EN

5806716_06 – 23.10
Translation of Original instructions

NRP 0280 - 0750

Technical manual

60 Hz | GAS R410a | inverter | 2 | 4

AIR-WATER MULTIPURPOSE

Cooling capacity 12.3 ÷ 44.9 ton

Heating capacity 183,914 ÷ 660,249 BTU/h

AERMEC

www.aermec.com

Dear Customer,

Thank you for wanting to learn about a product Aermec. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.

The manual you are about to read is meant to present the product and help you select the unit that best meets the needs of your system.

WARNING: personnel who possess the necessary skills according to state, national and local regulations in force must choose and size the machine

Aermec, always attentive to the continuous changes in the market and its regulations, reserves the right to make all the changes deemed necessary for improving the product, including technical data.

Thank you again.

Aermec S.p.A.

COMPANY CERTIFICATIONS

SAFETY CERTIFICATIONS

This mark indicates that the disposal of this product must strictly follow the national and local laws in force.

TABLE OF CONTENTS

1 PRODUCT DESCRIPTION

The Selection and the sizing of the unit for each application must be approved by a person skilled in the field of the existing legislation

Multipurpose external units designed for 2 or 4-pipe systems. With just one unit simultaneous and independent requests for hot and chilled water can be accommodated all year round.

SYSTEM TYPES

2-pipe system

The multipurpose 2-pipe units have been made to respond to the demands of hotels, where there is a high cold/hot water and DHW demand throughout the year.

The operating modes are:
1. SUMMER OPERATION
Cold water production at system.
Production of DHW with use of total recovery device.

NO ANTI-LEGIONELLA CYCLE

2. WINTER OPERATION
Heat pump supplying the system.
Heat pump for DHW.

4-pipe system

The multipurpose 4-pipe units have been made to respond to the demands of shopping centres, offices or facilities with large windows, where there can be the simultaneous demand for hot and cold water with a system which does not require season changeover and therefore is a valid alternative to traditional systems based on the chiller-boiler combination.
The microprocessor control logic mounted ensures perfect satisfaction of heating and cooling loads.

The operating modes are:
1. PRODUCTION OF COOLED WATER ONLY
The multipurpose unit acts as a classical chiller: cool water to the system and condensation heat disposal outside through finned coils.
2. PRODUCTION OF HOT WATER ONLY
The multipurpose unit acts as a heat pump, exploiting the heat of the outside air it makes use of the finned coil (evaporator) to raise the temperature of the water to be sent to the system through a plate heat exchanger (condenser).
The main difference with respect to traditional heat pumps with cycle inversion is that the heated water is produced in an exchanger different to that used for the production of cold water.
This is to keep the heating and cooling sections necessary for 4-pipe systems well distinguished.
3. COMBINED PRODUCTION
If the utility requires simultaneous hot and cold water, the unit acts as a water/water heat pump, controlling condensation and evaporation on two distinct plate heat exchangers associated to the circulation of cold and hot water in the system.
It automatically changes from one configuration to the other (managed by onboard microprocessor) to optimise the energy spent depending on the demand by the utility.

2 CONFIGURATOR

Field		Description
1,2,3		**NRP**
4,5,6,7		**Size** 0280, 0300, 0330, 0350, 0500, 0550, 0600, 0650, 0700, 0750
8		**Version**
	A	High efficiency
	E	Silenced high efficiency (1)
9		**System type**
	2	2-pipe system
	4	4-pipe system
10		**Coils**
	°	Copper-aluminium
	R	Copper pipes-copper fins
	S	Copper pipes-Tinned copper fins
	V	Copper pieps-Coated aluminium fins
11		**Fans**
	J	Inverter
12		**Power supply**
	6	230V 3 ~ 60Hz with magnet circuit breakers
	7	460V 3 ~ 60Hz with magnet circuit breakers
	8	575V 3 ~ 60Hz with magnet circuit breakers
	9	208V 3 ~ 60Hz with magnet circuit breakers
13,14		**System side - pumps**
	00	Without hydronic kit
	01	Storage tank with low head pump
	02	Storage tank with low head pump + stand-by pump
	03	Storage tank with high head pump
	04	Storage tank with high head pump + stand-by pump
	P1	Single pump low head
	P2	Pump low head + stand-by pump
	P3	Single pump high head
	P4	Pump high head + stand-by pump
15,16		**Recovery side - pumps**
	00	Without hydronic kit
	R1	Single pump low head
	R2	Pump low head + stand-by pump
	R3	Single pump high head
	R4	Pump high head + stand-by pump

(4) The size up 0280 to 0350 are only available in the silenced versions (E)

3 UNIT COMPONENTS DESCRIPTION

REFRIGERANT CIRCUIT

Compressors

Crankcase heaters as standard, automatically activated when the unit stops, as long as power is maintained to the unit.

System side cooling/heating exchanger

Brazed plate heat exchanger in stainless steel. It is externally insulated with closed cell neoprene anti-condensation material.
When the unit is not functioning, it's protected against the formation of ice by an electric heater.

Dhw side exchanger (2 pipes) - System heating side (4 pipes)

Brazed plate heat exchanger in stainless steel. It is externally insulated with closed cell neoprene anti-condensation material.
When the unit is not functioning, it's protected against the formation of ice by an electric heater.

Source side heat exchanger

Finned coil heat exchanger with copper tubes and aluminium louvers adequately spaced to ensure high efficiencies.

Reversing valve

4-way cycle inversion valve. Reverses the refrigerant fluid flow.

Liquid accumulator

Compensates for the difference in volume between the finned coil and the plate heat exchanger, retaining the excessive liquid.

■ *Always passed through.*

One-way valve

Allows one-way flow of the refrigerant. Positioned on the compressor flow, it prevents inverse rotation of the rotors after stopping.

Filter drier

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

Mechanic thermostatic valve

The mechanical type valve, with external equaliser located at the evaporator outlet, modulates the flow of refrigerant into the evaporator based on the load and ensures the correct superheat of the suction gas.

■ *The units from size 1604 to 3606 have an electronic expansion valve as standard.*

Solenoid valves

The valves close when the compressor switches off, blocking the flow of refrigerant gas to the evaporator, recovery and the coil.

■ *Only with the mechanical thermostatic valve*

Liquid separator

Located in the intake line, it protects the compressor from any liquid returns.

Sight glass

It is used to verify that the expansion system is powered correctly and the presence of humidity in the cooling circuit.

HYDRAULIC CIRCUIT

Water filter

Fitted with steel filtering mesh to prevent the heat exchangers (both system side and DHW/heating system side) from getting clogged up by impurities in the circuit.

■ *Installed in versions with the hydronic kit, it is supplied for version 00.*

Flow switch

Checks that water is circulating in the heat exchanger, and stops the unit if this is not the case.

■ *The flow switch is available as an accessory for both the system side and the recovery side, and is compulsory; if it is not installed, the warranty will be considered invalid.*

HYDRAULIC CIRCUIT (VERSIONS WITH HYDRONIC KIT)

Pump

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

Air drain valve

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

Expansion vessel

Membrane type precharged with nitrogen.

STRUCTURE AND FANS

Structure

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

Standard fan unit

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

Inverter fans

Continuous modulation of revolution speed according to the condensation pressure, highly efficient motor for low energy consumption.

CONTROL AND SAFETY COMPONENTS

High pressure switch

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

■ *Manual reset*

Low pressure transducer

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

High pressure transducer

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

Safety valvs for cooling circuit

Activates by discharging overpressure if abnormal pressure occurs.
— On the low pressure branch, the pressure relief valves are calibrated at 30 bar.
— On the high pressure branch, the pressure relief valves are calibrated at 45 bar.

Condensation control temperature

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

ELECTRICAL CONTROL AND POWER PANEL

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

Door interlocked isolator

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

Controller keypad

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

4 MAIN HYDRAULIC CIRCUITS

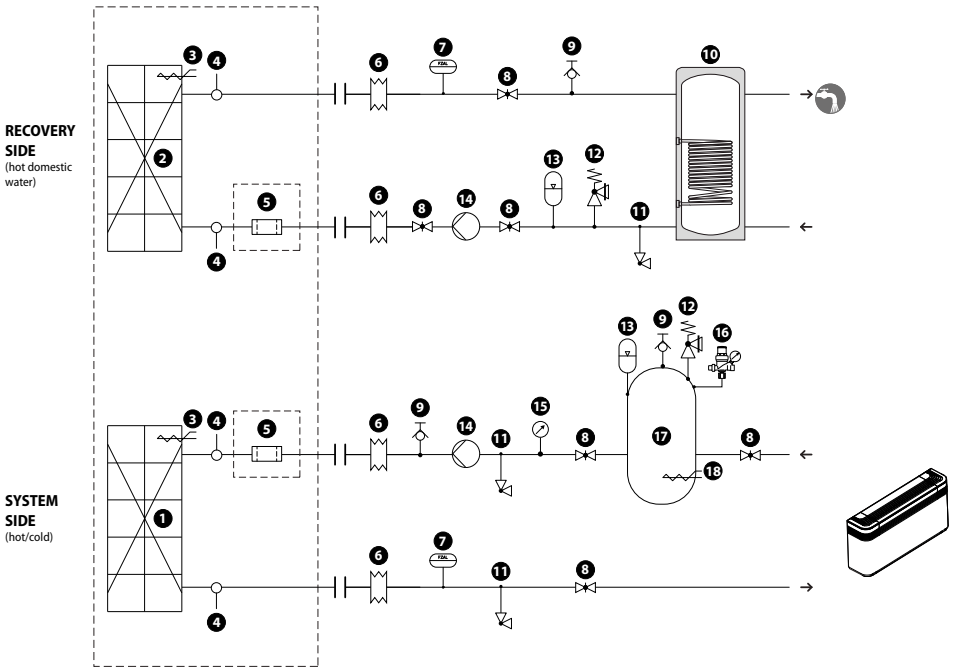
2-PIPE SYSTEM

Without hydronic kit

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

In the absence of glycol, the machine needs to be powered to ensure the heaters (if present) and the pumps (if present) are operating to avoid glazing and, therefore, damaging the components in the hydraulic circuit.

Flushing the plant's hydraulic circuit (cleaning the hydraulic circuit) needs to be done by excluding the chiller's hydraulic circuit. Make sure, in any case, that the water has not entered the chiller by ensuring you open the chiller's hydraulic circuit drains. Any water accumulated in the chiller's hydraulic circuit can cause icing/damage to the components.



Components as standard

1 Plate heat exchanger (SYSTEM SIDE)
2 Plate heat exchanger (RECOVERY SIDE - DOMESTIC HOT WATER)
3 Antifreeze electric heater
4 Water temperature sensors (IN/OUT)
5 Water filter (as standard)

Components not provided and responsibility of the installer

6 Anti-vibration joints
7 Flow switch (MANDATORY)
8 Flow shut-off valves
9 Drain valve
10 Domestic hot water storage tank
11 Drain valve
12 Pressure relief valve
13 Expansion vessel
14 Pump
15 Pressure gauge
16 Loading unit
17 Storage tank
18 Antifreeze electric heater

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). This phenomenon can trigger corrosion processes and subsequent drilling of the heat exchanger and pipes.

WARNING under no circumstances does the unit have to be operated with water circulating on the heat exchanger whose characteristics are different from those indicated in the table WATER CHARACTERISTICS, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction of the units which are operated with water whose characteristics are outside the limits in the table WATER CHARACTERISTICS and for their consequences.

With storage tank (01÷04 / 00)

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

In the absence of glycol, the machine needs to be powered to ensure the heaters (if present) and the pumps (if present) are operating to avoid glazing and, therefore, damaging the components in the hydraulic circuit.

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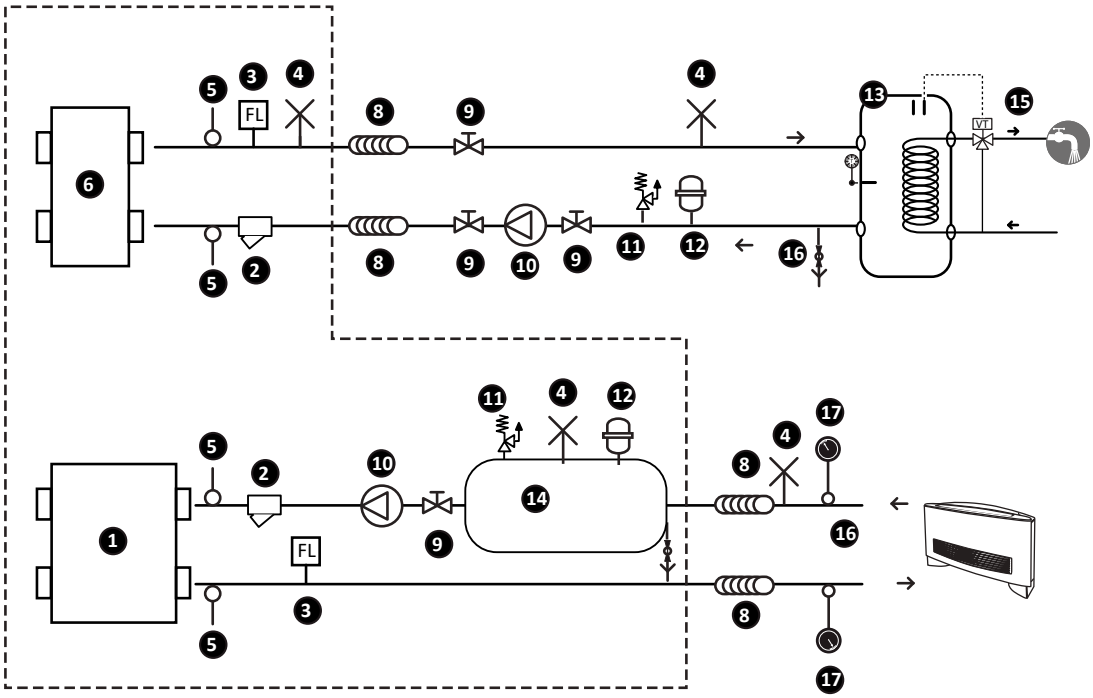

Components as standard

1 Plate heat exchanger (SYSTEM SIDE)
2 Water filter
3 Flow switch
4 Drain valve
5 Water temperature sensor (IN/OUT)
6 Total recovery (DHW SIDE)
9 Flow shut-off valves
10 Pump
11 Pressure relief valve
12 Expansion vessel
14 System buffer tank

Components not provided and responsibility of the installer

8 Anti-vibration joints
9 Flow shut-off valves
10 Pump
11 Pressure relief valve
12 Expansion vessel
13 Domestic hot water storage tank
15 Thermostatic expansion valve
16 Drain valve
17 Pressure gauge

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
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Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

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With pumps (P1÷P3 / R1÷R3)

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

In the absence of glycol, the machine needs to be powered to ensure the heaters (if present) and the pumps (if present) are operating to avoid glazing and, therefore, damaging the components in the hydraulic circuit.

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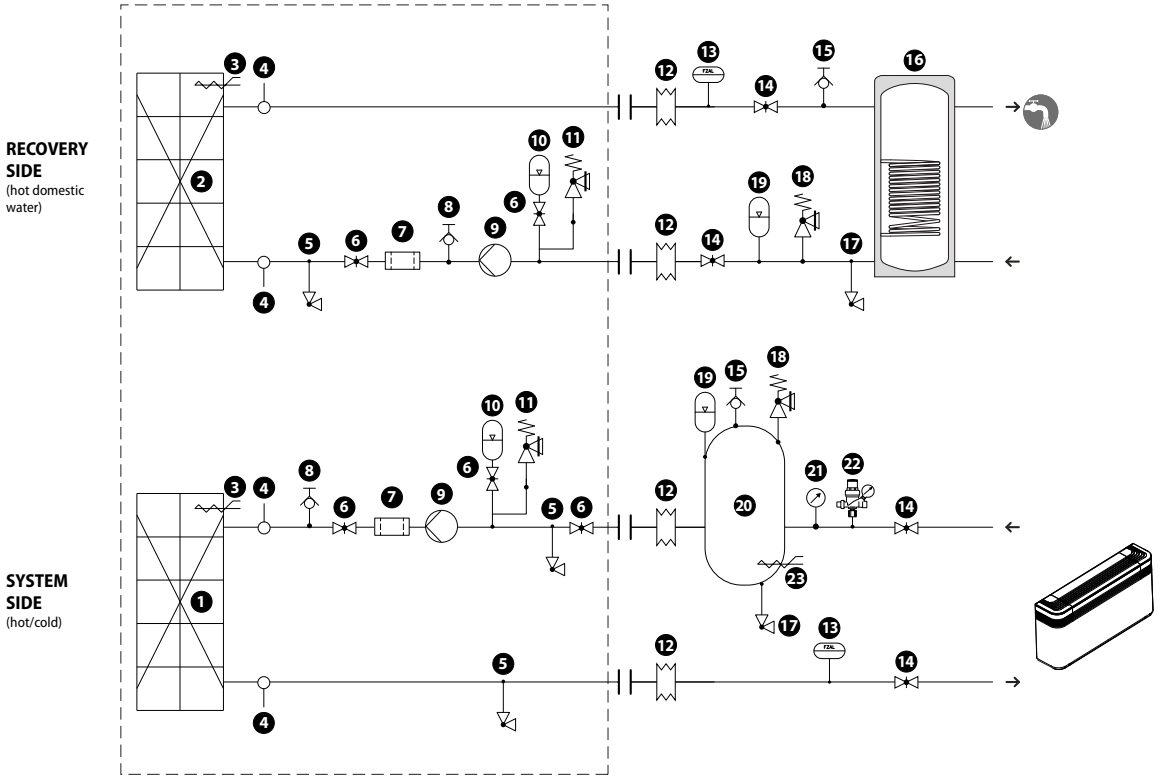

Components as standard

1 Plate heat exchanger (SYSTEM SIDE)
2 Plate heat exchanger (RECOVERY SIDE - DOMESTIC HOT WATER)
3 Antifreeze electric heater
4 Water temperature sensors (IN/OUT)
5 Drain valve
6 Flow shut-off valves
7 Water filter
8 Drain valve
9 Pump
10 Expansion vessel
11 Pressure relief valve

Components not provided and responsibility of the installer

12 Anti-vibration joints
13 Flow switch (MANDATORY)
14 Flow shut-off valves
15 Drain valve
16 Domestic hot water storage tank
17 Drain valve
18 Pressure relief valve
19 Expansion vessel
20 Storage tank
21 Pressure gauge
22 Loading unit
23 Antifreeze electric heater

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

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With pumps (P2÷P4 / R2÷R4)

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

In the absence of glycol, the machine needs to be powered to ensure the heaters (if present) and the pumps (if present) are operating to avoid glazing and, therefore, damaging the components in the hydraulic circuit.

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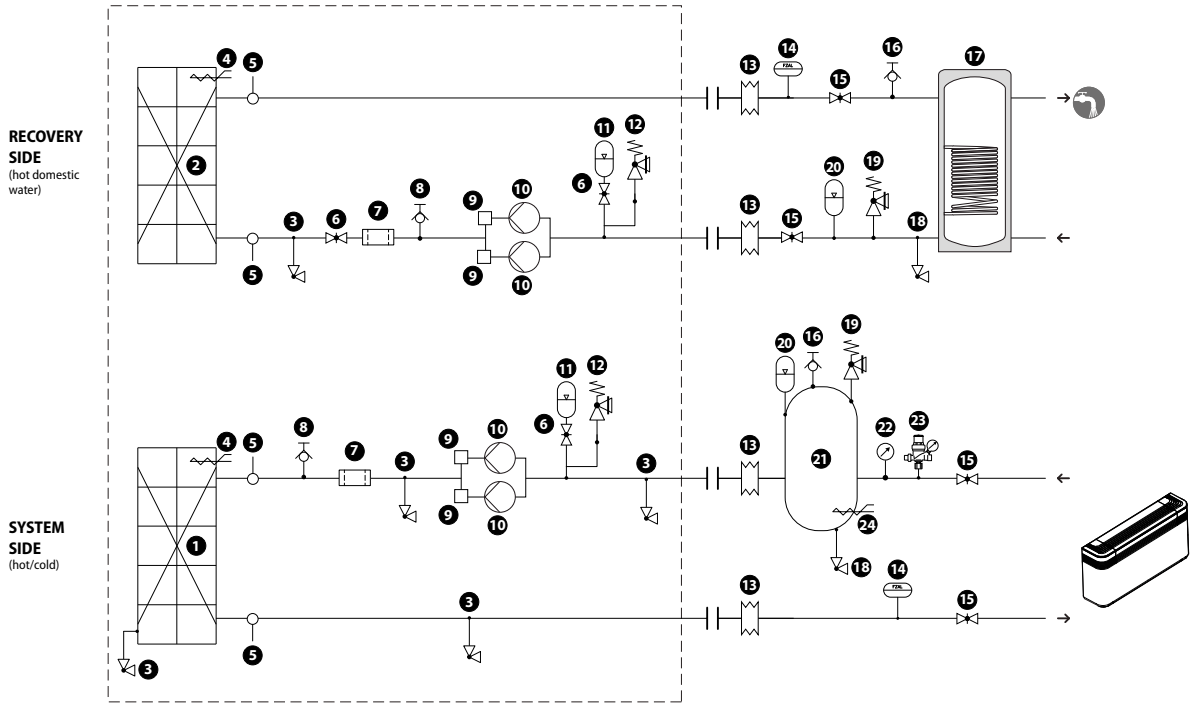

Components as standard

1 Plate heat exchanger (SYSTEM SIDE)
2 Plate heat exchanger (RECOVERY SIDE - DOMESTIC HOT WATER)
3 Drain valve
4 Antifreeze electric heater
5 Water temperature sensors (IN/OUT)
6 Flow shut-off valves
7 Water filter
8 Drain valve
9 One-way valve
10 Pump
11 Expansion vessel
12 Pressure relief valve

Components not provided and responsibility of the installer

13 Anti-vibration joints
14 Flow switch (MANDATORY)
15 Flow shut-off valves
16 Drain valve
17 Domestic hot water storage tank
18 Drain valve
19 Pressure relief valve
20 Expansion vessel
21 Storage tank
22 Pressure gauge
23 Loading unit
24 Antifreeze electric heater

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). This phenomenon can trigger corrosion processes and subsequent drilling of the heat exchanger and pipes.

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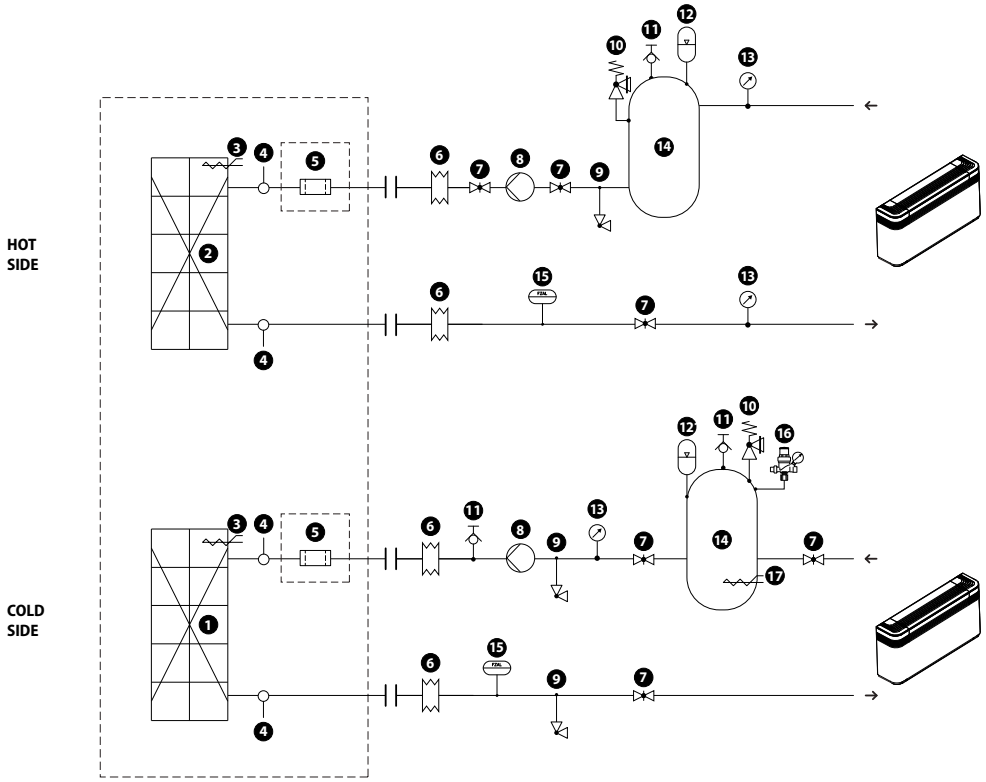
4-PIPE SYSTEM

Without hydronic kit

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

In the absence of glycol, the machine needs to be powered to ensure the heaters (if present) and the pumps (if present) are operating to avoid glazing and, therefore, damaging the components in the hydraulic circuit.

Flushing the plant's hydraulic circuit (cleaning the hydraulic circuit) needs to be done by excluding the chiller's hydraulic circuit. Make sure, in any case, that the water has not entered the chiller by ensuring you open the chiller's hydraulic circuit drains. Any water accumulated in the chiller's hydraulic circuit can cause icing/damage to the components.



Components as standard

1 Plate heat exchanger (COLD WATER PRODUCTION SYSTEM SIDE)
2 Plate heat exchanger (HOT WATER PRODUCTION RECOVERY SIDE)
3 Antifreeze electric heater
4 Water temperature sensors (IN/OUT)
5 Water filter (as standard)

Components not provided and responsibility of the installer

6 Anti-vibration joints
7 Flow shut-off valves
8 Pump
9 Drain valve
10 Pressure relief valve
11 Drain valve
12 Expansion vessel
13 Pressure gauge
14 Storage tank
15 Flow switch (MANDATORY)
16 Loading unit
17 Antifreeze electric heater

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

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With storage tank (01÷04 / 00)

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

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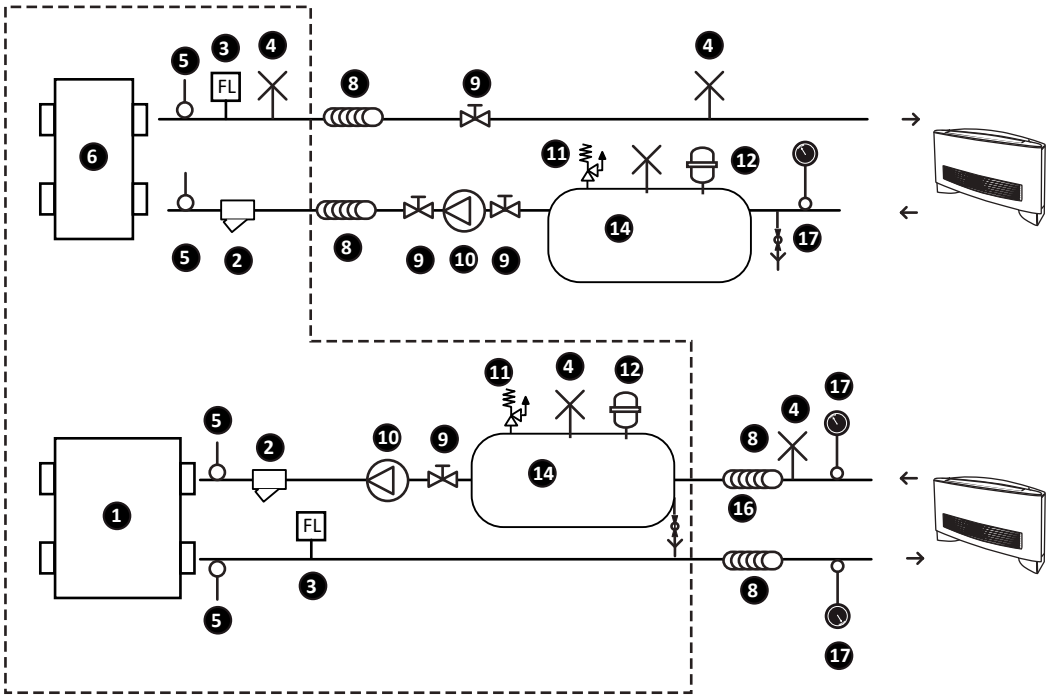

Components as standard

1 Plate heat exchanger (COOLING SYSTEM SIDE)
2 Water filter
3 Flow switch
4 Drain valve
5 Water temperature sensor (IN/OUT)
6 Total recovery
9 Flow shut-off valves
10 Pump
11 Pressure relief valve
12 Expansion vessel
14 System buffer tank (COLD SIDE)

Components not provided and responsibility of the installer

8 Anti-vibration joints
9 Flow shut-off valves
10 Pump
11 Pressure relief valve
12 Expansion vessel
14 System storage tank (HEATING SIDE)
16 Drain valve
17 Pressure gauge

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). This phenomenon can trigger corrosion processes and subsequent drilling of the heat exchanger and pipes.

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With pumps (P1÷P3 / R1÷R3)

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

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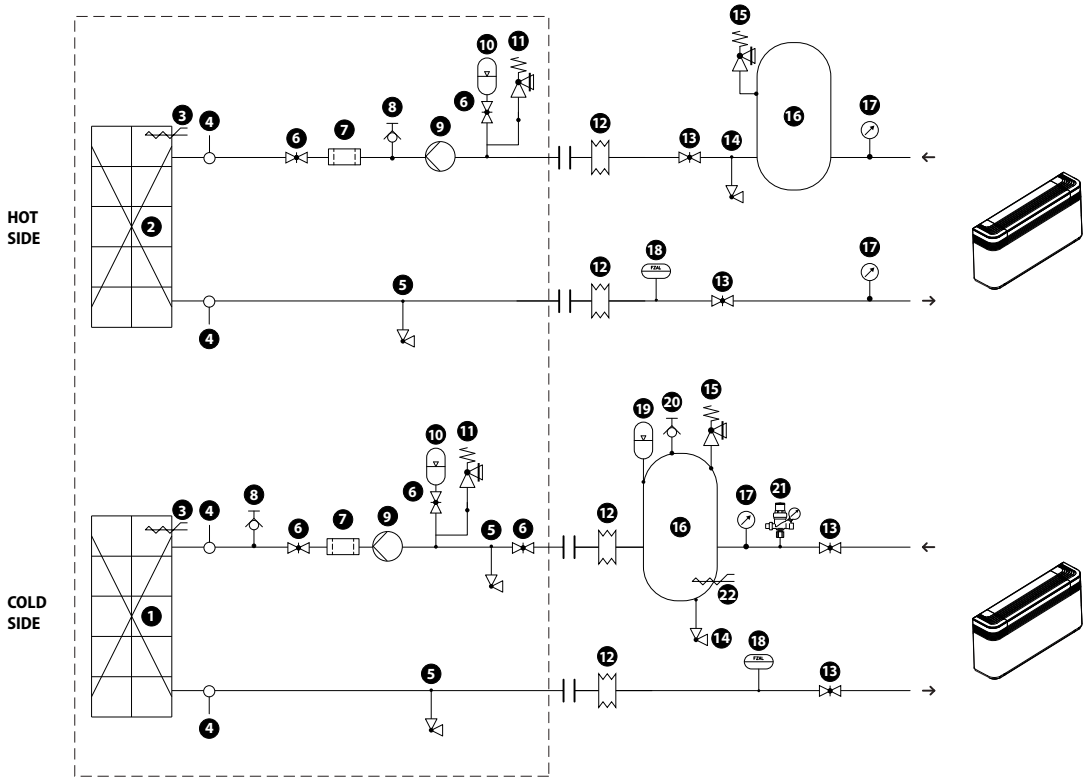


Components as standard

1 Plate heat exchanger (COLD WATER PRODUCTION SYSTEM SIDE)
2 Plate heat exchanger (HOT WATER PRODUCTION RECOVERY SIDE)
3 Antifreeze electric heater
4 Water temperature sensors (IN/OUT)
5 Drain valve
6 Flow shut-off valves
7 Water filter
8 Drain valve
9 Pump
10 Expansion vessel
11 Pressure relief valve

Components not provided and responsibility of the installer

12 Anti-vibration joints
13 Flow shut-off valves
14 Drain valve
15 Pressure relief valve
16 Storage tank
17 Pressure gauge
18 Flow switch (MANDATORY)
19 Expansion vessel
20 Drain valve
21 Loading unit
22 Antifreeze electric heater

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). This phenomenon can trigger corrosion processes and subsequent drilling of the heat exchanger and pipes.

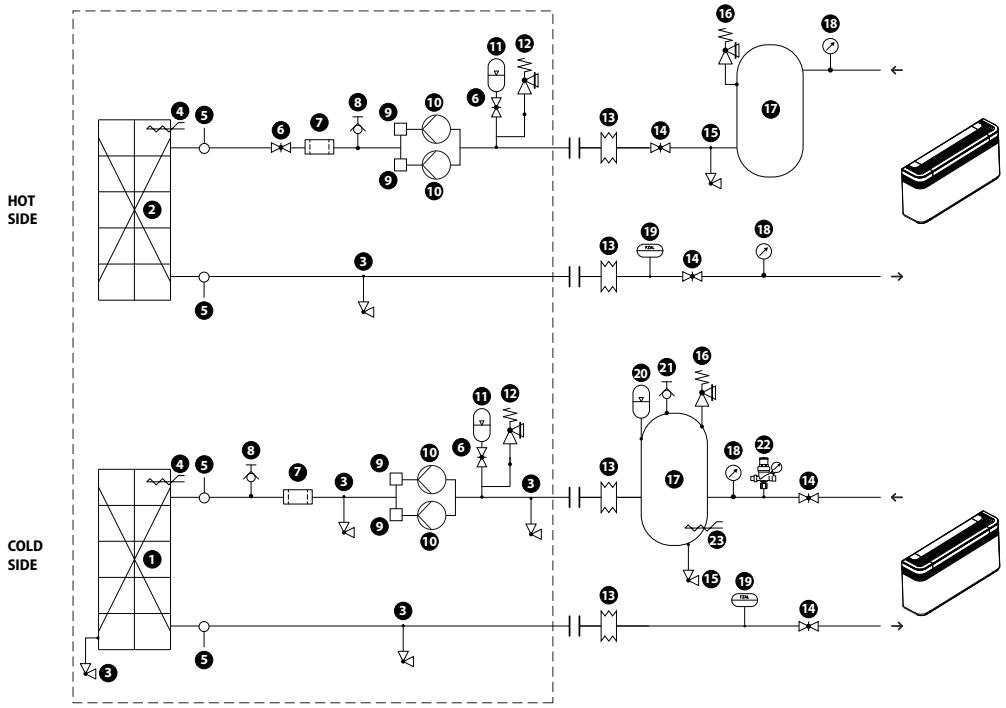
WARNING under no circumstances does the unit have to be operated with water circulating on the heat exchanger whose characteristics are different from those indicated in the table WATER CHARACTERISTICS, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction of the units which are operated with water whose characteristics are outside the limits in the table WATER CHARACTERISTICS and for their consequences.

With pumps (P2÷P4 / R2÷R4)

Water filter: Installation in the immediate vicinity of the heat exchanger is mandatory,.

In the absence of glycol, the machine needs to be powered to ensure the heaters (if present) and the pumps (if present) are operating to avoid glazing and, therefore, damaging the components in the hydraulic circuit.

Flushing the plant's hydraulic circuit (cleaning the hydraulic circuit) needs to be done by excluding the chiller's hydraulic circuit. Make sure, in any case, that the water has not entered the chiller by ensuring you open the chiller's hydraulic circuit drains. Any water accumulated in the chiller's hydraulic circuit can cause icing/damage to the components.



Components as standard

1 Plate heat exchanger (COLD WATER PRODUCTION SYSTEM SIDE)
2 Plate heat exchanger (HOT WATER PRODUCTION RECOVERY SIDE)
3 Drain valve
4 Antifreeze electric heater
5 Water temperature sensors (IN/OUT)
6 Flow shut-off valves
7 Water filter
8 Drain valve
9 One-way valve
10 Pump
11 Expansion vessel
12 Pressure relief valve

Components not provided and responsibility of the installer

13 Anti-vibration joints
14 Flow shut-off valves
15 Drain valve
16 Pressure relief valve
17 Storage tank
18 Pressure gauge
19 Flow switch (MANDATORY)
20 Expansion vessel
21 Drain valve
22 Loading unit
23 Antifreeze electric heater

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Electric conductivity	10-500 µS /cm
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,2 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Free chlorine	< 0,5 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

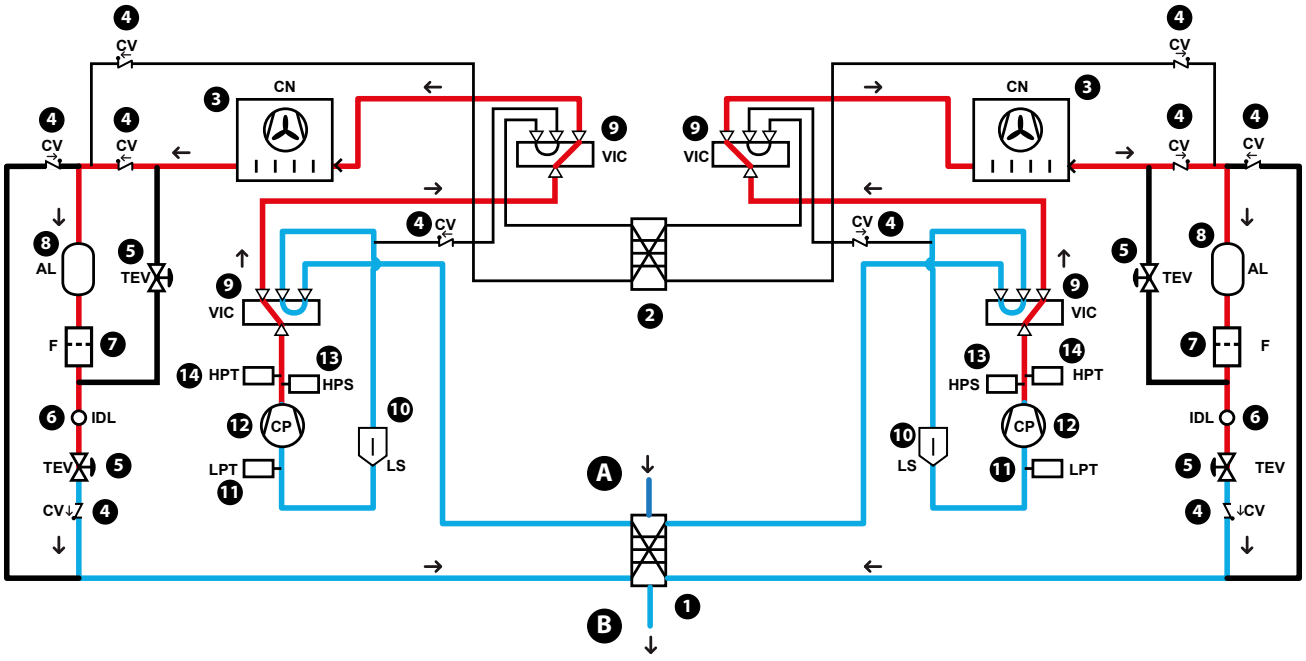
It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). This phenomenon can trigger corrosion processes and subsequent drilling of the heat exchanger and pipes.

WARNING under no circumstances does the unit have to be operated with water circulating on the heat exchanger whose characteristics are different from those indicated in the table WATER CHARACTERISTICS, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction of the units which are operated with water whose characteristics are outside the limits in the table WATER CHARACTERISTICS and for their consequences.

5 MAIN COOLING REFRIGERANT LAYOUTS

MAIN COOLING REFRIGERANT LAYOUTS FOR 2-PIPE SYSTEM

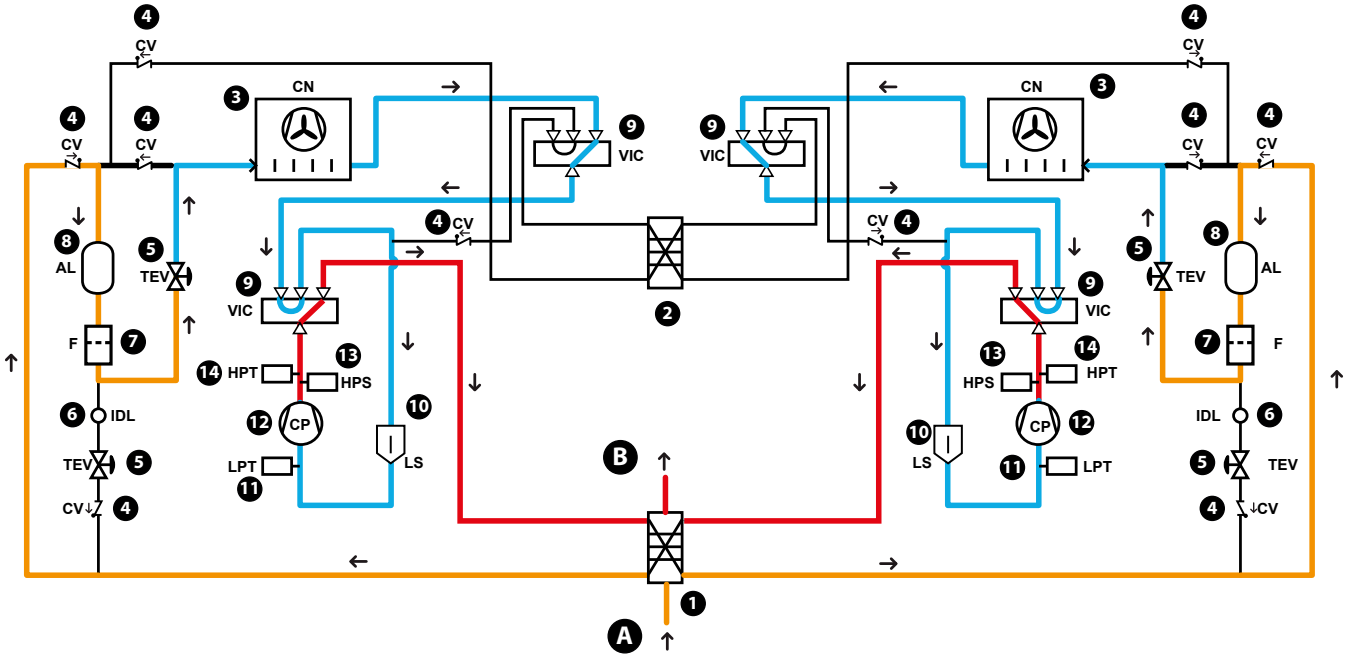
Cold water production at system



Key:

A	Plant return water	4	One-way valve	10	Liquid separator
B	System delivery water	5	Thermostatic expansion valve	11	Low pressure transducer
1	System side heat exchanger	6	Sight glass	12	Compressor
2	Dhw side exchanger	7	Filter drier	13	High pressure switch
3	Source side heat exchanger	8	Liquid accumulator	14	High pressure transducer
		9	Cycle inversion valve		

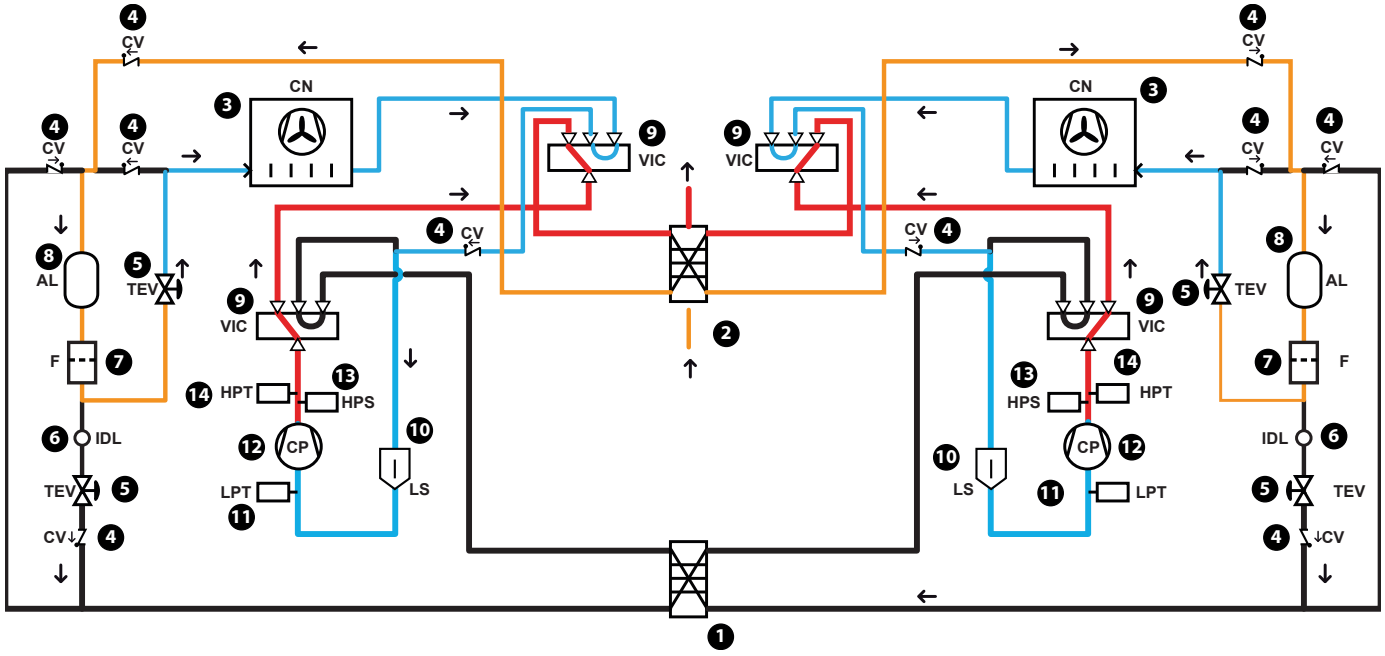
System hot water production



Key:

A	Plant return water	4	One-way valve	10	Liquid separator
B	System delivery water	5	Thermostatic expansion valve	11	Low pressure transducer
1	System side heat exchanger	6	Sight glass	12	Compressor
2	Dhw side exchanger	7	Filter drier	13	High pressure switch
3	Source side heat exchanger	8	Liquid accumulator	14	High pressure transducer
		9	Cycle inversion valve		

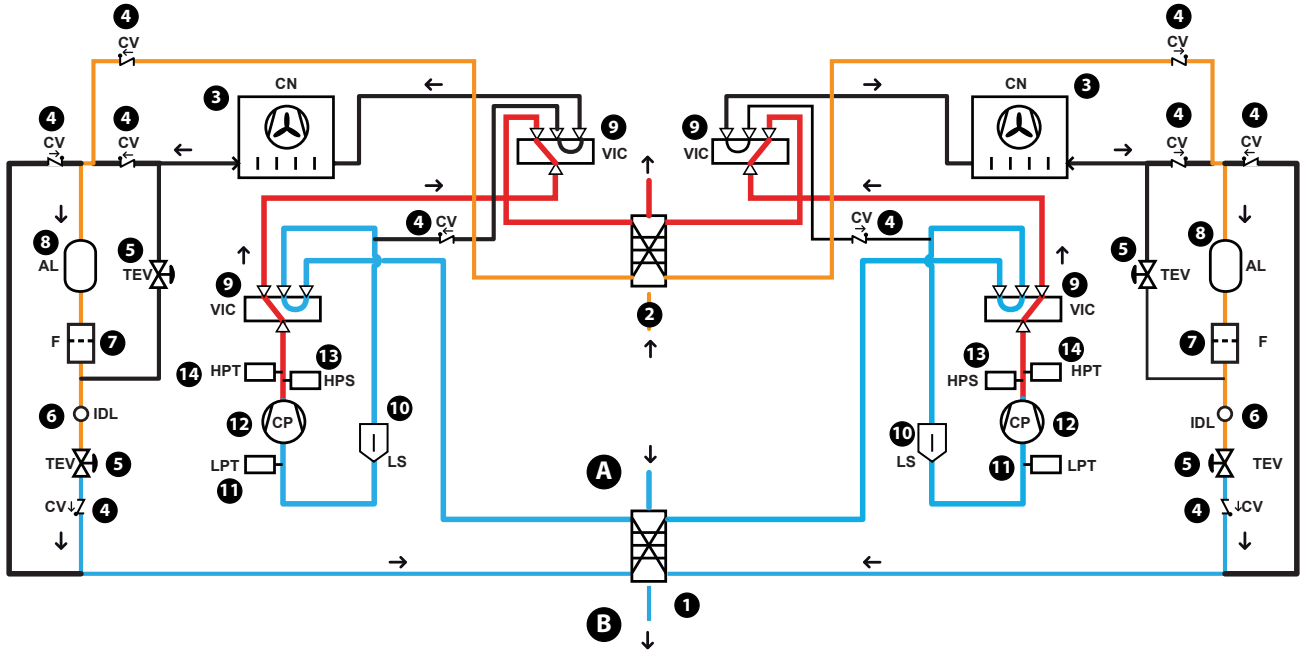
2 CIRCUITS TO PRODUCE HOT WATER ONLY TO DHW



Key:

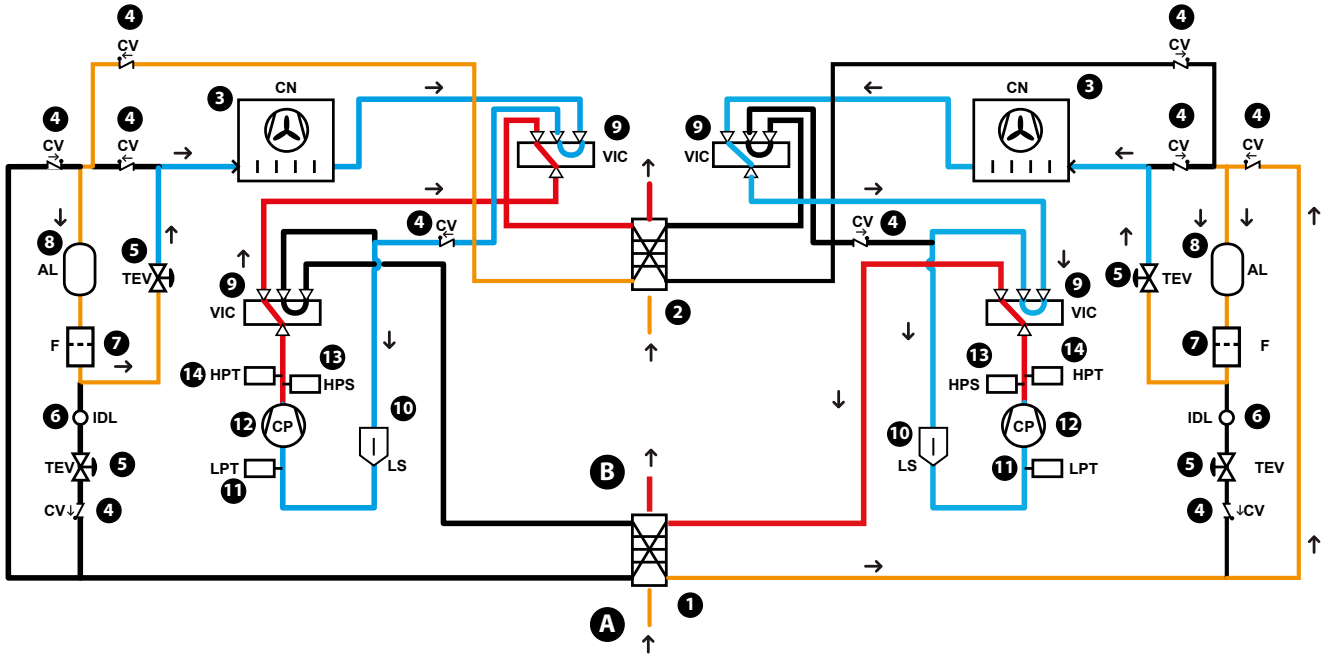
A	Plant return water	4	One-way valve	10	Liquid separator
B	System delivery water	5	Thermostatic expansion valve	11	Low pressure transducer
1	System side heat exchanger	6	Sight glass	12	Compressor
2	Dhw side exchanger	7	Filter drier	13	High pressure switch
3	Source side heat exchanger	8	Liquid accumulator	14	High pressure transducer
		9	Cycle inversion valve		

2 CIRCUITS TO PRODUCE COLD WATER TO SYSTEM AND HOT WATER TO DHW



Key:

A	Plant return water	4	One-way valve	10	Liquid separator
B	System delivery water	5	Thermostatic expansion valve	11	Low pressure transducer
1	System side heat exchanger	6	Sight glass	12	Compressor
2	Dhw side exchanger	7	Filter drier	13	High pressure switch
3	Source side heat exchanger	8	Liquid accumulator	14	High pressure transducer
		9	Cycle inversion valve		

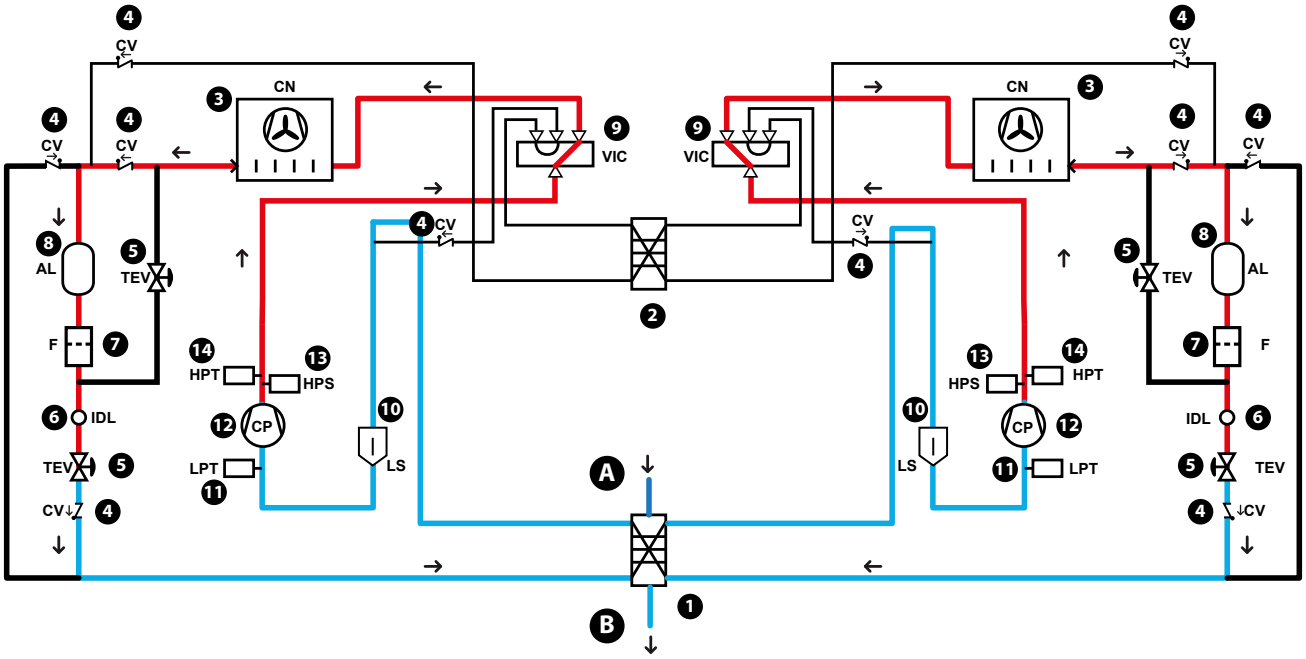


Key:

A	Plant return water	4	One-way valve	10	Liquid separator
B	System delivery water	5	Thermostatic expansion valve	11	Low pressure transducer
1	System side heat exchanger	6	Sight glass	12	Compressor
2	Dhw side exchanger	7	Filter drier	13	High pressure switch
3	Source side heat exchanger	8	Liquid accumulator	14	High pressure transducer
		9	Cycle inversion valve		

MAIN COOLING REFRIGERANT LAYOUTS FOR 4-PIPE SYSTEM

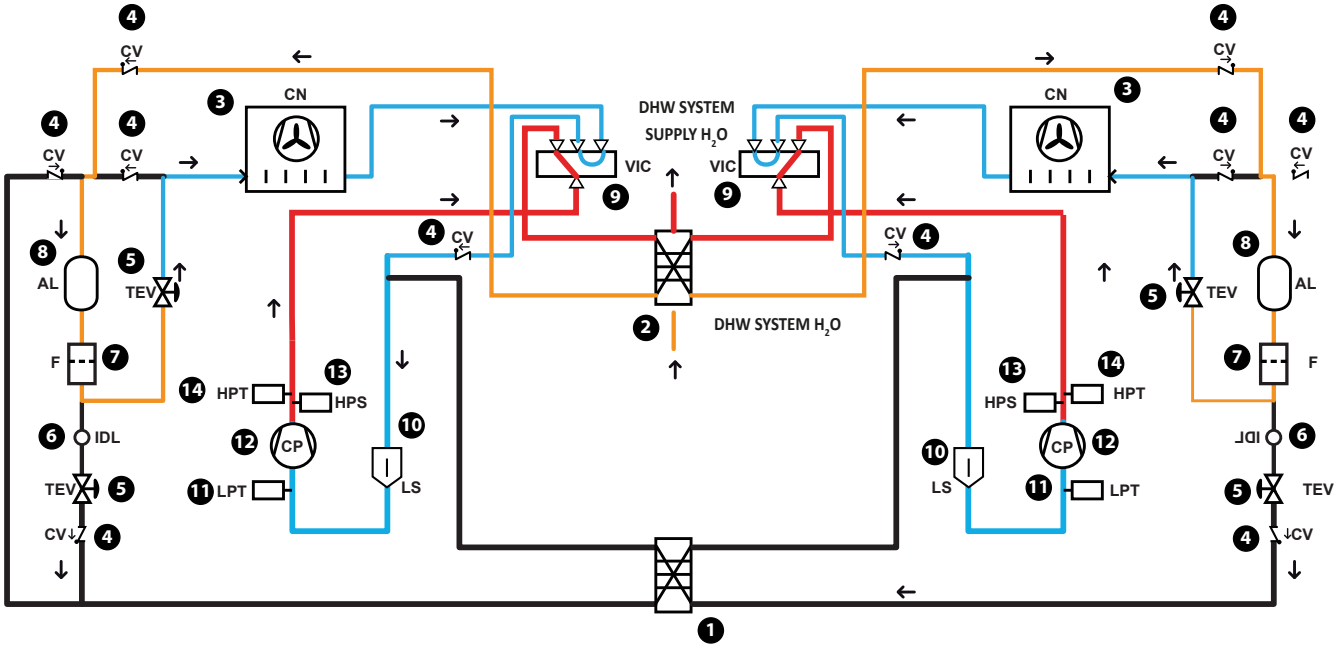
Cold water production at system



Key:

A	Plant return water	4	One-way valve	10	Liquid separator
B	System delivery water	5	Thermostatic expansion valve	11	Low pressure transducer
1	System side heat exchanger	6	Sight glass	12	Compressor
2	Dhw side exchanger	7	Filter drier	13	High pressure switch
3	Source side heat exchanger	8	Liquid accumulator	14	High pressure transducer
		9	Cycle inversion valve		

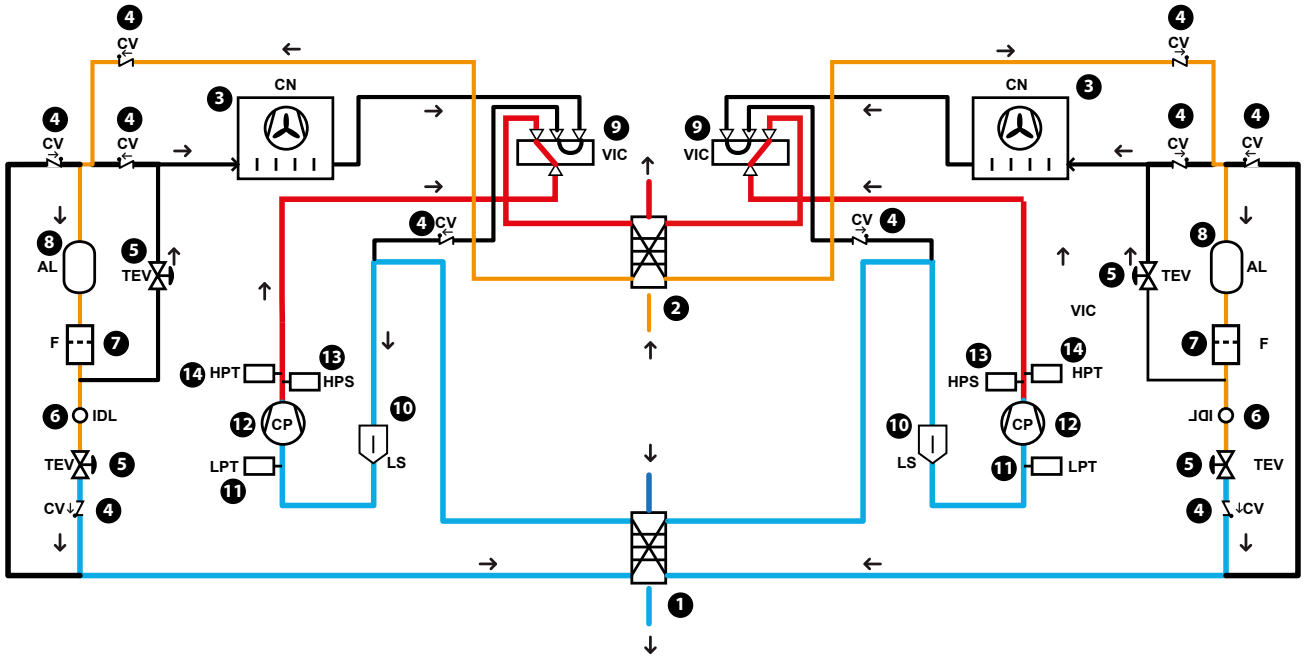
System hot water production



Key:

A Plant return water
B System delivery water
1 System side heat exchanger
2 Dhw side exchanger
3 Source side heat exchanger
4 One-way valve
5 Thermostatic expansion valve
6 Sight glass
7 Filter drier
8 Liquid accumulator
9 Cycle inversion valve
10 Liquid separator
11 Low pressure transducer
12 Compressor
13 High pressure switch
14 High pressure transducer

Simultaneous production of hot and cold water to the system



Key:

A Plant return water
B System delivery water
1 System side heat exchanger
2 Dhw side exchanger
3 Source side heat exchanger
4 One-way valve
5 Thermostatic expansion valve
6 Sight glass
7 Filter drier
8 Liquid accumulator
9 Cycle inversion valve
10 Liquid separator
11 Low pressure transducer
12 Compressor
13 High pressure switch
14 High pressure transducer

ACCESSORIES

AER485P1: RS-485 interface for supervision systems with MODBUS protocol.
AERNET: The device allows the control, the management and the remote monitoring of a Chiller with a PC, smartphone or tablet using Cloud connection. AERNET works as Master while every unit connected is configured as Slave (max. 6 unit); also, with a simple click is possible to save a log file with all the connected unit datas in the personal terminal for post analysis.
PGD1: Allows you to control the unit at a distance.
GP: Anti-intrusion grid.
VT: Anti-vibration supports.

FACTORY FITTED ACCESSORIES

DRE: Electronic device for peak current reduction.
RIF: Power factor correction. Connected in parallel to the motor allowing about 10% reduction of input current.

ACCESSORIES COMPATIBILITY

Accessories

Model	Ver	0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
AER485P1	A					•	•	•	•	•	•
	E	•	•	•	•						
AERNET	A					•	•	•	•	•	•
	E	•	•	•	•						
PGD1	A					•	•	•	•	•	•
	E	•	•	•	•						

Anti-intrusion grid

Ver	0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
A	-	-	-	-	GP2 x 2 (1)	GP2 x 2 (1)	GP2 x 2 (1)	GP2 x 2 (1)	GP2 x 3 (1)	GP10 x 3 (1)
E	GP3	GP4	GP4	GP4	-	-	-	-	-	-

(1) x _ indicates the quantity to buy

Antivibration

Version	System side - pumps	Recovery side - pumps	0280	0300	0330
A	00,P1,P2,P3,P4	00,R1,R2,R3,R4	VT11	VT11	VT11
A	01,02,03,04	00	-	-	-
E	00,P1,P2,P3,P4	00,R1,R2,R3,R4	VT17	VT17	VT17
E	01,02,03,04	00	VT13	VT13	VT13

Version	System side - pumps	Recovery side - pumps	0350	0500	0550
A	00,P1,P2,P3,P4	00,R1,R2,R3,R4	VT11	VT11	VT11
A	01,02,03,04	00	-	VT11	VT11
E	00,P1,P2,P3,P4	00,R1,R2,R3,R4	VT17	-	-
E	01,02,03,04	00	VT13	-	-

Version	System side - pumps	Recovery side - pumps	0600	0650	0700
A	00	00,R1,R2,R3,R4	VT11	VT11	VT22
A	01,02,03,04	00	VT11	VT11	VT22
A	P1,P2,P3,P4	00,R1,R2,R3,R4	VT11	VT11	VT22
E	00	00,R1,R2,R3,R4	-	-	-
E	01,02,03,04	00	-	-	-
E	P1,P2,P3,P4	00,R1,R2,R3,R4	-	-	-

Version	System side - pumps	Recovery side - pumps	0750
A	00	00,R1,R2,R3,R4	VT23
A	01,02,03,04	00	VT23
A	P1,P2,P3,P4	00,R1,R2,R3,R4	VT23
E	00	00,R1,R2,R3,R4	-
E	01,02,03,04	00	-
E	P1,P2,P3,P4	00,R1,R2,R3,R4	-

- not available

PERFORMANCE SPECIFICATIONS

2-PIPE

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Cooling system side 2-pipe system (1)												
Cooling capacity	A	ton	-	-	-	-	22.7	26.8	32.6	37.0	41.2	44.9
	E	ton	12.3	14.1	16.2	20.3	-	-	-	-	-	-
Input power	A	kW	-	-	-	-	28.4	33.7	40.6	46.3	51.8	56.0
	E	kW	15.2	17.6	20.1	25.4	-	-	-	-	-	-
EER	A	BTU/(Wh)	-	-	-	-	9.59	9.55	9.66	9.59	9.55	9.62
	E	BTU/(Wh)	9.69	9.62	9.69	9.59	-	-	-	-	-	-
Water flow rate system side	A	gpm	-	-	-	-	54.4	64.2	78.1	88.6	98.5	107.5
	E	gpm	29.5	33.8	38.8	48.5	-	-	-	-	-	-
Pressure drop system side	A	ftH_2O	-	-	-	-	4.7	5.7	10.7	12.0	14.7	11.0
	E	ftH_2O	4.0	5.0	5.0	5.7	-	-	-	-	-	-
Heating system side 2-pipe system (2)												
Heating capacity	A	BTU/h	-	-	-	-	328,248	381,819	479,406	536,389	590,642	660,249
	E	BTU/h	183,914	213,259	242,603	304,704	-	-	-	-	-	-
Input power	A	kW	-	-	-	-	31.0	36.5	46.6	51.2	56.6	63.5
	E	kW	17.2	19.9	22.7	27.3	-	-	-	-	-	-
COP	A	kW/kW	-	-	-	-	3,10	3,06	3,02	3,07	3,06	3,05
	E	kW/kW	3,13	3,14	3,14	3,27	-	-	-	-	-	-
Water flow rate system side	A	gpm	-	-	-	-	73.6	85.6	107.5	120.3	132.4	148.0
	E	gpm	41.3	47.8	54.4	68.4	-	-	-	-	-	-
Pressure drop system side	A	ftH_2O	-	-	-	-	8.7	10.0	20.4	22.1	26.8	21.1
	E	ftH_2O	8.0	10.0	10.0	11.4	-	-	-	-	-	-
Heating domestic hot water side 2-pipe system (3)												
Heating capacity	A	BTU/h	-	-	-	-	328,248	381,819	479,406	536,389	590,642	660,249
	E	BTU/h	183,914	213,259	242,603	304,704	-	-	-	-	-	-
Input power	A	kW	-	-	-	-	31.0	36.5	46.6	51.2	56.6	63.5
	E	kW	17.2	19.9	22.7	27.3	-	-	-	-	-	-
COP	A	kW/kW	-	-	-	-	3,10	3,06	3,02	3,07	3,06	3,05
	E	kW/kW	3,13	3,14	3,14	3,27	-	-	-	-	-	-
Water flow rate domestic hot water side	A	gpm	-	-	-	-	73.6	85.6	107.5	120.3	132.4	148.0
	E	gpm	41.3	47.8	54.4	68.4	-	-	-	-	-	-
Pressure drop domestic hot water side	A	ftH_2O	-	-	-	-	8.7	10.0	20.4	22.1	26.8	21.1
	E	ftH_2O	8.0	10.0	10.0	11.4	-	-	-	-	-	-
Simultaneous operation (heating + cooling), 2 pipes (4)												
Cooling capacity	A	ton	-	-	-	-	20.6	24.6	29.9	34.0	37.9	41.6
	E	ton	11.2	13.2	15.1	19.4	-	-	-	-	-	-
Recovered heating power	A	BTU/h	-	-	-	-	328,589	400,927	491,348	556,179	619,986	681,063
	E	BTU/h	181,526	214,624	246,698	312,552	-	-	-	-	-	-
Input power	A	kW	-	-	-	-	24.9	32.8	40.8	45.7	51.0	56.1
	E	kW	14.7	17.4	20.1	24.7	-	-	-	-	-	-
Water flow rate system side	A	gpm	-	-	-	-	54.4	64.2	78.1	88.6	98.5	107.5
	E	gpm	29.5	33.8	38.8	48.5	-	-	-	-	-	-
Pressure drop system side	A	ftH_2O	-	-	-	-	4.7	5.7	10.7	12.0	14.7	11.0
	E	ftH_2O	4.0	5.0	5.0	5.7	-	-	-	-	-	-
Water flow rate domestic hot water side	A	gpm	-	-	-	-	73.6	85.6	107.5	120.3	132.4	148.0
	E	gpm	41.3	47.8	54.4	68.4	-	-	-	-	-	-
Pressure drop domestic hot water side	A	ftH_2O	-	-	-	-	8.7	10.0	20.4	22.1	26.8	21.1
	E	ftH_2O	8.0	10.0	10.0	11.4	-	-	-	-	-	-
TER	A	W/W	-	-	-	-	6.77	6.23	6.11	6.18	6.18	6.17
	E	W/W	6.30	6.28	6.24	6.47	-	-	-	-	-	-

(1) Data: System side water heat exchanger 54.0 °F / 44.1 °F; External air 95 °F
(2) Data: System side water heat exchanger 104 °F / 113 °F; External air 44.6 °F
(3) Water exchanger to the total recovery side 104 °F / 113 °F;
(4) Water exchanger to the total recovery side * / 113 °F; Water to the system side heat exchanger * / 44.6 °F;

4-PIPE

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Cooling system side 4-pipe system (1)												
Cooling capacity	A	ton	-	-	-	-	22.7	26.8	32.6	37.0	41.2	44.9
	E	ton	12.3	14.1	16.2	20.3	-	-	-	-	-	-
Input power	A	kW	-	-	-	-	28.4	33.7	40.6	46.3	51.8	56.0
	E	kW	15.2	17.6	20.1	25.4	-	-	-	-	-	-
EER	A	BTU/(Wh)	-	-	-	-	9.59	9.55	9.66	9.59	9.55	9.62
	E	BTU/(Wh)	9.69	9.62	9.69	9.59	-	-	-	-	-	-
Water flow rate system side	A	gpm	-	-	-	-	54.4	64.2	78.1	88.6	98.5	107.5
	E	gpm	29.5	33.8	38.8	48.5	-	-	-	-	-	-
Pressure drop system side	A	ftH_2O	-	-	-	-	4.7	5.7	10.7	12.0	14.7	11.0
	E	ftH_2O	4.0	5.0	5.0	5.7	-	-	-	-	-	-
Heating system side 4-pipe system (2)												
Heating capacity	A	BTU/h	-	-	-	-	328,248	381,819	479,406	536,389	590,642	660,249
	E	BTU/h	183,914	213,259	242,603	304,704	-	-	-	-	-	-
Input power	A	kW	-	-	-	-	31.0	36.5	46.6	51.2	56.6	63.5
	E	kW	17.2	19.9	22.7	27.3	-	-	-	-	-	-
COP	A	kW/kW	-	-	-	-	3,10	3,06	3,02	3,07	3,06	3,05
	E	kW/kW	3,13	3,14	3,14	3,27	-	-	-	-	-	-
Water flow rate system side	A	gpm	-	-	-	-	73.6	85.6	107.5	120.3	132.4	148.0
	E	gpm	41.3	47.8	54.4	68.4	-	-	-	-	-	-
Pressure drop system side	A	ftH_2O	-	-	-	-	8.7	10.0	20.4	22.1	26.8	21.1
	E	ftH_2O	8.0	10.0	10.0	11.4	-	-	-	-	-	-
Simultaneous operation (heating + cooling), 4 pipes (3)												
Cooling capacity	A	ton	-	-	-	-	20.6	24.6	29.9	34.0	37.9	41.6
	E	ton	11.2	13.2	15.1	19.4	-	-	-	-	-	-
Recovered heating power	A	BTU/h	-	-	-	-	328,589	400,927	491,348	556,179	619,986	681,063
	E	BTU/h	181,526	214,624	246,698	312,552	-	-	-	-	-	-
Input power	A	kW	-	-	-	-	24.9	32.8	40.8	45.7	51.0	56.1
	E	kW	14.7	17.4	20.1	24.7	-	-	-	-	-	-
Water flow rate cold side	A	gpm	-	-	-	-	54.4	64.2	78.1	88.6	98.5	107.5
	E	gpm	29.5	33.8	38.8	48.5	-	-	-	-	-	-
Pressure drop cold side	A	ftH_2O	-	-	-	-	4.7	5.7	10.7	12.0	14.7	11.0
	E	ftH_2O	4.0	5.0	5.0	5.7	-	-	-	-	-	-
Water flow rate hot side	A	gpm	-	-	-	-	73.6	85.6	107.5	120.3	132.4	148.0
	E	gpm	41.3	47.8	54.4	68.4	-	-	-	-	-	-
Pressure drop hot side	A	ftH_2O	-	-	-	-	8.7	10.0	20.4	22.1	26.8	21.1
	E	ftH_2O	8.0	10.0	10.0	11.4	-	-	-	-	-	-
TER	A	W/W	-	-	-	-	6.77	6.23	6.11	6.18	6.18	6.17
	E	W/W	6.30	6.28	6.24	6.47	-	-	-	-	-	-

(1) Data: System side water heat exchanger 54.0 °F / 44.1 °F; External air 95 °F
(2) Data: Heat exchanger water (services side) 104 °F / 113 °F; outside air 44.6 °F b.s. / 42.8 °F b.u.
(3) Water exchanger to the total recovery side * / 113 °F; Water to the system side heat exchanger * / 44.6 °F;

GENERAL TECHNICAL DATA

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Compressor												
Type	A,E	type						Scroll				
Number	A	no.	-	-	-	-	3	3	4	4	4	4
	E	no.	2	2	2	2	-	-	-	-	-	-
Circuits	A	no.	-	-	-	-	2	2	2	2	2	2
	E	no.	2	2	2	2	-	-	-	-	-	-
Refrigerant	A,E	type						R410A				
Refrigerant load circuit 2 (1)	A	lbs	-	-	-	-	35.3	37.5	48.5	46.3	- (2)	- (2)
	E	lbs	- (2)	- (2)	- (2)	34.4	-	-	-	-	-	-
Refrigerant load circuit 1 (1)	A	lbs	-	-	-	-	38.6	41.9	48.5	46.3	- (2)	- (2)
	E	lbs	- (2)	- (2)	- (2)	34.4	-	-	-	-	-	-
2-pipe system - System side heat exchanger (hot/cold)												
Type	A	type	-	-	-	-	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
	E	type	Brazed plate	Brazed plate	Brazed plate	Brazed plate	-	-	-	-	-	-
Sizes (in/out)	A	Ø	-	-	-	-	2″1/2	2″1/2	2″1/2	2″1/2	2″1/2	3″
	E	Ø	2″1/2	2″1/2	2″1/2	2″1/2	-	-	-	-	-	-
2-pipe system - Recovery side heat exchanger (domestic hot water)												
Type	A	type	-	-	-	-	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
	E	type	Brazed plate	Brazed plate	Brazed plate	Brazed plate	-	-	-	-	-	-
Number	A	no.	-	-	-	-	2	2	2	2	2	2
	E	no.	2	2	2	2	-	-	-	-	-	-
Sizes (in/out)	A	Ø	-	-	-	-	2″1/2	2″1/2	2″1/2	2″1/2	2″1/2	3″
	E	Ø	2″1/2	2″1/2	2″1/2	2″1/2	-	-	-	-	-	-
4-pipe system - System side heat exchanger (cold side)												
Type	A	type	-	-	-	-	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
	E	type	Brazed plate	Brazed plate	Brazed plate	Brazed plate	-	-	-	-	-	-
Number	A	no.	-	-	-	-	1	1	1	1	1	1
	E	no.	1	1	1	1	-	-	-	-	-	-
Sizes (in/out)	A	Ø	-	-	-	-	2″1/2	2″1/2	2″1/2	2″1/2	2″1/2	3″
	E	Ø	2″1/2	2″1/2	2″1/2	2″1/2	-	-	-	-	-	-
4-pipe system - Recovery side heat exchanger (hot side)												
Type	A	type	-	-	-	-	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
	E	type	Brazed plate	Brazed plate	Brazed plate	Brazed plate	-	-	-	-	-	-
Number	A	no.	-	-	-	-	2	2	2	2	2	2
	E	no.	2	2	2	2	-	-	-	-	-	-
Sizes (in/out)	A	Ø	-	-	-	-	2″1/2	2″1/2	2″1/2	2″1/2	2″1/2	3″
	E	Ø	2″1/2	2″1/2	2″1/2	2″1/2	-	-	-	-	-	-

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

Maximum system water content

Size				0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Hydronic kit													
Expansion vessel number	A		no.	-	-	-	-	1	1	1	1	1	2
	E		no.	1	1	1	1	-	-	-	-	-	-
Expansion vessel capacity	A		gal	-	-	-	-	6.3	6.3	6.3	6.3	6.3	6.3
	E		gal	6.3	6.3	6.3	6.3	-	-	-	-	-	-
Storage tank number	A		no.	-	-	-	-	1	1	1	1	1	1
	E		no.	1	1	1	1	-	-	-	-	-	-
Storage tank capacity	A		gal	-	-	-	-	132.1	132.1	132.1	132.1	132.1	184.9
	E		gal	79.3	79.3	79.3	79.3	-	-	-	-	-	-
Pressure relief valve	A		n°/psi	-	-	-	-	1/87.0	1/87.0	1/87.0	1/87.0	1/87.0	1/87.0
	E		n°/psi	1/87.0	1/87.0	1/87.0	1/87.0	-	-	-	-	-	-

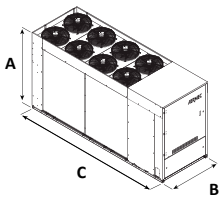
FANS DATA

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Fan												
Type	A,E	type	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Fan motor	A,E	type	Inverter	Inverter	Inverter	Inverter	Inverter	Inverter	Inverter	Inverter	Inverter	Inverter
Number	A	no.	-	-	-	-	2	2	3	3	3	4
	E	no.	8	8	8	8	-	-	-	-	-	-
Air flow rate	A	cfm	-	-	-	-	26,485	26,485	40,023	40,023	40,023	54,149
	E	cfm	25,897	25,897	25,897	24,132	-	-	-	-	-	-

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
POWER SUPPLY: 6												
Fan												
Total fan input current	A	A	-	-	-	-	15.0	15.0	22.5	22.5	22.5	30.0
	E	A	17.6	17.6	17.6	17.6	-	-	-	-	-	-
Total fan input power	A	kW	-	-	-	-	4,8	4,8	7,2	7,2	7,2	9,6
	E	kW	2,8	2,8	2,8	2,8	-	-	-	-	-	-
POWER SUPPLY: 7												
Fan												
Total fan input current	A	A	-	-	-	-	7.8	7.8	11.7	11.7	11.7	15.6
	E	A	17.6	17.6	17.6	17.6	-	-	-	-	-	-
Total fan input power	A	kW	-	-	-	-	5,1	5,1	7,7	7,7	7,7	10,2
	E	kW	2,8	2,8	2,8	2,8	-	-	-	-	-	-
POWER SUPPLY: 8												
Fan												
Total fan input current	A	A	-	-	-	-	6.2	6.2	9.4	9.4	9.4	12.5
	E	A	17.6	17.6	17.6	17.6	-	-	-	-	-	-
Total fan input power	A	kW	-	-	-	-	5,1	5,1	7,7	7,7	7,7	10,2
	E	kW	2,8	2,8	2,8	2,8	-	-	-	-	-	-
POWER SUPPLY: 9												
Fan												
Total fan input current	A	A	-	-	-	-	16.6	16.6	24.9	24.9	24.9	33.2
	E	A	19.5	19.5	19.5	19.5	-	-	-	-	-	-
Total fan input power	A	kW	-	-	-	-	4,8	4,8	7,2	7,2	7,2	9,6
	E	kW	2,8	2,8	2,8	2,8	-	-	-	-	-	-

DIMENSIONS AND WEIGHTS

NRP 0280-0300-0330-0350



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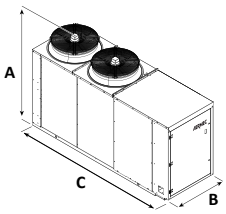

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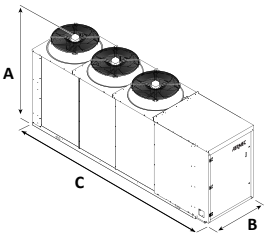

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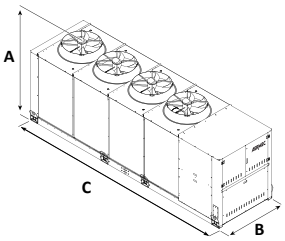


Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Dimensions and weights												
A	A	in	-	-	-	-	73.8	73.8	73.8	73.8	73.8	73.8
	E	in	63.2	63.2	63.2	63.2	-	-	-	-	-	-
B	A	in	-	-	-	-	43.3	43.3	43.3	43.3	43.3	59.1
	E	in	43.3	43.3	43.3	43.3	-	-	-	-	-	-
C	A	in	-	-	-	-	131.6	131.6	170.9	170.9	170.9	210.8
	E	in	126.0	126.0	126.0	126.0	-	-	-	-	-	-
Weights												
Empty weight	A	lbs	-	-	-	-	2,465	2,571	3,210	3,263	3,406	4,932
	E	lbs	1,949	2,004	2,061	2,244	-	-	-	-	-	-

ELECTRIC DATA

Power supply 460V-3-60Hz

	Version	System side - pumps	Recovery side - pumps		0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Peak current (LRA)	A	00	00	A	-	-	-	-	187.0	196.0	192.0	221.0	230.0	270.0
	A	00	R1/R2	A	-	-	-	-	190.0	200.0	198.0	227.0	236.0	276.0
	A	00	R3/R4	A	-	-	-	-	191.0	202.0	199.0	228.0	237.0	277.0
	A	01/02/P1/P2	00	A	-	-	-	-	190.0	199.0	195.0	227.0	236.0	276.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	191.0	200.0	196.0	228.0	237.0	277.0
	A	P1/P2	R1/R2	A	-	-	-	-	193.0	203.0	200.0	232.0	241.0	281.0
	A	P1/P2	R3/R4	A	-	-	-	-	194.0	204.0	202.0	233.0	242.0	282.0
	A	P3/P4	R1/R2	A	-	-	-	-	194.0	204.0	202.0	233.0	242.0	282.0
	A	P3/P4	R3/R4	A	-	-	-	-	195.0	206.0	203.0	234.0	243.0	283.0
	E	00	00	A	131.0	156.0	160.0	189.0	-	-	-	-	-	-
	E	00	R1/R2	A	133.0	158.0	162.0	191.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	133.0	158.0	162.0	191.0	-	-	-	-	-	-
	E	00	R3/R4	A	135.0	160.0	164.0	193.0	-	-	-	-	-	-
	E	03/04	00	A	135.0	160.0	164.0	193.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	135.0	160.0	164.0	193.0	-	-	-	-	-	-
	E	P3/P4	00	A	135.0	160.0	164.0	193.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	137.0	162.0	166.0	195.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	137.0	162.0	166.0	195.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	139.0	164.0	168.0	197.0	-	-	-	-	-	-
Minimum circuit amperage (MCA)	A	00	00	A	-	-	-	-	64.0	74.0	90.0	100.0	109.0	122.0
	A	00	R1/R2	A	-	-	-	-	67.0	78.0	96.0	106.0	115.0	128.0
	A	00	R3/R4	A	-	-	-	-	68.0	80.0	97.0	107.0	116.0	129.0
	A	01/02/P1/P2	00	A	-	-	-	-	67.0	77.0	93.0	106.0	115.0	128.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	68.0	78.0	94.0	107.0	116.0	129.0
	A	P1/P2	R1/R2	A	-	-	-	-	70.0	81.0	98.0	111.0	120.0	133.0
	A	P1/P2	R3/R4	A	-	-	-	-	71.0	82.0	100.0	112.0	121.0	134.0
	A	P3/P4	R1/R2	A	-	-	-	-	71.0	82.0	100.0	112.0	121.0	134.0
	A	P3/P4	R3/R4	A	-	-	-	-	72.0	84.0	101.0	113.0	122.0	135.0
	E	00	00	A	46.0	53.0	58.0	68.0	-	-	-	-	-	-
	E	00	R1/R2	A	48.0	55.0	60.0	70.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	48.0	55.0	60.0	70.0	-	-	-	-	-	-
	E	00	R3/R4	A	50.0	57.0	62.0	72.0	-	-	-	-	-	-
	E	03/04	00	A	50.0	57.0	62.0	72.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	50.0	57.0	62.0	72.0	-	-	-	-	-	-
	E	P3/P4	00	A	50.0	57.0	62.0	72.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	52.0	59.0	64.0	74.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	52.0	59.0	64.0	74.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	54.0	61.0	66.0	76.0	-	-	-	-	-	-
Maximum overcurrent permitted by the protection device (MOP)	A	00	00	A	-	-	-	-	86.0	96.0	108.0	123.0	132.0	148.0
	A	00	R1/R2	A	-	-	-	-	89.0	100.0	114.0	129.0	138.0	154.0
	A	00	R3/R4	A	-	-	-	-	90.0	102.0	115.0	130.0	139.0	155.0
	A	01/02/P1/P2	00	A	-	-	-	-	89.0	99.0	111.0	129.0	138.0	154.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	90.0	100.0	112.0	130.0	139.0	155.0
	A	P1/P2	R1/R2	A	-	-	-	-	92.0	103.0	116.0	134.0	143.0	159.0
	A	P1/P2	R3/R4	A	-	-	-	-	93.0	104.0	118.0	135.0	144.0	160.0
	A	P3/P4	R1/R2	A	-	-	-	-	93.0	104.0	118.0	135.0	144.0	160.0
	A	P3/P4	R3/R4	A	-	-	-	-	94.0	106.0	119.0	136.0	145.0	161.0
	E	00	00	A	59.0	71.0	76.0	90.0	-	-	-	-	-	-
	E	00	R1/R2	A	61.0	73.0	78.0	92.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	61.0	73.0	78.0	92.0	-	-	-	-	-	-
	E	00	R3/R4	A	63.0	75.0	80.0	94.0	-	-	-	-	-	-
	E	03/04	00	A	63.0	75.0	80.0	94.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	63.0	75.0	80.0	94.0	-	-	-	-	-	-
	E	P3/P4	00	A	63.0	75.0	80.0	94.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	65.0	77.0	82.0	96.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	65.0	77.0	82.0	96.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	67.0	79.0	84.0	98.0	-	-	-	-	-	-

- not available

Power supply 230V-3-60Hz

	Version	System side - pumps	Recovery side - pumps		0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Peak current (LRA)	A	00	00	A	-	-	-	-	374.0	394.0	380.0	450.0	468.0	531.0
	A	00	R1/R2	A	-	-	-	-	380.0	402.0	391.0	461.0	479.0	542.0
	A	00	R3/R4	A	-	-	-	-	382.0	405.0	393.0	463.0	481.0	544.0
	A	01/02/P1/P2	00	A	-	-	-	-	380.0	400.0	386.0	461.0	479.0	542.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	382.0	402.0	388.0	463.0	481.0	544.0
	A	P1/P2	R1/R2	A	-	-	-	-	385.0	408.0	397.0	472.0	490.0	553.0
	A	P1/P2	R3/R4	A	-	-	-	-	388.0	411.0	399.0	474.0	492.0	555.0
	A	P3/P4	R1/R2	A	-	-	-	-	388.0	410.0	399.0	474.0	492.0	555.0
	A	P3/P4	R3/R4	A	-	-	-	-	390.0	413.0	401.0	477.0	495.0	558.0
	E	00	00	A	238.0	286.0	296.0	366.0	-	-	-	-	-	-
	E	00	R1/R2	A	242.0	290.0	300.0	370.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	242.0	290.0	300.0	370.0	-	-	-	-	-	-
	E	00	R3/R4	A	246.0	294.0	304.0	374.0	-	-	-	-	-	-
	E	03/04	00	A	246.0	294.0	304.0	374.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	246.0	294.0	304.0	374.0	-	-	-	-	-	-
	E	P3/P4	00	A	246.0	294.0	304.0	374.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	250.0	298.0	308.0	378.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	250.0	298.0	308.0	378.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	254.0	302.0	312.0	382.0	-	-	-	-	-	-
Minimum circuit amperage (MCA)	A	00	00	A	-	-	-	-	134.0	146.0	164.0	205.0	240.0	258.0
	A	00	R1/R2	A	-	-	-	-	140.0	154.0	175.0	216.0	251.0	269.0
	A	00	R3/R4	A	-	-	-	-	142.0	157.0	177.0	218.0	253.0	271.0
	A	01/02/P1/P2	00	A	-	-	-	-	140.0	152.0	170.0	216.0	251.0	269.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	142.0	154.0	172.0	218.0	253.0	271.0
	A	P1/P2	R1/R2	A	-	-	-	-	145.0	160.0	181.0	227.0	262.0	280.0
	A	P1/P2	R3/R4	A	-	-	-	-	148.0	163.0	183.0	229.0	264.0	282.0
	A	P3/P4	R1/R2	A	-	-	-	-	148.0	162.0	183.0	229.0	264.0	282.0
	A	P3/P4	R3/R4	A	-	-	-	-	150.0	165.0	185.0	232.0	267.0	285.0
	E	00	00	A	80.0	87.0	93.0	133.0	-	-	-	-	-	-
	E	00	R1/R2	A	84.0	91.0	97.0	137.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	84.0	91.0	97.0	137.0	-	-	-	-	-	-
	E	00	R3/R4	A	88.0	95.0	101.0	141.0	-	-	-	-	-	-
	E	03/04	00	A	88.0	95.0	101.0	141.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	88.0	95.0	101.0	141.0	-	-	-	-	-	-
	E	P3/P4	00	A	88.0	95.0	101.0	141.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	92.0	99.0	105.0	145.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	92.0	99.0	105.0	145.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	96.0	103.0	109.0	149.0	-	-	-	-	-	-
Maximum overcurrent permitted by the protection device (MOP)	A	00	00	A	-	-	-	-	186.0	197.0	198.0	256.0	292.0	314.0
	A	00	R1/R2	A	-	-	-	-	192.0	205.0	209.0	267.0	303.0	325.0
	A	00	R3/R4	A	-	-	-	-	194.0	208.0	211.0	269.0	305.0	327.0
	A	01/02/P1/P2	00	A	-	-	-	-	192.0	203.0	204.0	267.0	303.0	325.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	194.0	205.0	206.0	269.0	305.0	327.0
	A	P1/P2	R1/R2	A	-	-	-	-	197.0	211.0	215.0	278.0	314.0	336.0
	A	P1/P2	R3/R4	A	-	-	-	-	200.0	214.0	217.0	280.0	316.0	338.0
	A	P3/P4	R1/R2	A	-	-	-	-	200.0	213.0	217.0	280.0	316.0	338.0
	A	P3/P4	R3/R4	A	-	-	-	-	202.0	216.0	219.0	283.0	319.0	341.0
	E	00	00	A	107.0	120.0	126.0	184.0	-	-	-	-	-	-
	E	00	R1/R2	A	111.0	124.0	130.0	188.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	111.0	124.0	130.0	188.0	-	-	-	-	-	-
	E	00	R3/R4	A	115.0	128.0	134.0	192.0	-	-	-	-	-	-
	E	03/04	00	A	115.0	128.0	134.0	192.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	115.0	128.0	134.0	192.0	-	-	-	-	-	-
	E	P3/P4	00	A	115.0	128.0	134.0	192.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	119.0	132.0	138.0	196.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	119.0	132.0	138.0	196.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	123.0	136.0	142.0	200.0	-	-	-	-	-	-

- not available

Power supply 575V-3-60Hz

	Version	System side - pumps	Recovery side - pumps		0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Peak current (LRA)	A	00	00	A	-	-	-	-	138.0	144.0	132.0	164.0	171.0	202.0
	A	00	R1/R2	A	-	-	-	-	140.0	147.0	136.0	168.0	175.0	206.0
	A	00	R3/R4	A	-	-	-	-	141.0	148.0	137.0	169.0	176.0	207.0
	A	01/02/P1/P2	00	A	-	-	-	-	140.0	146.0	134.0	168.0	175.0	206.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	141.0	147.0	135.0	169.0	176.0	207.0
	A	P1/P2	R1/R2	A	-	-	-	-	142.0	149.0	139.0	173.0	180.0	211.0
	A	P1/P2	R3/R4	A	-	-	-	-	143.0	151.0	140.0	174.0	181.0	212.0
	A	P3/P4	R1/R2	A	-	-	-	-	143.0	150.0	140.0	174.0	181.0	212.0
	A	P3/P4	R3/R4	A	-	-	-	-	144.0	152.0	141.0	175.0	182.0	213.0
	E	00	00	A	102.0	104.0	108.0	140.0	-	-	-	-	-	-
	E	00	R1/R2	A	104.0	106.0	110.0	142.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	104.0	106.0	110.0	142.0	-	-	-	-	-	-
	E	00	R3/R4	A	105.0	107.0	111.0	143.0	-	-	-	-	-	-
	E	03/04	00	A	105.0	107.0	111.0	143.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	105.0	107.0	111.0	143.0	-	-	-	-	-	-
	E	P3/P4	00	A	105.0	107.0	111.0	143.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	107.0	109.0	113.0	145.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	107.0	109.0	113.0	145.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	108.0	110.0	114.0	146.0	-	-	-	-	-	-
Minimum circuit amperage (MCA)	A	00	00	A	-	-	-	-	52.0	58.0	66.0	81.0	96.0	107.0
	A	00	R1/R2	A	-	-	-	-	54.0	61.0	70.0	85.0	100.0	111.0
	A	00	R3/R4	A	-	-	-	-	55.0	62.0	71.0	86.0	101.0	112.0
	A	01/02/P1/P2	00	A	-	-	-	-	54.0	60.0	68.0	85.0	100.0	111.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	55.0	61.0	69.0	86.0	101.0	112.0
	A	P1/P2	R1/R2	A	-	-	-	-	56.0	63.0	73.0	90.0	105.0	116.0
	A	P1/P2	R3/R4	A	-	-	-	-	57.0	65.0	74.0	91.0	106.0	117.0
	A	P3/P4	R1/R2	A	-	-	-	-	57.0	64.0	74.0	91.0	106.0	117.0
	A	P3/P4	R3/R4	A	-	-	-	-	58.0	66.0	75.0	92.0	107.0	118.0
	E	00	00	A	36.0	40.0	43.0	59.0	-	-	-	-	-	-
	E	00	R1/R2	A	38.0	42.0	45.0	61.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	38.0	42.0	45.0	61.0	-	-	-	-	-	-
	E	00	R3/R4	A	39.0	43.0	46.0	62.0	-	-	-	-	-	-
	E	03/04	00	A	39.0	43.0	46.0	62.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	39.0	43.0	46.0	62.0	-	-	-	-	-	-
	E	P3/P4	00	A	39.0	43.0	46.0	62.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	41.0	45.0	48.0	64.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	41.0	45.0	48.0	64.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	42.0	46.0	49.0	65.0	-	-	-	-	-	-
Maximum overcurrent permitted by the protection device (MOP)	A	00	00	A	-	-	-	-	72.0	78.0	78.0	101.0	115.0	131.0
	A	00	R1/R2	A	-	-	-	-	74.0	81.0	82.0	105.0	119.0	135.0
	A	00	R3/R4	A	-	-	-	-	75.0	82.0	83.0	106.0	120.0	136.0
	A	01/02/P1/P2	00	A	-	-	-	-	74.0	80.0	80.0	105.0	119.0	135.0
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	75.0	81.0	81.0	106.0	120.0	136.0
	A	P1/P2	R1/R2	A	-	-	-	-	76.0	83.0	85.0	110.0	124.0	140.0
	A	P1/P2	R3/R4	A	-	-	-	-	77.0	85.0	86.0	111.0	125.0	141.0
	A	P3/P4	R1/R2	A	-	-	-	-	77.0	84.0	86.0	111.0	125.0	141.0
	A	P3/P4	R3/R4	A	-	-	-	-	78.0	86.0	87.0	112.0	126.0	142.0
	E	00	00	A	45.0	52.0	56.0	79.0	-	-	-	-	-	-
	E	00	R1/R2	A	47.0	54.0	58.0	81.0	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	47.0	54.0	58.0	81.0	-	-	-	-	-	-
	E	00	R3/R4	A	48.0	55.0	59.0	82.0	-	-	-	-	-	-
	E	03/04	00	A	48.0	55.0	59.0	82.0	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	48.0	55.0	59.0	82.0	-	-	-	-	-	-
	E	P3/P4	00	A	48.0	55.0	59.0	82.0	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	50.0	57.0	61.0	84.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	50.0	57.0	61.0	84.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	51.0	58.0	62.0	85.0	-	-	-	-	-	-

- not available

Power supply 208V-3-60Hz

	Version	System side - pumps	Recovery side - pumps		0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Peak current (LRA)	A	00	00	A	-	-	-	-	386.7	408.6	399.6	470.5	490.3	556.2
	A	00	R1/R2	A	-	-	-	-	392.5	416.8	410.9	481.8	501.6	567.5
	A	00	R3/R4	A	-	-	-	-	394.9	419.9	413.7	484.6	504.4	570.3
	A	01/02/P1/P2	00	A	-	-	-	-	392.5	414.4	405.4	481.8	501.6	567.5
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	394.9	416.8	407.8	484.6	504.4	570.3
	A	P1/P2	R1/R2	A	-	-	-	-	398.3	422.6	416.7	493.1	512.9	578.8
	A	P1/P2	R3/R4	A	-	-	-	-	400.7	425.7	419.5	495.9	515.7	581.6
	A	P3/P4	R1/R2	A	-	-	-	-	400.7	425.0	419.1	495.9	515.7	581.6
	A	P3/P4	R3/R4	A	-	-	-	-	403.1	428.1	421.9	498.7	518.5	584.4
	E	00	00	A	262.3	310.3	321.3	392.2	-	-	-	-	-	-
	E	00	R1/R2	A	266.7	314.7	325.7	396.6	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	266.7	314.7	325.7	396.6	-	-	-	-	-	-
	E	00	R3/R4	A	270.5	318.5	329.5	400.4	-	-	-	-	-	-
	E	03/04/P3/P4	00	A	270.5	318.5	329.5	400.4	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	271.1	322.9	330.1	404.8	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	274.9	322.9	333.9	404.8	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	274.9	322.9	333.9	404.8	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	278.7	326.7	337.7	408.6	-	-	-	-	-	-
Minimum circuit amperage (MCA)	A	00	00	A	-	-	-	-	140.6	152.2	171.4	211.7	247.6	266.0
	A	00	R1/R2	A	-	-	-	-	146.4	160.4	182.7	223.0	258.9	277.3
	A	00	R3/R4	A	-	-	-	-	148.8	163.5	185.5	225.8	261.7	280.1
	A	01/02/P1/P2	00	A	-	-	-	-	146.4	158.0	177.2	223.0	258.9	277.3
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	148.8	160.4	179.6	225.8	261.7	280.1
	A	P1/P2	R1/R2	A	-	-	-	-	152.2	166.2	188.5	234.3	270.2	288.6
	A	P1/P2	R3/R4	A	-	-	-	-	154.6	169.3	191.3	237.1	273.0	291.4
	A	P3/P4	R1/R2	A	-	-	-	-	154.6	168.6	190.9	237.1	273.0	291.4
	A	P3/P4	R3/R4	A	-	-	-	-	157.0	171.7	193.7	239.9	275.8	294.2
	E	00	00	A	100.7	107.9	113.7	154.1	-	-	-	-	-	-
	E	00	R1/R2	A	105.1	112.3	118.1	158.5	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	105.1	112.3	118.1	158.5	-	-	-	-	-	-
	E	00	R3/R4	A	108.9	116.1	121.9	162.3	-	-	-	-	-	-
	E	03/04/P3/P4	00	A	108.9	116.1	121.9	162.3	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	109.5	120.5	122.5	166.7	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	113.3	120.5	126.3	166.7	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	113.3	120.5	126.3	166.7	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	117.1	124.3	130.1	170.5	-	-	-	-	-	-
Maximum overcurrent permitted by the protection device (MOP)	A	00	00	A	-	-	-	-	191.9	203.4	204.7	263.0	298.9	321.8
	A	00	R1/R2	A	-	-	-	-	197.7	211.6	216.0	274.3	310.2	333.1
	A	00	R3/R4	A	-	-	-	-	200.1	214.7	218.8	277.1	313.0	335.9
	A	01/02/P1/P2	00	A	-	-	-	-	197.7	209.2	210.5	274.3	310.2	333.1
	A	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	A	03/04/P3/P4	00	A	-	-	-	-	200.1	211.6	212.9	277.1	313.0	335.9
	A	P1/P2	R1/R2	A	-	-	-	-	203.5	217.4	221.8	285.6	321.5	344.4
	A	P1/P2	R3/R4	A	-	-	-	-	205.9	220.5	224.6	288.4	324.3	347.2
	A	P3/P4	R1/R2	A	-	-	-	-	205.9	219.8	224.2	288.4	324.3	347.2
	A	P3/P4	R3/R4	A	-	-	-	-	208.3	222.9	227.0	291.2	327.1	350.0
	E	00	00	A	128.3	141.3	147.0	205.4	-	-	-	-	-	-
	E	00	R1/R2	A	132.7	145.7	151.4	209.8	-	-	-	-	-	-
	E	01/02/P1/P2	00	A	132.7	145.7	151.4	209.8	-	-	-	-	-	-
	E	00	R3/R4	A	136.5	149.5	155.2	213.6	-	-	-	-	-	-
	E	03/04/P3/P4	00	A	136.5	149.5	155.2	213.6	-	-	-	-	-	-
	E	01/02/03/04	R1/R2/R3/R4	A	-	-	-	-	-	-	-	-	-	-
	E	P1/P2	R1/R2	A	137.1	153.9	155.8	218.0	-	-	-	-	-	-
	E	P1/P2	R3/R4	A	140.9	153.9	159.6	218.0	-	-	-	-	-	-
	E	P3/P4	R1/R2	A	140.9	153.9	159.6	218.0	-	-	-	-	-	-
	E	P3/P4	R3/R4	A	144.7	157.7	163.4	221.8	-	-	-	-	-	-

- not available

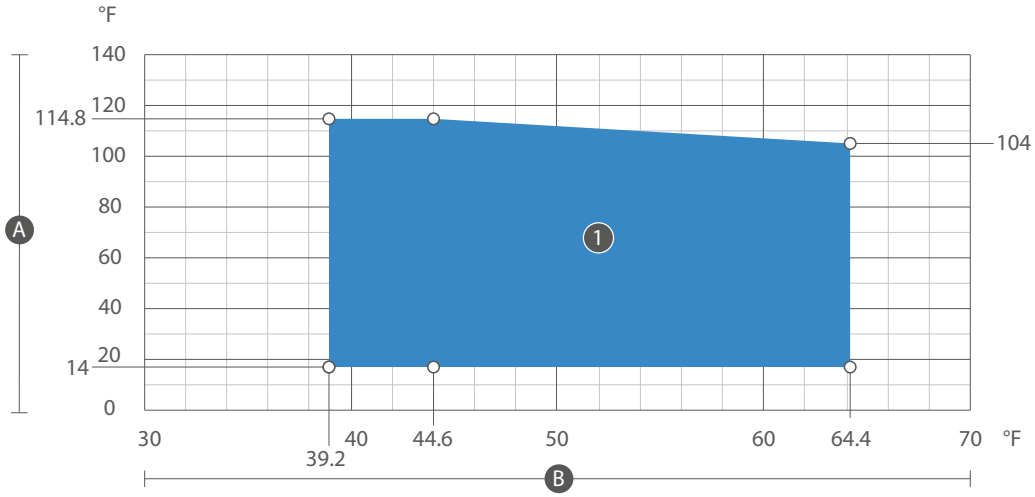
6 OPERATING LIMITS

In their standard configuration, the units are not suitable for installation in salty environments.
The values indicated in the table refer to the min. and max. limits of the unit, valid for ΔT = -22.0 °F (cooling mode) and ΔT = -22.9 °F (heating mode).

■ *If the unit is installed in particularly windy locations the provision of wind barriers may be necessary to avoid malfunctions. It should be installed if wind speed is above 4.3 knot.*

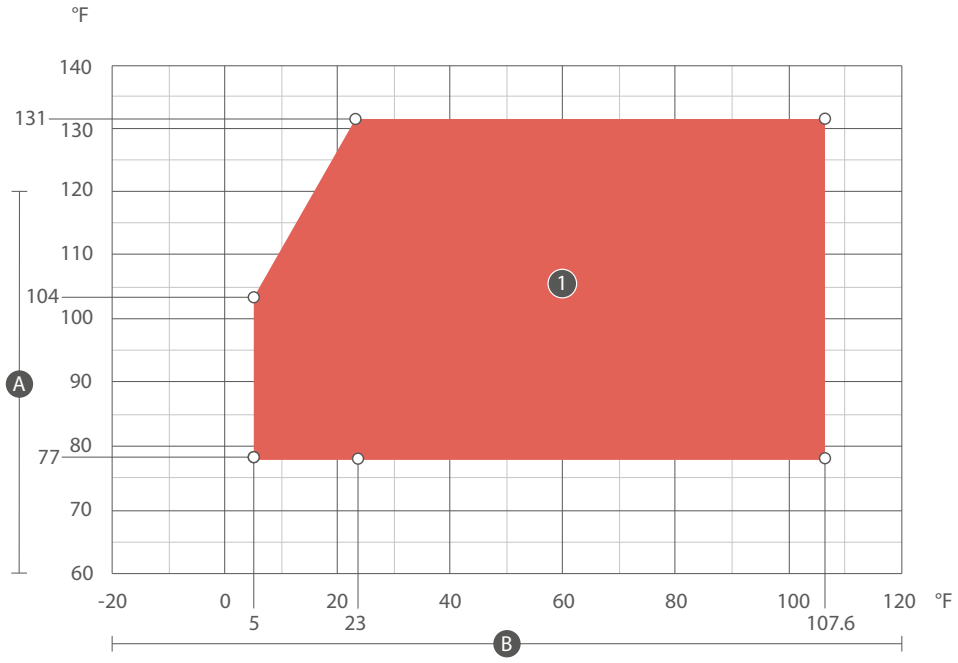
WARNING: Under no circumstances does the unit have to be operated outside the operating limit under penalty of the warranty expiration. Aermec S.p.A. cannot be held responsible for any malfunction of the units which are operated outside the established limits and for their consequences.

COOLING



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

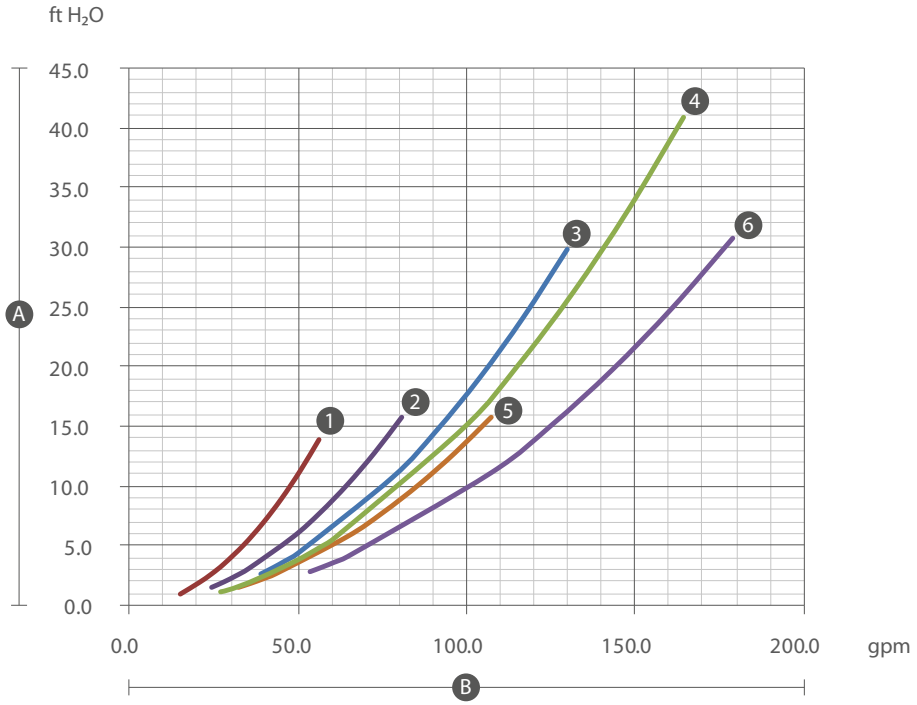
HEATING



Key
A **Outdoor air temperature - dry bulb (°F)**
B **Water produced (°F)**
1 Standard mode

7 PRESSURE DROPS

SYSTEM SIDE (EV) PRESSURE DROP COOLING MODE FUNCTIONING (2/4 PIPES)

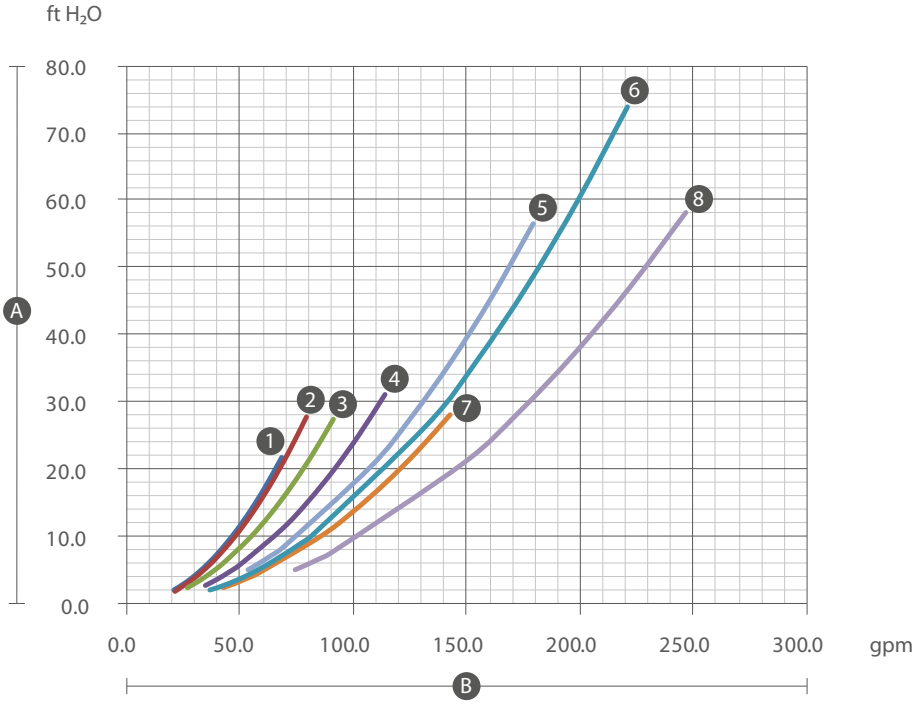


Key:

A	Pressure drop (ft H2O)
B	Water flow rate (gpm)
1	0280 (E) - 0300 (E) - 0330 (E)
2	0350 (E)
3	0600 (A)
4	0500 (A) - 0650 (A) - 0700 (A)
5	0550 (A)
6	0750 (A)

The diagram pressure drop are related to an average water temperature of 10°C/50°F

RECOVERY MODE WITH DHW SIDE (2 pipes) hot water production system side (4 pipes)



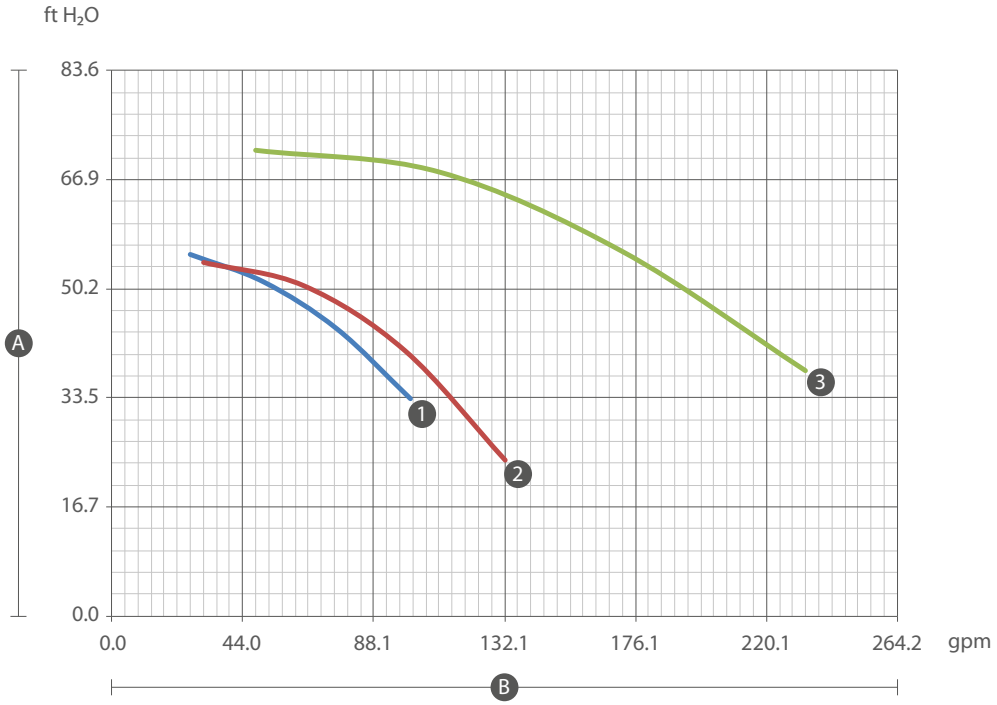
Key:

A	Pressure drop (ft H2O)
B	Water flow rate (gpm)
1	0280 (E)
2	0300 (E)
3	0330 (E)
4	0350 (E)
5	0600 (A)
6	0500 (A) - 0650 (A) - 0700 (A)
7	0550 (A)
8	0750 (A)

The diagram pressure drop are related to an average water temperature of 43°C/109.4°F

8 PUMPS STATIC PRESSURE

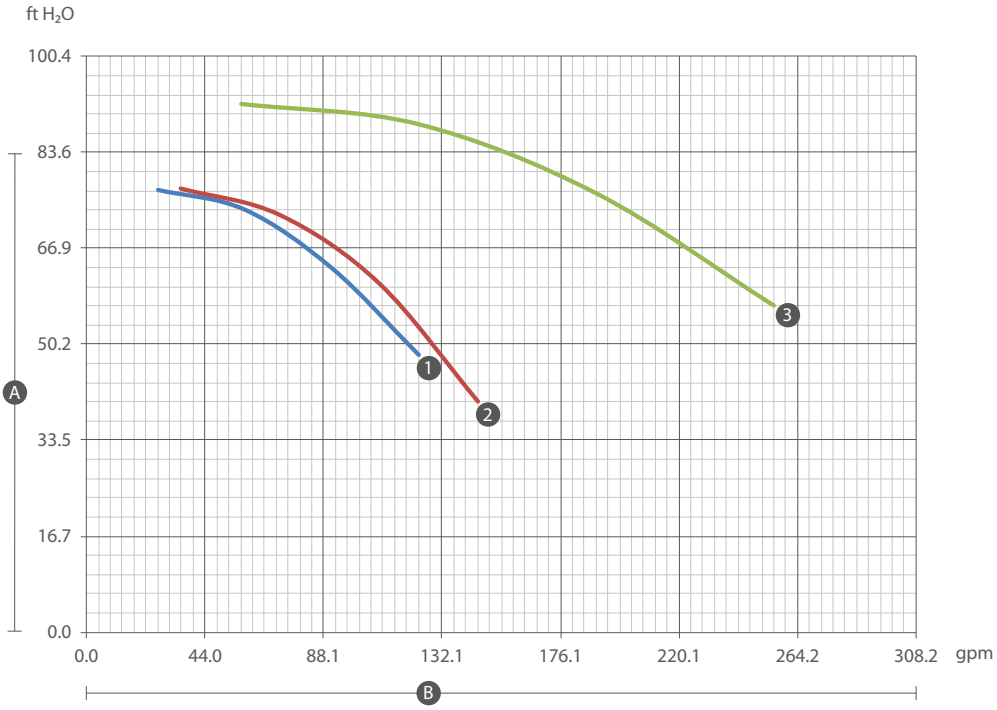
Low Static pressure pumps, USER SIDE (P1-P2-01-02)



Key:

A	Pumps static pressure (ft H2O)
B	Water flow rate (gpm)
1	0280 - 0300 - 0330 - 0350
2	0500 - 0550 - 0600
3	0650 - 0700 - 0750

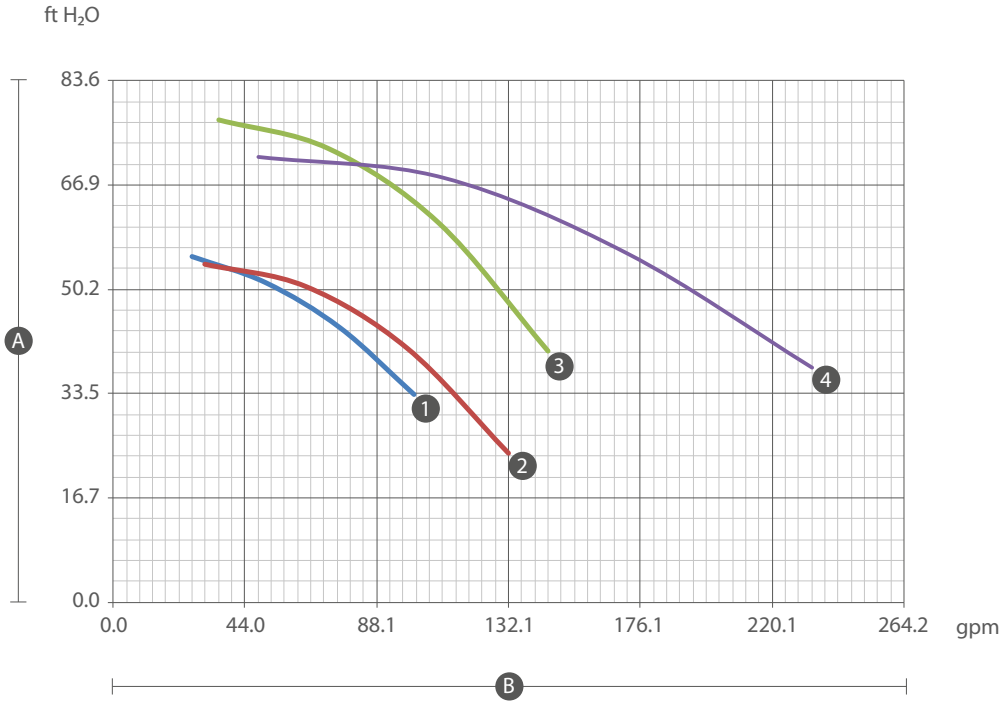
HIGH Static pressure pumps, USER SIDE (P3-P4-03-04)



Key:

A	Pumps static pressure (ft H2O)
B	Water flow rate (gpm)
1	0280 - 0300 - 0330 - 0350
2	0500 - 0550 - 0600
3	0650 - 0700 - 0750

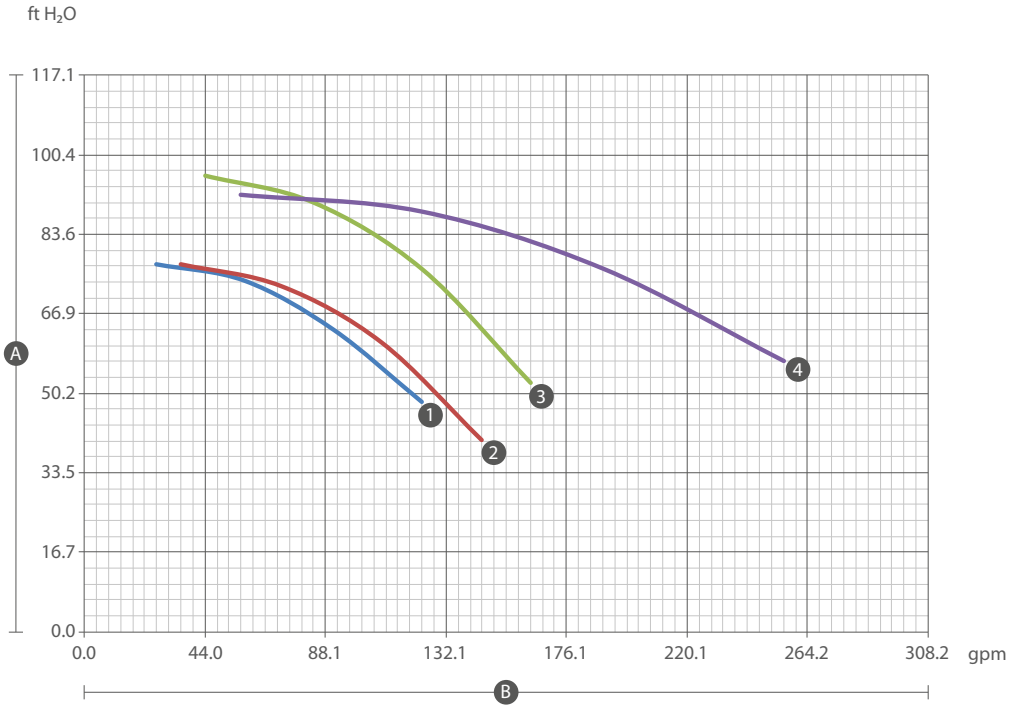
Low Static pressure pumps, RECOVERY SIDE (R1-R2)



Key:

A	Pumps static pressure (ft H2O)
B	Water flow rate (gpm)
1	0280 - 0300 - 0330 - 0350
2	0500
3	0550
4	0600 - 0650 - 0700 - 0750

HIGH Static pressure pumps, RECOVERY SIDE (R3-R4)



Key:

A	Pumps static pressure (ft H2O)
B	Water flow rate (gpm)
1	0280 - 0300 - 0330 - 0350
2	0500
3	0550
4	0600 - 0650 - 0700 - 0750

9 SYSTEM WATER CONTENT

MINIMUM SYSTEM WATER CONTENT

For correct unit operation, there must be a suitable amount of water in the system. A sufficient quantity of water not only ensures machine stability, but also helps avoid a high number of hourly compressor start-ups.
To calculate it, use the formula: Unit rated cooling capacity (ton) x table value (gal/ton) = Minimum system content (gal).

NRP 2-PIPE SYSTEM		0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Minimum water content allowed SYSTEM SIDE	gal/ton					9					
Minimum water content allowed DHW SIDE	gal/ton					9					
Recommended water content SYSTEM AND DHW SIDE	gal/ton					13					

NRP 4-PIPE SYSTEM		0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Minimum water content allowed COOLING SIDE	gal/ton					6.5					
Minimum water content allowed HEATING SIDE	gal/ton					9					
Recommended water content COOLING AND HEATING SIDE	gal/ton					13					

Note: the water content referred to in the tables corresponds to the amount of water effectively useful for inertial purposes; this value does not necessarily coincide with the entire system water content, and must be calculated on the basis of the system layout and operating modes.

Some examples are given below, but they do not cover all the possible situations.
Example 1: for a 4-pipe multifunction unit with primary circuit (heating and cooling) and secondary circuit, where the zone pumps of the secondary circuit may (even just occasionally) be disabled, the water content of the primary circuit alone is considered the amount useful for count purposes.
Example 2: for a 2-pipe multifunction unit with an intermediate circuit (DHW side) that works on an intermediate heat exchanger for DHW production, and a secondary circuit and boiler downstream from the heat exchanger, the water content of the secondary circuit and the DHW storage tank can only be considered part of the useful amount if both the following conditions are met:

1. the intermediate heat exchanger is suitably sized on the basis of the machine capacity;
2. both pumps (primary and secondary) are always active or are simultaneously commanded on the basis of the temperature of the water in the DHW storage tank (measured by an SSAN probe).

On the system circuit of a multifunction unit for 2-pipe systems, example 1 applies.

If you are in any doubt, please refer to the relevant technical documentation or contact the AERMEC Technical-Commercial Service.

NOTICE: Under no circumstances does the unit have to be operated when water flow rate on the heat exchanger is below the minimum water flow rate or above the maximum water flow rate, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction of the units which are operated outside the established limits of water flow rate and for their consequences

NOTICE: Under no circumstances does the unit have to be operated in a system in which the content of the water circulating is below the MINIMUM SYSTEM WATER CONTENT, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction of the units which are operated in a system in which the content of the water circulating is below the MINIMUM SYSTEM WATER CONTENT and for their consequences

NOTICE: in the case of several units connected in parallel, the designer must ensure that the configuration of the system and the management logic adopted do not cause too frequent START/STOP cycles and / or sudden changes in the water flow rate of the groups in operation

ATTENTION It is recommended to design systems with high water content (minimum recommended values shown in tab), in order to limit:

- **The hourly number of inversions between operating modes**
- **Drop in water temperature during winter defrost cycles.**

MAXIMUM SYSTEM WATER CONTENT

Units with the hydronic kit mounted come standard with the expansion vessel set at 21.8 psi, the pressure relief valve and the water filter mounted.
The maximum system water content depends on the capacity of the expansion vessel and on the calibration of the pressure relief valve.

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Hydronic kit												
Expansion vessel number	A	no.	-	-	-	-	1	1	1	1	1	2
	E	no.	1	1	1	1	-	-	-	-	-	-
Expansion vessel capacity	A	gal	-	-	-	-	6.3	6.3	6.3	6.3	6.3	6.3
	E	gal	6.3	6.3	6.3	6.3	-	-	-	-	-	-
Storage tank number	A	no.	-	-	-	-	1	1	1	1	1	1
	E	no.	1	1	1	1	-	-	-	-	-	-
Storage tank capacity	A	gal	-	-	-	-	132.1	132.1	132.1	132.1	132.1	184.9
	E	gal	79.3	79.3	79.3	79.3	-	-	-	-	-	-
Pressure relief valve	A	n°/psi	-	-	-	-	1/87.0	1/87.0	1/87.0	1/87.0	1/87.0	1/87.0
	E	n°/psi	1/87.0	1/87.0	1/87.0	1/87.0	-	-	-	-	-	-

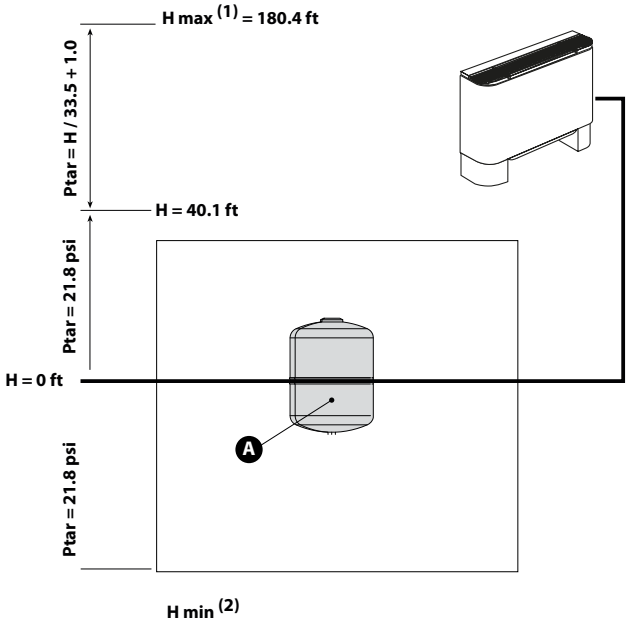
The table gives an example of the maximum water content calculated at the indicated operating conditions and only to protect the unit.
If the volume of water in the system is higher, add another expansion vessel of the correct size.

System water temperature max/min	**°F**			**104/39.2**		
Hydraulic height	**Ft**	**98.4**	**82.0**	**65.6**	**49.2**	**≤40.19**
Expansion vessel pre-load	psi	46.4	40.6	33.4	26.1	21.8
Water content maximum	gal	574.3	699.0	823.7	948.4	1,017.6
System water temperature max/min	**°F**			**140/39.2**		
Expansion vessel pre-load	psi	46.4	40.6	33.4	26.1	21.8
Water content maximum	gal	258.4	314.4	370.9	426.9	457.5

The data in the table refer to units with a 6.3 gal. expansion vessel.

EXPANSION VESSEL SETTING

The expansion tank volume is 6.3 gal. The standard value of the expansion tank pre-charge pressure is 21.8 psi, but this can be calibrated up to a maximum of 87.0 psi.
The expansion tank pressure setting has to be adjusted based on the difference in height (H) of the installation (see figure) according to the formula: p (rating) [psi] = H [ft] / 33.5 + 1.0.
For example: if level difference H is equal to 65.6 ft, the calibration value of the vessel will be 33.4 psi.
If the calibration value obtained from the formula is less than 21.8 psi (i.e. for H < 40.2), use the standard calibration.



Key
A Expansion vessel
1 Check that highest utility is not higher than 180.4 ft
2 Ensure that lowest utility can withstand global pressure in that position

10 CORRECTION FACTORS

CORRECTIVE FACTORS FOR AVERAGE WATER TEMPERATURES DIFFERENT FROM NOMINAL VALUES

The pressure drops are calculated with an average water temperature of 50.0 °F (Cooling mode), 109.4 °F (Heating or recovery mode)

		System side heat exchanger													
		Cooling mode							Heating mode or recovery						
Average water temperatures	°F	41.0	50.0	59.0	68.0	86.0	104.0	122.0	73.4	82.4	91.4	100.4	109.4	118.4	127.4	134.4
Correction factor		1.02	1.00	0.98	0.97	0.95	0.93	0.91	1.04	1.03	1.02	1.01	1.00	0.99	0.98	0.97

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

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

11 GLYCOL

ETHYLENE GLYCOL

Cooling mode

CORRECTION FACTOR WITH ETHYLENE GLYCOL - COOLING MODE											
Freezing Point	°F	0	25.47	21.02	15.93	10.20	3.67	–3.89	-12.62	-22.79	-34.78
Percent ethylene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwc	–	1.000	1.033	1.040	1.049	1.060	1.072	1.086	1.102	1.120	1.141
Pc	–	1.000	0.990	0.985	0.980	0.975	0.970	0.965	0.960	0.955	0.950
Pa	–	1.000	0.996	0.994	0.992	0.990	0.988	0.986	0.984	0.982	0.980
Δp	–	1.000	1.109	1.157	1.209	1.268	1.336	1.414	1.505	1.609	1.728

Heating mode range

CORRECTION FACTOR WITH ETHYLENE GLYCOL - HEATING MODE											
Freezing Point	°F	0	25.47	21.02	15.93	10.20	3.67	-3.89	-12.62	-22.79	-34.78
Percent ethylene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwh	–	1.000	1.027	1.038	1.050	1.063	1.078	1.095	1.114	1.135	1.158
Ph	–	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Pa	–	1.000	1.002	1.003	1.004	1.005	1.007	1.008	1.010	1.012	1.015
Δp	–	1.000	1.087	1.128	1.175	1.227	1.286	1.353	1.428	1.514	1.610

PROPYLENE GLYCOL

Cooling mode

CORRECTION FACTOR WITH PROPILENE GLYCOL - COOLING MODE											
Freezing Point	°F	0	25.83	22.46	18.61	14.04	8.46	1.65	-6.65	-16.67	-28.70
Percent propilene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwc	–	1.000	1.007	1.006	1.007	1.010	1.015	1.022	1.032	1.044	1.058
Pc	–	1.000	0.985	0.978	0.970	0.963	0.955	0.947	0.939	0.932	0.924
Pa	–	1.000	0.996	0.994	0.992	0.990	0.988	0.986	0.984	0.982	0.980
Δp	–	1.000	1.082	1.102	1.143	1.201	1.271	1.351	1.435	1.520	1.602

Heating mode range

CORRECTION FACTOR WITH PROPILENE GLYCOL - HEATING MODE											
Freezing Point	°F	0	25.83	22.46	18.61	14.04	8.46	1.65	-6.65	-16.67	-28.70
Percent propilene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwh	–	1.000	1.008	1.014	1.021	1.030	1.042	1.055	1.071	1.090	1.112
Ph	–	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Pa	–	1.000	1.003	1.004	1.005	1.007	1.009	1.011	1.014	1.018	1.023
Δp	–	1.000	1.050	1.077	1.111	1.153	1.202	1.258	1.321	1.390	1.467

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

12 SOUND DATA

COOLING

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Sound data calculated in cooling mode (1)												
Sound power level	A	dB(A)	-	-	-	-	83	84	85	86	86	86
	E	dB(A)	74	75	77	78	-	-	-	-	-	-
Sound pressure level (10 m / 33 ft)	A	dB(A)	-	-	-	-	51	52	53	54	54	54
	E	dB(A)	42	43	45	46	-	-	-	-	-	-
Sound pressure level (1 m / 3.3 ft)	A	dB(A)	-	-	-	-	63	64	65	66	66	66
	E	dB(A)	54	55	57	58	-	-	-	-	-	-
Sound power by centre octave band dB(A)												
125 Hz	A	dB(A)	-	-	-	-	69,1	70,1	71,9	72,4	73,9	74,8
	E	dB(A)	72,2	74,1	75,1	76,1	-	-	-	-	-	-
250 Hz	A	dB(A)	-	-	-	-	70,8	71,9	74,4	73,6	74,2	75,3
	E	dB(A)	61,1	63,2	64	65	-	-	-	-	-	-
500 Hz	A	dB(A)	-	-	-	-	75	77	77,8	78,1	79	80,1
	E	dB(A)	66,4	68,1	69,1	70,1	-	-	-	-	-	-
1000 Hz	A	dB(A)	-	-	-	-	77,7	79,5	80,7	80,9	79,3	80,5
	E	dB(A)	63,5	65,3	66,3	67,6	-	-	-	-	-	-
2000 Hz	A	dB(A)	-	-	-	-	77,5	78,5	79,4	81	81	82
	E	dB(A)	61	63	64,1	64,6	-	-	-	-	-	-
4000 Hz	A	dB(A)	-	-	-	-	75,1	74	75	77,6	77,6	78,2
	E	dB(A)	50	52	53,3	55	-	-	-	-	-	-
8000 Hz	A	dB(A)	-	-	-	-	64,8	63	62,9	67,1	66,2	67,2
	E	dB(A)	43,7	45,5	46,8	47,1	-	-	-	-	-	-

(1) Sound power calculated on the basis of measurements made in accordance with UNI EN ISO 9614-2. Sound pressure (cold functioning) measured in free field, 10 m / 33 ft away from the unit external surface (in compliance with UNI EN ISO 3744).

HEATING

Size			0280	0300	0330	0350	0500	0550	0600	0650	0700	0750
Sound data calculated in heating mode (1)												
Sound power level	A	dB(A)	-	-	-	-	83	84	85	86	86	87
	E	dB(A)	74	76	77	78	-	-	-	-	-	-
Sound pressure level (10 m / 33 ft)	A	dB(A)	-	-	-	-	51	52	53	54	54	55
	E	dB(A)	42	44	45	46	-	-	-	-	-	-
Sound pressure level (1 m / 3.3 ft)	A	dB(A)	-	-	-	-	63	64	65	66	66	67
	E	dB(A)	54	56	57	58	-	-	-	-	-	-
Sound power by centre octave band dB(A)												
125 Hz	A	dB(A)	-	-	-	-	69,1	70,1	71,9	72,4	73,9	73,9
	E	dB(A)	72,2	73	75,1	76,1	-	-	-	-	-	-
250 Hz	A	dB(A)	-	-	-	-	70,8	71,9	74,4	73,6	74,2	74,2
	E	dB(A)	61,1	62,5	64	65	-	-	-	-	-	-
500 Hz	A	dB(A)	-	-	-	-	75	77	77,8	78,1	79	79
	E	dB(A)	66,4	67,5	69,1	70,1	-	-	-	-	-	-
1000 Hz	A	dB(A)	-	-	-	-	77,7	79,5	80,7	80,9	79,3	79,3
	E	dB(A)	63,5	64,4	66,3	67,6	-	-	-	-	-	-
2000 Hz	A	dB(A)	-	-	-	-	77,5	78,5	79,4	81	81	81
	E	dB(A)	61	62,5	64,1	64,6	-	-	-	-	-	-
4000 Hz	A	dB(A)	-	-	-	-	75,1	74	75	77,6	77,6	77,6
	E	dB(A)	50	51,2	53,3	55	-	-	-	-	-	-
8000 Hz	A	dB(A)	-	-	-	-	64,8	63	62,9	67,1	66,2	66,2
	E	dB(A)	43,7	45	46,8	47,1	-	-	-	-	-	-

(1) Sound power calculated on the basis of measurements made in accordance with UNI EN ISO 9614-2. Sound pressure (cold functioning) measured in free field, 10 m / 33 ft away from the unit external surface (in compliance with UNI EN ISO 3744).

Data 14511:2018
System water temperature 54/44 °F (in/out)
External air temperature 95 °F
Standard fans
Note
For operating conditions different to those declared refer to the selection program Magellano, available on www.aermec.com

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