AERMEC

air conditioning

R134a | FREE COOLING | CPU | RS485

Technical manual

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

NS
FREE COOLING

AERMEC
COMPANY QUALITY SYSTEM
ICIM
ISO 9001:2008 - Cert. n° 0128
CISQ IQNet
AERMEC S.P.A.

CE

EN

4138356_00

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 FREE COOLING

SERIAL NUMBER	

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

NAME **NS FREE COOLING**

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	Seamless, round copper tubes for air conditioning and refrigeration.
UNI EN 14276	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 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

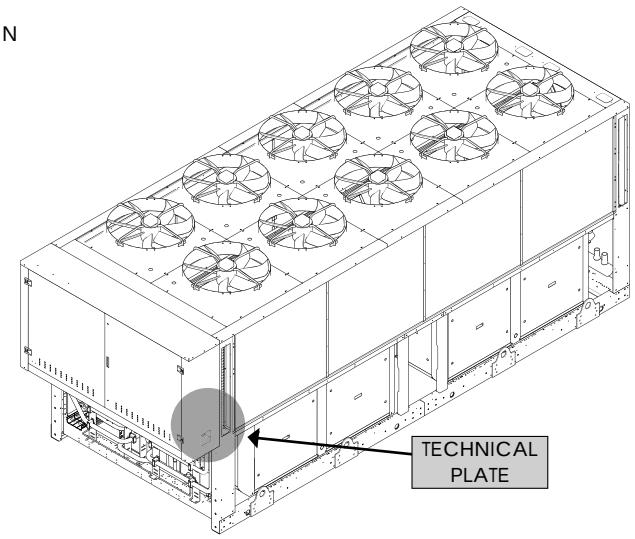
- The cooler must be installed by a qualified and suitably trained technician, in compliance with the national legislation in force in the country of destination.
  ⚠ ***AERMEC will not assume any responsibility for damage due to failure to follow these instructions.***
- Before beginning any operation, 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 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.

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 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
Sensitive and careful consideration of customer requirements, Aermec offers the possibility of lowering noise even further using the **AKW accessory**, only available in the silenced versions (E).

3.3. MODELS

Free Cooling (F)
NS FREE COOLING 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.
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: already when the water returning from the system is 2°C cooler than the temperature of the outdoor air, a 3-way valve diverts the water in the free-cooling coil to be pre-cooled and then sent to the evaporator where it is taken to the design temperature.

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 - PN)
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 - PO)
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

1, 2 Code

NS

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

7 Operating range

° 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)

8 Model

F Free - cooling

9 Heat recuperators

° Without heat recovery

D Desuperheater (plate exchanger)*

10 Version

A High efficiency

E High efficiency in silenced operation

11 Coils

° in aluminium

R In copper

S In tinned copper

V In painted aluminium-copper (epoxy paint)

12 Fans

° **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")**

13 Power supply

° 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 ******

14-15 Hydronic kit

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)

PN Pumping unit (pump N)*******

PO Pumping unit (pump N and reserve pump)*******

PP Pumping unit (pump P)*******

PQ Pumping unit (pump P and reserve pump)*******

Limitations of option D with Desuperheater

not available for sizes:

- from 2002 up to 2802

Possible for sizes :

- from 1251up to 1601
- 1402, 1602, 1801, 1802
- from 3002 up to 4202
- from 6003 up to 6603

without evaporator side pumping unit

Limitazioni delll'opzione Alimentazione

* not available for size from 1251 up to 2401 and from 2352 up to 7203

** not available for size from 1801 alla 2401 and from 3402 up to 7203

Limitations of option *Kit Idronico*

*** not available for size:

- from 1251 up to 1801
- from 1402 up to 2002
- from 3002 up to 4202
- from 6003 up to 6603

5. VERSIONS AVAILABLE WITH DESUPERHEATER

Versions available with Desuperheater															
Sheaves	Compatibility of Desuperheater with Hydronic Kit														
	00	PA	PB	PC	PD	PE	PF	PG	PH	PJ	PK	PN	PO	PP	PQ
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

6. VERSIONS AVAILABLE WITH HYDRONIC KIT

Versions available with Hydronic Kit															
Sheaves	Hydronic kit compatibility														
	00	PA	PB	PC	PD	PE	PF	PG	PH	PJ	PK	PN	PO	PP	PQ
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

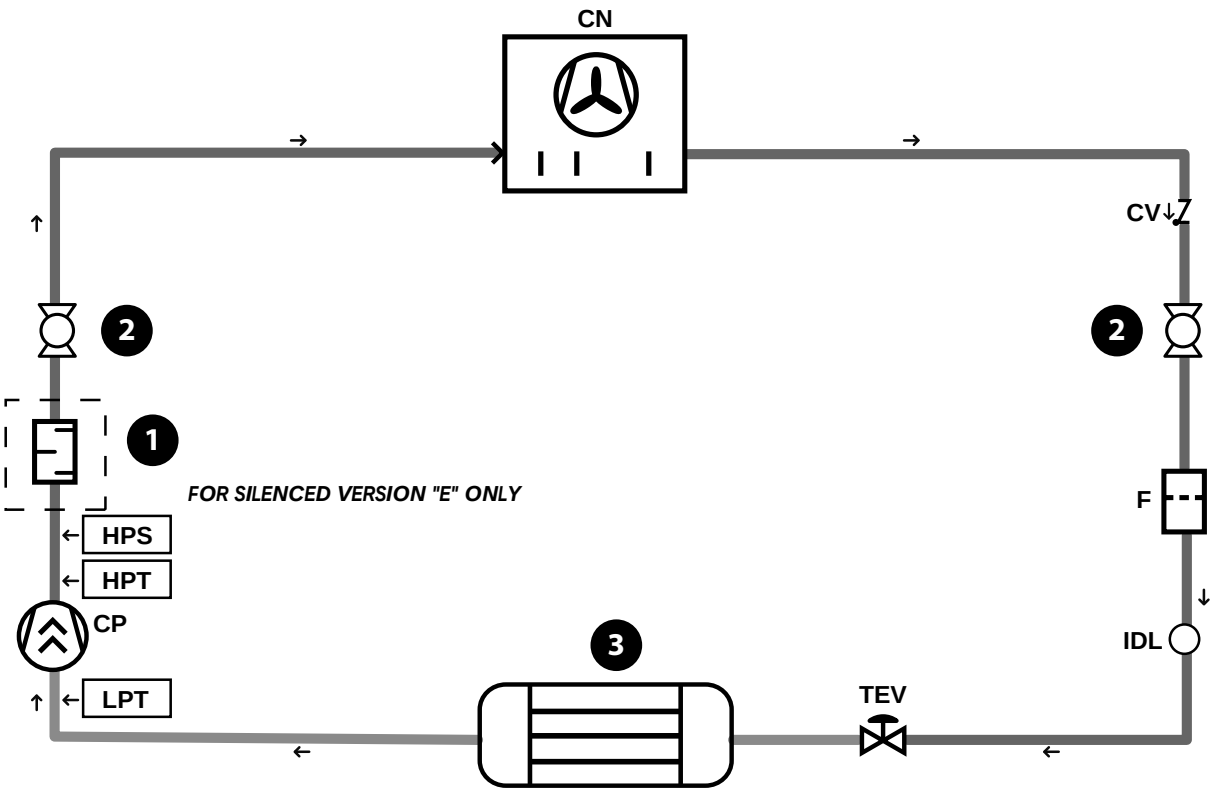
7. VERSIONS AVAILABLE WITH POWER SUPPLY

Sheaves	Power supply					
	400V350Hz with fuses	230V350Hz with fuses	230V350Hz with circuit breakers	500V350Hz with fuses	400V350Hz with circuit breakers	500V350Hz 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	SILENZER (***SILENCED VERSION ONLY "E"***)
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 of 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 (*electronic fan speed control system*)**: 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.

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.
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, (lower overheating average) 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 (mounted as per standard on E versions): device mounted on the pressing line to reduce the noise produced when the high pressure gas passes through.

Solenoid valve
The valve closes when the compressor switches off, blocking the flow of refrigerant gas to the evaporator.
(not available with electronic thermostatic valve)

One-way valve
Allows one-way flow of the refrigerant.

9.3. HYDRAULIC CIRCUIT

The 00 version includes as per standard:
-**Evaporator** (shall 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**
-**Three-way valve**

Condensing 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.

Three-way valve
There is an ON - OFF diverter valve on water side of the free-cooling circuit controlled by the electric servo control.

⚠ ***ATTENZIONE***
SUW - COMMON OUTLET WATER SENSOR
(in units with over an evaporator)
Pay attention to fit the water sensor on the evaporators, first providing a ½-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**.**

Expansion vessel
(only in versions with pump - n° 2 for evaporator)
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.

9.4. 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

9.5. CONTROL AND SAFETY COMPONENTS

COOLING CIRCUIT

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.

Vent valve (as per standard in all versions)
Automatic-type valve mounted on the top of the hydraulic system; they discharge possible air pockets.

Fans magnet-circuit breakers protection

Auxiliary magnet circuit-breaker protection

9.6. 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.

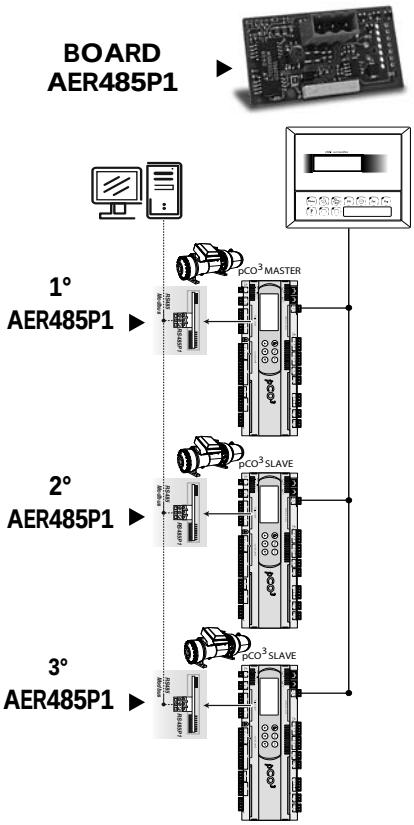
Door-lock isolating switch
The electric control board can be accessed by removing the voltage. Act on the opening lever of the control board itself.
This lever can be locked using one or more padlocks during maintenance interventions to prevent the machine being powered up accidentally.

Control board
Allows the complete control of the appliance For a more in-depth description please refer to the user manual.

Electronic adjustment
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 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



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

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 RS485 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.

- KRSDES: 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)

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 COMPATIBILITY

NS FREECOOLING MODELS FROM SIZE **1251** TO **1602**

MODEL	VERS.	1251	1401	1601	1801	2101	2401	1402	1602
AER485P1		•	•	•	•	•	•	•	•
MULTICHILLER		•	•	•	•	•	•	•	•
[1][3] AK-ACOUSTIC KIT	**All**	•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB300		•	•	•	•	•	•	•	•
KRSDES									
[1] [4] KRSDES	**All**	KRS10DES	KRS11DES	KRS10DES	KRS11DES	KRS11DES	KRS19DES	KRS19DES	KRS19DES
RIFNS									
[2][1] RIFNS - RIFNSF	**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

NS-FREECOOLING MODELS FROM SIZE **1802** TO **3002**

MODEL	VERS.	1802	2002	2202	2352	2502	2652	2802	3002
AER485P1		• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)
MULTICHILLER		•	•	•	•	•	•	•	•
(1)(3) AK-ACOUSTIC KIT	**All**	•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB300		•	•	•	•	•	•	•	•
KRSDES									
(1) (4) KRSDES	**All**	KRS18DES	KRS18DES	KRS19DES	KRS19DES	KRS19DES	KRS19DES	KRS19DES	KRS13DES
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 MODELS FROM SIZE **3202** TO **5002**

MODEL	VERS.	3202	3402	3602	3902	4202	4502	4802	5002
AER485P1		•	•	•	•	•	•	• (x2)	• (x2)
MULTICHILLER		•	•	•	•	•	•	•	•
(1)(3) AK-ACOUSTIC KIT	**All**	•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB30		•	•	•	•	•	•	•	•
KRS									
(1) KRS	**All**	KRS14	KRS13	KRS12	KRS13	KRS13	KRS14	KRS14	KRS14
(1) (4) KRSDES		KRS14DES	KRS13DES	KRS12DES	KRS13DES	KRS13DES	KRS14DES	KRS14DES	KRS14DES
RIFNS-FREECOOLING									
(1) (2) RIFNS-FREECOOLING	**All**								
KIT AVX									
AVX		507	513	516	518	518	521	521	560

NS-FREECOOLING MODELS FROM SIZE **5202** TO **7203**

MODELLO	VERS.	5202	5402	5702	6003	6303	6603	6903	7203
AER485P1		•(x2)	•(x2)	•(x2)	•(x3)	•(x3)	•(x3)	•(x3)	•(x3)
MULTICHILLER		•	•	•	•	•	•	•	•
(1)(3) AK-ACUSTIC KIT	**All**	•	•	•	•	•	•	•	•
PRV3		•	•	•	•	•	•	•	•
AERWEB300		•	•	•	•	•	•	•	•
KRSDES									
(1) (4) KRSDES	**All**	KRS14DES	KRS14DES	KRS14DES	KRS15DES	KRS16DES	KRS16DES	KRS17DES	KRS17DES
RIFNS									
(2)(1) RIFNS	**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 KRSDES accessory includes the electrical evaporator resistor plus the electrical desuperheater resistor

	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 - MODELS FROM 1251 TO 1602

Mod. NS "F"	U.M.	Vers	1251	1401	1601	1801	2101	2401	1402	1602
OPERATION - CHILLER										
Cooling capacity (kW)	kW	FA	272	304	338	408	465	518	285	324
		FE	243	282	322	372	415	471	257	295
Total input power (kW)	kW	FA	91	104	115	144	157	177	103	119
		FE	93	105	117	148	161	183	105	121
Rate of water evaporation	l/h	FA	46780	52290	58140	70180	79980	89100	49020	55730
		FE	41800	48500	55380	63980	71380	81010	44200	50740
Total circuit pressure drops	kPa	FA	57.5	54.4	46.3	74.3	78.0	96.9	43.1	55.9
		FE	45.9	46.8	42.0	61.7	62.1	80.1	35.0	46.3
Total pressure drops with 1 pump	kPa	FA	67	66	61	96	104	132	54	70
		FE	53.5	56.8	55.3	79.8	82.8	109.1	43.9	58.0
Total pressure drops with 2 pumps	kPa	FA	76	79	77	118	132	167	66	85
		FE	60.7	68.0	69.9	98.1	105.1	138.1	53.7	70.5
OPERATION - FREECOOLING										
Cooling capacity	kW	FA	280	291	301	403	486	503	285	297
		FE	268	283	297	391	466	490	249	288
Total input power	kW	FA / FE	12	12	12	16	20	20	12	12
Total pressure drops	kPa	FA	87.8	93.4	95.8	153.9	145.2	185.0	79.7	103.1
		FE	70.1	80.3	86.9	127.9	115.7	152.9	64.8	85.4
Total pressure drops with 1 pump	kPa	FA	97	105	111	175	172	220	91	118
		FE	77.4	90.3	100.7	145.4	137.0	181.9	74.0	97.8
Total pressure drops with 2 pumps	kPa	FA	107	118	127	197	199	255	103	133
		FE	85.4	101.5	115.2	163.7	158.5	210.8	83.7	110.2
ENERGY INDEX										
E.E.R.(CHILLER)		FA	2.99	2.92	2.94	2.83	2.96	2.93	2.77	2.72
		FE	2.61	2.69	2.75	2.51	2.58	2.57	2.45	2.44
E.E.R.(FREECOOLING)		FA	23.3	24.3	25.1	25.2	24.3	25.2	23.8	24.8
		FE	22.3	23.6	24.8	24.4	23.3	24.5	20.8	24.0
ELECTRICAL DATA										
Power supply		**400V-3-50Hz**								
Total input current **(Chiller mode)**	A	FA	160	180	196	238	267	299	179	205
		FE	164	182	199	245	274	309	182	208
Total input current **(Freecooling mode)**	A	All	24	24	24	32	40	40	24	24
Maximum current **(FLA)**	A	All	242	242	242	346	365	405	275	315
Initial starting current **(RLA)**	A	All	387	431	431	501	631	695	251	289
REFRIGERANT LOAD *(The refrigerant load may be subject to variations)*										
Refrigerante R134a (C1 + C2)	kg	Tutte	70	85	95	125	130	155	55 + 55	55 + 55
Oil	kg	Tutte	19	19	19	35	35	35	15 + 15	15 + 15
TWIN-SCREW COMPRESSORS										
N. compressors/circuits	n°/n°	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2/1	2/1
Electric resistance (n°/power)	n°/W	300							2 x 200	
PARTIALISATIONS										
Partialisation of the unit	%	40 - 100 (continuous)								
FANS										
Air flow rate (Chiller)	m³/h	FA	102000	102000	102000	136000	170000	170000	102000	102000
		FE	70000	78000	87000	100000	112000	127000	74000	80000
Air flow rate (Freecooling)	m³/h	FA	102000	102000	102000	136000	170000	170000	102000	102000
Quantity	n°	All	6	6	6	8	10	10	6	6
STANDARD "°"										
Number of Revs	rpm	FA	898 rpm							
		FE	870 rpm							
Total input power	kW	FA	10.5	10.5	10.5	14.0	17.5	17.5	10.5	10.5
		FE	6.6	6.6	6.6	8.8	11.0	11.0	6.6	6.6
Total input current	A	FA	19.0	19.0	19.0	25.3	31.6	31.6	19.0	19.0
		FE	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%**

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

Mod. NS "F"	U.M.	Vers	1251	1401	1601	1801	2101	2401	1402	1602
INCREASED "M"										
Number of Revs	rpm	All	900							
Total input power	kW	FA	13.8	13.8	13.8	18.4	23.0	23.0	13.8	13.8
Total input current	A	FA	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	FA	1020							
Total input power	kW	FA	14.4	14.4	14.4	19.2	24.0	24.0	14.4	14.4
Total input current	A	FA	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
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Water content	l	All	269	262	294	351	451	451	294	294
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		IN	4"	4"	4"	4"	5"	5"	4"	4"
		OUT	4"	4"	4"	4"	5"	5"	4"	4"
Quantity	n°		1							
DESUPERHEATER (PLATE EXCHANGER)										
Water content (C1+C2)	l	All	4.5	5.3	6	8	10	13	2.5 + 2.5	2.8 + 2.8
Recovered power	kw	FA	70	78.5	88.2	105	116.5	133.5	76	86.5
		FE	63	73	82.5	98	108	124	68	78.5
Quantity	n°	All	1						2	
Water flow rate	l/h	All	61060	69316	76196	93396	103544	117648	67596	76540
Heat exchanger pressure drops	kPa	All	4							
Hydraulic connections (VICTAULIC)	Ø	All	2"							
Desuperheater weight	kg	All	30	30	30	40	50	60	40	40
1 electric resistance per type of heat exchanger (available as accessory)										
Electric resistance - **KRSDES**	W	All	170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	l		25							
Quantity	n°		2							
SOUND DATA										
Sound power (Chiller mode)	dB(A)	FA	94	95	97	97	98	98	96	97
	dB(A)	FE	86	87	89	89	90	90	88	89
Sound pressure (Chiller mode)	dB(A)	FA	62	63	65	65	66	66	64	65
	db(A)	FE	54	55	57	57	58	58	56	57
Sound power (Freecooling mode)	db(A)	FA	94	95	97	97	98	98	96	97
Sound pressure (Freecooling mode)	dB(A)	FA	62	63	65	65	66	66	64	65
Sound power (with AK accessory)	dB(A)	FA	84	83	84	85	86	86	83	84
Sound pressure (with AK accessory)	dB(A)	FA	52	51	52	53	54	54	51	52
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	3780	3780	3780	4770	5750	5750	3780	3780
Empty weight	kg	All	3760	3770	3840	5000	5950	5980	4010	4030
Functioning weight (version 00)	kg	All	4029	4032	4134	5351	6401	6431	4304	4324

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%**

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 - MODELS FROM 1802 TO 3002

Mod. NS "F"	U.M.	Vers.	1802	2002	2202	2352	2502	2652	2802	3002
OPERATION - CHILLER										
Cooling capacity	kW	FA	377	429	480	501	522	553	584	642
		FE	340	389	439	457	475	514	554	604
Total input power	kW	FA	133	153	168	177	186	200	215	219
		FE	136	156	167	179	191	203	214	222
Water flow rate	l/h	FA	64840	73790	82560	86170	89780	95120	100450	110430
		FE	58480	66910	75510	78600	81700	88410	95290	103890
Total circuit pressure drops	kPa	FA	59.8	75.6	81.2	89.1	97.2	107.6	123.0	49.8
		FE	48.6	62.1	67.9	74.1	80.5	92.9	110.7	44.1
Total pressure drops with 1 pump	kPa	FA	79	99	111	122	133	149	171	69
		FE	64.3	81.4	92.9	101.5	110.1	128.7	153.9	61.1
Total pressure drops with 2 pumps	kPa	FA	98	124	142	156	171	193	221	78
		FE	79.7	102.0	118.8	129.8	141.6	166.7	198.9	69.0
OPERATION - FREECOOLING										
Cooling capacity	kW	FA	393	452	491	498	505	514	522	592
		FE	379	420	476	483	489	502	514	580
Total input power	kW	FA / FE	16	20	20	20	20	20	20	24
Pressure drops	kPa	FA	130.3	136.4	157.5	172.9	188.9	214.0	245.2	94.6
		FE	106.0	112.2	131.7	143.8	156.4	184.9	220.7	83.8
Total pressure drops with 1 pump	kPa	FA	149	160	187	206	225	256	293	108
		FE	121.2	131.6	156.4	171.4	186.3	221.2	263.7	95.6
Total pressure drops with 2 pumps	kPa	FA	169	185	218	240	262	299	343	122
		FE	137.5	152.1	182.4	199.7	217.0	258.3	308.7	108.0
ENERGY INDEX										
E.E.R. (Chiller)		FA	2.83	2.80	2.86	2.83	2.81	2.77	2.72	2.93
		FE	2.50	2.49	2.63	2.55	2.49	2.53	2.59	2.72
E.E.R. (Freecooling)		FA	24.6	22.6	24.6	24.9	25.3	25.7	26.1	24.7
		FE	23.7	21.0	23.8	24.2	24.5	25.1	25.7	24.2
ELECTRICAL DATA										
Power supply		**400V-3-50Hz**								
Total input current **(Chiller mode)**	A	A	225	261	288	305	322	344	366	376
		E	230	266	286	308	331	349	364	381
Total input current **(Freecooling mode)**	A	FA / FE	32	40	40	40	40	40	40	48
Maximum current **(FLA)**	A	A / E	360	389	409	442	475	475	475	484
Initial starting current **(RLA)**	A	A / E	340	420	437	497	524	568	570	579
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	2/1							2 / 2
Electric resistance (n°/power)	n°/W	All	2 x 200							
PARTLOAD										
Partialisation of the unit	%	All	40 - 100 (continuous)							
FAN(STANDARD)										
Air flow rate (Chiller)	m³/h	FA	136000	170000	170000	170000	170000	170000	170000	204000
		FE	96000	124500	120000	123000	130000	130000	140000	165000
Air flow rate (Freecooling)	m³/h	FA	136000	170000	170000	170000	170000	170000	170000	204000
Quantity	n°	All	8	10	10	10	10	10	10	12
STANDARD "°"										
Number of Revs	rpm	FA	898							
		FE	870							
Total input power	kW	FA	14.0	17.5	17.5	17.5	17.5	17.5	17.5	21.0
		FE	8.8	11.0	11.0	11.0	11.0	11.0	11.0	13.2
Total input current	A	FA	25.3	31.6	31.6	31.6	31.6	31.6	31.6	37.9
		FE	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
- Water inlet temperature **15 °C**
- External air temperature **2 °C**
- Glycol **0%**

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 1802 TO 3002

Mod. NS "F"	U.M.	Vers.	1802	2002	2202	2352	2502	2652	2802	3002
INCREASED "M"										
Number of Revs	rpm	FA	900							
Total input power	kW	FA	18.4	23.0	23.0	23.0	23.0	23.0	23.0	27.6
Total input current	A	FA	33.2	41.5	41.5	41.5	41.5	41.5	41.5	49.9
Static pressure "M" fans	Pa	FA	25							
INVERTER "J"										
Number of Revs	rpm	FA	1020							
Total input power	kW	FA	19.2	24.0	24.0	24.0	24.0	24.0	24.0	28.8
Total input current	A	FA	29.2	36.5	36.5	36.5	36.5	36.5	36.5	43.8
Static pressure "J" fans	Pa	FA	65							
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Water content	l	All	345	394	389	389	389	384	384	556
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		IN	4"	4"	4"	4"	4"	4"	4"	4"
		OUT	4"	4"	4"	4"	4"	4"	4"	4"
Quantity	n°	All	1	1	1	1	1	1	1	2
DESUPERHEATER (PLATE EXCHANGER)										
Water content (C1 + C2)	l	All	3 + 3	-	-	-	-	-	-	-
Recovered power	Kw	A	98	-	-	-	-	-	-	166.5
		E	91	-	-	-	-	-	-	155.5
Quantity	n°	All	2	-	-	-	-	-	-	2
Water flow rate	l/h	A	88064	-	-	-	-	-	-	28638
		E	88064	-	-	-	-	-	-	26746
Heat exchanger pressure drops	kPa	All	4	-	-	-	-	-	-	4
Hydraulic connections (VICTAULIC)	Ø	All	2"	-	-	-	-	-	-	2"
Desuperheater weight	kg	All	40	-	-	-	-	-	-	60
1 electric resistance per type of heat exchanger (available as accessory)										
Electric resistance - **KRSDES**	W	All	170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	dm3	All	25							
Quantity	n°	Alll	2							
SOUND DATA										
Sound power (Chiller mode)	dB(A)	FA	97	98	98	97	98	98	98	99
	dB(A)	FE	89	90	90	90	90	90	91	90
Sound pressure (Chiller mode)	dB(A)	FA	65	66	66	66	66	67	67	67
	db(A)	FE	57	58	58	58	58	59	59	59
Sound power (Freecooling mode)	dB(A)	FA	97	98	98	97	98	98	98	99
Sound pressure (Freecooling mode)	dB(A)	FA	65	66	66	66	66	67	67	67
Sound power (with AK accessory)	dB(A)	FA	84	85	85	85	85	85	86	86
Sound pressure (with AK accessory)	dB(A)	FA	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	All	4730	5470	5790	6340	6330	6340	6350	7210
Functioning weight (version 00)	kg	All	5075	5864	6179	6729	6719	6724	6734	7766

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%**

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 - MODELS FROM 3202 TO 5002

Mod. NS "F"	U.M.	Vers.	3202	3402	3602	3902	4202	4502	4802	5002
OPERATION - CHILLER										
Cooling capacity	kW	FA	675	746	817	873	926	983	1036	1084
		FE	645	694	744	787	843	887	943	1017
Total input power	kW	FA	230	259	288	300	321	334	354	374
		FE	233	265	298	311	333	346	369	381
Water flow rate	l/h	FA	116100	128310	140530	150160	159270	169080	178190	186450
		FE	110940	119370	127970	135370	145000	152570	162200	174930
Total circuit pressure drops	kPa	FA	46.3	59.0	74.3	76.2	85.8	87.3	96.9	100.5
		FE	42.3	51.1	61.6	61.9	71.1	71.1	80.3	88.5
Total pressure drops with 1 pump	kPa	FA	61	77	96	100	114	118	132	138
		FE	55.7	66.6	79.6	81.3	94.5	96.1	109.4	121.5
Total pressure drops with 2 pumps	kPa	FA	77	96	118	125	142	149	167	180
		FE	70.3	83.1	97.8	101.6	117.7	121.3	138.4	158.4
OPERATION - FREECOOLING										
Cooling capacity	kW	FA	602	705	807	889	907	989	1007	993
		FE	594	688	782	585	881	956	979	976
Total input power	kW	FA / FE	24	28	32	36	36	40	40	40
Pressure drops	kPa	FA	95.8	122.2	153.9	149.3	170.3	164.7	185.0	178.0
		FE	87.5	105.8	127.7	121.3	141.1	134.1	153.3	156.7
Total pressure drops with 1 pump	kPa	FA	111	140	175	173	198	195	220	221
		FE	101.4	121.2	145.1	140.6	164.1	158.8	182.3	194.5
Total pressure drops with 2 pumps	kPa	FA	127	159	197	198	227	227	255	263
		FE	116.0	137.6	163.4	160.9	188.1	184.8	211.3	231.5
ENERGY INDEX										
E.E.R. (Chiller)		FA	2.93	2.88	2.84	2.91	2.88	2.94	2.93	2.90
		FE	2.77	2.62	2.50	2.53	2.53	2.56	2.56	2.67
E.E.R. (Freecooling)		FA	25.1	25.2	25.2	24.7	25.2	24.7	25.2	24.8
		FE	24.8	24.6	24.4	16.3	24.5	23.9	24.5	24.4
ELECTRICAL DATA										
Power supply		**400V-3-50Hz**								
Total input current **(Chiller mode)**	A	FA	391	434	476	505	537	566	598	629
		FE	396	444	493	524	557	586	623	641
Total input current **(Freecooling mode)**	A	FA / FE	48	56	64	72	72	80	80	80
Maximum current **(FLA)**	A	FA / FE	484	588	692	711	751	770	810	900
Initial starting current **(RLA)**	A	FA / FE	579	649	677	810	857	934	934	1085
REFRIGERANT LOAD ***(The refrigerant load may be subject to variations)***										
R134a Refrigerant (C1 + C2)	kg	All	-	-	-	-	-	-	-	-
Oli	kg	FA / FE	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°/W	All	2 x 300							
PARTLOAD										
Partload of the unit	%	All	40 - 100 (continua)							25-100
FAN										
Air flow rate (Chiller)	m³/h	FA	204000	238000	272000	306000	306000	340000	340000	340000
		FE	174000	187000	200000	212000	227000	239000	254000	254000
Air flow rate (Freecooling)	m³/h	FA	204000	238000	272000	306000	306000	340000	340000	340000
Quantity	n°	All	12	14	16	18	18	20	20	20
STANDARD "°"										
Number of Revs	rpm	FA	898							
		FE	870							
Total input power	kW	FA	21.0	24.5	28.0	31.5	31.5	35.0	35.0	35.0
		FE	13.2	15.4	17.6	19.8	19.8	22.0	22.0	22.0
Total input current	A	FA	37.9	44.3	50.6	56.9	56.9	63.2	63.2	63.2
		FE	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
- Water inlet temperature **15 °C**
- External air temperature **2 °C**
- Glycol **0%**

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 3202 TO 5002

Mod. NS "F"	U.M.	Vers.	3202	3402	3602	3902	4202	4502	4802	5002
INCREASED "M"										
Numero giri	rpm	FA	900							
Potenza assorbita totale	kW	FA	27.6	32.2	36.8	41.4	41.4	46.0	46.0	46.0
Corrente assorbita totale	A	FA	49.9	58.2	66.5	74.8	74.8	83.1	83.1	83.1
Pressione statica ventilatori "M"	Pa	FA	25	25	25	25	25	25	25	25
INVERTER "J"										
Number of Revs	rpm	FA	1020							
Total input power	kW	FA	28.8	33.6	38.4	43.2	43.2	48.0	48.0	48.0
Total input current	A	FA	43.8	51.1	58.4	65.7	65.7	73.0	73.0	73.0
Static pressure"J" fans	Pa	FA	65	65	65	65	65	65	65	65
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Water content	l	All	345	394	389	389	389	384	384	556
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	2	2	2	2	2	2	2	2
DESUPERHEATER (PLATE EXCHANGER)										
Water content (C1 + C2)	l	-	-	-	-	-	-	-	-	-
Recovered power	kw	FA	176.5	193	223.2	221.2	238.2	249.8	266.5	281.2
		FE	165	180	195.5	205.5	222	232	248.5	263
Quantity	n°	Tutte	2	2	2	2	2	2	2	2
Water flow rate	l/h	FA	30358	33196	38390	38046	40970	42966	45838	48366
		FE	28380	30960	33626	35346	38184	39904	42742	45236
Heat exchanger pressure drops	kPa	All	4	4	4	4	4	4	4	5
Hydraulic connections (VICTAULIC)	Ø	All	2"							
Desuperheater weight	kg	All	70	70	80	100	90	110	120	120
1 electric resistance per type of heat exchanger (available as accessory)										
Electric resistance - **KRSDES**	W	All	170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	All	dm3	25							
Quantity	All	n°	4							
DATI SONORI										
Sound power (Chiller mode)	FA	dB(A)	99	99	99	100	100	100	100	101
	FE		91	91	92	92	92	92	92	93
Sound pressure (Chiller mode)	FA		68	68	68	69	69	69	69	70
	FE		60	60	60	61	61	61	61	62
Sound power (Freecooling)	FA		99	99	99	100	100	100	100	101
Sound pressure (Freecooling mode)	FA		68	68	68	69	69	69	69	70
Sound power (with AK accessory)	FA		86	87	87	87	88	88	88	89
Sound pressure (with AK accessory)	FA		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	All	7310	8410	9180	10580	10860	11104	11320	12300
Functioning weight (version 00)	kg	All	7655	8804	9569	10969	11249	11488	11704	12856

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%**

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 - MODELS FROM 5202 TO 7203

Mod. NS "F"	U.M.	Vers.	5202	5402	5702	6003	6303	6603	6903	7203
OPERATION - CHILLER										
Cooling capacity	kW	FA	675	746	817	873	926	983	1036	1084
		FE	645	694	744	787	843	887	943	1017
Total input power	kW	FA	230	259	288	300	321	334	354	374
		FE	233	265	298	311	333	346	369	381
Water flow rate	l/h	FA	198490	210700	220510	229620	239250	248370	258170	267290
		FE	183350	191950	199350	209150	216550	226180	233580	243210
Total circuit pressure drops	kPa	FA	103.7	111.1	118.9	82.0	83.1	90.5	96.9	101.4
		FE	88.5	92.2	97.2	68.1	68.1	75.0	79.3	83.9
Total pressure drops with 1 pump	kPa	FA	144	153	163	108	110	120	121	132
		FE	122.9	127.0	133.2	89.6	90.1	99.5	99.0	109.3
Total pressure drops with 2 pumps	kPa	FA	191	203	215	134	139	151	154	167
		FE	163.0	168.5	175.7	111.2	113.9	125.2	126.1	138.3
OPERATION - FREECOOLING										
Cooling capacity	kW	FA	602	705	807	889	907	989	1007	993
		FE	594	688	782	585	881	956	979	976
Total input power	kW	FA / FE	24	28	32	36	36	40	40	40
Pressure drops	kPa	FA	172.2	182.7	193.7	165.0	161.4	171.3	185.0	181.7
		FE	146.9	151.6	158.3	136.9	132.2	142.1	151.5	150.4
Total pressure drops with 1 pump	kPa	FA	223	235	249	191	189	206	202	220
		FE	190.3	195.0	203.5	158.5	154.8	170.8	165.4	182.1
Total pressure drops with 2 pumps	kPa	FA	270	285	301	217	217	237	234	255
		FE	230.4	236.5	246.0	180.0	177.8	196.5	191.5	211.1
ENERGY INDEX										
E.E.R. (Chiller)		FA	2.93	2.88	2.84	2.91	2.88	2.94	2.93	2.90
		FE	2.77	2.62	2.50	2.53	2.53	2.56	2.56	2.67
E.E.R. (Freecooling)		FA	25.1	25.2	25.2	24.7	25.2	24.7	25.2	24.8
		FE	24.8	24.6	24.4	16.3	24.5	23.9	24.5	24.4
ELECTRICAL DATA										
Power supply		**400V-3-50Hz**								
Total input current **(Chiller mode)**	A	FA	391	434	476	505	537	566	598	629
		FE	396	444	493	524	557	586	623	641
Total input current **(Freecooling mode)**	A	FA / FE	48	56	64	72	72	80	80	80
Maximum current **(FLA)**	A	FA / FE	484	588	692	711	751	770	810	900
Initial starting current **(RLA)**	A	FA / FE	579	649	677	810	857	934	934	1085
REFRIGERANT LOAD ***(The refrigerant load may be subject to variations)***										
R134a Refrigerant (C1 + C2)	kg	All	-	-	-	-	-	-	-	-
Oli	kg	FA / FE	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°	FA / FE	2/2	2/2	2/2	3/3	3/3	3/3	3/3	3/3
Electric resistance (n°/power)	n°/W	FA / FE	2 x 300							
PARTLOAD										
Partialisation of the unit	%	25-100				40 - 100 (continuous)				
FAN										
Air flow rate (Chiller)	m³/h	FA	340000	340000	340000	442000	476000	476000	510000	510000
		FE	254000	254000	254000	327000	339000	354000	366000	381000
Air flow rate (Freecooling)	m³/h	FA	340000	340000	340000	442000	476000	476000	510000	510000
Quantity	n°	Tutte	20	20	20	26	28	28	30	30
STANDARD "°"										
Number of Revs	rpm	FA	898							
		FE	870							
Total input power	kW	FA	35.0	35.0	35.0	45.5	49.0	49.0	52.5	52.5
		FE	22.0	22.0	22.0	28.6	30.8	30.8	33.0	33.0
Total input current	A	FA	63.2	63.2	63.2	82.2	88.5	88.5	94.8	94.8
		FE	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
- Water inlet temperature **15 °C**
- External air temperature **2 °C**
- Glycol **0%**

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 5202 to 7203

Mod. NS FREECOOLING	U.M.	Vers.	5202	5402	5702	6003	6303	6603	6903	7203
INCREASED "M"										
Numero giri	rpm	FA	900							
Potenza assorbita totale	kW	FA	46.0	46.0	46.0	59.8	64.4	64.4	69.0	69.0
Corrente assorbita totale	A	FA	83.1	83.1	83.1	108.0	116.3	116.3	124.6	124.6
Pressione statica ventilatori "M"	Pa	FA	25	25	25	25	25	25	25	25
INVERTER "J"										
Number of Revs	rpm	FA	1020							
Total input power	kW	FA	48.0	48.0	48.0	62.4	67.2	67.2	72.0	72.0
Total input current	A	FA	73.0	73.0	73.0	94.9	102.2	102.2	109.5	109.5
Static pressure"J" fans	Pa	FA	65	65	65	65	65	65	65	65
EVAPORATOR (SHELL AND TUBE EXCHANGER)										
Water content	l	All	948	948	948	1153	1253	1253	1353	1353
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)										
Water content (C1 + C2)	l	-	-	-	-	-	-	-	-	-
Recovered power	A	**kW**	298	314.7	326.2	343	354.7	371.5	383	400
	E		278	293	303	319.5	330	346	356	372.5
Quantity	n°	All	2	2	2	3	3	3	3	3
Water flow rate	A	l/h	51256	54128	56106	58996	61008	63898	65876	68800
	E		47816	50396	52116	54954	56760	59512	61232	64070
Heat exchanger pressure drops	A	kPa	7	8	8	4	4	4	4	4
Hydraulic connections (VICTAULIC)	E		6	7	7	4	4	4	4	4
Desuperheater weight	Tutte	Ø	2"							
Peso desurriscaldatore	Tutte	kg	120	120	120	80 + 60	90+60	90+60	110+60	120+60
1 electric resistance per type of heat exchanger (available as accessory)										
Electric resistance - **KRSDES**	W	All	170 (shell and tube) + 150 (desuperheater)							
EXPANSION VESSEL (standard in version with pumps)										
Capacity	All	dm3	25							
Quantity	All	n°	4			6				
DATI SONORI										
Sound power (Chiller mode)	dB(A)	FA	101	101	101	101	101	101	102	102
	dB(A)	FE	93	93	93	93	93	93	93	94
Sound pressure (Chiller mode)	dB(A)	FA	71	71	71	70	70	71	71	71
	db(A)	FE	63	63	63	62	62	63	63	63
Sound power (Freecooling mode)	db(A)	FA	101	101	101	101	101	101	102	102
Sound pressure (Freecooling mode)	dB(A)	FA	71	71	71	70	70	71	71	71
Sound power (with AK accessory)	dB(A)	FA	89	88	89	89	89	90	91	92
Sound pressure (with AK accessory)	dB(A)	FA	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	FA/FE	12600	12700	12800	15160	16560	16840	17084	17300
Functioning weight (version 00)	kg	FA/FE	13548	13648	13748	16313	17813	18093	18437	18653

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%**

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**	**PN**	**PO**	**PP**	**PQ**
Input power	kW	4		5,5		7,5		9,2		11		15		22	
Input current	A	8.14		11		14.6		17.5		21.2		28.6		40.3	
Quantity	n	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Weight	kg	109	193	117	203	121	217	140	255	148	271	172	319	198	371

14. OPERATING LIMITS

COOLING MODE

For functioning limits, please refer to the diagram, valid for $\Delta t = 5°C$.

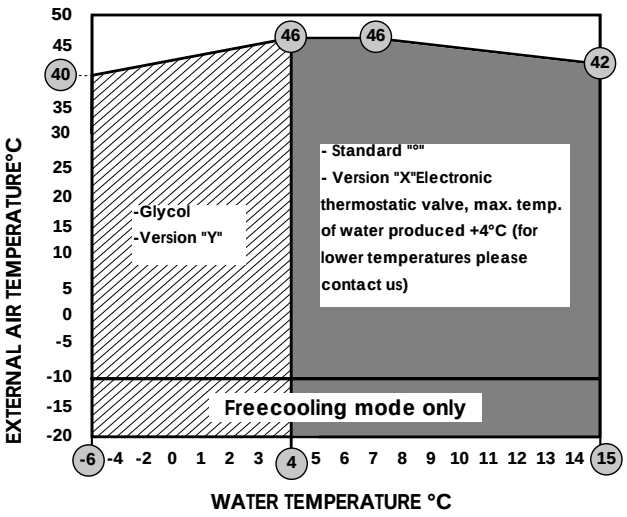
⚠ ***ATTENTION***

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

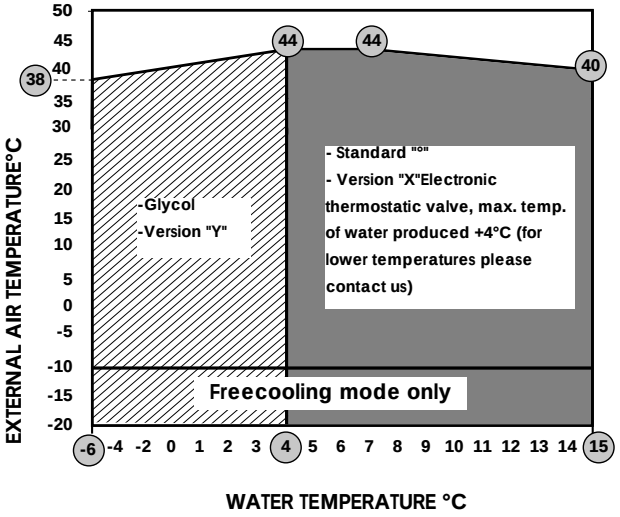
If the unit is to function beyond the operational limits, we recommend you first contact our technical-sales service

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

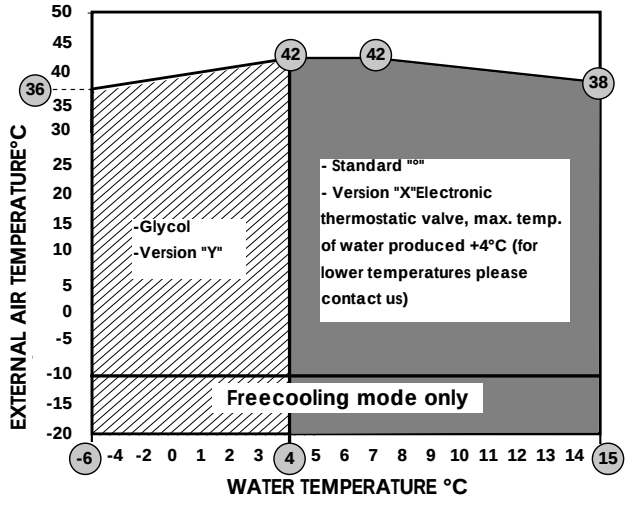
OPERATING LIMITS NS FREECOOLING



OPERATING LIMITS NS FREECOOLING 5002,5202,5402,5702



OPERATING LIMITS NS FREECOOLING 1601-3002-3202-3402



14.1. PROJECT DATA DIR. 97/23/EC

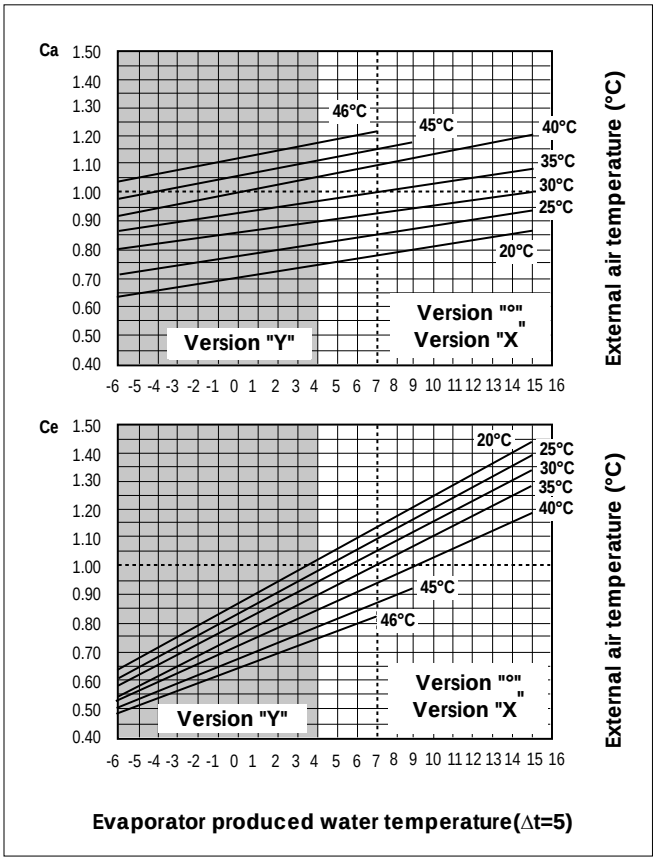
COOLING	U.M.	High Pressure Side	Low Pressure Side
Acceptable maximum pressure	bar	22	16,5
Acceptable maximum temperature	°C	120	55
Acceptable minimum temperature	°C	-10	-10

WATER SIDE	U.M.	version wtihout pump	version with pump
Acceptable maximum pressure	bar	6	6

15. CORRECTIVE COEFFICIENTS

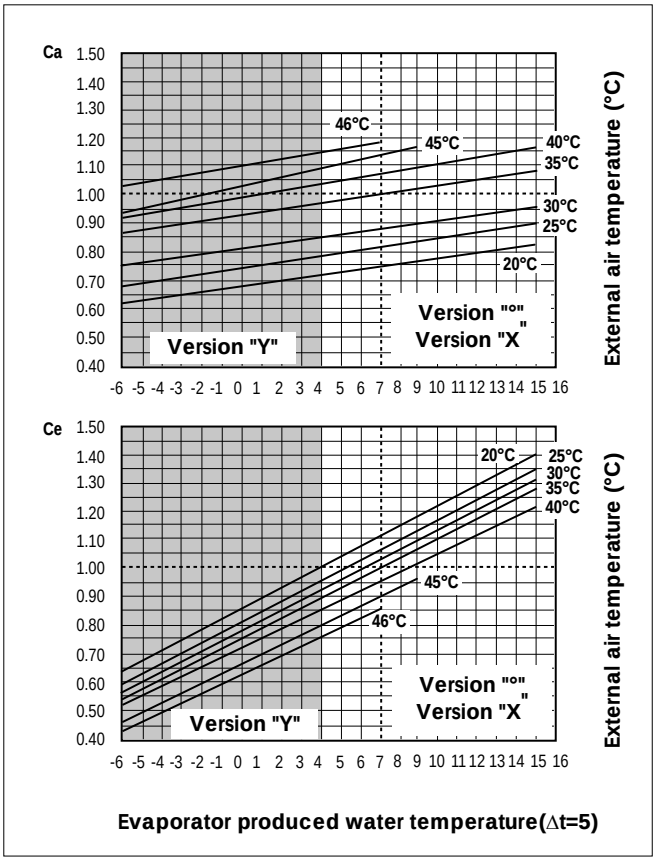
15.1. NS-FREECOOLING HIGH-EFFICIENCY VERSION

Chiller mode



15.2. NS-FREECOOLING HIGH-EFFICIENCY SILENCED VERSION

Chiller mode



Key
Pc=Cooling capacity
Pe=Input power
Ca = Corrective coefficients of absorbed power (Pe)
Ce = Corrective coefficients of cooling capacity (Pc)

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 (Pc, Pe) by the respective coefficient correctives (Cf, Ca).
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 corrispondenze 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 (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

15.4. FOR DEPOSIT FACTORS DIFFERENT FROM THE NOMINAL

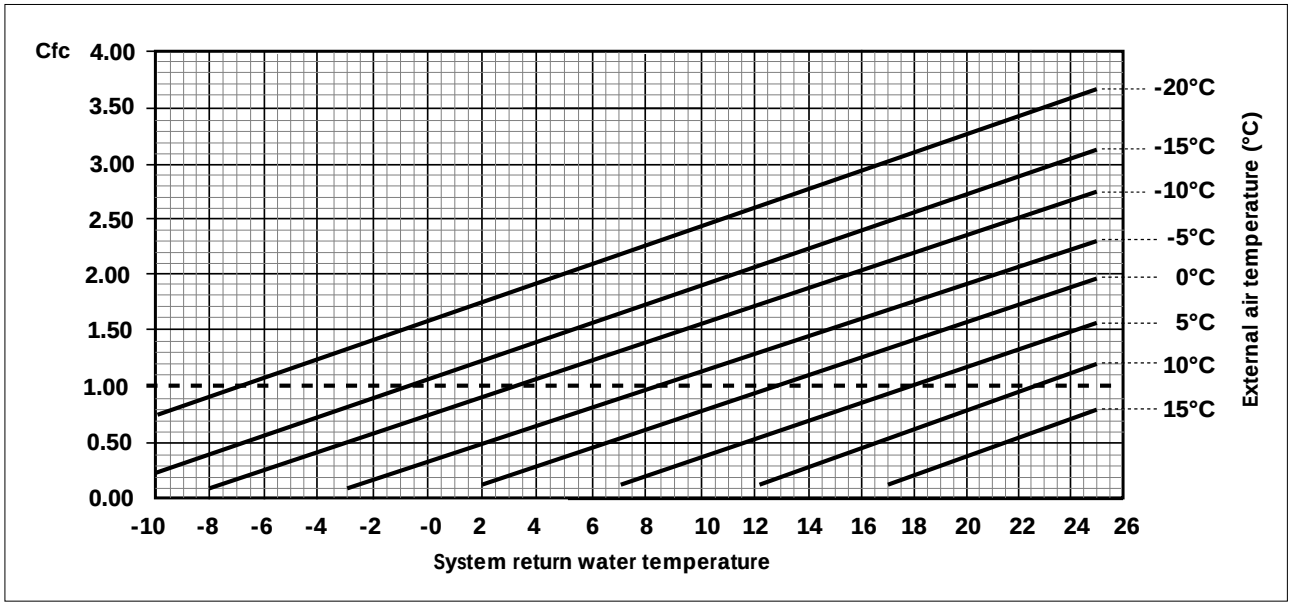
The performances provided in the technical data refer to clean tubes with deposit factor=1.
For different deposit factor values, multiply the performance data in the table by the coefficients shown.

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

Deposit factor[K*m²]/[W]	0,00005	0,0001	0,0002
Cooling capacity correction factors	1	0,98	094
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)
Ce = Corrective coefficients of cooling capacity (Pc)

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%*

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.

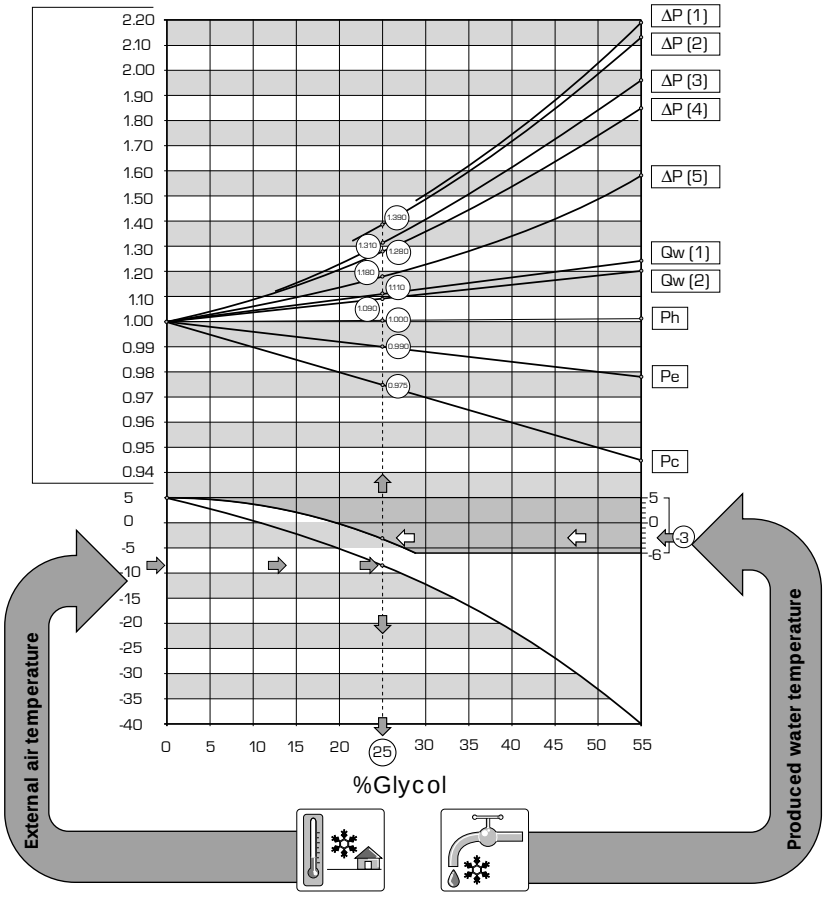
Corrective coeff. for deposit factors different from the nominal value (0.00005)

Deposit factor[K*m²]/[W]	0,00005	0,0001	0,0002
Cooling capacity correction factors	1	0,98	094
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.



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.

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 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)

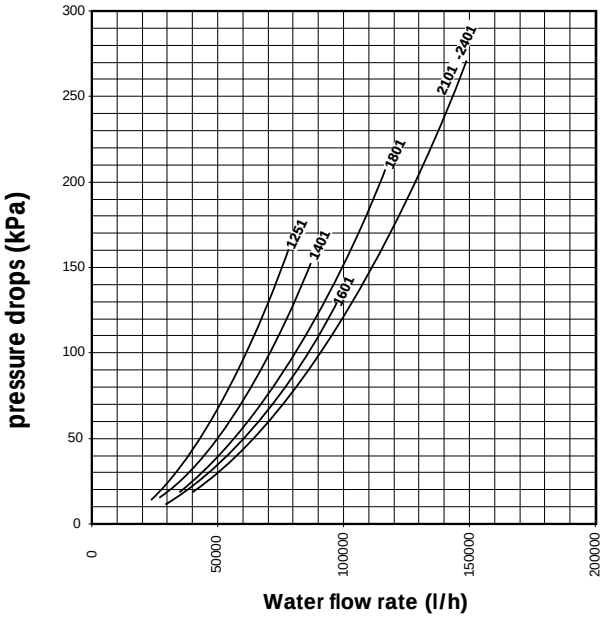
CHILLER MODE

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.

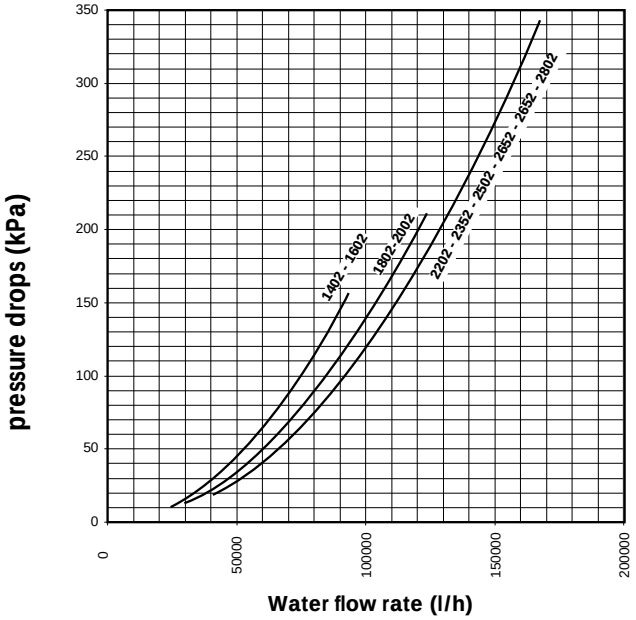
Nominal reference conditions:
COOLING

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

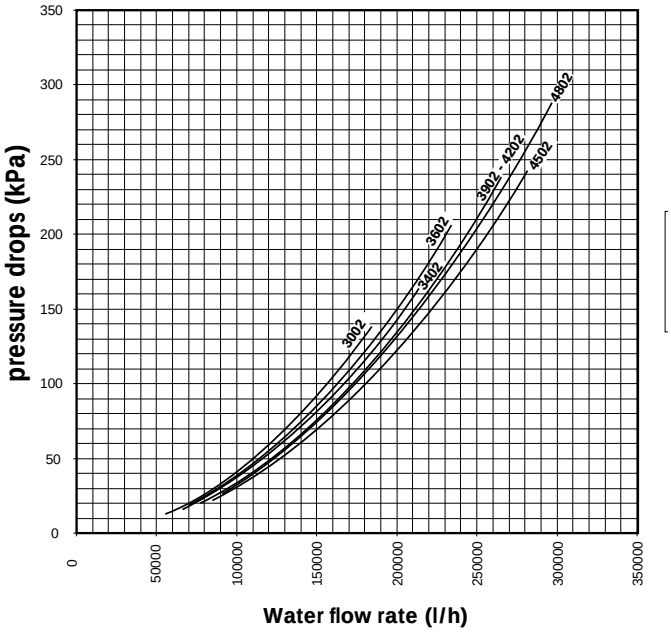
Pressure drops in Chiller mode from size 1251 to 2401



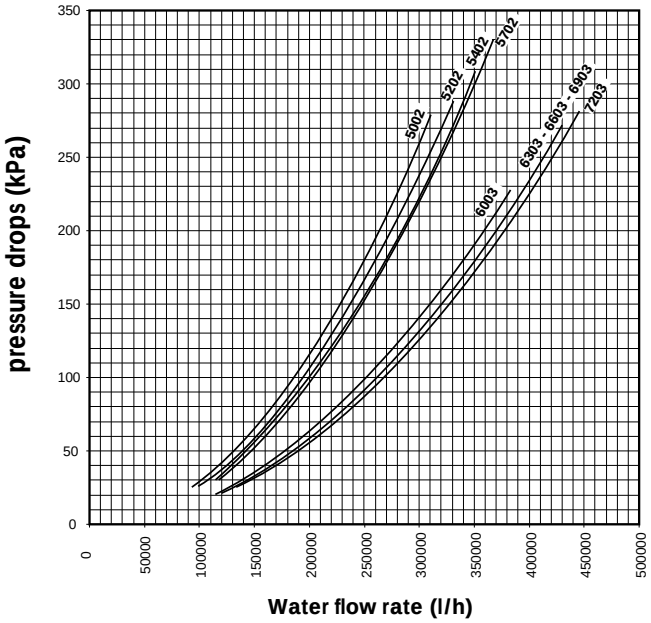
Pressure drops in Chiller mode from size 1402 to 2802



Pressure drops in Chiller mode from size 3002 to 4802



Pressure drops in Chiller mode from size 5002 to 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

VERSION WITHOUT PUMPS (00)

FREECOOLING MODE

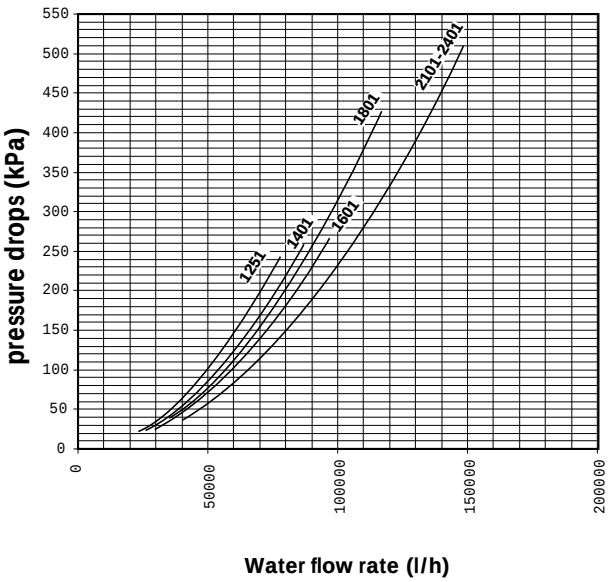
The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

Nominal reference conditions:

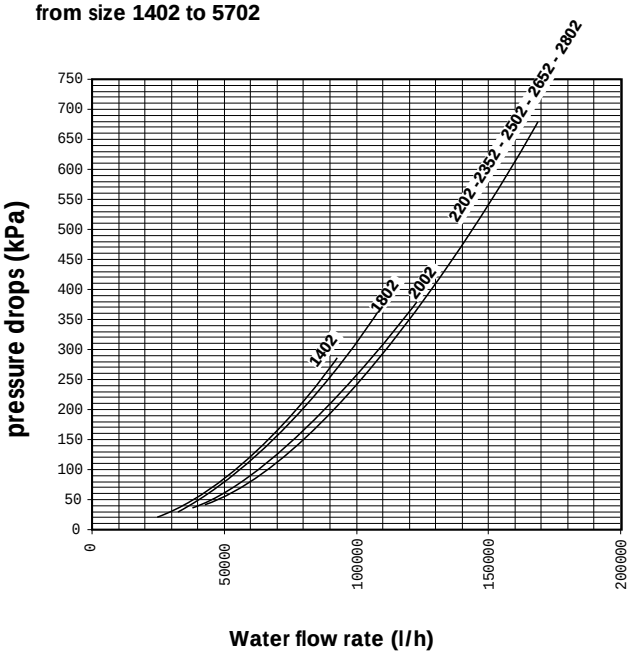
COOLING

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

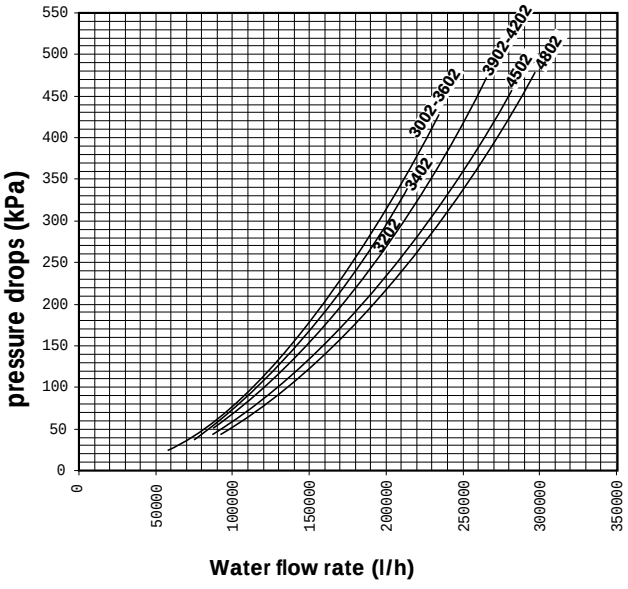
Free-cooling mode pressure drops from size 1251 to 2401



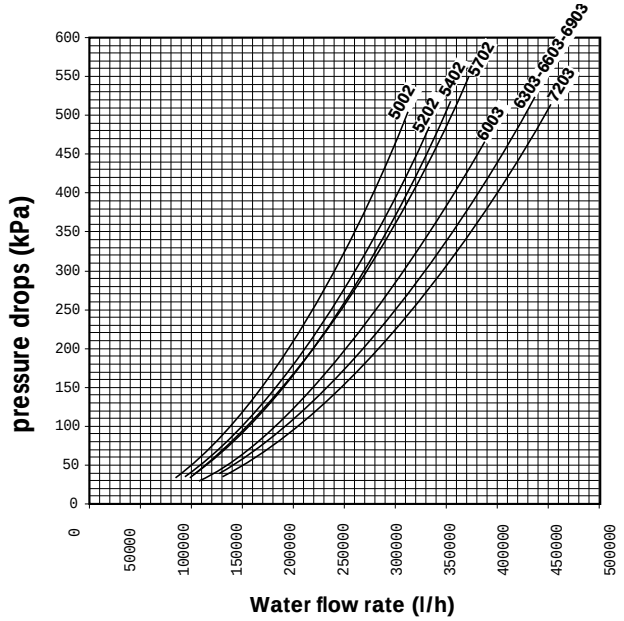
Pressure drops in Freecooling mode from size 1402 to 5702



Pressure drops in Freecooling mode from size 3002 to 4802



Pressure drops in Freecooling mode from size 5002 to 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. CIRCUIT PRESSURE DROPS

18.1. VERSION WITH SINGLE PUMP (PA - PC - PE - PG - PJ - PN - PP)

CHILLER MODE

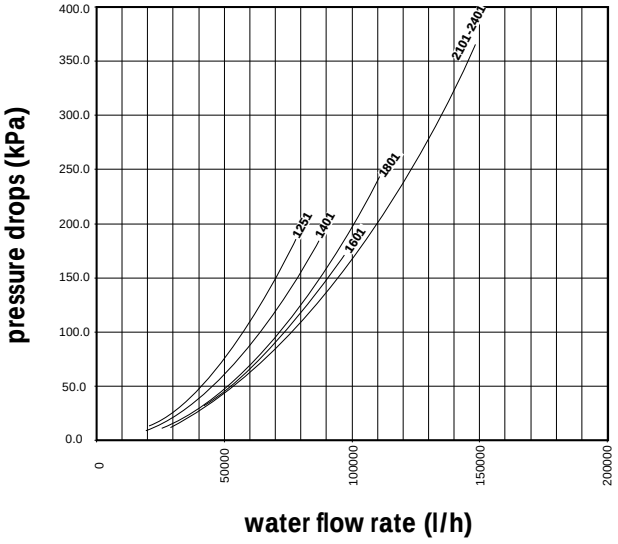
The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

Nominal reference conditions:

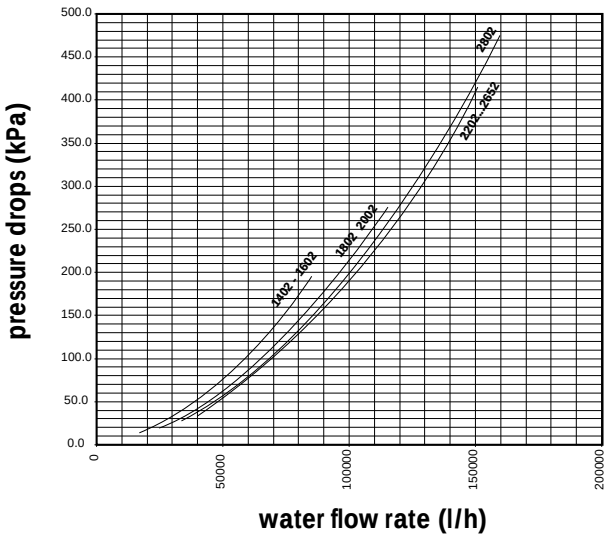
COOLING

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

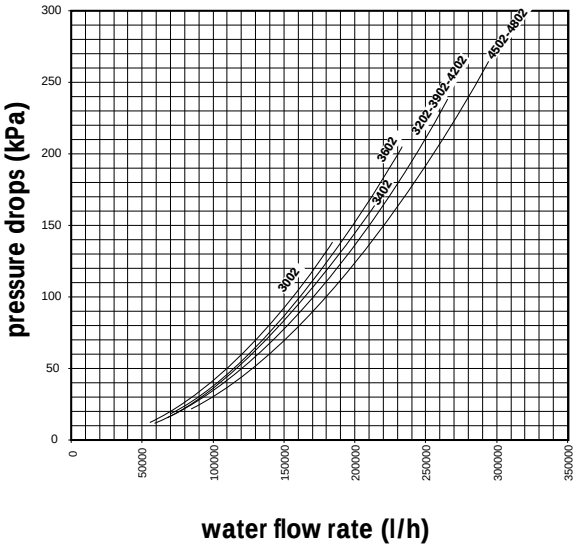
Pressure drops in Chiller mode from size 1251 to 2401



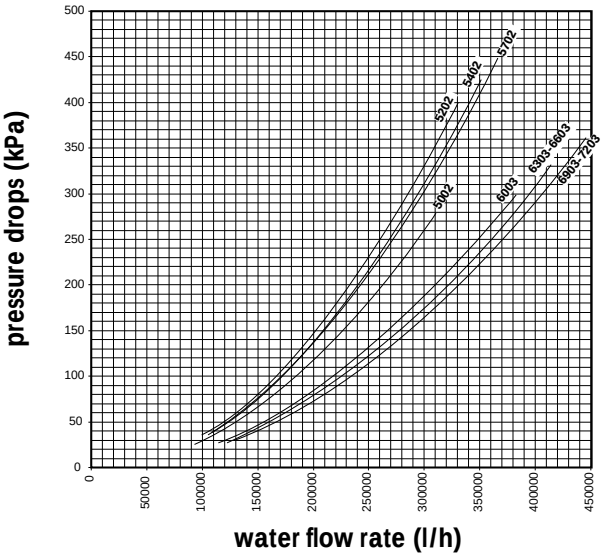
Pressure drops in Chiller mode from size 1402 to 2802



Pressure drops in Chiller mode from size 3002 to 4802



Pressure drops in Chiller mode from size 5002 to 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

VERSION WITH SINGLE PUMP (PA - PC - PE - PG - PJ - PN - PP)

FREECOOLING MODE

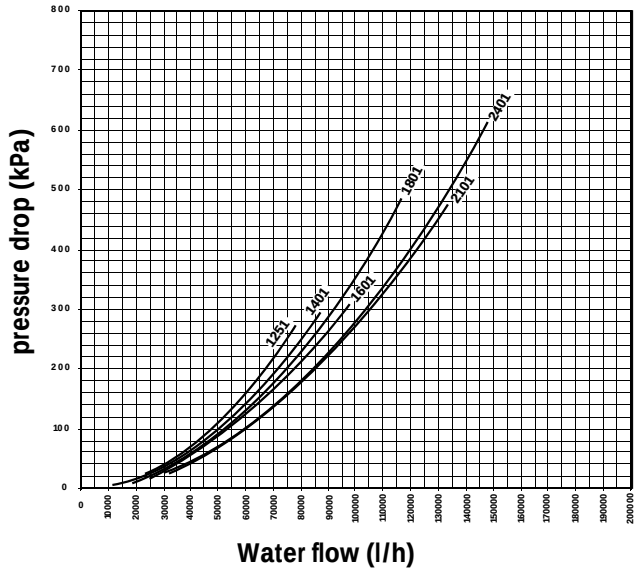
The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

Nominal reference conditions:

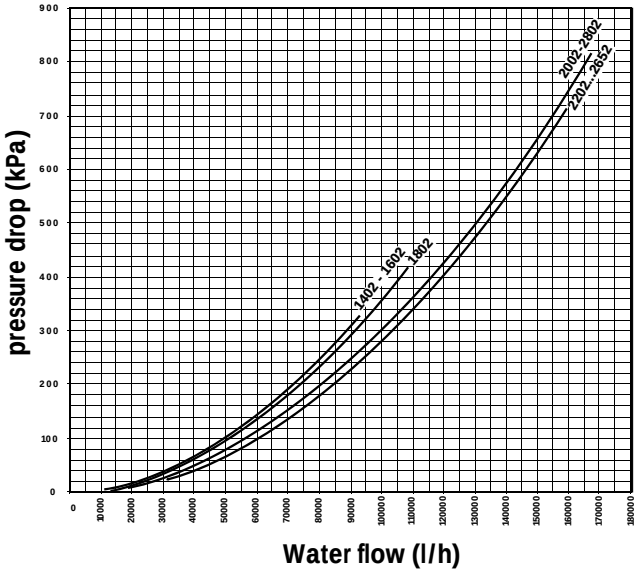
FREE COOLING

Inlet water temperature	*15°C*
External air temperature	*2°C*
Glycol	*0%*

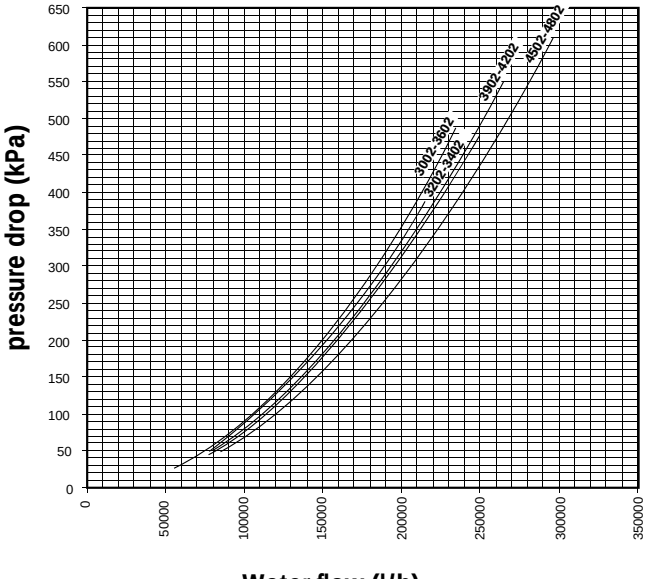
Free-cooling mode pressure drops from size 1251 to 2401



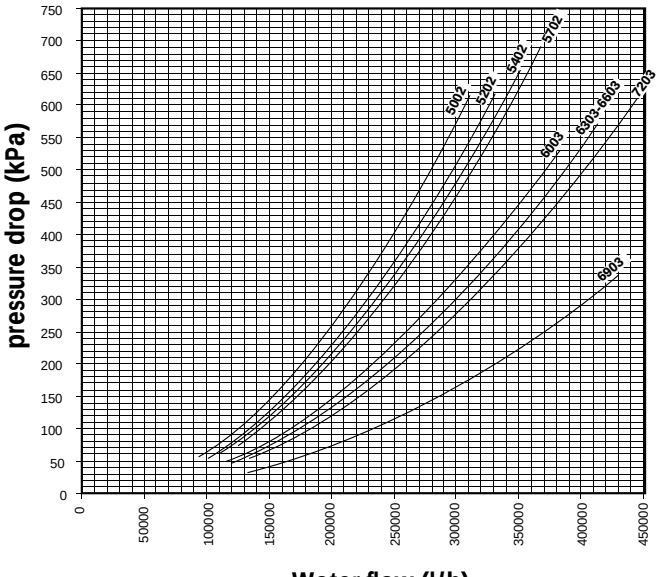
Pressure drops in Freecooling mode from size 1402 to 5702



Pressure drops in Freecooling mode from size 3002 to 4802



Pressure drops in Freecooling mode from size 5002 to 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

19. CIRCUIT PRESSURE DROPS

19.1. VERSION WITH SINGLE PUMP AND RESERVE PUMP (PB - PD- PF- PH- PK - PO - PQ)

CHILLER MODE

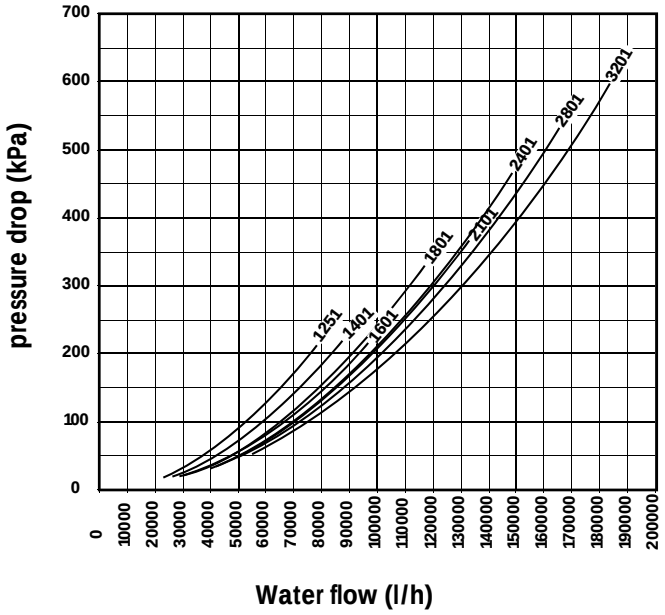
The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

Nominal reference conditions:

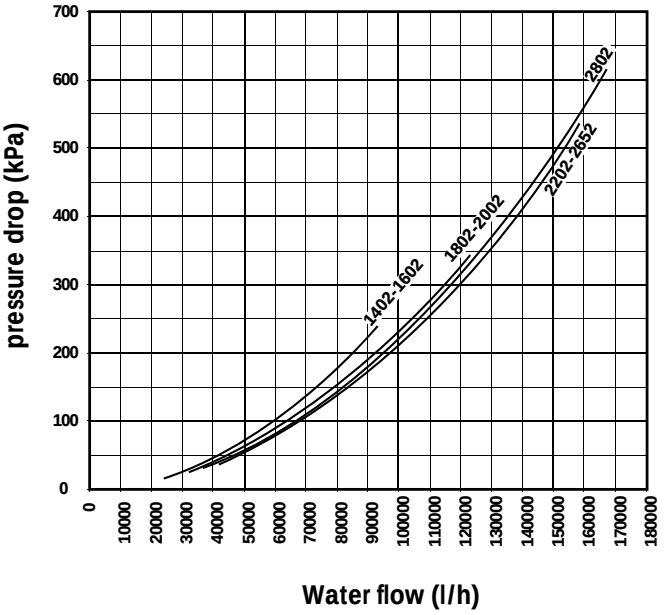
COOLING

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

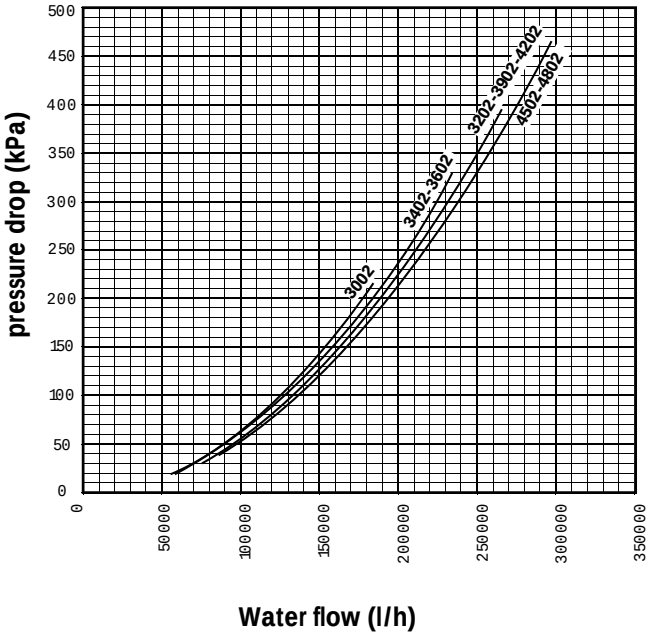
Pressure drops in Chiller mode from size 1251 to 2401



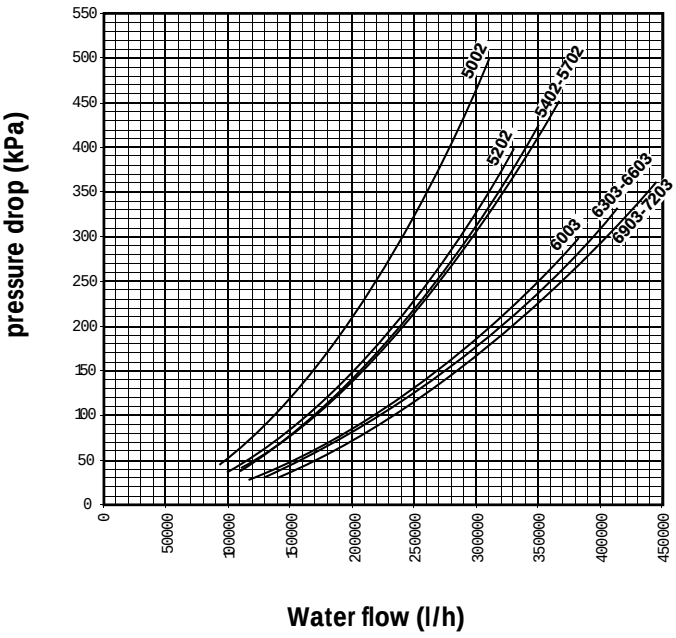
Pressure drops in Chiller mode from size 1402 to 2802



Pressure drops in Chiller mode from size 3002 to 4802



Pressure drops in Chiller mode from size 5002 to 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

VERSION WITH SINGLE PUMP AND RESERVE PUMP (PB - PD- PF- PH- PK - PO - PQ)

FREECOOLING MODE

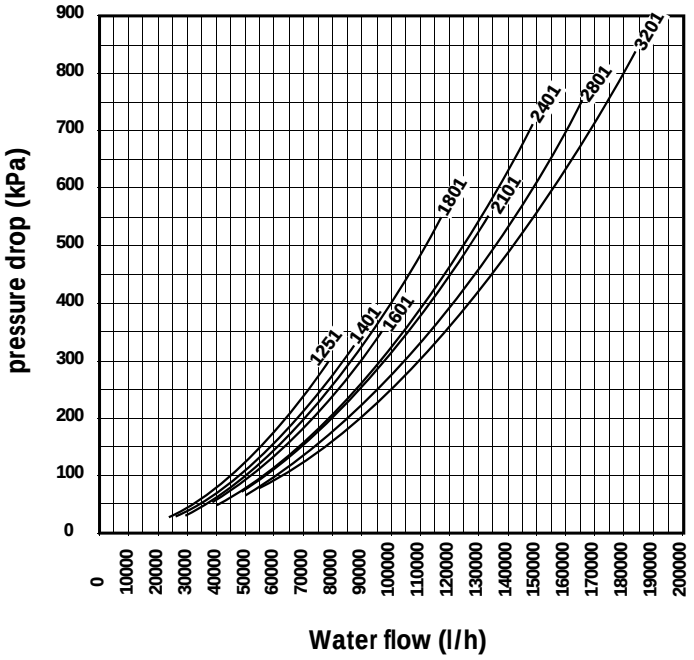
The pressure drops in the diagram are relative to an average water temperature of 10 °C.
The table states the correction to apply to the pressure drops on variation of the average water temperature.

Nominal reference conditions:

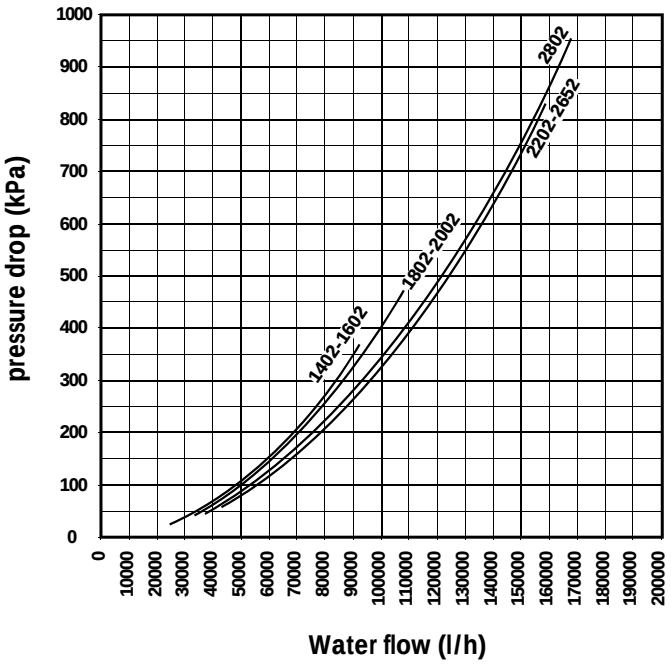
FREE COOLING

Inlet water temperature	*15°C*
External air temperature	*2°C*
Glycol	*0%*

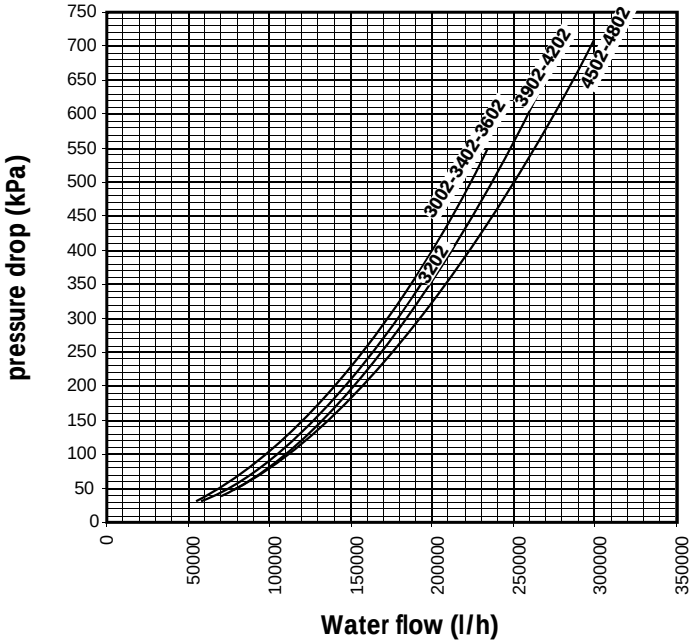
MODELS 1251 - 1401 - 1601 - 1801 - 2101- 2401 - 2801 - 3201



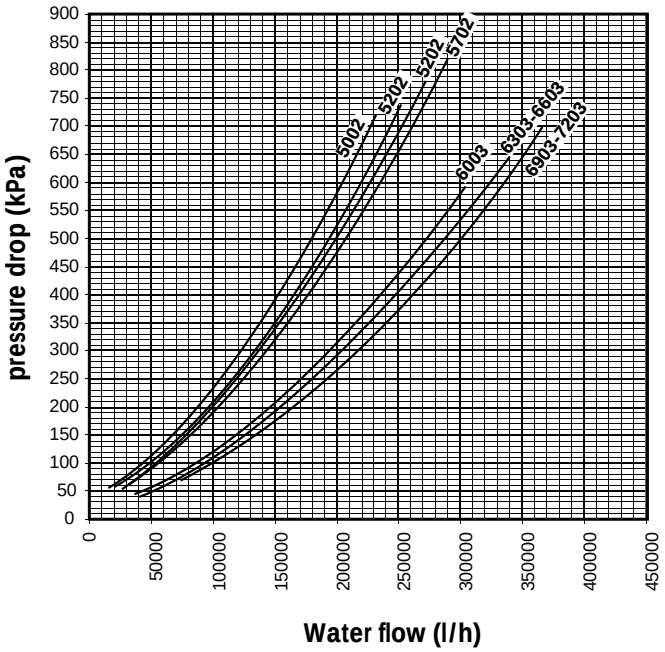
MODELS 1402 -1602 - 1802 - 2002 - 2202
2352 - 2502 - 2652 - 2802 - 3002



MODELS 3202, 3402, 3602, 3902, 4202, 4502, 4802



MODELS 5202, 5402,5702, 6003
6303, 6603, 6903, 7203



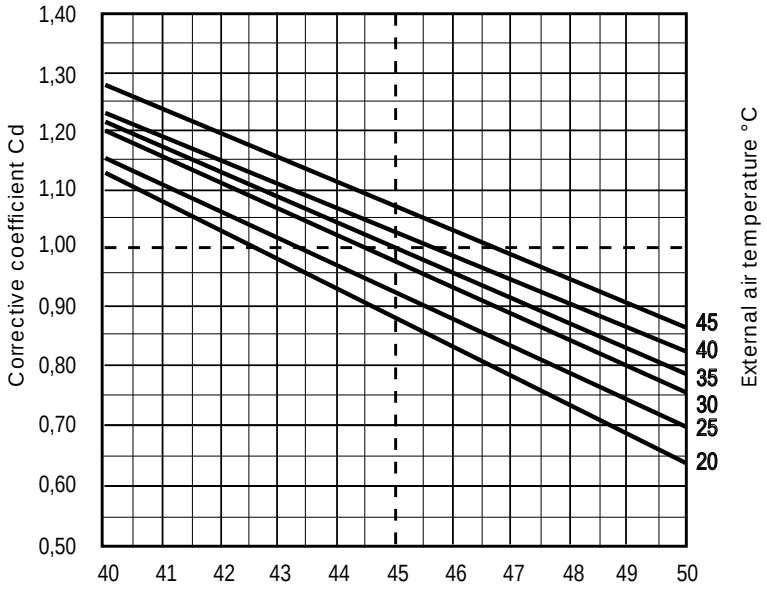
Corrective coefficients to apply to pressure drops							
Average water temperature °C	**5**	**10**	**15**	**20**	**30**	**40**	**50**
Multiplicative coefficient	1.02	**1**	0.985	0.97	0.95	0.93	0.91

20. DESUPERHEATER

The heating capacity that the desuperheater can achieve is attained by multiplying the nominal value (Pd), by a relevant coefficient (Cd).
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 corrispondenze to each curve.

Key
Pd= heating capacity *recovered*
Cd = Corrective coefficient *(Pc)*

DESUPERHEATER CORRECTIVE COEFFICIENTS



21. DESUPERHEATER PRESSURE DROPS

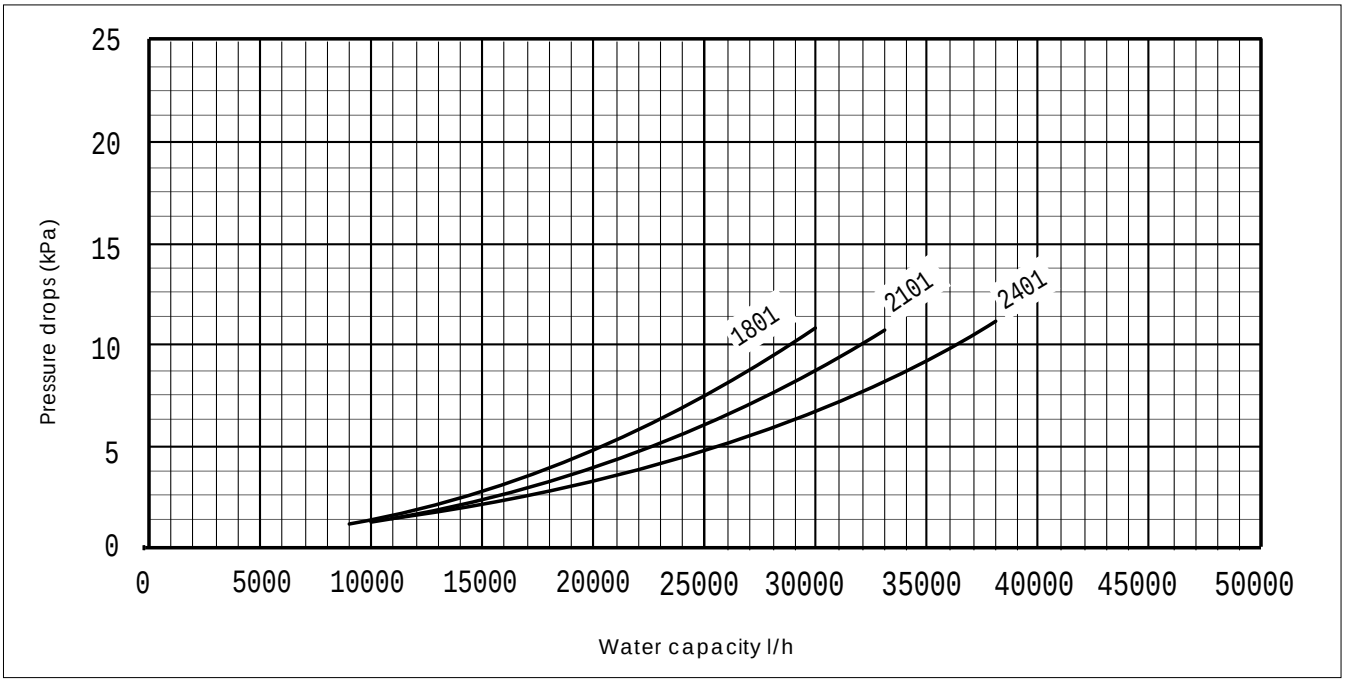
The NS models with desuperheater can have up to 3 desuperheaters, 1 per circuit, according to the size.

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.

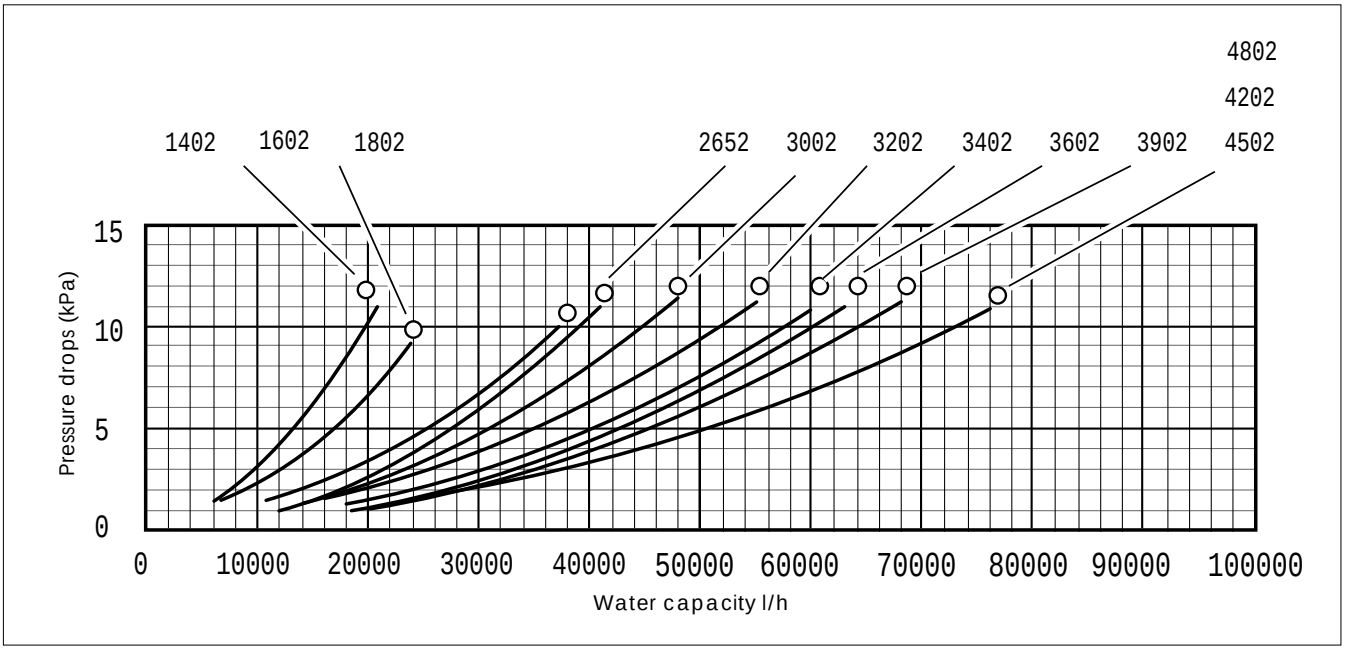
Nominal value referred to:
Air temperature ..... 35°C
Water to the desuperheater..... 40/45°C
Δt ..... 5°C

Models 1251-2401

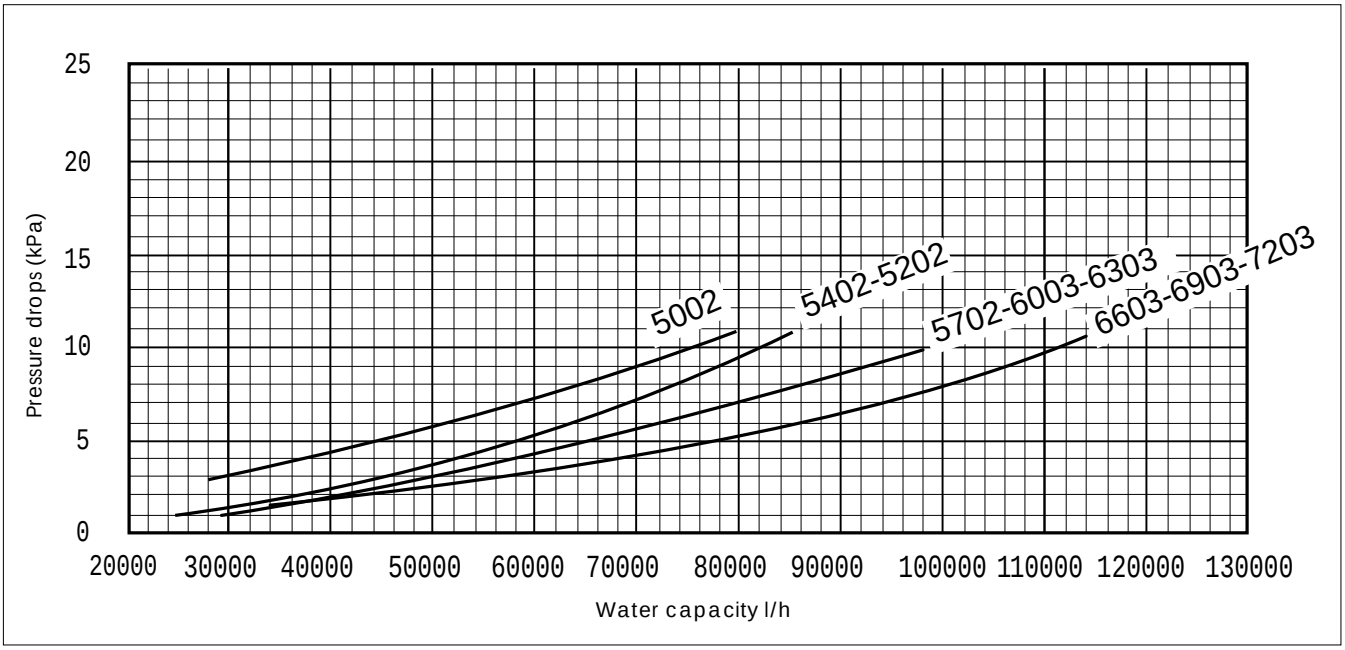


Corrective factors for water temperature different to nominal				
Average water temperature °C	**30**	**40**	**45**	**50**
Multiplicative coefficient	1.03	1.01	1	0.99

Models 1402-4802



Models 5002-7203



21.1.1. 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

22. PUMPS

22.1. PUMP SELECTION

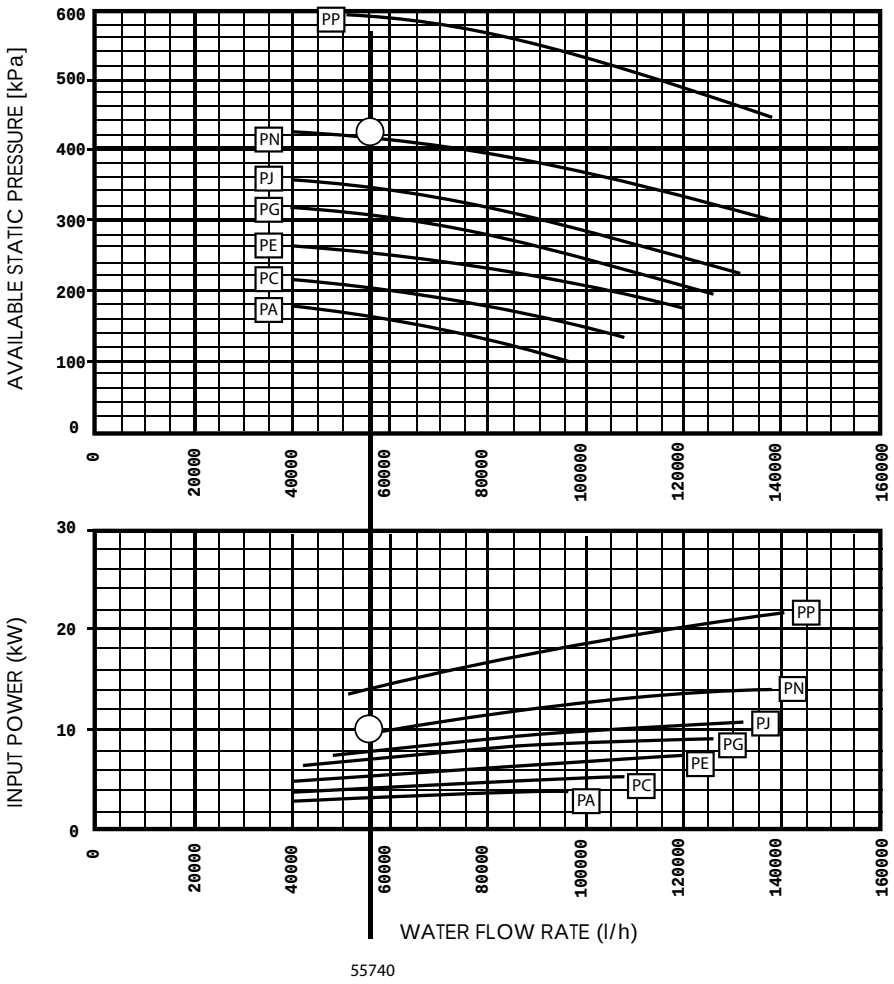
Pump selection example

NS 3202A
Useful static pressure required 300 kPa.
Nominal water flow rate = 110940 l/h
Nominal pressure drop = 61 kPa per circuit.

Procedure:
1.**Divide the flow rate by the number of hydraulic circuit**
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 300 kPa**, which offers:
Pump N = 410 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 (PN) - Nominal pressure drops 410 kPa - 61kPa = 349 kPa of useful static pressure to the system. (49 kPa exceeding the requirement).



Field	Pumping unit		
00	Without pump	**PG**	with pump G
PA	with pump A	**PH**	With pump G and reserve pump
PB	With pump A and reserve pump	**PJ**	with pump J
PC	with pump C	**PK**	With pump J and reserve pump
PD	With pump C and reserve pump	**PN**	with pump N
PE	with pump E	**PO**	With pump N and reserve pump
PF	With pump E and reserve pump	**PP**	with pump P
		PQ	With pump P and reserve pump

ATTENTION:

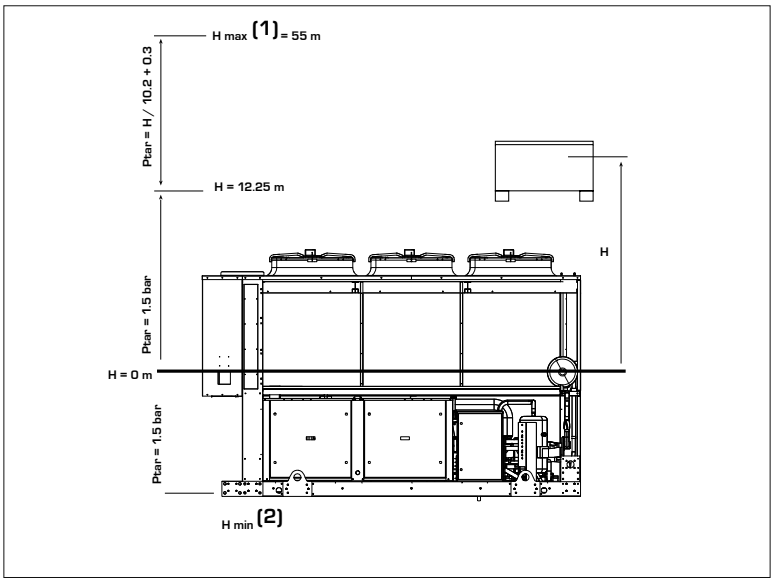
The pump will be the same for all the hydraulic circuits that make up the selected model.

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

23. 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 (calibration) [bar] = H [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.

24. WATER SYSTEM CONTENT

Minimum water content	U.M.	(1)	(2)
1251		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	m^3	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		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	m^3	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		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	m^3	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.

25. SOUND DATA

25.1. 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 "F"	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	Sound power for central band frequency (dB)						
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

25.2. 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 "F"	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	Sound power for central band frequency (dB)						
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

25.3. 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.

Mod. NS "F"	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	Sound power for central band frequency (dB)						
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

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

26. 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	\	\	\	\	\	\	\	\	\	\	\
COMPRESSOR FUSES		**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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