saving (see chapter functioning layout NS FREECOOLING GLYCOL FREE).

FUNCTIONING MODE:

– FREE-COOLING ONLY:

when the outdoor temperature is sufficiently low to cool the water in the free-cooling coils until the design temperature. This condition is the most economical as only the fans operate in speed modulation.

– FREE-COOLING + COMPRESSORS:

when the cooling capacity recovered from the outdoor air is no longer sufficient to satisfy the system demand, the compressors work in free-cooling integration.

The greater the cooling capacity recovery with free-cooling, the less this integration will be.

– COMPRESSORS ONLY:

when the outdoor air is warmer than the water returning from the system.

3.4. VERSIONS

- High efficiency [A]
- Silenced high efficiency (E)

• Extended operational limits

Max. summer outdoor air temperature:

42°C for models 1601 and 3002 to 3402

44°C for models 5002 to 5702

46°C for all other models

⚠ ATTENTION

Possibility of exceeding the limits with reduced power, thanks to an intelligent algorithm that prevents blockage in extreme situations.

If the unit is to function beyond the operational limits, we recommend you first contact our technical-sales service

3.5. FANS

- STANDARD (°)
- INCREASED (M)
- INVERTER (J)

⚠ ATTENTION

The machines with an inverter fan require a Class B residual current device as protection (motor leakage current <3.5mA).

3.6. HEAT RECUPERATORS:

- Without recuperators °
- Desuperheater D: Unit with (AISI 316) heat plate, insulated externally with closed cell material to reduce heat loss.

3.7. HYDRONIC KIT

Without pumps (00)

Single pump

(PA - PC - PE - PG - PJ)

Provides, depending on the features of the pump chosen, a useful static pressure to overcome system pressure drops.

Single pump and reserve pump

(PB - PD - PF - PH - PK)

In the presence of the second pump (reserve), changeover is performed manually by acting on the selector inside the electric control board, or else on the one outside the board.

4. CONFIGURATOR

<p>1, 2 Code NS</p>	<p>12 Fans</p> <ul style="list-style-type: none"> ◦ Standard M Increased (not compatible with power supply fields "2", "4", "5" and "9") J Increased Inverters (not compatible with power supply fields "5" and "9")
<p>3, 4, 5, 6 Size 1251, 1401, 1601, 1801, 2101, 2401 1402, 1602, 1802, 2002, 2202, 2352, 2652, 2802 3002, 3202, 3402, 3602, 3902, 4202, 4502, 4802, 5002, 5202, 5402, 5702 6003, 6303, 6603, 6903, 7203</p>	<p>13 Power supply</p> <ul style="list-style-type: none"> ◦ 400V-3-50 Hz with fuses 2 230V-3-50 Hz with fuses * 4 230V-3-50 Hz with magnet circuit breakers * 5 500V-3-50Hz with fuses ** 8 400V-3-50Hz with magnet circuit breakers 9 500V-3-50Hz with magnet circuit breakers **
<p>7 Operating range</p> <ul style="list-style-type: none"> ◦ Mechanical thermostatic valve produced water minimum temperature +4°C Y Mechanical thermostatic valve produced water temperature from +4°C to -6°C X Electronic thermostatic valve produced water temperature up to +4°C (contact head office for lower temperatures) 	<p>14-15 Hydronic kit</p> <ul style="list-style-type: none"> 00 Without pumps PA Single pump (pump A) PB Single pump (pump A and reserve pump) PC Single pump (pump C) PD Single pump (pump C and reserve pump) PE Single pump (pump E) PF Single pump (pump E and reserve pump) PG Single pump (pump G) PH Single pump (pump G and reserve pump) PJ Single pump (pump J) PK Single pump (pump J and reserve pump)
<p>8 Model B Free - cooling Glycol - Free</p>	
<p>9 Heat recuperators</p> <ul style="list-style-type: none"> ◦ Without heat recovery D Desuperheater (plate exchanger)* 	
<p>10 Version A High efficiency E High efficiency in silenced operation</p>	
<p>11 Coils</p> <ul style="list-style-type: none"> ◦ In aluminium R In copper S In tinned copper V In painted aluminium-copper (epoxy paint) 	

Limitations of option D with Desuperheater

not available for sizes:

- from 1251 up to 1601
- 1402 e 1602
- from 2002 up to 3402

Possible for sizes

- 1801, 1802
- from 3002 up to 4202
- from 6003 up to 6603

without evaporator side pumping unit

Limitations of option Power supply

* not available for sizes:

from 1251 up to 2401 and from 2352 up to 7203

** not available for sizes:

from 1801 up to 2401 and from 3402 up to 7203

Limitations of option Hydronic kit

not available for size:

- **1402, 1602, 2002**

not available PB, PD ,PF, PH, PK for size:

- from 1251 up to 1601
- from 3002 up to 3402

5. VERSIONS AVAILABLE WITH DESUPERHEATER

MODELLO GLYCOLFREE - B												
Versions available with Desuperheater												
Sheaves	Compatibility of Desuperheater with Hydronic Kit											
	00	PA	PB	PC	PD	PE	PF	PG	PH	PJ	PK	
1251	X	X	X	X	X	X	X	X	X	X	X	X
1401	X	X	X	X	X	X	X	X	X	X	X	X
1601	X	X	X	X	X	X	X	X	X	X	X	X
1801	✓	X	X	X	X	X	X	X	X	X	X	X
2101	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2401	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1402	X	X	X	X	X	X	X	X	X	X	X	X
1602	X	X	X	X	X	X	X	X	X	X	X	X
1802	✓	X	X	X	X	X	X	X	X	X	X	X
2002	X	X	X	X	X	X	X	X	X	X	X	X
2202	X	X	X	X	X	X	X	X	X	X	X	X
2352	X	X	X	X	X	X	X	X	X	X	X	X
2652	X	X	X	X	X	X	X	X	X	X	X	X
2802	X	X	X	X	X	X	X	X	X	X	X	X
3002	X	X	X	X	X	X	X	X	X	X	X	X
3202	X	X	X	X	X	X	X	X	X	X	X	X
3402	X	X	X	X	X	X	X	X	X	X	X	X
3602	✓	X	X	X	X	X	X	X	X	X	X	X
3902	✓	X	X	X	X	X	X	X	X	X	X	X
4202	✓	X	X	X	X	X	X	X	X	X	X	X
4502	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4802	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5002	X	X	X	X	X	X	X	X	X	X	X	X
5202	X	X	X	X	X	X	X	X	X	X	X	X
5402	X	X	X	X	X	X	X	X	X	X	X	X
5702	X	X	X	X	X	X	X	X	X	X	X	X
6003	✓	X	X	X	X	X	X	X	X	X	X	X
6303	✓	X	X	X	X	X	X	X	X	X	X	X
6603	✓	X	X	X	X	X	X	X	X	X	X	X
6903	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7203	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

6. VERSIONS AVAILABLE WITH HYDRONIC KIT

MODELLO GLYCOLFREE - B												
Versions available with Hydronic Kit												
Sheaves	Hydronic kit compatibility											
	00	PA	PB	PC	PD	PE	PF	PG	PH	PJ	PK	
1251	✓	✓	X	✓	X	✓	X	✓	X	✓	X	✓
1401	✓	✓	X	✓	X	✓	X	✓	X	✓	X	✓
1601	✓	✓	X	✓	X	✓	X	✓	X	✓	X	✓
1801	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2101	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2401	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1402	X	X	X	X	X	X	X	X	X	X	X	X
1602	X	X	X	X	X	X	X	X	X	X	X	X
1802	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2002	X	X	X	X	X	X	X	X	X	X	X	X
2202	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2352	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2652	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2802	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3002	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3202	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3402	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3602	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3902	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4202	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4502	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4802	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5002	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5202	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5402	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5702	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6003	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6303	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6603	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6903	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7203	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes

✓	Available versions
X	Unavailable versions

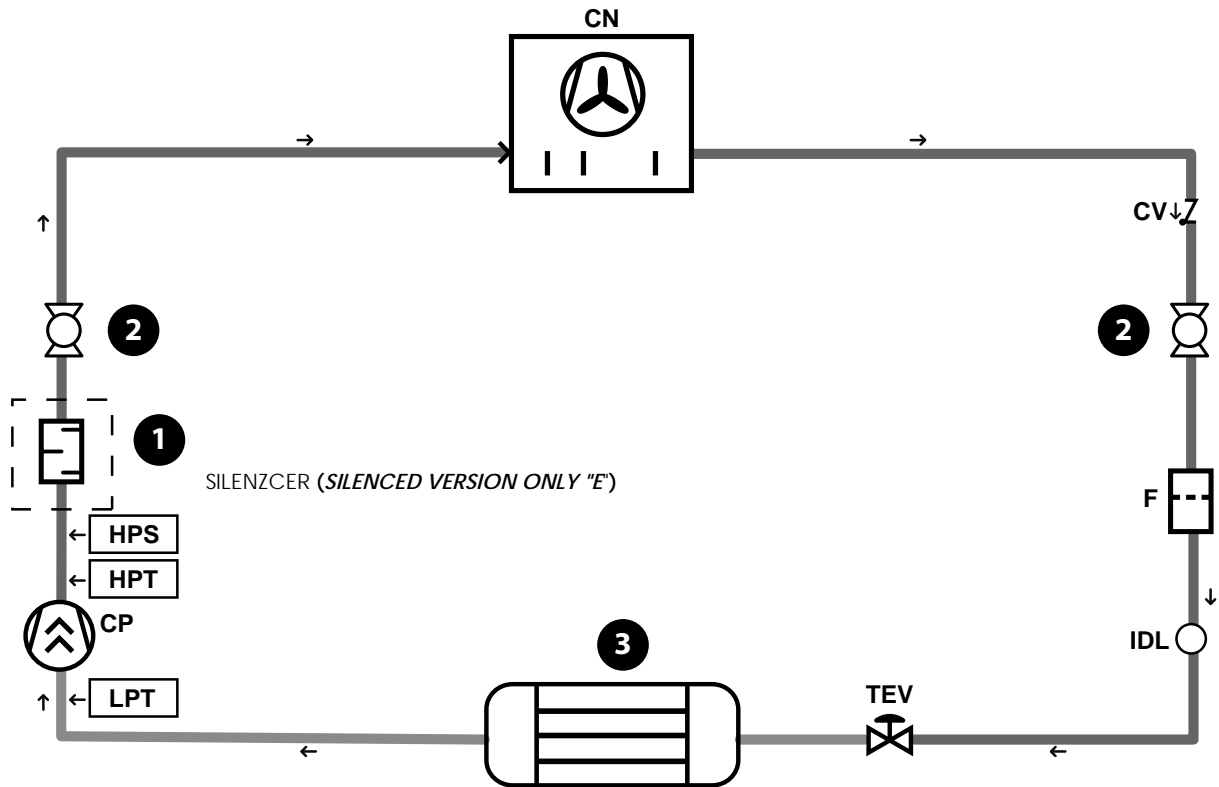
7. VERSIONS AVAILABLE WITH POWER SUPPLY

MODEL GLYCOLFREE - B						
Sheaves	Power supply					
	400V/350Hz with fuses	230V/350Hz with fuses	230V/350Hz with circuit breakers	500V/350Hz with fuses	400V/350Hz with circuit breakers	500V/350Hz with circuit breakers
	°	2	4	5	8	9
1251	✓	✗	✗	✓	✓	✓
1401	✓	✗	✗	✓	✓	✓
1601	✓	✗	✗	✓	✓	✓
1801	✓	✗	✗	✗	✓	✓
2101	✓	✗	✗	✗	✓	✓
2401	✓	✗	✗	✗	✓	✓
1402	✓	✓	✓	✓	✓	✓
1602	✓	✓	✓	✓	✓	✓
1802	✓	✓	✓	✓	✓	✓
2002	✓	✓	✓	✓	✓	✓
2202	✓	✓	✓	✓	✓	✓
2352	✓	✗	✗	✓	✓	✓
2652	✓	✗	✗	✓	✓	✓
2802	✓	✗	✗	✓	✓	✓
3002	✓	✗	✗	✓	✓	✓
3202	✓	✗	✗	✓	✓	✓
3402	✓	✗	✗	✗	✓	✓
3602	✓	✗	✗	✗	✓	✓
3902	✓	✗	✗	✗	✓	✓
4202	✓	✗	✗	✗	✓	✓
4502	✓	✗	✗	✗	✓	✓
4802	✓	✗	✗	✗	✓	✓
5002	✓	✗	✗	✗	✓	✓
5202	✓	✗	✗	✗	✓	✓
5402	✓	✗	✗	✗	✓	✓
5702	✓	✗	✗	✗	✓	✓
6003	✓	✗	✗	✗	✓	✓
6303	✓	✗	✗	✗	✓	✓
6603	✓	✗	✗	✗	✓	✓
6903	✓	✗	✗	✗	✓	✓
7203	✓	✗	✗	✗	✓	✓

Notes

✓	Available versions
✗	Unavailable versions

8. SCHEMA DI PRINCIPIO CIRCUITO FRIGORIFERO



KEY	
CP	SCREW COMPRESSOR
1	SILENCER (<i>SILENCED VERSION ONLY "E"</i>)
2	BALL STOP
CN	SOURCE SIDE HEAT EXCHANGER
CV	ONE-WAY VALVES
F	DEHYDRATOR FILTER
IDL	INDICATOR FOR LIQUID PASSAGE
TEV	THERMOSTATIC VALVE
3	WATER SIDE HEAT EXCHANGER
HPT	HIGH PRESSURE TRANSDUCER
LPT	LOW PRESSURE TRANSDUCER
HPS	DOUBLE HIGH PRESSURE SWITCH

9. DESCRIPTION OF COMPONENTS

9.1. STRUCTURE

Base and support structure

Made up from hot galvanised sheet steel profiles with suitable thickness. Polyester powder painting (RAL 9002), resistant to atmospheric agents. Realised in a way to allow total accessibility to the components inside, for service and maintenance operations.

Acoustic protection cover

As per standard, all **NS FREECOOLING** versions consist in a thick galvanised steel compartment and a sound-absorbent lining. This reduces the sound power level emitted by the unit and also protects the compressors from atmospheric agents.

9.2. FANS

Ventilation Unit

Helical type with IP54 protection rating and balanced statically and dynamically. The electric fans are protected electrically by magnet-circuit breakers and mechanically by anti-intrusion metal grids, according to the IEC EN 60335-2-40 Standard.

⚠ ATTENTION

The machines with an inverter fan require a Class B residual current device as protection (motor leakage current <3.5mA)

DCPX: as per standard with all versions

This device allows correct functioning with external temperatures lower than 10 °C and as low as - 10 °C. It is made up from an adjustment circuit board that varies the number of fan revs on the basis of the condensation pressure, read by the high pressure transducer, in order to keep it sufficiently high for correct unit functioning.

9.3. COOLING CIRCUIT

Compressor/s

High efficiency semi-hermetic screw compressors with adjustment of the cooling capacity via continuous modulation from 40 to 100% with mechanical thermostatic valve and from 25 to 100% with an electronic valve and equipped with:

- Motor circuit breaker protection
- Oil discharge temperature control
- Electric resistance for heating the oil sump with compressor at a standstill
- Reset button
- Oil level

Evaporator (shell and tube exchanger)

Dry expansion type, suitably dimensioned to obtain high performance. A steel case with closed cell expanded elastomer anti-condensation covering. The shell and tube is made from copper pipes with a special profile that allows high

exchange and low pressure drops.

An electric anti-freeze resistance is supplied as per standard, which protects the heat exchanger from external temperatures as low as -20°C, to prevent ice from forming in stand-by mode.

With the unit running, the protection is ensured by the output water temperature probe and the differential pressure switch.

Condensing coils (air exchanger)

made with copper pipes and aluminium louvered fins blocked by mechanical expansion of the pipes. IT IS THE high-efficiency type.

Liquid and pressing line taps

Interrupt the refrigerant in case of maintenance

Liquid indicator

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

Dehydrator filter

Mechanical with cartridge made of ceramics and hygroscopic material, able to withhold impurities and any traces of humidity present in the cooling circuit.

Thermostatic valve

Mechanical valve, with external equaliser positioned at evaporator outlet, modulates the flow of gas to the evaporator, depending on the heat load, in order to ensure a correct heating level of the intake gas.

Electronic thermostatic valve

(option with configurator)

⚠ ATTENTION

(THE electronic thermostatic valve is mounted as per standard for sizes from 5002 to 5702)

In comparison with the classic thermostatic valve, the electronic thermostatic valve, equipped with an indicator to monitor the stopper and the flow of refrigerant inside the circuit, is distinguished for better overheating regulation, and full use is made of the evaporator in all conditions, thereby increasing machine efficiency and achieving machine stability quicker and maintaining this constant.

Muffler: device mounted on the pressing line to reduce the noise produced when the high pressure gas passes through. IT IS mounted as per standard on silenced versions (E)

Solenoid valve

The valve closes when the compressor switches off, blocking the flow of refrigerant gas to the evaporator. **(not supplied with Electronic thermostatic valve)**

One-way valve

Allows one-way flow of the refrigerant.

9.4. HYDRAULIC CIRCUIT

The 00 version includes as per standard:

- Evaporator (shell and tube heat exchanger) supplied with stub pipe and victaulic connections
- Differential pressure switch
- Air vent valve
- SIW water inlet probe
- SUW water outlet probe
- Inlet water filter

The glycoled hydraulic circuit includes as standard:

- Intermediate plate heat exchanger
- Circulation pump
- Expansion vessel
- Flow switch
- Minimum pressure switch
- Manometer
- Safety valve

In the system side circuit anti-freeze heaters are installed on water pipings as standard so that the temperature will not reach the anti-freeze limit

Water coils (free cooling water exchanger)

made with copper pipes and aluminium louvered fins blocked by mechanical expansion of the pipes. IT IS THE high-efficiency type.

The Water coils are inspected in the factory with pressurised air.

Intermediate plate heat exchanger

Unit with (AISI 316) heat plate, insulated externally with closed cell material to reduce heat loss. Supplied with an anti-freeze electric resistance as per standard.

Glycoled hydraulic circuit circulation pump

Mounted on the glycoled hydraulic circuit, it switches on to circulate water inside the intermediate heat exchanger and free cooling coils providing heat exchange with external air.

⚠ ATTENTION

SUW - COMMON OUTLET WATER SENSOR (in units with over an evaporator)

Pay attention to fit the water sensor on the evaporators, first providing a 1/2-inch sleeve. The water sensor must be fitted on the best position to measure the right mixing water temperature of the system.

Electrical Box



SUW - COMMON OUTLET WATER SENSOR

Circulation pump

(option with configurator)

Provides, depending on the features of the pump chosen, a useful static pressure to overcome system pressure drops.

In the presence of the second pump (reserve), changeover is performed manually by acting on the selector inside the electric control board, or else on the one outside the board.

2 EXPANSION VESSELS

(only in versions with pump)

With 25 l nitrogen pre-load membrane

VERSION WITH DESUPERHEATER

(option with configurator)

Unit with (AISI 316) heat plate, insulated externally with closed cell material to reduce heat loss.

9.6. CONTROL AND SAFETY COMPONENTS

COOLING CIRCUIT

High Pressure Switch (standard)

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

Double high pressure switch (manual + tool - standard supply)

Calibrated in the factory, placed on the high pressure side of the cooling circuit, it inhibits the functioning of the unit if abnormal work pressure occurs.

High Pressure Transducer (standard)

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

Low pressure transducer (standard)

Allows to view the value of the compressor intake pressure on the microprocessor board display (one per circuit). Placed on the low pressure side of the cooling circuit.

Cooling circuit safety valves (High Pressure / Low Pressure)

Calibrated at 22 bar HP - 16.5 LP, they intervene by discharging the overpressure in the case of anomalous pressures.

Fuses or magnet circuit breakers

They protect the compressors (to be specified when placing the order).

HYDRAULIC CIRCUIT

Differential pressure switch IP54 n°1 for circuit (standard supply)

Positioned between the evaporator inlet and outlet, it has the task of controlling that there is water circulation. If this is not the case it blocks the unit.

Safety valve (calibrated 6 bar)

Equipped with a piped discharger, intervenes by discharging the over pressure in case of anomalous pressures.

9.5. ELECTRIC CONTROL BOARD AND REGULATION

ELECTRIC CONTROL BOARD

Contains the power section and control and safety device management and complies with standards IEC 60204-1, and electromagnetic compatibility directive EMC 89/336/EEC and 92/31/EEC

DOOR-LOCK ISOLATING SWITCH

The electric control board can be accessed by removing the voltage. Act on the opening lever of the control board itself.

This lever can be locked using one or more padlocks during maintenance interventions to prevent the machine being powered up accidentally.

CONTROL BOARD

Allows the complete control of the appliance

For a more in-depth description please refer to the user manual.

ELECTRONIC REGULATION

The electronic control on NS FREE COOLING chillers is made up of a control board for every compressor connected to each other in a network and a control panel with display. For multi-compressor models, the board controlling compressor n°1 is the "MASTER" board, while the others are

"SLAVE". The transducers, loads and alarms relative to the compressor that controls are connected to every board, while only the general machine ones are connected to the master board.

Microprocessor

- Remote on/off with voltage-free external contact.
- Multi-language menu
- Phase sequence control
- Separate control of the individual compressors
- Amperometric transformer
- Cumulative faults block signal
- Alarm log function
- Daily/weekly programming
- Inlet/outlet water temperature display
- Alarms display
- Integral proportional regulation on outlet water temperature
- 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

9.7. WATER FEATURES

PH	6-8
Electric conductivity	less than 200 mV/cm (25°C)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

Vent valve (as per standard in all versions)

Automatic-type valve mounted on the top of the hydraulic system; they discharge possible air pockets.

Water filter (mounted as per standard)

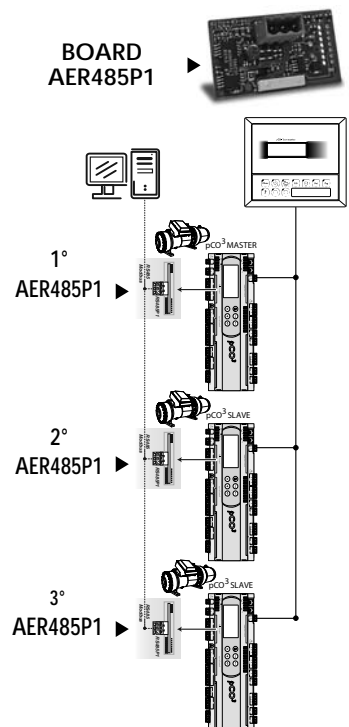
This allows to block and eliminate any impurities present in the hydraulic circuits. It contains a filtering mesh with holes that do not exceed one millimetre. It is indispensable in order to prevent serious damage to the plate exchanger.

Flow switch (mounted as per standard on glycoled hydraulic circuit)

It has the task of controlling that there is water circulation inside the heat exchangers; if this is not the case, it blocks the unit.

Fans magnet-circuit breakers protection

Auxiliary magnet circuit-breaker protection



ATTENTION
All cables inside the control board are numbered for immediate recognition of all electric components.

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

- Self-adapting "Switching Hysteresis" work differential to always ensure the correct functioning times of the compressors even in plants with low

water content or insufficient flow rates. This system decreases compressor wear

- 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.

ATTENTION

For further information concerning electronic adjustments, please refer to the user manual.

10. DESCRIPTION OF ACCESSORIES

- ELECTRIC REGULATION ACCESSORIES

AER485P1: This accessory allows connection of the unit to BMS supervising systems with RS 485 electric standard and MODBUS protocol.

NOTE: n°1 must be envisioned per compressor.

AERWEB300: AERWEB device allows remote control of a chiller from a common PC via a serial connection. By using additional modules, the device allows control of the chiller via a telephone network when the AERMODEM accessory is used or via a GSM network when the AERMODEMGSM accessory is used. **The AERWEB can pilot up to 9 chillers, each of which must be equipped with the AER485P1 accessory.**

MULTICHILLER: Control, switch-on and switch-off system of the single chillers where multiple units are installed in parallel.

PRV3: Allows to control the chiller at a distance.

- ELECTRIC ACCESSORIES

RIFNSFREECOOLING: Current rephaser. Connected in parallel to the compressor, it allows a reduction of the input current (approx. 10%). It can only be installed in the factory and so must be requested when ordering.

KRS (obligatory accessories): Electrical evaporator resistor for external temperatures up to -10 °C.

KRSDES (obligatory accessories): kit consisting of an electric resistance mounted in the evaporator and one mounted in the desuperheater. *(KRS and KRSDES accessories can only be applied in the factory)*

- **KDI:** 20 mm dual-lined evaporator, allows to leave the unit in standby with temperatures as low as -20°C. It must be requested when placing the order combining it with the KRS and KRSDES electric resistance.

- GENERIC ACCESSORIES

GP (PROTECTION GRIDS)

(To be mounted in the factory)

Protects the external coil from blows and prevents access to the underlying area where the compressors and the chiller circuit are housed.

AK (ACOUSTIC PROTECTION KIT)

(To be mounted in the factory)

This accessory reduces the noise further by means of a compressor cover, optimised with high density material without lead that reduces vibrations even further.

AVX (Spring anti-vibration mounts)

In order to reduce the vibrations transmitted to the support structure of the unit, mount anti-vibration supports on each resting point.

11. ACCESSORIES

NS NS FREECOOLING GLYCOL FREE MODELS FROM SIZE 1251 TO 1602

MODEL	VERS.	1251	1401	1601	1801	2101	2401	1402	1602
AER485P1	All	•	•	•	•	•	•	•	•
MULTICHILLER		•	•	•	•	•	•	•	•
⁽¹⁾⁽³⁾ AK-ACOUSTIC KIT		•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB300		•	•	•	•	•	•	•	•
KRS (obligatory accessories)									
⁽¹⁾ KRS	All	KRS10	KRS10	KRS11	KRS10	KRS11	KRS11	KRS11	KRS11
^{(1) (4)} KRSDES		KRS10DES	KRS11DES	KRS10DES	KRS11DES	KRS11DES	KRS19DES	KRS19DES	KRS19DES
KDI									
⁽³⁾ KDI	All	KDI01	KDI01	KDI02	KDI03	KDI04	KDI04	KDI06	KDI06
RIFNS									
⁽²⁾⁽¹⁾ RIFNS	All	RIFNS1251F	RIFNS1401F	RIFNS1601F	RIFNS1801	RIFNS2101	RIFNS2401	RIFNS1402	RIFNS1602
KIT AVX									
AVX	All	501	501	501	506	512	512	501	501

⁽¹⁾ Accessories can only be applied in the factory

⁽²⁾ Accessory only available with power supply 400V-3-50Hz

⁽³⁾ Accessory only available in the silenced versions

⁽⁴⁾ The KRSDES accessory includes the electrical evaporator resistor plus the electrical desuperheater resistor

⁽⁵⁾ The KDI accessory must always be combined with the KRS and KRSDES heating elements.

NS-FREECOOLING GLYCOL FREE MODELS FROM SIZE 1802 TO 3002

MODEL	VERS.	1802	2002	2202	2352	2502	2652	2802	3002
AER485P1	All	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)
MULTICHILLER		•	•	•	•	•	•	•	•
⁽¹⁾⁽³⁾ AK-ACOUSTIC KIT		•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB300		•	•	•	•	•	•	•	•
KRS (obligatory accessories)									
⁽¹⁾ KRS	All	KRS10	KRS10	KRS11	KRS11	KRS11	KRS11	KRS11	KRS13
^{(1) (4)} KRSEDES		KRS18DES	KRS18DES	KRS19DES	KRS19DES	KRS19DES	KRS19DES	KRS19DES	KRS19DES
KDI									
⁽⁵⁾ KDI	All	KDI06	KDI06	KDI08	KDI08	KDI08	KDI08	KDI08	KDI01+KDI02
RIFNS									
⁽²⁾⁽¹⁾ RIFNS	All	RIFNS1802	RIFNS2002	RIFNS2202	RIFNS2352	RIFNS2502	RIFNS2652	RIFNS2802	RIFNS3002F
KIT AVX									
AVX	All	505	511	511	511	511	511	511	509

NS-FREECOOLING GLYCOL FREE MODELS FROM SIZE 3202 TO 5002

MODEL	VERS.	3202	3402	3602	3902	4202	4502	4802	5002
AER485P1	All	•	•	•	•	•	•	• (x2)	• (x2)
MULTICHILLER		•	•	•	•	•	•	•	•
⁽¹⁾⁽³⁾ AK-ACOUSTIC KIT		•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB300		•	•	•	•	•	•	•	•
KRS (obligatory accessories)									
⁽¹⁾ KRS	All	KRS14	KRS13	KRS12	KRS13	KRS13	KRS14	KRS14	KRS14
^{(1) (4)} KRSEDES		KRS14DES	KRS13DES	KRS12DES	KRS13DES	KRS13DES	KRS14DES	KRS14DES	KRS14DES
KDI									
⁽⁵⁾ KDI	All	KDI02 x2	KDI02+KDI03	KDI03 x2	KDI03+KDI04	KDI03+KDI04	KDI04 x2	KDI04 x2	KDI04+KDI05
RIFNS-FREECOOLING									
⁽²⁾⁽¹⁾ RIFNS - RIFNSF	All	RIFNS3202F	RIFNS3402F	RIFNS3602	RIFNS3902	RIFNS4202	RIFNS4502	RIFNS4802	RIFNS5002
KIT AVX									
AVX		507	513	516	518	518	521	521	560

NS-FREECOOLING GLYCOL FREE MODELS FROM SIZE 5202 TO 7203

MODELLO	VERS.	5202	5402	5702	6003	6303	6603	6903	7203
AER485P1	All	• (x2)	• (x2)	• (x2)	• (x3)	• (x3)	• (x3)	• (x3)	• (x3)
MULTICHILLER		•	•	•	•	•	•	•	•
⁽¹⁾⁽³⁾ AK-ACUSTIC KIT		•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB300		•	•	•	•	•	•	•	•
KRS (obligatory accessories)									
⁽¹⁾ KRS	All	KRS14	KRS14	KRS14	KRS15	KRS16	KRS16	KRS17	KRS17
^{(1) (4)} KRSEDES		KRS14DES	KRS14DES	KRS14DES	KRS15DES	KRS16DES	KRS16DES	KRS17DES	KRS17DES
KDI									
⁽⁵⁾ KDI	All	KDI05 x2	KDI05 x2	KDI05 x2	KDI03x2+KDI04	KDI03+KDI04x2	KDI03+KDI04 x2	KDI04 x3	KDI04 x3
RIFNS - RIFNSF									
⁽²⁾⁽¹⁾ RIFNS - RIFNSF	All	RIFNS5202	RIFNS5402	RIFNS5702	RIFNS6003	RIFNS6303	RIFNS6603	RIFNS6903	RIFNS7203
KIT AVX									
AVX		560	560	560	525	527	527	530	530

⁽¹⁾ Accessories can only be applied in the factory

⁽²⁾ Accessory only available with power supply 400V-3-50Hz

⁽³⁾ Accessory only available in the silenced versions

⁽⁴⁾ The KRSEDES accessory includes the electrical evaporator resistor plus

the electrical desuperheater resistor

⁽⁵⁾ The KDI accessory must always be combined with the KRS and KRSEDES heating elements.

GP																
⁽¹⁾ Mod. NS A/E	1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202	2352	2502	2652	2802	3002
GP 300M	•	•	•													
GP 400M				•												
GP 500M					•	•										
GP 300B							•	•								
GP 400B									•							
GP 500B										•	•	•	•	•	•	•
GP 300M+300M																•

⁽¹⁾ Mod. NS A/E	3202	3402	3602	3902	4202	4502	4802	5002	5202	5402	5702	6003	6303	6603	6903	7203
GP 300M+300M	•															
GP 300M+400M		•														
GP 400M+400M			•													
GP 400M+500M				•	•											
GP 500M+500M						•	•	•	•	•	•					
GP 400M+400M+500M												•				
GP 400M+500M+500M													•	•		
GP 500M+500M+500M															•	•

⁽¹⁾ Accessories can only be applied in the factory

⁽²⁾ Accessory only available with power supply 400V-3-50Hz

⁽³⁾ Accessory only available in the silenced versions

⁽⁴⁾ The KRSDES accessory includes the electrical evaporator resistor plus

the electrical desuperheater resistor

⁽⁵⁾ The KDI accessory must always be combined with the KRS and KRSDES heating elements.

12. TECHNICAL DATA

12.1. NS FREE COOLING GLYCOL FREE - MODELS DAL 1251 AL 1602

Mod. NS "B"	U.M.	Vers.	1251	1401	1601	1801	2101	2401	1402	1602
FUNZIONAMENTO - CHILLER										
Cooling capacity (kW)	kW	BA	272	304	338	408	465	518	285	324
		BE	243	282	322	372	415	471	257	295
Total input power (kW)	kW	BA	91	104	115	144	157	177	103	119
		BE	93	105	117	148	161	183	105	121
Rate of water evaporation	l/h	BA	46780	52290	58140	70180	79980	89100	49020	55730
		BE	41800	48500	55380	63980	71380	81010	44200	50740
OPERATION - FREECOOLING GLYCOL FREE										
Cooling capacity	kW	BA / BE	213	222	229	307	370	383	217	226
Total input power	kW	BA / BE	14.0	14.0	14.0	19.8	25.3	25.5	14.0	14.0
Total pressure drops	kPa	BA	81.8	78.7	71.0	93.7	89.9	104.1	66.7	79.4
		BE	65.3	67.7	64.4	77.9	71.6	86.0	54.2	65.8
Total pressure drops with 1 pump	kPa	BA	95	95	92	124	128	153	-	-
		BE	75.9	81.7	83.5	103.1	102.0	126.5	-	-
Total pressure drops with 2 pumps	kPa	BA	-	-	-	146	155	189	-	-
		BE	-	-	-	121.3	123.5	156.2	-	-
ENERGY INDEX										
E.E.R.(Chiller)	W/W	BA	2.99	2.92	2.94	2.83	2.96	2.93	2.77	2.72
		BE	2.61	2.69	2.75	2.51	2.58	2.57	2.45	2.44
E.E.R.(Freecooling Glycol free)	W/W	BA/BE	15.2	15.9	16.4	15.5	14.6	15.0	15.5	16.1
ELECTRICAL DATA										
Power supply		400V-3N-50Hz								
Total input current (Chiller mode)	A	BA	160	180	196	238	267	299	179	205
		BE	164	182	199	245	274	309	182	208
Total input current (Freecooling mode)	A	BA / BE	28	28	28	40	51	51	28	28
Maximum current (FLA)	A	BA / BE	242	242	242	346	365	405	275	315
Initial starting current (RLA)	A	BA / BE	387	431	431	501	631	695	251	289
PROTECTION RATING OF THE UNIT										
IP		All	24	24	24	24	24	24	24	24
REFRIGERANT LOAD (The refrigerant load may be subject to variations)										
R134a Refrigerant	kg	All	70	85	95	125	130	155	55 + 55	55 + 55
Oil	kg	All	19	19	19	35	35	35	15 + 15	15 + 15
TWIN-SCREW COMPRESSORS										
N. compressors/circuits	n°/n°	All	1/1	1/1	1/1	1/1	1/1	1/1	2/1	2/1
Electric resistance (n°/power)	n°/W		1 x 300						2 x 200	
Partload										
Partload of the unit	%		40 - 100 (continuous)							
FANS										
Air flow rate (Chiller)	m³/h	BA	102000	102000	102000	136000	170000	170000	102000	102000
		BE	70000	78000	87000	100000	112000	127000	74000	80000
Air flow rate (Freecooling)	m³/h	BA	102000	102000	102000	136000	170000	170000	102000	102000
Quantity	n°	All	6	6	6	8	10	10	6	6
STANDARD ""										
Number of Revs	rpm'	BA	898							
		BE	870							
Total input power	kW	BA	10.5	10.5	10.5	14.0	17.5	17.5	10.5	10.5
		BE	6.6	6.6	6.6	8.8	11.0	11.0	6.6	6.6
Total input current	A	BA	19.0	19.0	19.0	25.3	31.6	31.6	19.0	19.0
		BE	11.9	11.9	11.9	15.9	19.9	19.9	11.9	11.9

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- Glicole primary circuit 30%

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

NS FREE COOLING - MODELS FROM 1251 TO 1602

NS FREE COOLING GLYCOL FREE - MODELS FROM 1251 UP TO 1602

Mod. NS "B"	U.M.	Vers.	1251	1401	1601	1801	2101	2401	1402	1602
INCREASED "M"										
Number of Revs	rpm		900							
Total input power	kW	BA	13.8	13.8	13.8	18.4	23.0	23.0	13.8	13.8
Total input current	A	BA	24.9	24.9	24.9	33.2	41.5	41.5	24.9	24.9
Static pressure "M" fans	Pa	All	25	25	25	25	25	25	25	25
INVERTER "J"										
Number of Revs	rpm	BA	1020							
Total input power	kW	BA	14.4	14.4	14.4	19.2	24.0	24.0	14.4	14.4
Total input current	A	BA	21.9	21.9	21.9	29.2	36.5	36.5	21.9	21.9
Static pressure "J" fans	Pa	All	65	65	65	65	65	65	65	65
WATER CONTENT										
Water content glycolated circuit	l	All	225	225	225	274	323	323	225	225
Water content system side	l	All	136	129	161	178	238	238	161	161
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Hydraulic connections without pump	Ø	IN	4"	4"	4"	4"	5"	5"	4"	4"
		OUT	4"	4"	4"	4"	5"	5"	4"	4"
Hydraulic connections with pump	Ø	IN	4"	4"	4"	4"	5"	5"	-	-
		OUT	4"	4"	4"	4"	5"	5"	-	-
Quantity	n°		1							
DESUPERHEATER (PLATE EXCHANGER)										
Water content (C1+C2)	l	Tutte	-	-	-	8	10	13	-	-
Recovered power	A	kW	-	-	-	105	116.5	133.5	-	-
	E		-	-	-	98	108	124	-	-
Quantity	All	n°	-	-	-	1		-	-	-
Water flow rate	A	l/h	-	-	-	93396	103544	117648	-	-
Heat exchanger pressure drops	All	kPa	-	-	-	4		-	-	-
Hydraulic connections (VICTAULIC)		Ø	-	-	-	2"		-	-	-
Desuperheater weight	All	kg	-	-	-	40	50	60	-	-
1 electric resistance per type of heat exchanger (obligatory accessory)										
Electric resistance - KRS	W	All	170 (shell and tube)							
Electric resistance - KRSDES	W	All	170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	l	All	25							
Quantity	n°		2							
SOUND DATA										
Sound power (Chiller mode)	dB(A)	BA	94	95	97	97	98	98	96	97
	dB(A)	BE	86	87	89	89	90	90	88	89
Sound pressure (Chiller mode)	dB(A)	BA	62	63	65	65	66	66	64	65
	db(A)	BE	54	55	57	57	58	58	56	57
Sound power (Freecooling mode)	db(A)	BA	94	95	97	97	98	98	96	97
Sound pressure (Freecooling mode)	dB(A)	BA	62	63	65	65	66	66	64	65
Sound power (with AK accessory)	dB(A)	BA	84	83	84	85	86	86	83	84
Sound pressure (with AK accessory)	dB(A)	BA/BE	52	51	52	53	54	54	51	52
DIMENSIONS										
Height	mm	All	2450	2450	2450	2450	2450	2450	2450	2450
Width	mm	Tutte	2200	2200	2200	2200	2200	2200	2200	2200
Depth	mm	Tutte	3780	3780	3780	4770	5750	5750	3780	3780
Empty weight	kg	BA/BE	3760	3770	3840	5000	5950	5980	4010	4030
Functioning weight (version 00)	kg	BA/BE	4121	4124	4226	5452	6511	6541	4396	4416

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING GLYCOL FREE

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- Glicole primary circuit 30%

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

12.2. NS FREE COOLING GLYCOL FREE - MODELS FROM 1802 UP TO 3002

Mod. NS "B"	U.M.	Vers.	1802	2002	2202	2352	2502	2652	2802	3002
OPERATION - CHILLER										
Cooling capacity	kW	BA	377	429	480	501	522	553	584	642
		BE	340	389	439	457	475	514	554	604
Total input power	kW	BA	133	153	168	177	186	200	215	219
		BE	136	156	167	179	191	203	214	222
Water flow rate	l/h	BA	64840	73790	82560	86170	89780	95120	100450	110430
		BE	58480	66910	75510	78600	81700	88410	95290	103890
OPERATION - FREECOOLING GLYCOL FREE										
Cooling capacity	kW	BA/BE	299	344	374	379	385	391	397	451
Total input power	kW	BA/BE	19.8	25.3	25.3	25.4	25.5	27.1	27.2	28.0
Pressure drops	kPa	BA	80.8	86.0	91.8	97.1	103.4	110.1	121.2	74.5
		BE	65.8	70.7	76.8	80.8	85.6	95.1	109.1	65.9
Total pressure drops with 1 pump	kPa	BA	107	119	133	144	155	170	189	94
		BE	87.0	97.8	111.3	119.8	128.4	146.9	170.1	83.2
Total pressure drops with 2 pumps	kPa	BA	127	144	164	178	192	213	239	108
		BE	103.3	118.4	137.2	148.1	159.0	184.0	215.1	95.6
ENERGY INDEX										
E.E.R. (Chiller)	W/W	BA	2.83	2.80	2.86	2.83	2.81	2.77	2.72	2.93
		BE	2.50	2.49	2.63	2.55	2.49	2.53	2.59	2.72
E.E.R. (Glycol free)	W/W	BA/BE	15.1	13.6	14.8	14.9	15.1	14.4	14.6	16.1
ELECTRICAL DATA										
Power supply		400V-3-50Hz								
Total input current (Chiller mode)	A	BA	225	261	288	305	322	344	366	376
		BE	230	266	286	308	331	349	364	381
Total input current (Freecooling mode)	A	BA/BE	40	51	51	51	51	54	54	48
Maximum current (FLA)	A	BA / BE	360	389	409	442	475	475	475	484
Initial starting current (RLA)	A	BA / BE	340	420	437	497	524	568	570	579
PROTECTION RATING OF THE UNIT										
IP		All	24	24	24	24	24	24	24	24
REFRIGERANT LOAD (The refrigerant load may be subject to variations)										
R134a Refrigerant (C1 + C2)	kg	All	60 + 60	60 + 70	85 + 85	85 + 85	85 + 85	90 + 90	90 + 90	-
Oli	kg	All	15 + 15	15 + 22	22 + 22	22 + 19	19 + 19	19 + 19	19 + 19	19 + 19
TWIN-SCREW COMPRESSORS										
N. compressors/circuits	n°/n°	All	2/2							
Electric resistance (n°/power)	n°/n°	All	2 x 200							
PARTLOAD										
Partialisation of the unit	%	All	40 - 100 (continuous)							
FAN										
Air flow rate	m³/h	BA	136000	170000	170000	170000	170000	170000	170000	204000
		BE	96000	124500	120000	123000	130000	130000	140000	165000
Air flow rate	m³/h	BA	136000	170000	170000	170000	170000	170000	170000	204000
Quantity	n°	Tutte	8	10	10	10	10	10	10	12
STANDARD ***										
Number of Revs	rpm	BA	898 rpm							
		BE	870 rpm							
Total input power	kW	BA	14.0	17.5	17.5	17.5	17.5	17.5	17.5	21.0
		BE	8.8	11.0	11.0	11.0	11.0	11.0	11.0	13.2
Total input current	A	BA	25.3	31.6	31.6	31.6	31.6	31.6	31.6	37.9
		BE	15.9	19.9	19.9	19.9	19.9	19.9	19.9	23.8

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING GLYCOL FREE

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- Glicole primary circuit 30%

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

NS FREE COOLING GLYCOL FREE - MODEL FROM 1802 UP TO 3002

Mod. NS FC GLYCOL FREE	U.M.	Vers.	1802	2002	2202	2352	2502	2652	2802	3002
INCREASED "M"										
Number of Revs	rpm	BA	900							
Total input power	kW	BA	18.4	23.0	23.0	23.0	23.0	23.0	23.0	27.6
Total input current	A	BA	33.2	41.5	41.5	41.5	41.5	41.5	41.5	49.9
Static pressure "M" fans	Pa	BA	25	25	25	25	25	25	25	25
INVERTER "J"										
Number of Revs	rpm	BA	1020							
Total input power	kW	BA	19.2	24.0	24.0	24.0	24.0	24.0	24.0	28.8
Total input current	A	BA	29.2	36.5	36.5	36.5	36.5	36.5	36.5	43.8
Static pressure "J" fans	Pa	BA	25	25	25	25	25	25	25	25
WATER CONTENT										
Water content glycoled circuit	l	All	274	323	323	323	323	323	323	450
Water content system side	l	All	172	181	176	176	176	171	171	290
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Hydraulic connections without pump	Ø	IN	4"	4"	4"	4"	4"	4"	4"	4"
		OUT	4"	4"	4"	4"	4"	4"	4"	4"
Hydraulic connections with pump	Ø	IN	4"	4"	4"	4"	4"	4"	4"	4"
		OUT	4"	4"	4"	4"	4"	4"	4"	4"
Quantity	n°	All	1							2
DESUPERHEATER (PLATE EXCHANGER)										
Water content (C1 + C2)	l	All	3 + 3	-	-	-	-	-	-	-
Recovered power	A	kW	98	-	-	-	-	-	-	-
	E		91	-	-	-	-	-	-	-
Quantity	tutte	n°	2	-	-	-	-	-	-	-
Water flow rate	A	l/h	88064	-	-	-	-	-	-	-
Heat exchanger pressure drops	tutte	kPa	4	-	-	-	-	-	-	-
Hydraulic connections (VICTAULIC)		Ø	2"	-	-	-	-	-	-	-
Desuperheater weight	Tutte	kg	40	-	-	-	-	-	-	-
1 electric resistance per type of heat exchanger (obligatory accessory)										
Electric resistance - KRS	All		170 (shell and tube)							
Electric resistance - KRSDES	All		170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	All	dm3	25							
Quantity	All	n°	2							
SOUND DATA										
Sound power (Chiller mode)	dB(A)	BA	97	98	98	97	98	98	98	99
	dB(A)	BE	89	90	90	90	90	90	91	90
Sound pressure (Chiller mode)	dB(A)	BA	65	66	66	66	66	67	67	67
	db(A)	BE	57	58	58	58	58	59	59	59
Sound power (Freecooling mode)	db(A)	BA	97	98	98	97	98	98	98	99
Sound pressure (Freecooling mode)	dB(A)	BA	65	66	66	66	66	67	67	67
Sound power (with AK accessory)	dB(A)	BA	84	85	85	85	85	85	86	86
Sound pressure (with AK accessory)	dB(A)	BA	52	53	53	53	53	53	54	53
DIMENSIONS										
Height	mm	All	2450	2450	2450	2450	2450	2450	2450	2450
Width	mm	All	2200	2200	2200	2200	2200	2200	2200	2200
Depth	mm	All	4770	5750	5750	5750	5750	5750	5750	7160
Empty weight	kg	BA/BE	4730	5470	5790	6340	6330	6340	6350	7210
Functioning weight (version 00)	kg	BA/BE	5176	5974	6289	6839	6829	6834	6844	7950

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING GLYCOL FREE

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- Glicole primary circuit 30%

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

12.3. NS FREE COOLING GLYCOL FREE - MODELLI DAL 3202 AL 5002

Mod. NS "B"	U.M.	Vers.	3202	3402	3602	3902	4202	4502	4802	5002
OPERATION - CHILLER										
Cooling capacity	kW	BA	675	746	817	873	926	983	1036	1084
		BE	645	694	744	787	843	887	943	1017
Total input power	kW	BA	230	259	288	300	321	334	354	374
		BE	233	265	298	311	333	346	369	381
Water flow rate	l/h	BA	116100	128310	140530	150160	159270	169080	178190	186450
		BE	110940	119370	127970	135370	145000	152570	162200	174930
OPERATION - FREECOOLING GLYCOL FREE										
Cooling capacity	kW	BA/ BE	458	536	614	677	690	753	766	756
Total input power	kW	BA/ BE	28.0	33.8	39.6	45.1	45.3	50.8	51.0	51.0
Pressure drops	kPa	BA	71.0	82.2	93.7	91.7	99.3	97.1	104.1	99.2
		BE	64.8	71.1	77.7	74.5	82.3	79.1	86.2	87.3
Total pressure drops with 1 pump	kPa	BA	92	107	124	126	139	140	153	157
		BE	84.0	92.6	102.8	102.4	115.2	114.0	126.8	138.2
Total pressure drops with 2 pumps	kPa	BA	-	-	146	150	168	172	189	199
		BE	-	-	121.1	121.9	139.2	140.0	156.6	175.2
ENERGY INDEX										
E.E.R. (Chiller)		BA	2.93	2.88	2.84	2.91	2.88	2.94	2.93	2.90
		BE	2.77	2.62	2.50	2.53	2.53	2.56	2.56	2.67
E.E.R. (Glycol free)		BA/BE	16.4	15.9	15.5	15.0	15.2	14.8	15.0	14.8
ELECTRICAL DATA										
Power supply			400V-3-50Hz							
Total input current (Chiller mode)	A	BA	391	434	476	505	537	566	598	629
		BE	396	444	493	524	557	586	623	641
Total input current (Freecooling Glycol free mode)	A	BA/BE	56	68	79	90	91	102	102	102
Maximum current (FLA)	A	BA/BE	484	588	692	711	751	770	810	900
Initial starting current (RLA)	A	BA/BE	579	649	677	810	857	934	934	1085
PROTECTION RATING OF THE UNIT										
IP		All	24	24	24	24	24	24	24	24
REFRIGERANT LOAD (The refrigerant load may be subject to variations)										
R134a Refrigerant (C1 + C2)	kg	BA/BE	-	-	-	-	-	-	-	-
Oil	kg	BA/BE	19 + 19	19 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35
TWIN-SCREW COMPRESSORS										
N. compressors/circuits	n°/n°	All	2							
Electric resistance (n°/power)	n°/n°	All	2 x 300							
PARTLOAD										
Partialisation of the unit	%	All	40 - 100 (continua)							25-100(VT)
FAN										
Air flow rate	m³/h	BA	204000	238000	272000	306000	306000	340000	340000	340000
		BE	174000	187000	200000	212000	227000	239000	254000	254000
Air flow rate	m³/h	BA	204000	238000	272000	306000	306000	340000	340000	340000
Quantity	n°	All	12	14	16	18	18	20	20	20
STANDARD ""										
Number of Revs	rpm	BA	898							
		BE	870							
Total input power	kW	BA	21.0	24.5	28.0	31.5	31.5	35.0	35.0	35.0
		BE	13.2	15.4	17.6	19.8	19.8	22.0	22.0	22.0
Total input current	A	BA	37.9	44.3	50.6	56.9	56.9	63.2	63.2	63.2
		BE	23.8	27.8	31.8	35.8	35.8	39.7	39.7	39.7

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING GLYCOL FREE

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- Glicole primary circuit 30%

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

NS FREE COOLING GLYCOL FREE - MODELLI DAL 3202 AL 5002

Mod. NS "B"	U.M.	Vers.	3202	3402	3602	3902	4202	4502	4802	5002
INCREASED "M"										
Number of Revs	rpm	BA	900							
Total input power	kW	BA	27.6	32.2	36.8	41.4	41.4	46.0	46.0	46.0
Total input current	A	BA	49.9	58.2	66.5	74.8	74.8	83.1	83.1	83.1
Static pressure"M" fans	Pa	BA	25	25	25	25	25	25	25	25
INVERTER "J"										
Number of Revs	rpm	BA	1020							
Total input power	kW	BA	28.8	33.6	38.4	43.2	43.2	48.0	48.0	48.0
Total input current	A	BA	43.8	51.1	58.4	65.7	65.7	73.0	73.0	73.0
Static pressure"J" fans	Pa	BA	65	65	65	65	65	65	65	65
WATER CONTENT										
Water content glycolated circuit	l	All	450	499	547	596	596	645	645	645
Water content system side	l	All	322	339	355	415	415	475	475	499
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Hydraulic connections without pump	Ø	IN	4"	4"	4"	5"+4"	5"+4"	5"+5"	5"+5"	6"+5"
		OUT	4"	4"	4"	5"+4"	5"+4"	5"+5"	5"+5"	6"+5"
Hydraulic connections with pump		IN	4"	4"	4"	5"+4"	5"+4"	5"+5"	5"+5"	6"+5"
		OUT	4"	4"	4"	5"+4"	5"+4"	5"+5"	5"+5"	6"+5"
Quantity	n°	All	1	1	1	1	1	1	1	2
DESUPERHEATER (PLATE EXCHANGER)										
Water content (C1 + C2)	l	-	-	-	-	-	-	-	-	-
Recovered power	A	kW	-	-	223.2	221.2	238.2	249.8	266.5	281.2
	E		-	-	195.5	205.5	222	232	248.5	263
Quantity	All	n°	-	-	2	2	2	2	2	2
Water flow rate	A	l/h	-	-	38390	38046	40970	42966	45838	48366
	E		-	-	33626	35346	38184	39904	42742	45236
Heat exchanger pressure drops	All	kPa	-	-	4	4	4	4	4	5
Hydraulic connections (VICTAULIC)		Ø	-	-	2"					
Desuperheater weight	All	kg	-	-	80	100	90	110	120	120
1 electric resistance per type of heat exchanger (obligatory accessory)										
Electric resistance - KRS	W	All	170 (shell and tube)							
Electric resistance - KRSEDES	W	All	170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	All	dm3	25							
Quantity	All	n°	2							
SOUND DATA										
Sound power (Chiller mode)	dB(A)	BA	99	99	99	100	100	100	100	101
	dB(A)	BE	91	91	92	92	92	92	92	93
Sound pressure (Chiller mode)	dB(A)	BA	68	68	68	69	69	69	69	70
	db(A)	BE	60	60	60	61	61	61	61	62
Sound power (Freecooling mode)	db(A)	BA	99	99	99	100	100	100	100	101
Sound pressure (Freecooling mode)	dB(A)	BA	68	68	68	69	69	69	69	70
Sound power (with AK accessory)	dB(A)	BA	86	87	87	87	88	88	88	89
Sound pressure (with AK accessory)	dB(A)	BA	53	54	54	54	55	55	55	56
DIMENSIONS										
Height	mm	All	2450	2450	2450	2450	2450	2450	2450	2450
Width	mm	All	2200	2200	2200	2200	2200	2200	2200	2200
Depth	mm	All	7160	8150	9140	10120	10120	11100	11100	11100
Empty weight	kg	BA/BE	7566	8695	9494	10936	11216	11502	11718	12698
Functioning weight (version 00)	kg	BA/BE	8338	9533	10396	11947	12227	12622	12838	13842

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING GLYCOL FREE

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- Glicole primary circuit 30%

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

12.4. NS FREE COOLING GLYCOL FREE - MODELLI DAL 5202 AL 7203

Mod. NS "B"	U.M.	Vers.	5202	5402	5702	6003	6303	6603	6903	7203
OPERATION - CHILLER										
Cooling capacity	kW	BA	1154	1225	1282	1335	1391	1444	1501	1554
		BE	1066	1116	1159	1216	1259	1315	1358	1414
Total input power	kW	BA	403	432	444	465	478	498	511	532
		BE	413	445	457	479	492	514	527	549
Water flow rate	l/h	BA	198490	210700	220510	229620	239250	248370	258170	267290
		BE	183350	191950	199350	209150	216550	226180	233580	243210
OPERATION - FREECOOLING										
Cooling capacity	kW	BA/BE	768	780	788	984	1060	1073	1136	1149
Total input power	kW	BA / BE	51.0	51.0	51.0	65.1	70.6	70.8	76.3	76.5
Pressure drops	kPa	BA	95.2	100.6	106.2	97.6	96.1	99.4	99.4	104.1
		BE	81.3	83.5	86.8	80.9	78.7	82.5	81.4	86.2
Total pressure drops with 1 pump	kPa	BA	161	169	178	134	135	144	144	153
		BE	137.4	140.3	145.5	111.2	110.6	119.4	117.9	126.7
Total pressure drops with 2 pumps	kPa	BA	208	219	230	161	163	175	177	189
		BE	177.5	181.8	188.0	133.6	133.5	145.1	144.9	156.5
ENERGY INDEX										
E.E.R. (Chiller)	W/W	BA	2.86	2.84	2.89	2.87	2.91	2.90	2.94	2.92
		BE	2.58	2.51	2.54	2.54	2.56	2.56	2.58	2.58
E.E.R. (Freecooling glycol free)	W/W	BA/BE	15.1	15.3	15.5	15.1	15.0	15.2	14.9	15.0
ELECTRICAL DATA										
Power supply		400V-3N-50Hz								
Total input current (Chiller mode)	A	BA	672	714	743	775	804	836	865	897
		BE	689	735	765	798	828	863	892	926
Total input current (Freecooling mode)	A	BA / BE	102	102	102	130	141	142	153	153
Maximum current (FLA)	A	BA / BE	958	995	1032	1097	1116	1156	1175	1215
Initial starting current (RLA)	A	BA / BE	1143	1255	1247	1060	1121	1113	1173	1173
PROTECTION RATING OF THE UNIT										
IP		All	24	24	24	24	24	24	24	24
REFRIGERANT LOAD (The refrigerant load may be subject to variations)										
R134a Refrigerant (C1 + C2)	kg	BA / BE	-	-	-	-	-	-	-	-
Oli	kg	BA / BE	35 + 35	35 + 35	35 + 35	35 + 35 + 35	35 + 35 + 35	35 + 35 + 35	35 + 35 + 35	35 + 35 + 35
TWIN-SCREW COMPRESSORS										
N. compressors/circuits	n°/n°	All	2/2	2/2	2/2	3/3	3/3	3/3	3/3	3/3
Electric resistance (n°/power)	n°/n°	All	2x300	2x300	2x300	3x300	3x300	3x300	3x300	3x300
PARTLOAD										
Partialisation of the unit	%	25-100				40 - 100 (continuous)				
FAN										
Quantity	n°	All	20	20	20	26	28	28	30	30
Air flow rate (Chiller)	m³/h	BA	340000	340000	340000	442000	476000	476000	510000	510000
		BE	254000	254000	254000	327000	339000	354000	366000	381000
Air flow rate (Freecooling)	m³/h	BA	340000	340000	340000	442000	476000	476000	510000	510000
STANDARD ***										
Number of Revs	rpm	BA	898							
		BE	870							
Total input power	kW	BA	35.0	35.0	35.0	45.5	49.0	49.0	52.5	52.5
		BE	22.0	22.0	22.0	28.6	30.8	30.8	33.0	33.0
Total input current	A	BA	63.2	63.2	63.2	82.2	88.5	88.5	94.8	94.8
		BE	39.7	39.7	39.7	51.7	55.6	55.6	59.6	59.6

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING GLYCOL FREE

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- *Glicole primary circuit* 30%

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

NS FREE COOLING GLYCOL FREE - MODELLI DAL 5202 AL 7203

Mod. NS "B"	U.M.	Vers.	5202	5402	5702	6003	6303	6603	6903	7203
INCREASED "M"										
Number of Revs	rpm	BA	900							
Total input power	kW	BA	46.0	46.0	46.0	59.8	64.4	64.4	69.0	69.0
Total input current	A	BA	83.1	83.1	83.1	108.0	116.3	116.3	124.6	124.6
Static pressure "M" fans	Pa	BA	25	25	25	25	25	25	25	25
INVERTER "J"										
Number of Revs	rpm	A	1020							
Total input power	kW	BA	48.0	48.0	48.0	62.4	67.2	67.2	72.0	72.0
Total input current	A	BA	73.0	73.0	73.0	94.9	102.2	102.2	109.5	109.5
Static pressure "J" fans	Pa	BA	65	65	65	65	65	65	65	65
WATER CONTENT										
Water content glycoled circuit	l	All	645	646	647	870	919	919	968	968
Water content system side	l	All	522	522	522	593	653	653	713	713
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Hydraulic connections without pump	Ø	IN	6"+6"	6"+6"	6"+6"	5"+4"+4"	5"+5"+4"	5"+5"+4"	5"+5"+5"	5"+5"+5"
		OUT	6"+6"	6"+6"	6"+6"	5"+4"+4"	5"+5"+4"	5"+5"+4"	5"+5"+5"	5"+5"+5"
Hydraulic connections with pump		IN	6"+6"	6"+6"	6"+6"	5"+4"+4"	5"+5"+4"	5"+5"+4"	5"+5"+5"	5"+5"+5"
		OUT	6"+6"	6"+6"	6"+6"	5"+4"+4"	5"+5"+4"	5"+5"+4"	5"+5"+5"	5"+5"+5"
Quantity	n°	All	2	2	2	3	3	3	3	3
DESUPERHEATER (PLATE EXCHANGER)										
Contenuto acqua	l	-	-	-	-	-	-	-	-	-
Potenza recuperata	kW	BA	298	314.7	326.2	343	354.7	371.5	383	400
		BE	278	293	303	319.5	330	346	356	372.5
Quantity	n°	All	2	2	2	3	3	3	3	3
Water flow rate	BA	l/h	51256	54128	56106	58996	61008	63898	65876	68800
	BE		47816	50396	52116	54954	56760	59512	61232	64070
Heat exchanger pressure drops	BA	kPa	7	8	8	4	4	4	4	4
	BE		6	7	7	4	4	4	4	4
Hydraulic connections (VICTAULIC)	Ø	All	2"							
Desuperheater weight	kg	All	120	120	120	80 + 60	90+60	90+60	110+60	120+60
1 electric resistance per type of heat exchanger (obligatory accessory)										
Electric resistance - KRS	W	All	170 (shell and tube)							
Electric resistance - KRSEDES	W	All	170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	All	dm3	25							
Quantity	All	n°	2							
SOUND DATA										
Sound power (Chiller mode)	dB(A)	BA	101	101	101	101	101	101	102	102
	dB(A)	BE	93	93	93	93	93	93	93	94
Sound pressure (Chiller mode)	dB(A)	BA	71	71	71	70	70	71	71	71
	db(A)	BE	63	63	63	62	62	63	63	63
Sound power (Freecooling mode)	dB(A)	BA	101	101	101	101	101	101	102	102
Sound pressure (Freecooling mode)	dB(A)	BA	71	71	71	70	70	71	71	71
Sound power (with AK accessory)	dB(A)	BA	89	88	89	89	89	90	91	92
Sound pressure (with AK accessory)	dB(A)	BE	56	55	56	56	56	57	57	58
DIMENSIONS										
Height	mm	All	2450	2450	2450	2450	2450	2450	2450	2450
Width	mm	All	2200	2200	2200	2200	2200	2200	2200	2200
Depth	mm	All	11100	11100	11100	14490	15470	15470	16450	16450
Empty weight	kg	BA/BE	12998	13098	13198	15673	17115	17395	17639	17855
Functioning weight (version 00)	kg	BA/BE	14165	14266	14367	17136	18687	18967	19320	19536

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

FREECOOLING GLYCOL FREE

- Water inlet temperature 15 °C
- External air temperature 2 °C
- Glycol 0%
- *Glicole primary circuit 30%*

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

13. PUMP FEATURES

PUMPS - Verify that the water flow rates are compatible with the features of the relative pumping unit.											
Type		PA	PB	PC	PD	PE	PF	PG	PH	PJ	PK
Input power	kW	4	4	5,5	5,5	7,5	7,5	9,2	9,2	11	11
Input current	A	8.14	8.14	11	11	14.6	14.6	17.5	17.5	21.2	21.2
Quantity	n	1	2	1	2	1	2	1	2	1	2
Weight	kg	109	193	117	203	121	217	140	255	148	271

14. OPERATING LIMITS

COOLING MODE

For functioning limits, please refer to the diagram, valid for $\Delta t = 5^\circ\text{C}$.

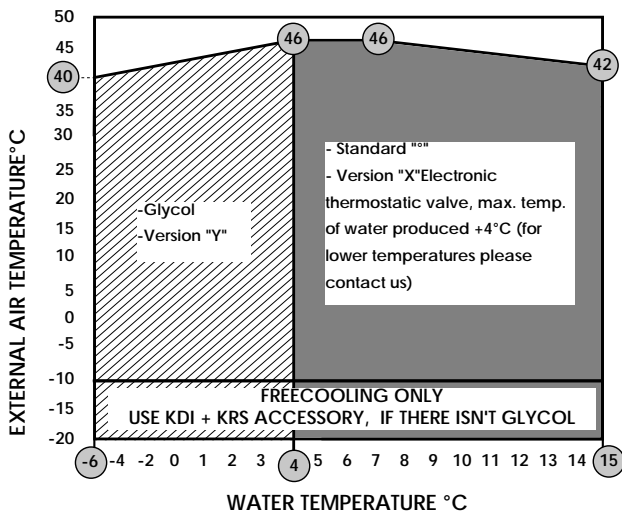
⚠ ATTENTION

The units, in standard configuration, are not suitable for installation in salty environments.

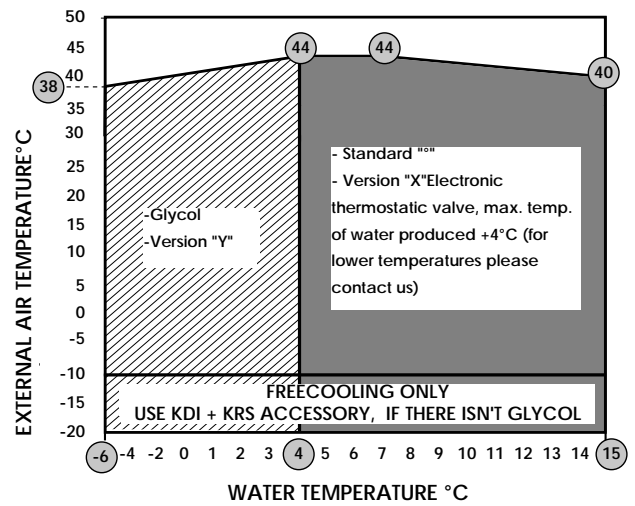
If the unit is to function beyond the operational limits, we recommend you first contact our technical-sales service

When the unit is installed in particularly windy areas, we recommend installing wind barriers if wind speed exceeds 2.5 m/s

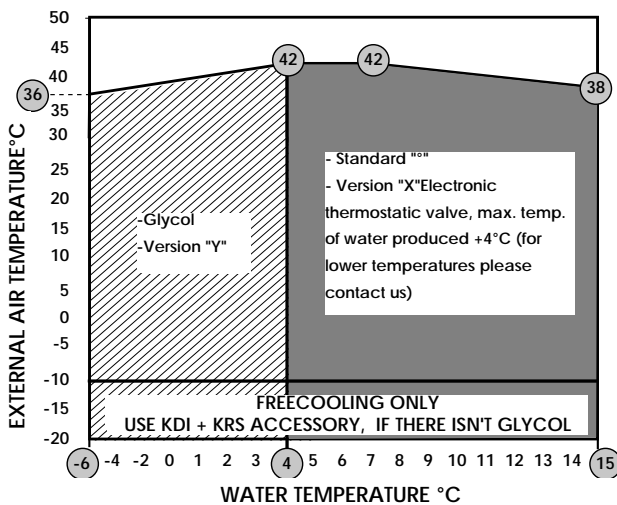
OPERATING LIMITS NS FREECOOLING GLYCOL FREE



OPERATING LIMITS NS FREECOOLING GLYCOL FREE 5002,5202,5402,5702



OPERATING LIMITS NS FREECOOLING GLYCOL FREE 1601-3002-3202-3402



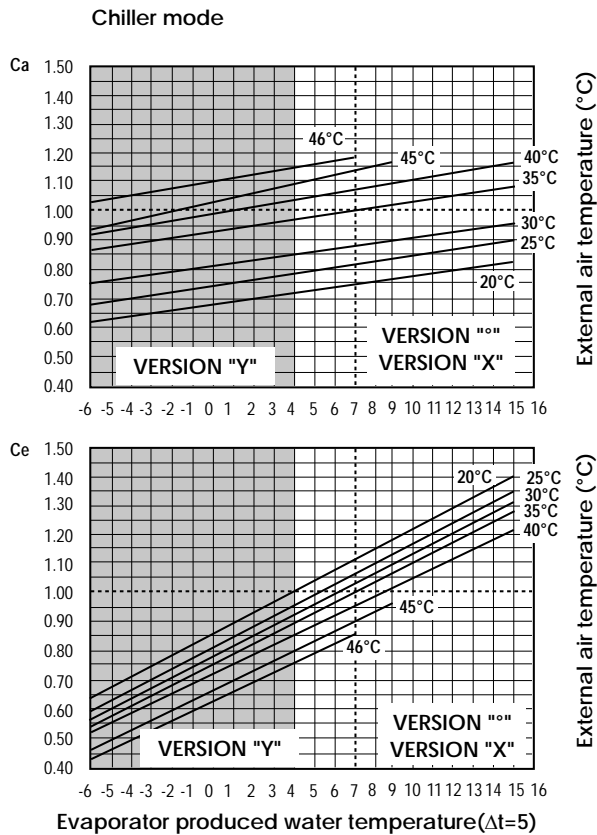
14.1. PROJECT DATA DIR. 97/23/EC

COOLING	U.M.	High Pressure Side	Low Pressure Side
Acceptable maximum pressure	bar	22	16,5
Acceptable maximum temperature	°C	120	55
Acceptable minimum temperature	°C	-10	-10

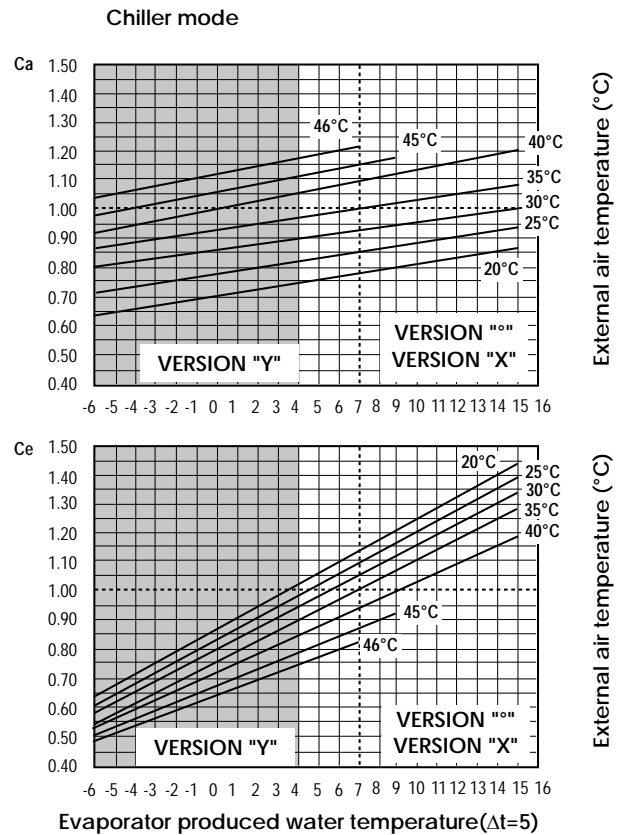
WATER SIDE	U.M.	without pump	with pump
Acceptable maximum pressure	bar	10	6

15. CORRECTIVE COEFFICIENTS

15.1. NS-FREECOOLING HIGH-EFFICIENCY VERSION



15.2. NS-FREECOOLING HIGH-EFFICIENCY SILENCED VERSION



Key

P_c = Cooling capacity

P_e = Input power

C_a = Corrective coefficients of absorbed power (P_e)

C_e = Corrective coefficients of cooling capacity (P_c)

- Y Mechanical thermostatic valve produced water temperature from +4°C to -6°C
- X Electronic thermostatic valve produced water temperature up to +4°C (contact head office for lower temperatures)

The cooling capacity efficiency and electrical input power in conditions differing from normal conditions are obtained by multiplying the nominal values (P_c , P_e) by the respective coefficient correctives (C_f , C_a).

The following diagrams show how to obtain corrective coefficients to use for units in their various versions in cooling mode; external air temperature, to which reference is made, is shown in correspondence to each curve.

Nominal reference conditions:

COOLING

Inlet water temperature	12°C
Outlet water temperature	7°C
External air temperature	35°C
Δt	5°C

15.3. FOR Δt DIFFERENT FROM THE NOMINAL

The performances provided in the technical data refer to Δt 5°C. Use the table below to obtain the corrective factors of a cooling capacity and input power other than Δt 5°C.

Corrective coeff. for Δt different from the nominal value ($\Delta t=5^\circ\text{C}$)

Heat drop value Δt	3	5	8	10
Cooling capacity correction factors	0,99	1	1,02	1,03
Input power correction factors	0,99	1	1,01	1,02

15.4. FOR DEPOSIT FACTORS DIFFERENT FROM THE NOMINAL

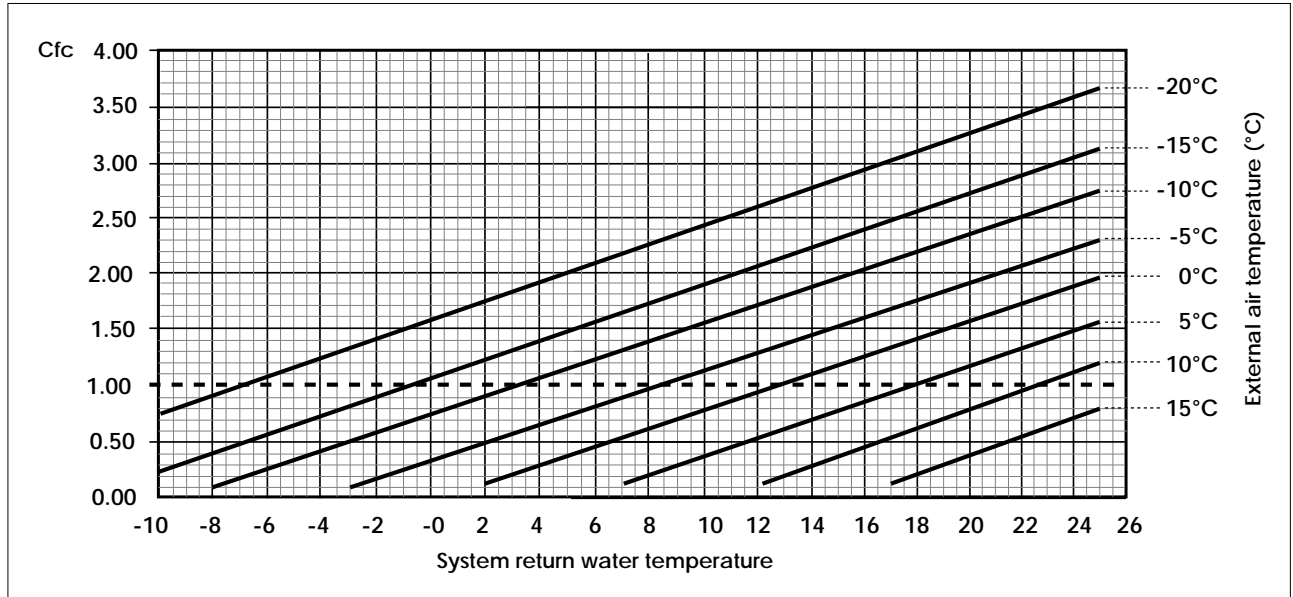
The performances provided in the technical data refer to clean tubes with deposit factor=1. For different deposit factor values, multiply the performance data in the table by the coefficients shown.

Corrective coeff. for deposit factors different from the nominal value (0.00005)

Deposit factor [$\text{K}^2\text{m}^2/[\text{W}]$]	0,00005	0,0001	0,0002
Cooling capacity correction factors	1	0,98	0,94
Input power correction factors	1	0,98	0,95

15.5. NS-FREECOOLING VERSION FREE COOLING ONLY

Free-Cooling mode



Key

Pfc= Cooling capacity

Pe=Input power

Ca = Corrective coefficients of absorbed power (*Pe*)

Cfc = Corrective coefficients of cooling capacity (*Pfc*)

The maximum cooling capacity when working in free-cooling mode only, namely with the compressors off, is achieved by multiplying the nominal free-cooling cooling capacity value (*Pc*) reported in the technical data by the respective corrective coefficient (*Cfc*) which is obtained from the following diagram based on the produced water temperature and the external air temperature.

These values refer to full speed fans (maximum absorbed power); if the power output is in excess speed will be modulated.

Nominal reference conditions:

Free cooling

- Inlet water temperature 15°C
- External air temperature 2°C
- Glycol 0%
- Glycol primary circuit 30%

15.6. FOR ΔT DIFFERENT FROM THE NOMINAL

The performances provided in the technical data refer to Δt 5°C. Use the table below to obtain the corrective factors of a cooling capacity and input power other than Δt 5°C.

Corrective coeff. for Δt different from the nominal value (Δt=5°C)

Heat drop value Δt	3	5	8	10
Cooling capacity correction factors	0,99	1	1,02	1,03
Input power correction factors	0,99	1	1,01	1,02

15.7. FOR DEPOSIT FACTORS DIFFERENT FROM THE NOMINAL

The performances provided in the technical data refer to clean tubes with deposit factor=1.

For different deposit factor values, multiply the performance data in the table by the coefficients shown.

Corrective coeff. for deposit factors different from the nominal value (0.00005)

Deposit factor[K*m²]/[W]	0,00005	0,0001	0,0002
Cooling capacity correction factors	1	0,98	0,94
Input power correction factors	1	0,98	0,95

16. GLYCOL

- The corrective factors of cooling capacity and input power take into account the presence of glycol and the difference in evaporation temperatures.
- The pressure drop correction factor considers the different flow rate resulting from the application of the water flow rate correction factor.
- The water flow rate correction factor is calculated to keep the same Δt that would be present with the absence of glycol.

NOTE

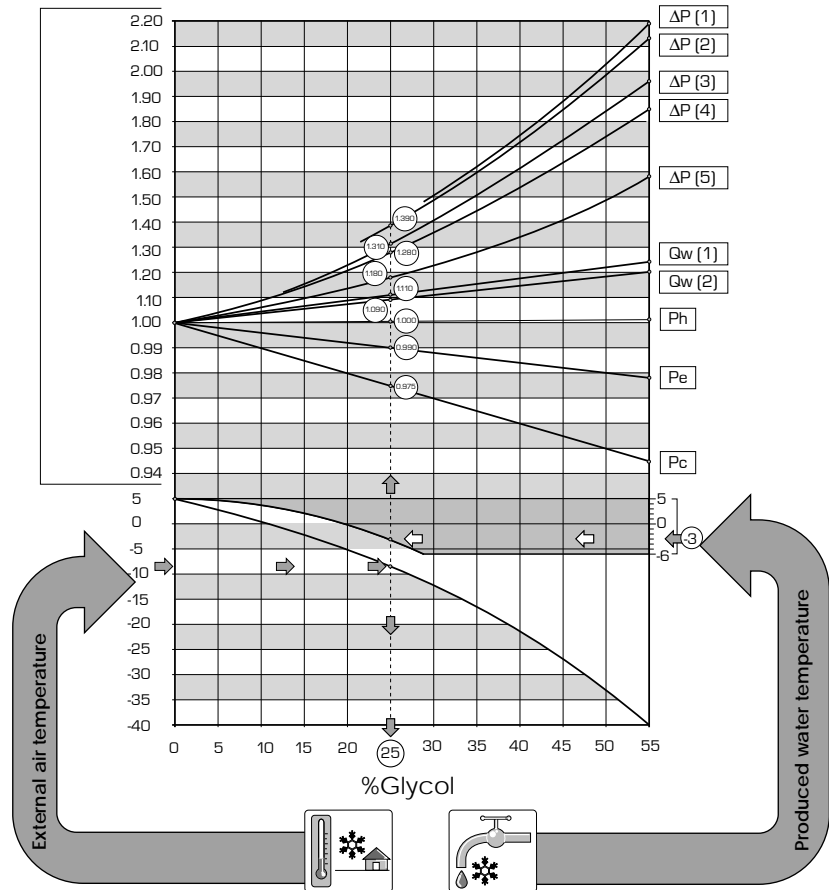
On the following page an example is given to help graph reading. to determine the percentage of glycol required, see diagram below; this percentage calculation can take into consideration one of the following factors:

Depending on which fluid is considered (water or air), the graph is interpreted by the right or left side at the crossing point on the curves with the external temperature line or the water produced line. A point from which the vertical line will pass is obtained and this will distinguish both glycol percentage and relative correction coefficients.

16.1. HOW TO INTERPRET GLYCOL CURVES

The curves shown in the diagram summarise a significant number of data, each of which is represented by a specific curve. In order to use these curves correctly it is first necessary to make some initial reflections.

- If you wish to calculate the percentage of glycol on the basis of the external air temperature, enter from the left axis and on reaching the curve draw a vertical line, which in turn will intercept all the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the glycol percentage value recommended to produce desired water temperature is on the lower axis.
- If you wish to calculate the percentage of glycol on the basis



KEY:

- Pc Corrective factors for cooling capacity
- Pe Corrective factors of the input power
- ΔP (1) Corrective factor for pressure drops with an average fluid temp. = -3.5 °C
- ΔP (2) Corrective factor for pressure drops with an average fluid temp. = 0.5 °C
- ΔP (3) Corrective factor for pressure drops with an average fluid temp. = 5.5 °C
- ΔP (4) Corrective factor for pressure drops with an average fluid temp. = 9.5 °C
- ΔP (5) Corrective factor for pressure drops with an average fluid temp. = 47.5 °C
- Qw (1) Corrective factor for pressure drops (evap) with an average fluid temp. = 9.5 °C
- Qw (2) Corrective factor of flow rates (condenser) with an average fluid temp. = 47.5 °C

NOTE

Although the graph shows a max external air temperature of -40°C, the unit operational limits must be complied with.

of the temperature of the water produced, enter from the right axis and on reaching the curve draw a vertical line, which in turn will intercept all the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the lower axis recommends the glycol percentage value

necessary to produce water at the desired temperature.

- Initial rates for "EXTERNAL AIR TEMPERATURE" and "TEMPERATURE OF PRODUCED WATER", are not directly related, therefore it is not possible to refer to the curve of one of these rates to obtain corresponding point on the curve of the other rate.

17. CIRCUIT PRESSURE DROPS

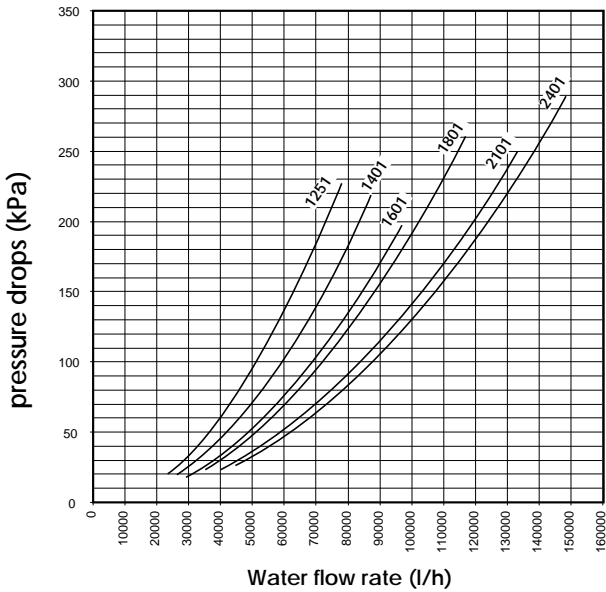
17.1. VERSION WITHOUT PUMPS (00)

The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

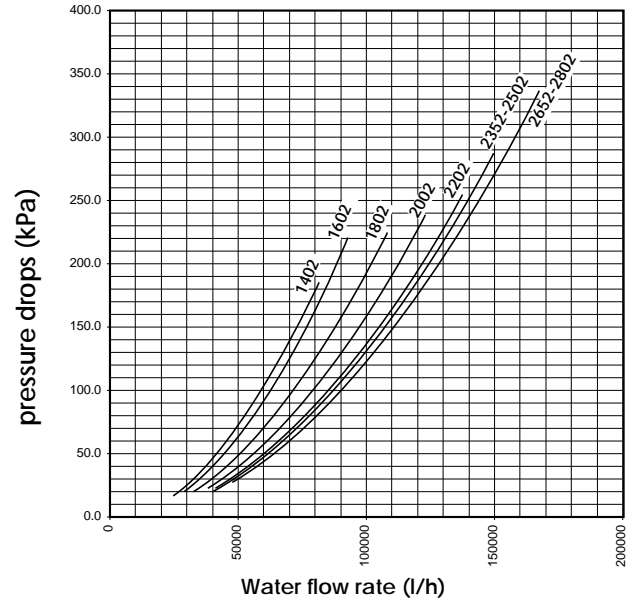
Nominal reference conditions:

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

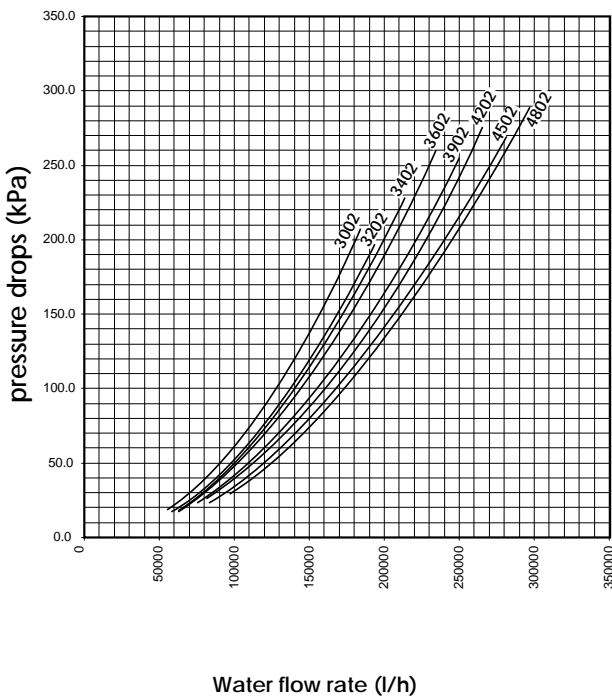
Pressure drops
size 1251-1401-1601-1801-2101-2401



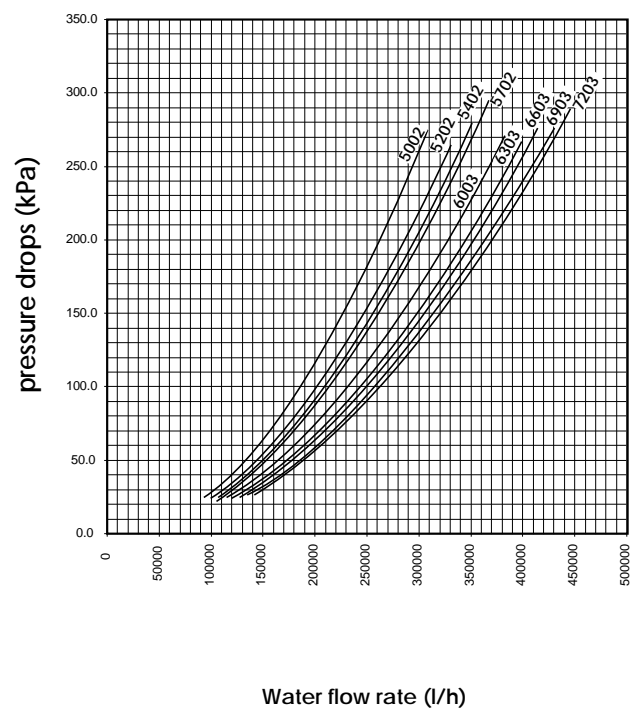
Pressure drops
size 1402-1602-1802-2002-2202-2352-2502-2652-2802



Pressure drops
size 3002-3202-3402-3602-3902-4202-4502-4802



Pressure drops
size 5002-5202-5402-5702-6003-6303-6603-6903-7203



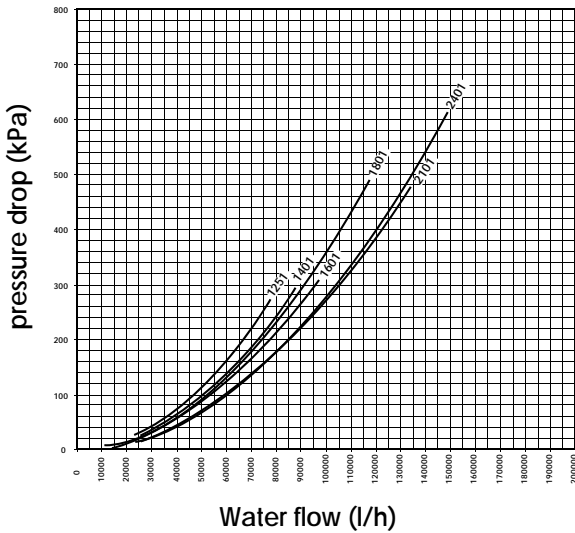
17.2. VERSION WITH SINGLE PUMP (PA - PC - PE - PG - PJ)

The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

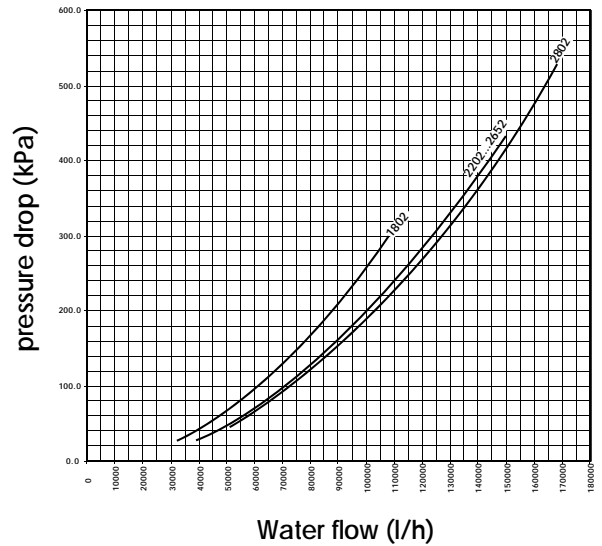
Nominal reference conditions:

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

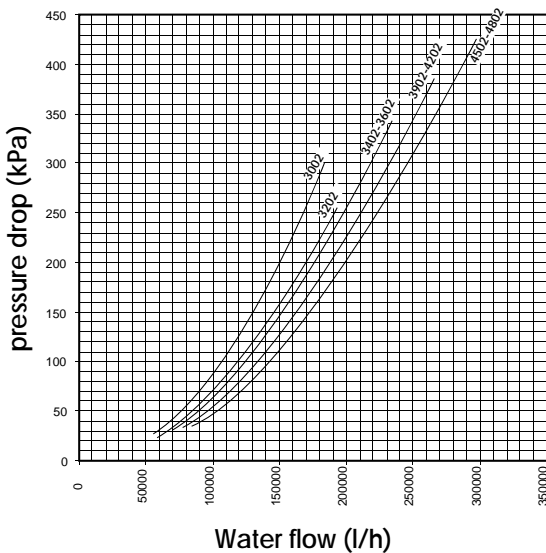
Pressure drops
size 1251-1401-1601-1801-2101-2401



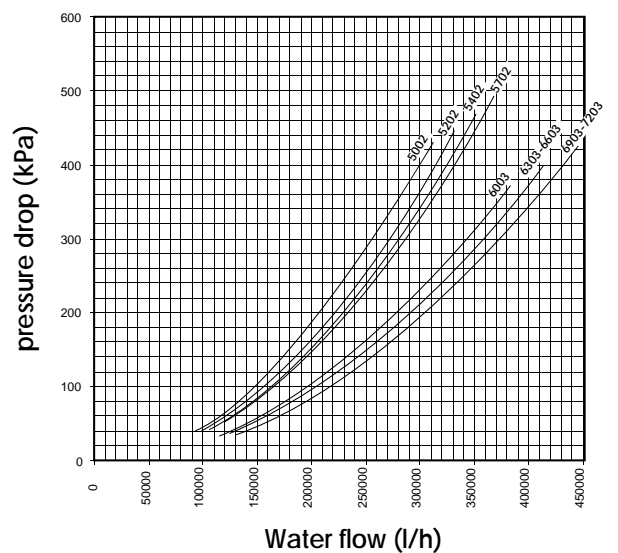
Pressure drops
size 1802-2202-235-2502-2652-2802



Pressure drops
size 3002-3202-3402-3602-3902-4202-4502-4802



Pressure drops
size 5002-5202-5402-5702-6003-6303-6603-6903-7203



Corrective coefficients to apply to pressure drops							
Average water temperature °C	5	10	15	20	30	40	50
Multiplicative coefficient	1.02	1	0.985	0.97	0.95	0.93	0.91

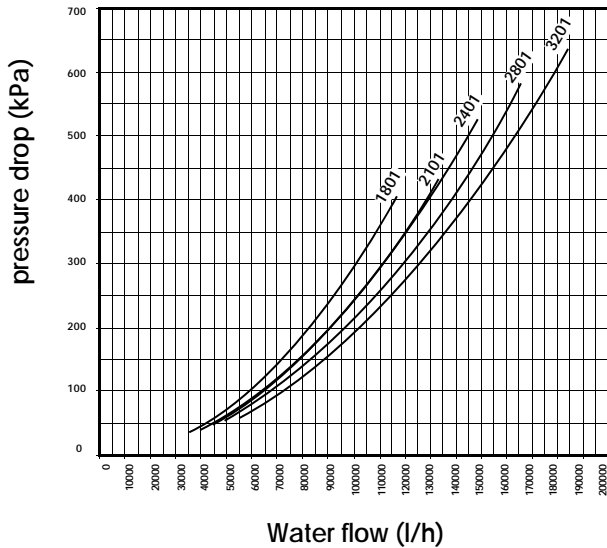
17.3. VERSION WITH SINGLE PUMP AND RESERVE PUMP (PB - PD- PF- PH- PK)

The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

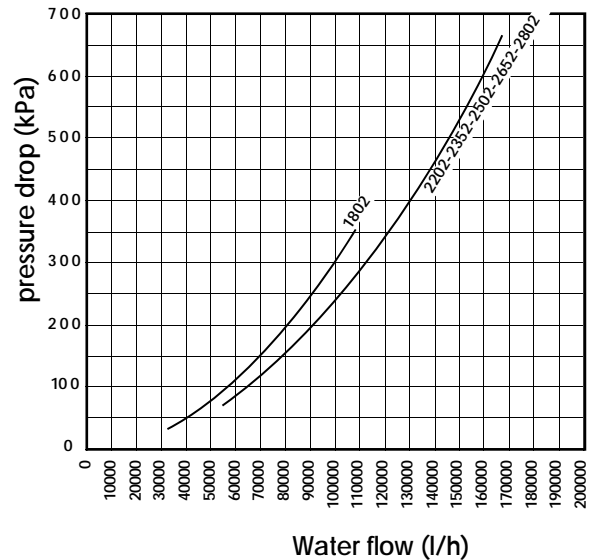
Nominal reference conditions:

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5k

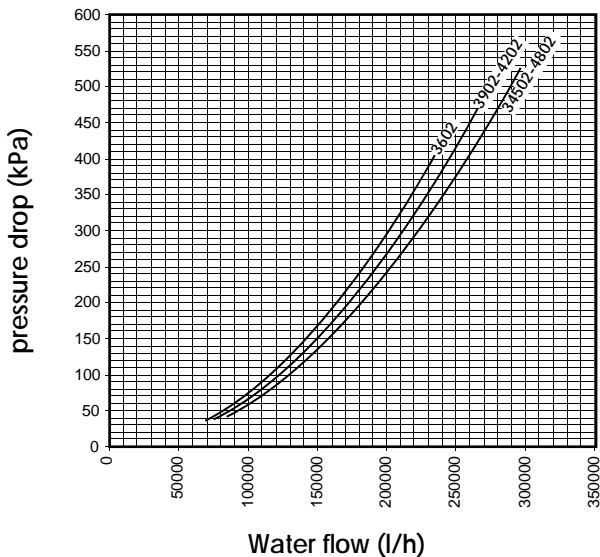
Pressure drops
size 1801-2101-2401-2801-3201



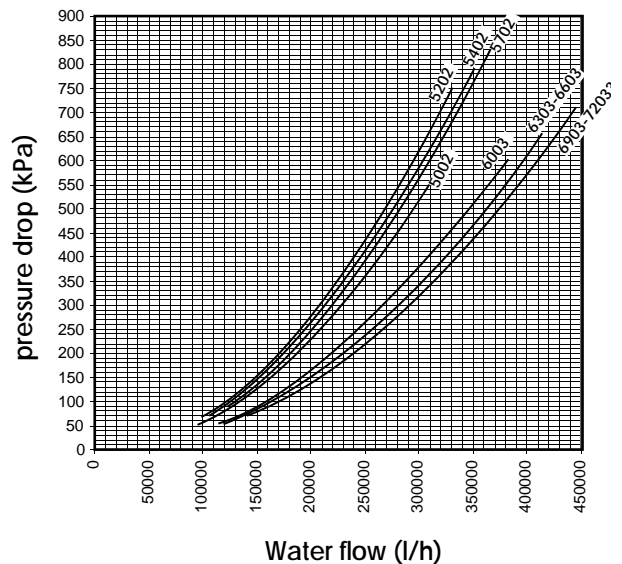
Pressure drops
size 1802-2202-2352-2502-2652-2802



Pressure drops
size 3602-3902-4202-34502-4802



Pressure drops
size 5002-5202-5402-5702-6003-6303-6603-6903-7203



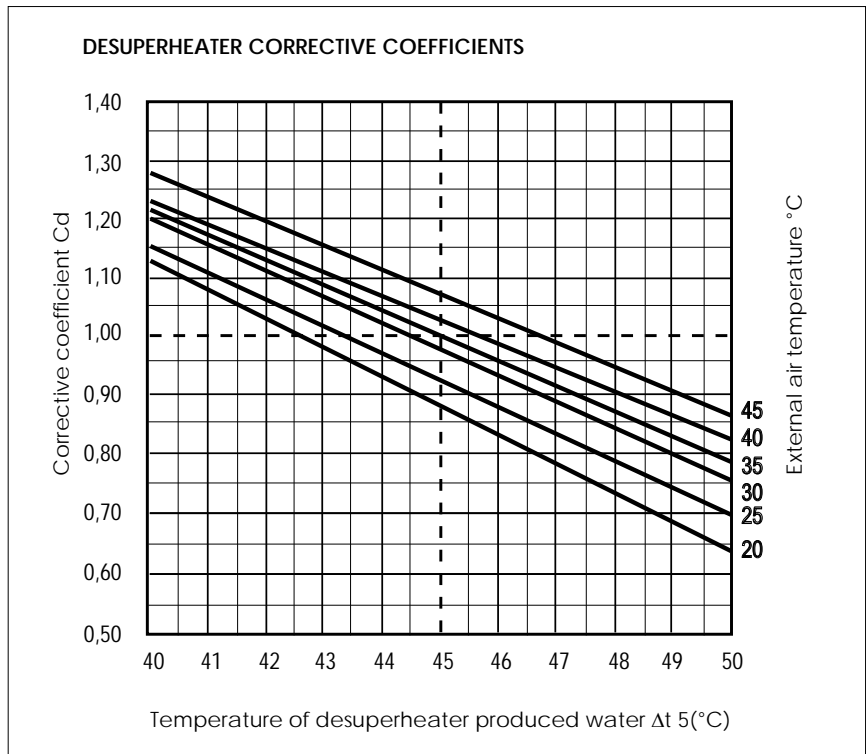
Corrective coefficients to apply to pressure drops							
Average water temperature °C	5	10	15	20	30	40	50
Multiplicative coefficient	1.02	1	0.985	0.97	0.95	0.93	0.91

18. DESUPERHEATER

The heating capacity that the desuperheater can achieve is attained by multiplying the nominal value (P_d), by a relevant coefficient (C_d).
 The following diagrams show how to obtain corrective coefficients to use for units in their various versions in cooling mode; external air temperature, to which reference is made, is shown in correspondence to each curve.

Key

P_d = heating capacity recovered
 C_d = Corrective coefficient (P_c)



19. DESUPERHEATER PRESSURE DROPS

The NS models with desuperheater can have up to 3 desuperheaters, 1 per circuit, according to the size.

NOTE
 THE PARALLEL HYDRAULIC INSTALLATION IS THE RESPONSIBILITY OF THE INSTALLER.

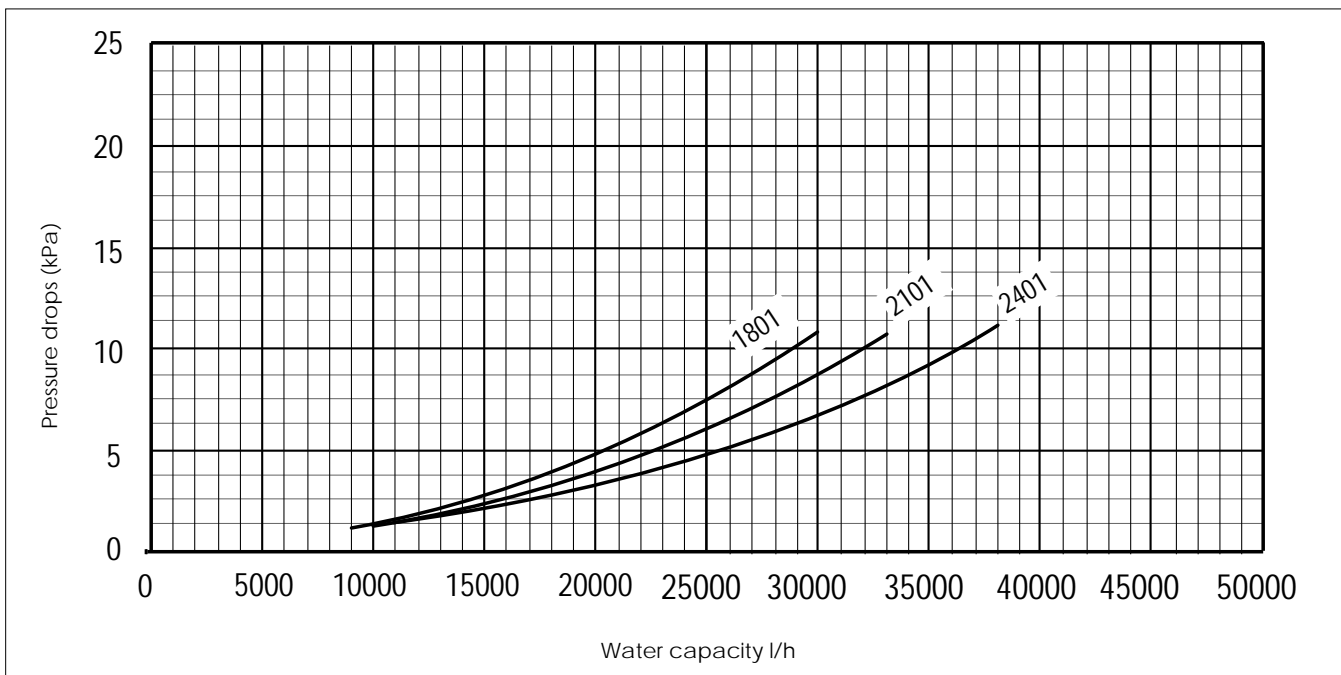
NOTE:

The features of the desuperheaters and the pressure drop curves are given below.
 For produced water temperature values different from 45 °C, multiply the results obtained by the corrective factor shown in figure 11.1.1.

Nominal value referred to:

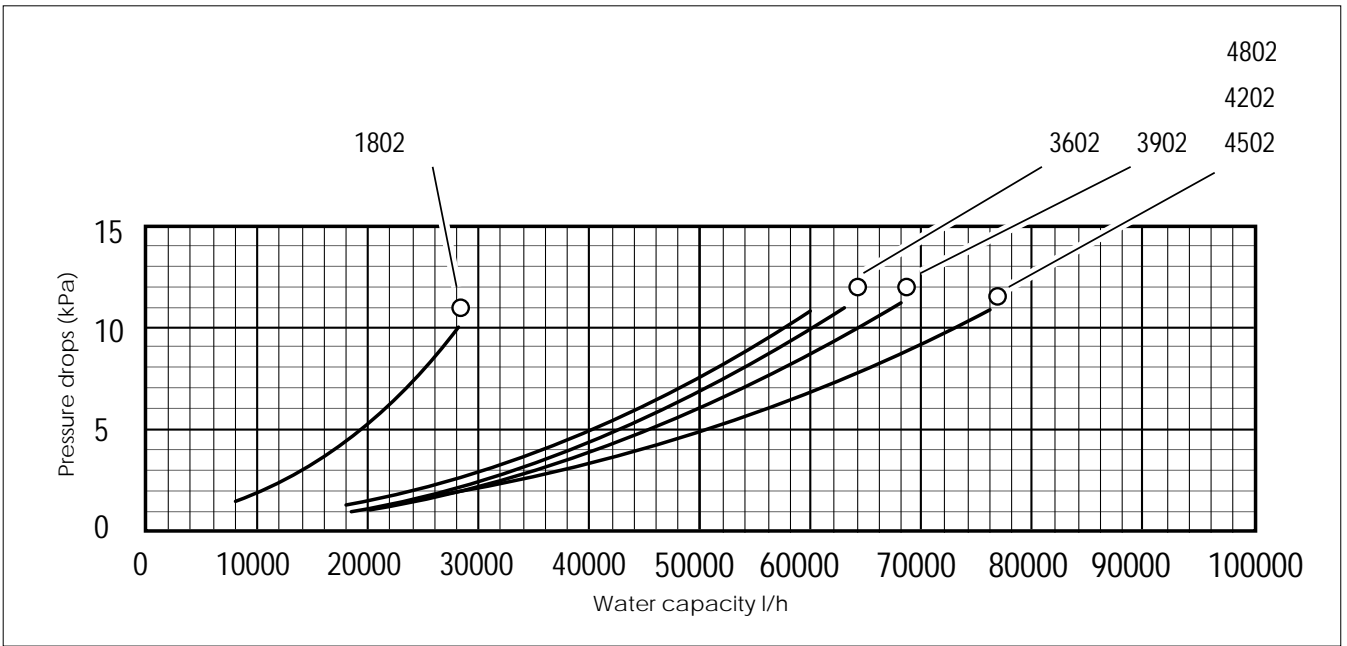
Air temperature 35°C
 Water to the desuperheater 40/45°C
 Δt 5°C

Models 1801- 2101 - 2401

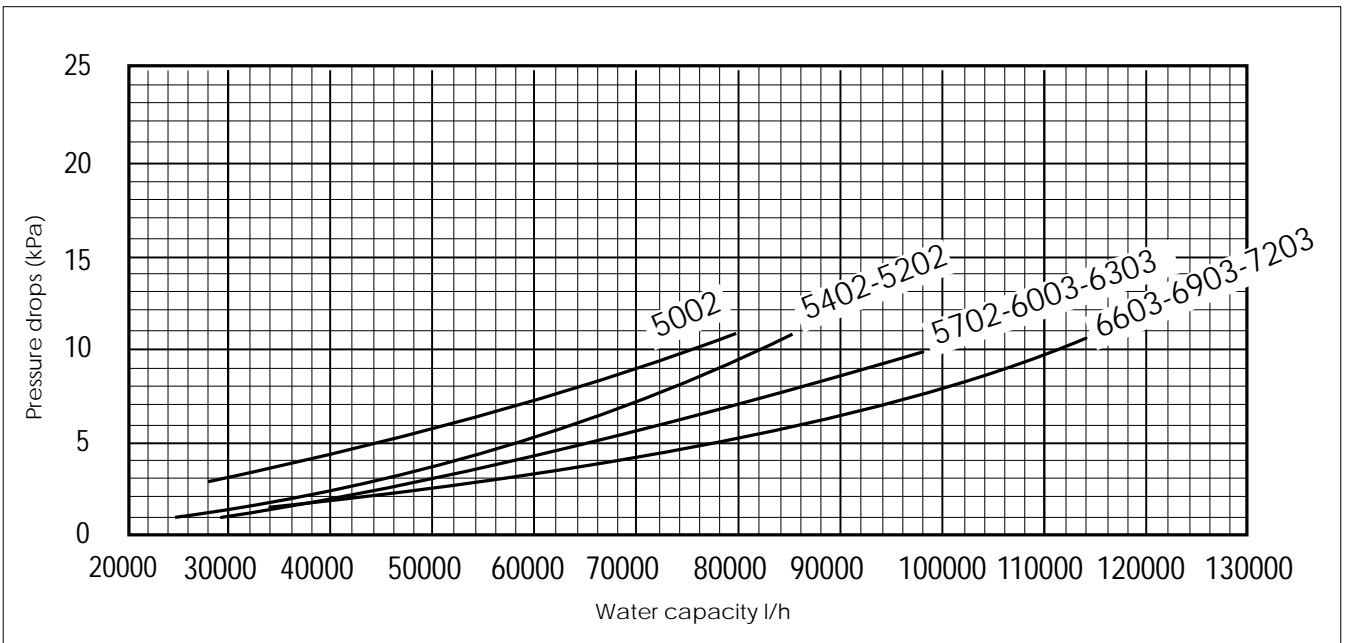


Corrective factors for water temperature different to nominal				
Average water temperature °C	30	40	45	50
Multiplicative coefficient	1.03	1.01	1	0.99

Models 1802 - 3602 - 3902 - 4202 - 4502 - 4802



Models 5002-7203



Corrective factors for water temperature different to nominal				
Average water temperature °C	30	40	45	50
Multiplicative coefficient	1.03	1.01	1	0.99

20. PUMPS

20.1. PUMP SELECTION

Pump selection example

NS 3202A

Useful static pressure required 180 kPa.
 Nominal water flow rate = 110940 l/h
 Nominal pressure drop = 92 kPa per circuit.

Procedure:

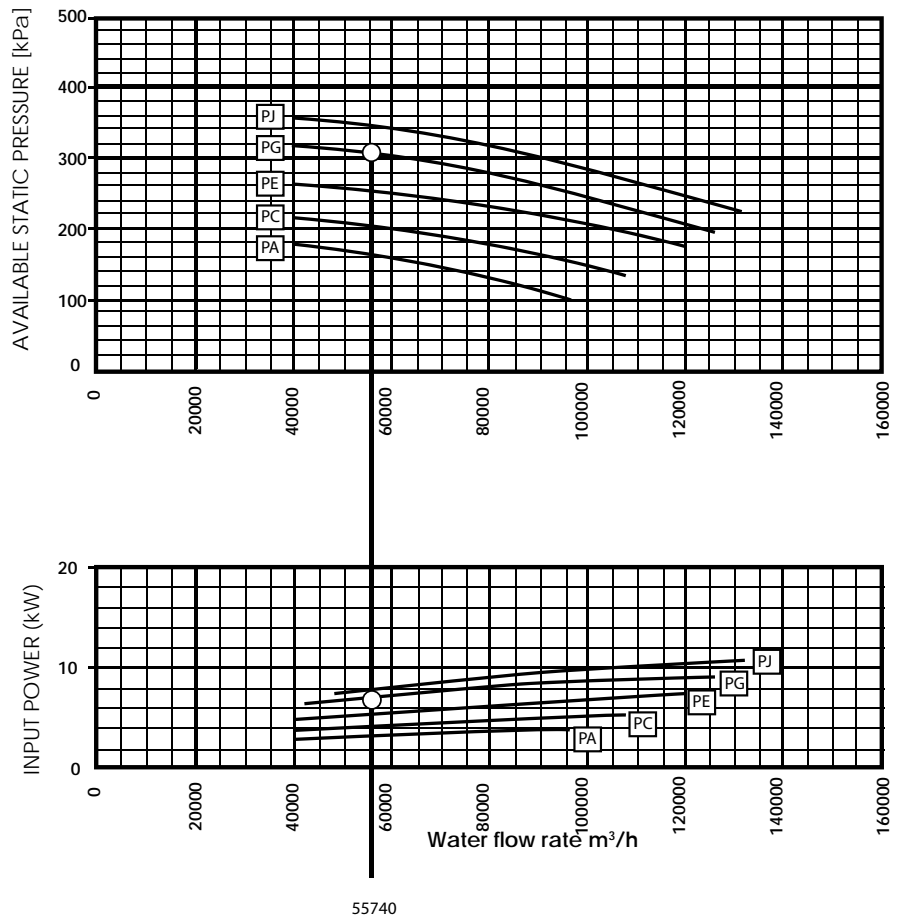
1. Divide the nominal flow rate by 2 (2 circuits) 110940/2 = 55470 l/h

Enter the water flow rate obtained (55470 l/h) into the graph as shown in the example at the side, which leads to the result that pump J must be used in order to meet a useful static pressure of 180 kPa, which offers:

Pump G = 320 kPa

2. At this point, in order for the system to reach a useful static pressure, simply deduct the evaporator pressure drop from the pump static pressure:

kPa pump (PG) - Nominal pressure drops:
 320kPa - 92kPa = 228 kPa of useful static pressure to the system. (48 kPa exceeding the requirement).



Field	Pumping unit	PE	with pump E
00	Without pump	PF	With pump E and reserve pump
PA	with pump A	PG	with pump G
PB	With pump A and reserve pump	PH	With pump G and reserve pump
PC	with pump C	PJ	with pump J
PD	With pump C and reserve pump	PK	With pump J and reserve pump

⚠ ATTENTION:

The pump will be the same for all the hydraulic circuits that make up the selected model.

Verify that the water flow rates are compatible with the features of the relative pumping unit.

21. EXPANSION VESSEL CALIBRATION

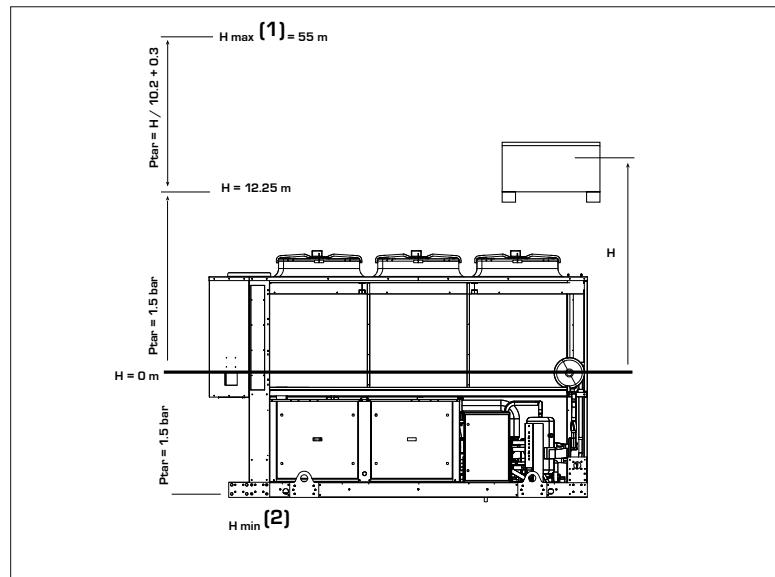
Standard pressure value of the expansion vessel when empty is 1.5 bar, whereas their volume is 25 litres and the maximum value is 6 bar.

The calibration of the vessel must be regulated in accordance with the maximum level difference (H) of the user (see figure) using the following formula:

$$p \text{ (calibration) [bar]} = H \text{ [m]} / 10.2 + 0.3.$$

For example: if level difference (H) is equal to 20 m, the calibration value of the vessel will be 2.3 bar.

If calibration value obtained from formula is less than 1.5 bar (that is for $H < 12.25$), keep calibration as standard.



Key:

[1] Check that the highest installation is no higher than 55 metres.

[2] Check that lowest installation can withstand overall pressure in that position.

22. WATER SYSTEM CONTENT

Minimum water content	U.M.	(1)	(2)
1251	m ³	1,9	3,9
1401		2,2	4,4
1601		2,4	4,9
1801		2,9	5,9
2101		3,3	6,5
2401		3,7	7,5
1402		2,1	4,3
1602		2,4	4,8
1802		2,8	5,6
2002		3,2	6,3
2202		3,5	6,9

Minimum water content	U.M.	(1)	(2)
2352	m ³	3,6	7,3
2502		3,8	7,6
2652		4,0	8,1
2802		4,3	8,6
3002		4,6	9,3
3202		4,9	9,7
3402		5,4	10,7
3602		5,9	11,7
3902		6,2	12,4
4202		6,7	13,3
4502		7,0	14,0

Minimum water content	U.M.	(1)	(2)
4802	m ³	7,5	14,9
5002		7,8	15,6
5202		8,3	16,6
5402		8,8	17,6
5702		9,1	18,3
6003		9,6	19,2
6303		9,9	19,9
6603		10,4	20,8
6903		10,7	21,4
7203		11,2	22,4

MINIMUM SYSTEM CONTENT

(1) Minimum water content for air conditioning applications.

(2) Minimum water content for process applications or operating with low external temperatures and low load.

23. SOUND DATA

23.1. CHILLER MODE HIGH-EFFICIENCY VERSION [A]

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744.

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

Power supply voltage 400V

ATTENZIONE

The "NS" cannot be silenced in freecooling functioning mode, because the fans work at maximum speed. Therefore, for noise data refer to A versions.

Mod. NS "B"	Total sound levels			Octave band [Hz]							
	Pow. dB(A)	Pressure.		125	250	500	1000	2000	4000	8000	
		dB(A) 10 m	dB(A) 1 m								
NS1251A	94	62	74,3	91.2	88.4	89.6	89.9	87.3	81.8	73.5	
NS1401A	95	63	75,3	94.1	90.9	91.9	91.3	87.4	80.4	72.0	
NS1601A	97	65	77,3	95.3	92.3	93.5	92.9	90.0	84.6	75.7	
NS1801A	97	65	76,8	95.9	93.2	94.3	92.4	89.4	85.1	76.5	
NS2101A	98	66	77,4	97.0	93.9	95.0	93.7	90.8	86.1	77.6	
NS2401A	98	66	77,4	99.0	94.9	95.2	93.4	90.4	86.3	78.7	
NS1402A	96	64	76,3	97.4	92.0	91.6	92.0	89.2	85.4	80.5	
NS1602A	97	65	77,3	98.0	94.7	92.7	92.5	89.9	86.0	82.1	
NS1802A	97	65	76,8	98.3	94.5	92.3	92.2	90.7	85.4	78.3	
NS2002A	98	66	77,4	98.4	94.2	93.1	93.4	92.0	86.0	80.9	
NS2202A	98	66	77,4	101.5	96.6	94.6	93.9	91.1	85.7	79.0	
NS2352A	97	65	76,4	100.7	94.7	93.7	93.3	90.4	86.9	81.6	
NS2502A	98	66	77,4	96.4	91.8	91.6	94.5	92.0	84.8	79.3	
NS2652A	98	66	77,4	98.0	92.7	94.0	95.0	92.4	86.2	81.6	
NS2802A	98	66	77,4	99.8	95.1	95.7	94.6	91.7	86.2	79.3	
NS3002A	99	66	77,8	97.8	94.7	95.8	95.2	91.9	86.0	77.2	
NS3202A	99	66	77,8	98.3	95.3	96.5	95.9	93.0	87.6	78.7	
NS3402A	99	66	77,5	98.6	95.8	97.0	95.7	92.7	87.8	79.1	
NS3602A	99	66	77,2	98.9	96.2	97.3	95.4	92.5	88.1	79.5	
NS3902A	100	67	77,9	99.5	96.6	97.7	96.1	93.2	88.6	80.1	
NS4202A	100	67	77,9	100.0	96.9	98.0	96.7	93.9	89.1	80.6	
NS4502A	100	67	77,6	101.1	97.5	98.1	96.6	93.6	89.2	81.2	
NS4802A	100	67	77,6	102.0	97.9	98.2	96.4	93.4	89.3	81.7	
NS5002A	101	68	78,6	100.3	97.4	98.6	97.5	94.6	89.5	80.8	
NS5202A	101	68	78,6	100.5	97.7	98.8	97.4	94.4	89.7	81.0	
NS5402A	101	68	78,6	100.7	98.0	99.1	97.2	94.2	89.8	81.3	
NS5702A	101	68	78,6	101.1	98.2	99.3	97.7	94.7	90.2	81.7	
NS6003A	101	67	77,7	102.0	98.6	99.4	97.5	94.6	90.3	82.1	
NS6303A	101	68	77,5	101.1	98.2	99.3	97.7	94.7	90.2	81.7	
NS6603A	101	68	77,5	103.0	99.2	99.7	97.9	94.9	90.7	82.8	
NS6903A	102	68	78,3	103.2	99.4	99.9	98.3	95.3	91.0	83.1	
NS7203A	102	68	78,3	103.8	99.7	100.0	98.2	95.2	91.1	83.5	

23.2. CHILLER MODE HIGH-EFFICIENCY SILENCED VERSION [E]

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

Power supply voltage 400V

Mod. NS "B"	Total sound levels			Octave band [Hz]							
	Pow. dB(A)	Pressure.		125	250	500	1000	2000	4000	8000	
		dB(A) 10 m	dB(A) 1 m								
NS1251E	86	54	66,3	80.6	83.4	84.7	82.6	75.2	66.8	58.5	
NS1401E	87	55	67,3	83.5	85.7	85.9	83.1	73.2	65.9	57.3	
NS1601E	89	57	69,3	85.3	86.4	87.0	85.4	79.8	71.3	59.1	
NS1801E	89	57	68,8	85.6	87.1	87.5	85.3	79.4	71.8	60.1	
NS2101E	90	58	69,4	86.6	87.6	88.0	86.0	80.8	73.1	61.2	
NS2401E	90	58	69,4	84.8	88.4	88.5	86.2	79.6	73.7	62.0	
NS1402E	88	56	68,3	86.5	88.5	87.0	83.6	73.6	69.7	61.4	
NS1602E	89	57	69,3	88.0	89.6	86.3	85.6	78.7	72.0	64.0	
NS1802E	89	57	68,8	87.6	90.5	88.0	82.5	79.0	70.3	62.6	
NS2002E	90	58	69,4	89.7	90.4	88.2	85.8	78.7	72.0	67.3	
NS2202E	90	58	69,4	92.0	91.2	89.7	85.2	78.6	71.6	62.7	
NS2352E	90	58	69,4	92.6	92.0	88.9	85.1	78.9	72.0	68.2	
NS2502E	90	58	69,4	84.9	88.2	85.6	87.6	80.2	70.5	60.9	
NS2652E	90	58	69,4	92.3	90.1	89.2	86.8	80.9	71.3	62.2	
NS2802E	91	59	70,4	92.3	91.7	89.9	86.3	79.6	71.8	64.5	
NS3002E	90	57	68,8	87.5	89.0	89.5	87.4	80.6	72.4	61.3	
NS3202E	91	58	69,8	88.3	89.4	90.0	88.4	82.8	74.3	62.1	
NS3402E	91	58	69,5	88.4	89.7	90.2	88.3	82.6	74.6	62.6	
NS3602E	92	59	70,2	88.6	90.1	90.5	88.3	82.4	74.8	63.1	
NS3902E	92	59	69,9	89.1	90.3	90.7	88.7	83.1	75.5	63.7	
NS4202E	92	59	69,9	89.6	90.6	91.0	89.0	83.8	76.1	64.2	
NS4502E	92	59	69,6	88.8	91.0	91.2	89.1	83.2	76.4	64.6	
NS4802E	92	59	69,6	87.8	91.4	91.5	89.2	82.6	76.7	65.0	
NS5002E	93	60	70,6	90.1	91.4	91.9	90.1	84.4	76.3	64.2	
NS5202E	93	60	70,6	90.2	91.6	92.1	90.1	84.3	76.4	64.5	
NS5402E	93	60	70,6	90.3	91.8	92.2	90.0	84.2	76.6	64.8	
NS5702E	93	60	70,6	90.7	92.0	92.4	90.3	84.7	77.1	65.2	
NS6003E	93	60	69,7	90.1	92.3	92.6	90.4	84.2	77.3	65.6	
NS6303E	93	60	69,5	90.7	92.0	92.4	90.3	84.7	77.1	65.2	
NS6603E	93	60	69,5	89.8	92.8	92.9	90.7	84.3	77.9	66.2	
NS6903E	93	59	69,3	90.2	92.9	93.1	90.9	84.8	78.3	66.5	
NS7203E	94	60	70,3	89.6	93.2	93.3	91.0	84.4	78.5	66.8	

23.3. FULL LOAD SOUND LEVELS NS E WITH AK KIT ACCESSORY

A further noise reduction accessory can only be installed in the factory and so must be requested when ordering. The data table is shown to the side.

ATTENTION

See the chapter ACCESSORIES for further information concerning the KIT.

COOLING

- Water inlet temperature 12 °C
- Produced water temperature 7 °C
- External air temperature 35 °C
- Δt 5

SOUND PRESSURE measured at 10 m in free field with directionality factor Q=2, according to ISO 3744

SOUND POWER Aermec determines the sound power value on the basis of the measurements made in compliance with the ISO 9614-2 Standard

Power supply voltage 400V

Mod. NS "B"	Total sound levels			Octave band [Hz]							
	Pow. dB(A)	Pressure.		125	250	500	1000	2000	4000	8000	
		dB(A) 10 m	dB(A) 1 m								
NS1251E	84	52	64,3	80.8	80.5	79.6	81.2	75.8	66.6	53.7	
NS1401E	83	51	63,3	80.8	80.5	79.1	80.2	74.8	65.6	53.7	
NS1601E	84	52	64,3	80.8	80.5	80.6	81.7	74.3	64.6	53.7	
NS1801E	85	53	64,8	88.4	83.7	82.7	79.6	74.2	72.1	59.6	
NS2101E	86	54	65,4	87.5	86.4	82.6	82.3	76.0	69.4	57.7	
NS2401E	86	54	65,4	87.5	87.4	82.1	82.3	76.0	70.4	58.7	
NS1402E	83	51	63,3	83.3	81.9	80.7	77.5	74.5	66.5	54.6	
NS1602E	84	52	64,3	83.2	80.9	83.3	80.0	73.5	66.5	54.6	
NS1802E	84	57	63,8	82.3	79.9	81.8	81.7	71.5	64.0	53.6	
NS2002E	85	53	64,4	82.9	81.3	82.0	82.6	73.9	65.3	52.5	
NS2202E	85	53	64,4	82.5	80.7	80.7	82.6	75.9	64.6	52.3	
NS2352E	85	53	64,4	82.5	80.7	80.7	82.6	75.9	64.6	52.3	
NS2502E	85	53	64,4	82.5	80.7	80.7	82.6	75.9	64.6	52.3	
NS2652E	85	53	64,4	82.5	80.7	80.7	82.6	75.9	64.6	52.3	
NS2802E	86	53	65,4	82.5	81.7	82.2	83.6	76.4	65.6	53.3	
NS3002E	86	53	64,8	82.5	81.7	82.2	83.6	76.4	65.6	53.3	
NS3202E	86	53	64,8	82.5	81.7	82.2	83.6	76.4	65.6	53.3	
NS3402E	87	54	65,5	88.3	86.3	84.6	83.5	78.1	69.6	56.8	
NS3602E	87	54	65,2	92.1	88.0	84.9	81.5	75.8	71.6	59.3	
NS3902E	87	54	64,9	91.1	88.3	84.6	82.6	75.7	70.0	57.3	
NS4202E	88	55	65,9	89.2	88.1	84.3	84.7	78.1	70.4	57.3	
NS4502E	88	55	65,6	89.2	88.1	84.3	84.7	78.1	70.4	57.3	
NS4802E	88	55	65,6	89.2	88.1	84.3	84.7	78.1	70.4	57.3	
NS5002E	89	56	66,6	90.6	87.7	85.5	85.5	79.8	71.3	58.7	
NS5202E	89	56	66,6	92.5	88.8	85.7	84.7	78.4	71.3	58.6	
NS5402E	88	55	65,6	94.2	88.5	86.5	83.4	78.0	74.4	62.4	
NS5702E	89	56	66,6	93.0	89.7	86.0	85.2	78.7	72.0	60.5	
NS6003E	89	56	65,7	93.0	89.7	86.0	85.2	78.7	72.5	59.5	
NS6303E	89	56	65,5	91.0	88.4	85.6	85.8	79.1	73.2	60.5	
NS6603E	90	57	66,5	93.0	91.2	86.6	86.4	79.5	72.0	60.5	
NS6903E	91	57	67,3	93.1	91.8	87.3	87.9	80.3	71.9	60.5	
NS7203E	92	58	68,3	93.6	93.8	87.8	88.4	82.3	73.9	60.5	

24. CALIBRATION OF SAFETY AND CONTROL PARAMETERS

CONTROL PARAMETERS			
Cooling Set	Water input temperature in cooling functioning mode.	MIN.	4°C
		MAX.	15°C
		DEFAULT	7.0°C
Anti-freeze intervention	Intervention temperature of the anti-freeze alarm on the EV side (water output temperature).	MIN.	-9°C
		MAX.	4°C
		DEFAULT	3°C
Total differential	Proportional temperature band within which the compressors are activated and deactivated.	MIN.	3°C
		MAX.	10°C
		DEFAULT	5°C
Autostart	Auto		

MAGNETOTHERMIC FANS		1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202
Fans	n°	6	6	6	6	8	8	6	6	6	8	8
MTV1	A	20	20	20	20	26	26	10	10	10	13	13
MTV2	A	\	\	\	\	\	\	10	10	10	13	13
MTV3	A	\	\	\	\	\	\	\	\	\	\	\
		2352	2502	2652	2802	3002	3202	3402	3602	3902	4202	4502
Fans	n°	8	8	10	10	12	12	12	12	14	14	16
MTV1	A	13	13	16.5	16.5	20	20	20	20	20	20	26.5
MTV2	A	13	13	16.5	16.5	20	20	20	20	26.5	26.5	26.5
MTV3	A	\	\	\	\	\	\	\	\	\	\	\
		4802	5002	5202	5402	5702	6003	6303	6603	6903	7203	
Fans	n°	16	18	18	18	20	20	22	22	24	24	
MTV1	A	26.5	20	20	20	20	20	20	20	26.5	26.5	
MTV2	A	26.5	20	20	20	20	20	26.5	26.5	26.5	26.5	
MTV3	A	\	\	\	\	\	26.5	26.5	26.5	26.5	26.5	
COMPRESSOR MAGNET CIRCUIT-BREAKERS 400V		1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202
Compressors	n°	1	1	1	1	1	1	2	2	2	2	2
MTC1	A	196	214	214	310	320	360	124	144	162	162	182
MTC2	A	\	\	\	\	\	\	124	144	162	182	182
MTC3	A	\	\	\	\	\	\	\	\	\	\	\
		2352	2502	2652	2802	3002	3202	3402	3602	3902	4202	4502
Compressors	n°	2	2	2	2	2	2	2	2	2	2	2
MTC1	A	182	196	196	214	214	214	214	310	310	320	320
MTC2	A	196	196	214	214	214	214	310	310	320	320	360
MTC3	A	\	\	\	\	\	\	\	\	\	\	\
		4802	5002	5202	5402	5702	6003	6303	6603	6903	7203	
Compressors	n°	2	2	3	3	3	3	3	3	3	3	
MTC1	A	360	360	450	450	550	310	310	310	320	360	
MTC2	A	360	450	450	550	550	310	320	360	360	360	
MTC3	A	\	\	\	\	\	360	360	360	420	360	
COMPRESSOR CIRCUIT BREAKER RELAY		1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202
RT1	A	125	136	178	197	203	228	78	91	103	103	115
RT2	A	\	\	\	\	\	\	78	91	103	115	115
RT3	A	\	\	\	\	\	\	\	\	\	\	\
		2352	2502	2652	2802	3002	3202	3402	3602	3902	4202	4502
RT1	A	115	125	125	136	178	178	178	197	197	203	203
RT2	A	125	125	136	136	178	178	197	197	203	203	228
RT3	A	\	\	\	\	\	\	\	\	\	\	\
		4802	5002	5202	5402	5702	6003	6303	6603	6903	7203	
RT1	A	228	228	260	260	330	197	197	197	203	228	
RT2	A	228	260	260	330	330	197	203	228	228	228	
RT3	A	\	\	\	\	\	228	228	228	228	228	
COMPRESSOR FUSES		1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202
F1	A	250	250	315	315	400	400	160	160	200	200	200
F2	A	\	\	\	\	\	\	160	160	200	200	200
F3	A	\	\	\	\	\	\	\	\	\	\	\
		2352	2502	2652	2802	3002	3202	3402	3602	3902	4202	4502
F1	A	200	250	250	250	250	250	250	315	315	315	400
F2	A	250	250	250	250	250	250	315	315	400	400	400
F3	A	\	\	\	\	\	\	\	\	\	\	\
COMPRESSOR FUSES		4802	5002	5202	5402	5702	6003	6303	6603	6903	7203	
F1	A	400	400	500	500	630	315	315	315	400	400	
F2	A	400	500	500	630	630	315	400	400	400	400	
F3	A	\	315	315	315	400	400	400	400	400	400	

MAIN SWITCH		1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202
	A	250	315	315	400	630	630	315	400	400	630	630
MAIN SWITCH		2352	2502	2652	2802	3002	3202	3402	3602	3902	4202	4502
	A	630	630	630	630	630	630	800	800	800	1000	1000
MAIN SWITCH		4802	5002	5202	5402	5702	6003	6303	6603	6903	7203	
	A	1000	1000	1250	1250	1600	1600	1600	1600	1600	1600	
PRESSURE SWITCHES AND TRANSDUCERS		1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202
Double high pressure switch (AP)	bar	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19
High pressure transducer (TAP)	bar	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7
Low pressure transducer (TBP)	bar	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
		2352	2502	2652	2802	3002	3202	3402	3602	3902	4202	4502
Double high pressure switch (AP)	bar	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19
High pressure transducer (TAP)	bar	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7
Low pressure transducer (TBP)	bar	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
		4802	5002	5202	5402	5702	6003	6303	6603	6903	7203	
Double high pressure switch (AP)	bar	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19	
High pressure transducer (TAP)	bar	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	17,7	
Low pressure transducer (TBP)	bar	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	
COOLING CIRCUIT SAFETY DEVICES		1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202
Low pressure valve	bar	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5
High pressure valve	bar	22	22	22	22	22	22	22	22	22	22	22
		2352	2502	2652	2802	3002	3202	3402	3602	3902	4202	4502
Low pressure valve	bar	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5
High pressure valve	bar	22	22	22	22	22	22	22	22	22	22	22
		4802	5002	5202	5402	5702	6003	6303	6603	6903	7203	
Low pressure valve	bar	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5	
High pressure valve	bar	22	22	22	22	22	22	22	22	22	22	



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