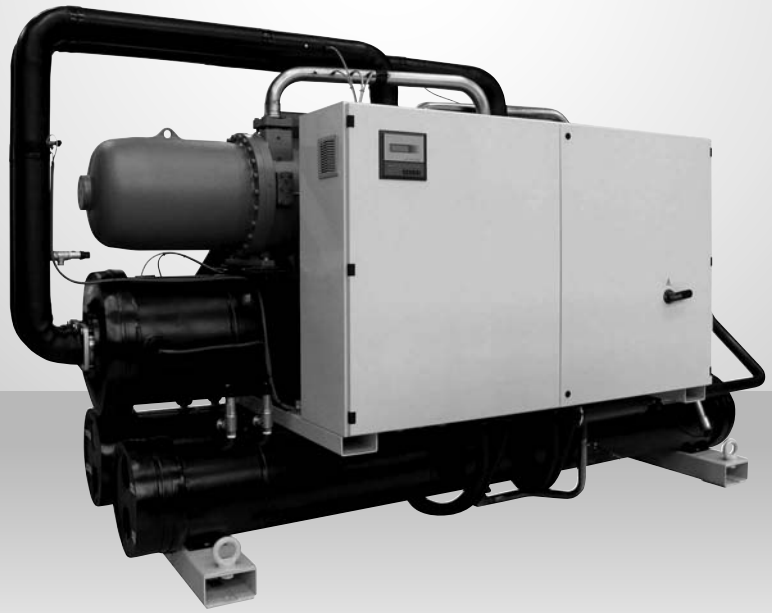
AERMEC

air conditioning



R134a

CPU

RS485

Technical manuaL - installation - maintenance

WF

WATER/WATER CHILLER

- INDOOR UNIT
- WITH HIGH ENERGY EFFICIENCY
- OPTIMISED FOR LOW CONDENSATION TEMPERATURES
- MAXIMUM WATER OUTLET TEMPERATURE FROM THE CONDENSER 50 °C

GB

AERMEC
COMPANY QUALITY SYSTEM
ICIM
ISO 9001:2000 - Cert. n° 0128/5
CISQ IQNet
AERMEC S.P.A.

EUROVENT CERTIFIED PERFORMANCE

Aermec participates in the EUROVENT Certification Program up to 1500 kW
The products of interest figure in the EUROVENT Guide of Certified products.

CE

IWFPY. 1011. 4471610_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

INDICE

AERMEC S.p.A.
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Tel. (+39) 0442 633111
Telefax 0442 93730–(+39) 0442 93566
www .aermec. com - info @ aermec. com

WF

SERIAL NUMBER	

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

NAME **WF**

TYPE **Liquid chillers**

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 systems 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

Therefore complying 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 H1) with certificate n.09/021-QT6704 Rev.4 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 - via Roma,996

Bevilacqua 11/10/2010

Marketing Manager
Signature

Standards and Directives respected on designing and constructing the unit:

Safety:
Machinery Directive
2006/42/CE

Low Voltage Directive
LVD 2006/95/CE

Electromagnetic compatibility
Directive
EMC 2004/108/CE

Pressure Equipment Directive
PED 97/23/CE EN 378,
UNI EN 14276

Electric part:
EN 60204-1

Protection rating
IP20

Acoustic part:
Sound power
(EN ISO 9614-2)
Sound pressure
(EN ISO 3744)

Certifications:
Eurovent: Aermec participates in the EUROVENT Certification Program up to 1500 kW

The products of interest figure in the EUROVENT Guide of Certified products.

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

1. GENERAL WARNINGS

AERMEC liquid chillers are constructed according to the recognised technical standards and safety regulations. They are designed for air conditioning and the production of hot water and must be destined to this use compatibly with their performance 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. (Ministerial Decree 329/2004).
The appliance must be installed in such a way as to enable maintenance and/or repairs to be carried out (SEE SECTION FOR THE NSTALLER page38).
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

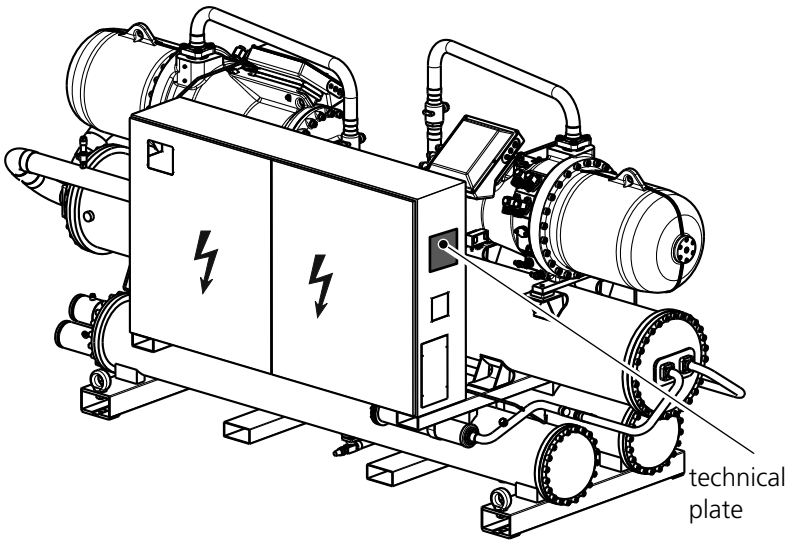
- The cooler must be installed by a qualified and suitably trained technician, in compliance with the national legislation in force in the country of destination (Ministerial Decree 329/2004).
  AERMEC will not assume any responsibility for damage due to failure to follow these instructions.
- Before 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. PRODUCT IDENTIFICATION

The HWFs can be identified by:

- PACKING LABEL
  which shows the product identification data
- TECHNICAL PLATE
  Positioned on one side of the electric box

NOTE
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.



3. PRESENTATION

Water cooled high energy efficiency liquid chillers.
Optimised for high condensation temperatures.
INDOOR UNIT for the production of cooled water. Compressors optimised for the use of the **R134a gas**, shell and tube condensers, dry expansion evaporator and electronic regulation valve.
They are units supplied complete with refrigerant load, factory-inspected and only requires electric and hydraulic connections in the place of installation. While versions "E" are delivered just pre-charged

They are units designed to warranty:

3.1. HIGH EFFICIENCY

For the **"A" high efficiency** unit
Thanks to the technology applied, the use of the dedicated compressors and heat exchangers with high heat exchange co-efficients, allow to reach
E.E.R. > di 5
C.O.P. > di 4,5
values at the work conditions declared by Eurovent.
Guaranteeing lower working costs and consequently quicker return of the investment

3.2. FLESSIBILITÀ

Flessibilità alle esigenze dell'impianto, grazie all'impiego di una regolazione elettronica di ultima generazione e alla modulazione continua della resa frigorifera con la valvola termostatica elettronica, a beneficio dell'efficienza energetica del sistema.

3.3. FLEXIBILITY

Flexibility of system requirements, thanks to the use of latest generation electronic regulation and continuous modulation of the cooling capacity with the electronic thermostatic valve, benefiting the system energy efficiency.

3.4. SILENCE

Guaranteed by the integral bonnet where " L" SET-UP is requested, further lowered the sound level with respect to the standard version.
Sensitive and careful consideration of customer requirements, Aermec offers the possibility of lowering noise even further using the **AKW accessory**, only available in the "L" SET-UP

3.5. AVAILABLE VERSIONS

3.5.1. ° Standard Reversible heat pump.

Reversible unit in heat pump mode on water side.
For functioning in heating mode, envision the isolation of the condenser using the"IS" ACCESSORY.
The electronic regulation is set-up for management of the unit on summer or winter set-point depending on the mode.
Switch-over is manual.

3.5.2. A High efficiency Reversible heat pump

Extended operational limits and performance

3.5.3. °D/AD with desuperheater

Unit for the production of cooled water, complete with additional heat exchanger downstream from the compressor in order to make use of heat produced from overheating.
This function is particularly indicated for applications with the production of domestic hot water or other uses with integration of a boiler of solar kits.

3.5.4. °T/AT with total recovery

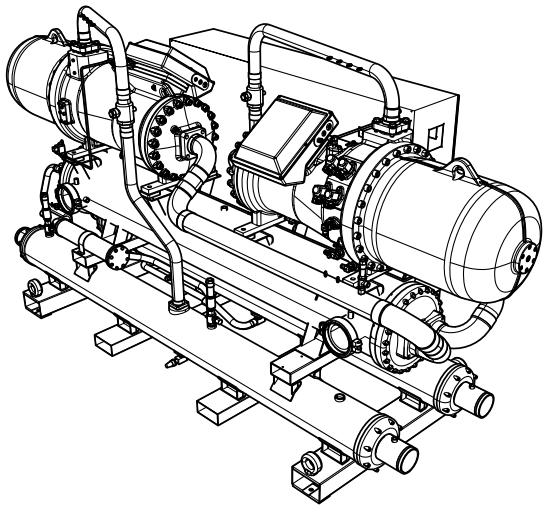
Unit for the production of cooled water, complete with additional refrigerant/ water exchanger for total recovery of the condensation heat. Recovery is managed depending on reaching the set-point set.
This function is particularly indicated for applications with air handling unit or production of domestic hot water integrated with a boiler of solar kit.

- **Indoor unit**
- **Optimised for low condensation temperatures**
- **Maximum temperature of the water produced at the condenser 50 °C**
- **Electronic thermostatic valve**
- **High energy efficiencies**
- **Flexibility in the system**
- **Silence**

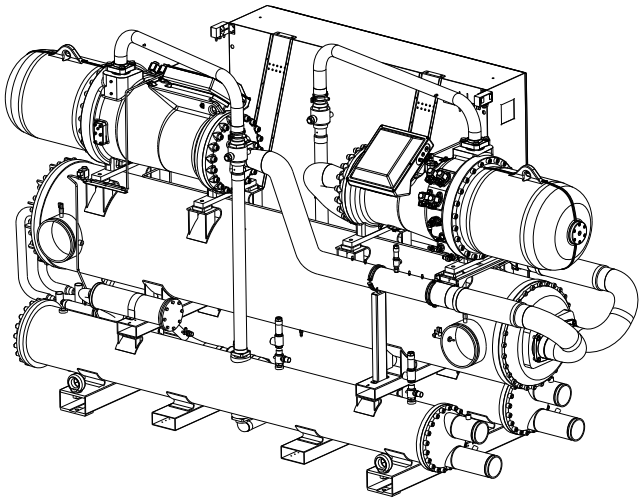
4. CONFIGURATOR

1,2	3,4,5,6	7	8	9	10	11	12
WF	2512	°	A	°	°	°	°

Field	CODE	
1, 2	WF	
3,4,5,6	TAGLIA	2512 - 2812 - 3212 - 3612 - 4212 - 4812 - 5612 - 6412
7	MODEL	
	°	Optimised for high condensation
8	VERSIONS:	
	°	Standard
	A	Low efficiency
9	SET-UP	
	°	Standard
	L	Silenced
10	HEAT RECOVERY	
	°	Without heat recovery
	D (1)	Desuperheater (NOT AVAILABLE FOR THE CONDENSERLESS "E")
	T (1)	Total heat recovery (NOT AVAILABLE FOR THE CONDENSERLESS "E")
11	CONDENSER	
	°	Standard
	E (1)	Condenserless
12	POWER SUPPLY	
	°	400V-3-50 Hz with fuses
	8	400V-3-50 Hz with magnet circuit beakers
	5	500V-3-50 Hz with fuses (for 2512 and 2812 only)
	9	500V-3-50 Hz with magnet circuit breakers (for 2512 and 2812 only)
		Configuration example: WF2812°°°°°
	(1)	**For the condenserless units (E) - with desuperheater (D) and total recovery (T) contact the establishment**



WF°
Standard



WFA
High efficiency

5. DESCRIPTION OF THE STANDARD UNIT COMPONENTS

5.1. 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.

5.2. COOLING CIRCUIT

Unit with independent cooling circuits for each compressor to guarantee functioning continuity and easy maintenance. Each cooling circuit has:

Compressor
With semi-hermetic screw with two rotors.

Oil flow induced by the pressure difference, therefore avoiding the aid of the dedicated pump, studied especially to guarantee a constant and uniform lubrication of the bearings in any compressor work state, both in full and partial load.

Oil separator incorporated with the use of a steel mesh filter that ensures constant presence of oil in the compressor.

Partialisation of the cooling capacity via slide valve which, depending on the position assumed, determines a stepless reduction of the compression chamber, can modulate continuously from 100% to 12.5% of its capacity

Each compressor has:
- Circuit breaker protection (Fuses) of the motor,
- Discharge temperature and oil level check
- Electric resistance for heating the guard with compressor at a standstill. The resistance is powered automatically on unit stop, as long as it remains live.

User side heat exchanger
Exchanger, with evaporator function, direct expansion shell and tube type, with pipes side refrigerant passage and case side water passage. Case side with baffles to increase the turbulence and therefore the efficiency of the heat exchange.
Steel case covered with closed cell expanded elastomer anti-condensation covering. The shell and tube is realised with copper pipes grooved internally to favour heat exchange.
The heat exchanger has a differential pressure switch to monitor the correct flow of water when the unit is running, thus preventing the formation of ice inside. The heat exchanger is manufactured respecting the PED Standard respectively working pressures and resistance to stress.
Victaulic water side connections (with stub pipe supplied for the connection)

Source side heat exchanger
Condenser, flooded type shell and tube, with pipes side water passage and case side refrigerant. Steel case and shell and tube realised with internally and externally grooved copper pipes in order to favour heat exchange.
For the units functioning in HEAT PUMP MODE (reversible hydraulic side) the heat exchanger must be insulated with (ACCESSORY IS) closed cell expanded elastomer anti-condensation covering with thickness of 10 mm and heat conductivity equal to 0.033 W/mK at 0°C.
Removable heads to allow inspection and cleaning of the pipes. The heat exchanger is manufactured respecting the PED Standard respectively working pressures and resistance to stress.
Victaulic water side connections (with stub pipe supplied for the connection)

Filter dehydrator, with replaceable cartridges
Mechanical with cartridge realised in ceramics and hygroscopic material, able to withhold impurities and any traces of humidity present in the cooling circuit.

Indicator for liquid passage with humidity presence signal,
Used to check the refrigerant gas load and the eventual presence of humidity in the cooling circuit.

Electronic thermostatic valve
The valve 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.

One-way valve
Allows the passage of the refrigerant in just one direction. Positioned on the compressor flow, it prevents inverse rotation of the rotors after stopping.

Solenoid valve for LIQUID INJECTION
The valve positioned between the compressor flow and the thermostatic valve outlet
allows to perform defrosting cycles without inverting the cycle.

Cocks
On the liquid and pressing line, to isolate the refrigerant if requested in the event of extraordinary maintenance.

Cooling circuit safety valves
Calibrated at 22 bar HP and 16.5 LP, they intervene by discharging the over pressure in the case of anomalous pressures.

5.3. SAFETY AND CONTROL

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

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

Double high pressure switch (manual+tool)
Calibrated in the factory, positioned on the high pressure side of the cooling circuit, stops the functioning of the compressor in the event of abnormal work pressures.

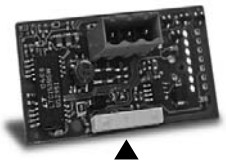
5.4. ELECTRIC CONTROL BOARD AND REGULATION

Electric power and control board, manufactured in compliance with the EN 60204-1/IEC 204-1 Standards, complete with:
- Circuit board
- transformer for the control circuit,
- Door lock main isolating switch,
- Fuses for compressors. Magnet circuit breakers are also available on request
- Power section
- clamps for remote ON/OF,
- Compressors protection with internal circuit breakers
- connection clamps to the remote keyboard,
- summer-winter manual change-over clamps,
- clamps for alarm signal,
- clamps for signalling compressor switch-on status,
- safety fuses,
- Protection rating: IP54,
- Control circuit numbered cables,
- Phases sequence control and for maximum voltage,

5.4.1. Adjustment

The electronic adjustment on HWF chillers is made up of a control board for every compressor connected to each other in a network and a control panel with display. The board that controls compressor n°1 is the “master” board, while the other is the “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. The program and the parameters set are memorised permanently on FLASH memory, allowing them to be kept also in the case of a power cut (without the need for a maintenance battery).
The connection to the supervision

GRAPHIC TERMINAL
4 characters + icons to ease reading of the machine functioning



AER485P1 Accessory

serial line according to the **standard RS485**, is realised via the serial boards **ACCESSORY RS485P1** and the communication protocol.

- The terminal, always managed by microprocessor, has a wide format keyboard that allows complete display of the machine state.

The controls and the LCD mean easy and safe access to the settings and the multi-level and multi-language structure allow consultation and intervention on the unit.
The connection of the terminal to the pCO is not necessary for normal functioning of the controller, but can only be used for initial programming of the fundamental parameters.

Microprocessor

- Remote on/off with external contact without voltage.
- Multi-language menu
- Phases sequence control
- Independent control of the individual compressors
- Amperometric transformer
- Cumulative faults block signal
- Historical alarms function
- Daily/weekly programming
- Water temperature display
- input/output
- Alarms display.
- Integral proportional regulation on the temperature of the output water
- Programmable timer function
- Function with double calibration point linked to an external contact
- Can be interfaced with Modbus protocol (AER485P1 accessory)
- Pump/s control
- Compressors rotation management
- Analogue input from 4 to 20 mA
- "Always Working" function. In the event of
- Critical conditions (e.g. an environmental temperature that is too high) the machine does not stop but can adjust itself and supply the maximum power in those conditions.
- "Switching Histeresys" self-adapting work differential
- To always ensure the correct work times of the compressors even in systems with low water content or insufficient flow rate. This system decreases wear of the compressors
- PDC "Pull Down Control" system to prevent the activation of power steps when the temperature of the water quickly approaches the set-point. Optimises machine functioning when working normally and in the presence of load variations, ensuring the best machine efficiency in all conditions.

For further information please refer to user manual.

5.5. COMPONENTS OF OTHER VERSIONS

"L set-up" standard integral acoustic bonnet
Realised in peraluman panels covered internally by a sound-absorbent material in polyester fibre with thickness of 30 mm. This allow to lower the sound power. For precise data refer to chapter 15.

6. ACCESSORIES

6.1. ELECTRIC REGULATION ACCESSORY

- **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.

- **MULTICHILLER**: Control system for control, switch-on and switch-off of the single chillers in a plant in where multiple units are installed in parallel, always ensuring constant flow to the evaporators.

- **AERWEB30**: the AERWEB device allows the remote control of a chiller from a common PC by means of a serial connection. By using additional modules the device allows control of the chiller by telephone network, using the AERMODEM accessory or GSM network. The AERWEB can pilot up to 9 chillers, each of which must be equipped with the AER485P1 accessory.

- **PRV3**: Allows to control the chiller at a distance.

6.2. ELECTRIC ACCESSORIES

- **RIFHWF**: Current rephaser. Connected in parallel to the motor, it allows a reduction of the input current (about 10%) with cost effective advantages. It can only be installed in the machine construction phase and so must be requested on ordering.

6.3. GENERIC ACCESSORIES

- **AKW (only available in silenced L set-up and can only be installed in the factory.**
  This accessory allows to lower the noise even further via:
  - An optimised compressor cover using high density material without lead that allows to reduce vibrations even further.
  - Anti-vibration mounts in AV rubber for compressors in order to reduce their vibrations so as to prevent damage caused to the pipes and use of flexible joints.
  - Isolation of the larger pipes to reduce the typical noise of the gas.
  - Isolation of the most critical points

- **IS (Mandatory for machine functioning in heat pump mode)**
  KIT for the isolation of the heat exchanger with closed cell expanded elastomer covering with thickness of 10 mm and heat conductivity equal to 0.033 W/mK a 0°C.

- **AVX** Spring anti-vibration kit

Accessories compatibility								
Mod	**2512**	**2812**	**3212**	**3612**	**4212**	**4812**	**5612**	**6412**
AERWEB30	•	•	•	•	•	•	•	•
MULTICHILLER	•	•	•	•	•	•	•	•
AER485P1	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)	• (x2)
PRV3	•	•	•	•	•	•	•	•
AVX	•	•	•	•	•	•	•	•
RIF WF (1)	2512	2812	3212	3612	4212	4812	5612	6412
AKW(WF-L) (1)	•	•	•	•	•	•	•	•
IS1 (2)	°/A	°/A	°	°	°	°		
IS2			A	A	A	A	°	°
IS3							A	A

AVX ANTI-VIBRATION MOUNT compatibility								
standard / standard silenced								
Mod WF	**2512°**	**2812°**	**3212°**	**3612°**	**4212°**	**4812°**	**5612°**	**6412°**
AVX	673	673	673	674	674	674	675	675

Mod WF	**2512°L**	**2812°L**	**3212°L**	**3612°L**	**4212°L**	**4812°L**	**5612°L**	**6412°L**
AVX	673	673	674	674	674	674	675	675

high efficiency/high efficiency silenced								
Mod WF	**2512A**	**2812A**	**3212A**	**3612A**	**4212A**	**4812A**	**5612A**	**6412A**
AVX	673	673	674	675	675	675	676	676

Mod WF	**2512AL**	**2812AL**	**3212AL**	**3612AL**	**4212AL**	**4812AL**	**5612AL**	**6412AL**
AVX	674	674	675	675	675	675	676	676

(x2) Indicates the amount to order

(1) The accessories must be envisioned on making the order, because they can only be installed in the factory

(2) The isolation kit is mandatory in heat pump functioning mode and is to be envisioned when placing the order, because it can only be installed in the factory

° STANDARD version

A HIGH EFFICIENCY version

°L/AL Silenced version

7. TECHNICAL DATA WF°°°°°° / WF°A°°°° (without recovery)

WF	VERS.	U.M	2512	2812	3212	3612	4212	4812	5612	6412
COOLING										
Cooling capacity	°	kW	632	723	875	987	1114	1281	1412	1553
	A		641	728	891	1007	1137	1282	1417	1554
Total input power	°	kW	122	139	169	190	214	246	272	300
	A		115	131	160	180	203	229	258	285
Water flow rate at the evaporator	°	l/h	108704	124356	150500	169764	191608	220332	242864	267116
	A		110252	125216	153252	173204	195564	220504	243724	267288
Pressure drops at the evaporator	°	kPa	41	58	56	47	43	62	65	75
	A		44	59	62	44	62	42	41	51
Condenser water consumption	°	l/h	129688	148264	179568	202444	228416	262644	289648	318716
	A		130032	147748	180772	204164	230480	259892	288100	316308
Condenser pressure drops	°	kPa	16	16	18	16	18	24	17	19
	A		63	64	72	69	69	74	74	77

WF HEATING		U.M	2512	2812	3212	3612	4212	4812	5612	6412
Heating capacity	°	kW	678	775	939	1059	1194	1372	1514	1667
	A		676	769	940	1062	1199	1353	1501	1648
Total input power	°	kW	156	178	216	243	274	314	348	384
	A		147	167	204	231	260	293	330	364
Condenser water flow rate	°	l/h	116616	133307	161508	182146	205368	235984	260408	286724
	A		116272	132268	161680	182664	206228	232716	258172	283456
Condenser pressure drops	°	kPa	13	13	14	13	14	19	14	15
	A		51	51	58	56	55	59	59	62
Evaporator water consumption	°	l/h	89784	102691	124356	140350	158240	181976	200552	220676
	A		90986	103544	126592	142932	161508	182320	201412	220848
Evaporator pressure drops	°	kPa	28	39	38	32	29	43	44	51
	A		30	40	42	30	42	29	28	35

ENERGETIC INDEX										
E.E.R.	°		5,18	5,20	5,18	5,19	5,21	5,21	5,19	5,18
	A		5,57	5,56	5,57	5,59	5,60	5,60	5,49	5,45
E.E.R. (EUROVENT CLASS)	°		A	A	A	A	A	A	A	A
	A		A	A	A	A	A	A	A	A
E.S.E.E.R.			6,16	6,19	6,16	6,18	6,19	6,20	6,18	6,16
C.O.P.	°		4,35	4,35	4,35	4,36	4,36	4,37	4,35	4,34
	A		4,60	4,60	4,61	4,60	4,61	4,62	4,55	4,53
C.O.P. (EUROVENT CLASS)	°		B	B	B	B	B	B	B	B
	A		A	A	A	A	A	A	A	A

ELECTRICAL DATA			400V/3/50Hz							
Total input current cooling mode	°	A	212	243	282	317	349	416	457	506
	A		202	232	268	303	332	392	437	483
Total input current heating mode	°	A	271	312	361	406	447	533	585	648
	A		258	297	343	388	425	501	559	619
Maximum current (F.L.A.)	°-A	A	294	336	396	446	494	572	636	702
Peak current (L.A.R.)	°-A	A	447	528	596	659	712	872	968	1156
Protection rating of the machine			IP20							

REFRIGERANT CIRCUIT										
N° circuit	°-A	n°	2	2	2	2	2	2	2	2

CHARGES for CIRCUIT (The declared data can be amended any time Aermec considers it necessary)										
Refrigerant (R134a)	°	Kg	60	65	70	80	83	85	90	95
	A	Kg	80	85	90	92	95	97	130	140
Oil	°-A	l	19	19	35	35	35	35	38	38

PARTLOAD										
Partload of the unit	°-A	%	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100

TWIN-SCREW COMPRESSORS										
N° compressors	°-A	n°	2	2	2	2	2	2	2	2
N° circuits	°-A	n°	2	2	2	2	2	2	2	2
Electric resistance (x n°1)	°-A	W	300	300	300	300	300	300	300	300

WF	VERS.	U.M	2512	2812	3212	3612	4212	4812	5612	6412
EVAPORATOR SHELL&TUBE										
Quantity	°-A	n°	1	1	1	1	1	1	1	1
Water content	°	lt.	263	256	248	419	506	485	518	562
	A		553	541	518	946	917	887	980	964
VICTAULIC hydraulic connections IN/OUT	°	Ø	6"	6"	6"	8"	8"	8"	8"	8"
	A		8"	8"	8"	10"	10"	10"	10"	10"
CONDENSER SHELL&TUBE (condenser circuit 1 = condenser circuit 2)										
Quantity	°-A	n°	2	2	2	2	2	2	2	2
Water content (x n°1)	°	lt.	38	43	48	56	61	61	80	85
	A		54	61	72	83	93	101	114	122
VICTAULIC hydraulic connections IN/OUT	°	Ø	5"	5"	5"	5"	5"	5"	6"	6"
	A		4"	4"	5"	5"	5"	5"	6"	6"
SOUND DATA										
Sound power	°-A	dB(A)	93,6	94,0	93,5	93,7	94,6	95,5	97,3	97,9
Sound Pressure	°-A	dB(A)	61,5	61,9	61,4	61,6	62,4	63,3	65,1	65,6
Sound power	°L-AL	dB(A)	85,5	86,2	87,0	87,9	90,2	89,8	91,0	90,8
Sound Pressure	°L-AL	dB(A)	53,5	54,2	55,0	55,9	58,2	57,8	59,0	58,8
DIMENSIONS AND WEIGHTS										
Height	°	mm	2100	2100	2050	2120	2140	2140	2210	2210
	A		2180	2180	2190	2340	2340	2340	2380	2380
Width	°	mm	1470	1470	1470	1520	1550	1550	1600	1600
	A		1470	1470	1537	1695	1695	1695	1700	1700
Depth	°	mm	3690	3690	4030	4030	4370	4370	4610	4760
	A		4330	4330	4330	4370	4550	4550	4800	4800
Empty weight	°	Kg	3570	3650	4470	4750	5050	5180	6030	6260
	A		4080	4140	5470	5950	6240	6440	7230	7360
Functioning weight	°	Kg	3909	3992	4814	5281	5678	5787	6708	6992
	A		4741	4803	6132	7062	7343	7529	8438	8568

NOMINAL REFERENCE CONDITIONS

COOLING
EVAPORATOR

Water input temperature	12 °C
Output water temperature	7 °C
Δt	5 °C

CONDENSER

Water input temperature	30 °C
Output water temperature	35 °C
Δt	5 °C

HEATING
EVAPORATOR

Water input temperature	10 °C
Output water temperature	5 °C
Δt	5 °C

CONDENSER

Water input temperature	40 °C
Output water temperature	45 °C
Δt	5 °C

Sound power
Aermec determines sound power values in agreement with the 9614-2 Standard, in compliance with that requested by Eurovent certification.

Sound Pressure
Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) at 10mt distance from external surface of unit, in compliance with ISO 3744 regulations.

8. TECHNICAL DATA WF°°°T°° / WF°A°T°°

WF	VERS.	U.M	2512	2812	3212	3612	4212	4812	5612	6412
WF WITH TOTAL RECOVERY										
Heat capacity recovered	°	kW	716	818	992	1118	1261	1449	1599	1760
	A		714	812	993	1121	1266	1429	1585	1740
Total input power	°	kW	156	178	216	243	274	314	348	384
	A		147	167	204	231	260	293	330	364
Water flow total recovery	°	l/h	123152	140696	170624	192296	216892	249228	275028	302720
	A		122808	139664	170796	192812	217752	245788	272620	299280
Pressure drops total recovery	°	kPa	14	14	16	15	16	19	16	17
	A		56	57	64	62	65	9	11	14
Cooling capacity	°	kW	560	640	776	875	987	1135	1251	1376
	A		567	645	789	890	1006	1136	1255	1376
Evaporator water flow rate	°	l/h	96320	110080	133472	150500	169764	195220	215172	236672
	A		97524	110940	135708	153080	173032	195392	215860	236672
Pressure drops evaporator	°	kPa	33	45	44	37	34	49	51	59
	A		34	46	48	35	49	33	32	40

ELECTRICAL DATA			400V/3/50Hz							
Total input current	°	A	271	312	361	406	447	533	585	648
	A		259	297	344	388	426	502	559	619
Maximum current (F.L.A.)	°-A	A	294	336	396	446	494	572	636	702
Peak current (L.A.R.)	°-A	A	447	528	596	659	712	872	968	1156
Protection rating of the machine			IP20							

REFRIGERANT CIRCUIT										
N° circuit	°-A	n°	2	2	2	2	2	2	2	2

CHARGES for CIRCUIT (The declared data can be amended any time Aermec considers it necessary)										
Refrigerant (R134a)	°	Kg	60	65	70	80	83	85	90	95
	A	Kg	80	85	90	92	95	97	130	140
Oil	°-A	l	19	19	35	35	35	35	38	38

PARTLOAD										
Partload of the unit	°-A	%	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100

TWIN-SCREW COMPRESSORS										
N° compressors	°-A	n°	2	2	2	2	2	2	2	2
N° circuits	°-A	n°	2	2	2	2	2	2	2	2
Electric resistance (x n°1)	°-A	W	300	300	300	300	300	300	300	300

EVAPORATOR SHELL&TUBE										
Quantity	°-A	n°	1	1	1	1	1	1	1	1
Water content	°	lt.	263	256	248	419	506	485	518	562
	A		553	541	518	946	917	887	980	964
VICTAULIC hydraulic connections IN/OUT	°	Ø	6"	6"	6"	8"	8"	8"	8"	8"
	A		8"	8"	8"	10"	10"	10"	10"	10"

CONDENSER with TOTAL RECOVERY SHELL&TUBE (condenser/total recovery 1 = condenser/total recovery 2)										
Quantity	°-A	n°	2	2	2	2	2	2	2	2
Water content condenser (x n°1)	°	lt.	75	85	97	117	124	132	158	169
	A		111	124	140	163	180	200	200	200
Water content total recovery (x n°1)	°	lt.	75	85	97	117	124	132	158	169
	A		111	124	140	163	180	200	200	200
hydraulic connections condenser VICTAULIC IN/OUT	°	Ø								
	A									
hydraulic connections total recovery VICTAULIC IN/OUT	°	Ø								
	A									

SOUND DATA										
Sound power	°-A	dB(A)	93,6	94,0	93,5	93,7	94,6	95,5	97,3	97,9
Sound Pressure	°-A	dB(A)	61,5	61,9	61,4	61,6	62,4	63,3	65,1	65,6
Sound power	°L-AL	dB(A)	85,5	86,2	87,0	87,9	90,2	89,8	91,0	90,8
Sound Pressure	°L-AL	dB(A)	53,5	54,2	55,0	55,9	58,2	57,8	59,0	58,8

DIMENSIONS AND WEIGHT
FOR DIMENSIONS AND WEIGHT CONTACT AERMEC

NOMINAL REFERENCE CONDITIONS COOLING

EVAPORATOR
Water input temperature 12 °C
Water output temperature 7 °C

TOTAL RECOVERY
Water input temperature 40 °C
Water output temperature 45 °C

Sound power
Aermec determines sound power values in agreement with the 9614-2 Standard, in compliance with that requested by Eurovent certification.

Sound Pressure
Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) at 10mt distance from external surface of unit, in compliance with ISO 3744 regulations.

NOTE:
1. For operating without total recovery (condenser), refer to the technical data of the chiller without recovery.
2. The evaporator pressure drops for chiller with total recovery may be different from those condenser without total recovery (see Chapters 17 or 18)

9. TECHNICAL DATA WF°°°D°° / WF°A°D°° (desuperheater)

WF	VERS.	U.M	2512	2812	3212	3612	4212	4812	5612	6412
WF COOLING WITH DESUPERHEATER										
Heat capacity recovered	°	kW	37	38	55	58	71	78	90	96
	A		35	43	49	58	67	73	76	81
Total input power	°	kW	122	139	169	190	214	246	272	300
	A		115	131	160	180	203	229	258	285
Water flow desuperheater	°	l/h	6364	6536	9460	9976	12212	13416	15480	16512
	A		6020	7396	8428	9976	11524	12556	13072	13932
Pressure drops desuperheater	°	kPa	45	50	46	50	43	51	45	51
	A		23	20	25	22	21	24	26	30
Cooling capacity	°	kW	632	723	875	987	1114	1281	1412	1553
	A		641	728	891	1007	1137	1282	1417	1554
Evaporator water flow rate	°	l/h	108704	124356	150500	169764	191608	220332	242864	267116
	A		110252	125216	153252	173204	195564	220504	243724	267288
Pressure drops evaporator	°	kPa	41	58	56	47	43	62	65	75
	A		44	59	62	44	62	42	41	51

ELECTRICAL DATA			400V-3-50Hz							
Total input current	°	A	212	243	282	317	349	416	457	506
	A		202	232	268	303	332	392	437	483
Maximum current (F.L.A.)	°-A	A	294	336	396	446	494	572	636	702
Peak current (L.A.R.)	°-A	A	447	528	596	659	712	872	968	1156
Protection rating of the machine			IP20							

REFRIGERANT CIRCUIT										
N° circuit	°-A	n°	2	2	2	2	2	2	2	2

CHARGES for CIRCUIT (The declared data can be amended any time Aermec considers it necessary)										
Refrigerant (R134a)	°	Kg	60	65	70	80	83	85	90	95
	A	Kg	80	85	90	92	95	97	130	140
Oil	°-A	l	19	19	35	35	35	35	38	38

PARTLOAD										
Partload of the unit dell'unità	°-A	%	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100	12,5-100

TWIN-SCREW COMPRESSORS										
N° compressors	°-A	n°	2	2	2	2	2	2	2	2
N° circuits	°-A	n°	2	2	2	2	2	2	2	2
Electric resistance (x n°1)	°-A	W	300	300	300	300	300	300	300	300

EVAPORATOR SHELL&TUBE										
Quantity	°-A	n°	1	1	1	1	1	1	1	1
Water content	°	lt.	263	256	248	419	506	485	518	562
	A		553	541	518	946	917	887	980	964
VICTAULIC hydraulic connections IN/OUT	°	Ø	6"	6"	6"	8"	8"	8"	8"	8"
	A		8"	8"	8"	10"	10"	10"	10"	10"

CONDENSER with RECUPERI PARZIALI FASCIO TUBIERO (condensatore/recupero circuito 1 = condensatore/recupero circuito 2)										
Quantità	°-A	n°	2	2	2	2	2	2	2	2
Water content condenser (x n°1)	°	lt.	75	85	95	111	122	122	160	170
	A		108	121	144	165	186	201	228	244
Water content desuperheater (x n°1)	°	lt.	6	5	8	8	11	11	14	14
	A		8	11	16	16	16	16	17	17
hydraulic connections condenser VICTAULIC IN/OUT	°	Ø								
	A									
hydraulic connections desuperheater VICTAULIC IN/OUT	°	Ø								
	A									

SOUND										
Sound power	°-A	dB(A)	93,6	94,0	93,5	93,7	94,6	95,5	97,3	97,9
Sound Pressure	°-A	dB(A)	61,5	61,9	61,4	61,6	62,4	63,3	65,1	65,6
Sound power	°L-AL	dB(A)	85,5	86,2	87,0	87,9	90,2	89,8	91,0	90,8
Sound Pressure	°L-AL	dB(A)	53,5	54,2	55,0	55,9	58,2	57,8	59,0	58,8

DIMENSIONS AND WEIGHT
FOR DIMENSIONS AND WEIGHT CONTACT AERMEC

NOMINAL REFERENCE CONDITIONS
COOLING
EVAPORATOR
Water input temperature 12 °C
Output water temperature 7 °C
CONDENSER
Water input temperature 30 °C
Output water temperature 35 °C
DESUPERHEATER
Water input temperature 40 °C
Output water temperature 45 °C

Sound power
Aermec determines sound power values in agreement with the 9614-2 Standard, in compliance with that requested by Eurovent certification.

Sound Pressure
Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) at 10mt distance from external surface of unit, in compliance with ISO 3744 regulations.

NOTE:
1. The evaporator pressure drops for chiller with total recovery may be different from those condenser without desuperheater (see Chapters 20 o 21).

10. TECHNICAL DATA WF °E/AE

WF	VERS.	U.M	2512	2812	3212	3612	4212	4812	5612	6412
Cooling capacity	°E	kW	547	624	748	842	954	1077	1208	1328
	AE		585	665	800	899	1016	1148	1246	1382
Total input power	°E	kW	143	162	195	221	247	279	313	345
	AE		143	162	195	221	248	280	313	346
Water flow rate at the evaporator	°E	l/h	94084	107328	128656	144824	164088	185244	207776	228416
	AE		100620	114380	137600	154628	174752	197456	214312	237704
Pressure drops at the evaporator	°E	kPa	31	43	41	34	31	44	47	55
	AE		36	49	50	35	49	34	31	40

ENERGETIC INDEX										
E.E.R.	°E	-	3.83	3.85	3.84	3.81	3.86	3.86	3.86	3.85
	AE	-	4.09	4.10	4.10	4.07	4.10	4.10	3.98	3.99
E.E.R. (EUROVENT CLASS)	°E	-	A	A	A	A	A	A	A	A
	AE	-	A	A	A	A	A	A	A	A

ELECTRICAL DATA			400V-3-50Hz							
Total input current	°E	A	242	277	321	363	398	465	516	571
	AE		242	277	321	363	400	465	518	573
Maximum current	°E-AE	A	294	336	396	446	494	572	636	702
Peak current	°E-AE	A	447	528	596	659	712	872	968	1156
Protection rating of the machine			IP20							

REFRIGERANT CIRCUIT										
N° circuit	°E-AE	n°	2	2	2	2	2	2	2	2

CHARGES for CIRCUIT (The declared data can be amended any time Aermec considers it necessary)										
Refrigerant (R134a)	°E	Kg	10	10	10	10	10	10	10	10
	AE	Kg	10	10	10	10	10	10	10	10
Oil	°E-AE	Kg	19	19	35	35	35	35	38	38

PARTLOAD										
Partload of the unit		%	35-100	35-100	35-100	35-100	35-100	35-100	35-100	35-100

TWIN-SCREW COMPRESSORS										
N° compressors	°E-AE	n°	2	2	2	2	2	2	2	2
N° circuits	°E-AE	n°	2	2	2	2	2	2	2	2
Electric resistance (x n°1)	°E-AE	W	300	300	300	300	300	300	300	300

EVAPORATOR SHELL&TUBE										
Quantity	°E-AE	n°	1	1	1	1	1	1	1	1
Water content	°E	lt.	263	256	248	419	506	485	518	562
	AE		553	541	518	946	917	887	980	964
VICTAULIC hydraulic connections IN/OUT	°E	Ø	6"	6"	6"	8"	8"	8"	8"	8"
	AE		8"	8"	8"	10"	10"	10"	10"	10"

SOUND DATA										
Sound power	°E-AE	dB(A)	93,6	94,0	93,5	93,7	94,6	95,5	97,3	97,9
Sound Pressure	°E-AE	dB(A)	61,5	61,9	61,4	61,6	62,4	63,3	65,1	65,6
Sound power	L	dB(A)	85,5	86,2	87,0	87,9	90,2	89,8	91,0	90,8
Sound Pressure	L	dB(A)	53,5	54,2	55,0	55,9	58,2	57,8	59,0	58,8

DIMENSIONS AND WEIGHT
FOR DIMENSIONS AND WEIGHT CONTACT AERMEC

CONDIZIONI NOMINALI DI RIFERIMENTO

EVAPORATOR

Water input temperature	12 °C
Water output temperature	7 °C
Condensation temperature	45 °C

Sound power
Aermec determines sound power values in agreement with the 9614-2 Standard, in compliance with that requested by Eurovent certification.

Sound Pressure
Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) at 10mt distance from external surface of unit, in compliance with ISO 3744 regulations.

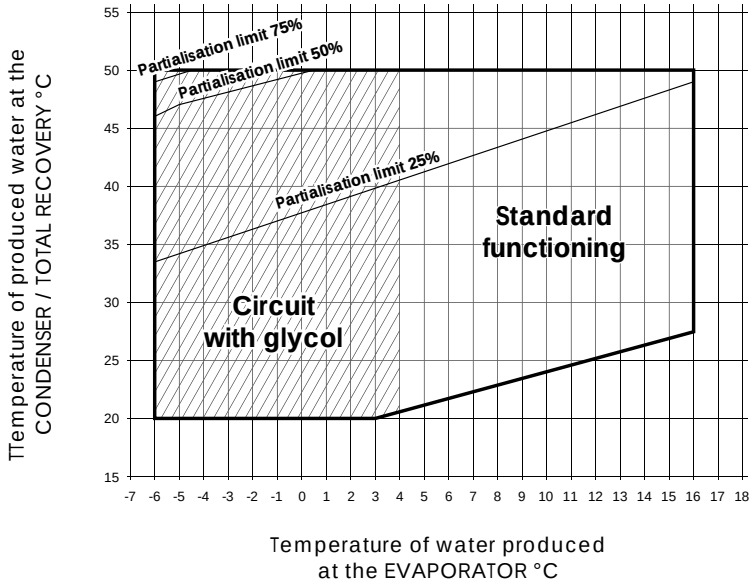
NOTE:
1. For the dimensions and positions of the refrigerant cooling lines, refer to Chapter 26.

11. FUNCTIONING LIMITS

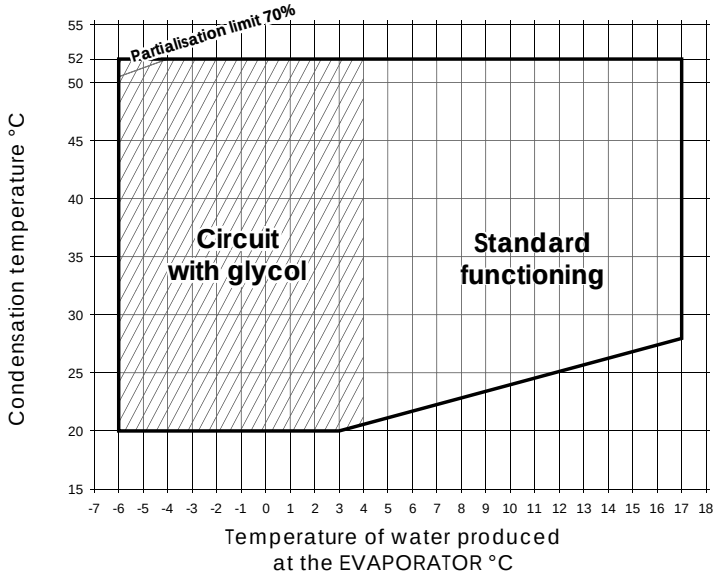
For functioning limits, please refer to the diagrams, valid for $\Delta t = 5°C$.

NOTE
If the unit is to function outside of operational limits, we recommend firstly contacting our technical-sales service

11.1. FUNCTIONING LIMITS FOR WF°/A MODELS



11.2. FUNCTIONING LIMITS FOR WF°E/AE



11.3. DESIGN DATA

COOLING		High pressure side	Low pressure side
Acceptable maximum pressure	bar	22	16,5
Acceptable maximum temperature	°C	125	55
Acceptable minimum temperature	°C	10	-10

WATER SIDE		Codenser	Evaporator
Acceptable maximum pressure	bar	16	10,5

12. PERFORMANCE IN COOLING MODE

12.1. WF 2512 STANDARD VERSIONE "°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	464.01	87.66	445.08	96.24	421.69	107.63	394.34	121.60	363.50	137.90	329.66	156.29	293.30	176.53
	-4	496.06	87.47	477.20	96.07	453.80	107.46	426.34	121.43	395.31	137.72	361.19	156.10	324.46	176.32
	-2	529.87	87.37	511.04	95.97	487.58	107.37	459.97	121.34	428.70	137.62	394.25	155.99	357.11	176.19
	0	565.47	87.32	546.62	95.94	523.05	107.35	495.25	121.32	463.69	137.60	428.87	155.95	391.26	176.14
	2	602.86	87.34	583.95	95.97	560.23	107.40	532.18	121.36	500.29	137.64	465.04	155.98	426.92	176.15
	4	-	-	623.04	96.05	599.11	107.49	570.77	121.46	538.51	137.73	502.79	156.07	464.12	176.22
	6	-	-	663.90	96.17	639.73	107.62	611.05	121.60	578.36	137.87	542.13	156.20	502.85	176.34
	7	-	-	685.00	96.25	660.69	107.70	**632.00**	**122.00**	598.90	137.95	562.40	156.28	522.80	176.41
	8	-	-	706.55	96.32	682.08	107.78	653.02	121.77	619.85	138.04	583.06	156.37	543.13	176.49
	10	-	-	751.00	96.50	726.19	107.97	696.70	121.97	663.01	138.24	625.61	156.56	584.98	176.68
	12	-	-	797.26	96.68	772.06	108.17	742.09	122.18	707.84	138.46	669.78	156.77	628.41	176.88
	14	-	-	-	-	819.71	108.38	789.22	122.40	754.35	138.68	715.59	157.00	673.43	177.10
	16	-	-	-	-	869.14	108.58	838.08	122.61	802.56	138.90	763.05	157.22	720.05	177.31

12.2. WF 2512 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	470.62	82.63	451.42	90.72	427.70	101.46	399.95	114.62	368.67	129.98	334.35	147.32	297.48	166.40
	-4	503.12	82.46	483.99	90.55	460.26	101.30	432.41	114.46	400.94	129.82	366.33	147.14	329.08	166.20
	-2	537.42	82.35	518.32	90.46	494.52	101.21	466.52	114.38	434.81	129.73	399.87	147.04	362.19	166.08
	0	573.52	82.31	554.40	90.44	530.50	101.20	502.30	114.36	470.29	129.70	434.97	147.00	396.83	166.03
	2	611.45	82.33	592.26	90.47	568.20	101.23	539.76	114.40	507.41	129.74	471.66	147.03	433.00	166.04
	4	-	-	631.91	90.54	607.64	101.32	578.90	114.49	546.17	129.83	509.95	147.11	470.73	166.11
	6	-	-	673.35	90.66	648.84	101.44	619.75	114.62	586.59	129.96	549.85	147.24	510.01	166.22
	7	-	-	694.75	90.72	670.09	101.52	**641.00**	**115.00**	607.43	130.04	570.40	147.31	530.24	166.29
	8	-	-	716.61	90.80	691.79	101.60	662.32	114.78	628.68	130.12	591.37	147.39	550.87	166.37
	10	-	-	761.69	90.96	736.53	101.78	706.62	114.97	672.45	130.31	634.52	147.58	593.31	166.54
	12	-	-	808.61	91.13	783.05	101.97	752.66	115.17	717.92	130.51	679.32	147.78	637.36	166.73
	14	-	-	-	-	831.38	102.16	800.45	115.37	765.09	130.73	725.78	147.99	683.02	166.94
	16	-	-	-	-	881.52	102.35	850.02	115.58	813.98	130.93	773.92	148.20	730.30	167.14

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1. For different deposit factor values, multiply the performance table data by the coefficients given in the table.

12.3. WF 2812 STANDARD VERSIONE "°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	530.83	99.87	509.17	109.65	482.41	122.63	451.12	138.54	415.84	157.11	377.12	178.07	335.53	201.13
	-4	567.48	99.66	545.91	109.45	519.14	122.44	487.73	138.35	452.23	156.91	413.19	177.85	371.18	200.89
	-2	606.17	99.54	584.63	109.34	557.79	122.34	526.20	138.25	490.43	156.80	451.02	177.72	408.53	200.74
	0	646.89	99.49	625.33	109.31	598.36	122.31	566.56	138.23	530.46	156.77	490.62	177.68	447.60	200.68
	2	689.67	99.51	668.03	109.35	640.89	122.36	608.80	138.27	572.32	156.82	532.00	177.72	488.40	200.70
	4	-	-	712.75	109.44	685.38	122.46	652.96	138.38	616.04	156.92	575.19	177.81	530.94	200.78
	6	-	-	759.49	109.58	731.84	122.62	699.04	138.54	661.63	157.08	620.19	177.96	575.25	200.91
	7	-	-	783.63	109.66	755.82	122.71	723.00	139.00	685.13	157.18	643.37	178.05	598.07	200.99
	8	-	-	808.28	109.75	780.29	122.80	747.05	138.74	709.11	157.28	667.02	178.15	621.34	201.09
	10	-	-	859.13	109.94	830.75	123.02	797.01	138.96	758.48	157.51	715.69	178.38	669.21	201.30
	12	-	-	912.05	110.15	883.23	123.25	848.94	139.20	809.76	157.75	766.22	178.62	718.89	201.53
	14	-	-	-	-	937.73	123.48	902.85	139.45	862.97	158.01	818.63	178.87	770.39	201.78
	16	-	-	-	-	994.29	123.71	958.76	139.70	918.11	158.26	872.92	179.13	823.72	202.02

12.4. WF 2812 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	534.50	94.12	512.69	103.34	485.75	115.57	454.24	130.57	418.71	148.07	379.73	167.82	337.85	189.56
	-4	571.41	93.93	549.69	103.15	522.73	115.39	491.10	130.39	455.35	147.88	416.05	167.61	373.74	189.33
	-2	610.36	93.81	588.67	103.05	561.64	115.30	529.84	130.29	493.82	147.77	454.14	167.49	411.35	189.19
	0	651.36	93.77	629.65	103.02	602.50	115.27	570.47	130.27	534.12	147.75	494.01	167.46	450.69	189.13
	2	694.44	93.78	672.65	103.05	645.32	115.32	613.01	130.32	576.28	147.79	535.68	167.49	491.77	189.15
	4	-	-	717.68	103.14	690.12	115.42	657.47	130.42	620.30	147.89	579.17	167.58	534.62	189.22
	6	-	-	764.74	103.27	736.90	115.56	703.87	130.57	666.21	148.04	624.48	167.72	579.23	189.35
	7	-	-	789.05	103.35	761.04	115.64	**728.00**	**131.00**	689.87	148.13	647.82	167.81	602.21	189.43
	8	-	-	813.87	103.43	785.69	115.74	752.22	130.75	714.01	148.23	671.63	167.90	625.64	189.51
	10	-	-	865.07	103.62	836.49	115.94	802.53	130.96	763.72	148.44	720.64	168.11	673.84	189.71
	12	-	-	918.36	103.81	889.33	116.15	854.81	131.19	815.36	148.67	771.52	168.34	723.87	189.93
	14	-	-	-	-	944.22	116.37	909.10	131.43	868.93	148.91	824.29	168.58	775.72	190.16
	16	-	-	-	-	1001.17	116.59	965.39	131.66	924.46	149.15	878.96	168.82	829.42	190.39

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power

from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

12.5. WF 3212 TANDARD VERSIONE "°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	642.42	121.43	616.21	133.31	583.83	149.10	545.96	168.44	503.26	191.02	456.41	216.50	406.07	244.54
	-4	686.79	121.17	660.68	133.07	628.28	148.86	590.27	168.21	547.30	190.77	500.06	216.23	449.21	244.25
	-2	733.60	121.02	707.53	132.94	675.05	148.74	636.83	168.08	593.53	190.64	545.84	216.08	494.41	244.07
	0	782.89	120.97	756.79	132.90	724.16	148.71	685.67	168.06	641.98	190.61	593.76	216.03	541.70	243.99
	2	834.66	120.99	808.47	132.95	775.63	148.77	736.80	168.12	692.65	190.66	643.85	216.07	591.07	244.01
	4	-	-	862.59	133.06	829.47	148.90	790.23	168.25	745.56	190.79	696.11	216.19	642.57	244.11
	6	-	-	919.16	133.22	885.70	149.08	846.00	168.44	800.73	190.99	750.57	216.37	696.19	244.27
	7	-	-	948.38	133.32	914.72	149.19	**875.00**	**169.00**	829.17	191.10	778.63	216.48	723.81	244.37
	8	-	-	978.21	133.43	944.34	149.31	904.10	168.68	858.19	191.23	807.25	216.60	751.97	244.49
	10	-	-	1039.75	133.67	1005.40	149.57	964.57	168.95	917.93	191.50	866.16	216.88	809.91	244.74
	12	-	-	1103.79	133.93	1068.91	149.85	1027.42	169.25	980.00	191.80	927.31	217.17	870.03	245.03
	14	-	-	-	-	1134.88	150.13	1092.66	169.55	1044.39	192.11	990.73	217.48	932.36	245.32
	16	-	-	-	-	1203.33	150.41	1160.32	169.85	1111.13	192.42	1056.44	217.79	996.90	245.62

12.6. WF 3212 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	654.17	114.96	627.48	126.21	594.51	141.16	555.94	159.47	512.46	180.85	464.75	204.97	413.50	231.52
	-4	699.35	114.72	672.76	125.99	639.77	140.94	601.06	159.25	557.31	180.61	509.20	204.72	457.43	231.24
	-2	747.02	114.58	720.47	125.86	687.40	140.82	648.47	159.13	604.39	180.49	555.82	204.57	503.45	231.07
	0	797.20	114.52	770.63	125.83	737.40	140.79	698.20	159.11	653.72	180.46	604.62	204.53	551.60	231.00
	2	849.92	114.54	823.26	125.87	789.81	140.85	750.27	159.17	705.31	180.51	655.62	204.57	601.88	231.02
	4	-	-	878.36	125.97	844.64	140.97	804.68	159.29	759.19	180.63	708.84	204.68	654.32	231.11
	6	-	-	935.97	126.13	901.89	141.14	861.47	159.47	815.37	180.81	764.30	204.85	708.92	231.26
	7	-	-	965.72	126.22	931.44	141.24	**891.00**	**160.00**	844.33	180.92	792.87	204.95	737.04	231.36
	8	-	-	996.10	126.33	961.61	141.36	920.64	159.70	873.88	181.04	822.01	205.07	765.72	231.47
	10	-	-	1058.76	126.55	1023.79	141.60	982.21	159.96	934.72	181.30	881.99	205.33	824.72	231.71
	12	-	-	1123.98	126.80	1088.46	141.87	1046.21	160.23	997.92	181.59	944.27	205.61	885.94	231.98
	14	-	-	-	-	1155.63	142.14	1112.64	160.52	1063.49	181.88	1008.85	205.90	949.41	232.26
	16	-	-	-	-	1225.33	142.40	1181.54	160.80	1131.45	182.17	1075.75	206.19	1015.13	232.54

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1. For different deposit factor values, multiply the performance table data by the coefficients given in the table.

12.7. WF 3612 STANDARD VERSIONE "°"

temp of water produced at evaporator °C	temp of water produced at the Condenser [°C]															
WF	20		25		30		35		40		45		50			
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe		
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]			
-6	724.65	136.52	695.09	149.88	658.56	167.62	615.84	189.37	567.68	214.76	514.83	243.40	458.05	274.93		
-4	774.70	136.23	745.25	149.61	708.70	167.36	665.82	189.11	617.36	214.48	564.07	243.10	506.71	274.60		
-2	827.51	136.06	798.10	149.46	761.46	167.22	718.34	188.97	669.51	214.33	615.71	242.93	557.70	274.40		
0	883.10	136.00	853.66	149.42	816.85	167.19	773.43	188.94	724.15	214.29	669.76	242.88	611.03	274.31		
2	941.49	136.02	911.96	149.47	874.91	167.25	831.11	189.01	781.30	214.36	726.26	242.92	666.73	274.33		
4	-	-	973.00	149.59	935.64	167.40	891.38	189.16	840.99	214.50	785.21	243.05	724.82	274.44		
6	-	-	1036.82	149.78	999.07	167.60	954.29	189.37	903.23	214.72	846.65	243.26	785.30	274.63		
7	-	-	1069.77	149.89	1031.80	167.73	**987.00**	**190.00**	935.31	214.85	878.30	243.38	816.46	274.74		
8	-	-	1103.42	150.01	1065.21	167.86	1019.83	189.64	968.03	214.99	910.58	243.52	848.22	274.87		
10	-	-	1172.84	150.28	1134.09	168.15	1088.04	189.95	1035.43	215.30	977.02	243.82	913.57	275.16		
12	-	-	1245.08	150.57	1205.73	168.47	1158.93	190.28	1105.44	215.63	1046.01	244.16	981.39	275.47		
14	-	-	-	-	1280.14	168.79	1232.52	190.62	1178.07	215.98	1117.55	244.50	1051.70	275.81		
16	-	-	-	-	1357.35	169.10	1308.84	190.95	1253.36	216.33	1191.66	244.85	1124.50	276.15		

12.8. WF 3612 HIGH EFFICIENCY VERSION "A"

temp of water produced at evaporator °C	temp of water produced at the Condenser [°C]															
WF	20		25		30		35		40		45		50			
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe		
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]			
-6	739.34	129.33	709.17	141.99	671.91	158.80	628.32	179.40	579.18	203.45	525.26	230.59	467.33	260.46		
-4	790.40	129.06	760.35	141.74	723.06	158.55	679.31	179.16	629.87	203.19	575.50	230.30	516.98	260.14		
-2	844.27	128.90	814.27	141.60	776.89	158.42	732.90	179.02	683.07	203.05	628.18	230.14	569.00	259.95		
0	900.99	128.84	870.96	141.55	833.41	158.39	789.10	179.00	738.82	203.02	683.34	230.09	623.41	259.88		
2	960.57	128.86	930.44	141.60	892.64	158.45	847.95	179.06	797.14	203.07	740.98	230.14	680.24	259.90		
4	-	-	992.72	141.72	954.60	158.59	909.45	179.20	858.03	203.21	801.13	230.26	739.50	260.00		
6	-	-	1057.83	141.90	1019.31	158.78	973.62	179.41	921.53	203.42	863.80	230.46	801.22	260.17		
7	-	-	1091.45	142.00	1052.71	158.90	**1007.00**	**180.00**	954.26	203.54	896.10	230.57	833.00	260.28		
8	-	-	1125.78	142.12	1086.80	159.03	1040.50	179.66	987.65	203.67	929.03	230.70	865.41	260.40		
10	-	-	1196.60	142.37	1157.07	159.30	1110.09	179.95	1056.41	203.97	996.82	230.99	932.09	260.67		
12	-	-	1270.31	142.64	1230.16	159.60	1182.41	180.26	1127.84	204.28	1067.20	231.31	1001.28	260.98		
14	-	-	-	-	1306.08	159.90	1257.50	180.59	1201.94	204.61	1140.19	231.63	1073.01	261.29		
16	-	-	-	-	1384.86	160.20	1335.36	180.90	1278.76	204.94	1215.81	231.96	1147.29	261.61		

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power

from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

12.9. WF 4212 STANDARD VERSIONE "°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	817.90	153.76	784.52	168.81	743.30	188.79	695.08	213.29	640.72	241.88	581.07	274.14	516.99	309.66
	-4	874.38	153.44	841.14	168.51	799.89	188.50	751.49	213.00	696.79	241.57	636.65	273.81	571.91	309.28
	-2	933.98	153.25	900.79	168.34	859.44	188.35	810.77	212.84	755.65	241.40	694.93	273.62	629.46	309.06
	0	996.73	153.17	963.51	168.29	921.96	188.31	872.95	212.81	817.33	241.36	755.94	273.55	689.66	308.96
	2	1062.64	153.20	1029.30	168.35	987.49	188.38	938.05	212.88	881.84	241.43	819.71	273.61	752.52	308.99
	4	-	-	1098.20	168.49	1056.03	188.54	1006.08	213.05	949.20	241.60	886.25	273.76	818.08	309.11
	6	-	-	1170.23	168.70	1127.62	188.77	1077.08	213.29	1019.45	241.84	955.59	273.99	886.35	309.32
	7	-	-	1207.42	168.83	1164.56	188.91	**1114.00**	**214.00**	1055.66	241.98	991.31	274.13	921.51	309.44
	8	-	-	1245.40	168.96	1202.28	189.06	1151.05	213.60	1092.59	242.14	1027.74	274.28	957.36	309.59
	10	-	-	1323.75	169.27	1280.02	189.39	1228.04	213.94	1168.66	242.49	1102.74	274.62	1031.13	309.91
	12	-	-	1405.29	169.59	1360.88	189.75	1308.05	214.31	1247.68	242.87	1180.60	275.00	1107.67	310.27
	14	-	-	-	-	1444.86	190.11	1391.12	214.70	1329.66	243.26	1261.34	275.39	1187.02	310.65
	16	-	-	-	-	1532.01	190.46	1477.25	215.07	1414.63	243.65	1344.99	275.78	1269.20	311.03

12.10. WF 4212 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	834.78	145.86	800.72	160.13	758.65	179.09	709.43	202.33	653.95	229.45	593.07	260.05	527.66	293.74
	-4	892.43	145.55	858.51	159.85	816.41	178.81	767.01	202.05	711.18	229.15	649.79	259.73	583.72	293.38
	-2	953.27	145.37	919.39	159.69	877.18	178.66	827.51	201.90	771.26	228.99	709.28	259.55	642.46	293.17
	0	1017.31	145.30	983.40	159.64	941.00	178.63	890.97	201.87	834.20	228.96	771.55	259.49	703.89	293.08
	2	1084.58	145.33	1050.55	159.69	1007.87	178.70	957.41	201.94	900.04	229.02	836.63	259.54	768.06	293.10
	4	-	-	1120.87	159.83	1077.83	178.85	1026.85	202.10	968.80	229.18	904.55	259.68	834.97	293.22
	6	-	-	1194.39	160.03	1150.90	179.07	1099.31	202.33	1040.49	229.41	975.32	259.90	904.65	293.42
	7	-	-	1232.35	160.15	1188.61	179.20	**1137.00**	**203.00**	1077.45	229.55	1011.78	260.04	940.54	293.54
	8	-	-	1271.12	160.28	1227.10	179.35	1174.82	202.62	1115.15	229.70	1048.96	260.18	977.13	293.68
	10	-	-	1351.08	160.56	1306.45	179.66	1253.39	202.95	1192.79	230.03	1125.51	260.51	1052.42	293.98
	12	-	-	1434.30	160.87	1388.97	179.99	1335.06	203.30	1273.44	230.39	1204.97	260.86	1130.54	294.32
	14	-	-	-	-	1474.69	180.33	1419.84	203.66	1357.11	230.76	1287.39	261.23	1211.53	294.68
	16	-	-	-	-	1563.64	180.67	1507.75	204.02	1443.84	231.13	1372.76	261.60	1295.40	295.04

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

12.11. WF 4812 STANDARD VERSIONE "°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	940.51	176.75	902.13	194.05	854.73	217.03	799.28	245.19	736.77	278.05	668.18	315.14	594.49	355.96
	-4	1005.46	176.38	967.23	193.71	919.80	216.69	864.15	244.85	801.25	277.69	732.09	314.75	657.65	355.53
	-2	1074.00	176.16	1035.83	193.51	988.28	216.51	932.32	244.67	868.93	277.50	799.11	314.53	723.82	355.27
	0	1146.15	176.08	1107.94	193.46	1060.17	216.47	1003.82	244.63	939.85	277.45	869.27	314.46	793.04	355.16
	2	1221.94	176.11	1183.60	193.52	1135.52	216.55	1078.67	244.72	1014.03	277.53	942.59	314.52	865.33	355.19
	4	-	-	1262.83	193.68	1214.34	216.73	1156.90	244.91	1091.50	277.72	1019.11	314.69	940.72	355.33
	6	-	-	1345.66	193.92	1296.66	217.00	1238.54	245.19	1172.27	278.00	1098.84	314.96	1019.22	355.57
	7	-	-	1388.42	194.07	1339.14	217.16	1281.00	246.00	1213.91	278.17	1139.92	315.12	1059.66	355.72
	8	-	-	1432.10	194.23	1382.51	217.33	1323.61	245.54	1256.38	278.35	1181.81	315.29	1100.88	355.88
	10	-	-	1522.19	194.58	1471.91	217.71	1412.14	245.93	1343.86	278.75	1268.05	315.69	1185.70	356.26
	12	-	-	1615.96	194.95	1564.88	218.12	1504.14	246.36	1434.72	279.19	1357.58	316.12	1273.72	356.67
	14	-	-	-	-	1661.46	218.53	1599.66	246.80	1528.99	279.64	1450.43	316.57	1364.97	357.10
	16	-	-	-	-	1761.67	218.94	1698.71	247.23	1626.70	280.08	1546.62	317.01	1459.46	357.54

12.12. WF 4812 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	941.24	164.54	902.84	180.64	855.40	202.03	799.91	228.24	737.35	258.84	668.70	293.36	594.95	331.36
	-4	1006.24	164.19	967.99	180.32	920.52	201.71	864.82	227.93	801.87	258.50	732.66	293.00	658.16	330.96
	-2	1074.84	163.99	1036.64	180.14	989.05	201.55	933.05	227.76	869.61	258.32	799.73	292.79	724.39	330.72
	0	1147.04	163.91	1108.81	180.09	1061.00	201.51	1004.60	227.72	940.59	258.28	869.95	292.73	793.66	330.62
	2	1222.89	163.94	1184.53	180.15	1136.41	201.59	1079.51	227.81	1014.82	258.36	943.33	292.79	866.01	330.64
	4	-	-	1263.82	180.30	1215.29	201.76	1157.80	227.99	1092.35	258.53	1019.90	292.94	941.45	330.78
	6	-	-	1346.71	180.52	1297.67	202.01	1239.51	228.25	1173.19	258.79	1099.70	293.19	1020.02	331.00
	7	-	-	1389.51	180.66	1340.19	202.15	**1282.00**	**229.00**	1214.86	258.95	1140.81	293.34	1060.48	331.13
	8	-	-	1433.22	180.81	1383.59	202.32	1324.64	228.57	1257.36	259.12	1182.73	293.51	1101.74	331.29
	10	-	-	1523.38	181.13	1473.06	202.67	1413.24	228.94	1344.91	259.49	1269.04	293.87	1186.63	331.64
	12	-	-	1617.22	181.48	1566.11	203.05	1505.32	229.34	1435.84	259.90	1358.64	294.27	1274.72	332.02
	14	-	-	-	-	1662.76	203.43	1600.91	229.74	1530.18	260.31	1451.56	294.69	1366.04	332.42
	16	-	-	-	-	1763.04	203.81	1700.03	230.15	1627.97	260.73	1547.83	295.11	1460.60	332.83

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power

from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

12.13. WF 5612 STANDARD VERSIONE "°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1036.69	195.43	994.39	214.56	942.14	239.96	881.02	271.10	812.12	307.44	736.51	348.44	655.28	393.58
	-4	1108.28	195.02	1066.15	214.18	1013.87	239.59	952.52	270.72	883.19	307.04	806.95	348.02	724.90	393.11
	-2	1183.83	194.78	1141.76	213.97	1089.34	239.39	1027.66	270.52	957.79	306.83	880.83	347.77	797.84	392.82
	0	1263.36	194.69	1221.25	213.91	1168.59	239.35	1106.47	270.48	1035.97	306.78	958.16	347.70	874.14	392.70
	2	1346.90	194.72	1304.64	213.97	1251.64	239.44	1188.98	270.58	1117.73	306.87	1038.99	347.76	953.82	392.73
	4	-	-	1391.97	214.15	1338.52	239.64	1275.21	270.79	1203.12	307.08	1123.33	347.95	1036.92	392.89
	6	-	-	1483.27	214.42	1429.26	239.94	1365.20	271.10	1292.15	307.38	1211.21	348.24	1123.45	393.15
	7	-	-	1530.41	214.58	1476.09	240.11	**1412.00**	**272.00**	1338.05	307.57	1256.49	348.42	1168.02	393.31
	8	-	-	1578.55	214.76	1523.89	240.31	1458.97	271.49	1384.87	307.77	1302.67	348.62	1213.46	393.50
	10	-	-	1677.86	215.14	1622.43	240.72	1556.55	271.93	1481.28	308.21	1397.73	349.05	1306.96	393.91
	12	-	-	1781.21	215.55	1724.92	241.17	1657.96	272.40	1581.44	308.70	1496.41	349.53	1403.98	394.36
	14	-	-	-	-	1831.37	241.63	1763.25	272.88	1685.35	309.19	1598.76	350.02	1504.56	394.84
	16	-	-	-	-	1941.82	242.08	1872.42	273.36	1793.05	309.69	1704.79	350.52	1608.71	395.32

12.14. WF 5612 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1040.36	185.38	997.91	203.52	945.47	227.61	884.14	257.15	814.99	291.61	739.12	330.51	657.60	373.32
	-4	1112.21	184.99	1069.92	203.16	1017.46	227.26	955.89	256.79	886.31	291.24	809.81	330.10	727.47	372.87
	-2	1188.02	184.76	1145.80	202.95	1093.20	227.07	1031.30	256.60	961.19	291.04	883.95	329.87	800.67	372.60
	0	1267.83	184.67	1225.57	202.90	1172.73	227.03	1110.39	256.56	1039.63	290.99	961.56	329.80	877.24	372.49
	2	1351.67	184.70	1309.26	202.96	1256.07	227.11	1193.19	256.65	1121.69	291.07	1042.67	329.86	957.20	372.52
	4	-	-	1396.90	203.13	1343.26	227.31	1279.73	256.86	1207.38	291.27	1127.30	330.04	1040.59	372.66
	6	-	-	1488.52	203.38	1434.33	227.59	1370.03	257.15	1296.73	291.56	1215.50	330.32	1127.43	372.91
	7	-	-	1535.83	203.54	1481.32	227.75	**1417.00**	**258.00**	1342.79	291.74	1260.94	330.49	1172.16	373.07
	8	-	-	1584.14	203.70	1529.29	227.94	1464.13	257.51	1389.77	291.93	1307.28	330.67	1217.75	373.24
	10	-	-	1683.80	204.07	1628.18	228.33	1562.06	257.93	1486.53	292.35	1402.68	331.09	1311.59	373.63
	12	-	-	1787.52	204.46	1731.02	228.76	1663.83	258.38	1587.04	292.81	1501.71	331.54	1408.95	374.07
	14	-	-	-	-	1837.85	229.19	1769.49	258.84	1691.32	293.28	1604.42	332.01	1509.88	374.52
	16	-	-	-	-	1948.70	229.62	1879.05	259.29	1799.40	293.75	1710.82	332.48	1614.41	374.98

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.
The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

12.15. WF 6412 STANDARD VERSION "°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1140.21	215.55	1093.69	236.65	1036.22	264.67	969.00	299.01	893.21	339.09	810.06	384.31	720.72	434.10
	-4	1218.95	215.10	1172.61	236.23	1115.11	264.25	1047.64	298.59	971.38	338.65	887.53	383.84	797.29	433.57
	-2	1302.04	214.83	1255.77	235.99	1198.12	264.04	1130.28	298.37	1053.44	338.42	968.79	383.57	877.51	433.26
	0	1389.52	214.73	1343.20	235.92	1285.28	263.99	1216.96	298.33	1139.42	338.36	1053.84	383.49	961.43	433.13
	2	1481.40	214.77	1434.92	236.00	1376.63	264.09	1307.71	298.44	1229.35	338.46	1142.74	383.56	1049.07	433.16
	4	-	-	1530.98	236.20	1472.19	264.31	1402.55	298.67	1323.26	338.69	1235.50	383.77	1140.46	433.33
	6	-	-	1631.39	236.49	1571.99	264.64	1501.52	299.01	1421.19	339.03	1332.16	384.09	1235.64	433.62
	7	-	-	1683.23	236.67	1623.49	264.83	**1553.00**	**300.00**	1471.66	339.23	1381.96	384.29	1284.66	433.80
	8	-	-	1736.19	236.86	1676.06	265.04	1604.66	299.44	1523.16	339.45	1432.75	384.51	1334.63	434.00
	10	-	-	1845.41	237.29	1784.44	265.50	1711.98	299.92	1629.20	339.94	1537.30	384.99	1437.47	434.46
	12	-	-	1959.08	237.74	1897.16	266.00	1823.52	300.44	1739.36	340.47	1645.84	385.51	1544.18	434.96
	14	-	-	-	-	2014.25	266.50	1939.32	300.98	1853.64	341.02	1758.41	386.06	1654.80	435.49
	16	-	-	-	-	2135.73	267.00	2059.40	301.50	1972.10	341.57	1875.02	386.60	1769.36	436.02

12.16. WF 6412 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1140.94	204.78	1094.39	224.82	1036.89	251.43	969.62	284.06	893.79	322.13	810.58	365.10	721.18	412.39
	-4	1219.74	204.35	1173.37	224.42	1115.83	251.04	1048.31	283.66	972.01	321.72	888.11	364.65	797.80	411.89
	-2	1302.88	204.09	1256.58	224.19	1198.89	250.83	1131.01	283.45	1054.12	321.50	969.41	364.40	878.08	411.59
	0	1390.41	203.99	1344.06	224.13	1286.11	250.79	1217.74	283.41	1140.15	321.44	1054.52	364.31	962.05	411.47
	2	1482.35	204.03	1435.85	224.20	1377.52	250.88	1308.55	283.51	1230.14	321.53	1143.47	364.38	1049.75	411.50
	4	-	-	1531.96	224.39	1473.13	251.10	1403.45	283.74	1324.11	321.75	1236.30	364.58	1141.20	411.66
	6	-	-	1632.44	224.67	1573.00	251.41	1502.49	284.06	1422.10	322.08	1333.02	364.89	1236.44	411.94
	7	-	-	1684.32	224.84	1624.53	251.59	**1554.00**	**285.00**	1472.61	322.27	1382.85	365.07	1285.48	412.11
	8	-	-	1737.30	225.02	1677.14	251.79	1605.69	284.46	1524.14	322.48	1433.67	365.28	1335.49	412.30
	10	-	-	1846.59	225.42	1785.59	252.23	1713.08	284.92	1630.25	322.95	1538.29	365.74	1438.39	412.73
	12	-	-	1960.34	225.85	1898.38	252.70	1824.70	285.42	1740.48	323.45	1646.90	366.23	1545.17	413.21
	14	-	-	-	-	2015.54	253.18	1940.57	285.93	1854.84	323.97	1759.54	366.75	1655.86	413.71
	16	-	-	-	-	2137.11	253.65	2060.73	286.43	1973.37	324.49	1876.23	367.27	1770.50	414.22

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power
from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

13. PERFORMANCE IN HEATING MODE

13.1. WF 2512 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	553.91	87.57	541.93	96.15	529.05	107.54	515.08	121.49	499.85	137.78	483.18	156.16	464.88	176.40
	-4	587.65	87.40	575.89	96.00	562.97	107.39	548.73	121.33	532.99	137.61	515.55	155.96	496.26	176.17
	-2	622.45	87.30	610.88	95.91	597.93	107.31	583.41	121.26	567.13	137.52	548.93	155.85	528.62	176.03
	0	658.47	87.25	647.10	95.89	634.09	107.30	619.27	121.25	602.46	137.50	583.48	155.82	562.14	175.97
	2	695.90	87.26	684.71	95.92	671.64	107.35	656.51	121.30	639.15	137.55	619.37	155.86	597.00	175.98
	4	-	-	723.89	96.00	710.74	107.45	695.30	121.41	677.38	137.65	656.79	155.95	633.37	176.05
	5	-	-	744.12	96.06	730.93	107.51	715.33	121.48	697.12	137.72	**678.00**	**156.00**	652.18	176.10
	6	-	-	764.81	96.11	751.58	107.58	735.80	121.55	717.31	137.80	695.91	156.08	671.43	176.17
	7	-	-	785.98	96.18	772.70	107.66	756.76	121.63	737.97	137.88	716.16	156.16	691.15	176.24
	8	-	-	807.65	96.25	794.32	107.74	778.21	121.72	759.13	137.97	736.90	156.25	711.35	176.32
	10	-	-	852.58	96.40	839.14	107.91	822.68	121.92	803.00	138.17	779.94	156.45	753.31	176.50
	12	-	-	899.78	96.55	886.22	108.10	869.39	122.12	849.12	138.39	825.20	156.66	797.48	176.71
	14	-	-	-	-	935.73	108.27	918.53	122.32	897.64	138.60	872.86	156.88	844.03	176.91
	16	-	-	-	-	987.85	108.44	970.27	122.51	948.74	138.80	923.10	157.09	893.15	177.12

13.2. WF 2512 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	552.28	82.52	540.33	90.61	527.49	101.33	513.56	114.48	498.38	129.83	481.75	147.15	463.51	166.23
	-4	585.92	82.36	574.19	90.46	561.31	101.19	547.11	114.33	531.41	129.67	514.03	146.97	494.79	166.01
	-2	620.61	82.26	609.08	90.38	596.17	101.12	581.69	114.26	565.46	129.58	547.31	146.86	527.06	165.88
	0	656.53	82.22	645.19	90.36	632.22	101.11	617.45	114.26	600.69	129.57	581.76	146.83	560.48	165.82
	2	693.85	82.23	682.69	90.39	669.66	101.16	654.58	114.31	637.27	129.62	617.55	146.86	595.24	165.83
	4	-	-	721.75	90.46	708.65	101.25	693.25	114.40	675.38	129.71	654.86	146.95	631.50	165.89
	5	-	-	741.92	90.51	728.78	101.31	713.22	114.47	695.06	129.78	**676.00**	**147.00**	650.26	165.94
	6	-	-	762.55	90.57	749.36	101.37	733.63	114.54	715.19	129.85	693.86	147.08	669.45	166.00
	7	-	-	783.66	90.63	770.42	101.44	754.53	114.62	735.80	129.93	714.05	147.15	689.11	166.07
	8	-	-	805.26	90.70	791.98	101.52	775.91	114.70	756.89	130.01	734.73	147.24	709.25	166.15
	10	-	-	850.06	90.84	836.67	101.69	820.25	114.88	800.64	130.20	777.64	147.42	751.09	166.32
	12	-	-	897.12	90.98	883.61	101.86	866.83	115.07	846.61	130.40	822.77	147.62	795.13	166.51
	14	-	-	-	-	932.97	102.03	915.82	115.26	894.99	130.60	870.29	147.83	841.54	166.71
	16	-	-	-	-	984.94	102.18	967.40	115.44	945.94	130.80	920.37	148.02	890.52	166.90

Ph = Heating capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

13.3. WF 2812 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	633.16	99.93	619.46	109.72	604.74	122.70	588.77	138.63	571.36	157.21	552.30	178.18	531.39	201.28
	-4	671.73	99.73	658.28	109.53	643.52	122.53	627.24	138.45	609.24	157.01	589.31	177.96	567.25	201.02
	-2	711.50	99.61	698.28	109.44	683.47	122.44	666.87	138.36	648.27	156.91	627.46	177.83	604.24	200.86
	0	752.68	99.56	739.68	109.41	724.81	122.43	707.87	138.35	688.66	156.89	666.96	177.80	642.56	200.79
	2	795.46	99.57	782.67	109.45	767.73	122.49	750.44	138.41	730.59	156.95	707.99	177.84	682.41	200.80
	4	-	-	827.45	109.54	812.43	122.60	794.77	138.53	774.29	157.07	750.76	177.94	723.99	200.88
	5	-	-	850.58	109.60	835.51	122.67	817.67	138.61	796.85	157.14	**775.00**	**178.00**	745.49	200.94
	6	-	-	874.23	109.67	859.10	122.75	841.07	138.69	819.93	157.23	795.47	178.09	767.49	201.01
	7	-	-	898.42	109.74	883.25	122.84	865.03	138.79	843.55	157.33	818.62	178.19	790.03	201.09
	8	-	-	923.19	109.82	907.96	122.93	889.54	138.89	867.73	157.43	842.33	178.29	813.12	201.19
	10	-	-	974.55	109.99	959.20	123.13	940.38	139.11	917.89	157.66	891.53	178.51	861.08	201.40
	12	-	-	1028.51	110.17	1013.01	123.34	993.78	139.34	970.60	157.90	943.26	178.75	911.57	201.63
	14	-	-	-	-	1069.61	123.54	1049.95	139.57	1026.06	158.14	997.74	179.00	964.79	201.86
	16	-	-	-	-	1129.18	123.73	1109.08	139.79	1084.47	158.38	1055.16	179.24	1020.93	202.10

13.4. WF 2812 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	628.26	93.75	614.67	102.93	600.05	115.12	584.21	130.06	566.94	147.49	548.03	167.17	527.28	188.84
	-4	666.53	93.56	653.18	102.76	638.53	114.96	622.38	129.89	604.52	147.31	584.75	166.96	562.86	188.60
	-2	705.99	93.45	692.88	102.67	678.18	114.88	661.71	129.81	643.25	147.21	622.61	166.84	599.57	188.45
	0	746.85	93.41	733.95	102.65	719.20	114.87	702.39	129.80	683.32	147.20	661.79	166.81	637.59	188.38
	2	789.30	93.42	776.61	102.69	761.79	114.92	744.63	129.86	724.94	147.25	702.51	166.85	677.13	188.39
	4	-	-	821.05	102.77	806.14	115.02	788.62	129.97	768.29	147.36	744.95	166.94	718.38	188.46
	5	-	-	843.99	102.83	829.04	115.09	811.34	130.04	790.68	147.43	**769.00**	**167.00**	739.71	188.52
	6	-	-	867.46	102.89	852.45	115.16	834.56	130.12	813.59	147.51	789.32	167.09	761.55	188.59
	7	-	-	891.47	102.96	876.41	115.25	858.33	130.21	837.02	147.60	812.28	167.17	783.91	188.67
	8	-	-	916.05	103.04	900.93	115.33	882.66	130.31	861.02	147.70	835.81	167.27	806.83	188.75
	10	-	-	967.01	103.20	951.77	115.52	933.10	130.51	910.78	147.92	884.62	167.48	854.42	188.95
	12	-	-	1020.54	103.36	1005.17	115.72	986.08	130.73	963.08	148.14	935.96	167.71	904.51	189.17
	14	-	-	-	-	1061.33	115.91	1041.82	130.94	1018.12	148.37	990.02	167.94	957.32	189.39
	16	-	-	-	-	1120.44	116.08	1100.49	131.15	1076.08	148.59	1046.99	168.16	1013.03	189.61

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power
from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

13.5. WF 3212 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	767.14	121.26	750.55	133.14	732.71	148.90	713.36	168.22	692.27	190.77	669.18	216.22	643.84	244.25
	-4	813.87	121.01	797.58	132.92	779.69	148.69	759.97	168.00	738.16	190.53	714.02	215.95	687.29	243.93
	-2	862.06	120.87	846.05	132.80	828.11	148.58	807.99	167.89	785.45	190.41	760.24	215.80	732.11	243.74
	0	911.96	120.81	896.20	132.77	878.19	148.57	857.67	167.89	834.38	190.39	808.09	215.75	778.54	243.65
	2	963.79	120.83	948.29	132.82	930.19	148.64	909.24	167.96	885.20	190.46	857.81	215.80	826.82	243.67
	4	-	-	1002.55	132.93	984.35	148.77	962.96	168.10	938.14	190.60	909.63	215.92	877.19	243.76
	5	-	-	1030.57	133.00	1012.31	148.86	990.70	168.20	965.48	190.69	**939.00**	**216.00**	903.24	243.83
	6	-	-	1059.22	133.08	1040.90	148.96	1019.06	168.30	993.44	190.80	963.81	216.11	929.90	243.92
	7	-	-	1088.54	133.17	1070.15	149.06	1048.08	168.42	1022.06	190.91	991.85	216.22	957.21	244.02
	8	-	-	1118.55	133.27	1100.10	149.18	1077.78	168.54	1051.36	191.04	1020.58	216.35	985.19	244.14
	10	-	-	1180.78	133.48	1162.17	149.42	1139.37	168.81	1112.13	191.32	1080.18	216.62	1043.30	244.39
	12	-	-	1246.15	133.69	1227.38	149.67	1204.07	169.09	1175.99	191.61	1142.87	216.91	1104.47	244.67
	14	-	-	-	-	1295.95	149.92	1272.13	169.37	1243.19	191.91	1208.88	217.21	1168.95	244.96
	16	-	-	-	-	1368.13	150.14	1343.78	169.63	1313.96	192.19	1278.45	217.51	1236.98	245.25

13.6. WF 3212 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	767.96	114.52	751.35	125.74	733.49	140.63	714.12	158.87	693.01	180.17	669.89	204.21	644.53	230.68
	-4	814.74	114.29	798.43	125.53	780.52	140.43	760.78	158.67	738.95	179.95	714.78	203.95	688.02	230.38
	-2	862.98	114.16	846.95	125.42	828.99	140.33	808.85	158.57	786.29	179.83	761.05	203.81	732.89	230.20
	0	912.93	114.10	897.16	125.40	879.13	140.32	858.58	158.56	835.27	179.81	808.95	203.77	779.37	230.12
	2	964.82	114.11	949.30	125.44	931.18	140.38	910.21	158.63	886.14	179.87	858.72	203.81	827.70	230.13
	4	-	-	1003.62	125.54	985.40	140.51	963.98	158.76	939.14	180.01	910.60	203.93	878.13	230.22
	5	-	-	1031.67	125.61	1013.39	140.59	991.75	158.85	966.51	180.10	**940.00**	**204.00**	904.20	230.29
	6	-	-	1060.35	125.69	1042.01	140.68	1020.14	158.95	994.50	180.20	964.83	204.11	930.89	230.37
	7	-	-	1089.70	125.77	1071.29	140.78	1049.19	159.06	1023.15	180.31	992.91	204.21	958.23	230.47
	8	-	-	1119.74	125.87	1101.27	140.89	1078.93	159.18	1052.48	180.43	1021.66	204.33	986.24	230.57
	10	-	-	1182.04	126.06	1163.41	141.12	1140.59	159.43	1113.31	180.69	1081.33	204.59	1044.41	230.81
	12	-	-	1247.48	126.26	1228.69	141.36	1205.36	159.69	1177.24	180.97	1144.09	204.86	1105.65	231.08
	14	-	-	-	-	1297.33	141.59	1273.48	159.96	1244.51	181.24	1210.16	205.15	1170.20	231.35
	16	-	-	-	-	1369.59	141.80	1345.21	160.20	1315.36	181.51	1279.81	205.42	1238.29	231.62

Ph = Heating capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1. For different deposit factor values, multiply the performance table data by the coefficients given in the table.

13.7. WF 3612 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	865.18	136.41	846.47	149.78	826.34	167.51	804.53	189.25	780.74	214.61	754.70	243.25	726.12	274.78
	-4	917.88	136.14	899.50	149.53	879.33	167.27	857.09	189.00	832.50	214.35	805.27	242.94	775.12	274.42
	-2	972.23	135.98	954.17	149.40	933.93	167.16	911.25	188.88	885.83	214.21	857.40	242.77	825.67	274.21
	0	1028.50	135.92	1010.74	149.37	990.42	167.14	967.27	188.87	941.02	214.19	911.36	242.72	878.03	274.11
	2	1086.96	135.93	1069.48	149.42	1049.07	167.22	1025.44	188.95	998.32	214.26	967.43	242.78	932.48	274.12
	4	-	-	1130.67	149.54	1110.14	167.37	1086.02	189.12	1058.03	214.42	1025.88	242.91	989.29	274.23
	5	-	-	1162.27	149.62	1141.68	167.46	1117.30	189.22	1088.86	214.53	**1059.00**	**243.00**	1018.67	274.31
	6	-	-	1194.59	149.72	1173.92	167.57	1149.29	189.34	1120.40	214.65	1086.98	243.13	1048.74	274.41
	7	-	-	1227.65	149.82	1206.91	167.69	1182.02	189.47	1152.67	214.78	1118.61	243.25	1079.54	274.53
	8	-	-	1261.50	149.93	1240.68	167.82	1215.52	189.61	1185.72	214.92	1151.00	243.39	1111.09	274.65
	10	-	-	1331.68	150.16	1310.70	168.10	1284.98	189.91	1254.25	215.23	1218.23	243.70	1176.63	274.94
	12	-	-	1405.40	150.40	1384.23	168.38	1357.95	190.22	1326.27	215.56	1288.92	244.03	1245.62	275.25
	14	-	-	-	-	1461.57	168.66	1434.70	190.54	1402.06	215.89	1363.37	244.36	1318.34	275.58
	16	-	-	-	-	1542.97	168.91	1515.50	190.83	1481.88	216.21	1441.83	244.69	1395.06	275.90

13.8. WF 3612 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	867.63	129.68	848.86	142.38	828.68	159.24	806.81	179.90	782.95	204.02	756.84	231.24	728.18	261.21
	-4	920.48	129.42	902.05	142.15	881.82	159.01	859.52	179.67	834.86	203.76	807.55	230.95	777.32	260.87
	-2	974.98	129.27	956.87	142.02	936.58	158.90	913.83	179.55	888.34	203.63	859.83	230.78	828.01	260.66
	0	1031.41	129.20	1013.60	141.99	993.23	158.89	970.01	179.54	943.68	203.61	913.94	230.74	880.52	260.57
	2	1090.04	129.22	1072.51	142.04	1052.04	158.96	1028.35	179.62	1001.15	203.68	970.17	230.79	935.12	260.59
	4	-	-	1133.88	142.16	1113.29	159.10	1089.10	179.78	1061.02	203.83	1028.78	230.92	992.10	260.69
	5	-	-	1165.56	142.24	1144.91	159.19	1120.47	179.88	1091.95	203.93	**1062.00**	**231.00**	1021.56	260.77
	6	-	-	1197.97	142.32	1177.25	159.30	1152.54	179.99	1123.57	204.05	1090.06	231.12	1051.71	260.86
	7	-	-	1231.13	142.42	1210.33	159.41	1185.36	180.11	1155.94	204.17	1121.78	231.24	1082.59	260.97
	8	-	-	1265.07	142.52	1244.20	159.54	1218.96	180.25	1189.08	204.31	1154.26	231.37	1114.24	261.09
	10	-	-	1335.45	142.75	1314.41	159.80	1288.62	180.53	1257.80	204.60	1221.68	231.66	1179.96	261.36
	12	-	-	1409.38	142.97	1388.15	160.06	1361.80	180.83	1330.03	204.92	1292.58	231.98	1249.15	261.66
	14	-	-	-	-	1465.71	160.33	1438.76	181.13	1406.03	205.23	1367.23	232.30	1322.07	261.97
	16	-	-	-	-	1547.34	160.57	1519.80	181.41	1486.08	205.54	1445.91	232.61	1399.01	262.28

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.
The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power
from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

13.9. WF 4212 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	975.47	153.82	954.37	168.89	931.68	188.88	907.09	213.39	880.27	241.99	850.91	274.28	818.68	309.83
	-4	1034.89	153.51	1014.17	168.61	991.43	188.61	966.35	213.11	938.62	241.69	907.92	273.94	873.94	309.43
	-2	1096.17	153.33	1075.80	168.46	1052.99	188.48	1027.41	212.98	998.76	241.54	966.70	273.74	930.93	309.19
	0	1159.61	153.25	1139.58	168.42	1116.68	188.46	1090.58	212.97	1060.97	241.51	1027.54	273.69	989.96	309.08
	2	1225.53	153.27	1205.81	168.48	1182.80	188.55	1156.16	213.06	1125.59	241.60	1090.76	273.75	1051.35	309.10
	4	-	-	1274.81	168.62	1251.66	188.72	1224.47	213.24	1192.90	241.78	1156.66	273.90	1115.41	309.21
	5	-	-	1310.44	168.71	1287.22	188.83	1259.73	213.36	1227.67	241.89	**1194.00**	**274.00**	1148.53	309.31
	6	-	-	1346.87	168.82	1323.57	188.95	1295.80	213.49	1263.23	242.03	1225.54	274.14	1182.43	309.42
	7	-	-	1384.15	168.93	1360.77	189.09	1332.70	213.64	1299.61	242.18	1261.21	274.29	1217.15	309.55
	8	-	-	1422.31	169.06	1398.84	189.23	1370.47	213.80	1336.87	242.34	1297.73	274.44	1252.73	309.69
	10	-	-	1501.44	169.32	1477.78	189.54	1448.79	214.14	1414.14	242.69	1373.53	274.79	1326.62	310.01
	12	-	-	1584.56	169.59	1560.69	189.86	1531.06	214.49	1495.34	243.06	1453.23	275.16	1404.41	310.37
	14	-	-	-	-	1647.88	190.17	1617.59	214.84	1580.79	243.44	1537.17	275.54	1486.40	310.74
	16	-	-	-	-	1739.67	190.46	1708.70	215.18	1670.79	243.80	1625.63	275.91	1572.90	311.10

13.10. WF 4212 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	979.56	145.96	958.37	160.26	935.59	179.23	910.89	202.49	883.95	229.63	854.47	260.27	822.11	294.00
	-4	1039.23	145.67	1018.42	159.99	995.58	178.98	970.40	202.22	942.55	229.34	911.73	259.94	877.60	293.62
	-2	1100.76	145.49	1080.31	159.85	1057.40	178.85	1031.72	202.10	1002.94	229.20	970.75	259.76	934.83	293.39
	0	1164.47	145.42	1144.35	159.82	1121.35	178.84	1095.15	202.08	1065.42	229.17	1031.84	259.70	994.11	293.29
	2	1230.66	145.44	1210.86	159.87	1187.75	178.92	1161.00	202.17	1130.30	229.25	1095.32	259.76	1055.76	293.30
	4	-	-	1280.15	160.00	1256.90	179.08	1229.59	202.35	1197.90	229.42	1161.50	259.91	1120.08	293.42
	5	-	-	1315.92	160.09	1292.61	179.18	1265.01	202.46	1232.81	229.53	**1199.00**	**260.00**	1153.34	293.50
	6	-	-	1352.51	160.19	1329.12	179.30	1301.22	202.59	1268.52	229.66	1230.68	260.13	1187.38	293.61
	7	-	-	1389.95	160.30	1366.47	179.43	1338.28	202.72	1305.06	229.80	1266.49	260.27	1222.25	293.73
	8	-	-	1428.27	160.42	1404.70	179.56	1376.21	202.87	1342.47	229.96	1303.17	260.42	1257.98	293.87
	10	-	-	1507.73	160.67	1483.97	179.86	1454.85	203.20	1420.06	230.29	1379.28	260.75	1332.18	294.17
	12	-	-	1591.20	160.92	1567.23	180.16	1537.47	203.53	1501.61	230.64	1459.32	261.10	1410.29	294.51
	14	-	-	-	-	1654.79	180.46	1624.37	203.87	1587.41	231.00	1543.60	261.46	1492.62	294.86
	16	-	-	-	-	1746.95	180.73	1715.85	204.18	1677.79	231.34	1632.44	261.81	1579.48	295.20

Ph = Heating capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

13.11. WF 4812 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1120.89	176.27	1096.65	193.54	1070.58	216.46	1042.32	244.54	1011.50	277.32	977.76	314.32	940.73	355.07
	-4	1189.17	175.92	1165.36	193.22	1139.23	216.15	1110.42	244.22	1078.55	276.97	1043.28	313.93	1004.22	354.60
	-2	1259.58	175.71	1236.18	193.05	1209.97	215.99	1180.58	244.07	1147.65	276.80	1110.81	313.71	1069.71	354.32
	0	1332.48	175.63	1309.47	193.01	1283.15	215.98	1253.16	244.06	1219.14	276.77	1180.73	313.64	1137.55	354.20
	2	1408.23	175.65	1385.58	193.08	1359.13	216.08	1328.52	244.16	1293.39	276.87	1253.37	313.71	1208.09	354.22
	4	-	-	1464.86	193.24	1438.26	216.27	1407.01	244.37	1370.74	277.07	1329.09	313.89	1281.69	354.36
	5	-	-	1505.80	193.34	1479.11	216.39	1447.53	244.51	1410.69	277.21	**1372.00**	**314.00**	1319.75	354.46
	6	-	-	1547.66	193.46	1520.89	216.54	1488.97	244.66	1451.55	277.36	1408.25	314.16	1358.71	354.59
	7	-	-	1590.50	193.59	1563.63	216.69	1531.37	244.83	1493.36	277.53	1449.22	314.33	1398.61	354.74
	8	-	-	1634.35	193.74	1607.38	216.86	1574.78	245.01	1536.17	277.72	1491.20	314.51	1439.49	354.90
	10	-	-	1725.27	194.04	1698.09	217.21	1664.77	245.40	1624.96	278.12	1578.29	314.90	1524.40	355.27
	12	-	-	1820.79	194.34	1793.36	217.58	1759.31	245.80	1718.27	278.54	1669.88	315.33	1613.78	355.68
	14	-	-	-	-	1893.55	217.94	1858.74	246.21	1816.45	278.97	1766.32	315.76	1707.99	356.10
	16	-	-	-	-	1999.02	218.27	1963.43	246.59	1919.87	279.39	1867.98	316.19	1807.38	356.51

13.12. WF 4812 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1105.37	164.48	1081.46	180.60	1055.75	201.98	1027.88	228.19	997.49	258.77	964.22	293.30	927.71	331.32
	-4	1172.70	164.15	1149.22	180.30	1123.45	201.69	1095.04	227.89	1063.62	258.45	1028.83	292.93	990.32	330.89
	-2	1242.14	163.96	1219.06	180.14	1193.21	201.55	1164.23	227.75	1131.76	258.29	1095.43	292.73	1054.89	330.63
	0	1314.03	163.88	1291.34	180.10	1265.38	201.53	1235.81	227.73	1202.26	258.26	1164.37	292.67	1121.79	330.51
	2	1388.72	163.90	1366.39	180.17	1340.31	201.63	1310.12	227.83	1275.48	258.35	1236.01	292.73	1191.36	330.53
	4	-	-	1444.57	180.31	1418.34	201.81	1387.52	228.03	1351.76	258.54	1310.68	292.90	1263.94	330.66
	5	-	-	1484.94	180.41	1458.63	201.92	1427.49	228.16	1391.15	258.67	**1353.00**	**293.00**	1301.47	330.76
	6	-	-	1526.23	180.52	1499.83	202.05	1468.35	228.30	1431.45	258.81	1388.74	293.15	1339.89	330.88
	7	-	-	1568.47	180.65	1541.98	202.20	1510.17	228.46	1472.68	258.97	1429.16	293.30	1379.24	331.01
	8	-	-	1611.72	180.78	1585.12	202.35	1552.97	228.62	1514.90	259.14	1470.54	293.47	1419.56	331.17
	10	-	-	1701.38	181.06	1674.57	202.68	1641.72	228.99	1602.46	259.52	1556.43	293.84	1503.28	331.51
	12	-	-	1795.57	181.34	1768.52	203.03	1734.94	229.36	1694.47	259.92	1646.76	294.24	1591.43	331.89
	14	-	-	-	-	1867.33	203.36	1833.00	229.74	1791.30	260.32	1741.86	294.65	1684.33	332.28
	16	-	-	-	-	1971.33	203.67	1936.24	230.10	1893.28	260.70	1842.11	295.04	1782.35	332.67

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power
from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

13.13. WF 5612 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1236.90	195.36	1210.15	214.50	1181.38	239.89	1150.19	271.02	1116.19	307.35	1078.95	348.36	1038.10	393.51
	-4	1312.25	194.97	1285.97	214.14	1257.14	239.55	1225.34	270.67	1190.18	306.97	1151.25	347.92	1108.16	393.00
	-2	1389.95	194.74	1364.13	213.95	1335.20	239.38	1302.77	270.50	1266.43	306.77	1225.78	347.68	1180.42	392.69
	0	1470.39	194.64	1445.00	213.91	1415.96	239.36	1382.86	270.48	1345.32	306.74	1302.93	347.60	1255.28	392.55
	2	1553.98	194.67	1528.98	213.99	1499.80	239.47	1466.02	270.60	1427.25	306.85	1383.09	347.68	1333.12	392.57
	4	-	-	1616.47	214.16	1587.12	239.69	1552.63	270.83	1512.61	307.07	1466.65	347.88	1414.34	392.72
	5	-	-	1661.64	214.28	1632.20	239.83	1597.35	270.98	1556.69	307.22	**1514.00**	**348.00**	1456.34	392.84
	6	-	-	1707.84	214.41	1678.30	239.98	1643.08	271.15	1601.78	307.39	1554.00	348.18	1499.33	392.98
	7	-	-	1755.11	214.56	1725.47	240.15	1689.87	271.34	1647.92	307.58	1599.22	348.36	1543.36	393.15
	8	-	-	1803.50	214.71	1773.74	240.34	1737.76	271.54	1695.16	307.79	1645.53	348.56	1588.48	393.33
	10	-	-	1903.84	215.05	1873.84	240.73	1837.07	271.97	1793.14	308.23	1741.64	349.00	1682.17	393.74
	12	-	-	2009.23	215.39	1978.97	241.14	1941.39	272.42	1896.11	308.71	1842.71	349.47	1780.80	394.19
	14	-	-	-	-	2089.53	241.53	2051.12	272.87	2004.46	309.18	1949.14	349.95	1884.76	394.66
	16	-	-	-	-	2205.91	241.90	2166.64	273.29	2118.57	309.64	2061.31	350.42	1994.44	395.12

13.14. WF 5612 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1226.28	185.25	1199.76	203.40	1171.24	227.49	1140.32	257.00	1106.60	291.45	1069.69	330.34	1029.18	373.16
	-4	1300.98	184.88	1274.93	203.07	1246.34	227.16	1214.82	256.67	1179.96	291.09	1141.37	329.92	1098.64	372.67
	-2	1378.01	184.67	1352.41	202.89	1323.74	227.00	1291.58	256.51	1255.56	290.90	1215.26	329.69	1170.29	372.38
	0	1457.77	184.58	1432.59	202.85	1403.80	226.98	1370.99	256.49	1333.77	290.87	1291.74	329.62	1244.50	372.25
	2	1540.63	184.60	1515.85	202.92	1486.92	227.09	1453.43	256.60	1415.00	290.97	1371.21	329.69	1321.68	372.27
	4	-	-	1602.59	203.08	1573.49	227.29	1539.30	256.82	1499.62	291.19	1454.05	329.88	1402.20	372.41
	5	-	-	1647.38	203.19	1618.19	227.42	1583.63	256.97	1543.33	291.33	**1501.00**	**330.00**	1443.84	372.52
	6	-	-	1693.18	203.32	1663.89	227.57	1628.97	257.13	1588.03	291.49	1540.65	330.17	1486.46	372.66
	7	-	-	1740.04	203.46	1710.65	227.73	1675.36	257.30	1633.77	291.67	1585.49	330.34	1530.11	372.81
	8	-	-	1788.02	203.61	1758.51	227.91	1722.84	257.49	1680.61	291.87	1631.40	330.53	1574.84	372.99
	10	-	-	1887.49	203.92	1857.75	228.28	1821.30	257.90	1777.74	292.29	1726.68	330.95	1667.72	373.37
	12	-	-	1991.98	204.24	1961.97	228.66	1924.72	258.33	1879.83	292.74	1826.89	331.40	1765.51	373.80
	14	-	-	-	-	2071.59	229.04	2033.51	258.75	1987.24	293.19	1932.40	331.85	1868.58	374.24
	16	-	-	-	-	2186.97	229.39	2148.04	259.15	2100.38	293.62	2043.61	332.30	1977.32	374.68

Ph = Heating capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

13.15. WF 6412 STANDARD VERSION"°"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1361.90	215.57	1332.45	236.69	1300.77	264.71	1266.43	299.06	1228.98	339.14	1187.99	384.39	1143.00	434.22
	-4	1444.86	215.14	1415.93	236.30	1384.18	264.33	1349.17	298.67	1310.46	338.72	1267.60	383.91	1220.14	433.66
	-2	1530.41	214.88	1501.98	236.09	1470.13	264.15	1434.42	298.48	1394.41	338.50	1349.65	383.64	1299.71	433.31
	0	1618.99	214.78	1591.03	236.04	1559.05	264.13	1522.61	298.46	1481.28	338.47	1434.60	383.56	1382.13	433.16
	2	1711.02	214.80	1683.50	236.12	1651.36	264.25	1614.17	298.59	1571.49	338.59	1522.86	383.64	1467.85	433.19
	4	-	-	1779.82	236.31	1747.50	264.48	1709.53	298.85	1665.47	338.84	1614.86	383.87	1557.27	433.35
	5	-	-	1829.56	236.44	1797.15	264.64	1758.77	299.02	1714.01	339.00	**1667.00**	**384.00**	1603.52	433.48
	6	-	-	1880.43	236.59	1847.90	264.81	1809.13	299.20	1763.65	339.19	1711.04	384.20	1650.85	433.64
	7	-	-	1932.48	236.75	1899.84	265.00	1860.64	299.41	1814.45	339.40	1760.83	384.40	1699.33	433.82
	8	-	-	1985.76	236.92	1952.99	265.20	1913.38	299.63	1866.47	339.63	1811.82	384.62	1749.00	434.02
	10	-	-	2096.23	237.29	2063.20	265.63	2022.72	300.10	1974.35	340.12	1917.64	385.10	1852.16	434.47
	12	-	-	2212.28	237.67	2178.96	266.08	2137.58	300.60	2087.72	340.64	2028.93	385.62	1960.76	434.97
	14	-	-	-	-	2300.69	266.52	2258.40	301.09	2207.02	341.17	2146.11	386.16	2075.23	435.48
	16	-	-	-	-	2428.83	266.92	2385.59	301.56	2332.67	341.67	2269.62	386.68	2195.99	435.99

13.16. WF 6412 HIGH EFFICIENCY VERSION "A"

WF		temp of water produced at the Condenser [°C]													
		20		25		30		35		40		45		50	
		Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe	Ph	Pe
		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
temp of water produced at evaporator °C	-6	1346.38	204.34	1317.26	224.36	1285.94	250.92	1252.00	283.48	1214.98	321.48	1174.45	364.37	1129.98	411.61
	-4	1428.39	203.93	1399.79	223.99	1368.40	250.57	1333.79	283.11	1295.52	321.08	1253.15	363.92	1206.24	411.07
	-2	1512.97	203.69	1484.86	223.79	1453.37	250.39	1418.07	282.93	1378.52	320.87	1334.27	363.66	1284.90	410.74
	0	1600.54	203.59	1572.89	223.74	1541.28	250.37	1505.26	282.92	1464.39	320.84	1418.25	363.58	1366.38	410.60
	2	1691.51	203.62	1664.31	223.82	1632.54	250.48	1595.78	283.04	1553.57	320.95	1505.50	363.66	1451.12	410.62
	4	-	-	1759.53	224.01	1727.59	250.71	1690.05	283.28	1646.48	321.19	1596.46	363.87	1539.52	410.78
	5	-	-	1808.71	224.13	1776.66	250.85	1738.73	283.44	1694.47	321.35	**1648.00**	**364.00**	1585.24	410.90
	6	-	-	1859.00	224.27	1826.84	251.02	1788.51	283.62	1743.55	321.53	1691.54	364.19	1632.03	411.05
	7	-	-	1910.45	224.42	1878.18	251.20	1839.43	283.81	1793.77	321.73	1740.76	364.38	1679.96	411.22
	8	-	-	1963.13	224.58	1930.73	251.39	1891.57	284.02	1845.19	321.94	1791.17	364.59	1729.07	411.41
	10	-	-	2072.34	224.93	2039.68	251.80	1999.67	284.47	1951.85	322.41	1895.79	365.05	1831.05	411.84
	12	-	-	2187.07	225.29	2154.12	252.22	2113.22	284.94	2063.93	322.90	2005.80	365.54	1938.41	412.31
	14	-	-	-	-	2274.47	252.64	2232.66	285.41	2181.86	323.40	2121.65	366.04	2051.58	412.80
	16	-	-	-	-	2401.15	253.02	2358.40	285.85	2306.08	323.88	2243.75	366.54	2170.97	413.28

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

Pc = Cooling capacity
Pe = Input power
from 4 to -6 functioning with glycol

FOULING FACTOR [K*M²]/[W]			
	0,00001	0,00002	0,00005
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

14. PRESSURE DROPS WF°°°°°

The pressure drops are calculated in cooling mode and reported the average water temperature

CONDENSER
Water temperatrue inlet 30 °C
Water temperature outlet 35 °C

EVAPORATOR
Water temperatrue inlet 12 °C
Water temperature outlet 7 °C

The table gives the correction to apply to the pressure drops on variation of the average water temperature

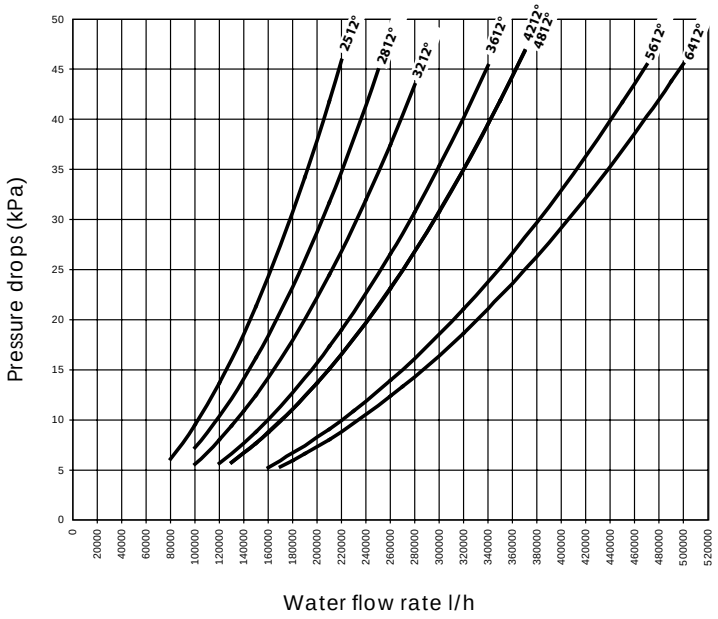
Condenser

Average water temperature °C	23	28	**33**	38	43	48
Multiplicative coefficient	1,02	1,01	**1,00**	0,99	0,98	0,97

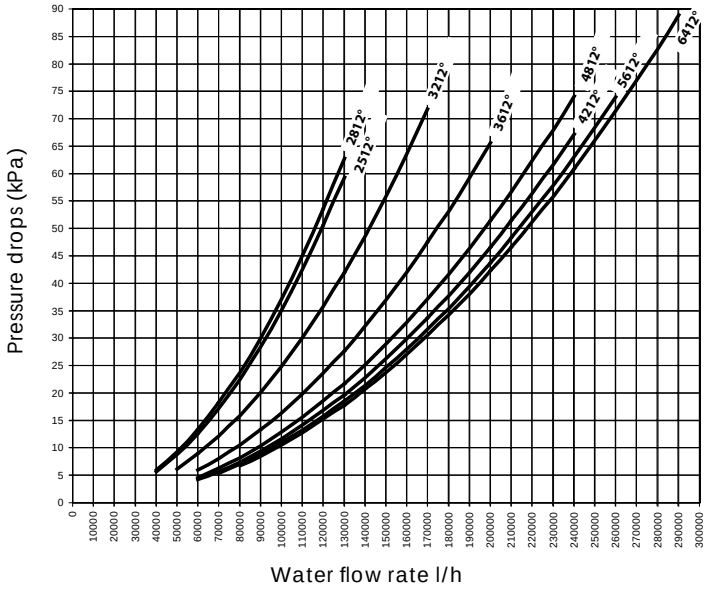
Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

CONDENSER



EVAPORATOR



WF°	C.min.[1] H_2O [l/kW]	C.min.[2] H_2O [l/kW]	C.min.[1] H_2O [l/kW]	C.min.[2] H_2O [l/kW]
2512°	7	14	7	14
2812°	7	14	7	14
3212°	7	14	7	14
3612°	7	14	7	14
4212°	7	14	7	14
4812°	7	14	7	14
5612°	7	14	7	14
6412°	7	14	7	14

Key	
C.min.[1]	Minimum water content
C.min.[2]	Minimum water content in the case of process applications or operating at low temperatures for condensation and evaporator version

15. RESSURE DROPS WF°A°°°

The pressure drops are calculated in cooling mode and reported the average water temperature

CONDENSER
Water temperatrue inlet 30 °C
Water temperature outlet 35 °C

EVAPORATOR
Water temperatrue inlet 12 °C
Water temperature outlet 7 °C

The table gives the correction to apply to the pressure drops on variation of the average water temperature

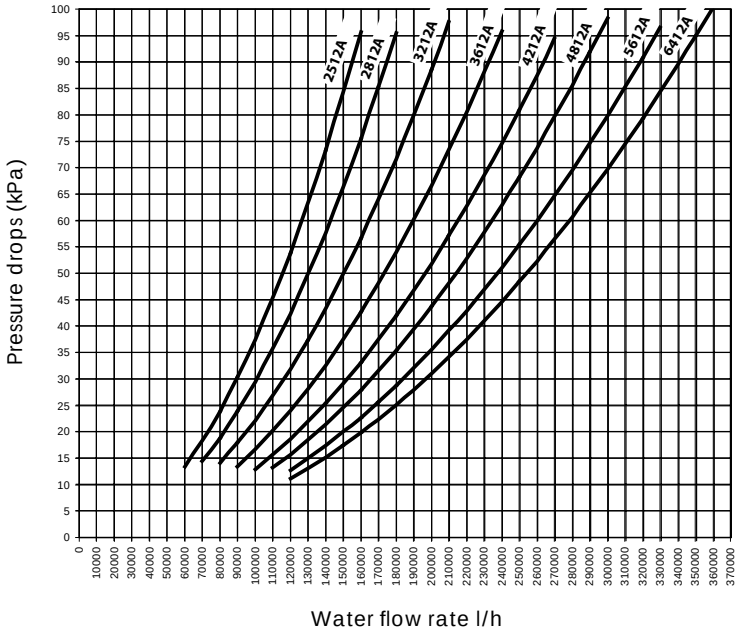
Condenser

Average water temperature °C	23	28	**33**	38	43	48
Multiplicative coefficient	1,02	1,01	**1,00**	0,99	0,98	0,97

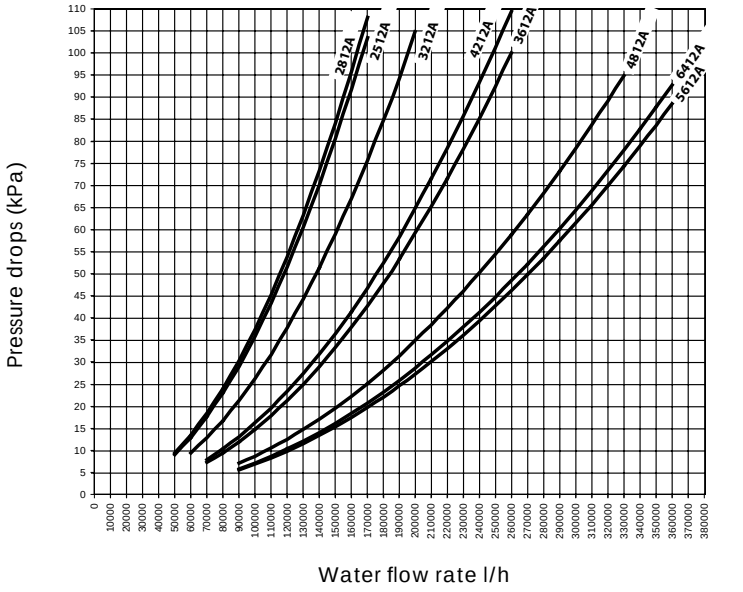
Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

CONDENSER



EVAPORATOR



WFA	C.min.[1] H_2O [l/kW]	C.min.[2] H_2O [l/kW]	C.min.[1] H_2O [l/kW]	C.min.[2] H_2O [l/kW]
2512A	7	14	7	14
2812A	7	14	7	14
3212A	7	14	7	14
3612A	7	14	7	14
4212A	7	14	7	14
4812A	7	14	7	14
5612A	7	14	7	14
6412A	7	14	7	14

Key

C.min.[1]	Minimum water content
C.min.[2]	Minimum water content in the case of process applications or operating at low temperatures for condensation and evaporator version

16. PERFORMANCE IN COLLING MODE WITH TOTAL RECOVERY

16.1. WF 2512°°°T°° STANDARD VERSION / WF 2512°A°T°° HIGH EFFICIENCY

WF2512°°°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	459	441	419	393	363	331	295	490	473	451	425	395	362	326	524	506	484	458	428	394	358	
Ph rec	[kW]	554	542	529	515	500	483	465	588	576	563	549	533	515	496	622	611	598	583	567	549	528	
Pe rec	[kW]	87	96	107	121	138	156	176	87	96	107	121	137	156	176	87	96	107	121	137	156	176	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	559	541	519	492	462	428	392	595	578	555	529	498	464	427	-	616	594	567	536	501	464	
Ph rec	[kW]	658	647	634	619	602	583	562	696	685	671	656	639	619	597	-	724	711	695	677	657	633	
Pe rec	[kW]	87	96	107	121	137	156	176	87	96	107	121	137	156	176	-	96	107	121	138	156	176	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	656	634	606	575	540	502	-	677	654	627	595	560	522	-	698	675	648	616	580	542	
Ph rec	[kW]	-	765	751	736	717	696	671	-	786	773	757	738	716	691	-	807	794	778	759	737	711	
Pe rec	[kW]	-	96	107	121	138	156	176	-	96	108	122	138	156	176	-	96	108	122	138	156	176	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	742	719	691	658	622	583	-	788	764	735	703	666	626	-	-	811	782	748	711	670	
Ph rec	[kW]	-	852	839	822	803	780	753	-	900	886	869	849	825	797	-	-	936	918	897	873	844	
Pe rec	[kW]	-	96	108	122	138	156	176	-	96	108	122	138	156	177	-	-	108	122	138	157	177	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	859	830	796	758	716															
Ph rec	[kW]	-	-	988	970	949	923	893															
Pe rec	[kW]	-	-	108	122	139	157	177															

WF2512°A°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	465	447	424	398	368	335	299	497	479	456	430	400	366	330	530	513	490	463	433	399	363	
Ph rec	[kW]	552	540	527	514	498	482	463	586	574	561	547	531	514	495	621	609	596	582	565	547	527	
Pe rec	[kW]	82	91	101	114	130	147	166	82	90	101	114	130	147	166	82	90	101	114	129	147	166	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	566	548	525	499	468	434	397	603	585	562	535	504	470	432	-	624	601	574	542	508	470	
Ph rec	[kW]	656	645	632	617	601	582	560	694	683	670	655	637	618	595	-	722	709	693	675	655	631	
Pe rec	[kW]	82	90	101	114	129	147	166	82	90	101	114	129	147	166	-	90	101	114	130	147	166	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	665	642	614	582	547	508	-	686	662	635	603	567	528	-	707	684	656	624	588	548	
Ph rec	[kW]	-	762	749	734	715	694	669	-	784	770	754	736	714	689	-	805	792	776	757	735	709	
Pe rec	[kW]	-	90	101	114	130	147	166	-	91	101	114	130	147	166	-	91	101	115	130	147	166	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	751	728	699	667	630	590	-	798	773	745	711	674	634	-	-	821	792	758	720	679	
Ph rec	[kW]	-	850	837	820	801	778	751	-	897	884	867	847	823	795	-	-	933	916	895	870	841	
Pe rec	[kW]	-	91	102	115	130	147	166	-	91	102	115	130	147	166	-	-	102	115	130	148	167	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	870	840	806	767	725															
Ph rec	[kW]	-	-	985	967	946	920	890															
Pe rec	[kW]	-	-	102	115	131	148	167															

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIVERSI DAL NOMINALE (ΔT 5)				
ALL'EVAPORATORE	**3**	**5**	**8**	**10**
Resa frigorifera	0,99	1	1,02	1,03
Potenza assorbita	0,99	1	1,01	1,02
Resa termica	0,99	1	1,02	1,03
AL RECUPERO TOTALE	-	**5**	**10**	**15**
Resa frigorifera	-	1	1,01	1,02
Potenza assorbita	-	1	0,99	0,98
Resa termica	le variazioni sono trascurabili			

FATTORE DI SPORCAMENTO [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Potenza frigorifera	1	0,99	0,98
Potenza assorbita	1	1	1
Potenza termica	1	1	0,99
Potenza assorbita	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

WF 2812

16.2. WF 2812°°°T°° STANDARD VERSION / WF 2812°A°T°° HIGH EFFICIENCY

WF2812°°°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	525	504	479	449	415	378	338	561	540	515	485	451	413	373	598	578	553	523	489	451	410	
Ph rec	[kW]	633	619	604	588	571	552	531	671	658	643	627	609	589	567	711	698	683	666	648	627	604	
Pe rec	[kW]	100	110	123	138	157	178	201	100	109	122	138	157	178	201	100	109	122	138	157	178	201	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	638	618	593	563	528	490	448	680	660	635	604	569	530	488	-	704	679	648	612	573	530	
Ph rec	[kW]	752	739	724	707	688	666	642	795	782	767	750	730	707	682	-	827	812	794	774	750	723	
Pe rec	[kW]	99	109	122	138	157	178	201	99	109	122	138	157	178	201	-	109	122	138	157	178	201	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	750	724	693	657	617	574	-	774	748	716	680	640	596	-	798	772	740	704	663	619	
Ph rec	[kW]	-	874	858	840	819	795	767	-	898	883	864	843	818	789	-	922	907	889	867	842	813	
Pe rec	[kW]	-	110	123	139	157	178	201	-	110	123	139	157	178	201	-	110	123	139	157	178	201	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	848	821	789	752	711	666	-	900	873	840	803	761	715	-	-	927	893	855	813	766	
Ph rec	[kW]	-	974	958	940	917	891	860	-	1028	1012	993	970	943	911	-	-	1069	1049	1025	997	964	
Pe rec	[kW]	-	110	123	139	157	178	201	-	110	123	139	158	179	201	-	-	123	139	158	179	202	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	982	948	910	866	818															
Ph rec	[kW]	-	-	1128	1108	1084	1054	1020															
Pe rec	[kW]	-	-	124	140	158	179	202															

WF2812°A°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	529	508	483	453	419	381	340	565	545	519	489	455	417	376	603	583	557	527	493	454	413	
Ph rec	[kW]	628	614	600	584	567	548	527	666	653	638	622	604	585	563	706	693	678	661	643	622	599	
Pe rec	[kW]	94	103	115	130	147	167	189	93	103	115	130	147	167	188	93	103	115	130	147	167	188	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	643	623	598	567	532	493	452	686	666	640	609	574	535	492	730	710	684	653	617	577	534	
Ph rec	[kW]	747	734	719	702	683	662	637	789	776	762	744	725	702	677	833	821	806	788	768	745	718	
Pe rec	[kW]	93	103	115	130	147	167	188	93	103	115	130	147	167	188	93	103	115	130	147	167	188	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	777	756	730	698	662	622	578	801	780	754	722	686	645	601	825	804	778	746	709	668	624	
Ph rec	[kW]	879	867	852	834	813	789	761	903	891	876	858	837	812	784	928	916	901	882	861	836	807	
Pe rec	[kW]	93	103	115	130	147	167	188	94	103	115	130	147	167	188	94	103	115	130	148	167	189	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	876	855	828	796	758	717	671	928	907	880	847	809	767	721	983	962	934	900	862	819	772	
Ph rec	[kW]	979	967	951	933	910	884	854	1032	1020	1005	986	963	936	904	1088	1076	1061	1041	1018	990	957	
Pe rec	[kW]	94	103	115	130	148	167	189	94	103	116	131	148	168	189	94	103	116	131	148	168	189	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	1040	1018	990	956	917	873	825															
Ph rec	[kW]	1147	1136	1120	1100	1076	1047	1013															
Pe rec	[kW]	94	104	116	131	148	168	189															

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

16.3. WF 3212°°°T°° STANDARD VERSION / WF 3212°A°T°° HIGH EFFICIENCY

WF3212°°°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	636	612	581	545	504	458	409	680	655	625	588	547	501	452	726	701	671	634	593	546	497	
Ph rec	[kW]	767	751	733	713	692	669	644	814	798	780	760	738	714	687	862	846	828	808	786	760	732	
Pe rec	[kW]	121	133	149	168	191	216	244	121	133	149	168	190	216	244	121	133	148	168	190	216	243	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	774	750	719	682	640	594	543	825	801	770	733	690	643	592	-	854	823	785	742	695	643	
Ph rec	[kW]	912	896	878	858	835	808	779	964	948	930	909	885	858	827	-	1003	984	963	938	910	877	
Pe rec	[kW]	121	133	148	168	190	216	243	121	133	148	168	190	216	243	-	133	149	168	190	216	244	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	910	878	840	797	748	696	963	938	907	869	825	776	723	-	968	936	898	853	804	751	
Ph rec	[kW]	-	1059	1041	1019	994	964	930	1104	1089	1070	1048	1022	992	957	-	1119	1100	1078	1052	1021	985	
Pe rec	[kW]	-	133	149	168	191	216	244	121	133	149	168	191	216	244	-	133	149	168	191	216	244	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1028	996	957	912	862	808	-	1091	1059	1019	974	923	867	-	-	1124	1083	1037	985	929	
Ph rec	[kW]	-	1181	1162	1140	1112	1080	1043	-	1246	1228	1204	1176	1143	1105	-	-	1296	1272	1243	1209	1169	
Pe rec	[kW]	-	133	149	169	191	216	244	-	134	150	169	191	217	244	-	-	150	169	192	217	245	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	1191	1150	1103	1050	992															
Ph rec	[kW]	-	-	1368	1344	1314	1279	1237															
Pe rec	[kW]	-	-	150	169	192	217	245															

WF3212°A°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	647	622	591	554	512	466	416	691	666	635	598	556	510	460	738	713	682	645	602	556	505	
Ph rec	[kW]	768	751	734	714	693	670	645	815	798	781	761	739	715	688	863	847	829	809	786	761	733	
Pe rec	[kW]	114	126	140	159	180	204	230	114	125	140	159	180	204	230	114	125	140	158	180	204	230	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	787	762	731	694	651	604	552	839	814	783	745	702	654	602	-	868	837	798	755	706	653	
Ph rec	[kW]	913	897	879	859	835	809	779	965	949	931	910	886	859	828	-	1004	985	964	939	911	878	
Pe rec	[kW]	114	125	140	158	180	204	230	114	125	140	158	180	204	230	-	125	140	159	180	204	230	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	925	893	854	810	761	707	-	954	922	883	839	789	735	-	984	952	913	868	818	763	
Ph rec	[kW]	-	1060	1042	1020	995	965	931	-	1090	1071	1049	1023	993	958	-	1120	1101	1079	1053	1022	986	
Pe rec	[kW]	-	126	141	159	180	204	230	-	126	141	159	180	204	230	-	126	141	159	180	204	230	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1046	1013	973	928	877	821	-	1110	1076	1036	990	938	882	-	-	1142	1101	1054	1002	944	
Ph rec	[kW]	-	1182	1164	1141	1113	1081	1045	-	1248	1229	1205	1177	1144	1106	-	-	1297	1274	1245	1210	1170	
Pe rec	[kW]	-	126	141	159	181	204	231	-	126	141	160	181	205	231	-	-	141	160	181	205	231	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	1211	1169	1121	1068	1009															
Ph rec	[kW]	-	-	1370	1345	1315	1280	1238															
Pe rec	[kW]	-	-	142	160	181	205	231															

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

16.4. WF 3612°°°T°° STANDARD VERSION / WF 3612°A°T°° HIGH EFFICIENCY

WF3612°°°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	1128	1085	1030	966	893	813	726	766	739	704	663	617	565	510	818	791	756	715	668	616	560	
Ph rec	[kW]	865	846	826	804	780	754	726	917	899	879	857	832	805	775	972	954	933	911	885	857	825	
Pe rec	[kW]	136	150	167	189	214	243	274	136	149	167	189	214	243	274	136	149	167	189	214	243	274	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	873	846	811	769	722	669	613	930	903	868	826	778	725	667	-	963	928	885	837	783	725	
Ph rec	[kW]	1028	1010	990	967	941	911	878	1086	1069	1048	1025	998	967	932	-	1130	1110	1085	1057	1025	989	
Pe rec	[kW]	136	149	167	189	214	242	274	136	149	167	189	214	243	274	-	149	167	189	214	243	274	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1026	990	947	898	844	784	-	1058	1022	979	930	875	815	-	1091	1055	1012	962	907	846	
Ph rec	[kW]	-	1194	1173	1149	1120	1086	1048	-	1227	1206	1181	1152	1118	1079	-	1261	1240	1215	1185	1121	1110	
Pe rec	[kW]	-	150	167	189	214	243	274	-	150	168	189	215	243	274	-	150	168	189	215	231	274	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1160	1123	1079	1029	972	911	-	1231	1194	1149	1098	1040	978	-	-	1267	1222	1169	1111	1047	
Ph rec	[kW]	-	1331	1310	1284	1254	1218	1176	-	1405	1383	1357	1326	1288	1245	-	-	1461	1434	1401	1363	1318	
Pe rec	[kW]	-	150	168	190	215	243	275	-	150	168	190	215	244	275	-	-	168	190	216	244	275	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	1343	1297	1244	1184	1119															
Ph rec	[kW]	-	-	1542	1515	1481	1441	1394															
Pe rec	[kW]	-	-	169	191	216	244	276															

WF3612°A°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	729	701	666	625	578	526	470	779	752	716	675	627	575	518	832	804	769	727	680	627	570	
Ph rec	[kW]	867	848	828	806	782	756	728	920	901	881	859	834	807	777	974	956	936	913	888	859	827	
Pe rec	[kW]	130	142	159	180	204	231	261	129	142	159	179	204	231	261	129	142	159	179	203	231	260	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	888	860	825	783	734	681	623	946	918	883	840	792	738	679	-	979	944	901	851	797	737	
Ph rec	[kW]	1031	1013	993	969	943	913	880	1089	1072	1051	1028	1000	969	934	-	1133	1113	1088	1060	1028	991	
Pe rec	[kW]	129	142	159	179	203	230	260	129	142	159	179	203	231	260	-	142	159	180	204	231	260	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1043	1007	964	914	858	798	-	1076	1040	996	946	890	829	-	1110	1073	1029	979	922	861	
Ph rec	[kW]	-	1197	1176	1152	1123	1089	1051	-	1230	1209	1185	1155	1121	1082	-	1264	1243	1218	1188	1153	1113	
Pe rec	[kW]	-	142	159	180	204	231	261	-	142	159	180	204	231	261	-	142	159	180	204	231	261	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1179	1142	1098	1046	989	927	-	1252	1214	1169	1117	1058	995	-	-	1289	1242	1189	1130	1065	
Ph rec	[kW]	-	1335	1313	1288	1257	1221	1179	-	1408	1387	1361	1329	1292	1248	-	-	1465	1438	1405	1366	1321	
Pe rec	[kW]	-	143	160	180	204	231	261	-	143	160	181	205	232	261	-	-	160	181	205	232	262	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	1366	1319	1265	1204	1138															
Ph rec	[kW]	-	-	1546	1519	1485	1445	1398															
Pe rec	[kW]	-	-	160	181	205	232	262															

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

16.5. WF 4212°°°T°° STANDARD VERSION / WF4212°A°T°° HIGH EFFICIENCY

WF4212°°°T°°																						
Twe	[°C]	-6							-4							-2						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	809	778	739	693	641	583	521	864	834	795	748	696	638	575	923	892	853	807	754	695	632
Ph rec	[kW]	975	954	932	907	880	274	819	1035	1014	991	966	938	274	874	1096	1076	1053	1027	999	273	931
Pe rec	[kW]	154	169	189	213	242	851	310	153	168	188	213	241	908	309	153	168	188	213	241	967	309
Twe	[°C]	0							2							4						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	985	954	915	868	814	755	691	1049	1018	979	932	878	818	753	-	1086	1046	999	944	884	817
Ph rec	[kW]	1159	1139	1116	1090	1061	273	990	1225	1206	1183	1156	1125	273	1051	-	1275	1251	1224	1193	274	1115
Pe rec	[kW]	153	168	188	213	241	1027	309	153	168	188	213	241	1091	309	-	168	189	213	242	1156	309
Twe	[°C]	6							7							8						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1157	1117	1069	1013	952	885	-	1194	1153	1105	1049	987	919	-	1231	1190	1142	1085	1023	955
Ph rec	[kW]	-	1347	1323	1296	1263	274	1182	-	1384	1361	1332	1299	274	1217	-	1422	1399	1370	1337	274	1253
Pe rec	[kW]	-	169	189	213	242	1225	309	-	169	189	213	242	1261	309	-	169	189	214	242	1298	309
Twe	[°C]	10							12							14						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1308	1267	1217	1160	1097	1027	-	1388	1346	1296	1238	1174	1103	-	-	1429	1378	1319	1253	1181
Ph rec	[kW]	-	1501	1478	1449	1414	275	1326	-	1584	1560	1531	1495	275	1404	-	-	1648	1617	1581	275	1486
Pe rec	[kW]	-	169	189	214	242	1373	310	-	169	190	214	243	1453	310	-	-	190	215	243	1537	310
Twe	[°C]	16																				
Twre	[°C]	20	25	30	35	40	45	50														
Pc	[kW]	-	-	1515	1463	1403	1336	1262														
Ph rec	[kW]	-	-	1739	1708	1671	276	1573														
Pe rec	[kW]	-	-	190	215	244	1625	311														

WF4212°A°T°°																						
Twe	[°C]	-6							-4							-2						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	825	793	753	706	653	594	531	881	850	810	763	709	650	586	941	909	870	822	768	708	644
Ph rec	[kW]	979	958	935	911	884	854	822	1039	1018	995	970	942	911	877	1100	1080	1057	1031	1003	970	934
Pe rec	[kW]	146	160	179	202	229	260	294	146	160	179	202	229	260	293	145	160	179	202	229	259	293
Twe	[°C]	0							2							4						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	1004	972	932	885	830	770	704	1070	1038	998	950	895	834	767	-	1107	1067	1018	962	901	833
Ph rec	[kW]	1164	1144	1121	1095	1065	1031	994	1230	1210	1187	1161	1130	1095	1055	-	1280	1256	1229	1197	1161	1120
Pe rec	[kW]	145	160	179	202	229	259	293	145	160	179	202	229	259	293	-	160	179	202	229	260	293
Twe	[°C]	6							7							8						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1179	1138	1089	1033	970	902	-	1217	1175	1126	1069	1006	937	-	1255	1213	1164	1106	1043	973
Ph rec	[kW]	-	1352	1329	1301	1268	1230	1187	-	1389	1366	1338	1305	1266	1222	-	1428	1404	1376	1342	1303	1257
Pe rec	[kW]	-	160	179	202	229	260	293	-	160	179	203	230	260	293	-	160	179	203	230	260	294
Twe	[°C]	10							12							14						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1333	1291	1241	1183	1118	1047	-	1415	1372	1321	1262	1196	1124	-	-	1457	1404	1344	1277	1204
Ph rec	[kW]	-	1507	1483	1454	1420	1379	1332	-	1591	1567	1537	1501	1459	1410	-	-	1654	1624	1587	1543	1492
Pe rec	[kW]	-	160	180	203	230	260	294	-	161	180	203	230	261	294	-	-	180	204	231	261	295
Twe	[°C]	16																				
Twre	[°C]	20	25	30	35	40	45	50														
Pc	[kW]	-	-	1544	1491	1430	1361	1287														
Ph rec	[kW]	-	-	1746	1715	1677	1632	1579														
Pe rec	[kW]	-	-	181	204	231	262	295														

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

16.6. WF 4812°°°T°° STANDARD VERSION / WF 4812°A°T°° HIGH EFFICIENCY

WF4812°°°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	930	895	850	797	737	670	599	994	959	914	861	800	733	661	1061	1026	981	928	867	799	726	
Ph rec	[kW]	1121	1096	1070	1042	1011	978	941	1189	1165	1139	1110	1078	1043	1004	1259	1236	1210	1180	1147	1111	1070	
Pe rec	[kW]	176	193	216	244	277	314	355	176	193	216	244	277	314	354	176	193	216	244	277	313	354	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	1132	1097	1052	998	937	868	795	1207	1171	1126	1072	1010	941	866	-	1249	1203	1149	1086	1016	940	
Ph rec	[kW]	1332	1309	1283	1253	1219	1181	1137	1408	1385	1359	1328	1293	1253	1208	-	1465	1438	1407	1371	1329	1281	
Pe rec	[kW]	175	193	216	244	276	313	354	175	193	216	244	277	313	354	-	193	216	244	277	314	354	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1331	1284	1229	1165	1095	1017	-	1373	1326	1270	1206	1135	1057	-	1416	1369	1313	1248	1176	1098	
Ph rec	[kW]	-	1547	1521	1489	1451	1408	1358	-	1590	1563	1531	1493	1449	1398	-	1634	1607	1575	1536	1491	1439	
Pe rec	[kW]	-	193	216	244	277	314	354	-	193	216	245	277	314	354	-	194	217	245	277	314	355	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1504	1457	1400	1334	1261	1182	-	1596	1548	1490	1424	1350	1268	-	-	1643	1585	1517	1441	1358	
Ph rec	[kW]	-	1725	1698	1665	1625	1578	1524	-	1821	1793	1759	1718	1670	1614	-	-	1893	1858	1816	1766	1708	
Pe rec	[kW]	-	194	217	245	278	315	355	-	194	217	246	278	315	355	-	-	218	246	279	315	356	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	1742	1682	1613	1536	1451															
Ph rec	[kW]	-	-	1999	1963	1920	1868	1807															
Pe rec	[kW]	-	-	218	246	279	316	356															

WF4812°A°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	931	895	850	797	737	671	599	995	959	914	861	801	734	662	1062	1027	982	928	867	800	727	
Ph rec	[kW]	1105	1081	1056	1028	997	964	928	1173	1149	1123	1095	1064	1029	990	1242	1219	1193	1164	1132	1095	1055	
Pe rec	[kW]	164	180	202	228	259	293	331	164	180	201	228	258	293	331	164	180	201	228	258	292	330	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	1133	1098	1053	999	937	869	795	1208	1172	1127	1073	1010	941	867	-	1250	1204	1150	1087	1017	941	
Ph rec	[kW]	1314	1291	1265	1236	1202	1164	1122	1389	1366	1340	1310	1275	1236	1191	-	1444	1418	1387	1352	1311	1264	
Pe rec	[kW]	164	180	201	227	258	292	330	164	180	201	228	258	292	330	-	180	202	228	258	293	330	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1332	1285	1230	1166	1096	1018	-	1374	1327	1272	1207	1136	1058	-	1417	1370	1314	1249	1177	1099	
Ph rec	[kW]	-	1526	1500	1468	1431	1389	1340	-	1568	1542	1510	1473	1429	1379	-	1612	1585	1553	1515	1470	1419	
Pe rec	[kW]	-	180	202	228	259	293	331	-	180	202	228	259	293	331	-	181	202	228	259	293	331	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1506	1458	1401	1336	1262	1183	-	1598	1550	1492	1425	1351	1269	-	-	1645	1586	1518	1442	1360	
Ph rec	[kW]	-	1701	1674	1642	1602	1556	1503	-	1795	1768	1735	1694	1647	1591	-	-	1867	1833	1791	1742	1684	
Pe rec	[kW]	-	181	202	229	259	294	331	-	181	203	229	260	294	332	-	-	203	230	260	294	332	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	1744	1684	1614	1537	1453															
Ph rec	[kW]	-	-	1971	1936	1893	1842	1782															
Pe rec	[kW]	-	-	203	230	260	295	332															

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

16.7. WF 5612°°°T°° STANDARD VERSION / WF 5612°A°T°° HIGH EFFICIENCY

WF5612°°°T°°																						
Twe	[°C]	-6							-4							-2						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	1025	986	937	878	812	739	660	1096	1056	1007	949	882	808	729	1170	1131	1081	1022	955	881	801
Ph rec	[kW]	1237	1210	1181	1150	1116	1079	1038	1312	1286	1257	1225	1190	1151	1108	1390	1364	1335	1303	1266	1226	1180
Pe rec	[kW]	195	214	240	271	307	348	393	195	214	239	270	307	348	393	195	214	239	270	306	347	392
Twe	[°C]	0							2							4						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	1248	1209	1159	1100	1032	957	876	1330	1291	1241	1181	1113	1037	954	-	1377	1326	1266	1197	1120	1036
Ph rec	[kW]	1470	1445	1416	1383	1345	1303	1255	1554	1529	1500	1466	1427	1383	1333	-	1616	1587	1552	1512	1466	1414
Pe rec	[kW]	194	214	239	270	306	347	392	194	214	239	270	307	347	392	-	214	239	271	307	348	392
Twe	[°C]	6							7							8						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1467	1416	1355	1284	1206	1121	-	1513	1462	1400	1330	1251	1165	-	1560	1509	1447	1376	1297	1210
Ph rec	[kW]	-	1708	1678	1643	1602	1554	1499	-	1755	1725	1690	1648	1599	1543	-	1803	1774	1738	1695	1645	1588
Pe rec	[kW]	-	214	240	271	307	348	393	-	214	240	271	307	348	393	-	214	240	271	307	348	393
Twe	[°C]	10							12							14						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1658	1606	1543	1471	1390	1302	-	1760	1707	1643	1569	1487	1398	-	-	1811	1746	1672	1588	1497
Ph rec	[kW]	-	1904	1874	1837	1793	1741	1682	-	2009	1979	1941	1896	1842	1781	-	-	2089	2051	2004	1949	1885
Pe rec	[kW]	-	215	240	272	308	349	393	-	215	241	272	308	349	394	-	-	241	273	309	350	394
Twe	[°C]	16																				
Twre	[°C]	20	25	30	35	40	45	50														
Pc	[kW]	-	-	1920	1854	1778	1693	1600														
Ph rec	[kW]	-	-	2206	2166	2118	2061	1994														
Pe rec	[kW]	-	-	242	273	309	350	395														

WF5612°A°T°°																						
Twe	[°C]	-6							-4							-2						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	1029	989	940	881	815	741	662	1099	1060	1010	952	885	811	731	1174	1134	1085	1026	958	884	803
Ph rec	[kW]	1226	1199	1171	1140	1106	1069	1029	1301	1275	1246	1214	1180	1141	1098	1378	1352	1323	1291	1255	1215	1170
Pe rec	[kW]	185	203	227	257	291	330	373	185	203	227	256	291	330	372	184	203	227	256	291	329	372
Twe	[°C]	0							2							4						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	1252	1213	1163	1103	1036	960	879	1334	1295	1245	1185	1116	1040	957	-	1381	1331	1270	1201	1123	1039
Ph rec	[kW]	1457	1432	1403	1371	1333	1291	1244	1540	1515	1486	1453	1415	1371	1321	-	1602	1573	1539	1499	1454	1402
Pe rec	[kW]	184	203	227	256	291	329	372	184	203	227	256	291	329	372	-	203	227	257	291	330	372
Twe	[°C]	6							7							8						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1471	1420	1359	1289	1210	1125	-	1518	1466	1405	1334	1255	1169	-	1565	1514	1452	1380	1301	1214
Ph rec	[kW]	-	1693	1663	1628	1588	1540	1486	-	1740	1710	1675	1633	1585	1530	-	1787	1758	1722	1680	1631	1574
Pe rec	[kW]	-	203	227	257	291	330	372	-	203	227	257	291	330	372	-	203	228	257	292	330	373
Twe	[°C]	10							12							14						
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50
Pc	[kW]	-	1663	1611	1548	1475	1395	1306	-	1765	1712	1648	1574	1492	1402	-	-	1817	1752	1677	1593	1502
Ph rec	[kW]	-	1887	1857	1821	1777	1726	1667	-	1991	1961	1924	1879	1826	1765	-	-	2071	2033	1987	1932	1868
Pe rec	[kW]	-	204	228	258	292	331	373	-	204	228	258	292	331	373	-	-	229	258	293	332	374
Twe	[°C]	16																				
Twre	[°C]	20	25	30	35	40	45	50														
Pc	[kW]	-	-	1926	1860	1784	1698	1605														
Ph rec	[kW]	-	-	2186	2147	2100	2043	1977														
Pe rec	[kW]	-	-	229	259	293	332	374														

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

16.8. WF 6412°°°T°° STANDARD VERSION / WF 6412°A°T°° HIGH EFFICIENCY

WF6412°°°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	1128	1085	1030	966	893	813	726	1205	1162	1108	1043	970	889	801	1287	1244	1189	1125	1051	969	881	
Ph rec	[kW]	1361	1332	1300	1266	1228	1187	1142	1444	1415	1384	1349	1310	1267	1220	1530	1501	1469	1434	1394	1349	1299	
Pe rec	[kW]	215	236	264	299	339	384	434	215	236	264	298	338	384	433	215	236	264	298	338	383	433	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	1373	1330	1275	1210	1135	1053	963	1463	1420	1365	1299	1224	1140	1050	-	1514	1459	1393	1316	1232	1140	
Ph rec	[kW]	1618	1590	1558	1522	1481	1434	1381	1710	1683	1651	1613	1571	1522	1467	-	1779	1747	1709	1665	1614	1557	
Pe rec	[kW]	215	236	264	298	338	383	433	215	236	264	298	338	383	433	-	236	264	299	338	383	433	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1613	1557	1490	1413	1327	1233	-	1664	1608	1540	1463	1376	1282	-	1716	1659	1591	1513	1426	1331	
Ph rec	[kW]	-	1880	1847	1808	1763	1710	1650	-	1932	1899	1860	1814	1760	1699	-	1985	1952	1912	1866	1811	1748	
Pe rec	[kW]	-	236	265	299	339	384	433	-	237	265	299	339	384	433	-	237	265	299	339	384	434	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1824	1766	1697	1618	1529	1432	-	1935	1877	1807	1726	1636	1538	-	-	1992	1921	1839	1747	1647	
Ph rec	[kW]	-	2095	2062	2022	1973	1917	1851	-	2211	2178	2137	2087	2028	1960	-	-	2300	2257	2206	2145	2074	
Pe rec	[kW]	-	237	265	300	340	385	434	-	237	266	300	340	385	435	-	-	266	301	341	386	435	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	2112	2039	1956	1862	1760															
Ph rec	[kW]	-	-	2428	2384	2332	2269	2195															
Pe rec	[kW]	-	-	267	301	341	386	436															

WF6412°A°T°°																							
Twe	[°C]	-6							-4							-2							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	1128	1085	1030	966	893	813	726	1205	1162	1108	1043	970	889	801	1287	1244	1189	1125	1051	969	881	
Ph rec	[kW]	1346	1317	1285	1251	1214	1174	1129	1428	1399	1368	1333	1295	1253	1206	1512	1484	1453	1417	1378	1334	1284	
Pe rec	[kW]	204	224	251	283	321	364	411	204	224	250	283	321	364	411	203	224	250	283	321	363	410	
Twe	[°C]	0							2							4							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	1373	1330	1275	1210	1135	1053	963	1463	1420	1365	1299	1224	1140	1050	-	1514	1459	1393	1316	1232	1140	
Ph rec	[kW]	1600	1572	1541	1505	1464	1418	1366	1691	1664	1632	1595	1553	1505	1450	-	1759	1727	1689	1646	1596	1539	
Pe rec	[kW]	203	224	250	283	321	363	410	203	224	250	283	321	363	410	-	224	250	283	321	363	410	
Twe	[°C]	6							7							8							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1613	1557	1490	1413	1327	1233	-	1664	1608	1540	1463	1376	1282	-	1716	1659	1591	1513	1426	1331	
Ph rec	[kW]	-	1858	1826	1788	1743	1691	1631	-	1910	1877	1839	1793	1740	1679	-	1962	1930	1891	1844	1790	1728	
Pe rec	[kW]	-	224	251	283	321	364	411	-	224	251	284	321	364	411	-	224	251	284	322	364	411	
Twe	[°C]	10							12							14							
Twre	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Pc	[kW]	-	1824	1766	1697	1618	1529	1432	-	1935	1877	1807	1726	1636	1538	-	-	1992	1921	1839	1747	1647	
Ph rec	[kW]	-	2071	2039	1999	1951	1895	1830	-	2186	2153	2112	2063	2005	1938	-	-	2273	2232	2181	2121	2051	
Pe rec	[kW]	-	225	252	284	322	365	411	-	225	252	285	323	365	412	-	-	252	285	323	366	412	
Twe	[°C]	16																					
Twre	[°C]	20	25	30	35	40	45	50															
Pc	[kW]	-	-	2112	2039	1956	1862	1760															
Ph rec	[kW]	-	-	2400	2357	2305	2243	2170															
Pe rec	[kW]	-	-	253	286	324	366	413															

Twe = Temp of water produced at evaporator °C

Twre = temp of water produced at total recovery

Pc = Cooling capacity

Ph_{REC} = Heating capacity total recovery

Pe_{REC} = Power consumption total recovery

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

17. PRESSURE DROPS CHILLER WITH TOTAL RECOVERY WF°°°T°°

The pressure drop on the conditions of the diagram are:

TOTAL RECOVERY
Water temperature inlet 40 °C
Water temperature outlet 45 °C

EVAPORATOR
Water temperature inlet 12 °C
Water temperature outlet 7 °C

he table gives the correction to apply to the pressure drops on variation of the average water temperature

Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

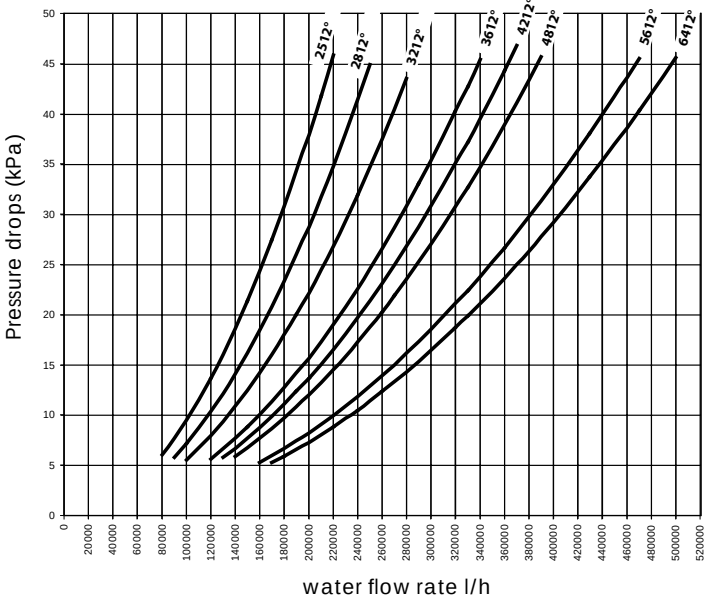
Condenser

Average water temperature °C	23	28	**33**	38	43	48
Multiplicative coefficient	1,02	1,01	**1,00**	0,99	0,98	0,97

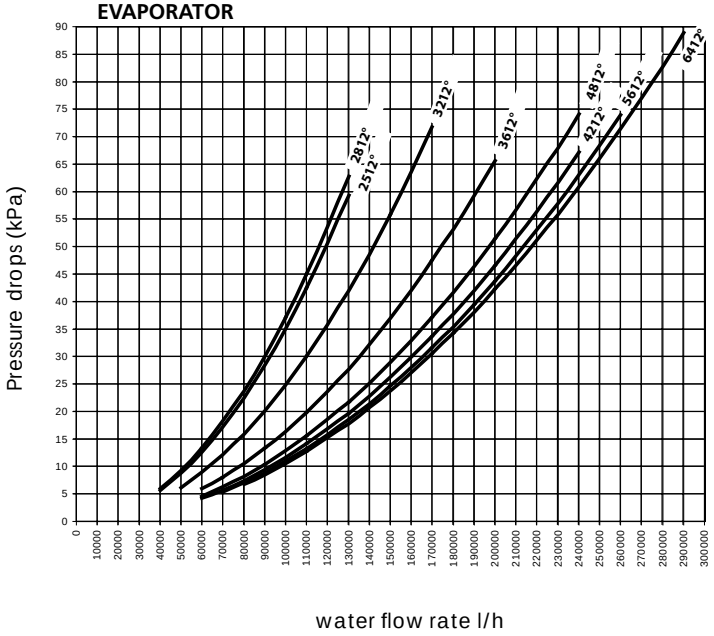
Total recovery

Average water temperature °C	23	28	33	38	**43**	48
Multiplicative coefficient	1,04	1,03	1,02	1,01	**1,00**	0,99

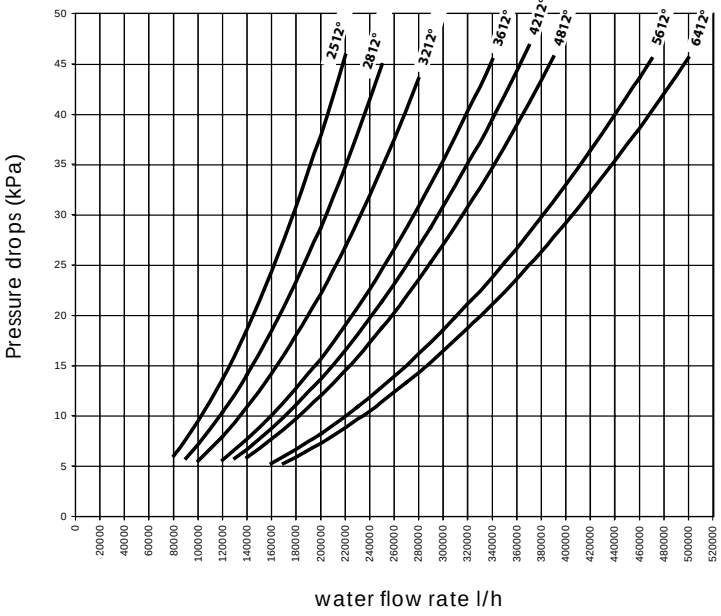
CONDENSERS



EVAPORATOR



TOTAL RECOVERY



18. PRESSURE DROPS CHILLER WITH TOTAL RECOVERY WF°A°T°°

The pressure drop on the conditions of the diagram are:

TOTAL RECOVERY

Water temperature inlet	40 °C
Water temperature outlet	45 °C

EVAPORATOR

Water temperature inlet	12 °C
Water temperature outlet	7 °C

he table gives the correction to apply to the pressure drops on variation of the average water temperature

Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

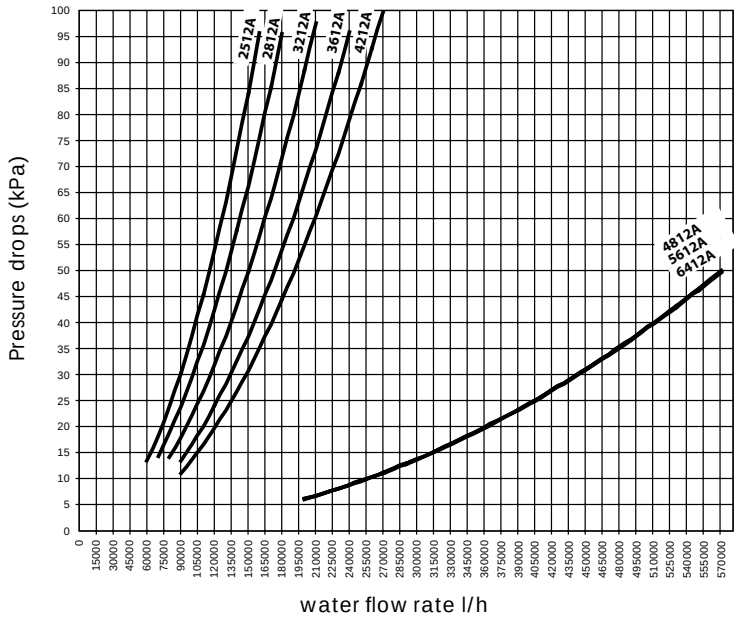
Condenser

Average water temperature °C	23	28	**33**	38	43	48
Multiplicative coefficient	1,02	1,01	**1,00**	0,99	0,98	0,97

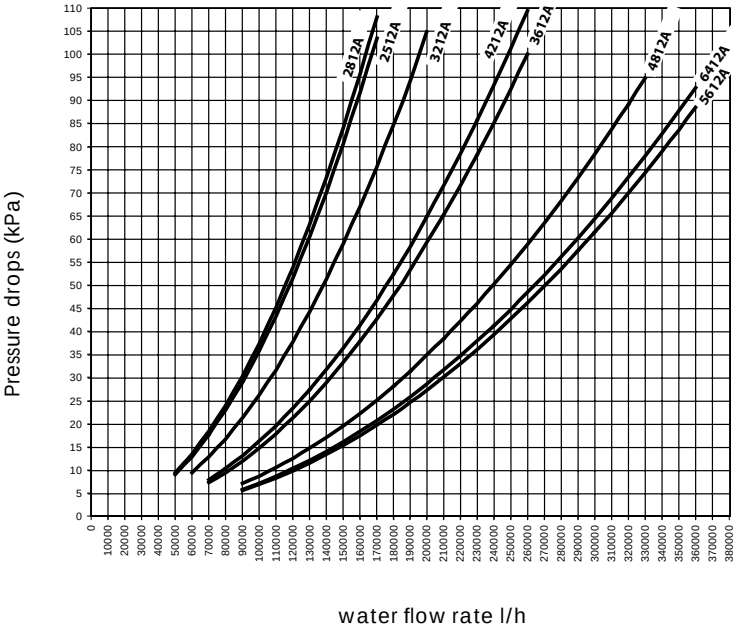
Total recovery

Average water temperature °C	23	28	33	38	**43**	48
Multiplicative coefficient	1,04	1,03	1,02	1,01	**1,00**	0,99

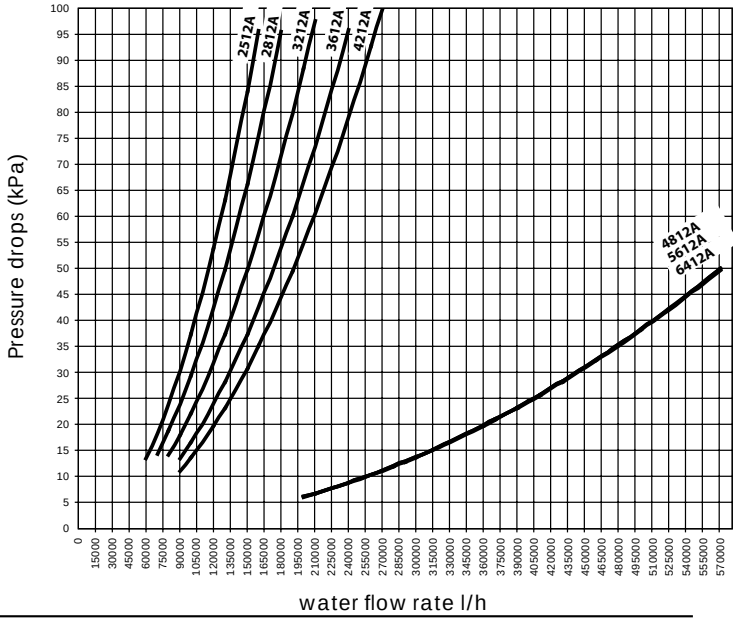
CONDENSERS



EVAPORATOR



TOTAL RECOVERY



19. PERFORMANCE DESUPERHEATER

19.1. WF 2512°°°D°° STANDARD VERSION / WF 2512°A°D°° HIGH EFFICIENCY

WF2512°°°D°°																							
Twd	[°C]	40							42							44							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	5.5	21.6	36.0	50.3	66.1	84.8	108.1	0.8	16.6	30.9	45.1	60.8	79.5	102.8	-3.9	11.7	25.8	39.8	55.4	74.1	97.5	
Twd	[°C]	45							46							48							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	-6.3	9.3	23.2	37.0	52.8	71.4	94.8	-8.6	6.8	20.6	34.6	50.1	68.8	92.2	-13.2	1.9	15.5	29.3	44.8	63.4	86.8	
Twd	[°C]	50																					
Twc	[°C]	20	25	30	35	40	45	50															
Ph_{DES}	[kW]	-17.9	-3.1	10.4	24.1	39.4	58.0	81.4															

WF2512°A°D°°																							
Twd	[°C]	40							42							44							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	5.2	20.4	34.1	47.6	62.5	80.3	102.3	0.7	15.7	29.2	42.6	57.5	75.2	97.2	-3.7	11.1	24.4	37.7	52.4	70.1	92.2	
Twd	[°C]	45							46							48							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	-5.9	8.8	21.9	35.0	49.9	67.6	89.7	-8.1	6.4	19.5	32.7	47.4	65.1	87.2	-12.5	1.8	14.7	27.8	42.4	60.0	82.1	
Twd	[°C]	50																					
Twc	[°C]	20	25	30	35	40	45	50															
Ph_{DES}	[kW]	-17.0	-2.9	9.8	22.8	37.3	54.9	77.0															

19.2. WF 2812°°°D°° STANDARD VERSION / WF 2812°A°D°° HIGH EFFICIENCY

WF2512°°°D°°																							
Twd	[°C]	40							42							44							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	5.6	22.2	37.0	51.7	67.9	87.1	111.0	0.8	17.1	31.7	46.3	62.4	81.6	105.6	-4.0	12.0	26.4	40.9	56.9	76.2	100.1	
Twd	[°C]	45							46							48							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	-6.4	9.5	23.8	38.0	54.2	73.4	97.4	-8.8	7.0	21.2	35.5	51.5	70.6	94.7	-13.6	1.9	16.0	30.1	46.0	65.1	89.2	
Twd	[°C]	50																					
Twc	[°C]	20	25	30	35	40	45	50															
Ph_{DES}	[kW]	-18.4	-3.2	10.7	24.7	40.5	59.6	83.6															

WF2512°A°D°°																							
Twd	[°C]	40							42							44							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	6.4	25.1	41.8	58.5	76.8	98.6	125.6	0.9	19.3	35.9	52.4	70.6	92.4	119.5	-4.6	13.6	29.9	46.3	64.4	86.2	113.3	
Twd	[°C]	45							46							48							
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50	
Ph_{DES}	[kW]	-7.3	10.8	27.0	43.0	61.3	83.0	110.2	-10.0	7.9	24.0	40.2	58.2	79.9	107.1	-15.4	2.2	18.1	34.1	52.0	73.7	100.9	
Twd	[°C]	50																					
Twc	[°C]	20	25	30	35	40	45	50															
Ph_{DES}	[kW]	-20.9	-3.6	12.1	28.0	45.8	67.4	94.6															

Twd =Temp of water produced at desuperheater

Twc = Temp of water produced at condenser

Ph_{DES} = Heating capacity desuperheater

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

WF 3212

19.3. WF 3212°°°D°° STANDARD VERSION / WF 3212°A°D°° HIGH EFFICIENCY

WF 3212°°°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	8.1	32.1	53.5	74.8	98.2	126.1	160.7	1.2	24.7	45.9	67.0	90.3	118.1	152.8	-5.8	17.4	38.3	59.2	82.4	110.2	144.9		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-9.3	13.8	34.5	55.0	78.4	106.2	141.0	-12.8	10.1	30.7	51.4	74.5	102.2	137.0	-19.7	2.8	23.1	43.6	66.6	94.3	129.1		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-26.7	-4.6	15.5	35.8	58.6	86.2	121.1																

WF 3212°A°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	7.3	28.6	47.7	66.6	87.5	112.4	143.2	1.0	22.0	40.9	59.7	80.5	105.3	136.1	-5.2	15.5	34.1	52.7	73.4	98.2	129.1		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-8.3	12.3	30.7	49.0	69.9	94.6	125.6	-11.4	9.0	27.3	45.8	66.3	91.1	122.1	-17.5	2.5	20.6	38.9	59.3	84.0	115.0		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-23.8	-4.1	13.8	31.9	52.2	76.8	107.8																

WF 3612

19.4. WF 3612°°°D°° STANDARD VERSION / WF 3612°A°D°° HIGH EFFICIENCY

WF 3612°°°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	8.6	33.8	56.4	78.9	103.6	133.0	169.5	1.2	26.0	48.4	70.6	95.2	124.6	161.1	-6.1	18.3	40.4	62.4	86.9	116.2	152.8		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-9.8	14.5	36.4	58.0	82.7	112.0	148.7	-13.5	10.6	32.4	54.2	78.5	107.8	144.5	-20.8	2.9	24.4	46.0	70.2	99.4	136.1		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-28.1	-4.8	16.3	37.7	61.8	90.9	127.7																

WF 3612°A°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	8.6	33.8	56.4	78.9	103.6	133.0	169.5	1.2	26.0	48.4	70.6	95.2	124.6	161.1	-6.1	18.3	40.4	62.4	86.9	116.2	152.8		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-9.8	14.5	36.4	58.0	82.7	112.0	148.7	-13.5	10.6	32.4	54.2	78.5	107.8	144.5	-20.8	2.9	24.4	46.0	70.2	99.4	136.1		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-28.1	-4.8	16.3	37.7	61.8	90.9	127.7																

Twd =Temp of water produced at desuperheater

Twc = Temp of water produced at condenser

Ph_{DES} = Heating capacity desuperheater

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

19.5. WF 4212°°°D°° STANDARD VERSION / WF 4212°A°D°° HIGH EFFICIENCY

WF 4212°°°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	10.5	41.4	69.1	96.6	126.8	162.8	207.5	1.5	31.9	59.2	86.5	116.6	152.5	197.2	-7.5	22.4	49.4	76.4	106.4	142.3	187.1		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-12.0	17.8	44.5	71.0	101.2	137.1	182.0	-16.5	13.0	39.6	66.4	96.1	132.0	176.9	-25.4	3.6	29.8	56.3	85.9	121.7	166.6		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-34.4	-5.9	20.0	46.2	75.6	111.3	156.3																

WF 4212°A°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	9.9	39.1	65.2	91.1	119.7	153.6	195.8	1.4	30.1	55.9	81.6	110.0	143.9	186.1	-7.1	21.2	46.6	72.1	100.4	134.3	176.5		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-11.3	16.8	42.0	67.0	95.5	129.4	171.7	-15.5	12.3	37.4	62.6	90.7	124.6	166.9	-24.0	3.4	28.1	53.1	81.1	114.8	157.2		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-32.5	-5.6	18.8	43.6	71.4	105.1	147.5																

19.6. WF 4812°°°D°° STANDARD VERSION / WF 4812°A°D°° HIGH EFFICIENCY

WF 4812°°°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	11.5	45.5	75.9	106.1	139.3	178.9	227.9	1.6	35.0	65.1	95.0	128.1	167.5	216.7	-8.3	24.6	54.3	83.9	116.8	156.3	205.5		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-13.2	19.5	48.9	78.0	111.2	150.6	199.9	-18.1	14.3	43.5	72.9	105.6	145.0	194.3	-27.9	3.9	32.8	61.9	94.4	133.7	183.1		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-37.8	-6.5	21.9	50.7	83.1	122.3	171.7																

WF 4812°A°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	10.8	42.6	71.0	99.3	130.4	167.4	213.3	1.5	32.8	60.9	88.9	119.9	156.8	202.8	-7.7	23.1	50.8	78.5	109.4	146.3	192.4		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-12.3	18.3	45.8	73.0	104.1	141.0	187.1	-16.9	13.4	40.7	68.3	98.8	135.7	181.8	-26.1	3.7	30.7	57.9	88.3	125.1	171.3		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-35.4	-6.1	20.5	47.5	77.7	114.5	160.7																

Twd =Temp of water produced at desuperheater

Twc = Temp of water produced at condenser

Ph_{DES} = Heating capacity desuperheater

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

WF 5612

19.7. WF 5612°°°D°° STANDARD VERSIONE / WF 5612°A°D°° HIGH EFFICIENCY

WF 5612°°°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	13.3	52.5	87.6	122.4	160.7	206.4	263.0	1.9	40.4	75.1	109.6	147.8	193.3	250.0	-9.5	28.4	62.6	96.8	134.8	180.4	237.2		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-15.2	22.5	56.4	90.0	128.3	173.8	230.7	-20.9	16.5	50.2	84.2	121.9	167.3	224.2	-32.2	4.5	37.8	71.4	108.9	154.3	211.2		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-43.7	-7.5	25.3	58.5	95.9	141.1	198.1																

WF 5612°A°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	11.2	44.3	73.9	103.4	135.7	174.3	222.1	1.6	34.1	63.4	92.6	124.8	163.2	211.1	-8.1	24.0	52.9	81.8	113.8	152.3	200.3		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-12.8	19.0	47.7	76.0	108.4	146.8	194.8	-17.6	13.9	42.4	71.1	102.9	141.3	189.3	-27.2	3.8	31.9	60.3	92.0	130.3	178.4		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-36.9	-6.3	21.4	49.4	80.9	119.2	167.3																

WF 6412

19.8. WF 6412°°°D°° STANDARD VERSIONE / WF 6412°A°D°° HIGH EFFICIENCY

WF 6412°°°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	14.2	56.0	93.4	130.6	171.5	220.1	280.5	2.0	43.1	80.1	116.9	157.6	206.2	266.7	-10.2	30.3	66.8	103.3	143.8	192.4	253.0		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-16.2	24.0	60.2	96.0	136.9	185.4	246.0	-22.3	17.6	53.6	89.8	130.0	178.5	239.1	-34.4	4.8	40.3	76.1	116.2	164.5	225.3		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-46.6	-8.0	27.0	62.4	102.2	150.5	211.3																

WF 6412°A°D°°																								
Twd	[°C]	40							42							44								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	12.0	47.2	78.8	110.2	144.7	185.7	236.7	1.7	36.4	67.6	98.7	133.0	174.0	225.0	-8.6	25.6	56.4	87.2	121.3	162.3	213.4		
Twd	[°C]	45							46							48								
Twc	[°C]	20	25	30	35	40	45	50	20	25	30	35	40	45	50	20	25	30	35	40	45	50		
Ph_{DES}	[kW]	-13.7	20.3	50.8	81.0	115.5	156.4	207.6	-18.8	14.8	45.2	75.7	109.7	150.6	201.8	-29.0	4.1	34.0	64.2	98.0	138.8	190.1		
Twd	[°C]	50																						
Twc	[°C]	20	25	30	35	40	45	50																
Ph_{DES}	[kW]	-39.3	-6.7	22.8	52.7	86.3	127.0	178.3																

Twd =Temp of water produced at desuperheater

Twc = Temp of water produced at condenser

Ph_{DES} = Heating capacity desuperheater

The data are calculated with Dt 5 ° C, Glycol 0%

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

20. PRESSURE DROPS CHILLER WITH DESUPERHEATER WF°°°D°°

The pressure drop on the conditions of the diagram are:

DESUPERHEATER
Water temperature inlet 40 °C
Water temperature outlet 45 °C

EVAPORATOR
Water temperature inlet 12 °C
Water temperature outlet 7 °C

CONDENSER
Water temperature inlet 30 °C
Water temperature outlet 35 °C

he table gives the correction to apply to the pressure drops on variation of the average water temperature

Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

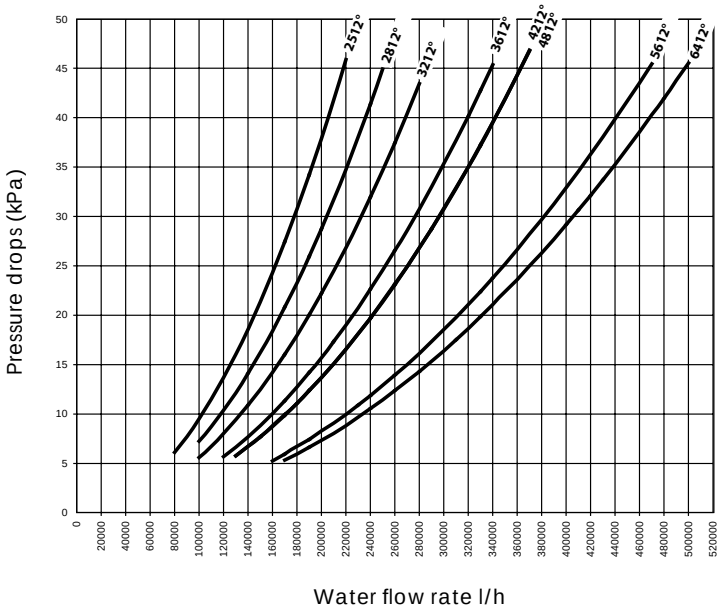
Condenser

Average water temperature °C	23	28	**33**	38	43	48
Multiplicative coefficient	1,02	1,01	**1,00**	0,99	0,98	0,97

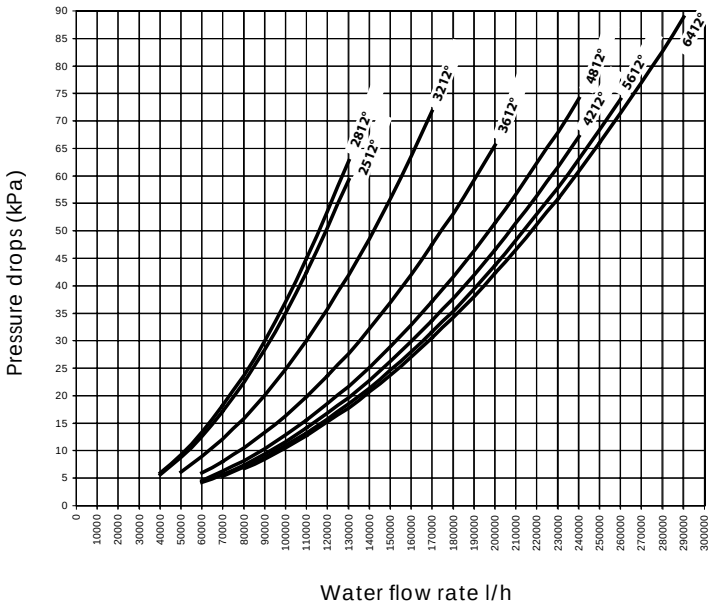
Desuperheater

Average water temperature °C	23	28	33	38	**43**	48
Multiplicative coefficient	1,04	1,03	1,02	1,01	**1,00**	0,99

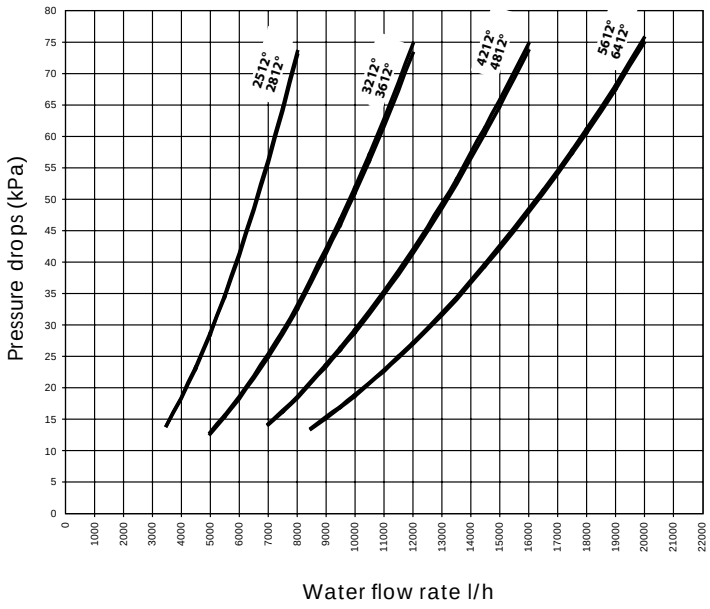
CONDENSER



EVAPORATOR



DESUPERHEATER



22. PRESSURE DROPS CHILLER WITH DESUPERHEATER WF°A°D°°

The pressure drop on the conditions of the diagram are:

DESUPERHEATER
Water temperature inlet 40 °C
Water temperature outlet 45 °C

EVAPORATOR
Water temperature inlet 12 °C
Water temperature outlet 7 °C

CONDENSER
Water temperature inlet 30 °C
Water temperature outlet 35 °C

he table gives the correction to apply to the pressure drops on variation of the average water temperature

Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

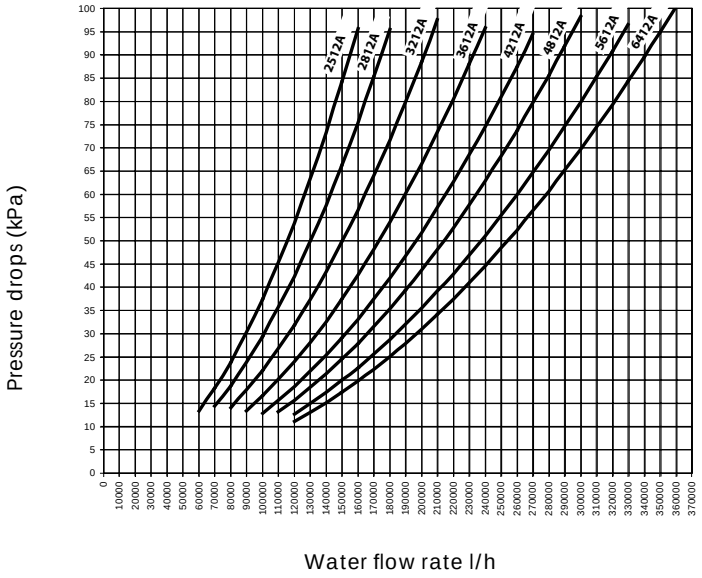
Condenser

Average water temperature °C	23	28	**33**	38	43	48
Multiplicative coefficient	1,02	1,01	**1,00**	0,99	0,98	0,97

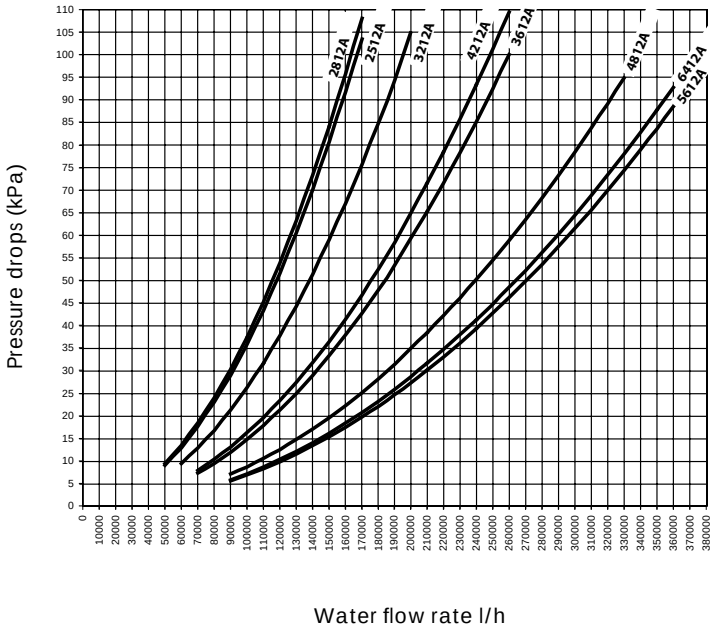
Desuperheater

Average water temperature °C	23	28	33	38	**43**	48
Multiplicative coefficient	1,04	1,03	1,02	1,01	**1,00**	0,99

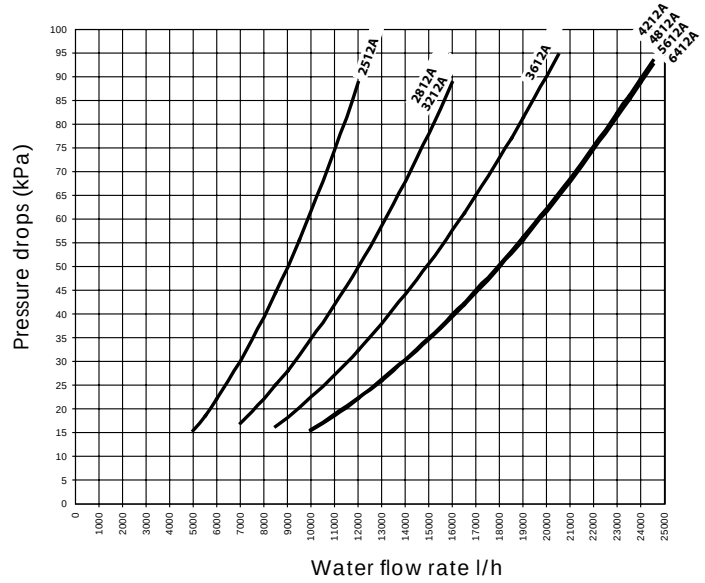
CONDENSER



EVAPORATOR



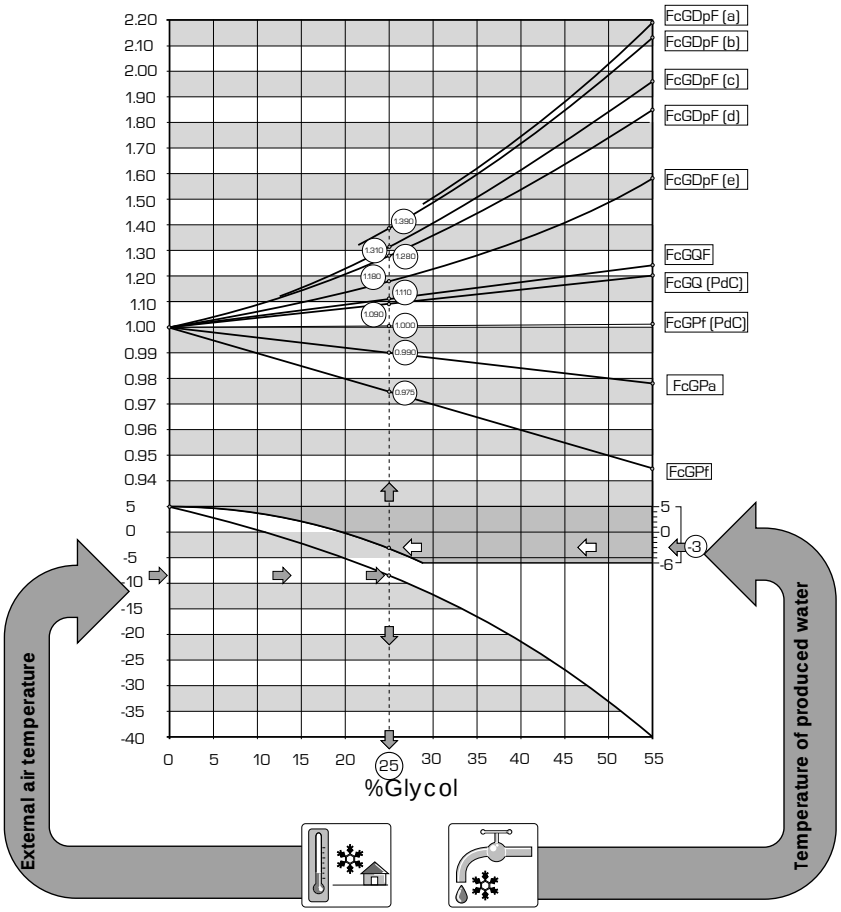
DESUPERHEATER



23. GLYCOL

- The correction factors of cooling power and input power take into account the presence of glycol and diverse 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.



23.1. 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.

KEY:

FcGPf	Corrective factors for cooling capacity
FcGPa	Corrective factors of the input power
FcGDpF (a)	Correction factors for pressure drop (evaporator) (av. temp. = -3.5 °C)
FcGDpF (b)	Correction factor for pressure drops (av. temp. = 0.5 °C)
FcGDpF (c)	Correction factor for pressure drops (av. temp. = 5.5 °C)
FcGDpF (d)	Correction factor for pressure drops (av. temp. = 9.5 °C)
FcGDpF (e)	Correction factor for pressure drops (av. temp. = 47.5 °C)
FcGQF	Correction factor of flow rates (evap.) (av. temp. = 9.5 °C)
FcGQC	Correction factors of flow rates (condenser) (av. temp. = 47.5 °C)

NOTE
Although graph shows up to external air temperature of -40°C, unit operational limits must be considered.

24. PERFORMANCE IN COOLING MODE MOTOEVAPORATING UNIT

24.1. WF 2512°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	448.34	80.83	431.12	88.41	409.52	98.62	383.99	111.26	355.02	126.12	323.08	142.98	288.63	161.65	274.26	169.57
-4	479.07	80.66	461.95	88.25	440.34	98.47	414.73	111.11	385.60	125.96	353.40	142.81	318.61	161.45	304.08	169.36
-2	511.51	80.56	494.43	88.16	472.79	98.39	447.05	111.03	417.70	125.87	385.20	142.71	350.03	161.33	335.32	169.23
0	545.67	80.53	528.59	88.14	506.86	98.38	480.95	111.02	451.34	125.86	418.50	142.69	382.91	161.29	368.00	169.18
2	581.56	80.54	564.44	88.18	542.57	98.42	516.45	111.07	486.54	125.90	453.31	142.72	417.24	161.31	402.12	169.19
4	619.20	80.60	601.98	88.25	579.94	98.51	553.56	111.16	523.30	126.00	489.64	142.81	453.05	161.38	437.70	169.26
6	658.59	80.69	641.24	88.36	618.98	98.63	592.29	111.29	561.64	126.13	527.50	142.94	490.35	161.50	474.75	169.37
7	678.94	80.75	661.51	88.43	639.12	98.71	612.26	111.37	581.40	126.21	547.00	143.00	509.56	161.57	493.83	169.43
8	699.74	80.81	682.21	88.50	659.69	98.79	632.65	111.46	601.56	126.30	566.90	143.10	529.14	161.65	513.27	169.51
10	742.68	80.94	724.92	88.66	702.09	98.96	674.65	111.64	643.09	126.48	607.86	143.28	569.45	161.82	553.29	169.68
12	787.40	81.08	769.38	88.82	746.19	99.14	718.32	111.83	686.22	126.68	650.38	143.48	611.27	162.01	594.82	169.87
14	833.93	81.21	815.59	88.98	792.01	99.32	763.64	112.02	730.98	126.88	694.48	143.68	654.63	162.21	637.85	170.06
16	882.27	81.33	863.57	89.12	839.54	99.49	810.65	112.21	777.37	127.08	740.17	143.88	699.53	162.40	682.42	170.25
17	907.12	81.38	888.23	89.19	863.96	99.57	834.79	112.30	801.18	127.17	763.62	143.97	722.57	162.50	705.28	170.34

24.2. WF 2512°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	479.48	80.83	461.07	88.41	437.97	98.62	410.67	111.26	379.68	126.12	345.52	142.98	308.68	161.65	293.31	169.57
-4	512.35	80.66	494.04	88.25	470.93	98.47	443.55	111.11	412.38	125.96	377.95	142.81	340.75	161.45	325.20	169.36
-2	547.05	80.56	528.78	88.16	505.63	98.39	478.11	111.03	446.72	125.87	411.96	142.71	374.35	161.33	358.62	169.23
0	583.58	80.53	565.31	88.14	542.07	98.38	514.36	111.02	482.70	125.86	447.58	142.69	409.51	161.29	393.56	169.18
2	621.96	80.54	603.65	88.18	580.27	98.42	552.33	111.07	520.34	125.90	484.80	142.72	446.23	161.31	430.06	169.19
4	662.21	80.60	643.80	88.25	620.23	98.51	592.02	111.16	559.65	126.00	523.66	142.81	484.52	161.38	468.11	169.26
6	704.34	80.69	685.78	88.36	661.98	98.63	633.43	111.29	600.65	126.13	564.15	142.94	524.41	161.50	507.73	169.37
7	726.11	80.75	707.46	88.43	683.52	98.71	654.80	111.37	621.79	126.21	585.00	143.00	544.95	161.57	528.13	169.43
8	748.35	80.81	729.61	88.50	705.52	98.79	676.60	111.46	643.35	126.30	606.28	143.10	565.90	161.65	548.93	169.51
10	794.27	80.94	775.28	88.66	750.87	98.96	721.52	111.64	687.76	126.48	650.09	143.28	609.00	161.82	591.73	169.68
12	842.10	81.08	822.83	88.82	798.03	99.14	768.22	111.83	733.89	126.68	695.56	143.48	653.74	162.01	636.14	169.87
14	891.86	81.21	872.25	88.98	847.03	99.32	816.69	112.02	781.76	126.88	742.73	143.68	700.11	162.21	682.17	170.06
16	943.56	81.33	923.57	89.12	897.87	99.49	866.97	112.21	831.37	127.08	791.59	143.88	748.13	162.40	729.83	170.25
17	970.14	81.38	949.94	89.19	923.98	99.57	892.78	112.30	856.84	127.17	816.67	143.97	772.76	162.50	754.27	170.34

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1. For different deposit factor values, multiply the performance table data by the coefficients given in the table.

PERFORMANCE IN COOLING MODE MOTOEVAPORATING UNIT

24.3. WF 2812°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	511.45	91.57	491.81	100.15	467.16	111.72	438.05	126.04	405.00	142.88	368.55	161.98	329.26	183.12	312.86	192.10
-4	546.51	91.38	526.97	99.97	502.33	111.55	473.12	125.87	439.87	142.69	403.14	161.78	363.46	182.90	346.88	191.86
-2	583.51	91.27	564.03	99.88	539.34	111.46	509.98	125.78	476.50	142.60	439.43	161.67	399.31	182.77	382.53	191.72
0	622.48	91.23	603.00	99.85	578.21	111.45	548.66	125.77	514.88	142.58	477.41	161.65	436.81	182.72	419.80	191.66
2	663.43	91.24	643.89	99.89	618.95	111.50	589.15	125.82	555.03	142.63	517.12	161.68	475.97	182.74	458.73	191.67
4	706.36	91.31	686.72	99.98	661.58	111.60	631.48	125.93	596.96	142.74	558.57	161.78	516.83	182.82	499.31	191.75
6	751.29	91.41	731.50	100.10	706.11	111.74	675.66	126.08	640.70	142.89	601.75	161.93	559.37	182.96	541.58	191.87
7	774.52	91.48	754.63	100.18	729.09	111.82	698.45	126.17	663.24	142.98	624.00	162.00	581.29	183.04	563.34	191.95
8	798.24	91.55	778.25	100.26	752.55	111.91	721.71	126.27	686.24	143.08	646.70	162.11	603.63	183.13	585.53	192.03
10	847.22	91.69	826.97	100.44	800.92	112.11	769.62	126.47	733.61	143.29	693.43	162.32	649.60	183.32	631.18	192.23
12	898.24	91.85	877.68	100.62	851.23	112.31	819.43	126.69	782.82	143.51	741.93	162.54	697.32	183.54	678.55	192.44
14	951.32	92.00	930.40	100.80	903.49	112.52	871.14	126.91	833.88	143.74	792.24	162.77	746.78	183.76	727.64	192.65
16	1006.46	92.13	985.14	100.97	957.72	112.71	924.76	127.12	886.80	143.96	844.37	163.00	798.00	183.98	778.48	192.87
17	1034.82	92.19	1013.27	101.04	985.58	112.80	952.30	127.22	913.96	144.07	871.11	163.10	824.28	184.09	804.56	192.97

24.4. WF 2812°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	545.06	91.57	524.13	100.15	497.86	111.72	466.83	126.04	431.61	142.88	392.77	161.98	350.89	183.12	333.42	192.10
-4	582.42	91.38	561.60	99.97	535.33	111.55	504.20	125.87	468.78	142.69	429.63	161.78	387.34	182.90	369.68	191.86
-2	621.85	91.27	601.09	99.88	574.78	111.46	543.49	125.78	507.81	142.60	468.30	161.67	425.54	182.77	407.66	191.72
0	663.38	91.23	642.62	99.85	616.20	111.45	584.70	125.77	548.71	142.58	508.78	161.65	465.51	182.72	447.39	191.66
2	707.02	91.24	686.20	99.89	659.62	111.50	627.86	125.82	591.50	142.63	551.10	161.68	507.25	182.74	488.87	191.67
4	752.77	91.31	731.84	99.98	705.05	111.60	672.97	125.93	636.19	142.74	595.27	161.78	550.78	182.82	532.12	191.75
6	800.66	91.41	779.56	100.10	752.51	111.74	720.06	126.08	682.80	142.89	641.29	161.93	596.13	182.96	577.16	191.87
7	825.41	91.48	804.21	100.18	777.00	111.82	744.34	126.17	706.82	142.98	665.00	162.00	619.48	183.04	600.35	191.95
8	850.69	91.55	829.38	100.26	802.00	111.91	769.13	126.27	731.33	143.08	689.20	162.11	643.29	183.13	624.00	192.03
10	902.89	91.69	881.31	100.44	853.55	112.11	820.19	126.47	781.81	143.29	738.99	162.32	692.29	183.32	672.65	192.23
12	957.26	91.85	935.35	100.62	907.16	112.31	873.27	126.69	834.25	143.51	790.68	162.54	743.14	183.54	723.13	192.44
14	1013.83	92.00	991.53	100.80	962.86	112.52	928.38	126.91	888.67	143.74	844.30	162.77	795.85	183.76	775.45	192.65
16	1072.59	92.13	1049.87	100.97	1020.65	112.71	985.53	127.12	945.07	143.96	899.85	163.00	850.44	183.98	829.63	192.87
17	1102.81	92.19	1079.84	101.04	1050.34	112.80	1014.87	127.22	974.02	144.07	928.35	163.10	878.44	184.09	857.42	192.97

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

24.5. WF 3212°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	613.08	110.23	589.54	120.55	560.00	134.48	525.09	151.72	485.48	171.98	441.79	194.98	394.69	220.43	375.04	231.23
-4	655.11	110.00	631.69	120.34	602.15	134.27	567.13	151.51	527.29	171.76	483.26	194.74	435.69	220.16	415.82	230.94
-2	699.47	109.86	676.11	120.22	646.51	134.17	611.32	151.40	571.19	171.65	526.75	194.61	478.66	220.00	458.54	230.77
0	746.18	109.81	722.82	120.19	693.11	134.15	657.68	151.39	617.19	171.63	572.29	194.57	523.61	219.94	503.22	230.70
2	795.26	109.83	771.84	120.24	741.95	134.21	706.23	151.45	665.32	171.69	619.89	194.62	570.56	219.97	549.88	230.72
4	846.73	109.91	823.18	120.34	793.05	134.33	756.97	151.58	715.59	171.81	669.56	194.74	619.53	220.07	598.54	230.81
6	900.59	110.04	876.86	120.50	846.43	134.50	809.93	151.76	768.02	172.00	721.33	194.91	670.53	220.22	649.20	230.95
7	928.43	110.11	904.59	120.59	873.98	134.60	837.25	151.87	795.04	172.11	748.00	195.00	696.80	220.32	675.29	231.05
8	956.87	110.19	932.90	120.68	902.10	134.71	865.12	151.99	822.61	172.22	775.22	195.13	723.58	220.43	701.88	231.15
10	1015.58	110.37	991.30	120.89	960.08	134.94	922.56	152.23	879.39	172.48	831.22	195.38	778.69	220.67	756.61	231.38
12	1076.74	110.56	1052.09	121.11	1020.39	135.19	982.27	152.50	938.38	172.75	889.37	195.65	835.89	220.93	813.39	231.64
14	1140.36	110.74	1115.29	121.33	1083.04	135.44	1044.25	152.76	999.58	173.02	949.68	195.93	895.18	221.20	872.24	231.90
16	1206.47	110.90	1180.90	121.53	1148.04	135.67	1108.53	153.01	1063.02	173.29	1012.16	196.20	956.58	221.46	933.18	232.16
17	1240.45	110.97	1214.62	121.62	1181.43	135.77	1141.54	153.13	1095.58	173.41	1044.22	196.33	988.08	221.59	964.44	232.28

24.6. WF 3212°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	655.71	110.23	630.53	120.55	598.93	134.48	561.60	151.72	519.23	171.98	472.51	194.98	422.13	220.43	401.11	231.23
-4	700.65	110.00	675.61	120.34	644.01	134.27	606.56	151.51	563.94	171.76	516.85	194.74	465.98	220.16	444.72	230.94
-2	748.10	109.86	723.11	120.22	691.46	134.17	653.82	151.40	610.89	171.65	563.37	194.61	511.93	220.00	490.42	230.77
0	798.06	109.81	773.07	120.19	741.29	134.15	703.40	151.39	660.10	171.63	612.07	194.57	560.01	219.94	538.21	230.70
2	850.55	109.83	825.50	120.24	793.53	134.21	755.32	151.45	711.58	171.69	662.98	194.62	610.22	219.97	588.11	230.72
4	905.59	109.91	880.41	120.34	848.18	134.33	809.59	151.58	765.34	171.81	716.11	194.74	662.60	220.07	640.15	230.81
6	963.20	110.04	937.82	120.50	905.27	134.50	866.24	151.76	821.41	172.00	771.48	194.91	717.14	220.22	694.33	230.95
7	992.97	110.11	967.47	120.59	934.73	134.60	895.45	151.87	850.31	172.11	800.00	195.00	745.24	220.32	722.23	231.05
8	1023.39	110.19	997.75	120.68	964.81	134.71	925.26	151.99	879.80	172.22	829.11	195.13	773.88	220.43	750.68	231.15
10	1086.18	110.37	1060.22	120.89	1026.82	134.94	986.70	152.23	940.53	172.48	889.01	195.38	832.83	220.67	809.20	231.38
12	1151.59	110.56	1125.23	121.11	1091.32	135.19	1050.55	152.50	1003.61	172.75	951.20	195.65	894.00	220.93	869.93	231.64
14	1219.64	110.74	1192.82	121.33	1158.33	135.44	1116.85	152.76	1069.07	173.02	1015.70	195.93	957.41	221.20	932.88	231.90
16	1290.34	110.90	1263.00	121.53	1227.85	135.67	1185.60	153.01	1136.92	173.29	1082.52	196.20	1023.08	221.46	998.05	232.16
17	1326.69	110.97	1299.06	121.62	1263.56	135.77	1220.90	153.13	1171.75	173.41	1116.81	196.33	1056.77	221.59	1031.48	232.28

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

24.7. WF 3612°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	690.13	124.92	663.63	136.63	630.37	152.41	591.08	171.95	546.49	194.91	497.31	220.98	444.29	249.82	422.17	262.06
-4	737.44	124.66	711.07	136.39	677.82	152.18	638.40	171.71	593.55	194.66	543.99	220.70	490.44	249.51	468.07	261.74
-2	787.37	124.51	761.08	136.25	727.76	152.06	688.15	171.59	642.97	194.53	592.94	220.56	538.81	249.33	516.16	261.54
0	839.95	124.45	813.66	136.22	780.21	152.04	740.33	171.58	694.75	194.51	644.20	220.52	589.41	249.27	566.46	261.46
2	895.20	124.48	868.84	136.27	835.19	152.10	794.98	171.65	748.93	194.58	697.79	220.57	642.26	249.30	618.99	261.48
4	953.13	124.57	926.63	136.39	892.71	152.24	852.10	171.79	805.52	194.72	753.71	220.70	697.38	249.41	673.75	261.58
6	1013.77	124.71	987.06	136.56	952.80	152.44	911.71	172.00	864.53	194.93	811.98	220.90	754.79	249.59	730.78	261.75
7	1045.10	124.79	1018.26	136.67	983.81	152.55	942.46	172.12	894.95	195.05	842.00	221.00	784.36	249.70	760.15	261.85
8	1077.12	124.89	1050.13	136.78	1015.47	152.67	973.84	172.25	925.99	195.19	872.64	221.15	814.51	249.82	790.09	261.97
10	1143.21	125.09	1115.88	137.01	1080.73	152.94	1038.50	172.53	989.91	195.47	935.68	221.43	876.55	250.09	851.69	262.23
12	1212.05	125.30	1184.31	137.26	1148.62	153.22	1105.71	172.83	1056.30	195.78	1001.14	221.74	940.93	250.38	915.60	262.52
14	1283.67	125.50	1255.44	137.51	1219.14	153.49	1175.48	173.13	1125.20	196.09	1069.02	222.05	1007.67	250.69	981.85	262.82
16	1358.08	125.68	1329.30	137.74	1292.31	153.76	1247.84	173.42	1196.61	196.39	1139.35	222.36	1076.79	250.99	1050.45	263.11
17	1396.34	125.76	1367.26	137.84	1329.90	153.88	1284.99	173.55	1233.26	196.53	1175.44	222.50	1112.25	251.13	1085.64	263.25

24.8. WF 3612°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	736.85	124.92	708.56	136.63	673.05	152.41	631.10	171.95	583.48	194.91	530.98	220.98	474.37	249.82	450.75	262.06
-4	787.36	124.66	759.21	136.39	723.71	152.18	681.62	171.71	633.73	194.66	580.81	220.70	523.64	249.51	499.76	261.74
-2	840.67	124.51	812.60	136.25	777.03	152.06	734.73	171.59	686.49	194.53	633.08	220.56	575.28	249.33	551.11	261.54
0	896.81	124.45	868.74	136.22	833.03	152.04	790.45	171.58	741.79	194.51	687.81	220.52	629.31	249.27	604.81	261.46
2	955.80	124.48	927.66	136.27	891.73	152.10	848.79	171.65	799.63	194.58	745.02	220.57	685.74	249.30	660.89	261.48
4	1017.66	124.57	989.36	136.39	953.14	152.24	909.78	171.79	860.05	194.72	804.73	220.70	744.59	249.41	719.36	261.58
6	1082.39	124.71	1053.88	136.56	1017.30	152.44	973.43	172.00	923.06	194.93	866.95	220.90	805.89	249.59	780.25	261.75
7	1115.85	124.79	1087.20	136.67	1050.41	152.55	1006.26	172.12	955.54	195.05	899.00	221.00	837.46	249.70	811.61	261.85
8	1150.03	124.89	1121.22	136.78	1084.21	152.67	1039.77	172.25	988.67	195.19	931.71	221.15	869.65	249.82	843.57	261.97
10	1220.60	125.09	1191.42	137.01	1153.89	152.94	1108.80	172.53	1056.92	195.47	999.02	221.43	935.89	250.09	909.34	262.23
12	1294.10	125.30	1264.48	137.26	1226.37	153.22	1180.56	172.83	1127.81	195.78	1068.91	221.74	1004.63	250.38	977.59	262.52
14	1370.57	125.50	1340.43	137.51	1301.67	153.49	1255.06	173.13	1201.37	196.09	1141.39	222.05	1075.89	250.69	1048.32	262.82
16	1450.02	125.68	1419.29	137.74	1379.80	153.76	1332.31	173.42	1277.62	196.39	1216.48	222.36	1149.69	250.99	1121.56	263.11
17	1490.87	125.76	1459.82	137.84	1419.93	153.88	1371.98	173.55	1316.75	196.53	1255.01	222.50	1187.55	251.13	1159.13	263.25

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

24.9. WF 4212°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	781.93	139.62	751.91	152.70	714.22	170.34	669.71	192.18	619.18	217.84	563.46	246.97	503.39	279.21	478.32	292.89
-4	835.53	139.33	805.66	152.43	767.98	170.08	723.32	191.91	672.50	217.56	616.34	246.67	555.68	278.87	530.33	292.53
-2	892.10	139.16	862.31	152.28	824.57	169.95	779.68	191.78	728.49	217.42	671.81	246.50	610.48	278.67	584.82	292.31
0	951.68	139.09	921.89	152.25	883.99	169.92	838.81	191.76	787.17	217.39	729.89	246.46	667.81	278.59	641.81	292.22
2	1014.28	139.12	984.41	152.30	946.28	170.00	900.72	191.84	848.55	217.47	790.60	246.52	727.69	278.63	701.32	292.24
4	1079.92	139.22	1049.89	152.44	1011.46	170.15	965.44	192.00	912.67	217.63	853.96	246.67	790.15	278.75	763.37	292.35
6	1148.61	139.38	1118.35	152.63	1079.53	170.37	1032.99	192.23	979.53	217.86	919.99	246.89	855.19	278.95	827.99	292.54
7	1184.12	139.48	1153.71	152.74	1114.67	170.50	1067.82	192.37	1014.00	218.00	954.00	247.00	888.70	279.07	861.26	292.66
8	1220.39	139.58	1189.82	152.87	1150.54	170.63	1103.38	192.52	1049.16	218.15	988.71	247.17	922.85	279.21	895.18	292.79
10	1295.27	139.80	1264.31	153.13	1224.49	170.93	1176.64	192.83	1121.58	218.47	1060.14	247.49	993.15	279.51	964.98	293.08
12	1373.28	140.04	1341.84	153.41	1301.40	171.24	1252.78	193.16	1196.81	218.81	1134.30	247.83	1066.09	279.84	1037.39	293.41
14	1454.42	140.27	1422.44	153.69	1381.30	171.55	1331.84	193.50	1274.87	219.16	1211.22	248.18	1141.71	280.18	1112.45	293.74
16	1538.73	140.47	1506.12	153.94	1464.21	171.84	1413.82	193.82	1355.78	219.50	1290.91	248.52	1220.03	280.52	1190.18	294.07
17	1582.08	140.56	1549.13	154.06	1506.80	171.98	1455.92	193.97	1397.31	219.66	1331.79	248.68	1260.20	280.68	1230.04	294.22

24.10. WF 4212°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	832.75	140.19	800.77	153.32	760.64	171.03	713.23	192.96	659.42	218.72	600.08	247.97	536.10	280.34	509.41	294.07
-4	889.83	139.89	858.02	153.05	817.89	170.77	770.33	192.69	716.21	218.44	656.40	247.67	591.79	280.00	564.80	293.71
-2	950.08	139.72	918.36	152.90	878.15	170.63	830.35	192.56	775.84	218.30	715.48	247.50	650.15	279.80	622.83	293.50
0	1013.53	139.66	981.80	152.86	941.44	170.61	893.32	192.54	838.33	218.27	777.33	247.46	711.21	279.72	683.52	293.41
2	1080.20	139.68	1048.38	152.92	1007.78	170.69	959.26	192.62	903.70	218.35	841.98	247.52	774.98	279.75	746.90	293.43
4	1150.10	139.78	1118.12	153.05	1077.19	170.84	1028.18	192.78	971.98	218.51	909.46	247.67	841.50	279.88	812.99	293.54
6	1223.26	139.94	1191.03	153.25	1149.69	171.06	1100.12	193.01	1043.19	218.75	979.78	247.89	910.77	280.08	881.80	293.73
7	1261.07	140.04	1228.69	153.36	1187.11	171.19	1137.22	193.15	1079.90	218.88	1016.00	248.00	946.45	280.20	917.23	293.84
8	1299.71	140.14	1267.14	153.49	1225.31	171.32	1175.09	193.29	1117.34	219.03	1052.97	248.17	982.83	280.34	953.36	293.98
10	1379.45	140.37	1346.48	153.75	1304.07	171.62	1253.11	193.61	1194.47	219.35	1129.04	248.49	1057.69	280.64	1027.69	294.27
12	1462.52	140.61	1429.05	154.03	1385.98	171.93	1334.20	193.95	1274.59	219.70	1208.02	248.83	1135.38	280.97	1104.81	294.59
14	1548.94	140.83	1514.88	154.31	1471.07	172.25	1418.40	194.28	1357.72	220.05	1289.94	249.18	1215.91	281.32	1184.75	294.93
16	1638.73	141.04	1604.00	154.56	1559.37	172.54	1505.71	194.60	1443.89	220.39	1374.80	249.52	1299.32	281.65	1267.53	295.26
17	1684.89	141.13	1649.80	154.68	1604.73	172.68	1550.54	194.75	1488.12	220.54	1418.35	249.69	1342.10	281.81	1309.98	295.42

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

24.11. WF 4812°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	882.74	157.71	848.85	172.49	806.31	192.41	756.05	217.08	699.01	246.07	636.11	278.97	568.29	315.38	539.99	330.83
-4	943.25	157.38	909.53	172.18	867.00	192.11	816.58	216.78	759.21	245.75	695.81	278.63	627.32	315.00	598.71	330.43
-2	1007.12	157.19	973.49	172.01	930.88	191.96	880.21	216.62	822.42	245.59	758.43	278.44	689.19	314.77	660.22	330.18
0	1074.38	157.11	1040.75	171.97	997.97	191.94	946.96	216.60	888.66	245.56	824.00	278.39	753.91	314.69	724.56	330.08
2	1145.05	157.14	1111.33	172.03	1068.29	192.02	1016.85	216.70	957.96	245.64	892.54	278.46	821.51	314.72	791.75	330.10
4	1219.15	157.26	1185.25	172.18	1141.86	192.20	1089.92	216.88	1030.34	245.83	964.06	278.63	892.02	314.86	861.80	330.23
6	1296.70	157.44	1262.54	172.40	1218.72	192.44	1166.17	217.14	1105.82	246.09	1038.61	278.88	965.45	315.09	934.74	330.44
7	1336.79	157.54	1302.46	172.53	1258.39	192.58	1205.50	217.29	1144.73	246.24	1077.00	279.00	1003.28	315.23	972.30	330.58
8	1377.74	157.66	1343.22	172.67	1298.88	192.74	1245.64	217.46	1184.43	246.41	1116.19	279.19	1041.84	315.38	1010.60	330.72
10	1462.27	157.92	1427.32	172.97	1382.36	193.07	1328.34	217.81	1266.19	246.77	1196.83	279.55	1121.19	315.72	1089.39	331.05
12	1550.33	158.18	1514.85	173.29	1469.19	193.43	1414.31	218.19	1351.12	247.16	1280.55	279.93	1203.54	316.10	1171.15	331.42
14	1641.94	158.44	1605.84	173.60	1559.40	193.78	1503.55	218.57	1439.24	247.55	1367.38	280.33	1288.91	316.48	1255.88	331.79
16	1737.12	158.67	1700.31	173.88	1652.99	194.11	1596.11	218.93	1530.58	247.93	1457.34	280.71	1377.33	316.86	1343.63	332.16
17	1786.05	158.77	1748.86	174.01	1701.07	194.26	1643.63	219.10	1577.47	248.11	1503.50	280.90	1422.68	317.04	1388.64	332.34

24.12. WF 4812°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	940.94	158.27	904.81	173.10	859.46	193.10	805.89	217.85	745.09	246.95	678.05	279.97	605.75	316.51	575.59	332.02
-4	1005.44	157.94	969.49	172.80	924.16	192.80	870.41	217.55	809.26	246.63	741.68	279.63	668.68	316.12	638.18	331.61
-2	1073.52	157.75	1037.67	172.63	992.24	192.65	938.23	217.40	876.63	246.47	808.43	279.44	734.62	315.90	703.75	331.37
0	1145.21	157.68	1109.36	172.59	1063.76	192.63	1009.38	217.38	947.24	246.44	878.32	279.39	803.61	315.81	772.33	331.27
2	1220.54	157.71	1184.59	172.65	1138.71	192.71	1083.89	217.47	1021.11	246.52	951.37	279.46	875.67	315.85	843.94	331.29
4	1299.52	157.82	1263.39	172.80	1217.14	192.88	1161.77	217.66	1098.26	246.71	1027.62	279.62	950.83	315.99	918.61	331.41
6	1382.19	158.00	1345.77	173.02	1299.06	193.13	1243.05	217.92	1178.72	246.97	1107.07	279.87	1029.10	316.22	996.36	331.63
7	1424.91	158.11	1388.32	173.15	1341.34	193.28	1284.97	218.07	1220.20	247.13	1148.00	280.00	1069.42	316.36	1036.40	331.76
8	1468.56	158.23	1431.77	173.29	1384.51	193.43	1327.75	218.24	1262.51	247.29	1189.77	280.19	1110.52	316.51	1077.22	331.91
10	1558.67	158.48	1521.41	173.59	1473.49	193.77	1415.91	218.59	1349.66	247.66	1275.73	280.55	1195.11	316.86	1161.21	332.24
12	1652.54	158.75	1614.71	173.91	1566.05	194.12	1507.54	218.97	1440.19	248.05	1364.97	280.94	1282.89	317.23	1248.35	332.60
14	1750.18	159.01	1711.70	174.22	1662.20	194.47	1602.67	219.35	1534.12	248.44	1457.53	281.33	1373.88	317.61	1338.68	332.98
16	1851.64	159.24	1812.40	174.51	1761.97	194.80	1701.33	219.71	1631.48	248.82	1553.42	281.72	1468.12	317.99	1432.21	333.35
17	1903.80	159.34	1864.15	174.64	1813.21	194.96	1751.99	219.88	1681.46	249.00	1602.62	281.90	1516.47	318.17	1480.18	333.53

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1. For different deposit factor values, multiply the performance table data by the coefficients given in the table.

24.13. WF 5612°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	990.12	176.93	952.10	193.51	904.38	215.86	848.01	243.53	784.03	276.05	713.48	312.97	637.41	353.81	605.67	371.15
-4	1057.98	176.56	1020.16	193.16	972.46	215.53	915.90	243.19	851.55	275.70	780.44	312.58	703.63	353.38	671.53	370.69
-2	1129.62	176.34	1091.90	192.97	1044.10	215.36	987.27	243.02	922.45	275.52	850.68	312.37	773.02	353.13	740.53	370.42
0	1205.06	176.26	1167.34	192.93	1119.35	215.33	1062.14	243.00	996.75	275.48	924.23	312.31	845.61	353.03	812.69	370.31
2	1284.33	176.29	1246.50	193.00	1198.23	215.42	1140.54	243.10	1074.48	275.58	1001.10	312.39	921.44	353.08	888.05	370.33
4	1367.44	176.42	1329.42	193.17	1280.75	215.62	1222.49	243.31	1155.66	275.78	1081.33	312.58	1000.52	353.23	966.62	370.47
6	1454.43	176.62	1416.11	193.41	1366.96	215.89	1308.02	243.60	1240.33	276.08	1164.94	312.86	1082.89	353.49	1048.44	370.71
7	1499.38	176.74	1460.88	193.56	1411.45	216.05	1352.13	243.77	1283.97	276.25	1208.00	313.00	1125.31	353.64	1090.57	370.86
8	1545.32	176.88	1506.60	193.71	1456.87	216.23	1397.15	243.96	1328.50	276.44	1251.95	313.21	1168.56	353.82	1133.52	371.03
10	1640.14	177.16	1600.93	194.05	1550.50	216.60	1489.91	244.36	1420.20	276.85	1342.40	313.61	1257.57	354.20	1221.90	371.40
12	1738.91	177.46	1699.10	194.40	1647.90	217.00	1586.33	244.78	1515.46	277.28	1436.31	314.05	1349.94	354.62	1313.60	371.80
14	1841.66	177.75	1801.16	194.75	1749.07	217.39	1686.44	245.20	1614.30	277.72	1533.70	314.49	1445.69	355.05	1408.64	372.23
16	1948.41	178.01	1907.12	195.07	1854.06	217.76	1790.25	245.61	1716.75	278.15	1634.61	314.92	1544.86	355.47	1507.06	372.64
17	2003.30	178.12	1961.58	195.22	1907.98	217.93	1843.55	245.80	1769.34	278.35	1686.38	315.13	1595.73	355.67	1557.54	372.84

24.14. WF 5612°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	1021.26	176.93	982.05	193.51	932.83	215.86	874.69	243.53	808.69	276.05	735.93	312.97	657.47	353.81	624.73	371.15
-4	1091.26	176.56	1052.26	193.16	1003.05	215.53	944.72	243.19	878.34	275.70	804.99	312.58	725.76	353.38	692.66	370.69
-2	1165.16	176.34	1126.25	192.97	1076.95	215.36	1018.33	243.02	951.47	275.52	877.44	312.37	797.33	353.13	763.83	370.42
0	1242.97	176.26	1204.06	192.93	1154.56	215.33	1095.55	243.00	1028.10	275.48	953.30	312.31	872.21	353.03	838.26	370.31
2	1324.73	176.29	1285.72	193.00	1235.92	215.42	1176.41	243.10	1108.28	275.58	1032.59	312.39	950.42	353.08	915.98	370.33
4	1410.46	176.42	1371.24	193.17	1321.04	215.62	1260.94	243.31	1192.02	275.78	1115.34	312.58	1031.99	353.23	997.03	370.47
6	1500.18	176.62	1460.66	193.41	1409.96	215.89	1349.16	243.60	1279.34	276.08	1201.58	312.86	1116.95	353.49	1081.42	370.71
7	1546.55	176.74	1506.84	193.56	1455.85	216.05	1394.66	243.77	1324.36	276.25	1246.00	313.00	1160.71	353.64	1124.87	370.86
8	1593.93	176.88	1554.00	193.71	1502.70	216.23	1441.10	243.96	1370.29	276.44	1291.33	313.21	1205.32	353.82	1169.18	371.03
10	1691.73	177.16	1651.29	194.05	1599.28	216.60	1536.78	244.36	1464.87	276.85	1384.63	313.61	1297.13	354.20	1260.34	371.40
12	1793.61	177.46	1752.55	194.40	1699.74	217.00	1636.24	244.78	1563.13	277.28	1481.49	314.05	1392.40	354.62	1354.92	371.80
14	1899.59	177.75	1857.82	194.75	1804.09	217.39	1739.49	245.20	1665.08	277.72	1581.95	314.49	1491.17	355.05	1452.95	372.23
16	2009.70	178.01	1967.12	195.07	1912.38	217.76	1846.57	245.61	1770.76	278.15	1686.03	314.92	1593.45	355.47	1554.47	372.64
17	2066.32	178.12	2023.28	195.22	1968.00	217.93	1901.55	245.80	1825.00	278.35	1739.43	315.13	1645.92	355.67	1606.54	372.84

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1.
For different deposit factor values, multiply the performance table data by the coefficients given in the table.

24.15. WF 6412°°°°E° STANDARD VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	1088.47	195.02	1046.68	213.29	994.22	237.93	932.25	268.43	861.92	304.27	784.36	344.96	700.73	389.98	665.84	409.09
-4	1163.08	194.61	1121.50	212.91	1069.06	237.56	1006.89	268.06	936.14	303.89	857.97	344.54	773.52	389.51	738.24	408.59
-2	1241.84	194.37	1200.37	212.70	1147.82	237.37	1085.34	267.87	1014.08	303.68	935.19	344.31	849.81	389.23	814.09	408.29
0	1324.77	194.28	1283.30	212.65	1230.55	237.34	1167.65	267.84	1095.77	303.65	1016.04	344.24	929.61	389.13	893.43	408.17
2	1411.91	194.32	1370.33	212.73	1317.26	237.45	1253.84	267.96	1181.22	303.75	1100.54	344.33	1012.97	389.17	976.27	408.19
4	1503.28	194.46	1461.48	212.92	1407.98	237.66	1343.93	268.18	1270.46	303.98	1188.74	344.54	1099.91	389.35	1062.64	408.35
6	1598.91	194.68	1556.78	213.19	1502.75	237.96	1437.95	268.51	1363.54	304.30	1280.66	344.85	1190.46	389.63	1152.59	408.61
7	1648.33	194.81	1606.00	213.35	1551.66	238.14	1486.45	268.69	1411.52	304.49	1328.00	345.00	1237.09	389.80	1198.90	408.78
8	1698.83	194.96	1656.27	213.52	1601.59	238.33	1535.94	268.90	1460.47	304.70	1376.32	345.23	1284.64	389.99	1246.12	408.96
10	1803.06	195.27	1759.96	213.89	1704.53	238.75	1637.92	269.34	1561.28	305.15	1475.75	345.68	1382.49	390.41	1343.28	409.37
12	1911.65	195.60	1867.89	214.28	1811.60	239.18	1743.92	269.80	1666.00	305.63	1578.99	346.16	1484.04	390.87	1444.09	409.82
14	2024.60	195.92	1980.08	214.66	1922.82	239.62	1853.97	270.27	1774.66	306.11	1686.06	346.64	1589.30	391.35	1548.57	410.28
16	2141.96	196.20	2096.57	215.02	2038.23	240.03	1968.09	270.72	1887.29	306.58	1796.98	347.12	1698.32	391.81	1656.77	410.74
17	2202.30	196.33	2156.44	215.18	2097.52	240.21	2026.69	270.93	1945.10	306.81	1853.90	347.35	1754.24	392.04	1712.26	410.96

24.16. WF 6412°A°°E° HIGH EFFICIENCY VERSION

temp of water produced at evaporator °C	Condensation temperature °C															
	20		25		30		35		40		45		50		52	
	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe	Pc	Pe
	[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]		[kW]	
-6	1132.73	195.58	1089.24	213.91	1034.65	238.62	970.16	269.20	896.96	305.16	816.25	345.96	729.23	391.11	692.91	410.28
-4	1210.38	195.17	1167.11	213.53	1112.53	238.25	1047.83	268.83	974.21	304.77	892.86	345.54	804.98	390.64	768.26	409.78
-2	1292.34	194.93	1249.18	213.32	1194.50	238.06	1129.48	268.65	1055.32	304.56	973.22	345.31	884.36	390.36	847.20	409.48
0	1378.64	194.84	1335.48	213.27	1280.58	238.03	1215.13	268.62	1140.32	304.53	1057.35	345.24	967.41	390.25	929.75	409.35
2	1469.32	194.88	1426.05	213.35	1370.82	238.13	1304.82	268.73	1229.25	304.63	1145.30	345.33	1054.16	390.30	1015.96	409.38
4	1564.41	195.02	1520.91	213.53	1465.23	238.35	1398.57	268.96	1322.12	304.86	1237.08	345.54	1144.64	390.48	1105.85	409.53
6	1663.92	195.24	1620.09	213.80	1563.85	238.65	1496.42	269.28	1418.98	305.18	1332.73	345.85	1238.87	390.76	1199.45	409.80
7	1715.36	195.38	1671.31	213.96	1614.75	238.83	1546.89	269.47	1468.91	305.38	1382.00	346.00	1287.40	390.93	1247.65	409.96
8	1767.91	195.52	1723.62	214.14	1666.71	239.03	1598.39	269.68	1519.85	305.58	1432.28	346.23	1336.88	391.12	1296.79	410.14
10	1876.38	195.84	1831.52	214.51	1773.84	239.44	1704.52	270.12	1624.76	306.03	1535.76	346.68	1438.71	391.54	1397.90	410.55
12	1989.38	196.17	1943.84	214.90	1885.26	239.88	1814.83	270.58	1733.74	306.52	1643.20	347.16	1544.38	392.00	1502.81	411.00
14	2106.93	196.49	2060.60	215.29	2001.01	240.31	1929.35	271.05	1846.82	307.00	1754.62	347.65	1653.93	392.48	1611.54	411.47
16	2229.06	196.77	2181.83	215.64	2121.11	240.72	2048.12	271.50	1964.03	307.47	1870.05	348.13	1767.38	392.95	1724.14	411.93
17	2291.85	196.90	2244.12	215.80	2182.81	240.91	2109.10	271.71	2024.19	307.70	1929.29	348.35	1825.57	393.17	1781.89	412.15

Pc = Cooling capacity

Pe = Input power

from 4 to -6 functioning with glycol

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	**3**	**5**	**8**	**10**
Cooling capacity	0,99	1	1,02	1,03
Input power	0,99	1	1,01	1,02
Heating capacity	0,99	1	1,02	1,03
AT THE CONDENSER	-	**5**	**10**	**15**
Cooling capacity	-	1	1,01	1,02
Input power	-	1	0,99	0,98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0,00001	**0,00002**	**0,00005**
Cooling capacity	1	0,99	0,98
Input power	1	1	1
Heating capacity	1	1	0,99
Input power	1	1	1,02

In order to obtain performance and absorption with different Δt, use the corrective factors given in the table.

The performance supplied refer to clean pipe conditions with deposit factor = 1. For different deposit factor values, multiply the performance table data by the coefficients given in the table.

25. PRESSURE DROPS CHILLER WF°°°E°

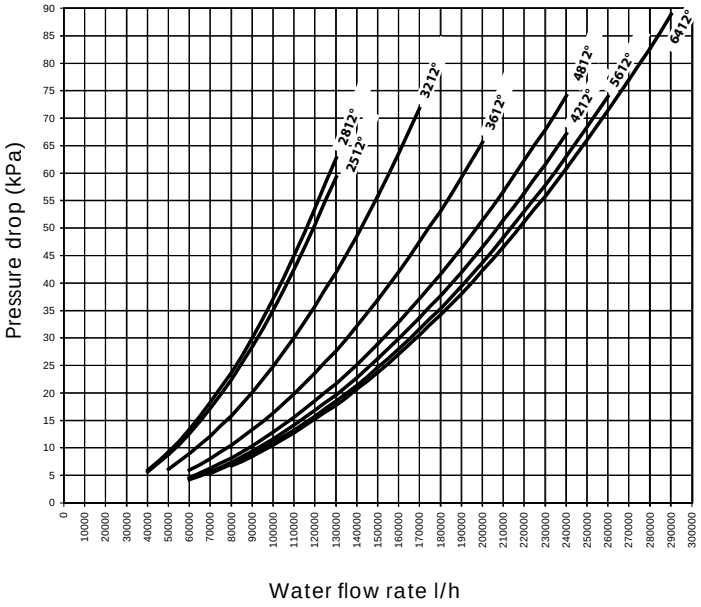
The pressure drop on the conditions of the diagram are:

CONDENSER
Water temperature inlet 30 °C
Water temperature outlet 35 °C

EVAPORATORS
Temperatura acqua ingresso 12 °C
Temperatura acqua in uscita 7 °C

he table gives the correction to apply to the pressure drops on variation of the average water temperature

EVAPORATOR



Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

26. PRESSURE DROPS CHILLER WF°A°E°

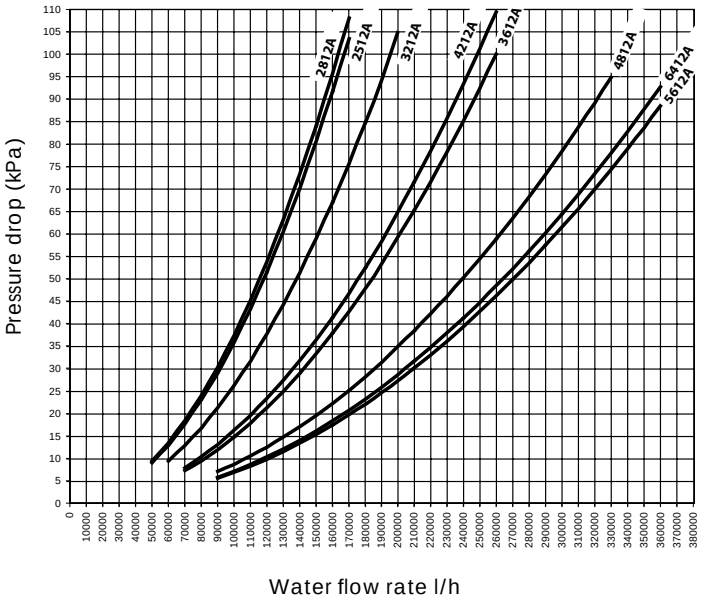
The pressure drop on the conditions of the diagram are:

CONDENSER
Water temperature inlet 30 °C
Water temperature outlet 35 °C

EVAPORATORS
Temperatura acqua ingresso 12 °C
Temperatura acqua in uscita 7 °C

he table gives the correction to apply to the pressure drops on variation of the average water temperature

EVAPORATOR



Evaporator

Average water temperature °C	5	**10**	15	20	25	30	35
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,96	0,95	0,94

WF°	SCAMBIATORE EVAPORATORE				WFA	SCAMBIATORE EVAPORATORE			
	Q.min	Q.max	C.min.[1] H_2O	C.min.[2] H_2O		Q.min	Q.max	C.min.[1] H_2O	C.min.[2] H_2O
	[l/h]	[l/h]	[l]	[l]		[l/h]	[l/h]	[l]	[l]
2512°	34000	136000	4500	9000	**2512A**	43000	174000	4600	9200
2812°	34000	136000	5100	10200	**2812A**	43000	174000	5200	10400
3212°	43000	170000	6000	12000	**3212A**	53000	209000	6100	12200
3612°	49000	199000	6700	13400	**3612A**	65000	264000	6800	13600
4212°	60000	240000	7700	15400	**4212A**	65000	264000	7800	15600
4812°	60000	240000	8900	17800	**4812A**	83000	331000	8800	17600
5612°	65000	262000	10000	20000	**5612A**	89000	360000	10100	20200
6412°	72000	287000	10700	21400	**6412A**	89000	360000	10800	21600

Legenda

C.min.[1]	Contenuto minimo d'acqua
C.min.[2]	Contenuto minimo d'acqua nel caso di applicazioni di processo o funzionamento con basse temperature di di condensazione e versioni motoevaporanti

27. CONDENSERLESS REFRIGERANT LINES

REFRIGERANT LINES							
Model	**Line length [m]**	**Intake line f [mm]**		**Liquid line f [mm]**		**R134a refrigerant per metre of line [g/m]**	**R134a refrigerant per metre of line [g/m]**
		C1	**C2**	**C1**	**C2**	**C1**	**C2**
HWF 2512 E	0-10	67	67	41	41	1,450	1,450
	10-20	67	67	41	41	1,450	1,450
	20-30	67	67	41	41	1,450	1,450
	30-60	67	67	41	41	1,450	1,450
HWF 2812 E	0-10	67	67	54	54	2,450	2,450
	10-20	67	67	54	54	2,450	2,450
	20-30	67	67	54	54	2,450	2,450
	30-60	67	67	54	54	2,450	2,450
HWF 3212 E	0-10	67	67	54	54	2,450	2,450
	10-20	79	79	54	54	2,520	2,520
	20-30	79	79	54	54	2,520	2,520
	30-60	79	79	54	54	2,520	2,520
HWF 3612 E	0-10	67	67	54	54	2,450	2,450
	10-20	79	79	54	54	2,520	2,520
	20-30	79	79	54	54	2,520	2,520
	30-60	79	79	54	54	2,520	2,520
HWF 4212 E	0-10	79	79	54	54	2,520	2,520
	10-20	79	79	54	54	2,520	2,520
	20-30	92	92	54	54	2,600	2,600
	30-60	92	92	54	54	2,600	2,600
HWF 4812 E	0-10	79	79	67	67	3,690	3,690
	10-20	79	79	67	67	3,690	3,690
	20-30	92	92	67	67	3,770	3,770
	30-60	92	92	67	67	3,770	3,770
HWF 5612 E	0-10	92	92	67	67	3,770	3,770
	10-20	92	92	67	67	3,770	3,770
	20-30	92	92	67	67	3,770	3,770
	30-60	92	92	67	67	3,770	3,770
HWF 6412 E	0-10	92	92	67	67	3,770	3,770
	10-20	92	92	67	67	3,770	3,770
	20-30	92	92	67	67	3,770	3,770
	30-60	92	92	67	67	3,770	3,770

there are n°2 circuits for every machine
therefore n° 2 gas lines + n° 2 liquid lines

Key
C1 = Cooling circuit 1
C2 = Cooling circuit 2

28. SOUND DATA

28.1. WF SOUND LEVELS

Sound power
Aermec determines sound power values in agreement with the 9614-2 Standard, in compliance with that requested by Eurovent certification.

Sound Pressure
Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) in compliance with ISO 3744 Standard.

Nominal value referred to:
Evaporator water temperature..... 12/7 °C
Condenser air temperature..... 35 °C
Δt..... 5°C

WF °/A	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 potential for central band dB (A) frequency						
2512	**93,6**	**61,5**	**74,7**	54,0	74,7	86,1	91,0	87,5	69,3	56,9
2812	**94,0**	**61,9**	**75,1**	59,5	74,3	88,5	91,2	86,7	71,2	59,3
3212	**93,5**	**61,4**	**74,5**	69,1	82,7	85,8	91,3	83,8	78,3	64,1
3612	**93,7**	**61,6**	**74,6**	66,5	84,8	87,0	90,7	84,8	75,6	63,3
4212	**94,6**	**62,4**	**75,3**	64,8	88,4	88,9	89,8	86,8	68,0	56,6
4812	**95,5**	**63,3**	**76,2**	65,4	87,0	87,9	92,7	86,7	76,1	63,3
5612	**97,3**	**65,1**	**77,7**	65,9	87,0	88,3	95,7	86,7	76,4	64,9
6412	**97,9**	**65,6**	**78,3**	58,9	84,6	91,9	95,4	88,6	79,5	63,9

28.2. SILENCED STANDARD SOUND LEVELS «L»

WF L/AL	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 potential for central band dB (A) frequency						
2512	**85,5**	**53,5**	**67,5**	50,0	74,7	79,1	83,0	76,5	55,3	44,9
2812	**86,2**	**54,2**	**68,2**	55,5	74,3	81,5	83,2	75,7	57,2	47,3
3212	**87,0**	**55**	**69**	65,1	82,7	78,8	83,3	72,8	64,3	52,1
3612	**87,9**	**55,9**	**69,9**	62,5	84,8	80,0	82,7	73,8	61,6	51,3
4212	**90,2**	**58,2**	**72,2**	60,8	88,4	81,9	81,8	75,8	54,0	44,6
4812	**89,8**	**57,8**	**71,8**	61,4	87,0	80,9	84,7	75,7	62,1	51,3
5612	**91,0**	**59**	**73**	61,9	87,0	81,3	87,7	75,7	62,4	52,9
6412	**90,8**	**58,8**	**72,8**	54,9	84,6	84,9	87,4	77,6	65,5	51,9

28.3. SOUND LEVELS WITH AKW KIT ACCESSORY

Note: available only in the **"L"** versions

WFL with KIT AKW	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 potential for central band dB (A) frequency						
2512	**80,8**	**48,7**	**61,9**	56,0	63,7	73,1	79,0	72,5	54,3	42,9
2812	**81,4**	**49,3**	**62,5**	61,5	63,3	75,5	79,2	71,7	56,2	45,3
3212	**81,5**	**49,4**	**62,5**	71,1	71,7	72,8	79,3	68,8	63,3	50,1
3612	**81,5**	**49,4**	**62,4**	68,5	73,8	74,0	78,7	69,8	60,6	49,3
4212	**82,4**	**50,2**	**63,1**	66,8	77,4	75,9	77,8	71,8	53,0	42,6
4812	**83,2**	**51,0**	**63,8**	67,4	76,0	74,9	80,7	71,7	61,1	49,3
5612	**85,2**	**52,9**	**65,6**	67,9	76,0	75,3	83,7	71,7	61,4	50,9
6412	**85,4**	**53,1**	**65,8**	60,9	73,6	78,9	83,4	73,6	64,5	49,9

29. CALIBRATION OF SAFETY AND CONTROL PARAMETERS

CONTROL PARAMETERS			
Cooling Set	Input temperature of the water in cooling functioning mode.	**MIN.**	6°C
		MAX.	16°C
		DEFAULT	7°C
Heating Set	Input temperature of the water in heating functioning mode.	**MIN.**	20°C
		MAX.	50°C
		DEFAULT	45°C
Anti-freeze intervention	Intervention temperature of the anti-freeze alarm on the EV side (water output temperature).	**DEFAULT**	3,5°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		

			2512	**2812**	**3212**	**3612**	**4212**	**4812**	**5612**	**6412**
COMPRESSORS										
Quantity Compressors		n°	2	2	2	2	2	2	2	2
CP1/CP2 magnet circuit breakers calibration	400V-3-50Hz	A	177	203	233	266	306	345	358	411
RT1/RT2 circuit breakers relay calibration	400V-3-50Hz	A	102	127	134	153	176	199	218	237
F1/F2 compressors fuses calibration	400V-3-50Hz	A	200	250	250	315	315	400	400	500
PRESSURE SWITCH - TRANSDUCERS - SAFETY VALVES										
High pressure double pressure switch*		bar	18/19	18/19	18/19	18/19	18/19	18/19	18/19	18/19
High pressure transducer		bar	18	18	18	18	18	18	18	18
Low pressure transducer		bar	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
High pressure safety valve		bar	22	22	22	22	22	22	22	22
Low pressure safety valve		bar	16,5	16,5	16,5	16,5	16,5	16,5	16,5	16,5

* Calibration of the double pressure switch + rearm with tool 18 bar manual rearm/19 manual rearm with tool.

FOR THE INSTALLER

30. RECEIPT OF THE PRODUCT AND INSTALLATION

30.3.1. Receipt and handling

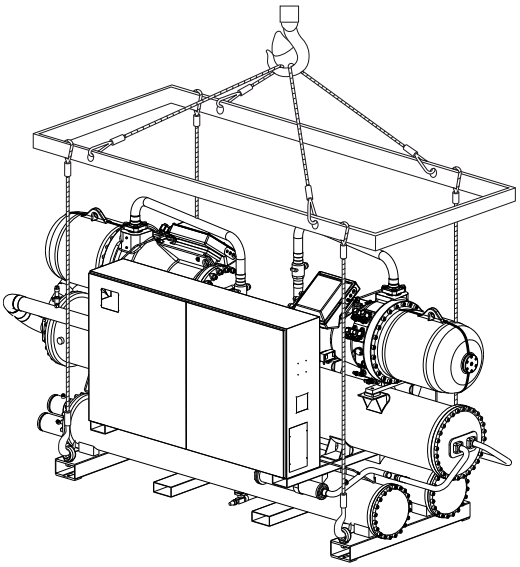
The machine is sent from the factory wrapped with estincoil placed on a pallet.
Before handling the unit, verify the lifting capacity of the machines used.
Handling must be performed by qualified, suitably equipped staff.
To handle the machine:
-Whenever the machine must be lifted using belts, place protections between the belts and the framework to prevent damage to the structure. It is prohibited to stop under the unit during lifting operations.

- **The machine must be kept in a vertical position**
- **The instructions found on the machine are an integral part of the same. They must be read and kept carefully.**

30.3.2. Selection and place of installation

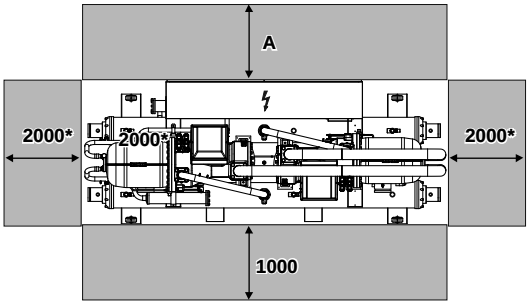
The HWF water/water OUTDOOR heat pump with gas side conversion (R134a) is sent from the factory already inspected and only requires electric and hydraulic connections in the place of installation.
Before beginning installation consent with client and pay attention to the following recommendations:

- The support surface must be capable of supporting the unit weight;
- The safety distances between the units and other appliances or structures must be scrupulously respected.
- The unit must be installed by a qualified technician in compliance with national laws in the country of destination.
- It is mandatory to foresee to the necessary technical space in order to allow ROUTINE AND EXTRAORDINARY MAINTENANCE interventions.
- Remember that whilst operational the chiller can cause vibrations; therefore anti-vibration mounts (AVX ACCESSORIES) are recommended, fixed in the holes on the base according to the assembly layout.
- Fix the unit checking that it is level.



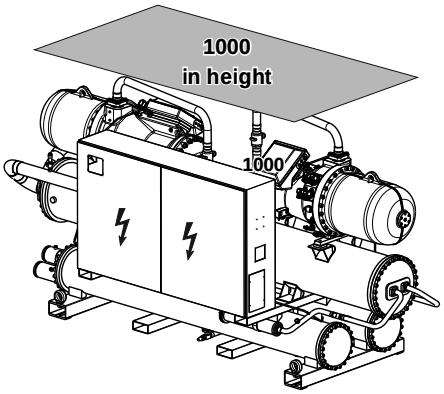
***ATTENTION**: ALWAYS USE ALL RINGS PREPARED*

30.1. MINIMUM TECHNICAL SPACES (mm)

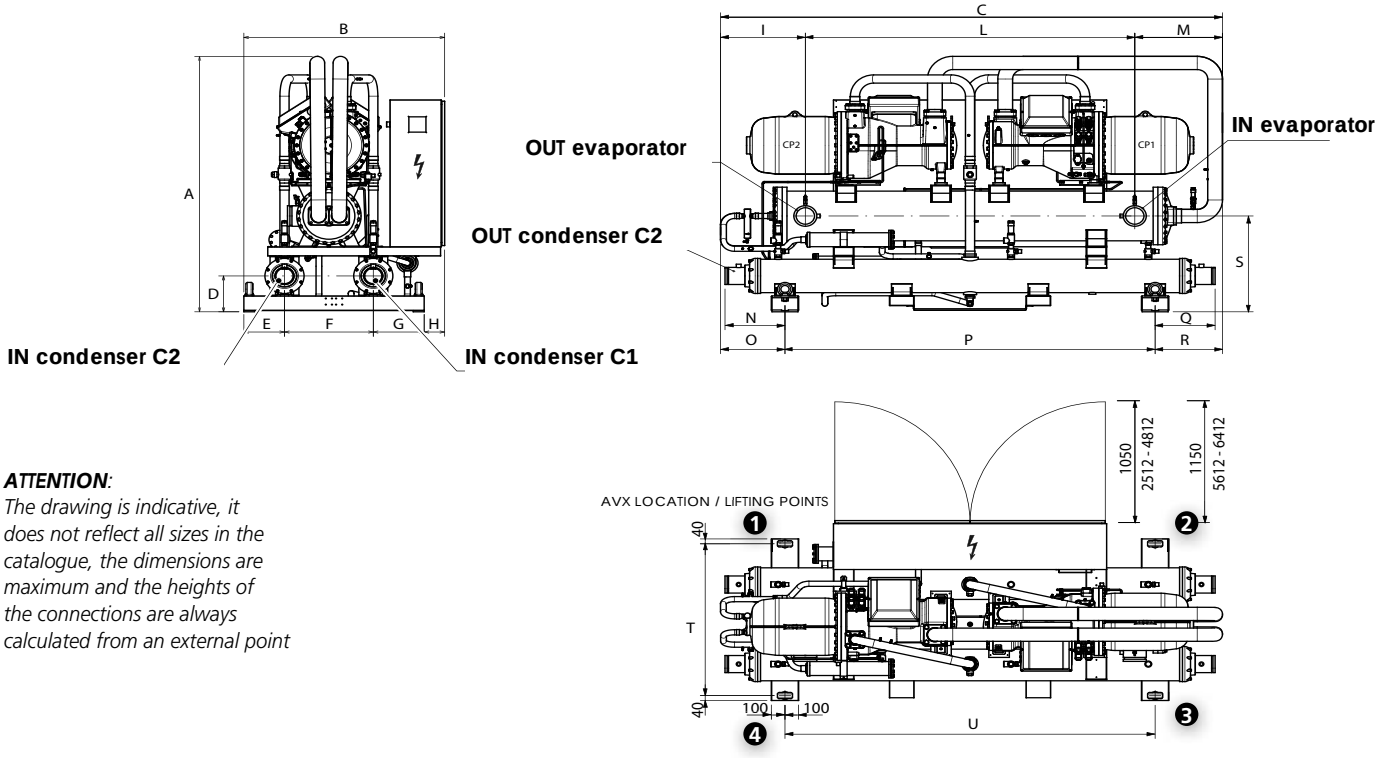


WF	Electrical box standard
	A
2512	1550
2812	1550
3212	1550
3612	1550
4212	1550
4812	1550
5612	1550
6412	1650

** Technical spaces provided for cleaning chemical or brushes the condenser. These spaces can be reduced to only 1000 mm in case of chemical cleaning.*



31. WF STANDARD DIMENSIONAL TABLES



***ATTENTION**:*
The drawing is indicative, it does not reflect all sizes in the catalogue, the dimensions are maximum and the heights of the connections are always calculated from an external point

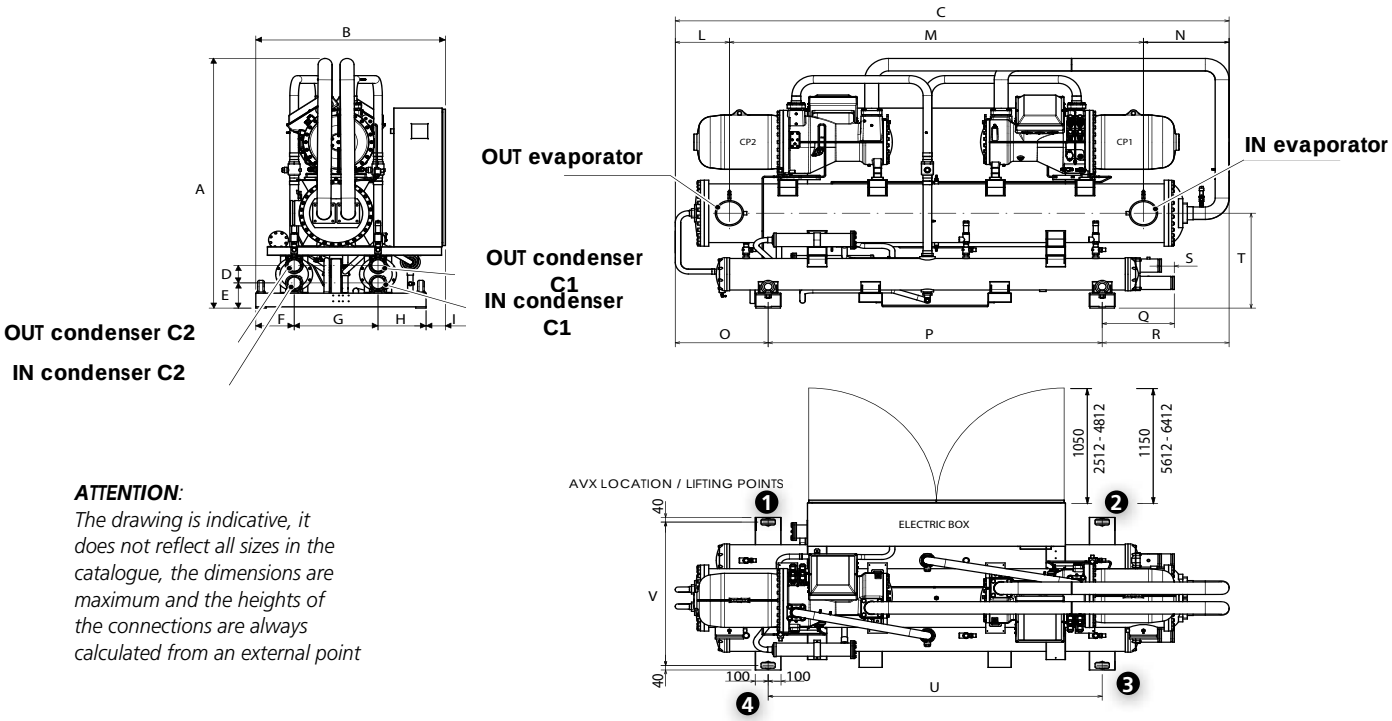
WF°	DIMENSION (mm)			Weights (kg) when EMPTY	Pesi IN FUNZIO-NE	WEIGHTS DISTRIBUTION AS % ON THE RESTS WITHOUT WATER				KIT AVX
	A	B	C	kg	kg	1	2	3	4	
2512°	2100	1470	3690	3570		25	25	25	25	673
2812°	2100	1470	3690	3650		25	25	25	25	673
3212°	2050	1470	4030	4470		25	25	25	25	673
3612°	2120	1520	4030	4750		25	25	25	25	674
4212°	2140	1550	4370	5100		25	25	25	25	674
4812°	2140	1550	4370	5200		25	25	25	25	674
5612°	2210	1600	4610	6110		25	25	25	25	675
6412°	2210	1600	4760	6310		25	25	25	25	675

***** *The AKW accessory can only be installed in the factory on the "L" units with bonnet, and therefore must be requested in the order phase.*

Dimensions, weight and weight distribution versions L - E - D - T
CONTACT AERMEC

	AVX HYDRAULIC CONNECTIONS AND ANTI-VIBRATION MOUNT POSITION (ACCESSORIES) (mm)																COND.				EVAP.	
	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	circuit 1 (C1)		circuit 2 (C2)			
																	IN ø	OUT ø	IN ø	OUT ø	IN ø	OUT ø
2512	293	298	650	373	150	620	2412	658	439	471	2710	439	509	783	1240	2710	5"	5"	5"	5"	6"	6"
2812	293	298	650	373	150	620	2412	658	439	471	2710	439	509	783	1240	2710	5"	5"	5"	5"	6"	6"
3212	293	298	650	373	150	809	2412	809	559	710	2590	439	730	783	1240	2590	5"	5"	5"	5"	6"	6"
3612	293	298	650	403	170	835	2360	835	559	710	2590	439	730	821	1270	2590	5"	5"	5"	5"	8"	8"
4212	293	298	650	403	200	730	2910	730	559	880	2590	439	900	821	1270	2590	5"	5"	5"	5"	8"	8"
4812	293	298	650	403	200	730	2910	730	559	880	2590	439	900	821	1270	2590	5"	5"	5"	5"	8"	8"
5612	324	298	650	403	250	658	3210	742	472	863	2800	472	947	883	1270	2800	6"	6"	6"	6"	8"	8"
6412	324	298	650	403	250	520	3510	730	472	875	2800	472	1085	883	1270	2800	6"	6"	6"	6"	8"	8"

32. TAVOLE DIMENSIONALI WF ALTA EFFICIENZA



***ATTENTION**:*
The drawing is indicative, it does not reflect all sizes in the catalogue, the dimensions are maximum and the heights of the connections are always calculated from an external point

***** *The AKW accessory can only be installed in the factory on the "L" units with bonnet, and therefore must be requested in the order phase.*

Dimensions, weight and weight distribution versions L - E - D - T
CONTACT AERMEC

WFA	DIMENSION (mm)			Weights (kg) when EMPTY	Pesi IN FUNZIONE	WEIGHTS DISTRIBUTION AS % ON THE RESTS WITHOUT WATER				KIT AVX
	A	B	C	kg	kg	1	2	3	4	
2512A	2180	1470	4330	4080		25	25	25	25	673
2812A	2180	1470	4330	4140		25	25	25	25	673
3212A	2190	1537	4330	5470		25	25	25	25	674
3612A	2340	1695	4370	5950		25	25	25	25	675
4212A	2340	1695	4550	6290		25	25	25	25	675
4812A	2340	1695	4550	6460		25	25	25	25	675
5612A	2380	1700	4800	7310		25	25	25	25	676
6412A	2380	1700	4800	7410		25	25	25	25	676

	AVX HYDRAULIC CONNECTIONS AND ANTI-VIBRATION MOUNT POSITION (ACCESSORIES) (mm)																	COND.				EVAP.	
	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	circuit 1 (C1)		circuit 2 (C2)			
																		IN ø	OUT ø	IN ø	OUT ø	IN ø	OUT ø
2512	150	218	298	650	373	150	438	3212	632	738	2590	469	1002	50	821	1240	2590	4"	4"	4"	4"	8"	8"
2812	150	218	298	650	373	150	438	3212	632	738	2590	469	1002	50	821	1240	2590	4"	4"	4"	4"	8"	8"
3212	200	224	327	650	373	187	502	3210	618	657	2800	565	873	100	883	1270	2800	5"	5"	5"	5"	8"	8"
3612	200	223	300	810	360	225	513	3130	727	855	2380	658	1135	100	958	1390	2380	5"	5"	5"	5"	10"	10"
4212	200	223	300	810	360	225	612	3130	808	954	2380	658	1216	100	958	1390	2380	5"	5"	5"	5"	10"	10"
4812	200	223	300	810	360	225	612	3130	808	954	2380	658	1216	100	958	1390	2380	5"	5"	5"	5"	10"	10"
5612	252	274	330	850	330	190	561	3430	809	976	2600	577	1224	50	1111	1430	2600	6"	6"	6"	6"	10"	10"
6412	252	274	330	850	330	190	561	3430	809	976	2600	577	1224	50	1111	1430	2600	6"	6"	6"	6"	10"	10"

33. HYDRAULIC CIRCUIT

The HWF chiller is equipped with the following, depending on the version:

system SIDE (EVAPORATOR):

- Differential pressure switch
- Shell and tube heat exchanger
- Water drain cock
- Inlet and outlet water temperature probes for the heat exchangers
- Victaulic connections with supplied welded joints

SOURCE SIDE (CONDENSERS):

- Shell and tube heat exchangers, for GEOTHERMAL APPLICATIONS:

33.1. EXTERNAL HYDRAULIC CIRCUIT RECOMMENDED

The choice and the installation of components external to the chiller is up to the installer, who must operate according to the rules of good technical design and in compliance with the regulations in force in the country of destination (Ministerial Decree 329/2004).

Before connecting the pipes make sure that they do not contain stones, sand, rust, sludge or foreign bodies that could damage the system. It is good practice to realise a unit by-pass to be able to wash the pipes without having to disconnect the appliance. The connection piping must be adequately supported so that its weight is not borne by the appliance, and we recommend insulating them with suitable material to avoid condensate forming and heat losses.

Ensure that the adjustment and cut-off parts project from the insulation.

It is recommended to install the following tools on the water circuit, whenever not envisioned in the version in your possession:

1. Two manometers with suitable scale (in inlet and outlet).
2. Anti-vibration joints (in inlet and outlet).
3. Cut-off valves (in normal input, in calibration valve output).
4. Thermometers (in inlet and outlet).
5. System Storage Tank
6. Loading unit
7. Provide a discharge valve in the lowest points to facilitate emptying operations.
8. Evaporator side and condensers flow meter (whenever not envisioned if water missing, the high pressure switch intervenes)
9. Expansion vessels
10. Pumps
11. Safety valve
12. Water filters

It is necessary that the water flow rate is in compliance with the values given in the performance tables.

The systems loaded with anti-freeze or particular legal dispositions, make the use of water disconnectors mandatory.

Supply/reintegration water details, must be conditioned with appropriate treatment systems.

33.2. LOADING THE SYSTEM

- Before beginning loading, place the switch at OFF
- Check that system drain cock is closed.
- Open all system vent valves and relative terminals.
- Open the system cut-off devices.
- Start filling by slowly opening the system water loading cock outside the appliance.
- When water starts to escape from the terminal vent valves, close them and continue loading until the value of 1.5 bar is read on the manometer.

The system must be loaded at a pressure between 1 and 2 bar.

It is recommended to repeat this operation after the appliance has functioned for a few hours and to periodically check the system pressure, reintegrating it if it drops below 1 bar.

Check the hydraulic sealing of the joints.

33.3. EMPTYING THE SYSTEM

- Before beginning emptying, place the master switch at "OFF"
- Check that loading/water system reintegration cock is closed
- Open the drain cock outside the appliance and all system vent valves and relative terminals.

If anti-freeze is used by the unit, it must not be dumped as it is harmful to the environment. It should be collected and if possible reused.

Supply/reintegration water details, must be conditioned with appropriate treatment systems.

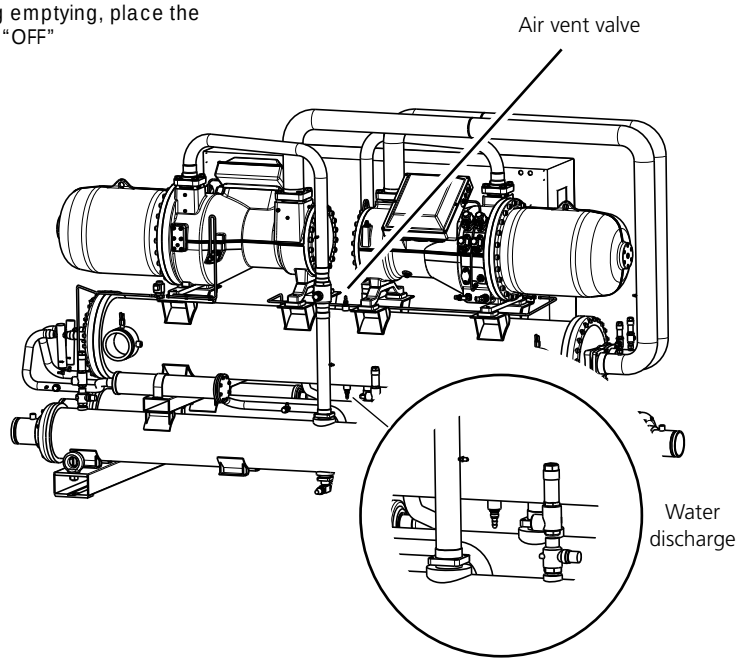
When to empty the system:

1. Whenever a prolonged winter standstill is envisioned in order to prevent water freezing **(operation not necessary if glycol is used)**
2. Whenever a fault occurs or operations must be performed in the system.

- Before beginning emptying, place the master switch at "OFF" and remove the voltage.
- Discharge the differential pressure switch
- Check that loading/water system reintegration cock is closed
- Open the drain cock outside the appliance and all system vent valves and relative terminals.
- Open the cock positioned under the shell and tube heat exchanger (see fig. 4)
- It is recommended to use compressed air to blow the heat exchanger in order to remove any water.

Note:

If anti-freeze is used by the unit, it must not be dumped as it is harmful to the environment. It should be collected and if possible reused.



33.3.1. 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

34. ELECTRIC CONNECTIONS

All the electrical operations must be carried out bySTAFF IN POSSESSION OF THE NECESSARY QUALIFICATIONS BY LAW, suitably trained and informed on the risks related to these operations.

The characteristics of the electrical lines and of the related components must be determined by STAFF QUALIFIED TO DESIGN ELECTRICAL SYSTEMS, in compliance with the international and national regulations of the place of installation of the unit and in compliance with the regulations in force at the moment of installation

For the installation requirements refer only to the electrical diagram supplied with the appliance. The electrical diagram along with the manuals must be kept in good condition and ALWAYS AVAILABLE FOR ANY FUTURE SERVICING ON THE UNIT.

IT ISmandatory to verify that the machine is watertight before making the electrical connections and it must only be powered up after the hydraulic and electrical works have been completed.

The HWF chillers are completely wired at the factory and only require connection to the electrical mains, downstream from a unit switch, according to that envisioned by the Standards in force on this subject in the country of installation.
It is also advised to check that:

- the electrical mains features are suitable for the absorption values indicated in the electrical data table, also taking into consideration any other machines operating at the same time.
- The unit is only powered when installation has been completed (hydraulic and electric).
- Respect the connection indications of the phase, and earth wires.
- The power supply line must have a relevant protection mounted upstream against short circuits and dispersions to earth, which isolates the system with respect to other utilities.
- The voltage must be within a tolerance of ±10% of the nominal power supply voltage of the machine (for unbalanced three-phase unit max 3% between the phases). Whenever these parameters are not respected, contact the electric energy public body. For electric connections, use the cables with double isolation according to the Standards in force on this subject in the different countries.
- The use of an omnipolar magnet circuit breaker switch is mandatory, in compliance with the IEC-EN Standards (contact opening at least 3 mm), with suitable cut-off power and differential protection on the basis of the electric data table shown below, installed as near as possible to the appliance.
- It is mandatory to make an effective earth connection. The manufacturer cannot be considered responsible for any damage caused by the lack of or ineffective appliance earth connection.
- For units with three-phase power supply, check the correct connection of the phases.

WARNING:
It is prohibited to use the water pipes to earth the appliance.

34.1. ELECTRIC DATA TABLE

The cable sections shown in the table are recommended for maximum lengths of 50m.
For longer lengths or different cable laying, it is up to the PLANNER to calculate the appropriate line switch, the power

WF	Tension				Recommended cables section			
		Compressors	TOT		SEZ A	SEZ B	HEART	IL
		N°	L.R.A. [A]	F.L.A. [A]	[mm²]	[mm²]	[mm²]	[A]
2512	400V-3	2	447	294	185 mm²	1,5 mm²	90 mm²	400A
2812	400V-3	2	528	336	240 mm²	1,5 mm²	120 mm²	400A
3212	400V-3	2	596	396	2x150 mm²	1,5 mm²	150 mm²	400A
3612	400V-3	2	659	446	2x185 mm²	1,5 mm²	185 mm²	630A
4212	400V-3	2	712	494	2x240 mm²	1,5 mm²	240 mm²	630A
4812	400V-3	2	872	572	3x185 mm²	1,5 mm²	2x150 mm²	800A
5612	400V-3	2	968	636	3x240 mm²	1,5 mm²	2x185 mm²	800A
6412	400V-3	2	1156	702	4x240 mm²	1,5 mm²	2x240 mm²	1000A

KEY

F.L.I.:	Maximum input power
F.L.A.:	Maximum input current
L.R.A.:	Peak current
Sec A:	Power supply
Sec B:	Controls and safety device connection
IL:	Main switch

supply line as well as the connection to the earth wire and connection cables depending on:

- the length
- the type of cable
- The absorption of the unit and the physical location, and the ambient temperature.

ATTENTION:
Check the tightening of all power wire clamps on commissioning and after 30 days from start-up. Subsequently, check the tightening of all the power clamps every six months.
Loose terminals can cause overheating of the cables and components.

34.2. ELECTRIC POWER CONNECTION TO THE ELECTRICAL MAINS

1. Before connecting the unit to the power supply mains , ensure that the isolating switch is open.
2. Open the front panel
3. Use the holes for the main electric power supply cable and for the cables of the other external connections under the responsibility of the installer.
4. It is forbidden to access positions not specifically envisioned in this manual with electric cables.
5. Avoid direct contact with non-insulated copper piping and with compressor.
6. Identify the clamps for the wiring diagram, always refer to the electric layout supplied with the unit.
7. For the functional connection of the unit, take the power supply cable to the electric control board inside the unit and connect to clamps L1-L2-L3 and PE respecting the polarities,
8. L1-L2-L3 as phases, and PE as earth see figure
9. Re-position the inspection panels
10. Ensure that all protections removed for the electric connection have been restored before electrically

powering the unit.
11. Position the system master switch (external to the appliance) at "ON".

35. CONTROL AND COMMISSIONING

35.1. PREPARATION FOR COMMISSIONING

Please note that, on request by the Aermec customer or the legitimate owner of the machine, the units in this series can be started up by the AERMEC After-Sales Service in your area (valid only on Italian territory). The start of operation must be scheduled in advance based on the timeframe for the completion of works for the system. Prior to the intervention, all other works (electrical and hydraulic hook-ups, priming and bleeding of air from the system) must have been completed.

35.2. AUXILIARY CONNECTIONS IF ENVISIONED, BY THE INSTALLER

All clamps to which referece is made in the following explanations are part of the terminal board and the regulation situated inside the electric control board.

35.2.1. Remote switch-on/off

To have a remote switch-on/off device , a switch is necessary at clamps 1 and 2 of the terminal board J5.ID1.

35.2.2. Season changeover

- For every season change, check that the functioning limits lie within the limits.
- Connect a switch to clamp 4 and 3 of the J5.ID2 terminal board

35.2.3. Season change from (REMOTE ACCESSORY PANEL)

- Refer to the user manual.

35.2.4. Evaporator pump circuit breaker protection (TMP EV)

Clamp 9 and 10 of the J5.ID6 terminal board

35.2.5. Condenser 1 pump circuit breaker protection (TMP C1)

Clamp 98 and 99 of the J7.ID11 terminal board

35.2.6. Condenser 2 pump circuit breaker protection (TMP C2)

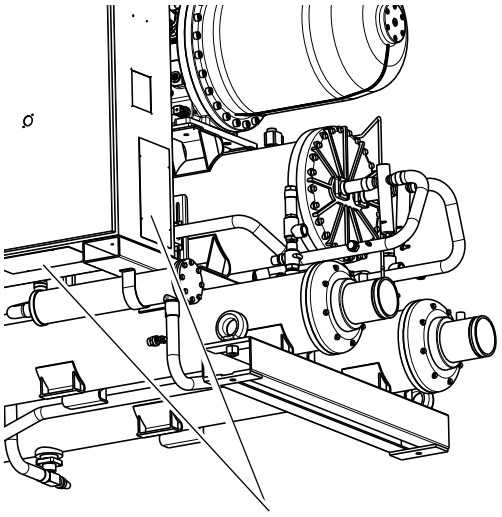
Clamp 100 and 101 of the 2 J7.ID11 terminal board

35.2.7. Compressor 1 exclusion (ECP1) - compressor 2 (ECP2)

Whenever it is necessary to exclude the compressor, connect a switch to clamp 92 and 93 of the J8.ID14 terminal board for compressor 1 (ECP1) - clamps 94 and 95 of the 2 J8.ID14 terminal board for compressor

For the electric connections use double isolated cables in compliance with the Standards in force on this subject in the countries where the unit will be installed.
ALWAYS REFER TO THE WIRING DIAGRAM SUPPLIED WITH THE MACHINE.

Commissioning must be performed with standard settings. Only when the inspection has been completed can the functioning Set Point values by changed.
Before start-up, power the unit for at least 12-24 hours positioning the protection magnet circuit breaker switch and the door lock isolating switch at ON
Make sure that the control panel is off in order to allow the compressor sump oil to heat.



Holes for electrical cables

2 (ECP2).

35.2.8. Condensers flow meter connection (FLC1-FLC2)

Remove the jumpers at clamps 108 and 109 of the J19 terminal board. ID15 for condenser 1 flow meter (FLC1) and the jumper on clamps 110 and 111 of the 2 J19 terminal board. ID15 for condenser 2 flow meter (FCL2).

35.2.9. To control the evaporting (MPOE) and condensing (MPOC1/2) pump

Connect to the clamps:
- 42 and 43 of the J12.N01 terminal board for (MPOE)
- 102 and 103 of the J18.N013 terminal board for (MPOC1)
- 104 and 105 of the 2J18.N013 terminal board for (MPOC2)

35.2.10. Multifunction input (MULTI IN)

A multifunction input is available where it is possible to select 4 different functions, but only 1 can be set:
- 0-10V variable set-point
- Max. power requested (0-10V) power from 0 to 100%
- Min. power limit. (0-10V) power from 0 to 100%
- Compensation set-point

To enable the MULTIFUNCTION input, close the contact between clamps 96 and 97 of the J20.ID18 terminal board. It will then be necessary to control the desired function, enable the panel parameters. To do this, refer to the user manual.

35.3. START -UP

35.3.1. Preliminary operations to be performed with no voltage present

Control:
1. All safety conditions have been respected
2. The unit is correctly fixed to the support surface
3. The minimum technical spaces have been respected;
4. That the main power supply cables have appropriate section, which can support the total absorption of the unit. (see electric data sections) and that the unit has been duly connected to the ground.
5. That all the electrical connections have been made correctly and all the terminals adequately tightened.

WARNING: Before carrying out the controls indicated below, make sure that the unit is disconnected from the power mains. Make sure that the master switch is locked in the OFF position and an appropriate sign is affixed. Before starting the operations, check that there is no voltage present using a voltmeter or a phase indicator.

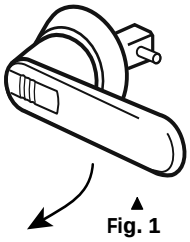


Fig. 1

35.3.2. The following operations are to be carried out when the unit is live.

1. Supply power to the unit by turning the master switch to the ON position, see **(fig1.)** The display will come on a few seconds after voltage has been supplied; check that the operating status is on OFF.(OFF BY KEY B on lower side of the display).
2. Use a tester to check that the value of the power supply voltage to the RST phases is equal to 400V ±10%; also verify that the unbalance between phases is no greater than 3%.
3. Check that the connections made by the installer are in compliance with the documentation.
4. Verify that the resistor of the compressor sump is working by measuring the increase in temperature of the oil pan. The resistance/s must function for at least 12 hours before start-up of the compressor and in all cases the temperature of the oil pan must be 10 -15°C higher than the room temperature.

HYDRAULIC CIRCUIT

1. Check that all hydraulic connections are made correctly, that the plate indications are complied with and that a mechanical filter has been installed at the evaporator inlet. (Mandatory component for warranty to be valid).
2. Check that the hydraulic system is filled and under pressure and also make sure that no air is present; if so, bleed it.
3. Verify that any on-off valves present in the system are correctly opened.
4. Make sure that the circulation pump/s is operating and that the flow rate of the water is sufficient to close the contact of the flow/pressure switch.
5. Check lthe water flow rate, measuring the pressure difference between input and output of the evaporator and calculate the flow rate using the evaporator pressure drop diagram present in this documentation.
6. Check the correct functioning of the flow meters if installed. Closing the cut-off valve at the output of the heat exchanger; the unit control panel must show the block. Finally re-open the valve and rearm the block.

35.4. MACHINE COMMISSIONING

controls stated above, it is possible to start the unit by pressing the ON key. The display shows the temperature of the water and machine functioning mode. Check the operating parameters (set-point) and reset any alarms present. After a few minutes, the unit will begin operating.

35.4.1. With machine on, check

COOLING CIRCUIT

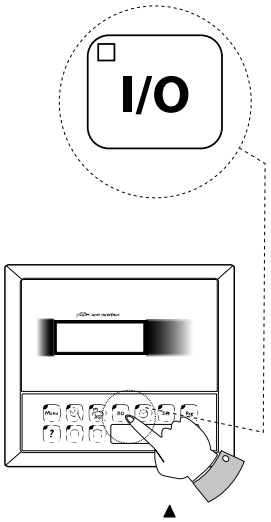
CHECK:
- **That the compressor input current** is lower than the maximum indicated in the technical data table.
- **That in models with three-phase power**

supply, the compressor noise level is not abnormal. If this is the case, invert a phase.
- **That the voltage value lies within the pre-fixed limits** and that unbalance between the three phases (three-phase power supply) is not above 3%.
- **The presence of any refrigerant GAS leaks** particularly with reference to pressure plugs, pressure transducers and pressure switches. (VIBRATIONS DURING TRANSPORTATION MAY LOOSEN CONNECTIONS).
- **After a brief functioning period, the oil level in the compressor** and that there are no air pockets in the liquid indicator glass. The continuous passage of steam pockets can mean that the load of refrigerant is insufficient or that the thermostatic valve is incorrectly adjusted. The brief presence of vapour is however possible.
- **Overheating**
  Comparing the temperature read using a contact thermostat positioned on the compressor intake with the temperature shown on the low pressure manometer (saturation temperature corresponding to the evaporation pressure). The difference between these two temperatures gives the overheating value. Optimal values are between 4 and 8°C
- **Subcooling**
  Comparing the temperature measured with a contact thermostat situated on the pipe at the outlet of the condenser with the temperature shown on the high pressure manometer (saturation temperature corresponding to the condensation pressure). The difference between these two temperatures gives the subcooling value. Optimal values are between 4 and 5°C
- **The Pressing line temperature**
  If the subcooling and overheating values are regular the temperature measured in the pressing line pipe at the outlet of the compressor must be 30/40°C above the condensation temperature.

CONTROL AND SAFETY DEVICES

CHECK:
- **The Double High pressure switch (manual + tool)**
  That stops the compressor, generating the respective alarm, when the delivery pressure exceeds the setpoint value. The control of its correct functioning can be performed by closing the air intake to the exchanger (in cooling mode) and keeping the high pressure manometer under control, check the intervention in correspondence of the calibration value. Caution: In the event of failure to intervene at the calibration value, stop the compressor immediately and check the cause. The reset is manual and can only be performed when the pressure falls below the differential value. (For the set and differential values, consult the technical manual).
- **The Low pressure switch (if envisioned)**
  That stops the compressor, generating the respective alarm, when the intake pressure drops below the set-point value. The control of its correct functioning can only be performed after about 5 minutes of functioning. Closing the cock slowly on the liquid piping and keeping the low pressure manometer under control, check the intervention in correspondence of the value calibrated. Caution: In the event of failure to intervene at the calibration value, stop the compressor immediately and check the cause. The reset is manual and can only be carried out when the pressure falls below the differential value. (For the set and differential values, consult the technical manual).

- **The anti-freeze control**
  The anti-freeze control managed by the electronic regulation and by the temperature probe located at the outlet of the evaporator is to prevent the formation of ice when the water flow rate is too low. Correct operation can be checked by progressively increasingly the anti-freeze set-point until it passes the outlet water temperature and keeping the water temperature controlled with a high precision thermometer, verify that the unit is off and generates the respective alarm. After this operation, take the anti-freeze set-point back to its original value.



▲ **Fig. 2**

All the units undergo rigorous tests in the factory, before delivery.
In all cases it is good practice to check all control and safety devices. All control operations must be performed by qualified staff, the incorrect settings of the above-mentioned devices cn cause serious damage to the unit.

36. FUNCTIONING FEATURES

36.1. SET POINT IN COOLING MODE

(Factory set) = 7°C, Δt = 5°C.

36.2. SET POINT IN HEATING MODE

(Factory set) = 45°C, Δt = 5°C.
If the unit power supply is restored after a temporary interruption, the set mode will be kept in the memory.

36.3. COMPRESSOR START-UP DELAY

Two functions have been prepared to prevent compressor start-ups that are too close.
- Minimum time from last switch-off 60 seconds in cooling mode.
- Minimum time from last switch-on 300 seconds in heating mode.

36.4. CIRCULTION PUMPS (NOT SUPPLIED)

The circuit board envisions an output for the management of the circulation pumps.
The pump side utilities start immediately after the first 30 seconds of functioning. When the water flow rate has gone into normal working conditions, the flow meter control functions are activated (if envisioned).
Below find the compressor start-up procedure, by switching the source side pump on with flow meter check if enabled after 20 seconds.
Whenever alarms do not occur, the compressor starts.

36.5. ANTI-FREEZE ALARM

The anti-freeze alarm is active if the machine is off or in stand-by mode. In order to prevent the heat exchanger from breaking due to the water it contains freezing, envision compressor block (if the machine is on below 3.5 °C) and ignition of the resistance (if standby below 5 °C). If the temperature detected by the probe positioned in outlet of the heat exchanger and in inlet to the chiller is less than +3.8°C.

WARNING
THIS ANTI-FREEZE SET TEMPERATURE CAN ONLY BE VARIED BY AN AUTHORISED AFTER-SALES CENTRE AND ONLY AFTER HAVING CHECKED THAT THERE IS ANTI-FREEZE SOLUTION IN THE WATER SYSTEM.
The intervention of this alarm determines compressor block and not pump block, which remains active along with the switch-on of the resistance if installed.
To restore normal functions the temperature of the outlet water must rise above +4°C.
Rearm is manual.

ATTENTION:
WHENEVER THIS ALARM INTERVENES, WE ADVISE YOU CALL THE NEAREST AFTER-SALES SERVICE IMMEDIATELY.

36.6. WATER FLOW RATE ALARM

The unit manages a water flow rate alarm controlled by the differential pressure switch installed in series on the machine. This type of safety device intervenes after the first 30 seconds of pump functioning, if the water flow rate is not sufficient.
The intervention of this alarm determines compressor and pump block.

37. ROUTINE MAINTENANCE

WARNING
Inspection, maintenance and eventual repair work must be carried out only by a legally qualified technician.

Lack of control/maintenance can cause damage to persons or objects.

For appliances installed near to the sea, the maintenance intervals must be halved.

All cleaning is prohibited until the unit has been disconnected from the electric power supply mains.
Make sure there is no voltage present before operating.
Periodic maintenance is fundamental to keep the unit perfectly efficient under a functional and energetic point of view.
It is therefore essential to carry out periodic yearly controls for the:

37.6.1. Hydraulic circuit

CHECK:
- Refilling of water circuit
- Cleaning the water filter
- Control of flow switch
- No air in the circuit (bleed)
- that the water flow rate to the evaporator is constant
- The thermal insulation state of the hydraulic piping
- The percentage of glycol where necessary

37.6.2. Electrical circuit

CHECK:
- Safety efficiency
- Electric supply pressure
- Electrical Input
- Connection tightness
- Functioning of the compressor guard resistance

37.6.3. Cooling circuit

CHECK:
- State of compressor
- Efficiency of the plate heat exchanger resistance
- Work pressure
- Leak test for watertightness control of the cooling circuit
- Functioning of high and low pressure pressure switches
- Carry out the appropriate checks on the filter dryer to check efficiency

37.6.4. Mechanical checks

CHECK:
- Tightening of the screws the compressors and the electrical box, as well as the exterior panelling of the unit. Insufficient fastening can lead to undesired noise and vibrations.
- The condition of the structure. If there are any oxidised parts, treat with paint suitable to eliminate or reduce oxidation.

38. EXTRAORDINARY MAINTENANCE

The HWF chillers are filled with R134a gas and are inspected at the factory. Under normal conditions they do not require Technical Assistance related to control of refrigerant gas. Through time gas leakage may be generated from the joints, causing refrigerant to escape and discharge the circuit, causing appliance malfunctioning.

In these cases the leakage points are to be discovered, repaired and the cooling circuit is to be replenished, respecting the December 28 1993 n°549 law.

38.6.1. Load procedure

The load procedure is the following:
- Empty and dry the entire cooling circuit using a vacuum pump connected to the low and high pressure socket until 10 Pa is read on the vacuum meter. Wait a few minutes and check that this value does not rise above 50 Pa.
- Connect the refrigerant gas cylinder or a load cylinder to the socket on the low pressure line.
- Load the amount of refrigerant gas indicated on the appliance features plate.
- After a few hours of functioning, check that the liquid indicator indicates the dry circuit (dry-green).

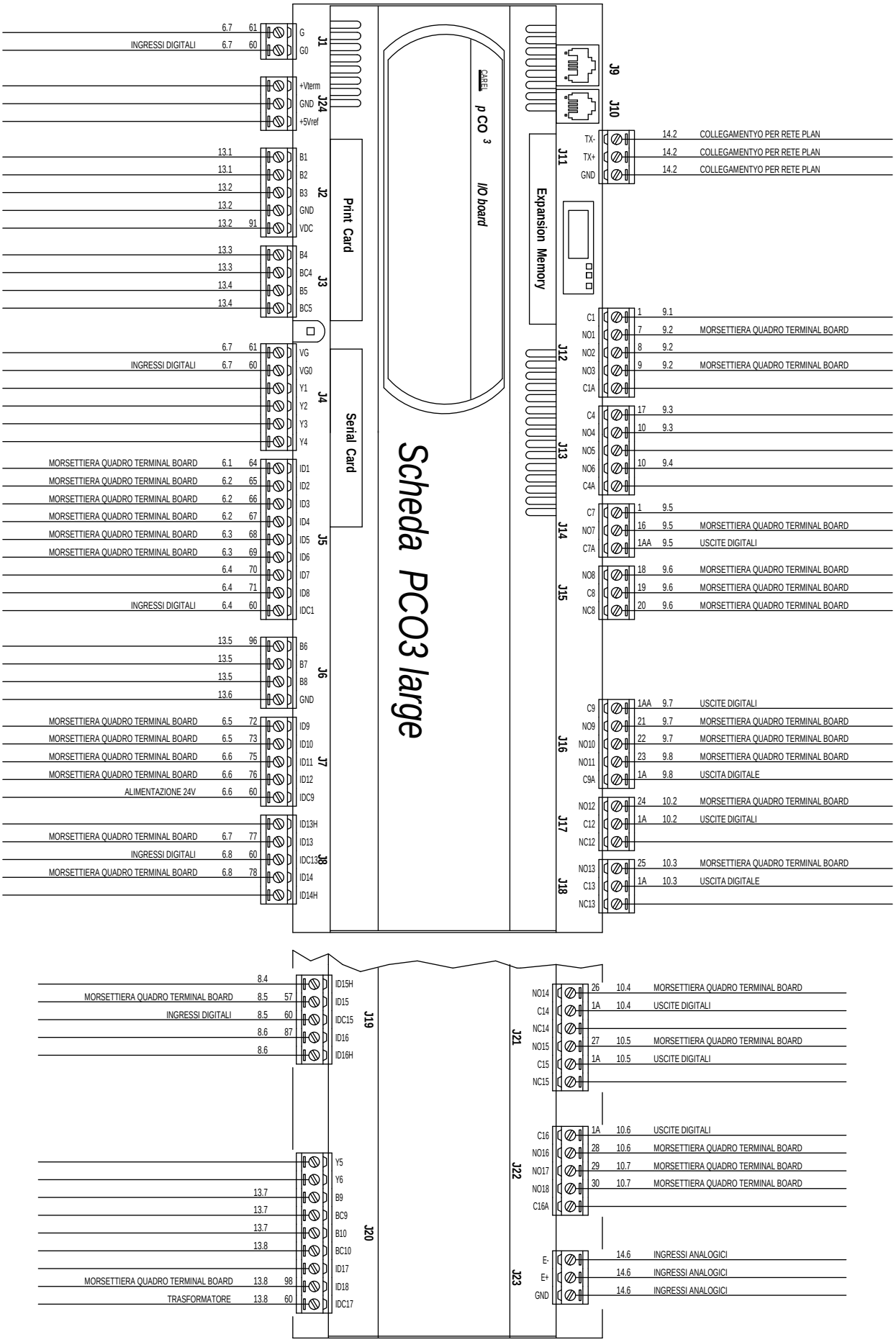
In the case of partial loss, the circuit must be emptied completely before being re-loaded.
- The R134A refrigerant must only be loaded in the liquid state.
- Functioning conditions that are different to the nominal conditions can give rise to values that are greatly different.
- The sealing test or the search for leaks must only be performed using R134a refrigerant gas, checking using a suitable leak detector.
- In the cooling circuit it is prohibited to use oxygen or acetylene or other inflammable or poisonous gases because they are a cause of explosions or intoxication.

We recommend to envision a machine book (not supplied, but the user's responsibility), which allows to keep track of the interventions performed on the unit. In this way it will be easy to suitably organise the interventions making research and the prevention of any machine breakdowns easier. Use the date to record date, type of intervention made (routine maintenance, inspection or repairs), description of the intervention, measures actuate...

IT IS forbidden to RELOAD the circuit with a refrigerant gas different to the one indicated. Using a different refrigerant gas can cause serious damage to the compressor.

DISPOSAL
Envisions that disposal of the unit is carried out in conformity with the Standards in force in the different countries.

ANOMALY	CAUSE	REMEDY
The unit does not start	• No electric voltage	• Check the presence of voltage • Check the safety systems upstream from the appliance
	• Master switch at OFF • Remote switch at OFF (if present) • Control panel at OFF • Main switch at OFF • Compressor magnet circuit breaker at OFF	• Position at ON
	• Power supply voltage too low	• Check power supply line
	• Remote control switch coil broken • Circuit board broken • Peak condenser broken • Compressor broken	• Replace the component
Insufficient yield	• No refrigerant • Appliance dimensioning • Functioning outside of operational limits	• Check
Noisy compressor	• Liquid return to the compressor • Inadequate fixing	• Check
	• Invertedphase	• Invert a phase
Noise and vibrations	• Contacts between metal bodies	• Check
	• Weak rest	• Restore
	• Loose screws	• Tighten the screws
The compressor stops due to intervention of the protections	• Excessive flow pressure • Low intake pressure • Power supply voltage low • Electric connections fastened badly • Functioning outside of operational limits	• Check
	• Pressure functions badly	• Replace the component
	• Circuit breaker protection intervention	• Check power supply voltage • Check electric isolation of the windings
High discharge pressure	• High water input temperature • Highutilities water inlet temperature	• Check
	• Geothermic side exchanger water flow rate insufficient (functioning in cooling mode) • Utilities side exchanger water flow rate insufficient (functioning in heating mode)	• Check pump functioning
	• Air in the hydraulic system	• Bleed
	• Excessive refrigerant gas load	• Check
Low discharge pressure	• External water temperature low or excessive watwer flow rate • Low utilities water input temperature	• Check
	• Humidity in the cooling circuit	• Empty and restore the gas load
	• Air in the hydraulic system	• Bleed
	• Insufficient gas load	• Check
High intake pressure	• High water input temperature • Low utilities water input temperature • Thermostatic expansion valve too open or damaged	• Check
Low intake pressure	• Low utilities water input temperature • Low external water input temperature • Thermostatic expansion valve damaged or blocked	• Check
	• Insufficient water flow	• Check pump functioning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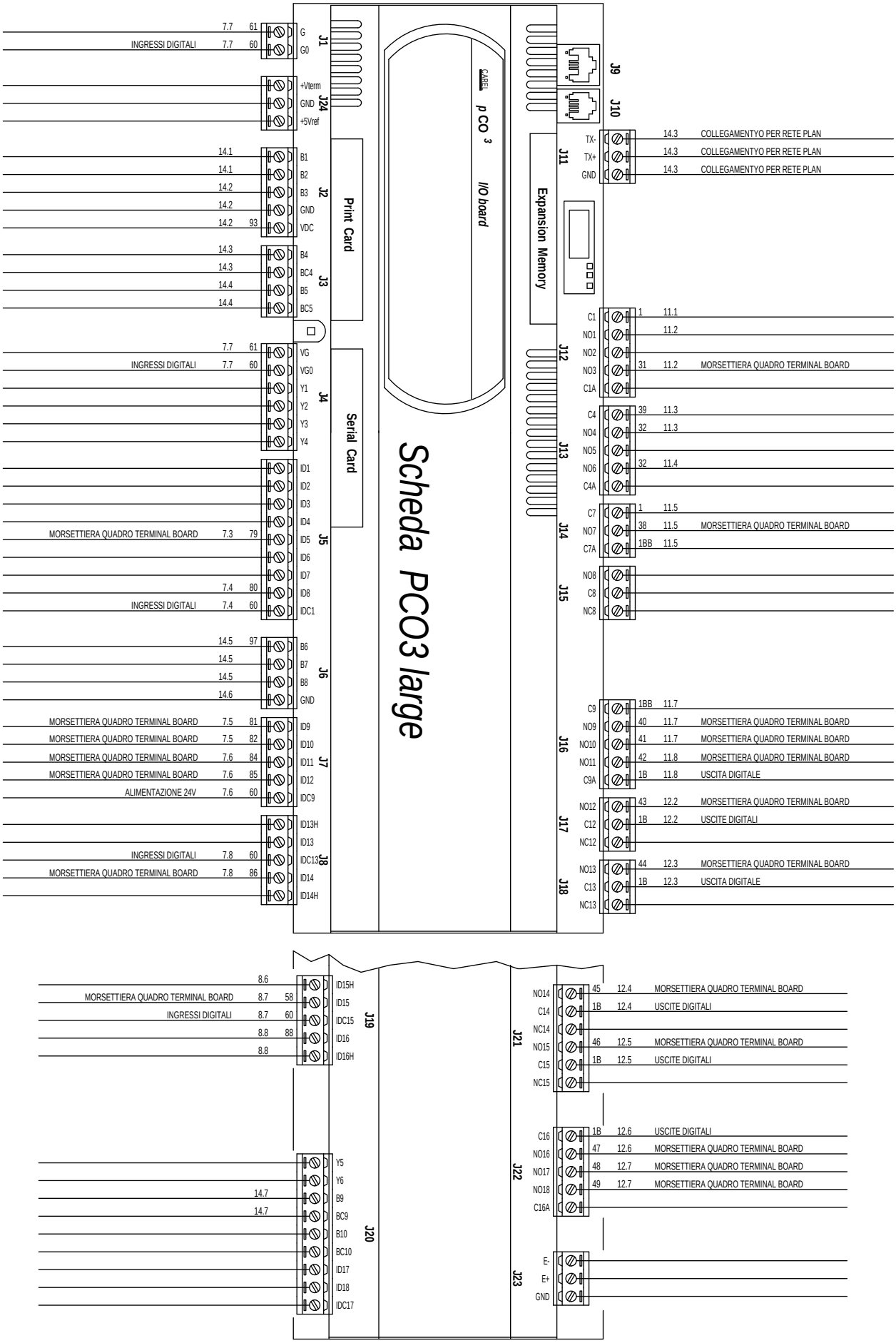
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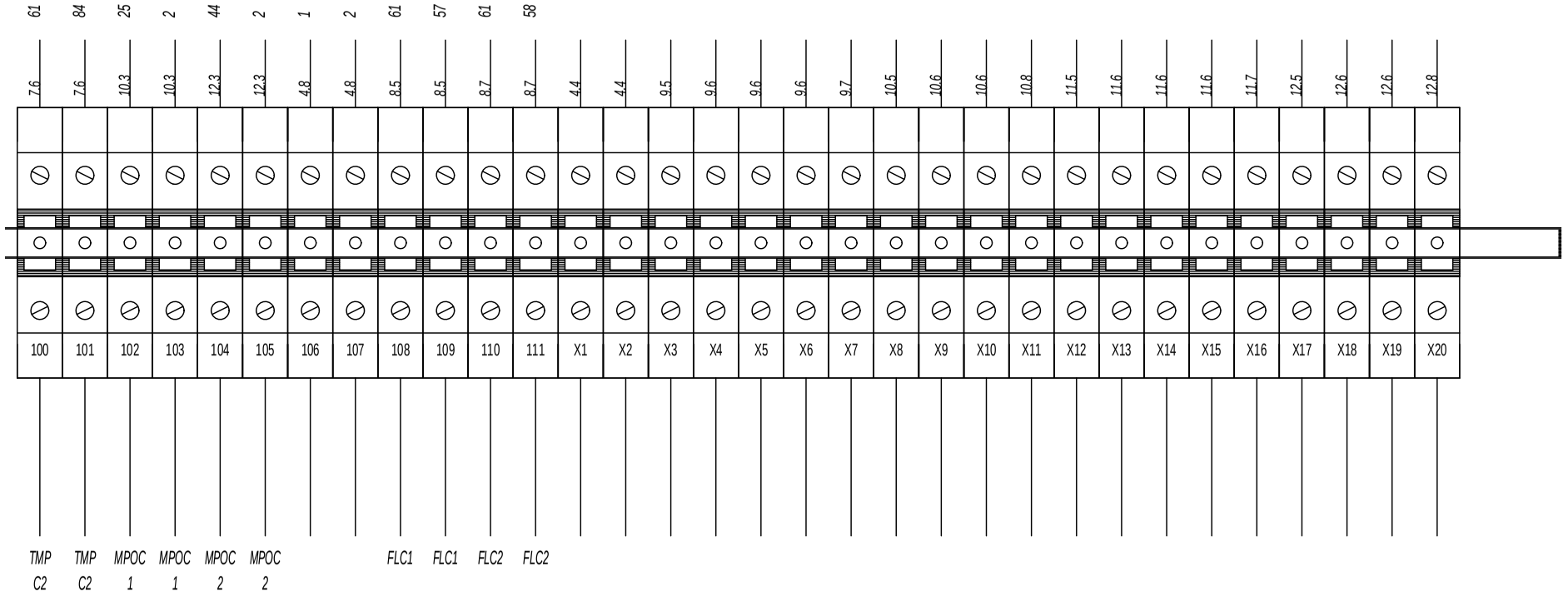

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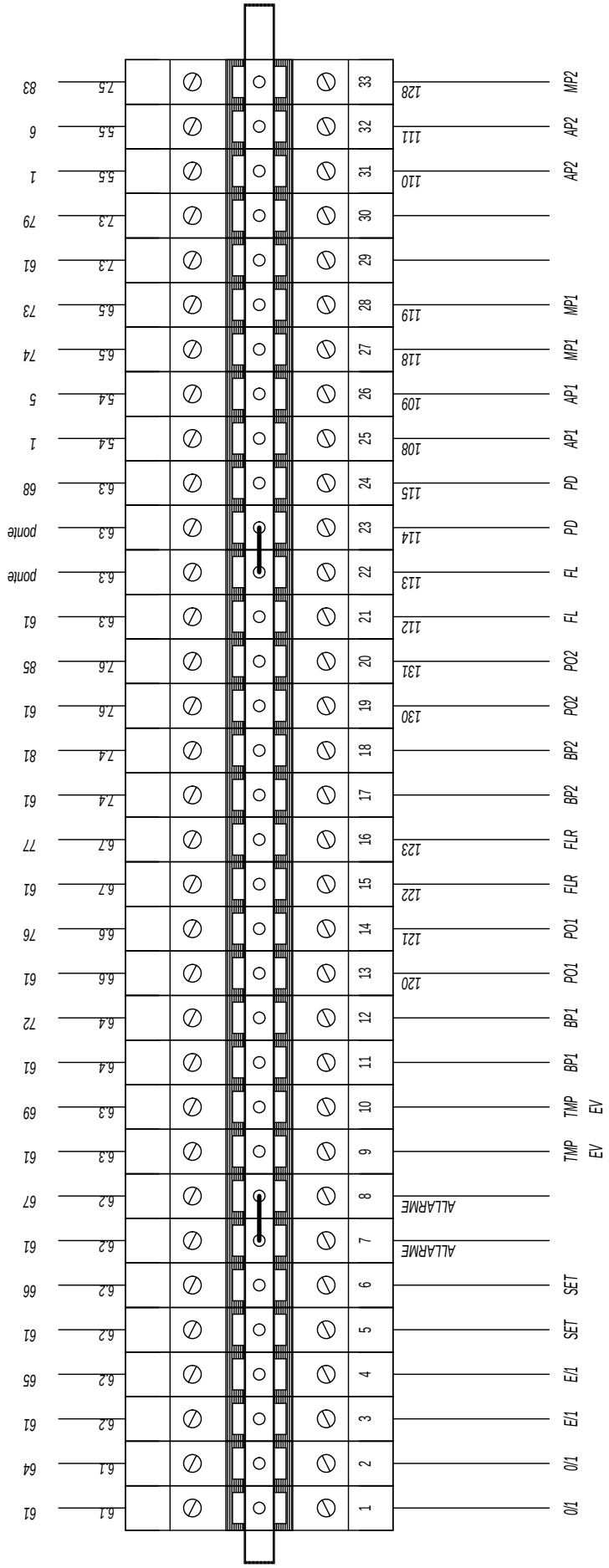

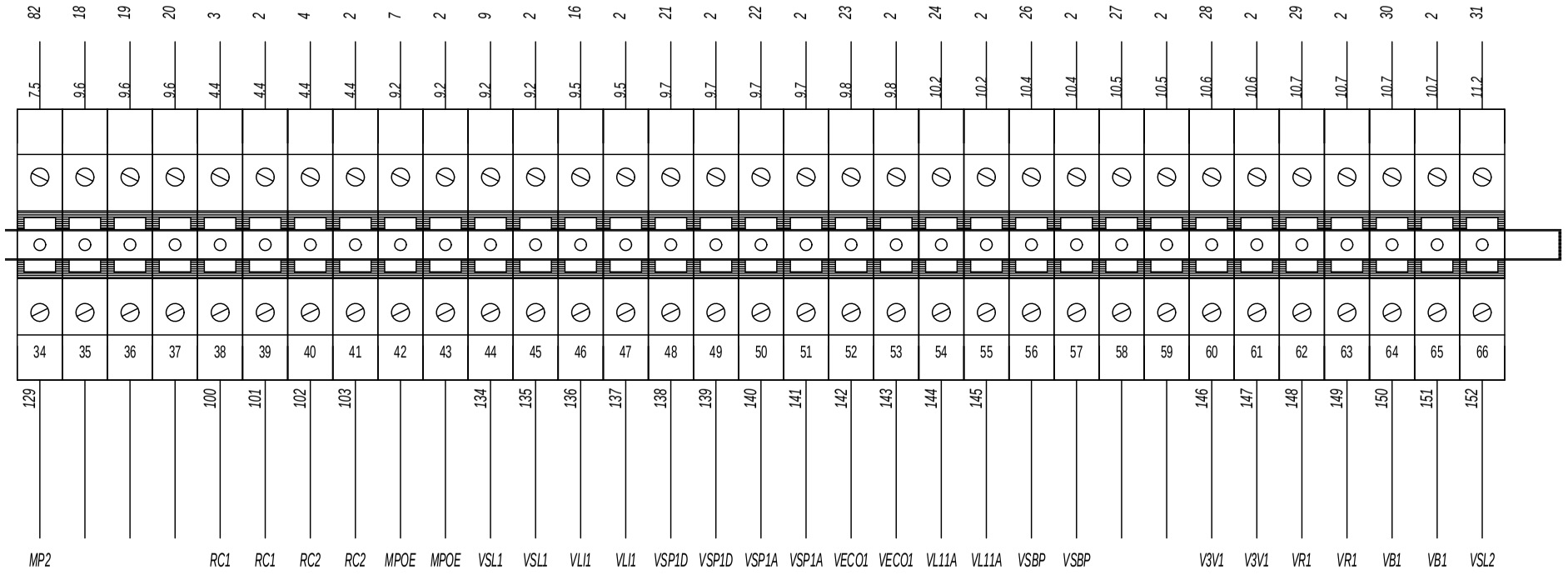

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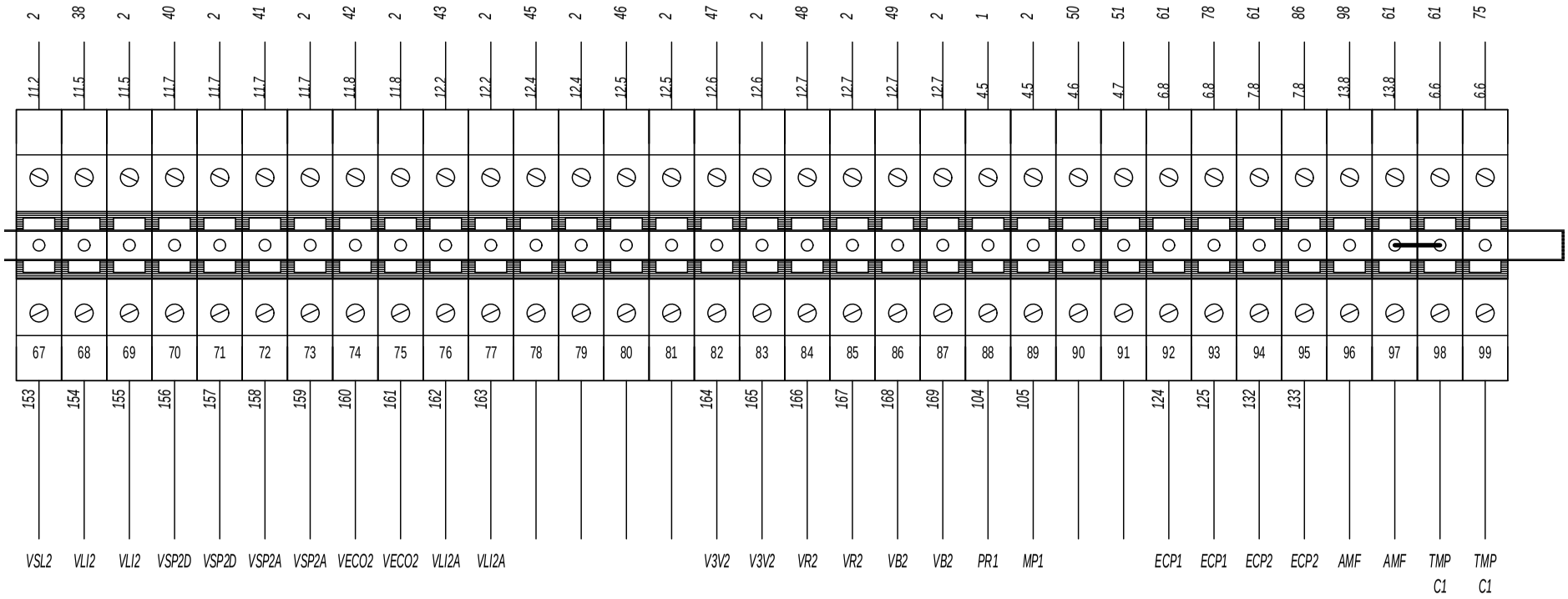

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