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NRA NRA H

MODEL:	
SERIAL NUMBER	

COMPLIANCE DECLARATION	We, the undersigned, declare on our own exclusive responsibility that the object in question, so defined:
Product identification	AIR / WATER chiller ; HEAT PUMP NRA RANGE is in compliance with:

1.	Directive 97/23/EC and has been subjected (with reference to Attachment II of the said directive) to the following compliance evaluation procedure: module H with checks made via inspections by the appointed body CEC via Pisacane 46 Legnano (MI) - Italy, identity number 1131;
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2.	Designed, produced and marketed in observance of the following technical specifications: Harmonised standards:	
	- EN 378:	Refrigerating system and heat pumps - Safety and environmental requirements;
	- EN 12735:	Copper and copper alloys - Seamless, round copper tubes for air conditioning and refrigeration;
	- UNI 1285-68:	Calculation of the strength of metal pipes subject to internal pressure;

3.	Designed, produced and marketed in observance of the following EC directives:	
	98/37/EC:	Machine Directive
	2006/95/CE	LVD

Bevilacqua	26/03/2007	
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Marketing Director
Signature

1 GENERAL STANDARDS

- This manual, and the electrical layouts supplied with the unit, must be kept in a dry place for any future consultation, and for the lifespan of the machine.

This manual has been drawn up with the aim of supporting the correct installation of the unit and providing all the indications for the correct use and maintenance of the device. Before proceeding with the installation, please read all the information in the manual carefully, as well as the procedures necessary for the correct installation and use of the unit.

- Be careful to adhere to the instructions in this manual and observe the safety regulations currently in place.
- The device must be installed in compliance with the local legislation currently in force in the country of destination.
- Non-authorized tampering with the equipment, whether electrical or mechanical, will make **THE WARRANTY VOID and exclude any liability on the part of the company.**
- Check the electrical characteristics shown on the registration plate (fig.1) before making the electrical connections. Read the instructions in the specific section about electrical connections.

- If the unit needs to be repaired, in all cases contact a specialised AERMEC After Sales Service centre and only use OEM spare parts.

- The manufacturer furthermore declines any liability for injury to persons or damage to things resulting from the failure to comply with the information in this manual.

- Permitted uses: this series of chillers is suitable for producing cold water to use in hydronic systems designed for air conditioning. The units are not suitable for producing hot water for bathrooms.

Any use other than that permitted, or outside the operating limits mentioned in this manual, is forbidden unless previously agreed with the company.

The warranty does not include payment for damage due to wrong installation of the unit by the installer.

- The warranty does not include payment for damage due to the improper use of the unit by the user.
- The manufacturer is not to be considered liable for accidents to the user or the installer due to the incorrect installation or improper use of the unit.
- The device must be installed in such a way that maintenance and/or repair

operations can be carried out. The warranty of the device does not in any case cover costs incurred as a result of motorised ladders, scaffolding or any other lifting systems necessary to carry out the operations under warranty.

The warranty is not valid when:

- the services and repairs have been carried out by non-authorized personnel or companies;
- the unit has been repaired or modified in the past with non-OEM spare parts;
- the unit has not been adequately maintained;
- the instructions described in this manual have not been followed;
- non-authorized modifications have been made.

N.B:

The Manufacturer reserves the right at all times to make any modification for the improvement of its product, and is not obliged to add these modification to machines of previous manufacture that have already been delivered or are being built.

The warranty conditions are anyway subject to the general sales conditions at the moment the contract is finalised.

1.1 Technical plate

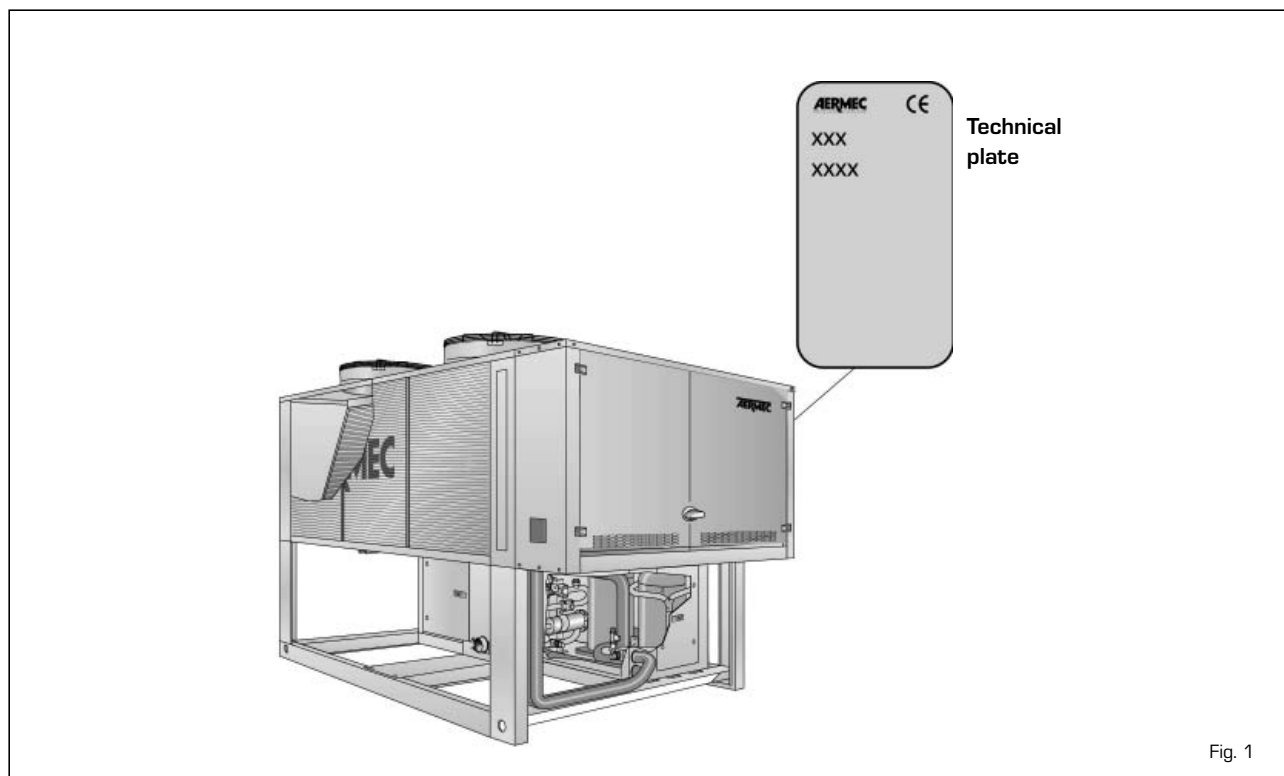


Fig. 1

2 DESCRIZIONE E SCELTA DELL'UNITÀ

The devices of the **NRA** range are units used to produce cold water for technological systems; the heat pump models also allow you to produce hot water for heating. They consist of two R407C refrigerating circuits and a single hydraulic circuit (which may or may not be fitted with an accumulation unit).

The presence of more than one scroll type compressor allows the NRA chillers various capacity controls of the cooling capacity.

The use of more than one scroll type compressor allows a high level of efficiency, even with partial loads. In these cases in fact, a variable number of scroll compressors are working, each at 100% (i.e. maximum efficiency) of the output power. By means of a microprocessor, the electronic regulation controls and manages all the components and working parameters of the unit; an internal memory registers the working conditions in the moment when an alarm condition arises, in order to visualise it on the display. The units have a protection rating of IP 24.

2.1 MODELS AVAILABLE

- "STANDARD COOLING ONLY (°)" maximum outside temperature allowed 42°C. Acoustic protection cover for the compressor, for quiet operation.
- "HEAT PUMP (H)" in cooling mode the operating limits arrive to a maximum outside air temperature of 46°C. NRAH do not envisage the following configurations:

- YH (with processed water lower than 4°C)
- HC (condensing heat pump)
- HA (heat pump in high temperature because the heat pump is, by its very nature, a machine for high temperatures)

2.2 VERSIONS AVAILABLE

- "STANDARD/BASE" Maximum outside temperature allowed 42°C, acoustic cover for the compressor, for quieter operation.
- "HIGH TEMPERATURE" **(available only for cold working versions)** via the expansion of the pack finned heat exchanger, it allows you to widen the operating limits, arriving at a maximum outside air temperature of 46°C.
- "SILENCED (L)" represents the models designed for particularly quiet operation. **All the sizes are fitted with a device for regulating the fan speed. When the temperature is lower than 35°C, the low noise version further reduces the number of fan rotations, thereby obtaining an even quieter operation than that in nominal conditions.**
- "SILENCED HEAT PUMPS (HL)" represents the models designed for particularly quiet operation. **All the sizes are fitted with a device for regulating the fan speed.**
- "HEAT RECOVERY" A unit with air condensation, complete

with section for partial heat recovery. The heat exchanger is specially scaled to guarantee heat recovery for the production of hot water for use in bathrooms or other purposes.

1. Desuperheater (D)

The desuperheater is also available for heat pump versions, limitedly in the cooling function. It must be intercepted in the heating function.

2. Total heat recovery (T)

In heat pumps total recovery is only available for the "OO versions without hydronic kit"

- "CONDENSING UNITS C"
- "SILENCED CONDENSING UNITS LC"
- "VERSION Y" is the version that allows you to produce chilled water below the standard value of +4°C, to a minimum of -6°C. For lower values, contact the company headquarters. **ONLY THE VERSION YA IS AVAILABLE.**

WARNING

For the devices designed to work with a low air temperature, and also the heat pumps, before starting up the unit (or at the end of each period of prolonged disuse) it is extremely important for the oil of the compressor carter to be heated beforehand, via the power supply to the special heaters, for at least 8 hours.

The carter heater is automatically powered when the unit stops, provided that the unit is kept under tension.

2.2.1 Standard equipment

ALL THE VERSIONS COME WITH:	
1.	Evaporator anti-freeze heater
2.	Compressor carter heater
3.	Remote control panel
4.	Water filter (supplied with the versions without accumulation)
5.	Flow switch only in the versions with accumulation
HEAT PUMPS	
TP1	Trasduttore di bassa pressione
TP2	Trasduttore di alta pressione
DCPX	Dispositivo di regolazione della velocità dei ventilatori di serie per la sola versione HL
CHILLERS WITH ACCUMULATION	
1.	Evaporator anti-freeze heater
2.	High or low pressure pumping unit
3.	OPTION: There is also the possibility to have a reserve pump. The stand-by pump that in NRA 800 - 900 - 1000 models is controlled by the electronic card which enables the alternate operation of the two pumps to optimize the working time. A switch on the NRA 1250 - 1400 - 1500 - 1650 - 1800 electric panel enables the pumps to be manually switched over.
4.	For the heat pump versions, an accumulation (pre-set for the insertion of integrative heaters) is available upon request.
CHILLERS WITH DESUPERHEATER	
DCPX	Standard

2.3 SELECTION

1,2,3	4,5,6,7	8	9	10	11	12	13	14	15,16
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NRA 1650 ° ° D L ° ° ° 00

fields 15 - 16

HYDRONIC KIT	
00	Without accumulation
01	Accumulation and low pressure pump
02	Accumulation, low pressure pump and reserve pump
03	Accumulation and high pressure pump
04	Accumulation, high pressure pump and reserve pump
05	Accumulation with holes for integrative resistance, and low pressure pump
06	Accumulation with holes for integrative resistance, low pressure pump and reserve pump
07	Accumulation with holes for integrative resistance, high pressure pump
08	Accumulation with holes for integrative resistance, high pressure pump and reserve pump
P1	Only low pressure pump
P2	Low pressure pump and reserve pump
P3	Only high pressure pump
P4	High pressure pump and reserve pump

fields 14

Power supply	
°	3~400V-50Hz with thermomagnetic switches
4	3~230V-50Hz with thermomagnetic switches
9	3~500V-50Hz with thermomagnetic switches

fields 13

Evaporator	
°	According to PED standards
C	Condensing [without evap.]

fields 12

Coils	
°	- Aluminium
R	- Copper
S	- Tinned copper
V	- Varnished aluminium copper

fields 11

Version	
°	Standard
A	High temperature
L	Standard in Silenced operation

fields 10

Heat recoverers	
°	Without recoverers
D	Desuperheater
T	Total recovery

fields 9

Model	
°	Cooling only
H	Heat pump

fields 8

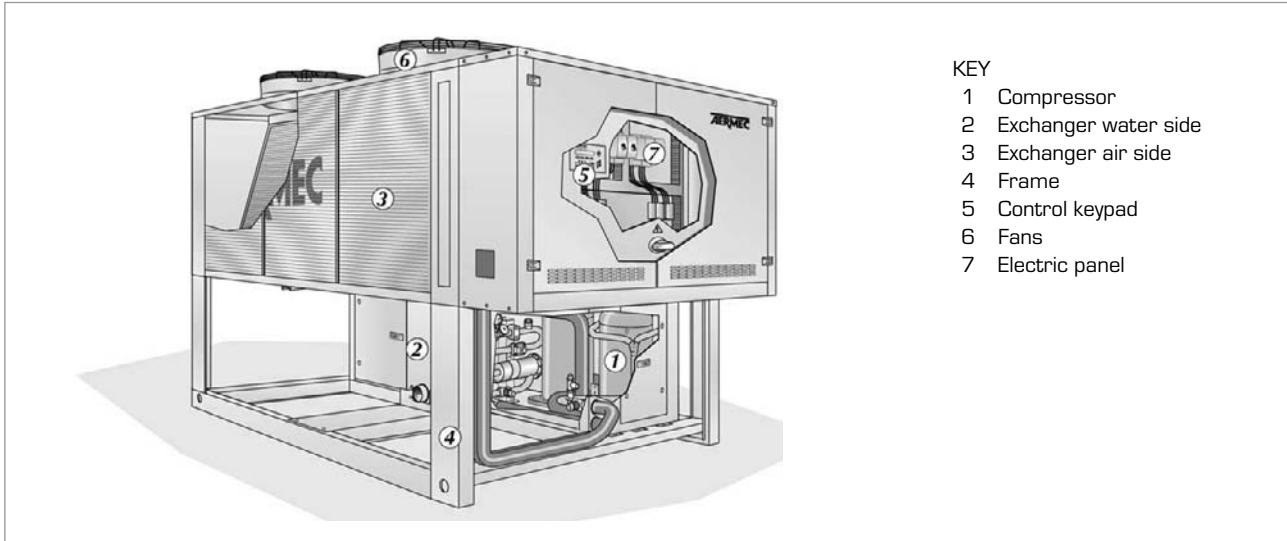
Refrigerant	
°	Standard
Y	Version for low temperature of processed water; down to -6°C

fields 4 - 5 - 6 - 7

0800 - 0900 - 1000 - 1250 - 1400 - 1500 - 1650 - 1800

3 DESCRIPTION OF COMPONENTS

Esempio NRA 1650 00



KEY

- 1 Compressor
- 2 Exchanger water side
- 3 Exchanger air side
- 4 Frame
- 5 Control keypad
- 6 Fans
- 7 Electric panel

3.1 REFRIGERATING CIRCUIT

Compressors

Hermetic scroll type compressors equipped, as standard, with anti-freeze heater.

The heater is automatically powered when the unit stops, provided that the unit is kept under tension. The compressor area is acoustically insulated. The use of more than one scroll type compressor allows a high level of efficiency with partial loads. In these cases in fact, a variable number of scroll compressors are working, each at its own 100% (i.e. maximum efficiency) of the output power.

Air side heat exchanger

It is made of copper pipes and aluminium fins locked into place through mechanical expansion of the pipes. Of the high efficiency type; furrowed tube and corrugated fins for heat pump, smooth tube and turbo fins for cooling only.

Water side heat exchanger

Of the plate type (AISI 316), externally insulated with closed cell material to reduce thermal dispersion. Fitted, as standard, with anti-freeze heater.

Liquid separator (heat pump only)

Suction from compressor, to protect from any liquid refrigerant return, flooded starts, working in the presence of liquid.

Filter drier

Of the mechanical type, made of ceramic and hygroscopic material, able to hold back any impurities and traces of humidity in the refrigerating circuit.

Sight glass

For checking the refrigerating gas load and any humidity in the refrigerating circuit.

Thermostatic valve

The mechanical valve, with outside equaliser on the evaporator outlet, modulates the gas flow to the evaporator on the basis of the thermal load, in such a way as to ensure the proper degree of overheating of the intake gas.

Liquid and force gas taps (cooling-only versions)

They allow the refrigerant to be cut off during extraordinary maintenance.

Solenoid valve

The valve closes when the compressor turns off, preventing the flow of refrigerant gas towards the evaporator.

Reverse cycle valve (heat pump only)

Inverts the flow of the refrigerant when there is a change of summer / winter operation and during the defrosting cycles.

One-way valve

This allows the refrigerant to flow in just one direction.

Desuperheater (only upon request)

Of the plate type (AISI 316), externally insulated with closed cell material to reduce thermal dispersion.

The desuperheater is also available for heat pump versions, limitedly in the cooling function. It must be intercepted in the heating function.

Total recovery (only upon request)

Of the plate type (AISI 316), externally insulated with closed cell material to reduce thermal dispersion.

NOTE

In heat pumps total recovery is only available for the "00 versions without hydronic kit"

Liquid accumulation

only for heat pumps, or with total heat recovery.

It is used in the heat pump or total recovery versions. Used to keep the refrigerating gas in a liquid state if the machine, in that particular working point, has an excess of it.

3.2 FRAME AND FANS

Fan unit

Screw type, statically and dynamically balanced. The electric fans are protected electrically with thermomagnetic switches and mechanically with metal anti-intrusion grilles, in accordance with the standard CEI EN 60335-2-40.

Load-bearing structure

Made of hot-galvanised steel sheet of a suitable thickness, varnished with polyester powders able to resist atmospheric agents over time.

3.3 HYDRAULIC COMPONENTS

Circulation pump

Depending on the characteristics of the pump chosen, it offers an effective pressure to overcome the pressure drops in the system. There is also the possibility to have a reserve pump.

The stand-by pump that in NRA 800 - 900 - 1000 models is controlled by

the electronic card which enables the alternate operation of the two pumps to optimize the working time. A switch on the NRA 1250 - 1400 - 1500 - 1650 - 1800 electric panel enables the pumps to be manually switched over.

Flow switch only in versions with accumulation feature and or pumps

This checks that the water is circulating. If this is not the case, it shuts down the unit..

NOTE

In the versions without accumulation a flow switch must be introduced or the WARRANTY becomes void.

Water filter Supplied with standard versions (Mounted in versions with accumulation and/or Pope)

Allows you to block and eliminate any impurities in the hydraulic circuits. Inside, it has a filtering mesh with holes not greater than one millimetre. It is essential in order to avoid serious damage to the plate heat exchanger.

Accumulation tank

It is made of stainless steel, with a capacity of 700 litres. In order to reduce the thermal dispersion and eliminate the phenomenon of the formation of condensation, it is insulated with polyurethane material of a suitable thickness. It is fitted, as standard, with an anti-freeze heater (down to -20°C outside temperature, tank water temperature 5°C), commanded by the anti-freeze probe situated in the tank.

Drain valve

(only in the versions with hydronic unit or pump(s))

Of the manual type, it discharges any air pockets. It is intercepted by a stopcock so that it can be substituted if necessary.

Filling unit

(only in the versions with accumulation or pump(s))

This has a pressure gauge showing the pressure in the system.

Two expansion tanks (of 25 litres)

(only in the versions with accumulation or pump(s))

of the membrane type, with nitrogen pre-charge.

Hydraulic circuit safety valve

(only in the versions with hydronic unit or pump(s))

CALIBRATED AT 6 bar and with a discharge that can be channelled, it intervenes by discharging the overpressure in the event of anomalous pressures.

3.4 SAFETY AND CONTROL COMPONENTS

Low pressure switch

not present in the heat pump versions, as these functions are carried out directly by the board.

Of fixed calibration, located on the low pressure side of the refrigerating circuit, it stops the operation of the compressor in the event of anomalous work pressures.

High pressure switch

Of variable calibration, located on the high pressure side of the refrigerating circuit, it stops the operation of the compressor in the event of anomalous work pressures.

Anti-freeze heater (installed as standard)

Its operation is commanded by the anti-freeze probe located in the plate evaporator. It is activated when the water temperature is +3°C, and deactivated when the water temperature is +5°C. The dedicated software in the regulation card manages the heater.

Refrigerating circuit safety valve

Calibrated at 30 Bar, it cuts in by letting off the overpressure in the case of anomalous pressures.

Low pressure transducers TP1, standard in the heat pumps.

accessory in the cooling only versions

High pressure transducer TP2 standard on all the versions

3.5 ELECTRICAL COMPONENTS

Electrical panel

Contains the power section and the management of the controls and safety devices. This conforms with standard CEI 60204-1, and Electromagnetic Compatibility Directives EMC 89/336/EEC and 92/31/EEC.

Door lock sectioner

IT IS POSSIBLE TO ACCESS THE ELECTRIC PANEL BY disconnecting the voltage, then using the opening lever of the panel itself. This lever can be blocked with one or more padlocks during maintenance, in order to prevent the machine being powered up accidentally.

Control keypad

Provides full control functions.

For a detailed description of the keypad refer to the user manual.

Remote control panel

This allows the chiller command operations to be given from a distance.

- thermomagnetic compressor protection.
- thermomagnetic fan protection;
- thermomagnetic auxiliary protection.
- thermostat for discharge gas temperature control

3.6 ELECTRONIC REGULATION

Microprocessor card

Consisting of a management/control card and a visualisation card. Functions carried out:

- regulation of evaporator water inlet temperature (also outlet can be selected), with thermostat action up to 12 levels and proportional/integral control of fan speed.
- delayed compressor start-up.
- operation as chiller; with possibility to integrate refrigerating capacity by means of "free-cooling".
- compressor sequence rotation.
- management of low temperature device (accessory).
- compressor operation hour count.
- start/stop.
- reset.
- permanent alarms memory.
- automatic start-up after drop in voltage.
- multi-lingual message service.
- operation with local or remote control.
- visualisation of machine status: ON/OFF compressors; alarms summary.
- alarms management: high pressure; flow switch; low pressure; anti-freeze; compressor overload; fan overload; pump overload.
- visualisation of the following parameters: water inlet temperature; evaporator water inlet temperature; water outlet temperature; delta T; high pressure; low pressure; waiting time for restart.
- alarms visualisation.
- settings:
 - a) without password: cooling set; total differential;
 - b) with password: anti-freeze set; low pressure exclusion time; display language; access code.

For further information, refer to the user manual.

4 ACCESSORIES

AER485 Scheda per sistemi MODBUS

Questo accessorio consente il collegamento dell'unità con sistemi di supervisione BMS con standard elettrico RS 485 e protocollo di tipo MODBUS.

AVX anti-vibration support

Spring-operated, anti-vibration supports.

DCPX¹ device for low temperatures

It consists of an electronic regulation card that varies the number of fan rotations on the basis of the condensation pressure

GP protection grille

Each kit has two grilles.

PGS daily/weekly timer.

Card to be inserted in the electronic

card of the unit. Allows you to programme two time bands per day, and to have different programmings for each day of the week.

TP1² low pressure transducer

It makes it possible to show the value of the compressor's intake pressure (one per circuit) on the microprocessor card display. Placed on the low pressure side of the refrigerating circuit, it shuts down compressor operation in the case of abnormal operating pressure.

DRE³ Dispositivo riduzione corrente di spunto

Electronic peak current reducer. It must be factory-mounted.

RIF³ Current rephaser.

Parallel connection with the motor makes the reduction of input current possible. This can only

be installed when the machine is being made and must therefore be specified when the order is placed.

ROMEO

Remote Overwaching Modem Enabling Operation (Remote Overwaching Modem Enabling Operation) is a device that enables a remote control of a chiller from an ordinary mobile phone with WAP browser. Furthermore it allows to send alarm or pre-alarm SMS up to 3 GSM mobile phones which may not be equipped with WAP browser

KEY

- 1 Standard in models: NRA L/ NRA D
- 2 Standard in models: NRA H - HL
- 3 It must be factory-mounted

MOD.	ROMEO	TP1	DRE	AER485	PGS	GP	DCPX	RIF	AVX		
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VERSION STANDARD (°)										S.a	C.a	P1/P2/P3/P4
0800	•	• (x2)	25 (x4)	•	•	260	29	64	151	152	151	
0900	•	• (x2)	25 (x2) - 30 (x2)	•	•	260	29	74	151	152	151	
1000	•	• (x2)	30 (x4)	•	•	260	29	84	151	152	151	
1250	•	• (x2)	38 (x4)	•	•	350	30	84	153	154	153	
1400	•	• (x2)	38 (x2) - 31 (x3)	•	•	350	30	85	153	154	153	
1500	•	• (x2)	30 (x6)	•	•	350	30	86	153	154	153	
1650	•	• (x2)	38 (x3) - 31 (x3)	•	•	500	30	86	601	602	P1-P3=601/P2-P4=603	
1800	•	• (x2)	38 (x6)	•	•	500	30	86	604	602	P1-P3=604/P2-P4=605	

NRA A											
0800	•	• (x2)	25 (x4)	•	•	260	29	64	151	152	151
0900	•	• (x2)	25 (x2) - 30 (x2)	•	•	260	29	74	151	152	151
1000	•	• (x2)	30 (x4)	•	•	260	29	84	151	152	151
1250	•	• (x2)	38 (x4)	•	•	350	30	84	153	154	153
1400	•	• (x2)	38 (x2) - 31 (x3)	•	•	350	30	85	153	154	153
1500	•	• (x2)	30 (x6)	•	•	350	30	86	153	154	153
1650	•	• (x2)	38 (x3) - 31 (x3)	•	•	500	30	86	604	602	P1-P3=605/P2-P4=606
1800	•	• (x2)	38 (x6)	•	•	500	30	86	604	602	P1-P3=605/P2-P4=606

NRA L											
0800	•	• (x2)	25 (x4)	•	•	260	std.	64	151	152	151
0900	•	• (x2)	25 (x2) - 30 (x2)	•	•	260	std.	74	151	152	151
1000	•	• (x2)	30 (x4)	•	•	260	std.	84	151	152	151
1250	•	• (x2)	38 (x4)	•	•	350	std.	84	153	154	153
1400	•	• (x2)	38 (x2) - 31 (x3)	•	•	350	std.	85	153	154	153
1500	•	• (x2)	30 (x6)	•	•	350	std.	86	153	154	153
1650	•	• (x2)	38 (x3) - 31 (x3)	•	•	500	std.	86	604	602	P1-P3=605/P2-P4=606
1800	•	• (x2)	38 (x6)	•	•	500	std.	86	604	602	P1-P3=605/P2-P4=606

NRA HEAT PUMP VERSION H											
0800	•	std.	25 (x4)	•	•	260	29	64	151	152	151
0900	•	std.	25 (x2) - 30 (x2)	•	•	260	29	74	151	152	151
1000	•	std.	30 (x4)	•	•	260	29	84	151	152	151
1250	•	std.	38 (x4)	•	•	350	30	84	153	154	153
1400	•	std.	38 (x2) - 31 (x3)	•	•	350	30	85	153	154	153
1500	•	std.	30 (x6)	•	•	350	30	86	153	154	153
1650	•	std.	38 (x3) - 31 (x3)	•	•	500	30	86	604	602	P1-P3=605/P2-P4=606
1800	•	std.	38 (x6)	•	•	500	30	86	604	602	P1-P3=605/P2-P4=606

MOD.	ROMEO	TP1	DRE	AER485	PGS	GP	DCPX	RIF	AVX		
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NRA HL										S.a	C.a.	P1/P2/P3/P4
0800	•	std.	25 (x4)	•	•	260	std.	64	151	152	151	
0900	•	std.	25 (x2) - 30 (x2)	•	•	260	std.	74	151	152	151	
1000	•	std.	30 (x4)	•	•	260	std.	84	151	152	151	
1250	•	std.	38 (x4)	•	•	350	std.	84	153	154	153	
1400	•	std.	38 (x2) - 31 (x3)	•	•	350	std.	85	153	154	153	
1500	•	std.	30 (x6)	•	•	350	std.	86	153	154	153	
1650	•	std.	38 (x3) - 31 (x3)	•	•	500	std.	86	604	602	P1-P3=605/P2-P4=606	
1800	•	std.	38 (x6)	•	•	500	std.	86	604	602	P1-P3=605/P2-P4=606	

NRA C											
0800	•	• (x2)	25 (x4)	•	•	260	29	64	151	152	151
0900	•	• (x2)	25 (x2) - 30 (x2)	•	•	260	29	74	151	152	151
1000	•	• (x2)	30 (x4)	•	•	260	29	84	151	152	151
1250	•	• (x2)	38 (x4)	•	•	350	30	84	153	154	153
1400	•	• (x2)	38 (x2) - 31 (x3)	•	•	350	30	85	153	154	153
1500	•	• (x2)	30 (x6)	•	•	350	30	86	153	154	153
1650	•	• (x2)	38 (x3) - 31 (x3)	•	•	500	30	86			
1800	•	• (x2)	38 (x6)	•	•	500	30	86			

NRA LC											
0800	•	• (x2)	25 (x4)	•	•	260	std.	64	151	152	151
0900	•	• (x2)	25 (x2) - 30 (x2)	•	•	260	std.	74	151	152	151
1000	•	• (x2)	30 (x4)	•	•	260	std.	84	151	152	151
1250	•	• (x2)	38 (x4)	•	•	350	std.	84	153	154	153
1400	•	• (x2)	38 (x2) - 31 (x3)	•	•	350	std.	85	153	154	153
1500	•	• (x2)	30 (x6)	•	•	350	std.	86	153	154	153
1650	•	• (x2)	38 (x3) - 31 (x3)	•	•	500	std.	86			
1800	•	• (x2)	38 (x6)	•	•	500	std.	86			

KEY

DRE - RIF It must be factory-mounted
S.a = Without storage tank
C.a With storage tank

NOTE

The numbers in parenthesis indicate the necessary quantity

5 TECHNICAL DATA

5.1 NOMINAL REFERENCE CONDITIONS

The technical data is calculated as follows

Cooling mode

- Temperature water inlet 12 °C
- Temperature of processed water 7 °C
- Ambient air temperature 35 °C
- Δt 5 °C

Heating mode

- Temperature of processed water 50 °C
- Ambient air temperature b.s. 7 °C
b.u. 6 °C
- Δt 5 °C

Sound Power

Aermec determines the value of sound power on the basis of measurements performed in compliance with regulation 9614, in respect with that requested by Eurovent certification.

(1) Sound Pressure

Sound pressure in free field on a reflective surface (factor of directionality Q=2), at 10 metres from the external surface of the unit, using the parallel expansion method (box-method, ISO 3744)

NOTE

- The noise data refer to configuration without pump.
- For heat pumps the data refers to functioning in cooling mode

E.S.E.E.R.

There is a growing awareness in Europe as well that attention needs to be paid to the electricity consumed by air conditioning machines. For many years now in the United States talk has not just been about efficiency in the plan conditions, but an assessment index is used that takes account of the marginal operation of the unit under plan conditions and the greater use with partial loads with external air that is less than that planned and in conditions of compressor capacity control. In Europe the proposed EECCAC (Energy Efficiency

and Certification of Central Air Conditioner) has been adopted, the ESEER (European Seasonal Energy Efficiency Ratio), that has the purpose of being able to compare the chillers with each other.

After estimating the total energy required by the system during summer management (kW/h), the seasonal electrical energy consumption can be deduced with this formula:

$$\text{Input energy} = \frac{\text{Required energy}}{\text{Efficiency index}}$$

The actual energy calculation can be obtained, more accurately, by considering:

1. The load profile with external temperature
2. The climatic profile
3. The total number of hours

With this data, every consultant or designer will be able to his or her evaluations.

$$\text{ESEER} = \{3 \times \text{EER}100\% + 33 \times \text{EER}75\% + 41 \times \text{EER}50\% + 23 \times \text{EER}25\%\} / 100$$

Acqua uscita evaporatore	7 °C			
ΔT a pieno carico	5 °C			
Carico	100%	75%	50%	25%
Temperatura aria esterna	35 °C	30 °C	25 °C	20 °C

5.3 TECHNICAL DATA, SILENCED VERSIONS

NRA L		800	900	1000	1250	1400	1500	1650	1800
Cooling capacity:	kW	190,0	213,0	235,0	292,0	329,0	353,0	404	446
Total input power	kW	89,0	98,5	107,5	136,5	148,0	160,0	180	199
Evaporator water flow rate	l/h	32680	36640	40420	50220	56590	60720	69490	76710
Evaporator pressure drop	kPa	27,8	23,8	27,6	28,9	24,8	28,5	32,7	34,7

ENERGY INDICES									
EER	W/W	2,13	2,16	2,19	2,14	2,22	2,21	2,24	2,24
ESSER	W/W	2,72	2,76	2,79	2,88	3,05	3,02	3,07	3,07

ELECTRICAL DATA									
Fuel feed	V	3~400 V 50Hz							
Total input power	A	151	166	180	229	250	270	301	330
Maximum current	A	188	207	225	269	304	340	373	400
Peak current	A	342	382	422	486	469	522	568	582

COMPRESSORS									
Type		scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll
Number	n°	4	4	4	4	5	6	6	6
Number per circuit	n°+n°+n°+n°	2+2	2+2	2+2	2+2	2+3	3+3	3+3	3+3

COMPRESSOR HEATER									
Compressor carter heater	n°xW	4x130	4x130	4x130	4x130	5x130	6x130	6x130	6x130

FANS									
Type		Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Number	n°	4	4	4	6	6	6	8	8
Input current ventilation unit	A								
Input power ventilation unit	kW	2,9	3,0	3,1	4,0	4,5	5,0	6	6,2
Air flow rate	m ³ /h	44000	50000	56000	68000	76000	84000	100000	112000

EVAPORATORS									
Type		Plate	Plate	Plate	Plate	Plate	Plate	Plate	Plate
Number	n°	1	1	1	1	1	1	1	1

HYDRAULIC CIRCUIT									
Water accumulation	lt	700	700	700	700	700	700	700	700
Accumulation anti-freeze heater	n°xW	2x300	2x300	2x300	2x300	2x300	2x300	2x300	2x300

PLUMBING CONNECTIONS STANDARD VERSIONS (hydraulic parallel not supplied)									
Hydraulic connections	Victaulic	3"	3"	3"	4"	4"	4"	4"	4"

LOW PRESSURE PUMPING UNIT									
Input power		3,8	3,8	3,8	4,8	4,8	6,5	6,5	6,5
Input current		6,22	6,22	6,22	8,14	8,14	11	11	11
Useful pressure pumping		120	116	102	110	90	122	130	113

HIGH PRESSURE PUMPING UNIT									
Input power		6,5	6,5	6,5	8,6	8,6	8,6	12,5	12,3
Input current		11	11	11	14,6	14,6	14,6	21,2	21,2
Useful pressure pumping		232	235	216	245	230	200	267	251

DATI SONORI									
Sound Power	dB(A)	83,0	83,0	83,0	86,0	85,5	85,0	86,5	88,5
Sound pressure (1)	dB(A)	51,0	51,0	51,0	54,0	53,5	53,0	54,5	56,5

DIMENSIONI per tutti gli allestimenti									
Height	mm	2450	2450	2450	2450	2450	2450	2450	2450
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200
Length	mm	3400	3400	3400	4250	4250	4250	5750	5750

PESO a vuoto senza accumulo e pompe									
	kg	2530	2570	2580	3310	3350	3390	3850	3950



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