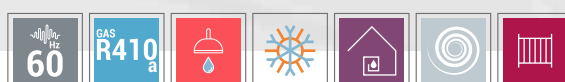


# WRK 0300-0700

## Technical manual



### REVERSIBLE WATER-COOLED HEAT PUMP, GAS SIDE

Cooling capacity 19.1 ÷ 49.1 ton

Heating capacity 281,781 ÷ 742,025 BTU/h





*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



Intertek




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

## TABLE OF CONTENTS

1. Fields of the range .....	p. 6	15. Glycol.....	p. 28
Extended operating range.....	p. 6	Ethylene glycol .....	p. 28
Dual-circuit unit .....	p. 6	Propylene glycol .....	p. 28
Plug and play .....	p. 6	16. Sound data.....	p. 29
Integrated hydronic kit .....	p. 6		
2. Configurator.....	p. 6		
3. Unit components description .....	p. 7		
Refrigerant circuit.....	p. 7		
Hydraulic circuit (versions with hydronic kit).....	p. 7		
Control and safety components .....	p. 7		
Electrical control and power panel .....	p. 7		
4. Main hydraulic circuits .....	p. 8		
Without hydronic kit .....	p. 8		
With user side pumps .....	p. 9		
With source side pumps .....	p. 10		
With user and source side pumps .....	p. 11		
With desuperheater.....	p. 12		
5. Main cooling refrigerant layouts .....	p. 13		
0300÷0500.....	p. 13		
0550.....	p. 14		
0600÷0700.....	p. 15		
6. Accessories.....	p. 16		
Factory fitted accessories .....	p. 16		
Accessories compatibility.....	p. 16		
7. Performance specifications .....	p. 17		
WRK.....	p. 17		
WRK with desuperheater.....	p. 17		
8. General technical data .....	p. 18		
Electric data.....	p. 18		
Dimensions and weights .....	p. 19		
9. Operating limits .....	p. 20		
Cooling mode.....	p. 20		
Heating mode range.....	p. 21		
10. Pressure drops.....	p. 22		
Cooling mode.....	p. 22		
11. Desuperheater pressure drops.....	p. 23		
12. Pumps static pressure.....	p. 24		
Hydronic kit - low heada (M-N-U-V) .....	p. 24		
Hydronic kit - high head (O-P-W-Z) .....	p. 24		
Single hydronic kits' data.....	p. 25		
13. System water content.....	p. 26		
Minimum system water content .....	p. 26		
Maximum system water content .....	p. 26		
Expansion vessel setting .....	p. 27		
14. Correction factors .....	p. 28		
Corrective factors for Average water temperatures			
different from nominal values .....	p. 28		
Fouling: deposit corrective factors $[K \cdot m^2]/[W]$ .....	p. 28		

1 FIELDS OF THE RANGE

 **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**

Water source heat pump with reverse cycle valve. The unit can produce chilled and hot water but it is optimized for high temperature hot water production, making it a perfect solution for DHW applications. It can also work with low source temperatures which make it possible to work with geothermal applications.

EXTENDED OPERATING RANGE

Particular attention has been given to winter operation, ensuring the production of hot water up to 154.4 °F.

DUAL-CIRCUIT UNIT

The units are dual-circuit, to ensure maximum efficiency both at full load and at partial load.

2 CONFIGURATOR

Field	Description
1,2,3	WRK
4,5,6,7	Size 0300, 0330, 0350, 0500, 0550, 0600, 0650, 0700
8	Operating field
9	Model
10	Version
11	Evaporator
12	Heat recovery
13	Power supply

PLUG AND PLAY

All units are equipped with scroll compressors with steam injection and brazed plate heat exchangers. The base and panels are made of steel treated with polyester paints RAL 9003. The heat pump can be supplied with all the components required for its installation in new systems and in retrofit applications. It can be combined with low temperature emission systems such as in floor radiant heating or fan coils, but also with conventional radiators.

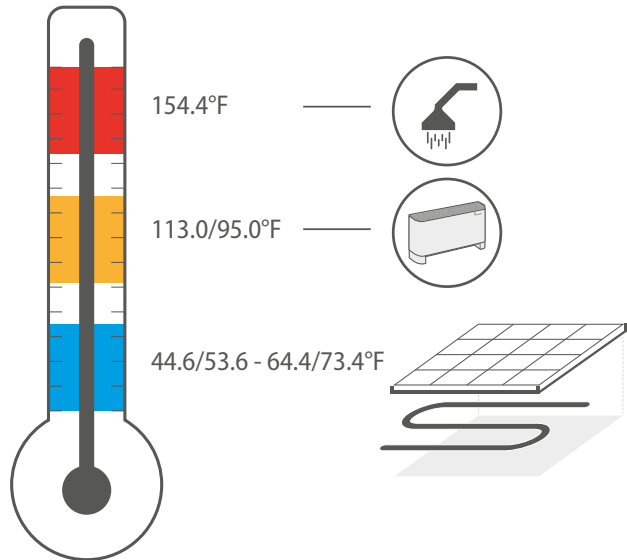
INTEGRATED HYDRONIC KIT

Integrated hydronic kit containing the main hydraulic components; available with various configurations with one or two pumps, high or low head, to obtain a solution that allows you to save money and to facilitate installation.

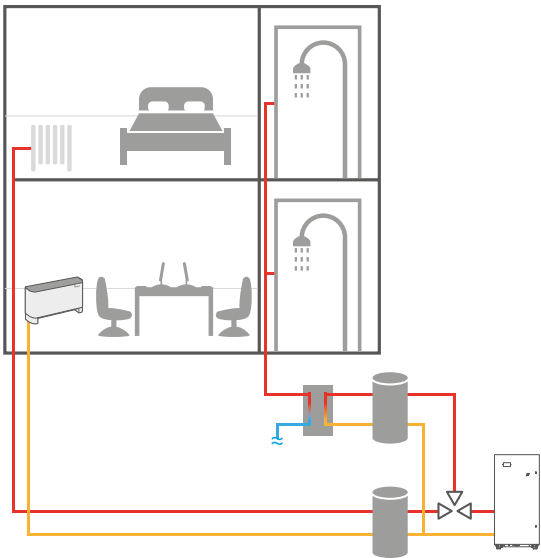
Field	Description
7	460V~3 60Hz with magnet circuit breakers
14	System side - pumps
15	Integrated hydronic kit, source side
16	Field for future development

(1) Option not available only for sizes 0650-0700.

Application examples



WRK units are used in building renovations, where centralised boilers need replacing, while maintaining the existing distribution system and terminals (e.g. radiators) at the same time, to ensure the production of domestic hot water. This situation is typical when operating in contexts such as public buildings, but also in the case of centralised residential systems such as condominiums, where costs must be



limited without changing the distribution system, while also offering a renewable energy source, represented precisely by heat pumps. Being able to upgrade a building without involving the distribution system also eliminates the inconveniences associated with the renovation of the premises, ensuring the continuity of the property's use, saving time and money.

### 3 UNIT COMPONENTS DESCRIPTION

#### REFRIGERANT CIRCUIT

##### Compressors

High-efficiency scroll hermetic compressors with 2-pole electric motors. All the compressors are equipped with inner electronic thermal protection device.

##### System side heat exchanger

Brazed plate heat exchanger in stainless steel. It is externally insulated with closed cell neoprene anti-condensation material.

##### Source side heat exchanger

Brazed plate heat exchanger in stainless steel. It is externally insulated with closed cell neoprene anti-condensation material.

##### 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.

##### Solenoid valves

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

##### 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 (VERSIONS WITH HYDRONIC KIT)

##### Flow switch

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

##### Pump

They provide useful static pressure to the system, excluding the unit pressure drops. A second standby pump (twin pumps) can be supplied upon request.

##### Water filter

Equipped with steel filtering mesh, it prevents the heat-exchanger from clogging system side due to any impurity inside the circuit.

■ *The filter only protects the heat exchangers; if the water is particularly dirty, you are advised to fit an external filter to protect the pumps).*

##### Expansion vessel

Membrane type precharged with nitrogen.

##### 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.

#### CONTROL AND SAFETY COMPONENTS

##### Pressure relief valve for cooling circuit

Activates by discharging overpressure if abnormal pressure occurs.

##### 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.

##### 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.

##### 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.

#### ELECTRICAL CONTROL AND POWER PANEL

Complete with:

- door interlocked isolator
- Magnet circuit breakers and contactors for compressors and fans
- terminals for REMOTE PANEL
- spring type terminals for control circuit
- externally rated cabinet, with double panel and seals
- electronic controller
- evaporator pump and recovery pump control consent relay (only for versions without pump units)
- 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.

##### Electronic controller

The microprocessor controls features cutting edge functions and proprietary adjustments.

The keyboard is equipped with control keys and LCD display, which allows you to consult and make interventions on the unit by means of the multi-level menu, with language selection settings. It controls:


- The system temperature for cooling the environments or industrial processes. The different temperatures are managed automatically according to the unit work conditions and requirements.
- Management and alarm log to have always a prompt diagnosis of the unit operation.
- Creation of operation time periods required for efficient programming

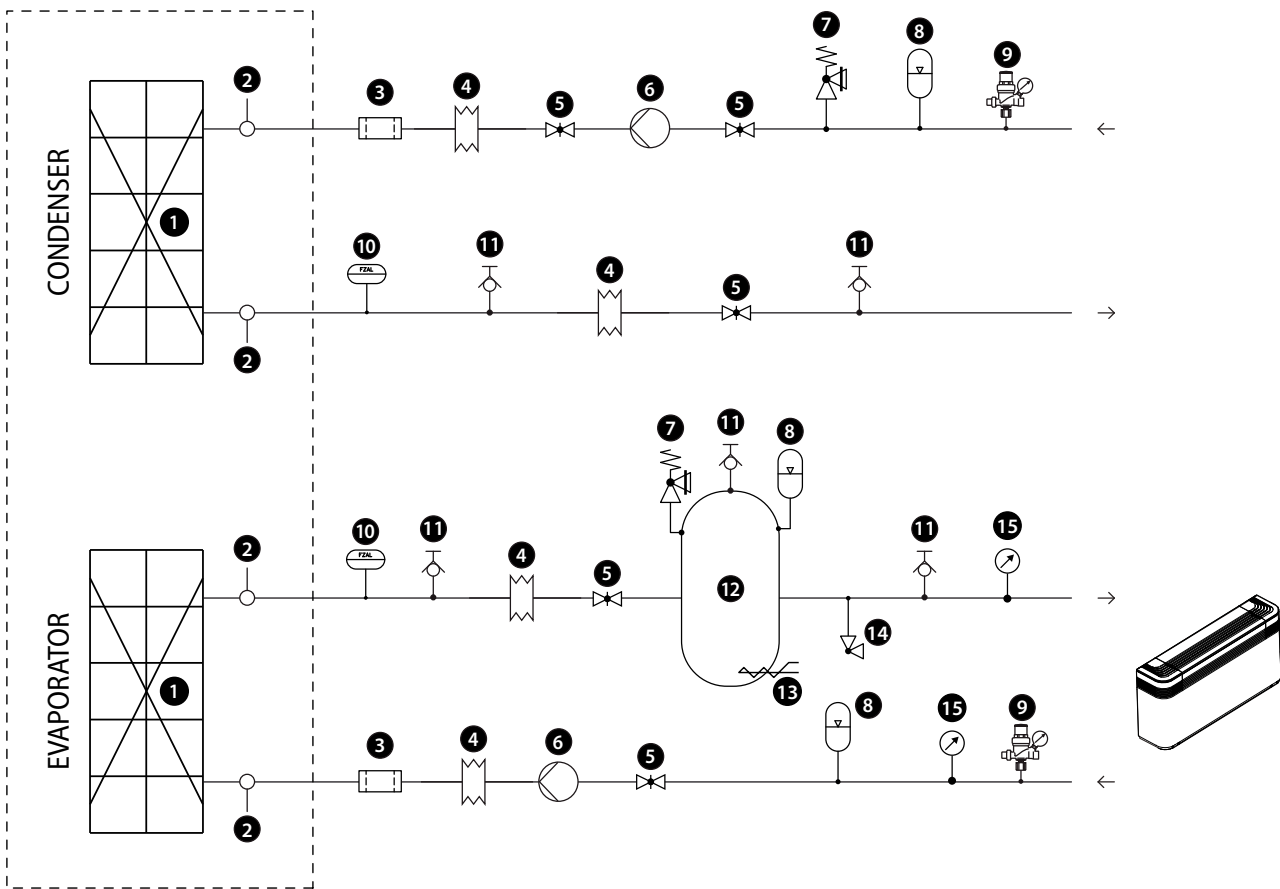
A specific keyboard for wall-mounting installation (PGD1) allows the remote control of all the functions.

■ *For further information refer to the user manual.*

4 MAIN HYDRAULIC CIRCUITS

WITHOUT HYDRONIC KIT

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



- Components as standard**


  - 1 Plate heat exchanger
  - 2 Water temperature sensors (IN/OUT)


**Components not provided and responsibility of the installer**

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

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO <sub>4</sub> )	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO <sub>3</sub> )	70 - 300 ppm
Chloride ions (Cl <sup>-</sup> )	< 50 ppm
Sulphate ions (SO <sub>4</sub> )	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH <sub>4</sub> )	None
Silica (SiO <sub>2</sub> )	< 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.

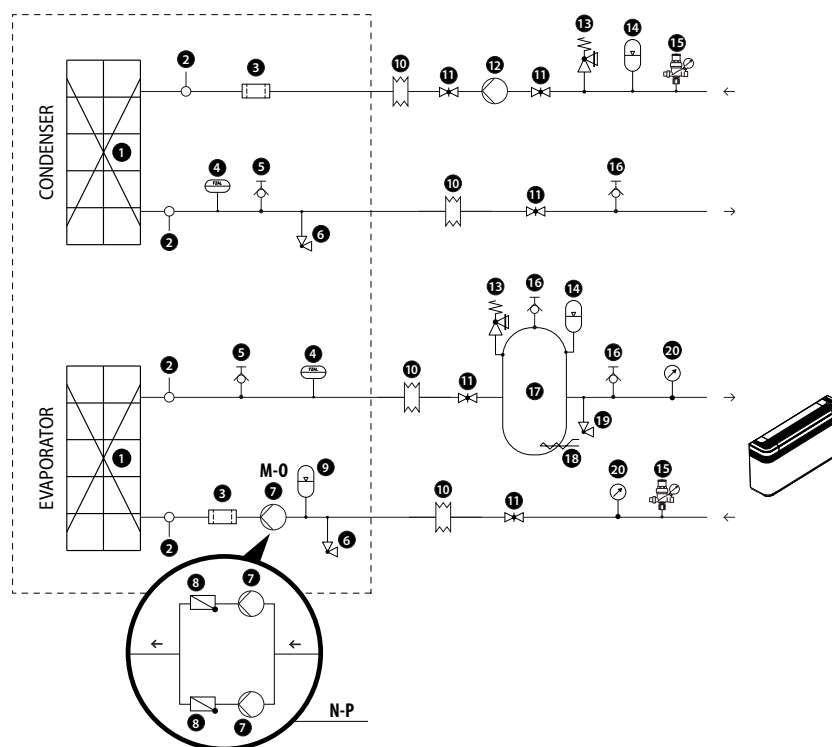
 **WARNING** under no circumstances does the unit have to be operated with water circulating on the heat exchanger whose characteristics are different from those indicated in the table WATER CHARACTERISTICS, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction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



## WITH USER SIDE PUMPS



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



### Components as standard

- 1 Plate heat exchanger
- 2 Water temperature sensors (IN/OUT)
- 3 Water filter
- 4 Flow switch
- 5 Drain valve
- 6 Drain valve
- 7 Pump

- 8 One-way valve
- 9 Expansion vessel

### Components not provided and responsibility of the installer

- 10 Anti-vibration joints
- 11 Flow shut-off valves
- 12 Pump
- 13 Pressure relief valve
- 14 Expansion vessel
- 15 Loading unit
- 16 Drain valve
- 17 Storage tank
- 18 Antifreeze electric heater
- 19 Drain valve
- 20 Pressure gauge



**O-P:** Options not available for sizes 0650-0700.

### Water characteristics

#### System: Chiller with plate heat exchanger

PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO <sub>4</sub> )	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO <sub>3</sub> )	70 - 300 ppm
Chloride ions (Cl <sup>-</sup> )	< 50 ppm
Sulphate ions (SO <sub>4</sub> )	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH <sub>4</sub> )	None
Silica (SiO <sub>2</sub> )	< 30 ppm




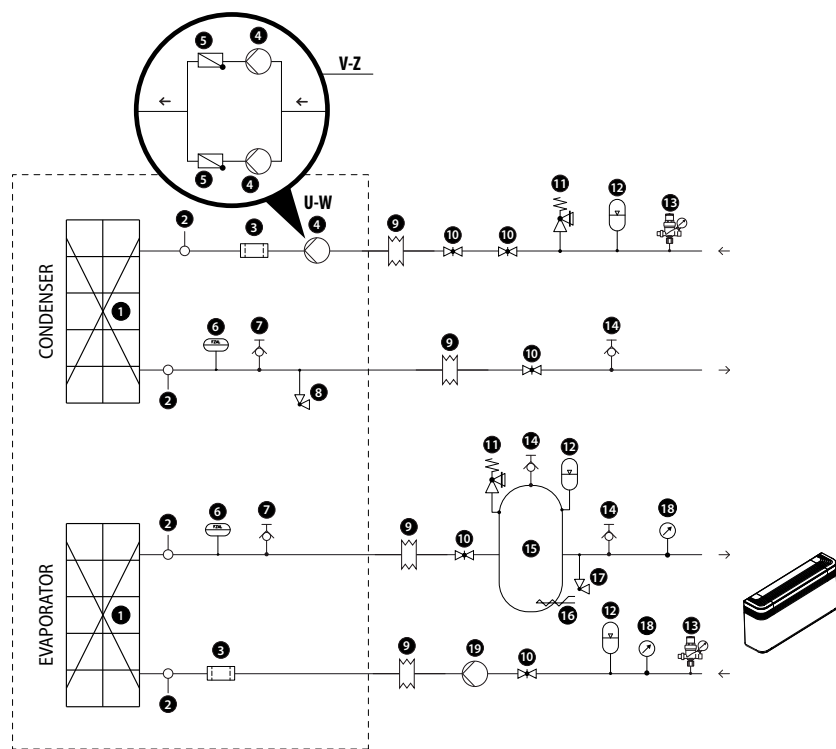
It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). 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 SOURCE SIDE PUMPS

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




- Components as standard**

  - 1 Plate heat exchanger
  - 2 Water temperature sensors (IN/OUT)
  - 3 Water filter
  - 4 Pump
  - 5 One-way valve
  - 6 Flow switch
  - 7 Drain valve
- 8 Drain valve


**Components not provided and responsibility of the installer**


  - 9 Anti-vibration joints
  - 10 Flow shut-off valves
  - 11 Pressure relief valve
  - 12 Expansion vessel
  - 13 Loading unit
- 14 Drain valve
  - 15 Storage tank
  - 16 Antifreeze electric heater
  - 17 Drain valve
  - 18 Pressure gauge
  - 19 Pump

 **W-Z:** Options not available for sizes 0650-0700.

Water characteristics

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO <sub>4</sub> )	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO <sub>3</sub> )	70 - 300 ppm
Chloride ions (Cl <sup>-</sup> )	< 50 ppm
Sulphate ions (SO <sub>4</sub> )	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH <sub>4</sub> )	None
Silica (SiO <sub>2</sub> )	< 30 ppm

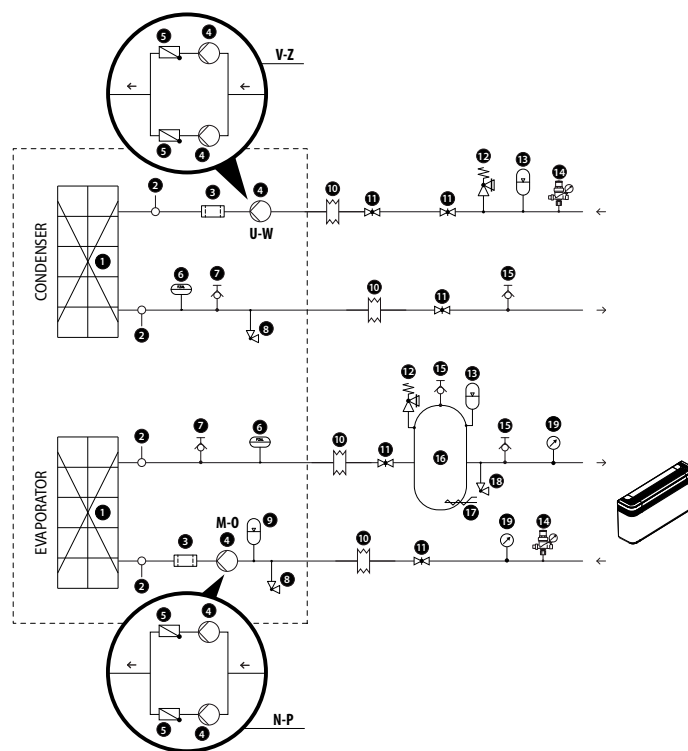
 It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). 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 USER AND SOURCE SIDE PUMPS



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



### Components as standard

- 1 Plate heat exchanger
- 2 Water temperature sensors (IN/OUT)
- 3 Water filter
- 4 Pump
- 5 One-way valve
- 6 Flow switch
- 7 Drain valve

- 8 Drain valve

- 9 Expansion vessel

### Components not provided and responsibility of the installer

- 10 Anti-vibration joints
- 11 Flow shut-off valves
- 12 Pressure relief valve
- 13 Expansion vessel

- 14 Loading unit

- 15 Drain valve

- 16 Storage tank

- 17 Antifreeze electric heater

- 18 Drain valve

- 19 Pressure gauge



**O-P-W-Z:** Options not available for sizes 0650-0700.

### Water characteristics

#### System: Chiller with plate heat exchanger

PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO <sub>4</sub> )	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO <sub>3</sub> )	70 - 300 ppm
Chloride ions (Cl <sup>-</sup> )	< 50 ppm
Sulphate ions (SO <sub>4</sub> )	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH <sub>4</sub> )	None
Silica (SiO <sub>2</sub> )	< 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.

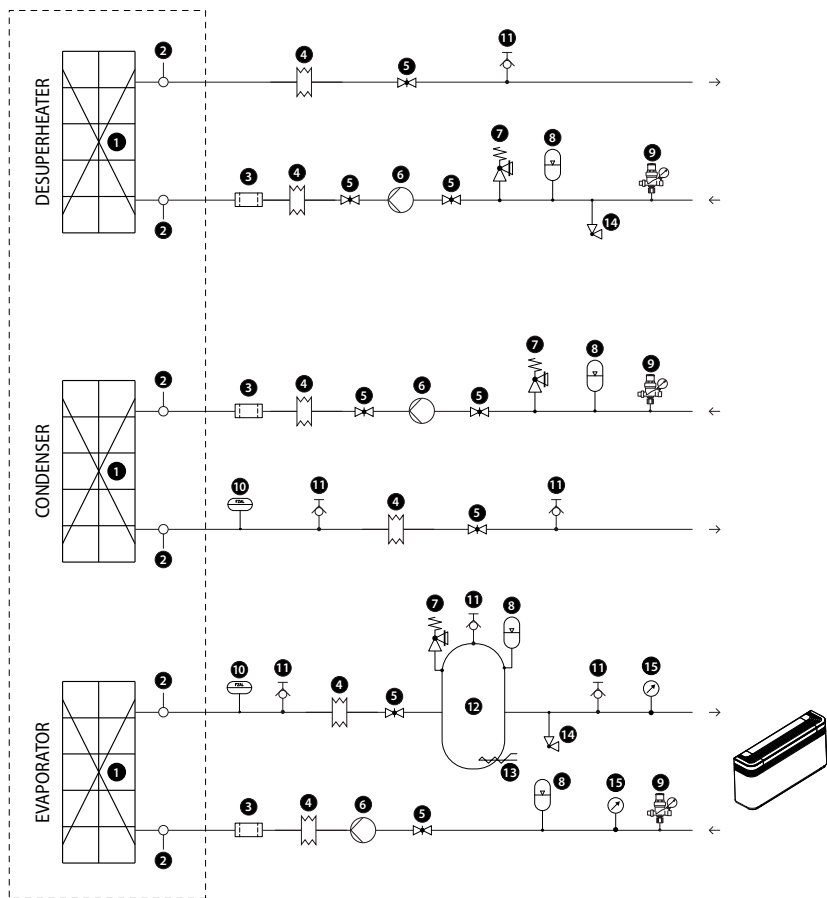


**WARNING** under no circumstances does the unit have to be operated with water circulating on the heat exchanger whose characteristics are different from those indicated in the table WATER CHARACTERISTICS, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction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

WITH DESUPERHEATER



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



**Components as standard**

- 1 Plate heat exchanger
- 2 Water temperature sensors (IN/OUT)

**Components not provided and responsibility of the installer**

- 3 Water filter (MANDATORY)

- 4 Anti-vibration joints
- 5 Flow shut-off valves
- 6 Pump
- 7 Pressure relief valve
- 8 Expansion vessel
- 9 Loading unit

- 10 Flow switch (MANDATORY)
- 11 Drain valve
- 12 Storage tank
- 13 Antifreeze electric heater
- 14 Drain valve
- 15 Pressure gauge

**Water characteristics**

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO <sub>4</sub> )	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO <sub>3</sub> )	70 - 300 ppm
Chloride ions (Cl <sup>-</sup> )	< 50 ppm
Sulphate ions (SO <sub>4</sub> )	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH <sub>4</sub> )	None
Silica (SiO <sub>2</sub> )	< 30 ppm



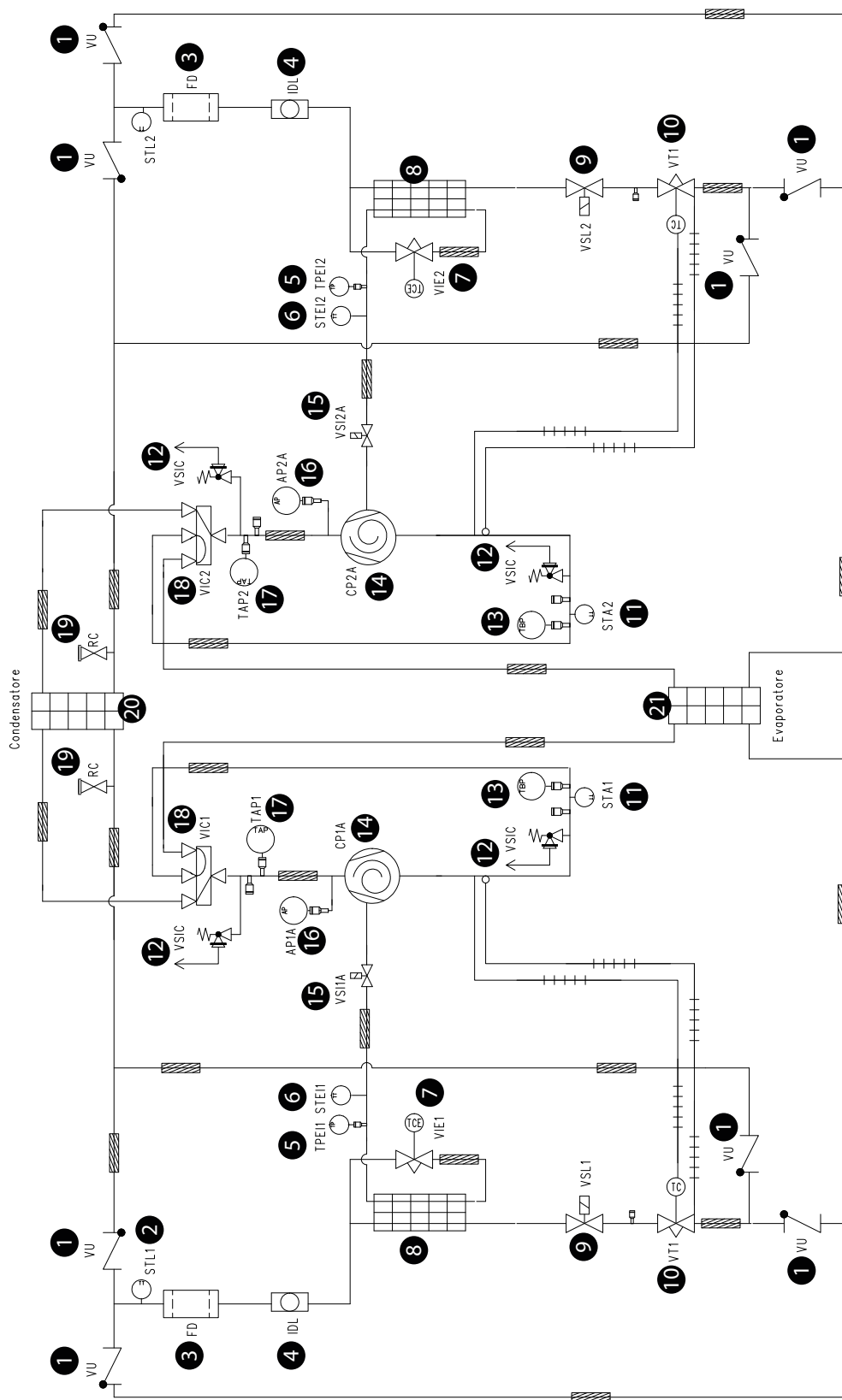
It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components).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

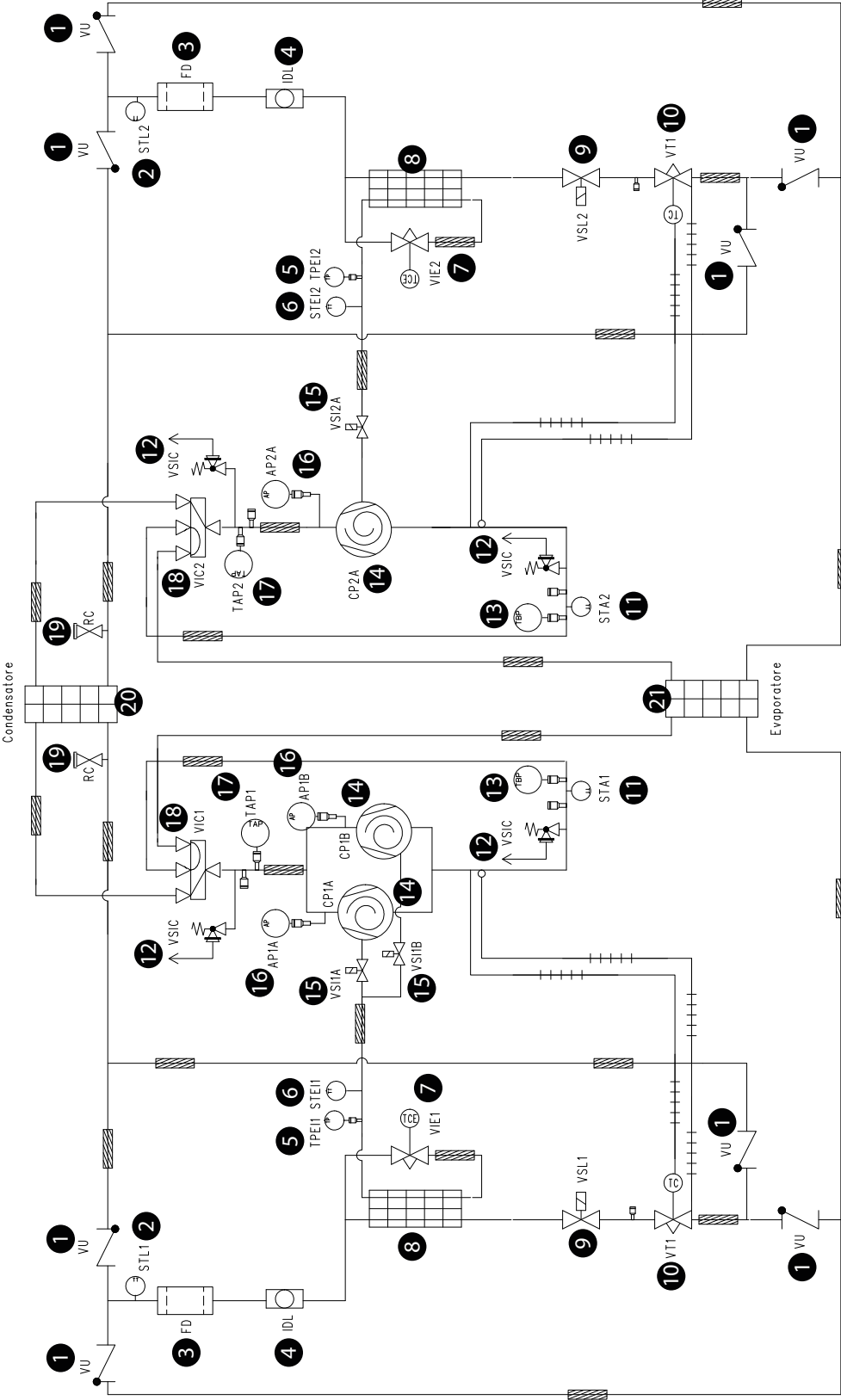
0300÷0500



- 1 One-way valve
- 2 Liquid temperature probe
- 3 Filter drier
- 4 Sight glass
- 5 Injection electronic expansion valve pressure transducer
- 6 Injection electronic expansion valve temperature probe
- 7 Injection electronic expansion valve

- 8 Economizer
- 9 Solenoid valve
- 10 Mechanic thermostatic valve
- 11 Intake temperature probe
- 12 Pressure relief valve
- 13 Low pressure transducer
- 14 Compressor

- 15 Injection solenoid valve
- 16 High pressure switch
- 17 High pressure transducer
- 18 4-way cycle inversion valve
- 19 Charging connection
- 20 Condenser
- 21 Evaporator



- 1 One-way valve

2 Liquid temperature probe

3 Filter drier

4 Sight glass

5 Injection electronic expansion valve pressure transducer

6 Injection electronic expansion valve temperature probe

7 Injection electronic expansion valve
- 8 Economizer

9 Solenoid valve

10 Mechanic thermostatic valve

11 Intake temperature probe

12 Pressure relief valve

13 Low pressure transducer

14 Compressor
- 15 Injection solenoid valve

16 High pressure switch

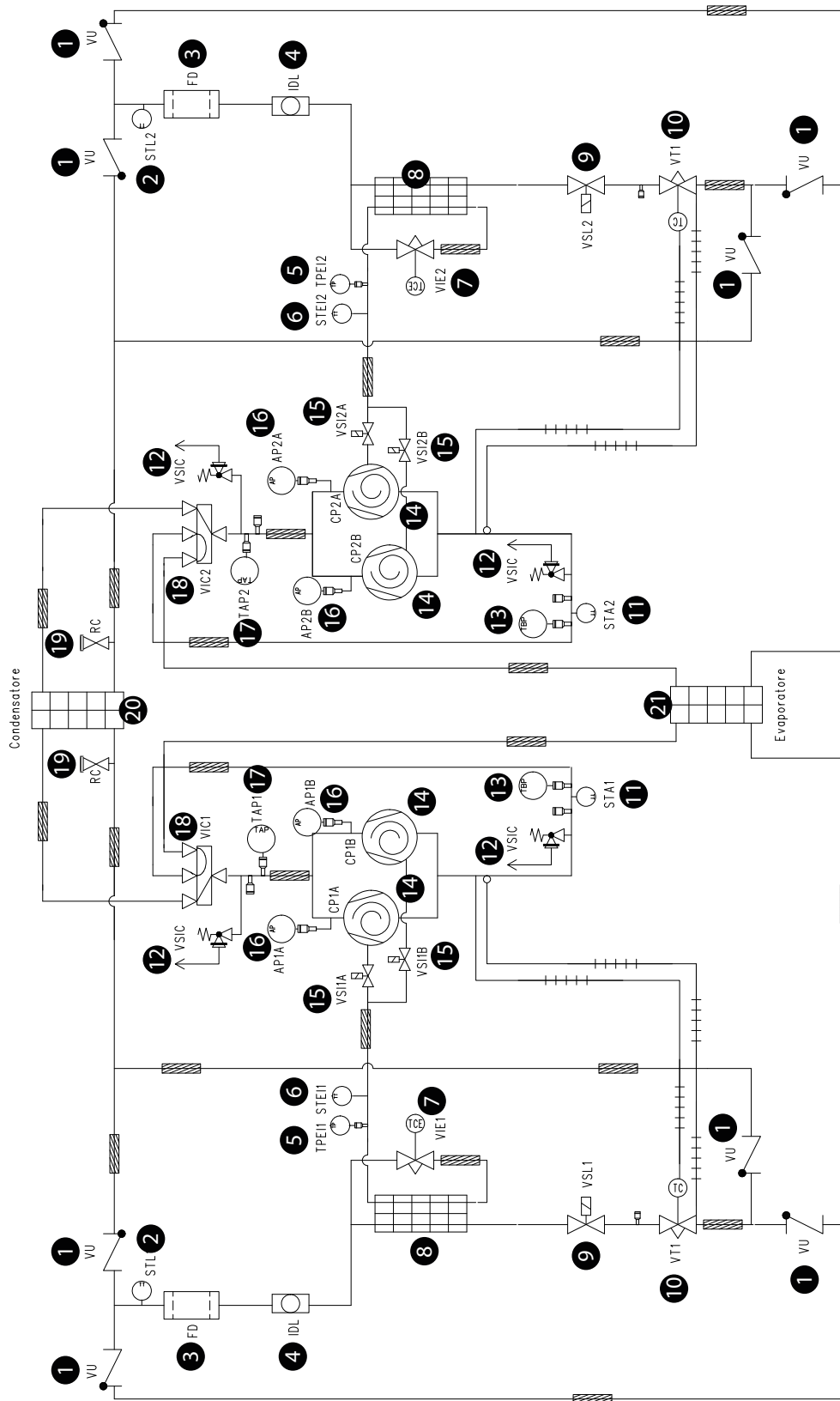
17 High pressure transducer

18 4-way cycle inversion valve

19 Charging connection

20 Condenser

21 Evaporator



- |   |  |    |                             |    |                             |
|---|--|----|-----------------------------|----|-----------------------------|
| 1 | One-way valve  | 8  | Economizer                  | 15 | Injection solenoid valve    |
| 2 | Liquid temperature probe                                 | 9  | Solenoid valve              | 16 | High pressure switch        |
| 3 | Filter drier   | 10 | Mechanic thermostatic valve | 17 | High pressure transducer    |
| 4 | Sight glass  | 11 | Intake temperature probe    | 18 | 4-way cycle inversion valve |
| 5 | Injection electronic expansion valve pressure transducer | 12 | Pressure relief valve       | 19 | Charging connection         |
| 6 | Injection electronic expansion valve temperature probe   | 13 | Low pressure transducer     | 20 | Condenser                   |
| 7 | Injection electronic expansion valve                     | 14 | Compressor                  | 21 | Evaporator                  |

6 ACCESSORIES

**AER485P1:** RS-485 interface for supervision systems with MODBUS protocol.  
**AERBACP:** Ethernet communication Interface for protocols Bacnet/IP, Modbus TCP/IP, SNMP  
**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.  
**FL-UL:** Flow switch.

**MULTICHILLER\_EVO:** Control, switch-on and switch-off system of the single chillers where multiple units are installed in parallel, always ensuring constant flow rate to the evaporators.  
**AVX:** Spring anti-vibration supports.  
**VT:** Anti-vibration supports.

FACTORY FITTED ACCESSORIES

**T6:** Double safety valve with exchange cock, both on the high and low pressure branches.

ACCESSORIES COMPATIBILITY

Model	Ver	0300	0330	0350	0500	0550	0600	0650	0700
AER485P1	L	*	*	*	*	*	*	*	*
AERBACP	L	*	*	*	*	*	*	*	*
AERNET	L	*	*	*	*	*	*	*	*
FL-UL (1)	L	*	*	*	*	*	*	*	*
MULTICHILLER_EVO	L	*	*	*	*	*	*	*	*

(1) Compliant with UL regulation

Antivibration

Version	System side - pumps	Integrated hydronic kit, source side	0300	0330	0350	0500	0550	0600	0650	0700
L	°	°	-	-	-	AVX345	AVX342	AVX342	AVX342	AVX342
L	°,M	U,W	-	-	-	AVX343	AVX343	AVX343	AVX343	AVX343
L	N	°	-	-	-	AVX343	AVX343	AVX343	AVX343	AVX343
L	O	U,W	-	-	-	AVX343	AVX343	AVX343	AVX343	AVX343
L	P	°	-	-	-	AVX343	AVX343	AVX343	AVX343	AVX343
L	°	V,Z	-	-	-	AVX313	AVX343	AVX343	AVX343	AVX343
L	M,O	°	-	-	-	AVX313	AVX343	AVX343	AVX343	AVX343
L	N,P	V,Z	-	-	-	AVX343	AVX343	AVX343	AVX344	AVX344

- not available

Version	System side - pumps	Integrated hydronic kit, source side	0300	0330	0350	0500	0550	0600	0650	0700
L	°	°	VT9	VT9	VT9	-	-	-	-	-
L	°	U,V,W,Z	VT15	VT15	VT15	-	-	-	-	-
L	M	°,U,W	VT15	VT15	VT15	-	-	-	-	-
L	N	°,V,Z	VT15	VT15	VT15	-	-	-	-	-
L	O	°,U,W	VT15	VT15	VT15	-	-	-	-	-
L	P	°,V,Z	VT15	VT15	VT15	-	-	-	-	-

- not available

Double safety valve.

Ver	0300	0330	0350	0500	0550	0600	0650	0700
L	T6WRK1	T6WRK1	T6WRK1	T6WRK2	T6WRK2	T6WRK2	T6WRK2	T6WRK2

A grey background indicates the accessory must be assembled in the factory



7 PERFORMANCE SPECIFICATIONS

WRK

Size			0300	0330	0350	0500	0550	0600	0650	0700
Cooling performances 54.0 °F / 44.0 °F (1)										
Cooling capacity	L	ton	19.1	22.8	25.9	28.6	33.5	38.2	45.0	49.1
Input power	L	kW	14.2	16.7	19.4	21.4	24.8	28.4	33.7	39.8
Cooling total input current	L	A	25.0	31.0	41.0	41.0	46.0	50.0	62.0	82.0
EER	L	BTU/(Wh)	16.13	16.36	16.01	16.08	16.23	16.15	16.03	14.82
Water flow rate system side	L	gpm	45.8	54.6	62.1	68.7	80.2	91.6	107.9	117.7
Pressure drop system side	L	ftH <sub>2</sub> O	5.0	3.3	3.3	4.0	4.0	5.4	4.3	5.4
Water flow rate source side	L	gpm	59.50	70.74	80.73	89.25	104.10	118.97	140.29	155.23
Pressure drop source side	L	ftH <sub>2</sub> O	8.36	5.69	5.35	6.69	7.03	9.03	7.69	9.03
Heating performance 104.0 °F / 113.0 °F (2)										
Heating capacity	L	BTU/h	281,781	336,417	376,103	420,308	493,822	563,041	665,582	742,025
Input power	L	kW	16.8	20.0	23.2	25.1	29.2	33.6	40.1	47.0
Heating total input current	L	A	29.0	34.0	44.0	45.0	51.0	57.0	68.0	88.0
COP	L	kW/kW	4.91	4.94	4.75	4.91	4.95	4.91	4.86	4.62
Water flow rate system side	L	gpm	63.2	75.4	84.3	94.3	110.7	126.3	149.3	166.4
Pressure drop system side	L	ftH <sub>2</sub> O	9.7	6.7	6.4	7.7	8.0	10.4	8.7	8.0
Water flow rate source side	L	gpm	83.93	100.36	111.13	125.22	147.39	167.73	197.81	217.77
Pressure drop source side	L	ftH <sub>2</sub> O	17.06	11.71	11.04	13.72	14.05	18.07	15.39	13.72

(1) Water user side 54.0 °F / 44.0 °F; Water source side 85.0 °F / 94.3 °F  
(2) Water user side 104.0 °F / 113.0 °F; Water source side 50.0 °F / 44.6 °F

WRK WITH DESUPERHEATER

Size			0300	0330	0350	0500	0550	0600	0650	0700
Cooling performances with desuperheater (1)										
Recovered heating power	L	BTU/h	41,969	34,463	41,969	49,135	55,277	61,419	73,361	83,597
Desuperheater water flow rate	L	gpm	9.4	7.7	9.4	11.0	12.4	13.8	16.5	18.7
Pressure drop desuperheater	L	ftH <sub>2</sub> O	1.3	1.7	0.7	1.0	1.3	1.7	1.3	1.7
Desuperheater										
Type	L	type	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
Number	L	no.	2	2	2	2	2	2	2	2
Minimum water flow rate	L	gpm	2.6	2.6	4.4	4.4	4.4	4.4	4.6	4.6
Maximum water flow rate	L	gpm	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Connections (in/out)	L	Type	Grooved joints	Grooved joints	Grooved joints	Grooved joints	Grooved joints	Grooved joints	Grooved joints	Grooved joints
Sizes (in/out)	L	Ø	1"	1"	1"	1"	1"	1"	1"	1"

(1) System side water 54.0 °F / 44.0 °F; Source water 85.0 °F / 94.3 °F; Desuperheater water 104.0 °F / 113.0 °F

## 8 GENERAL TECHNICAL DATA

Size			0300	0330	0350	0500	0550	0600	0650	0700
<b>Compressor</b>										
Type	L	type					Scroll			
Compressor regulation	L	Type					On-Off			
Number	L	no.	2	2	2	2	3	4	4	4
Circuits	L	no.	2	2	2	2	2	2	2	2
Refrigerant	L	type					R410A			
Refrigerant load circuit 1 (1)	L	lbs	10.6	12.1	14.1	16.5	20.9	20.9	27.6	27.6
Refrigerant load circuit 2 (1)	L	lbs	10.6	12.1	14.1	16.5	20.9	20.9	27.6	27.6
Oil	L	Type					POE			
Total oil charge	L	lbs	15.0	15.0	15.0	22.3	29.8	29.8	29.8	29.8
<b>System side heat exchanger</b>										
Type	L	type					Brazed plate			
Number	L	no.	1	1	1	1	1	1	1	1
Minimum water flow rate	L	gpm	17.6	26.0	29.9	29.9	36.1	36.1	48.2	48.2
Maximum water flow rate	L	gpm	248.8	248.8	248.8	248.8	248.8	248.8	248.8	248.8
Connections (in/out)	L	Type					Grooved joints			
Sizes (in/out)	L	Ø					2 1/2"			
Water content	L	gal	2.4	3.4	4.0	4.0	4.8	4.8	6.6	6.6
<b>Source side heat exchanger</b>										
Type	L	type					Brazed plate			
Number	L	no.	1	1	1	1	1	1	1	1
Minimum water flow rate	L	gpm	17.6	26.0	29.9	29.9	36.1	36.1	48.2	48.2
Maximum water flow rate	L	gpm	248.8	248.8	248.8	248.8	248.8	248.8	248.8	248.8
Connections (in/out)	L	Type					Grooved joints			
Sizes (in/out)	L	Ø					2 1/2"			
Water content	L	gal	2.4	3.4	4.0	4.0	4.8	4.8	6.6	6.6
<b>Sound data calculated in cooling mode (2)</b>										
Sound power level	L	dB(A)	78.3	76.4	79.5	75.9	77.7	81.8	79.8	81.3
Sound pressure level (10 m / 33 ft)	L	dB(A)	46.8	44.9	48.0	44.2	46.0	50.1	48.1	49.6
Sound pressure level (1 m / 3.3 ft)	L	dB(A)	62.1	60.2	63.3	59.0	60.8	64.9	62.9	64.4

(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) 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).

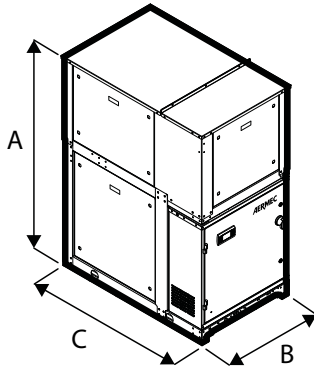
## ELECTRIC DATA

	Version	System side - pumps	Integrated hydraulic kit, source side		0300	0330	0350	0500	0550	0600	0650	0700
Peak current (LRA)	L	°	°	A	147.5	177.5	213.0	213.5	222.5	189.5	229.5	278.0
	L	°	U/V	A	149.6	181.5	217.0	217.5	228.0	195.0	236.2	284.7
	L	M/N	°	A	149.6	181.5	217.0	217.5	228.0	195.0	236.2	284.7
	L	°	W/Z	A	151.5	183.0	218.5	220.2	229.2	196.2	-	-
	L	O/P	°	A	151.5	183.0	218.5	220.2	229.2	196.2	-	-
	L	M/N	U/V	A	151.7	185.5	221.0	221.5	233.4	200.4	242.9	291.4
	L	M/N	W/Z	A	153.6	187.0	222.5	224.2	234.7	201.7	-	-
	L	O/P	U/V	A	153.6	187.0	222.5	224.2	234.7	201.7	-	-
	L	O/P	W/Z	A	155.5	188.5	224.0	226.9	235.9	202.9	-	-
Minimum circuit amperage (MCA)	L	°	°	A	50.0	60.0	70.0	75.0	90.0	100.0	110.0	150.0
	L	°	U/V	A	60.0	70.0	75.0	75.0	90.0	100.0	125.0	150.0
	L	M/N	°	A	60.0	70.0	75.0	75.0	90.0	100.0	125.0	150.0
	L	°	W/Z	A	60.0	70.0	75.0	80.0	90.0	100.0	-	-
	L	O/P	°	A	60.0	70.0	75.0	80.0	90.0	100.0	-	-
	L	M/N	U/V	A	60.0	70.0	80.0	80.0	100.0	110.0	125.0	150.0
	L	M/N	W/Z	A	60.0	70.0	80.0	90.0	100.0	110.0	-	-
Maximum over- current permitted by the protection device (MOP)	L	O/P	U/V/W/Z	A	60.0	70.0	80.0	90.0	100.0	110.0	-	-
	L	°	°/U/V	A	70.0	80.0	100.0	100.0	110.0	110.0	125.0	150.0
	L	M/N	°	A	70.0	80.0	100.0	100.0	110.0	110.0	125.0	150.0
	L	°	W/Z	A	70.0	80.0	100.0	100.0	110.0	110.0	-	-
	L	O/P	°	A	70.0	80.0	100.0	100.0	110.0	110.0	-	-
	L	M/N	U/V	A	70.0	90.0	100.0	110.0	110.0	110.0	125.0	150.0
	L	M/N	W/Z	A	75.0	90.0	100.0	110.0	125.0	110.0	-	-
	L	O/P	U/V	A	75.0	90.0	100.0	110.0	125.0	110.0	-	-
	L	O/P	W/Z	A	75.0	90.0	110.0	110.0	125.0	125.0	-	-

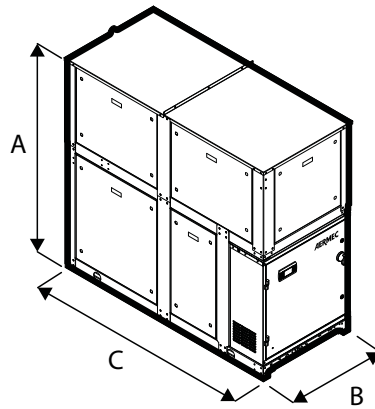
- not available

## DIMENSIONS AND WEIGHTS

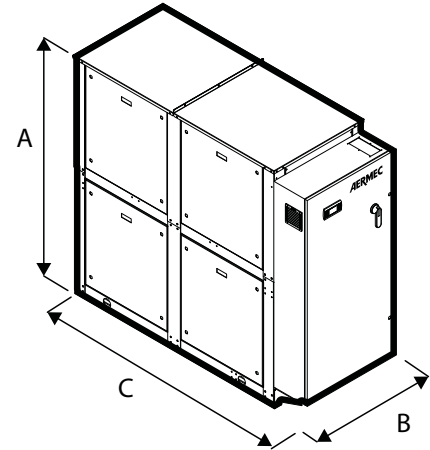
WRK 0300 - 0350 °



WRK 0300 - 0350 U-V-W-Z



WRK 0500 - 0700 °-U-V-W-Z




Size			0300	0330	0350	0500	0550	0600	0650	0700
<b>Dimensions and weights without hydronic kit</b>										
A	L	in	65.9	65.9	65.9	74.2	74.2	74.2	74.2	74.2
B	L	in	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
C	L	in	49.6	49.6	49.6	70.9	70.9	70.9	70.9	70.9
<b>Dimensions and weights with pump/s</b>										
A	L	in	65.9	65.9	65.9	74.2	74.2	74.2	74.2	74.2
B	L	in	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
C	L	in	70.9	70.9	70.9	118.9	118.9	118.9	118.9	118.9

	Version	System side - pumps	Integrated hydronic kit, source side		0300	0330	0350	0500	0550	0600	0650	0700
Weight empty + packaging	L	°	°	lbs	1,246	1,257	1,279	2,050	2,238	2,293	2,348	2,414
	L	°	U	lbs	1,620	1,631	1,653	2,546	2,734	2,789	2,877	2,943
	L	°	V	lbs	1,676	1,687	1,709	2,701	2,888	2,943	3,064	3,131
	L	°	W	lbs	1,620	1,631	1,653	2,546	2,734	2,789	-	-
	L	°	Z	lbs	1,676	1,687	1,709	2,701	2,888	2,943	-	-
	L	M	°	lbs	1,609	1,631	1,653	2,469	2,657	2,712	2,789	2,855
	L	M	U	lbs	1,687	1,709	1,731	2,668	2,855	2,910	3,020	3,086
	L	M	V/Z	lbs	-	-	-	-	-	-	-	-
	L	N	U/W	lbs	-	-	-	-	-	-	-	-
	L	O	V/Z	lbs	-	-	-	-	-	-	-	-
	L	P	U/W	lbs	-	-	-	-	-	-	-	-
	L	M	W	lbs	1,687	1,709	1,731	2,668	2,855	2,910	-	-
	L	O	U/W	lbs	1,687	1,709	1,731	2,668	2,855	2,910	-	-
	L	N	°	lbs	1,676	1,687	1,709	2,624	2,811	2,866	2,965	3,031
	L	N	V	lbs	1,808	1,819	1,841	2,976	3,164	3,219	3,384	3,439
	L	N	Z	lbs	1,808	1,819	1,841	2,976	3,164	3,219	-	-
	L	P	V/Z	lbs	1,808	1,819	1,841	2,976	3,164	3,219	-	-
	L	O	°	lbs	1,609	1,631	1,653	2,469	2,657	2,712	-	-
Weight functioning	L	P	°	lbs	1,676	1,687	1,709	2,624	2,811	2,866	-	-
	L	°	°	lbs	1,224	1,235	1,268	2,039	2,227	2,304	2,370	2,447
	L	°	U	lbs	1,642	1,664	1,698	2,590	2,789	2,855	2,965	3,042
	L	°	V	lbs	1,720	1,742	1,764	2,756	2,954	3,020	3,164	3,241
	L	°	W	lbs	1,642	1,664	1,698	2,590	2,789	2,855	-	-
	L	°	Z	lbs	1,720	1,742	1,764	2,756	2,954	3,020	-	-
	L	M	°	lbs	1,642	1,664	1,698	2,513	2,712	2,778	2,877	2,954
	L	M	U	lbs	1,720	1,742	1,775	2,723	2,921	2,987	3,120	3,197
	L	M	V/Z	lbs	-	-	-	-	-	-	-	-
	L	N	U/W	lbs	-	-	-	-	-	-	-	-
	L	O	V/Z	lbs	-	-	-	-	-	-	-	-
	L	P	U/W	lbs	-	-	-	-	-	-	-	-
	L	M	W	lbs	1,720	1,742	1,775	2,723	2,921	2,987	-	-
	L	O	U/W	lbs	1,720	1,742	1,775	2,723	2,921	2,987	-	-
	L	N	°	lbs	1,720	1,731	1,764	2,679	2,877	2,943	3,064	3,142
	L	N	V	lbs	1,863	1,874	1,907	3,053	3,252	3,318	3,505	3,571
	L	N	Z	lbs	1,863	1,874	1,907	3,053	3,252	3,318	-	-
	L	P	V/Z	lbs	1,863	1,874	1,907	3,053	3,252	3,318	-	-
	L	O	°	lbs	1,642	1,664	1,698	2,513	2,712	2,778	-	-
	L	P	°	lbs	1,720	1,731	1,764	2,679	2,877	2,943	-	-

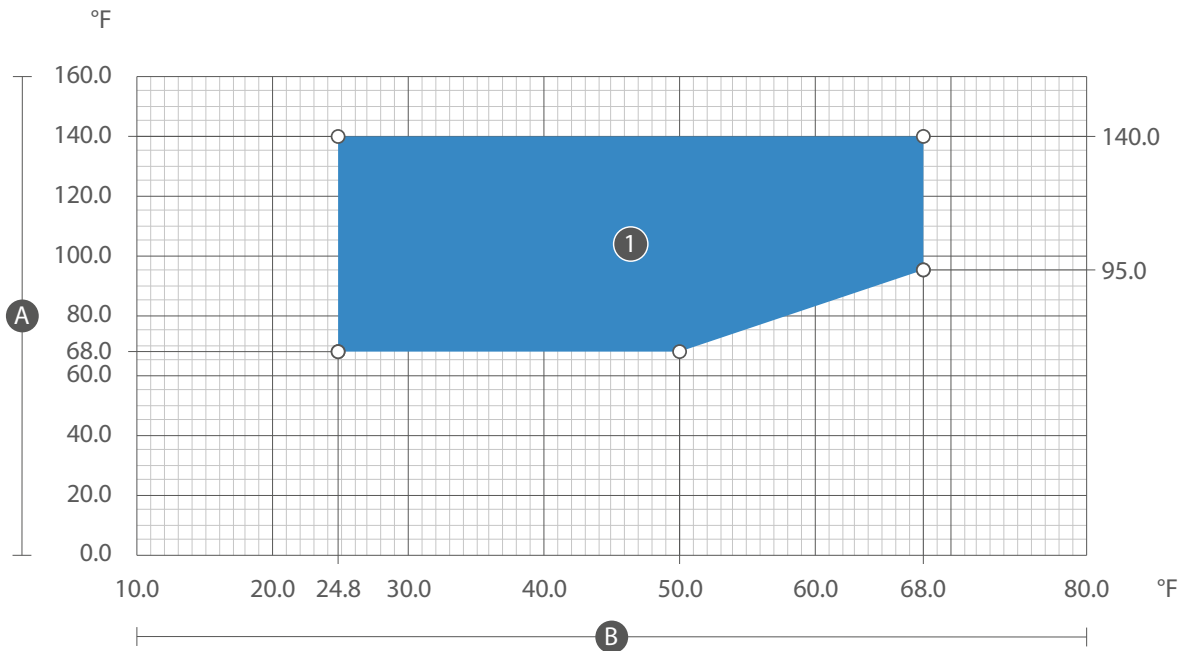
- not available

9 OPERATING LIMITS

The units, in standard configuration, are not suitable for installation in salty environment.  
The values indicated in the table refer to the min. and max. limits of the unit.  
If the unit operates beyond the operational limits, we recommend you first contact our technical-sales service.

 **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.

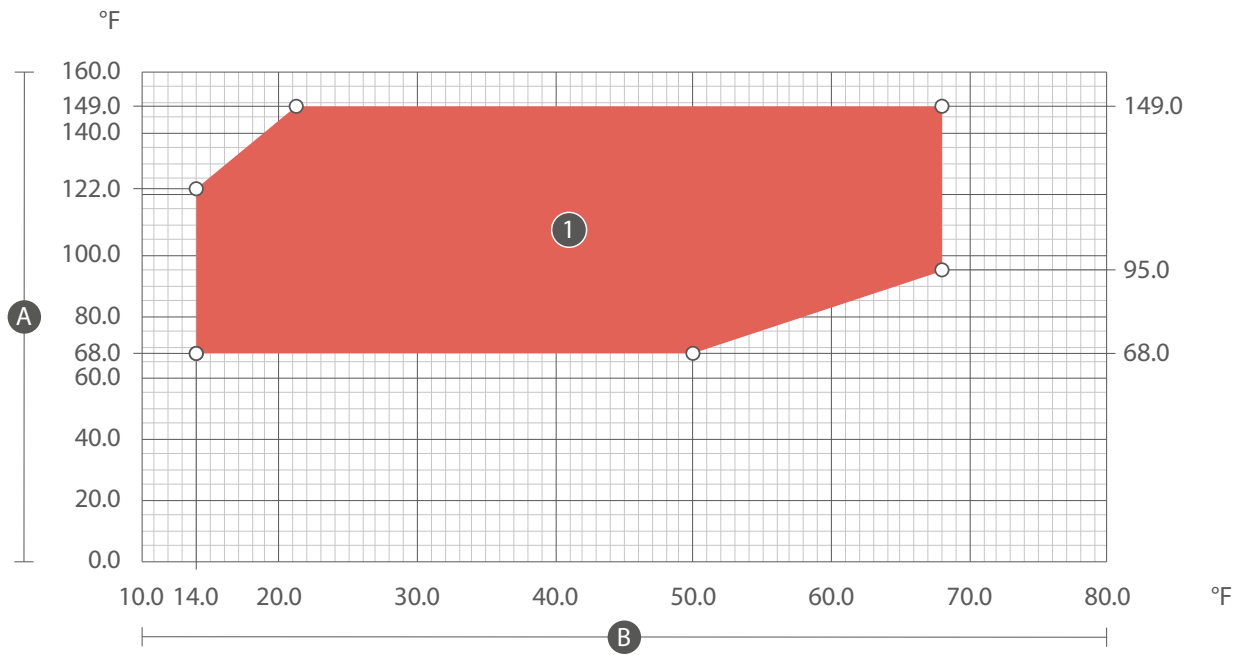
COOLING MODE



- Key**
- A Processed water temperature (source side) (°F)
  - B Water produced (system side) (°F)
  - 1 Cooling mode

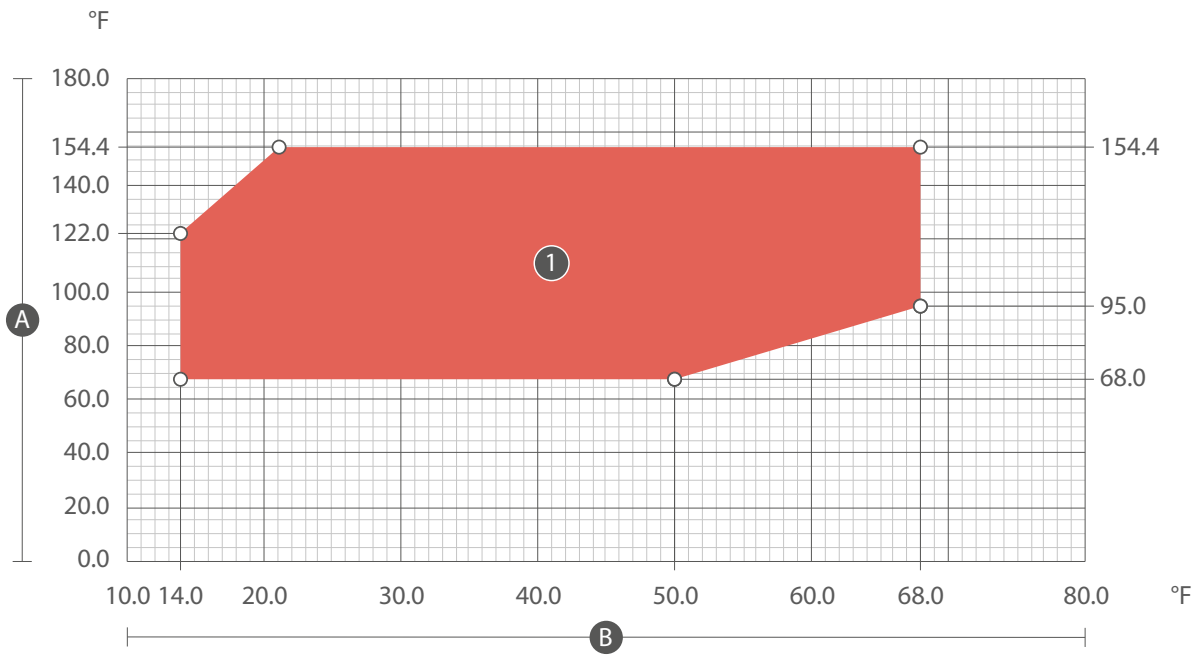
HEATING MODE RANGE

$\Delta T_{\text{condenser}} < 46.4\text{ }^{\circ}\text{F}$



- Key**
- A Water produced (system side) ( $^{\circ}\text{F}$ )
  - B Processed water temperature (source side) ( $^{\circ}\text{F}$ )
  - 1  $\Delta T_{\text{condenser}} < 46.4\text{ }^{\circ}\text{F}$

$\Delta T_{\text{condenser}} \Rightarrow 46.4\text{ }^{\circ}\text{F}$



- Key**
- A Water produced (system side) ( $^{\circ}\text{F}$ )
  - B Processed water temperature (source side) ( $^{\circ}\text{F}$ )
  - 1  $\Delta T_{\text{condenser}} \Rightarrow 46.4\text{ }^{\circ}\text{F}$

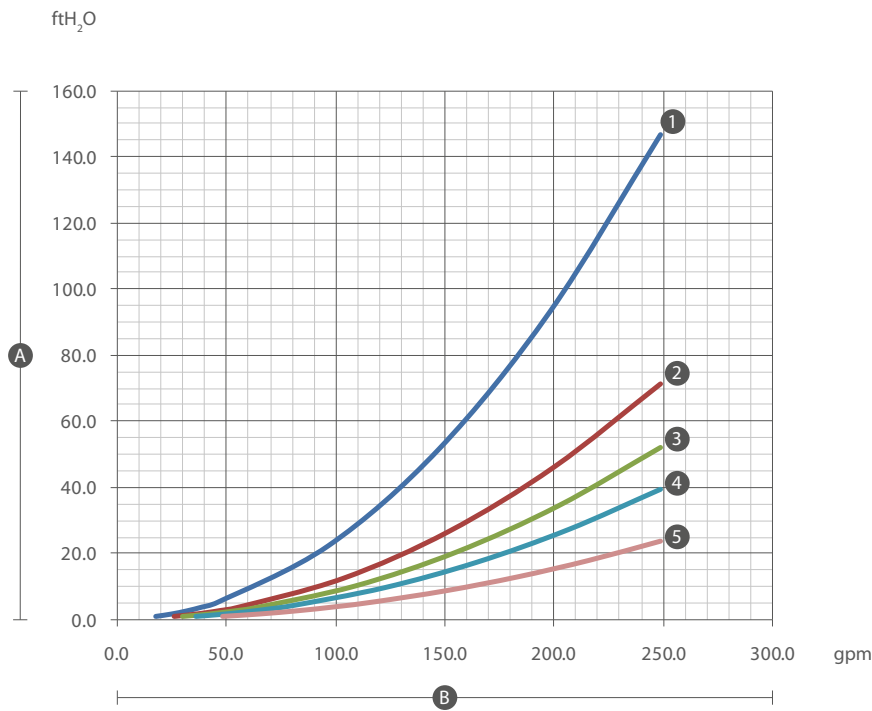
10 PRESSURE DROPS

COOLING MODE

System side heat exchanger

Evaporator  
Inlet water temperature 54.0 °F  
Outlet water temperature 44.0 °F

Source side heat exchanger  
Condenser  
Inlet water temperature 85.0 °F  
Outlet water temperature 94.3 °F



- A    Pressure drops (ft H<sub>2</sub>O)
- B    Water flow rate (gpm)
- 1    0300
- 2    0330
- 3    0350-0500
- 4    0550-0600
- 5    0650-0700

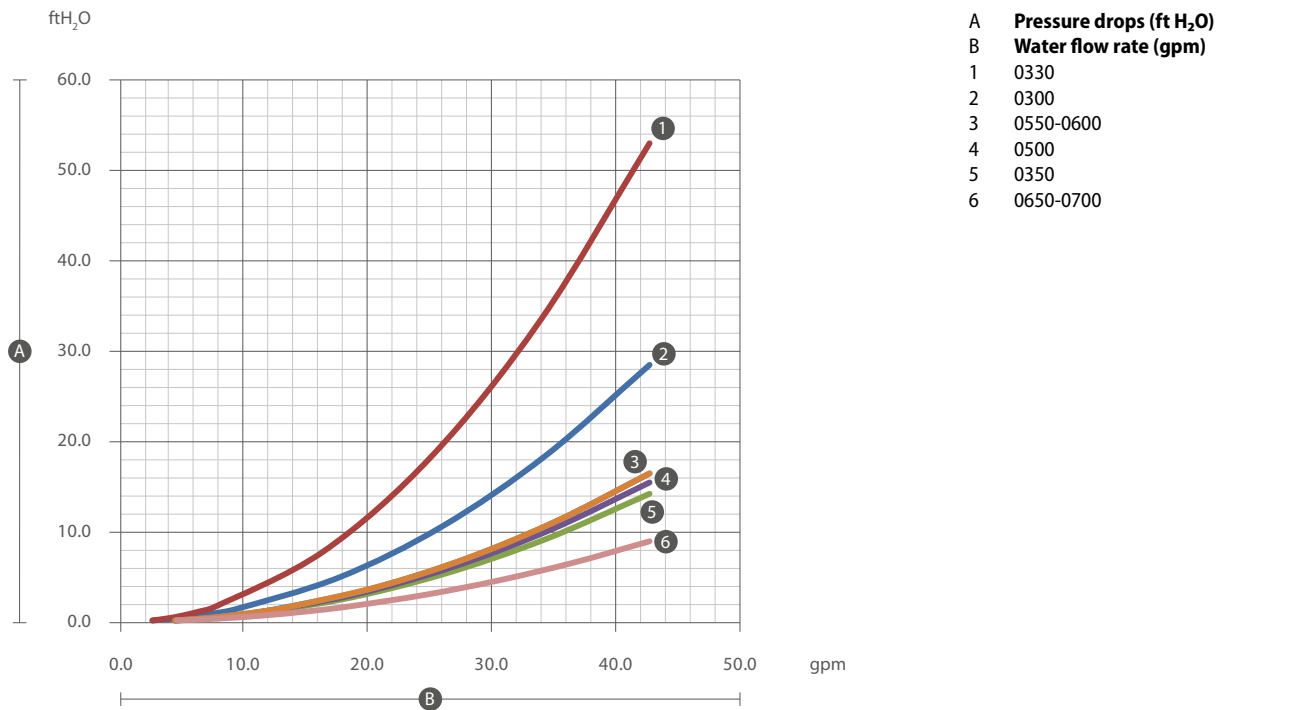
Size			0300	0330	0350	0500	0550	0600	0650	0700
System side heat exchanger										
Minimum water flow rate	L	gpm	17.6	26.0	29.9	29.9	36.1	36.1	48.2	48.2
Maximum water flow rate	L	gpm	248.8	248.8	248.8	248.8	248.8	248.8	248.8	248.8
Source side heat exchanger										
Minimum water flow rate	L	gpm	17.6	26.0	29.9	29.9	36.1	36.1	48.2	48.2
Maximum water flow rate	L	gpm	248.8	248.8	248.8	248.8	248.8	248.8	248.8	248.8

11 DESUPERHEATER PRESSURE DROPS

Desuperheater

Inlet water temperature 104 °F  
Outlet water temperature 113 °F  
Average water temperature 109.4 °F

ATTENTION: For average water temperature different than 109.4 °F refer to the chapter "Corrective factors for average water temperatures different from nominal values"

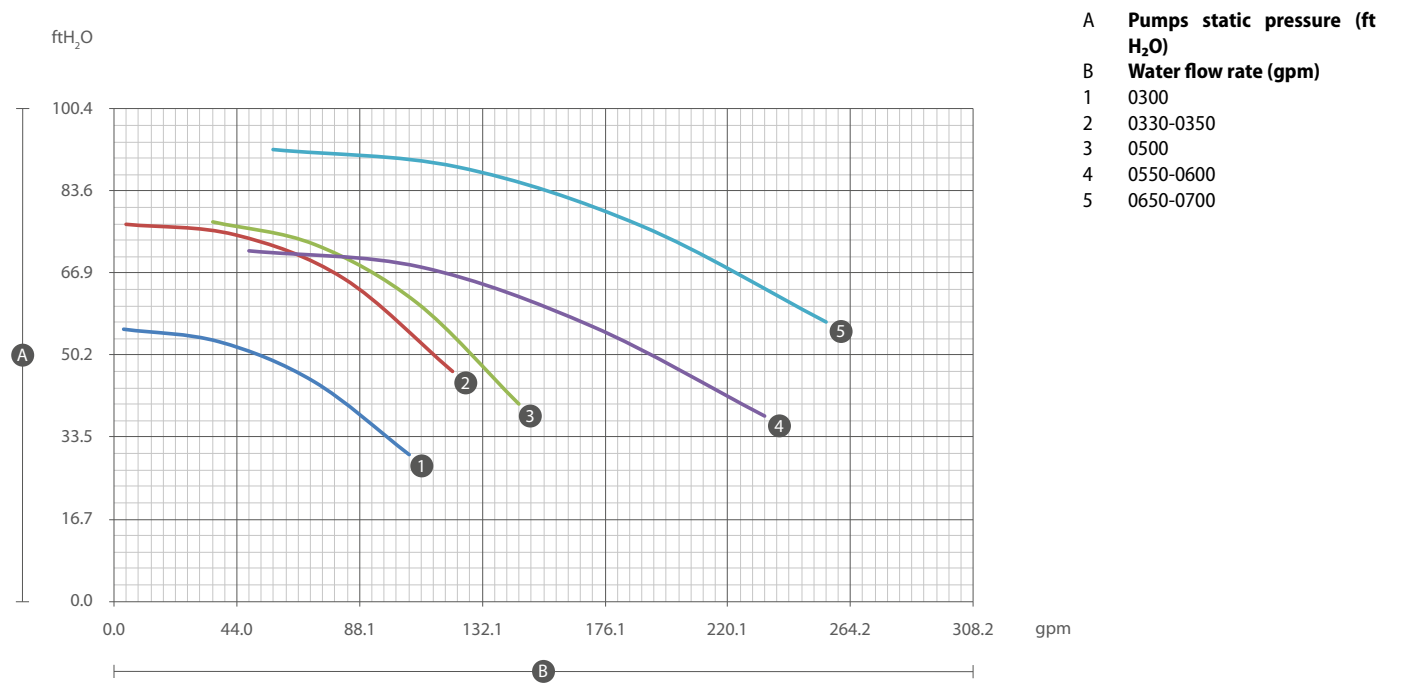


The desuperheater must be intercepted in heating mode. In cooling mode, a water temperature no lower than 95.0 °F must always be guaranteed on the heat exchanger inlet.

12 PUMPS STATIC PRESSURE

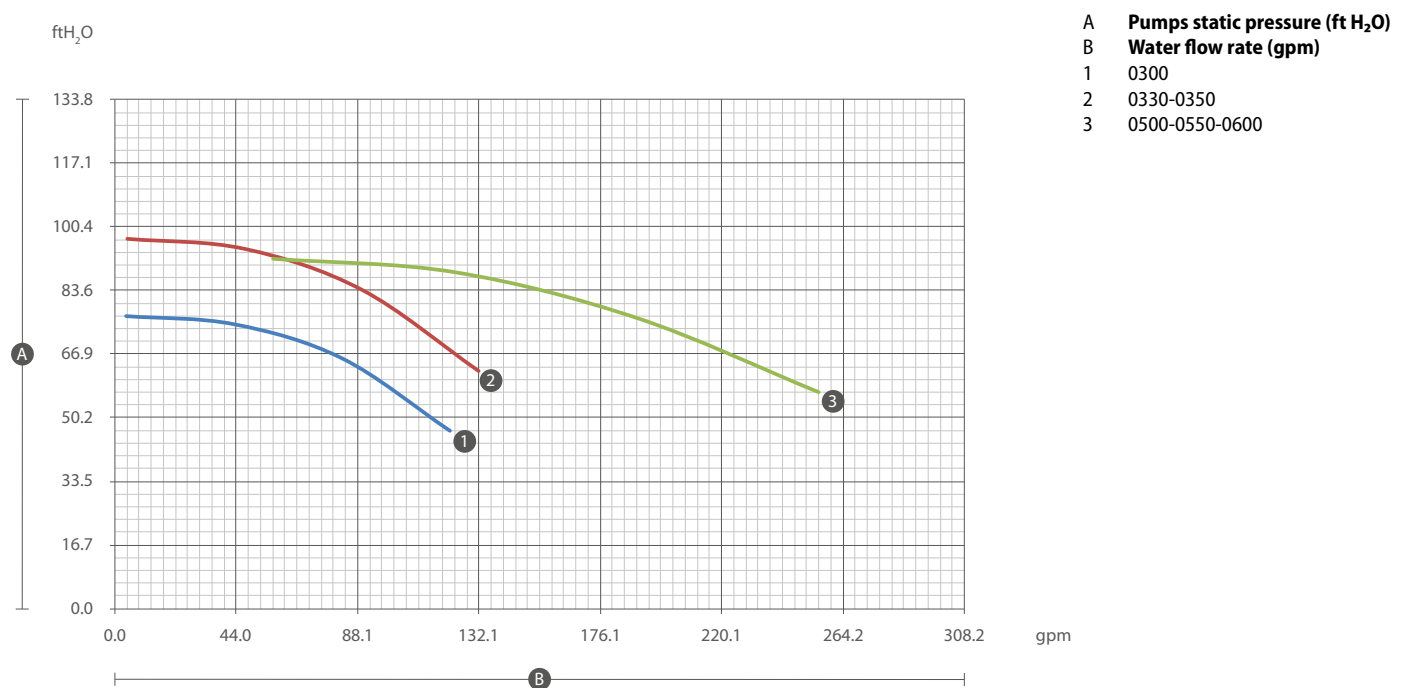
HYDRONIC KIT - LOW HEAD (M-N-U-V)


The table shows the characteristic curves of the pumps, **and therefore they do not represent the useful static pressures of the system.**  
The useful heads of the system must be calculated by subtracting the unit's pressure drops ( $\Delta p$ ) from the useful head of the pump shown in this diagram (see chapter: 10 Pressure drops p. 22).



HYDRONIC KIT - HIGH HEAD (O-P-W-Z)

The table shows the characteristic curves of the pumps, **and therefore they do not represent the useful static pressures of the system.**  
The useful heads of the system must be calculated by subtracting the unit's pressure drops ( $\Delta p$ ) from the useful head of the pump shown in this diagram (see chapter: 10 Pressure drops p. 22).



 **O-P-W-Z:** Options not available for sizes 0650-0700.



SINGLE HYDRONIC KITS’ DATA

Size			0300	0330	0350	0500	0550	0600	0650	0700
SYSTEM SIDE - PUMPS: °										
Pumps										
Nr. poles	L	no.	/	/	/	/	/	/	/	/
Maximum input power	L	kW	/	/	/	/	/	/	/	/
Maximum current	L	A	/	/	/	/	/	/	/	/
Minimum water flow rate	L	gpm	/	/	/	/	/	/	/	/
Maximum water flow rate	L	gpm	/	/	/	/	/	/	/	/
SYSTEM SIDE - PUMPS: M, N										
Pumps										
Nr. poles	L	no.	2	2	2	2	2	2	2	2
Maximum input power	L	kW	1.32	2.19	2.19	2.42	3.14	3.14	4.53	4.53
Maximum current	L	A	2.10	4.00	4.00	4.58	6.23	6.23	7.62	7.62
Minimum water flow rate	L	gpm	3.5	4.2	4.2	35.2	48.4	48.4	57.2	57.2
Maximum water flow rate	L	gpm	105.7	121.5	121.5	145.3	233.4	233.4	255.4	255.4
SYSTEM SIDE - PUMPS: O, P										
Pumps										
Nr. poles	L	no.	2	2	2	2	2	2	2	2
Maximum input power	L	kW	2.19	3.11	3.11	4.53	4.53	4.53	6.07	6.07
Maximum current	L	A	4.00	5.50	5.50	7.62	7.62	7.62	10.40	10.40
Minimum water flow rate	L	gpm	4.2	4.4	4.4	57.2	57.2	57.2	66.0	66.0
Maximum water flow rate	L	gpm	121.5	132.1	132.1	255.4	255.4	255.4	286.2	286.2
Size			0300	0330	0350	0500	0550	0600	0650	0700
INTEGRATED HYDRONIC KIT, SOURCE SIDE: °										
Pumps										
Nr. poles	L	no.	/	/	/	/	/	/	/	/
Maximum input power	L	kW	/	/	/	/	/	/	/	/
Maximum current	L	A	/	/	/	/	/	/	/	/
Minimum water flow rate	L	gpm	/	/	/	/	/	/	/	/
Maximum water flow rate	L	gpm	/	/	/	/	/	/	/	/
INTEGRATED HYDRONIC KIT, SOURCE SIDE: U, V										
Pumps										
Nr. poles	L	no.	2	2	2	2	2	2	2	2
Maximum input power	L	kW	1.32	2.19	2.19	2.42	3.14	3.14	4.53	4.53
Maximum current	L	A	2.10	4.00	4.00	4.58	6.23	6.23	7.62	7.62
Minimum water flow rate	L	gpm	3.5	4.2	4.2	35.2	48.4	48.4	57.2	57.2
Maximum water flow rate	L	gpm	105.7	121.5	121.5	145.3	233.4	233.4	255.4	255.4
INTEGRATED HYDRONIC KIT, SOURCE SIDE: W, Z										
Pumps										
Nr. poles	L	no.	2	2	2	2	2	2	2	2
Maximum input power	L	kW	2.19	3.11	3.11	4.53	4.53	4.53	6.07	6.07
Maximum current	L	A	4.00	5.50	5.50	7.62	7.62	7.62	10.40	10.40
Minimum water flow rate	L	gpm	4.2	4.4	4.4	57.2	57.2	57.2	66.0	66.0
Maximum water flow rate	L	gpm	121.5	132.1	132.1	255.4	255.4	255.4	286.2	286.2

## 13 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).

Size			0300	0330	0350	0500	0550	0600	0650	0700
<b>Minimum system water content</b>										
Minimum water content for air conditioning	L	gal/ton	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Minimum water content for processes	L	gal/ton	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0

**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.

A example is given below, but it does not cover a possible situation.

**Example:** for a chiller/heat pump equipped with a primary and a secondary circuit, and in which the zone pumps of the secondary circuit could (even occasionally) be turned off, only the water content of the primary circuit has value of useful water content for the counting purposes.

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



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

- Number of peaks made by the compressors
- The reduction of water temperature during defrosting cycles in the winter period for heat pumps.



**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:** 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:** 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

### 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			0300	0330	0350	0500	0550	0600	0650	0700
<b>SYSTEM SIDE - PUMPS: °</b>										
<b>Hydronic kit</b>										
Expansion vessel number	L	no.	/	/	/	/	/	/	/	/
Expansion vessel capacity	L	gal	/	/	/	/	/	/	/	/
<b>SYSTEM SIDE - PUMPS: M, N, O, P</b>										
<b>Hydronic kit</b>										
Expansion vessel number	L	no.	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory
Expansion vessel capacity	L	gal	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory
Size			0300	0330	0350	0500	0550	0600	0650	0700
<b>INTEGRATED HYDRONIC KIT, SOURCE SIDE: °</b>										
<b>Hydronic kit</b>										
Expansion vessel number	L	no.	/	/	/	/	/	/	/	/
Expansion vessel capacity	L	gal	/	/	/	/	/	/	/	/
<b>INTEGRATED HYDRONIC KIT, SOURCE SIDE: U, V, W, Z</b>										
<b>Hydronic kit</b>										
Expansion vessel number	L	no.	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory
Expansion vessel capacity	L	gal	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory	Contact the factory

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

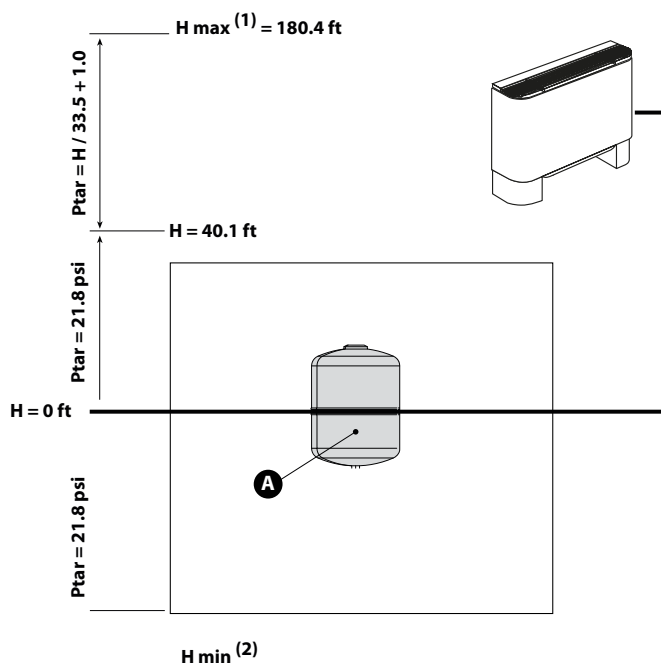
The data in the table refer to units with a 6.3 gal. expansion vessel.

## 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:  $p \text{ (rating) [bar]} = H \text{ [ft]} / 33.5 + 1.0$ .

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

- 1 Check that highest installation is not higher than 180.4 ft.
- 2 Ensure that lowest utility can withstand global pressure in that position

14 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
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

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 input power	1,0	1	0.98	0.95

15 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 PROPYLENE 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 propylene 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 PROPYLENE 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 propylene 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.

- Qwc Corrective factor of flow rates (middle water temperatur 49.1 °F)
- Qwh Corrective factor of flow rates (middle water temperatur 108.5 °F)
- Pc Corrective factor of cooling Capacity
- Ph Corrective factor of heating Capacity
- Pa Correction factor input Power
- ΔP Correction factor Pressure drop

## 16 SOUND DATA

Size			0300	0330	0350	0500	0550	0600	0650	0700
<b>Sound data calculated in cooling mode (1)</b>										
Sound power level	L	dB(A)	78.3	76.4	79.5	75.9	77.7	81.8	79.8	81.3
Sound pressure level (10 m / 33 ft)	L	dB(A)	46.8	44.9	48.0	44.2	46.0	50.1	48.1	49.6
Sound pressure level (1 m / 3.3 ft)	L	dB(A)	62.1	60.2	63.3	59.0	60.8	64.9	62.9	64.4
<b>Sound power by centre octave band dB(A)</b>										
125 Hz	L	dB(A)	65.4	64.6	66.5	64.0	65.9	69.7	69.0	69.7
250 Hz	L	dB(A)	76.2	73.4	74.2	72.3	75.4	80.0	77.2	76.7
500 Hz	L	dB(A)	71.8	69.8	71.6	71.0	71.4	74.6	72.6	73.1
1000 Hz	L	dB(A)	66.0	67.0	70.7	65.3	65.6	68.5	69.5	72.0
2000 Hz	L	dB(A)	64.5	65.3	74.9	64.3	64.1	66.8	67.7	75.9
4000 Hz	L	dB(A)	54.3	55.4	58.8	54.3	54.1	56.5	57.7	60.0
8000 Hz	L	dB(A)	43.7	44.2	46.1	44.4	43.9	45.7	46.3	47.3

(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).

Service side water 54.01°F / 44.01°F (in/out); Source side water 84.99°F / 94.30°F (in/out)

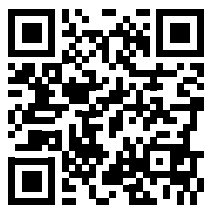
Note

For operating conditions different to those declared refer to the selection program Magellano, available on [www.aermec.com](http://www.aermec.com)





DOWNLOAD THE LATEST VERSION:



<http://www.aermec.com/qrcode.asp?q=16416>

TÉLÉCHARGER LA DERNIÈRE VERSION:



<http://www.aermec.com/qrcode.asp?q=16417>



Aermec S.p.A.

Via Roma, 996 - 37040 Bevilacqua (VR) - Italia

Tel. +39 0442 633 111 - Fax +39 0442 93577

[marketing@aermec.com](mailto:marketing@aermec.com) - [www.aermec.com](http://www.aermec.com)

