EN

INSTALLATION, USE AND MAINTENANCE MANUAL

MPE D

7 kW - 76 kW

DUCTABLE VERSION

Air condensed duct water chillers and heat pumps
PERFORMA MPE series

CE

R410A

TRANSLATION OF ORIGINAL INSTRUCTIONS

WATER CHILLERS AND HEAT PUMPS ARE IN ACCORDANCE WITH THE LAW 97/23/CE (PED) FILLIN IN D1 FORM, APPROVED BY THE THIRD NOTIFIED BODY ICIM N° 0425

The technical and dimensional data reported in this manual may be modified in view of any product improvement.

- for any information , please contact the company info@galletti.it
- In order to know the operating weight of any unit, refer to the table Rated technical data

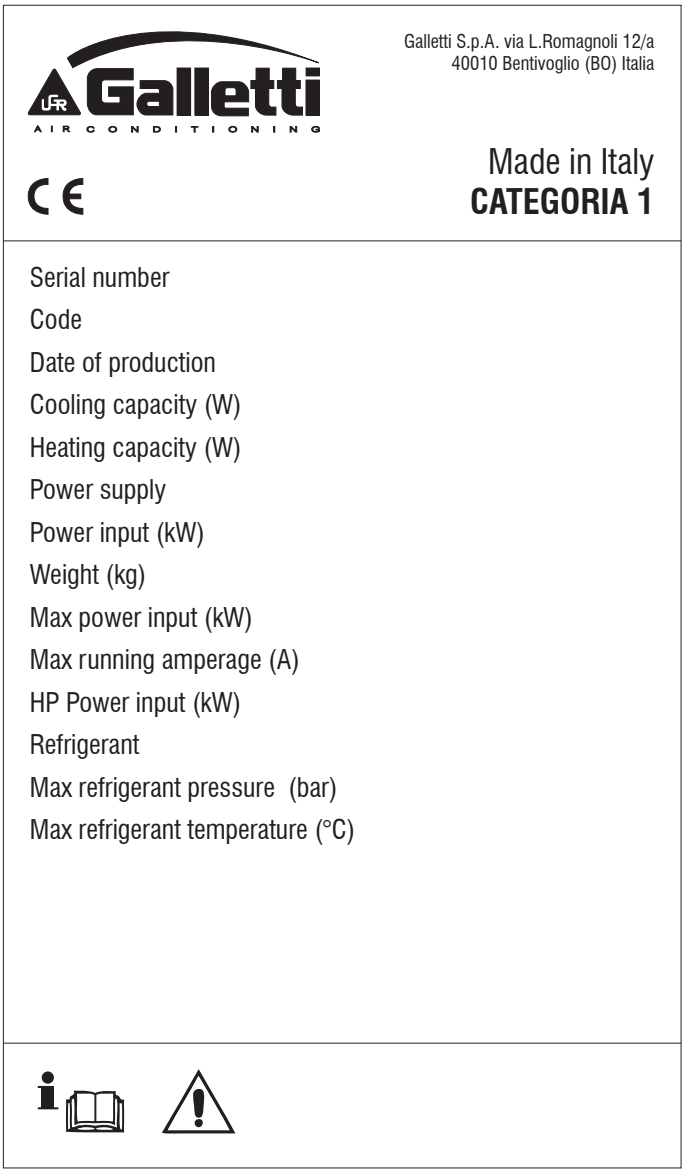
The unit data are reported on the rating label in this page.

THE LABEL SHOWS THE FOLLOWING DATA:

- Series and size of the unit
- Date of manufacture
- Main technical data
- Manufacturer
- The label is applied on the unit, usually on the enclosing panels beside the condenser coil

IMPORTANT: NEVER REMOVE THE LABEL

- Serial number of the unit
- The serial number permits to identify the technical characteristics and the components installed
- Without this datum it will be impossible to identify the unit correctly



GENERAL CAUTIONARY NOTES

- Keep this manual intact in a safe place for the all life of the unit.
- Carefully read all the information contained in this manual, paying special attention to sections marked "Important" and "Warning"; failure to comply with the instructions provided could result in injury to persons or damage to the equipment.
- Should a fault occur, consult this manual and if necessary contact the nearest Galletti S.p.A. service centre.
- All installation and maintenance operations must be carried out by qualified personnel, unless otherwise indicated in this manual.
- **THE FIRST START UP MUST BE CARRIED OUT EXCLUSIVELY BY QUALIFIED PERSONNEL AND AUTHORIZED BY GALLETTI S.p.A (SEE WARRANTY SHEET ATTACHED).**
- Before performing any work on the unit, disconnect it from the power supply.
- Failure to comply with the rules provided in this manual will result in the immediate invalidation of the warranty.
- Galletti S.p.A. shall not accept any liability for injury or damage resulting from improper use of the equipment or failure to comply with the directions provided in this manual and on the unit itself
- For further information or communication, please contact the company at: info@galletti.it
- To find out the weight of each unit, please refer to the table in the paragraph “Rated specifications”.

SAFETY SYMBOLS

Read the manual carefully

WARNING

Use personal protective equipment

USE SUITABLE PPE (GLOVES FOR REFRIGERANT, PROTECTIVE GOGGLES).

1 THE MPED SERIES

1.1 FIELD OF APPLICATION

MPED air-condensed water chillers and heat pumps have been designed to cool and heat water for air conditioning and heating systems in residential or commercial buildings. The MPED units are designed for indoor installation, in a position not accessible to the public. If protection grids are not provided (accessory) and if the machine can be reached by non-specialised personnel, access to the finned coil must be prohibited using appropriate barriers. Do not install the unit in environments with gas or flammable dusts.

1.2 MODELS AND VERSIONS

The MPED series includes 25 models with different in cooling only and heat pump version: All models are charged with R410A refrigerant.
The choice of some options can prevent the choice of some options or oblige the selection of other fields. To contact the Galletti for verification.

Complete Unit Code	M	P	E	0	0	9	C	0	A	D	0	0	0	0	C	0	0	0	0	0	0

Version [0]
Single compressor **0**
Tandem **T**

Model (size) [0 9]

Operation [C]
Water chiller **C**
Heat pump **H**

Supply voltage [0]
Standard 400 - 3N - 50 **0**
Single-phase **M**
400 - 3N - 50 + circuit breakers **2**
Single-phase + circuit breakers **4**

Refrigerant [A]
High effic. R410A **A**

Revision [A]
Standard initial **A**
Ducted with radial fans **D**

Expansion valve [0]
Traditional **0**
Electronic **A**

Pump and accessories [0]
Absent **0**
Pump + expansion tank + filling tap **1**
Dual pump + expansion tank + filling tap **2**

Inertial buffer tank [0]
Absent **0**
Present + expansion tank **S**

Partial heat recovery (the condensation control must be added) [0]
Absent **0**
Present with pump contact **D**

Fan regulation [C]
Condensation control - Rpm adjustment **C**
Condensation control - BLDC fan **E**

Antifreeze kit [0]
Absent **0**
For units with evaporator only **E**
For units with evaporator, pump and expansion tank **P**
For units with evaporator, pump, expansion tank and tank **S**

Sound insulation [0]
Absent **0**
Compressor and fan compartment soundproofing **1**
Compressor silencing housings **2**
Opt. 1 + Opt. 2 **3**

Cooling accessories [0]
None **0**
Refrigerant pressure gauges **M**

Remote Controller [0]
Absent **0**
Output RS485 (Modbus or Carel protocol) **2**
Simplified remote control **S**
BASE microprocessor remote control (modbus disabling) **M**
ADVANCED microprocessor remote control **X**
LON FTT10 serial card **L**

Special coils [0]
Standard **0**
Copper - copper **R**
Cataphoresis **C**
Corrosion-proof **B**
Hydrophilic **I**

Protection grille [0]
Absent **0**
Present **G**

Complete Unit Code	...	0	1
	Compressor options	**0**	
	Absent	**0**	
	Power factor correction capacitors	**1**	
	Soft starter	**2**	
	Power factor correction capacitors + Soft starter	**3**	
	Air/water low temperature, low pressure switch, crankcase heating element (chiller), coil wire (PDC)	**4**	
	Control microprocessor		**1**
	BASE microprocessor		**1**
	ADVANCED microprocessor		**2**
	Advanced microprocessor + kit GSM		**3**
	Advanced microprocessor + clock card		**4**

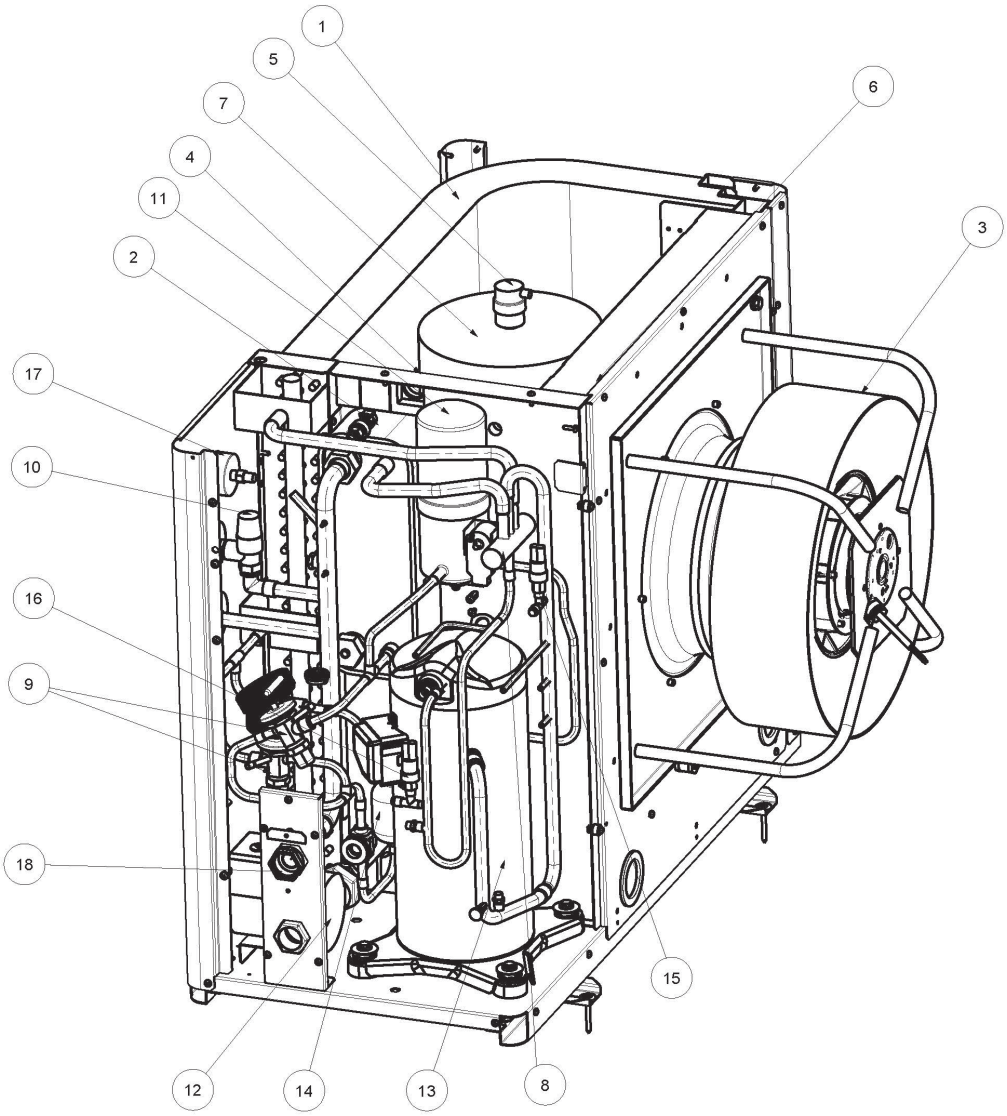
ACCESSORIES

0	Horizontal air expulsion orientation (vertical STANDARD)
M	Manual air flow rate setting
A	Automatic flow rate setting (only ADVANCED microprocessor)
–	Base rubber vibration dumpers
–	Spring vibration dumpers kit
–	Simplified remote control
–	MYCHILLER BASE (RS485 is a mandatory accessory)
–	MYCHILLER PLUS (RS485 is a mandatory accessory)

1 THE MPED SERIES

1.3 COMPONENTS LAY-OUT

MPED 07 ÷ 08

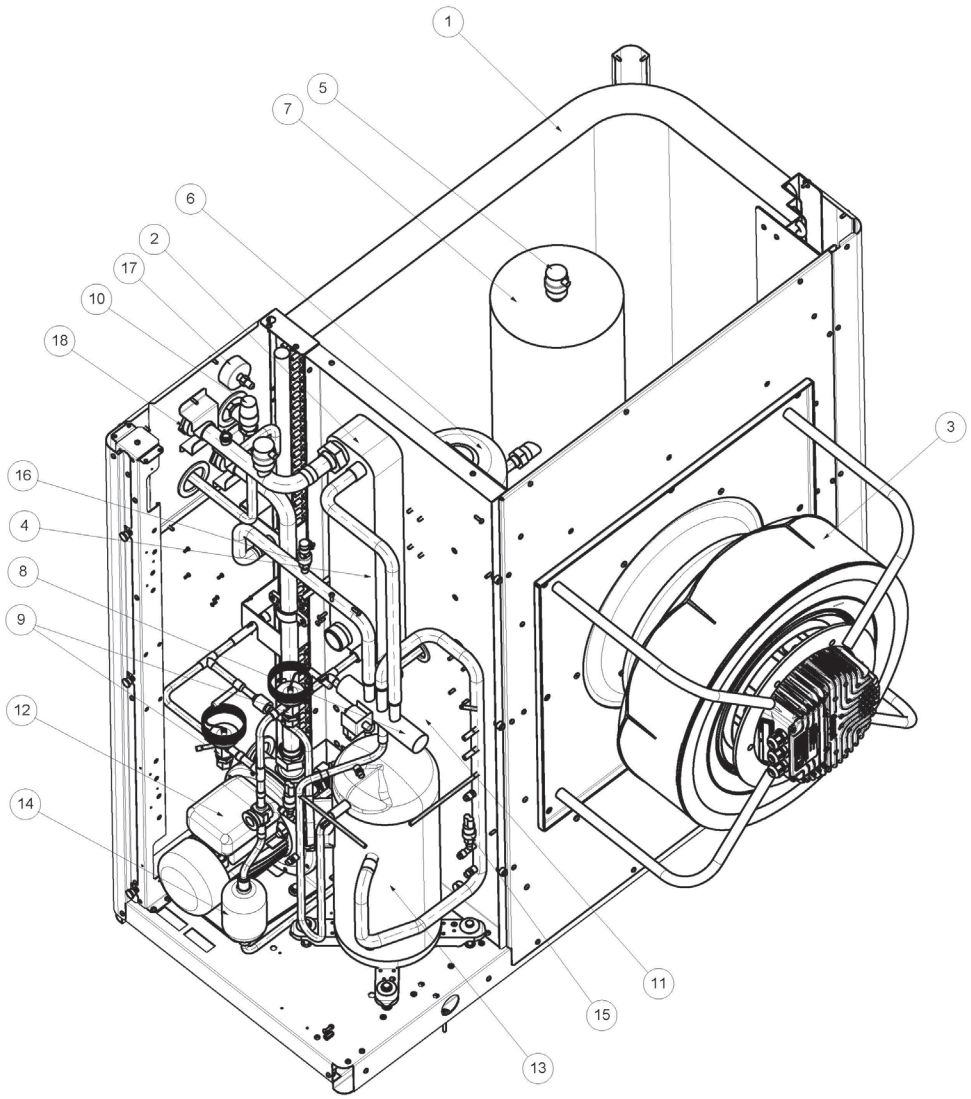


	DESCRIPTION		
1.	R410A-air heat-exchanger	**11.**	Water safety valve
2.	R410A-water heat-exchanger	**12.**	Liquid receiver
3.	Fans	**13.**	Pump
4.	Water differential pressure switch (fan housing)	**14.**	Compressor
5.	Automatic air purge valve	**15.**	Refrigerant filter
6.	Expansion vessel (fan housing)	**16.**	Low pressure switch and charge port
7.	Water tank (accessory)	**17.**	High pressure switch and charge port
9.	4-way valve (MPED H)	**18.**	Water gauge
10.	Thermostatic valve	**19.**	Water charge

1 THE MPED SERIES

1.3 COMPONENTS LAY-OUT

MPED 10 ÷ 15

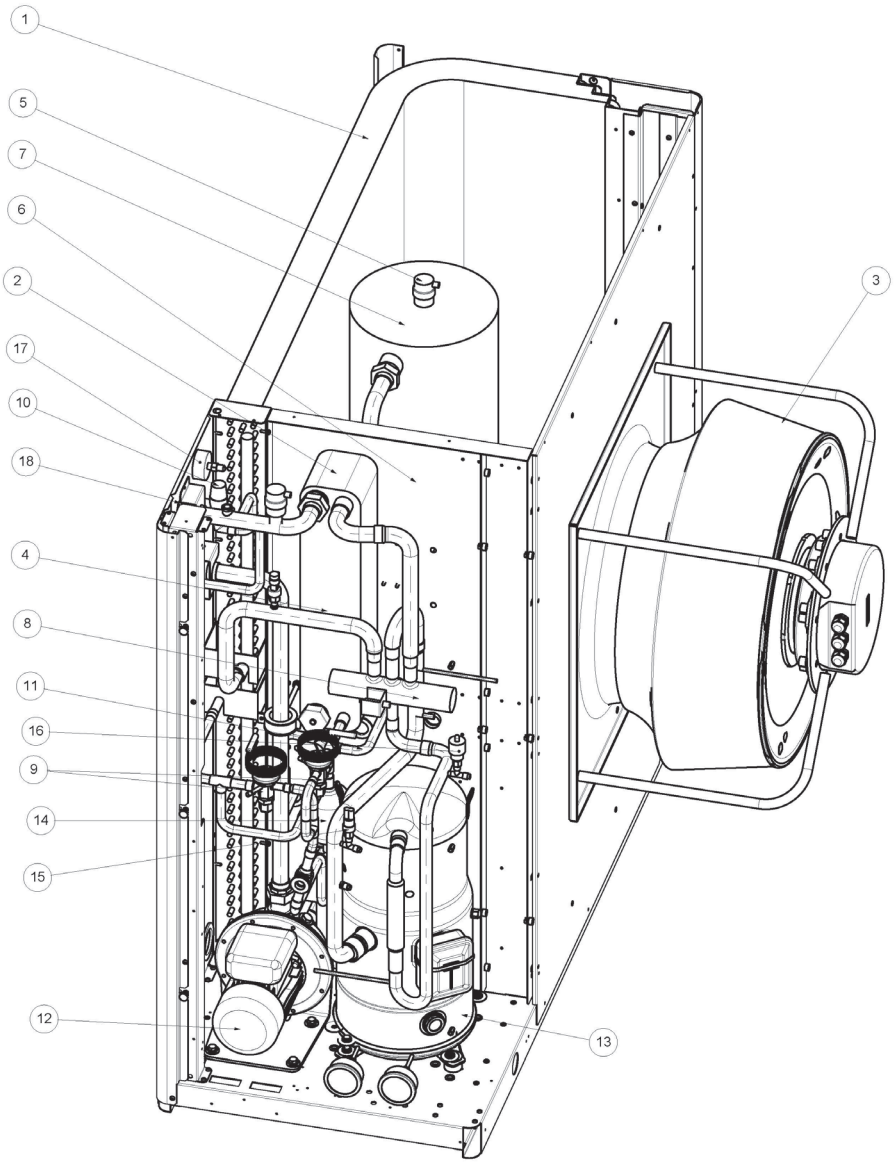


	DESCRIPTION		
1.	R410A-air heat-exchanger	**11.**	Water safety valve
2.	R410A-water heat-exchanger	**12.**	Liquid receiver (fan housing)
3.	Fans	**13.**	Pump
4.	Water differential pressure switch (fan housing)	**14.**	Compressor
5.	Automatic air purge valve	**15.**	Refrigerant filter
6.	Expansion vessel (fan housing)	**16.**	Low pressure switch and charge port
7.	Water tank (accessory)	**17.**	High pressure switch and charge port
9.	4-way valve (MPED H)	**18.**	Water gauge
10.	Thermostatic valve	**19.**	Water charge

1 THE MPED SERIES

1.3 COMPONENTS LAY-OUT

MPED 18 ÷ 27

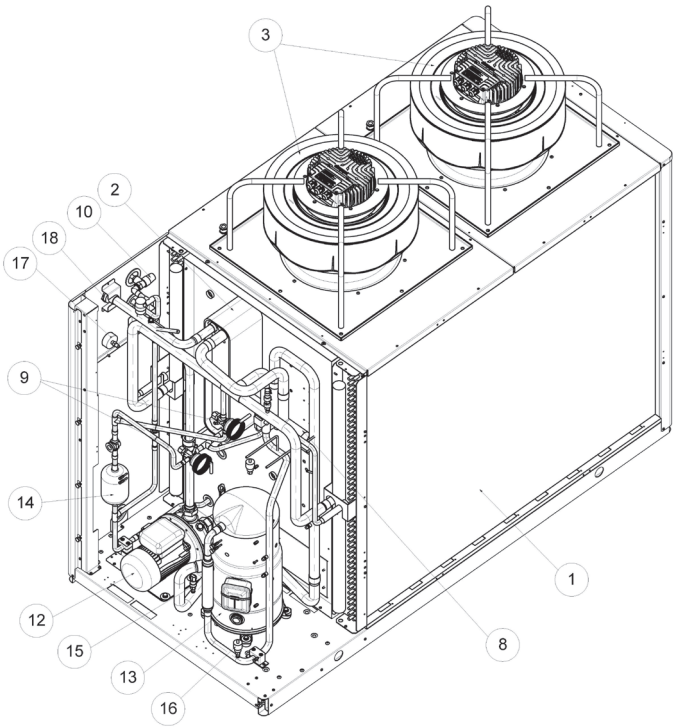


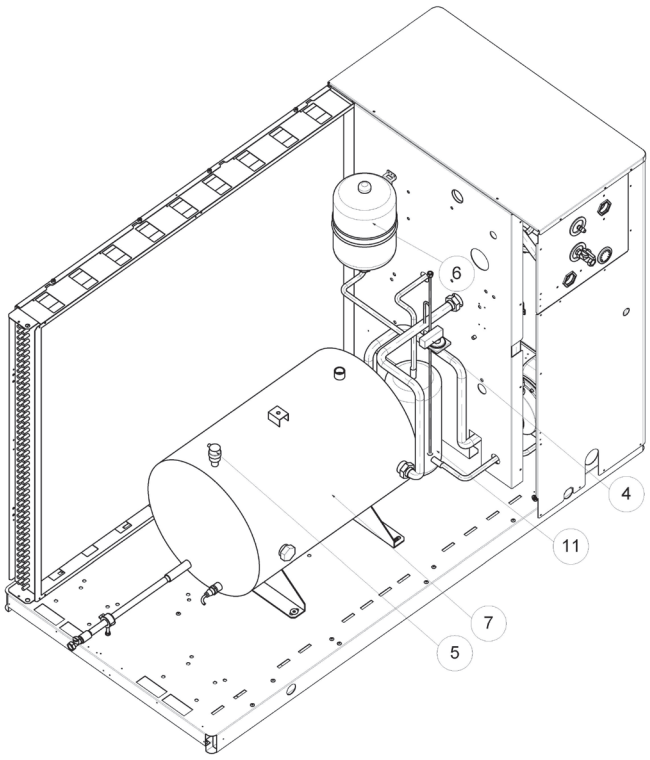
	DESCRIPTION		
1.	R410A-air heat-exchanger	**11.**	Water safety valve
2.	R410A-water heat-exchanger	**12.**	Liquid receiver (fan housing)
3.	Fans	**13.**	Pump
4.	Water differential pressure switch (fan housing)	**14.**	Compressor
5.	Automatic air purge valve	**15.**	Refrigerant filter
6.	Expansion vessel (fan housing)	**16.**	Low pressure switch and charge port
7.	Water tank (accessory)	**17.**	High pressure switch and charge port
9.	4-way valve (MPED H)	**18.**	Water gauge
10.	Thermostatic valve	**19.**	Water charge

1 THE MPED SERIES

1.3 COMPONENTS LAY-OUT

MPED 28 ÷ 40



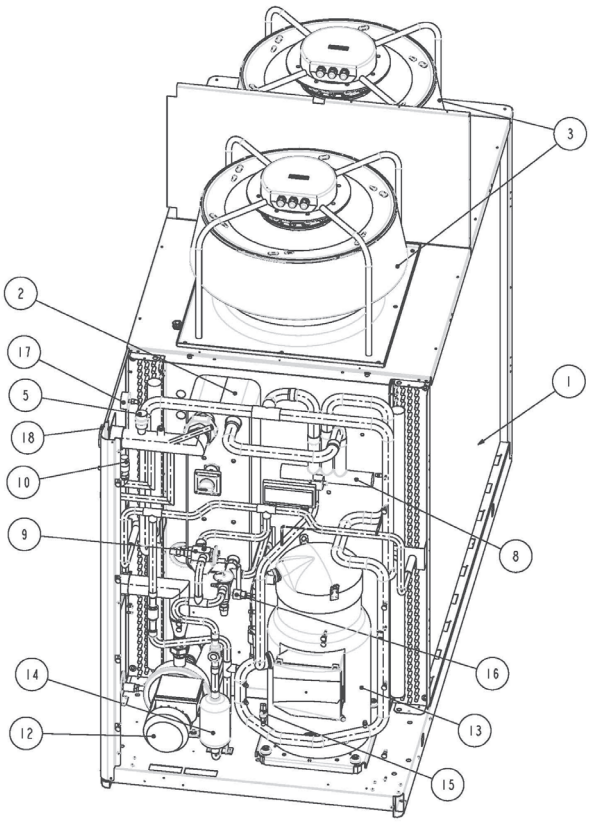


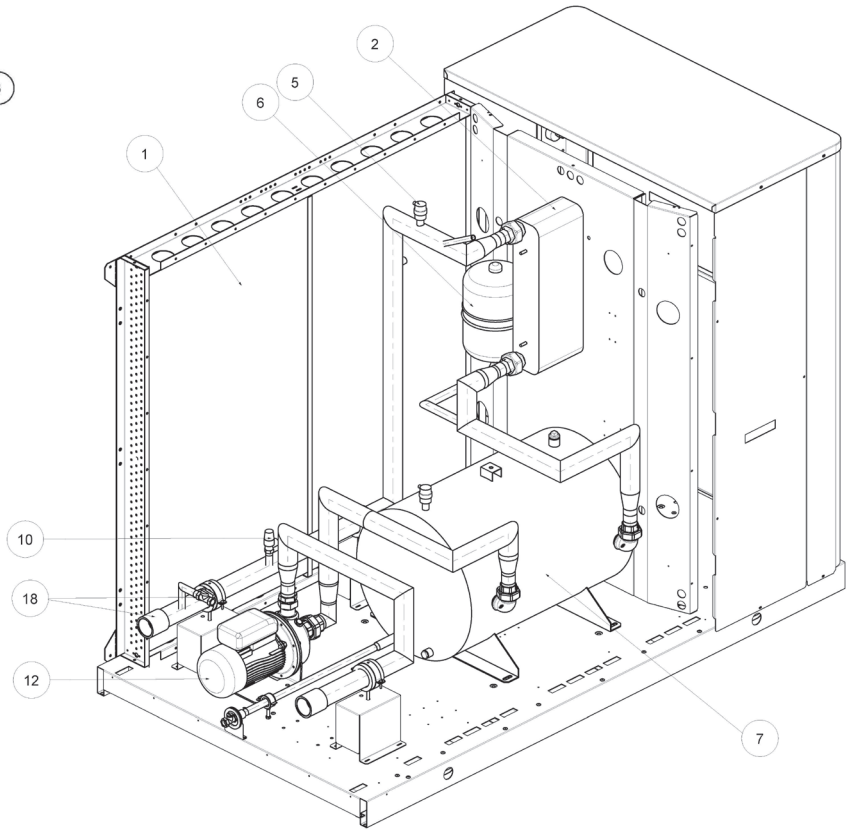
	DESCRIPTION		
1.	R410A-air heat-exchanger	**11.**	Water safety valve
2.	R410A-water heat-exchanger	**12.**	Liquid receiver (fan housing)
3.	Fans	**13.**	Pump
4.	Water differential pressure switch (fan housing)	**14.**	Compressor
5.	Automatic air purge valve	**15.**	Refrigerant filter
6.	Expansion vessel (fan housing)	**16.**	Low pressure switch and charge port
7.	Water tank (accessory)	**17.**	High pressure switch and charge port
9.	4-way valve (MPED H)	**18.**	Water gauge
10.	Thermostatic valve	**19.**	Water charge

1 THE MPED SERIES

1.3 COMPONENTS LAY-OUT

MPED 54 ÷ 66



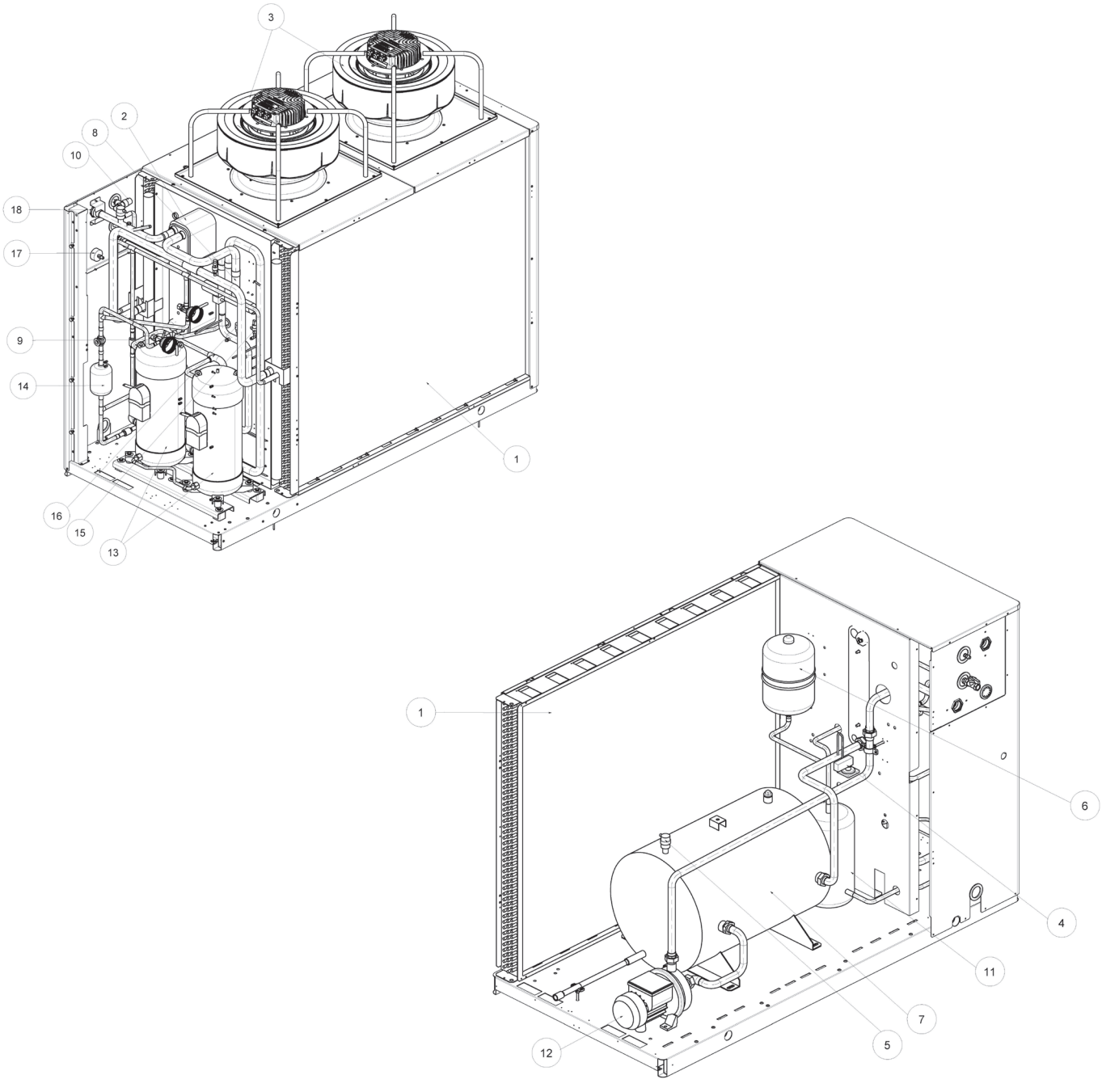


	DESCRIPTION		
1.	R410A-air heat-exchanger	**11.**	Water safety valve
2.	R410A-water heat-exchanger	**12.**	Liquid receiver (fan housing)
3.	Fans	**13.**	Pump
4.	Water differential pressure switch (fan housing)	**14.**	Compressor
5.	Automatic air purge valve	**15.**	Refrigerant filter
6.	Expansion vessel (fan housing)	**16.**	Low pressure switch and charge port
7.	Water tank (accessory)	**17.**	High pressure switch and charge port
9.	4-way valve (MPED H)	**18.**	Water gauge
10.	Thermostatic valve	**19.**	Water charge

1 THE MPED SERIES

1.3 COMPONENTS LAY-OUT

MPED 30 ÷ 45 T

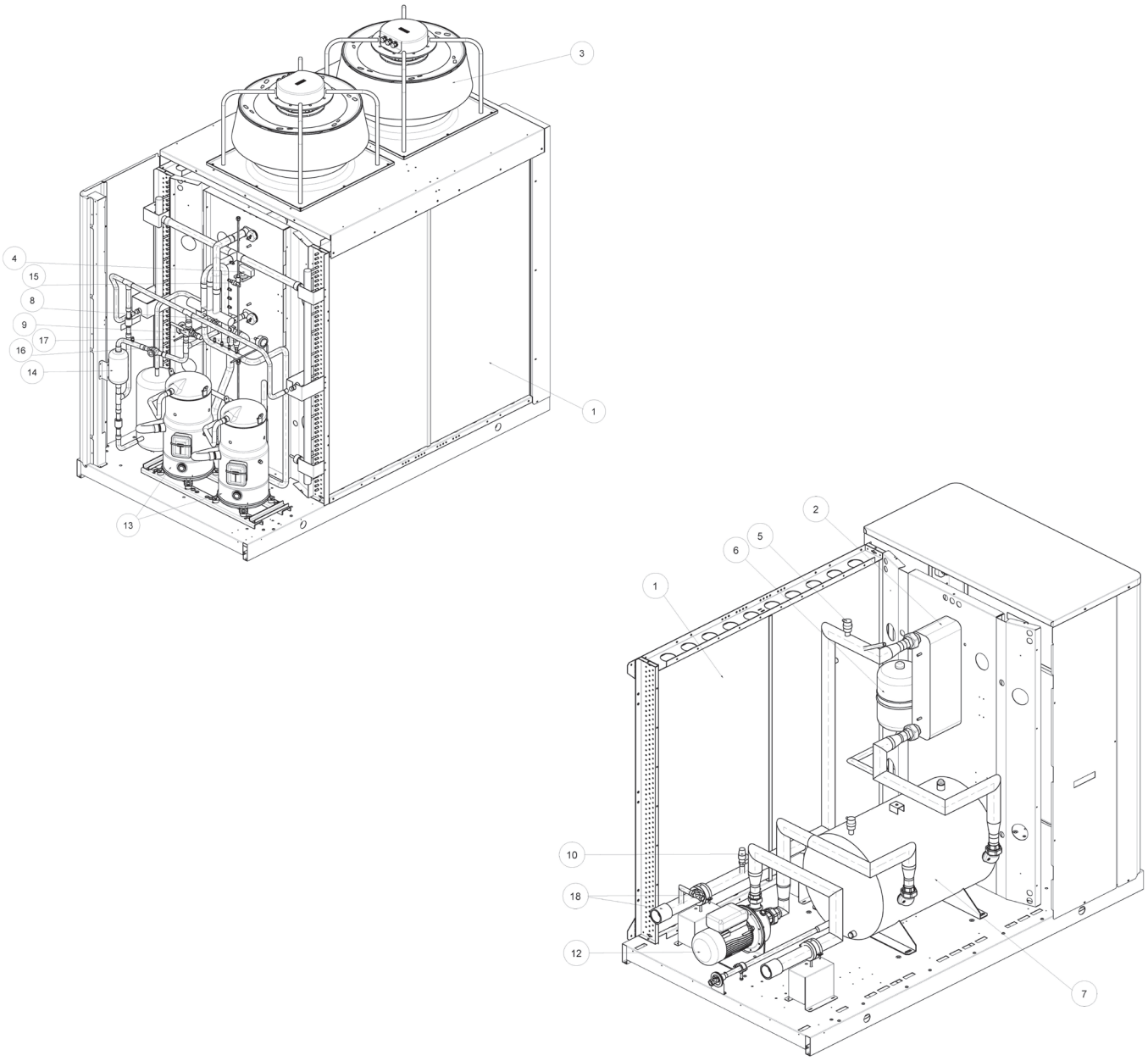


	DESCRIPTION		
1.	R410A-air heat-exchanger	**11.**	Water safety valve
2.	R410A-water heat-exchanger	**12.**	Liquid receiver (fan housing)
3.	Fans	**13.**	Pump
4.	Water differential pressure switch (fan housing)	**14.**	Compressor
5.	Automatic air purge valve	**15.**	Refrigerant filter
6.	Expansion vessel (fan housing)	**16.**	Low pressure switch and charge port
7.	Water tank (accessory)	**17.**	High pressure switch and charge port
9.	4-way valve (MPED H)	**18.**	Water gauge
10.	Thermostatic valve	**19.**	Water charge

1 THE MPE SERIES

1.3 COMPONENTS LAY-OUT

MPED 54 ÷ 76T

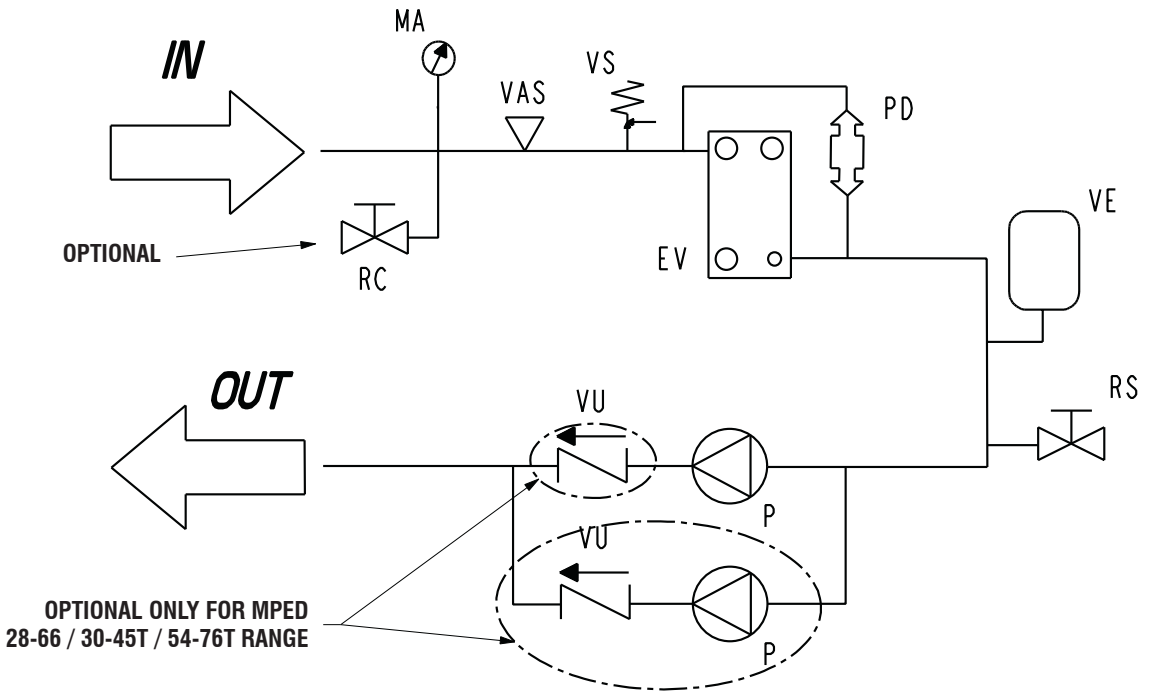


	DESCRIPTION		
1.	R410A-air heat-exchanger	**10.**	Water safety valve
2.	R410A-water heat-exchanger	**11.**	Liquid receiver (fan housing)
3.	Fans	**12.**	Pump
4.	Water differential pressure switch (fan housing)	**13.**	Compressor
5.	Automatic air purge valve	**14.**	Refrigerant filter
6.	Expansion vessel (fan housing)	**15.**	Low pressure switch and charge port
7.	Water tank (accessory)	**16.**	High pressure switch and charge port
8.	4-way valve (MPED H)	**17.**	Water gauge
9.	Thermostatic valve	**18.**	Water charge

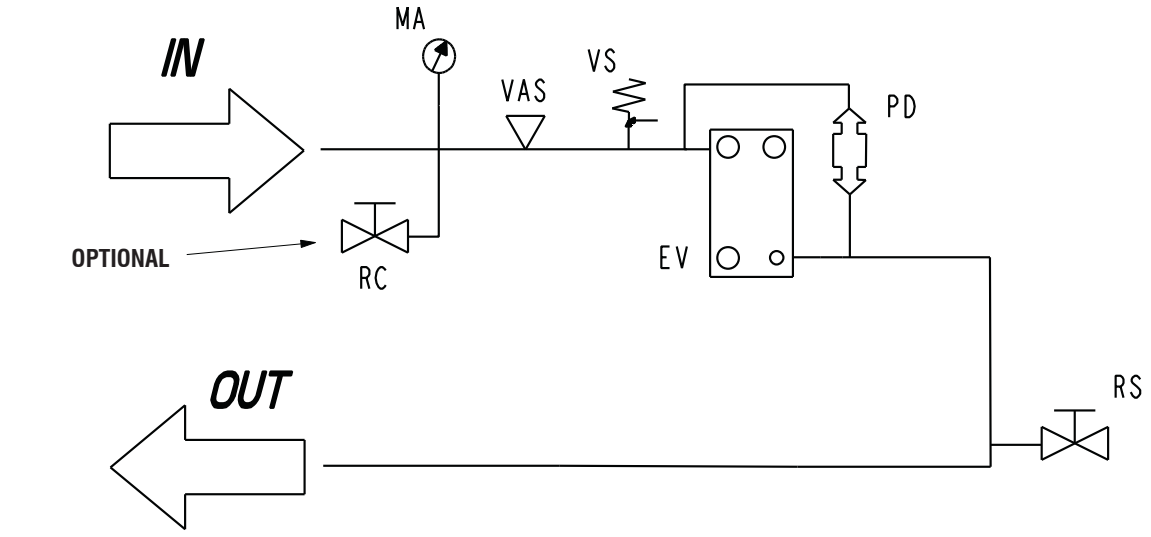
1 THE MPED SERIES

1.4 WATER CIRCUITS

MPED (EVAPORATOR AND PUMP)



MPED (EVAPORATOR)

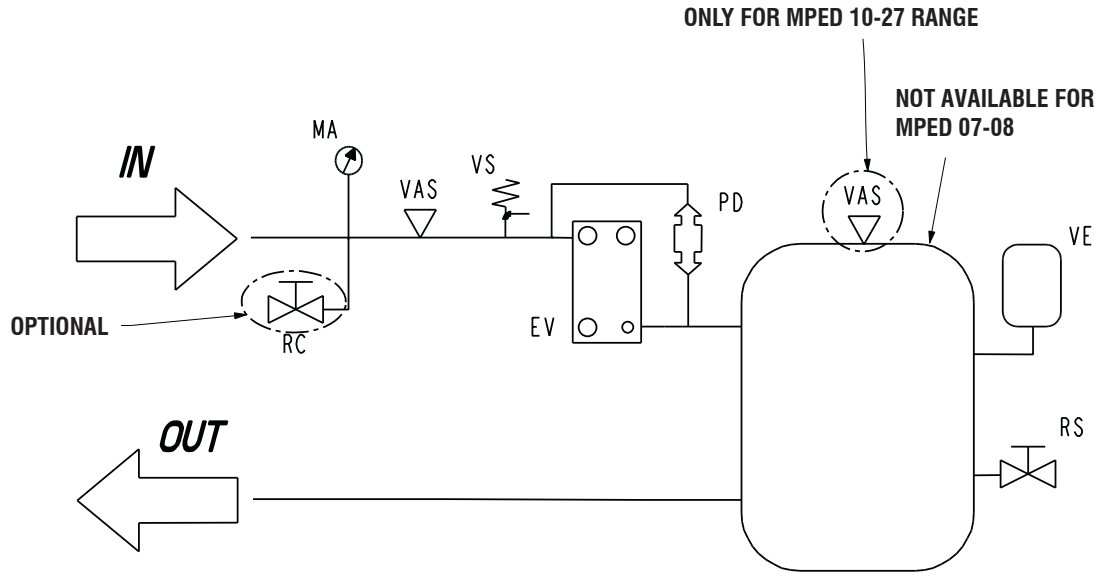


	LEGEND		
VS	Safety valve	**VE**	Expansion vessel
EV	Evaporator	**P**	Pump
PD	Water differential pressure switch	**RS**	Drain
MA	Water gauge	**RC**	Water charge
VAS	Air bleed hole	**VU**	Check valve

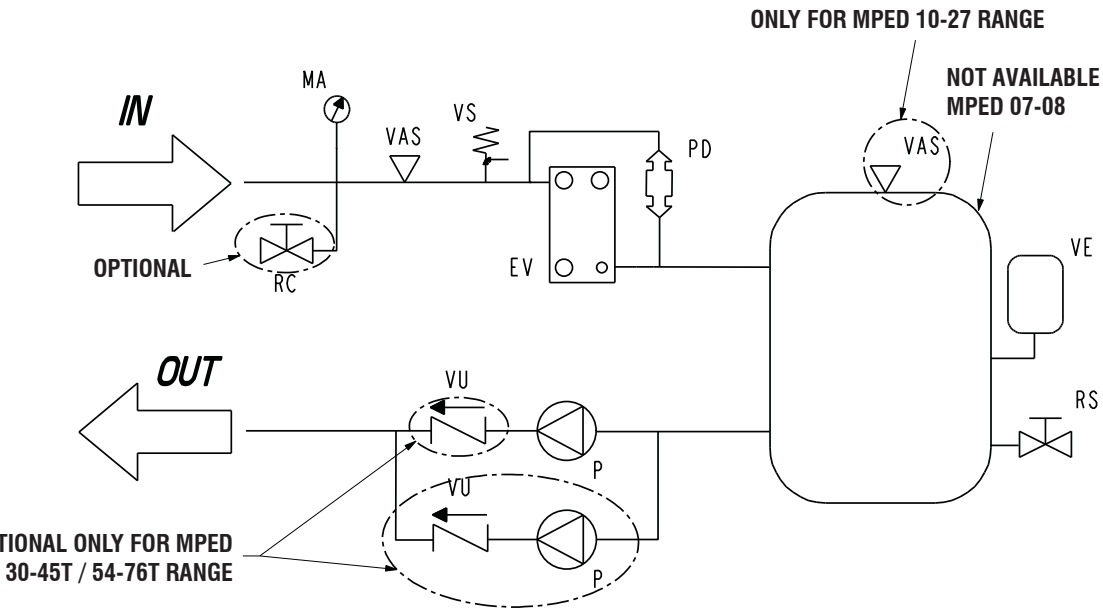
1 THE MPED SERIES

1.4 WATER CIRCUITS

MPED (EVAPORATOR AND BUFFER TANK)



MPED (EVAPORATOR, PUMP AND BUFFER TANK)



	LEGEND		
VS	Safety valve	**VE**	Expansion vessel
EV	Evaporator	**P**	Pump
PD	Water differential pressure switch	**RS**	Drain
MA	Water gauge	**RC**	Water charge
VAS	Air bleed hole	**VU**	Check valve

2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

2.1 INSPECTION

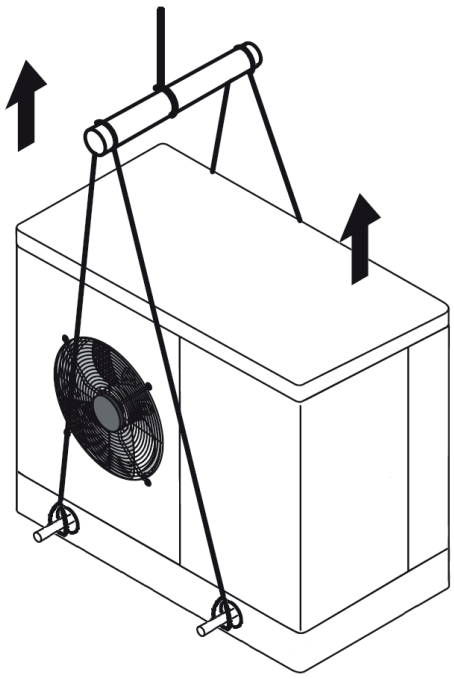
On receiving the unit, check that the packing is intact: the machine left the factory in perfect conditions and after thorough inspection.
Should you detect any signs of damage, immediately report them to the carrier and note them on the delivery slip.
Galletti S.p.A. must be notified of the entity of the damage within 8 days of the delivery date.
Check that the following items are present:

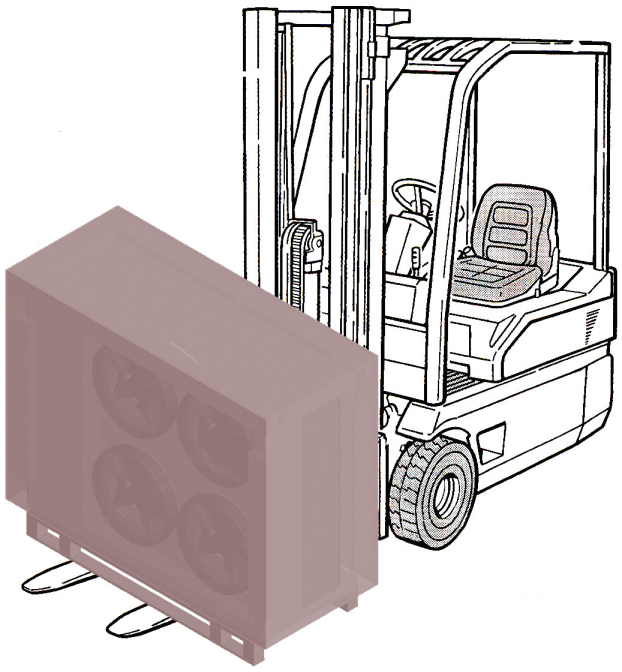
- starting up module,
- wiring diagram,
- warranty certificate
- make sure that this manual is intact (64 pages)

2.2 CONVEYANCE

During handling it is compulsory to check dimensions, weights, centre of gravity and anchorages. Check as well that lifting and positioning devices conform to the current safety regulations. The unit leaves the factory screwed onto a wooden pallet, which allows it to be easily conveyed with a forklift truck.
After removing the unit from the pallet, handle it gently, without applying excessive pressure on the side panels, finned coil and fan grille. You should collect and separate the packing materials (wood, cardboard, nylon etc.) and make them available for recycling in order to minimise their environmental impact.
Before lifting, remove the screws that fasten the machine base to the wooden pallet. The unit must be lifted using Ø 1½" GAS steel pipes at least 3mm thick, to be inserted in the round holes on the base side members (see figure) and identified by means of stickers. Piping must protrude of at least 250-300 mm from each side, be slung with ropes of equal length and secured to the lifting hook (provide stops at the ends of the pipes to prevent the ropes from slipping off due to the weight). Use ropes and belts sufficiently long to extend beyond the height of the machine and place spacer bars and boards on the top to prevent damaging the sides and the top of the unit. In this phase, before the definitive position, vibration damping supports can be installed (optional).

Warning ⚠ In all lifting operations make sure that the unit is securely anchored in order to prevent accidental falls or overturning.

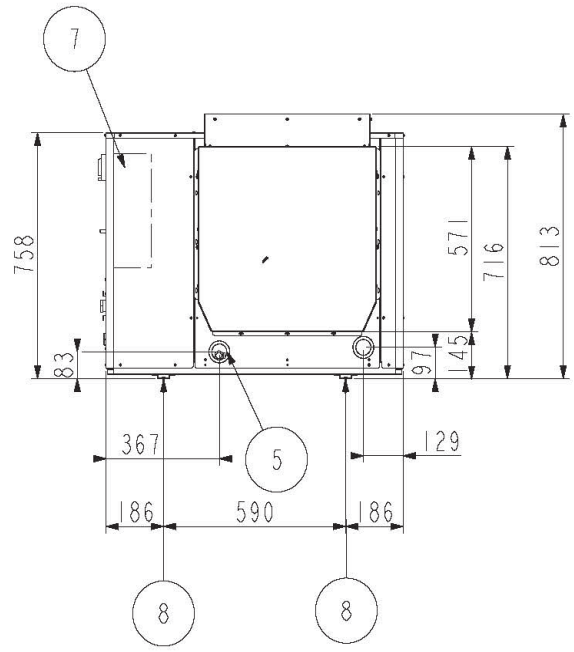


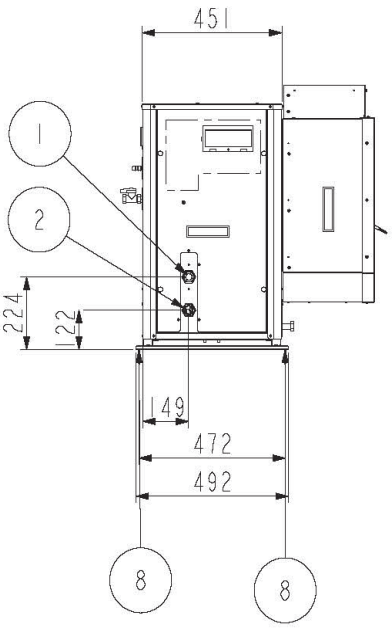


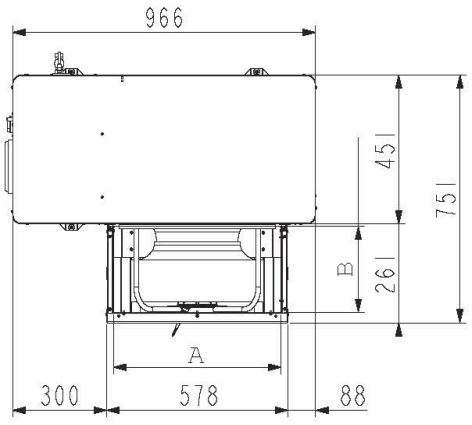
2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

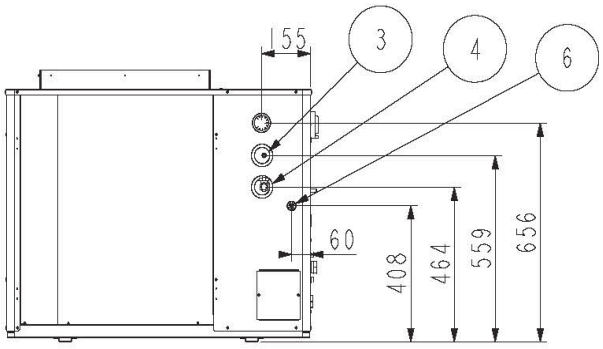
2.3 DIMENSIONAL

MPED 07 ÷ 08

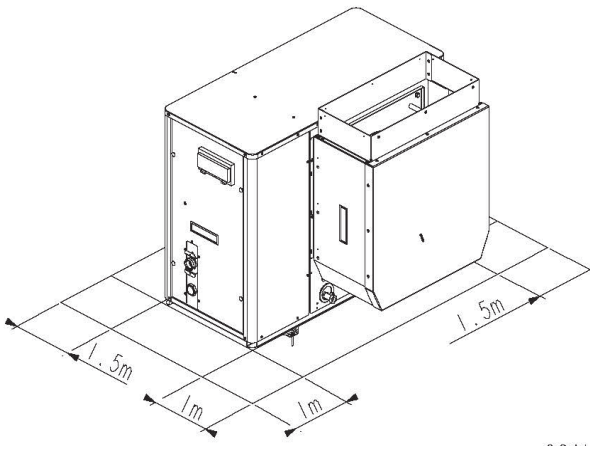








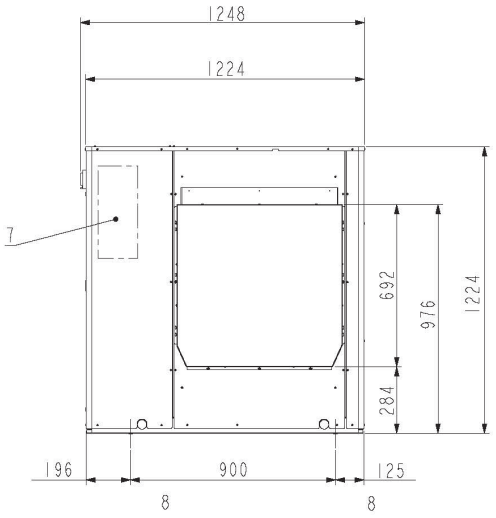
LEGEND	
1	Water in 1" female
2	Water out 1" female
3	Safety valve discharge outlet provided with rubber ring holder
4	Water supply $^1/_2$" male (optional tap)
5	Drain manifold $^1/_2$" female
6	Power supply Ø 28 mm
7	Electrical control board
8	Dampers fastening points (accessory)
A x B	Duct outlet dimensions

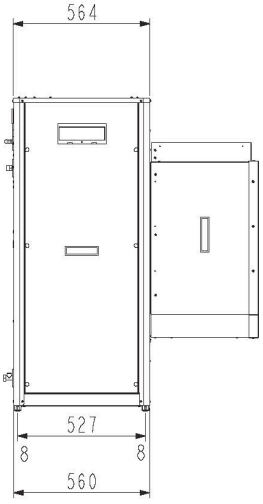


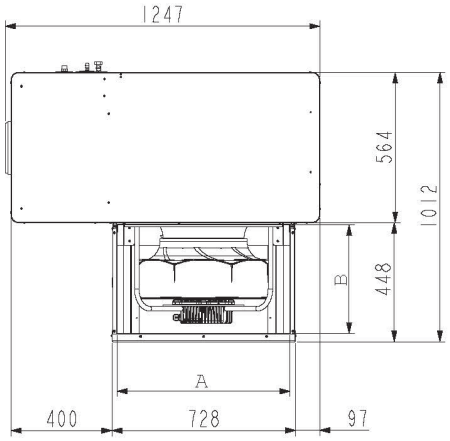
2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

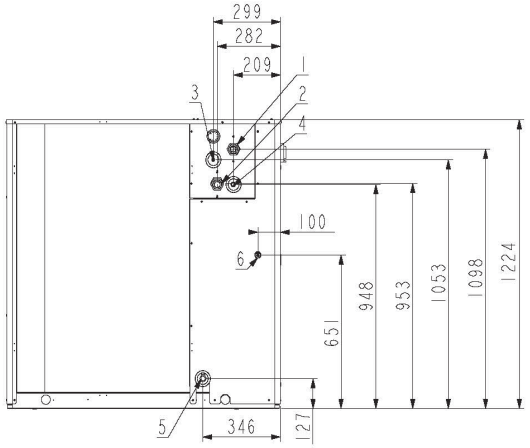
2.3 DIMENSIONAL

MPED 10 ÷ 15









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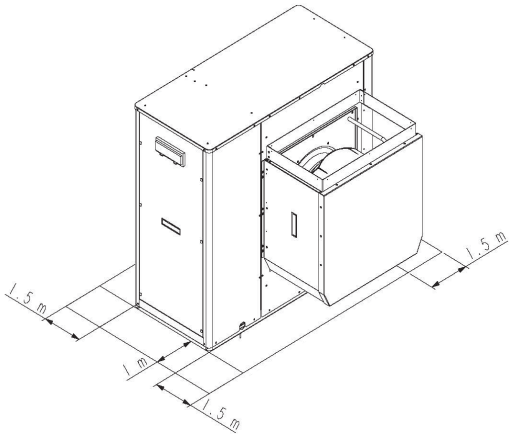
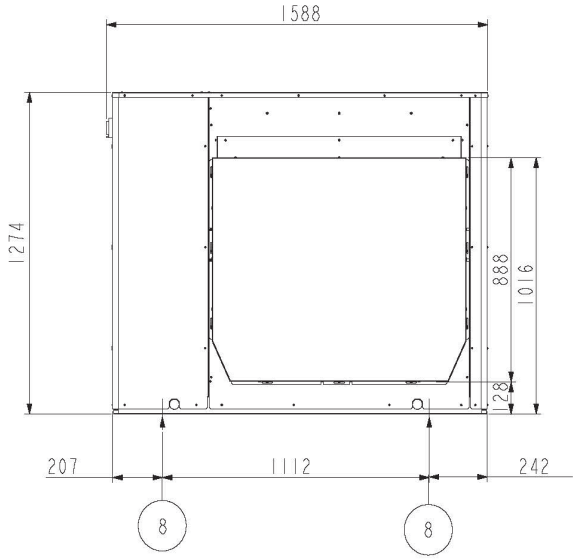
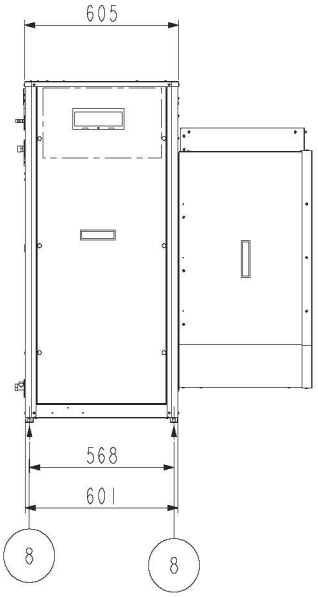


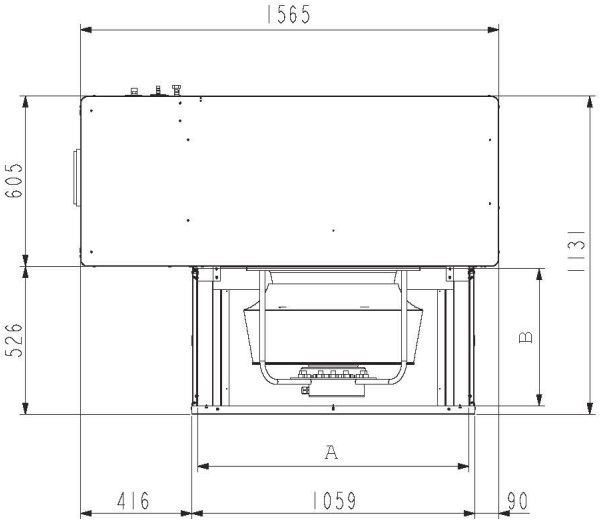
2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

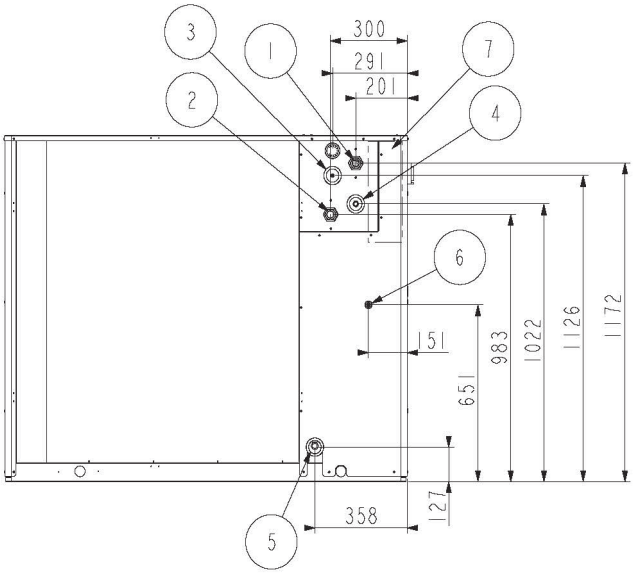
2.3 DIMENSIONAL

MPED 18 ÷ 27

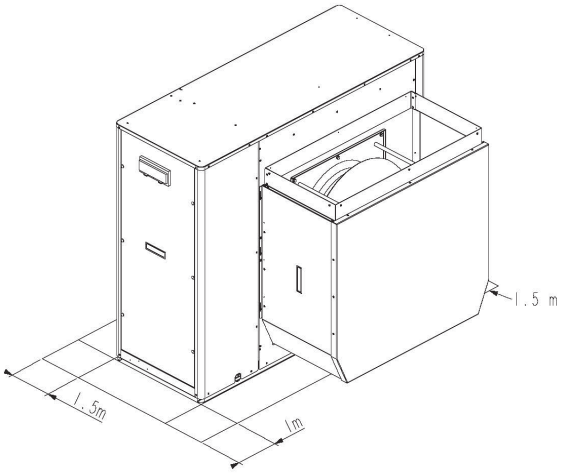








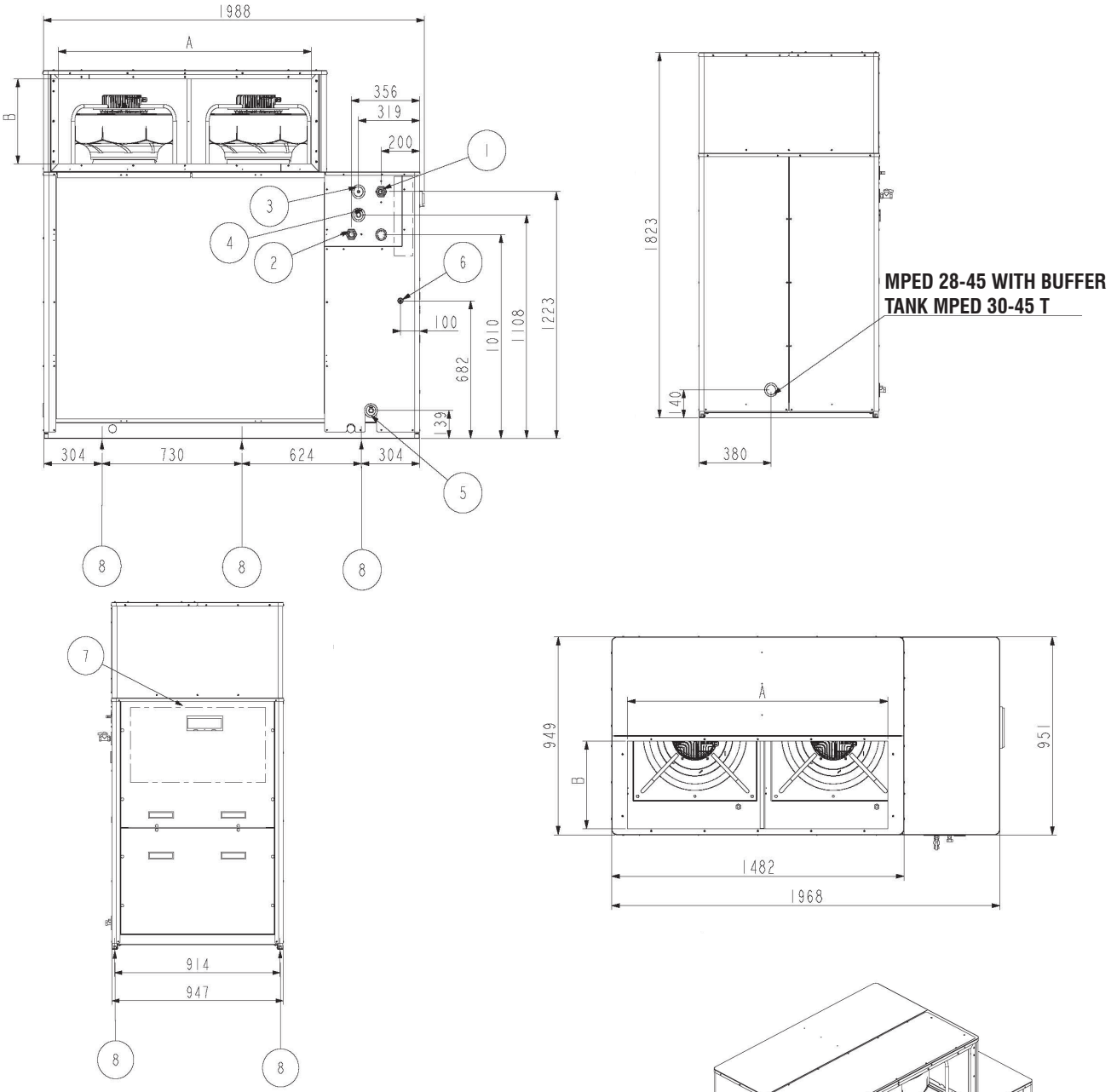
LEGEND	
1	Water in 1" $^1/_4$ female
2	Water out 1" $^1/_4$ female
3	Safety valve discharge outlet provided with rubber ring holder
4	Water supply $^1/_2$" male (optional tap)
5	Drain manifold $^1/_2$" female
6	Power supply Ø 28 mm
7	Electrical control board
8	Dampers fastening points (accessory)
A x B	Duct outlet dimensions



2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

2.3 DIMENSIONAL

MPED 28 ÷ 40 - MPED 30 ÷ 45 T

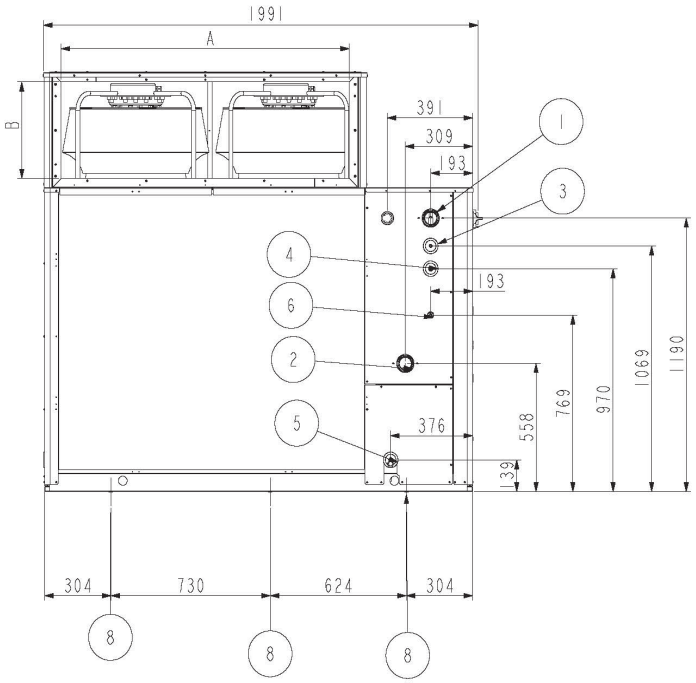


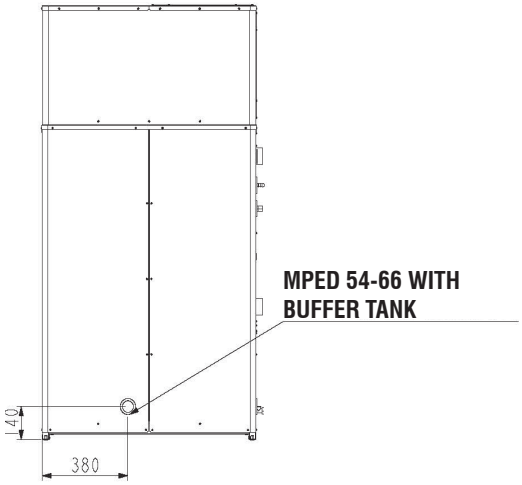
LEGEND	
1	Water in 1" $^1/_4$ female
2	Water out 1" $^1/_4$ female
3	Safety valve discharge outlet provided with rubber ring holder
4	Water supply $^1/_2$" male (optional tap)
5	Drain manifold $^1/_2$" female
6	Power supply Ø 37 mm
7	Electrical control board
8	Dampers fastening points (accessory)
A x B	Duct outlet dimensions

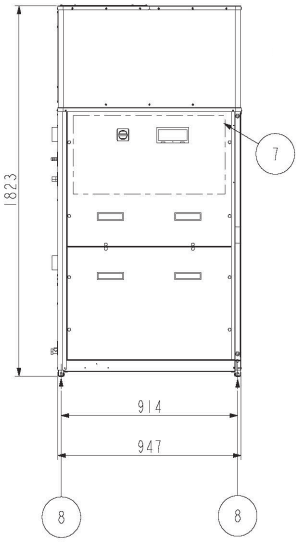
2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

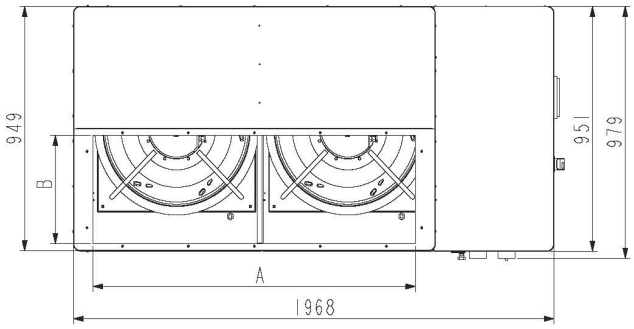
2.3 DIMENSIONAL

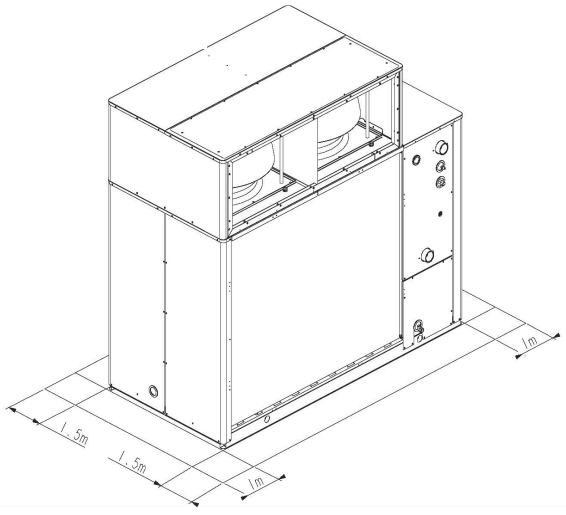
MPED 54 ÷ 66









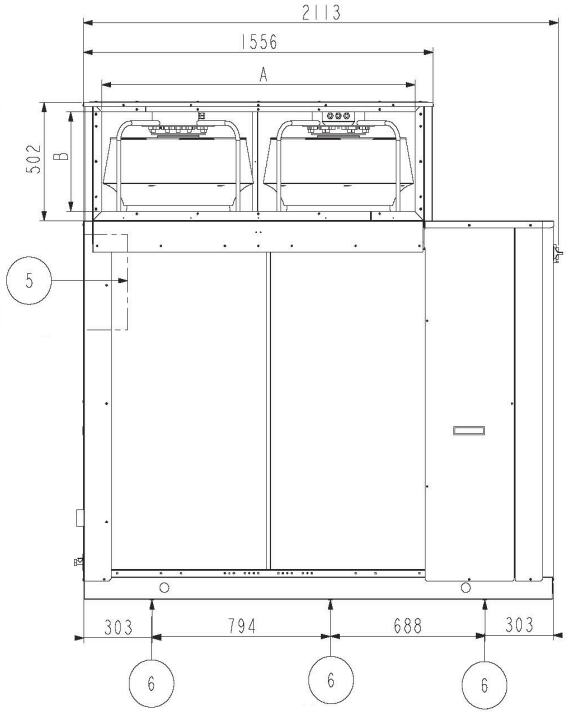


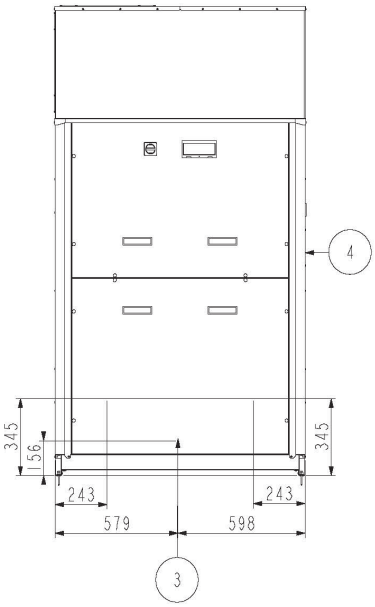
LEGEND	
1	Water inlet 2" female
2	Water outlet 2" female
3	Safety valve discharge outlet provided with rubber ring holder
4	Water supply ½" male
5	Water drainage ½" female
6	Power supply
7	Electric control board
8	Fastening points for vibration dampers (accessory)
9	Desuperheater water inlet 1" female
10	Desuperheater water outlet 1" female
A x B	Duct outlet dimensions

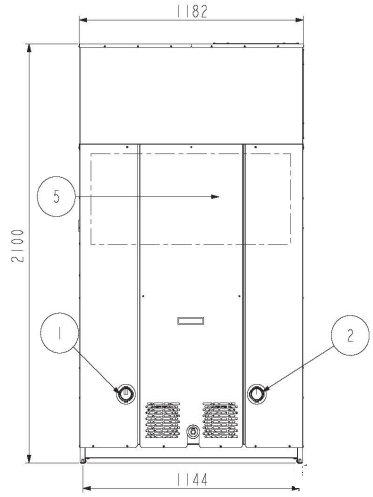
2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

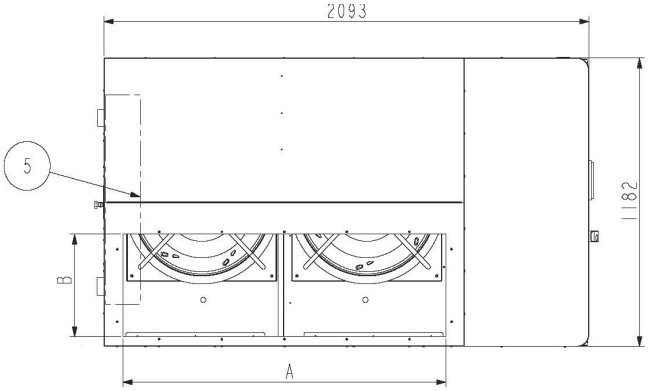
2.3 DIMENSIONAL

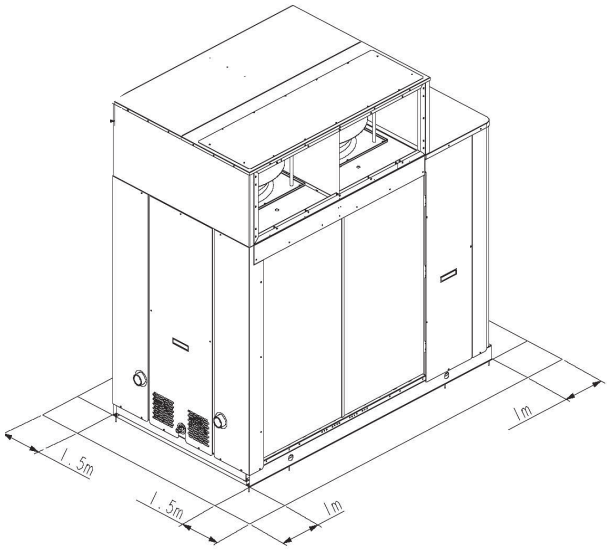
MPED 54 ÷ 76T











LEGEND	
1	Water inlet 2" female
2	Water outlet 2" female
3	Safety valve discharge outlet provided with rubber ring holder
4	Water supply ½" male
5	Water drainage ½" female
6	Power supply
A x B	Duct outlet dimensions

2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

2.3 DIMENSIONAL

The table shows the dimensions of the duct outlet. For the frames with fans located on top of the unit (models 28 - T76), the duct can be installed by removing the top panel or side panel of the fan compartment, as shown respectively in the top and front views of the dimensional diagrams. The isometric view shows, for example, the case of ducting on the side panel.

DUCT DIMENSIONS	007M	008 M	008	010 M	010	013	015	018	020	024	027	028	032
A (mm)	535	535	535	605	605	605	605	1015	1015	1015	1015	1320	1320
B (mm)	300	300	300	409	409	409	409	487	487	487	487	420	420

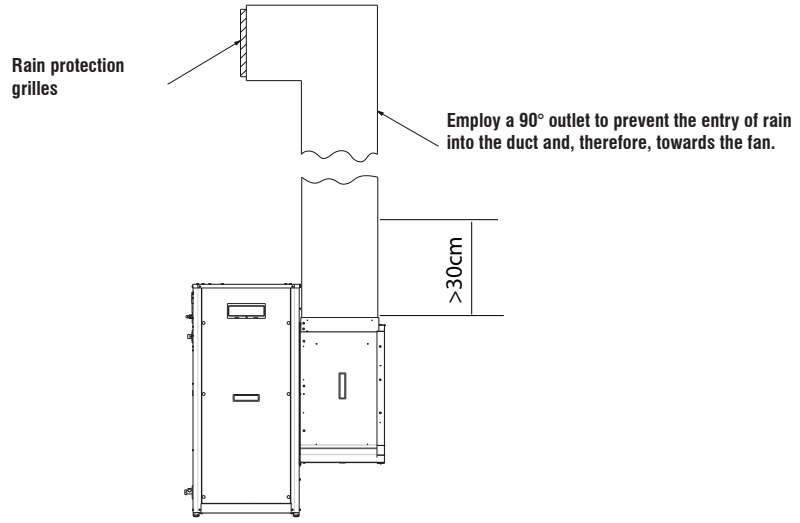
DUCT DIMENSIONS	035	040	054	066	T30	T34	T40	T45	T54	T61	T69	T76
A (mm)	1320	1320	1320	1320	1320	1320	1320	1320	1394	1394	1394	1394
B (mm)	420	420	420	420	420	420	420	420	420	420	420	420

2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

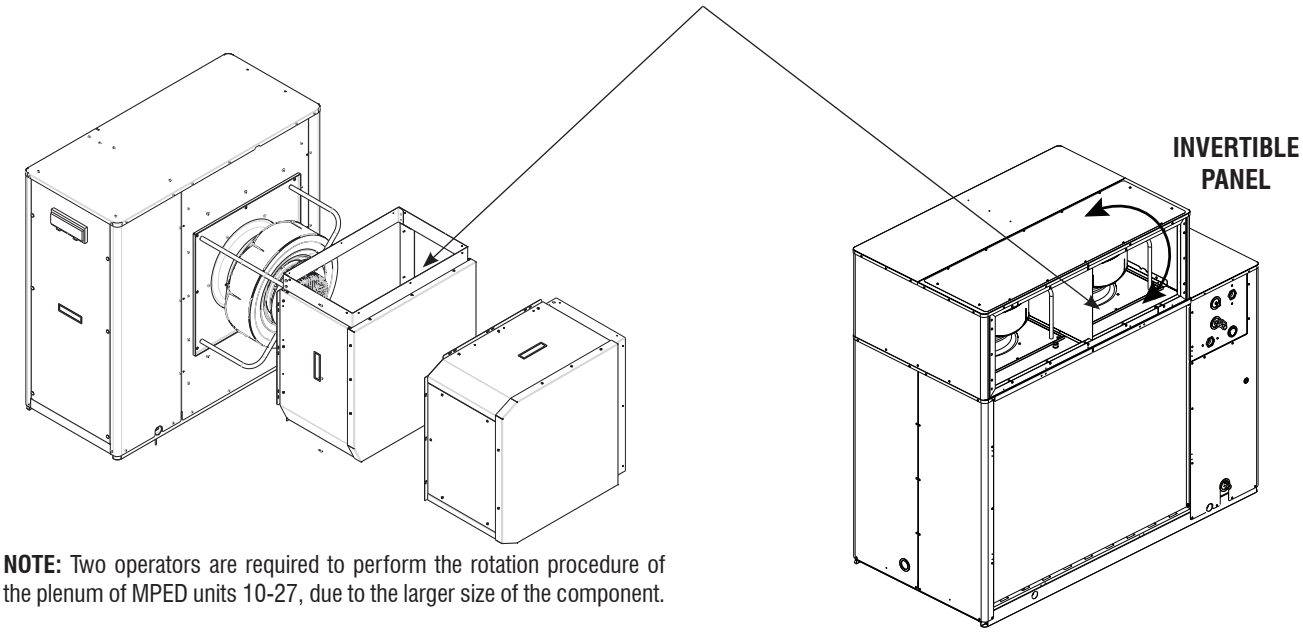
2.4 SITING

MPED water chillers and heat pumps are air-cooled units suitable for indoor installation. It is necessary to install air intake and outlet ducts that must be sized for the nominal air flow rate and the available useful pressure of each model.
At the same time avoid installations that may allow air recirculation to take place between the intake and the discharge.
The figures show a typical installation with air outlet from above and the procedure to follow to rotate the plenum of the radial fan in the MPED units from size 07 to 27.
It is important to bear in mind the following aspects when choosing the best site for installing the unit:
- size and origin of water pipes;
- Location of the power supply;
- Solidity of the supporting surface;
- Position the unit so that prevalent winds do not alter the fan air flow).
- Avoid the transmission of noise and vibrations through the technical compartment and duct structure. To do this, use base vibration damping accessories and vibration dampers on the air outlet. If vibration damping base supports are adopted, it is strongly recommended also to use vibration damping couplings on the water pipes.
- Ensure adequate accessibility for maintenance or repairs (see section on “installation clearance requirements”).

This appliance is not intended to be used by children or persons with physical, sensorial or mental problems, inexpert or unprepared, without supervision. Be careful that children do not approach the appliance.



REMOVE THE GRILLE BEFORE INSTALLING THE UNIT



NOTE: Two operators are required to perform the rotation procedure of the plenum of MPED units 10-27, due to the larger size of the component.

2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

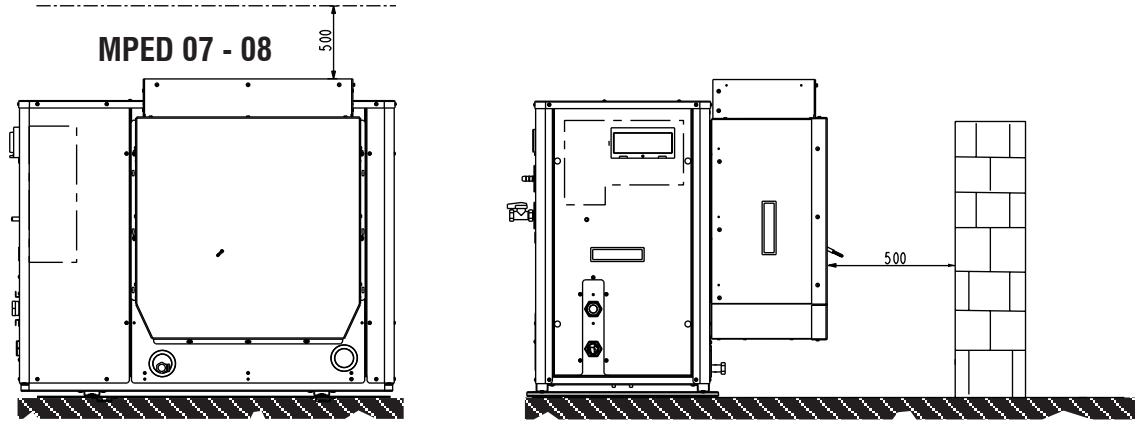
2.4 SITING

2.4.1 INSTALLATION CLEARANCE REQUIREMENTS

To guarantee the proper functioning of the unit and access for maintenance purposes, it is necessary to comply with the minimum installation clearance requirements shown in figures 1 and 2.
Verify that there are no obstacoles in front of the fans air outlet.
Avoid any and all situations of backflow of hot air between air outlet and inlet of the unit.
If even only one of the above conditions is not fulfilled, please contact the manufacturer to check for feasibility.
In the design of the MPED series, special care has been taken to minimise noise and vibrations transmitted to the ground.
Even greater insulation may be obtained, however, by using vibration damping base supports (available as optional accessories).
If vibration damping base supports are adopted, it is strongly recommended also to use vibration damping couplings on the water pipes.
Whenever the unit is to be sited on unstable ground (various types of soil, gardens, etc.) it is a good idea to provide a supporting base of adequate dimensions.

Warning ⚠ heat pump units produce condensation while operating in the heating mode.

1



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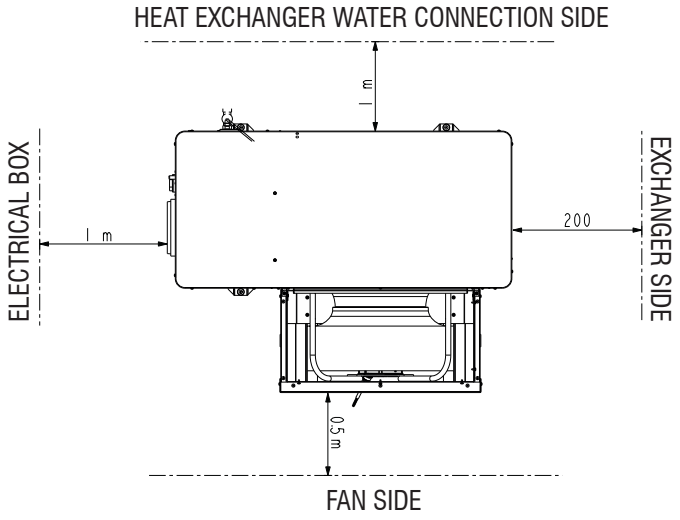
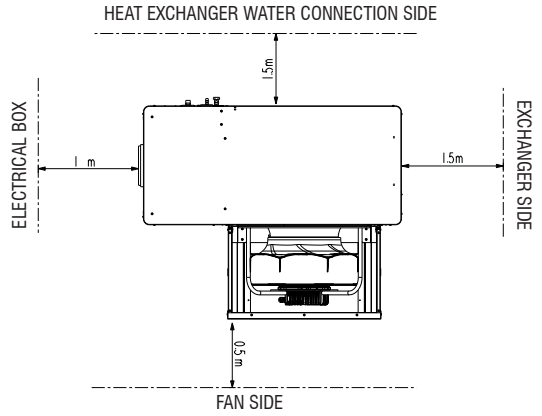
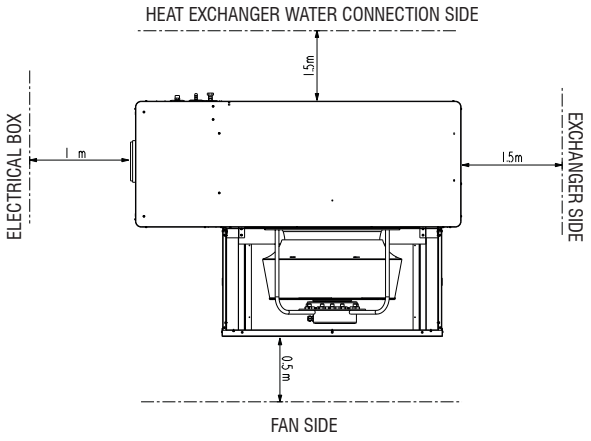


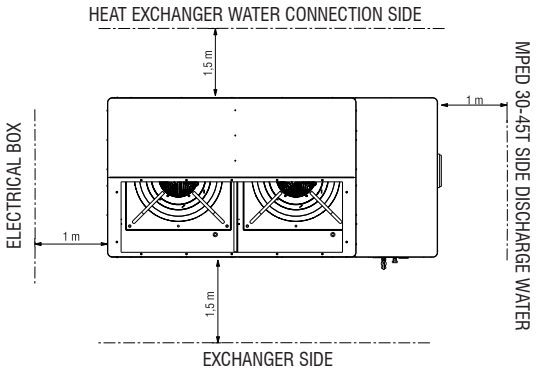
MPED 10 - 15



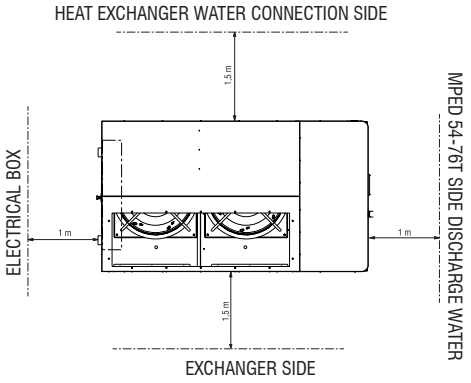
MPED 18 - 27



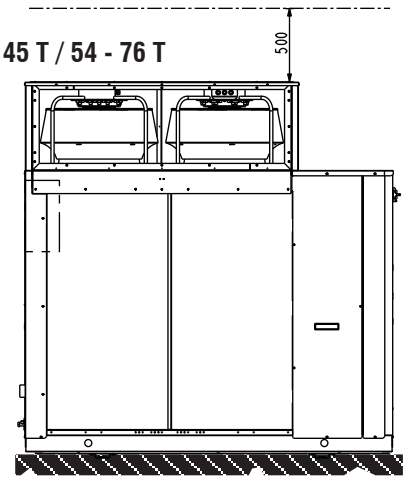
MPED 28 - 66 / 30 - 45 T



MPED 54 - 76 T

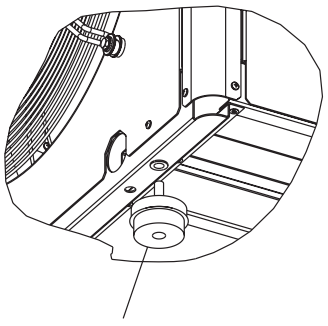


MPED 28 - 66 / 30 - 45 T / 54 - 76 T



2.5 DAMPERS SITING

MPED	N°DAMPERS
07 - 08	4
10 - 15	4
18 - 27	4
28 - 66	6
30 - 45 T	6
54 - 76 T	6



DAMPERS

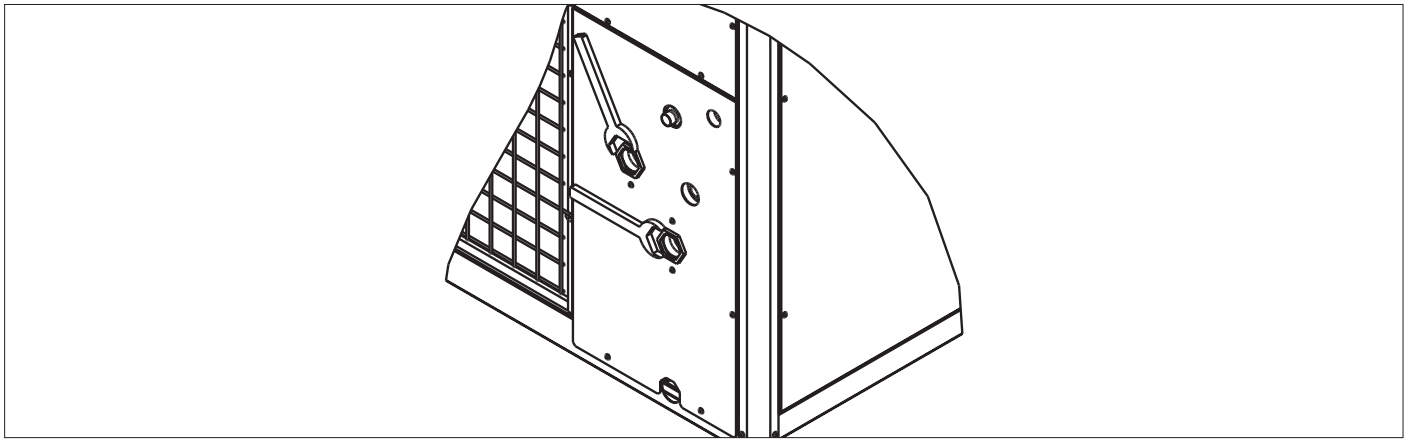
3 PLUMBING AND ELECTRICAL CONNECTIONS

3.1 PLUMBING CONNECTION

All the units belonging to the MPED series are equipped with water differential pressure switch, safety valve, water pressure gauge and automatic filling device and emptying tap.
Furthermore, depending on the version, MPED units can be supplied complete with pump, expansion vessel and buffer tank:

3.1.1 HYDRAULIC CONNECTION

Warning ⚠ While connecting the taps, hold the unit's plumbing connections tightly in place using a hexagonal wrench to prevent the pipes inside the unit from being damaged (see figure).



3.1.2 RECOMMENDED WATER CIRCUIT

Warning ⚠ when making the plumbing connections, make sure there are no open flames in proximity to or inside the unit.

When setting up the water circuit, it is advisable to equip it with:
- valves for regulating **(VI)** the unit on the water pipes, immediately upstream and downstream from the unit itself, to be used in the event maintenance work is required;
- standard mechanical filter **(FM) (OBLIGATORY!)** on the pipe feeding the unit, in proximity to the latter;
- standard mechanical filter **(FM) (OBLIGATORY!)** and check valve **(VNR),** on the supply line upstream from the filling tap **(RC);**
- an air vent valve at the highest point of the circuit;
- escape pipe for the safety valve **(VS),** which, in the event the safety valve opens, diverts the jet of water to an area where it cannot harm persons or damage property (**Important!**);
- vibration-damping couplings **(GA)** on the pipes to prevent vibrations from being transmitted toward the system.

Important! It is advisable to ensure that the pipes connected upstream and downstream from the unit are not smaller in diameter than the plumbing connections of the unit itself.

Important! During wintertime the water circuit (or the water chiller only) must be emptied to prevent damage caused by freezing; alternatively, the circuit may be filled with a mixture of water and glycol; the percentage of glycol necessary will depend on the lowest forecast temperature (see table):

Percentage by weight of ethylene glycol (%)	Mixture freezing temperature (°C)
0	0
10	-4
15	-8
20	-14
30	-18

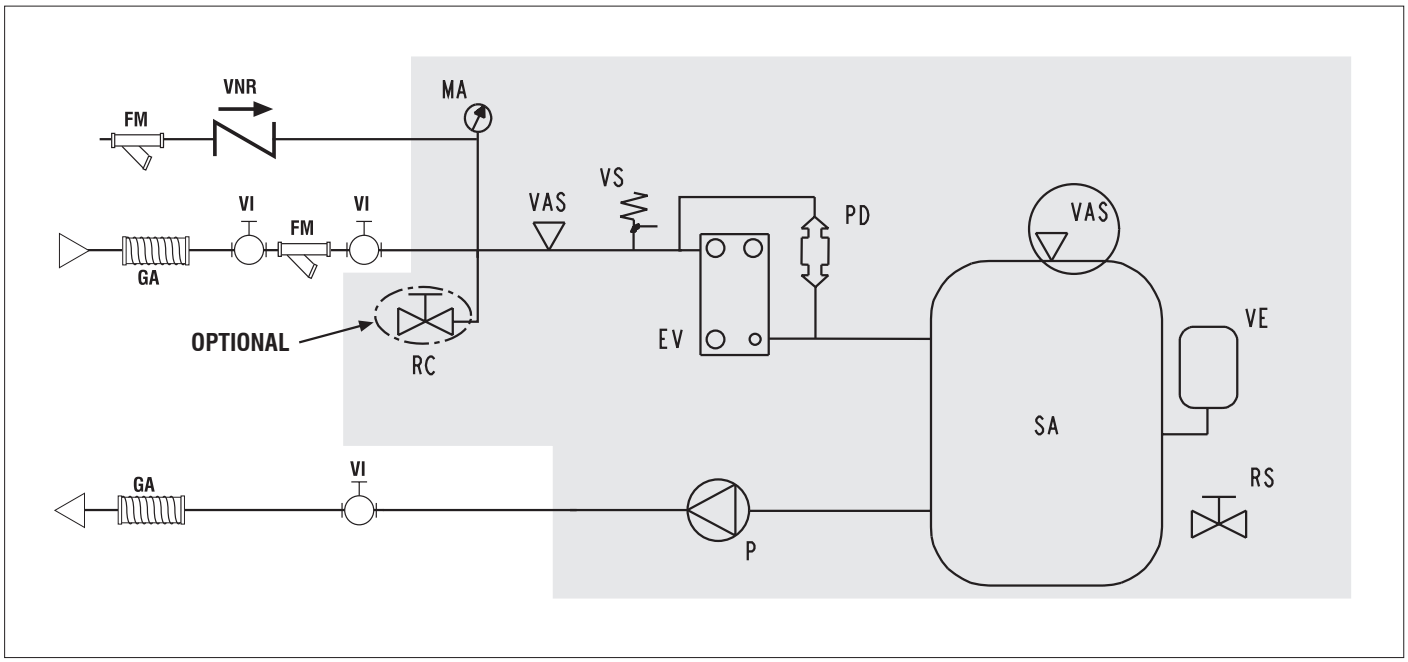
Important! If different antifreeze product is to be used, please contact the manufacturer.

Failure to install filters and vibration dampers may cause problems of clogging, breakages and noise, for which the manufacturer may not be held liable.

3 PLUMBING AND ELECTRICAL CONNECTIONS

3.1 PLUMBING CONNECTION

3.1.2 RECOMMENDED WATER CIRCUIT



	LEGEND		
VS	Safety valve	**VE**	Expansion vessel
EV	Evaporator	**RS**	Drain
PD	Water differential pressure switch	**RC**	Water charge
MA	Water gauge	**VI**	Regulation valve (not supplied)
VAS	Air bleed hole	**GA**	Vibration-damping coupling (not supplied)
SA	Storage tank	**FM**	Mechanical filter (OBLIGATORY)
		VNR	Check valve (not supplied)

3.1.3 FILLING THE SYSTEM

- Before you start filling, make sure that the system drainage cock is closed.
- Open all the air vent valves of the system and of the indoor units and chiller.
- Open the system regulating devices.
- To fill the circuit open slowly the water tap of the system (optional).
- When water starts coming out of the air vent valves of the indoor units, close them and continue filling until the pressure gauge reading is 1.5 bars.

3 PLUMBING AND ELECTRICAL CONNECTIONS

3.2 ELECTRICAL CONNECTIONS

All operations must be performed by qualified service personnel in accordance with current laws and regulations. For any electrical work on the unit, refer to the electric diagrams supplied with the unit.
It is recommended to make sure that:
- The characteristics of the mains power supply are adequate for the electrical inputs specified in the table of electrical data.

Warning ⚠ Before carrying out any job on electrical parts, make sure the power supply is disconnected. Check that the mains electricity supply is compatible with the specifications (voltage, number of phases, frequency) shown on the unit rating plate. The supply voltage may not undergo fluctuations exceeding ±5% of the rated voltage. The electrical connections must be made in accordance with the wiring diagram provided with the unit and the regulations in force.

Warning ⚠ Never attempt to modify internal electrical connections: any undue modifications will immediately invalidate the warranty.

Important! An all-pole circuit breaker must be used on the electric panel upstream, conform to IEC Standards (contacts must be open at least of 3 mm), with suitable interruption capacity and differential protection, according to the electrical data table described below, and installed as close as possible to the device. For the machine power supply line, use H07RN-F rubber flexible cables, with section as indicated in the table. For the cable passage, use sheaths and channels suitable for outdoor installation. Provide a line switch and delayed-type fuses with features as indicated in the table.

Important! Upstream from the electric control board, you must provide a switch with a delayed fuse meeting the specifications indicated in the table To access the electric control board it is necessary to remove the inspection panel (figure 4) by taking out the screws; introduce the power cable into the unit through the bushing on the side panel; then bring it to the electric control board through the cable holder provided.

MPED		**007M**	**008 M**	**008**	**010 M**	**010**	**013**	**015**	**018**	**020**	**024**	**027**	**028**
Power cables	mm²	6	6	4	6	4	4	4	6	6	10	10	10
Safety fuse **F**	A	20	25	10	32	16	20	20	25	25	32	32	32
Circuit breaker **IL**	A	25	25	16	32	20	25	25	25	25	32	40	40

MPED		**032**	**035**	**040**	**054**	**066**	**T30**	**T34**	**T40**	**T45**	**T54**	**T61**	**T69**	**T76**
Power cables	mm²	10	10	10	16	25	10	10	16	16	16	25	25	35
Safety fuse **F**	A	32	40	40	63	80	40	40	50	50	50	63	63	80
Circuit breaker **IL**	A	40	50	50	80	80	50	50	63	63	50	50	63	80

Important! Tighten the wires securely to the terminals and clamp the cable in place with the cable holder (figure 5).

Important! Make sure that the length of cable inside the unit enters the bushing from below: this is necessary to prevent rainwater from dripping inside the unit.

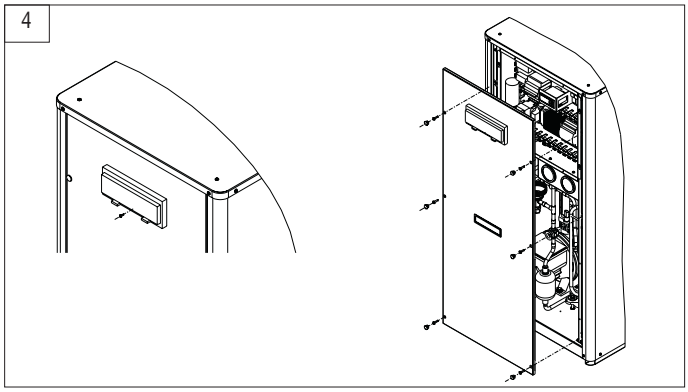
Important! To preserve the protection degree of the machine, use a cable gland compatible with the sheath or power cable diameter, in correspondence to the unit side panel hole.

Important! An earth connection is mandatory: connect the earthing wire to the terminal provided on the electric control board (see the electric control board layout supplied with the unit), marked ⏚.

Important! If you wish to include:
- a remote on/off switch
- a remote switch for changing over between the cooling and heating mode (**MPED H** only),
- a remote alarm indicator

it is a good idea to do so at this stage of the installation procedure, by connecting the switches or PCDS remote control (accessory) to the electric control board terminals as directed in section 3.3 and using the unit wiring diagram as your reference.

4



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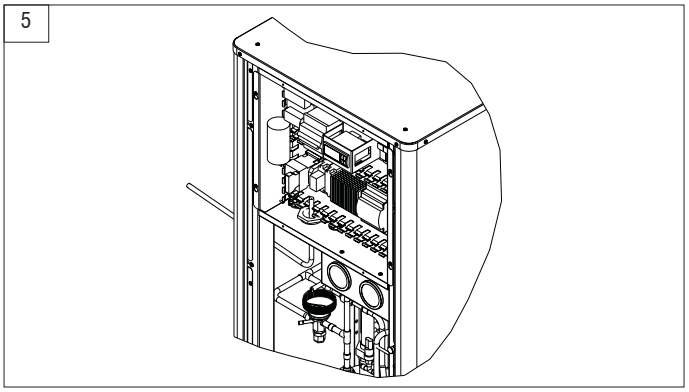


3 PLUMBING AND ELECTRICAL CONNECTIONS

3.3 ELECTRICAL DATA

MPED		007M	008 M	008	010 M	010	013	015	018	020	024	027	028	032
Maximum power input	kW	3,32	5,28	5,28	7,26	7,81	9,46	11,0	13,7	13,8	13,5	14,4	15,3	17,3
Maximum current absorption	A	17,0	26,0	11,0	32,9	17,9	21,0	23,6	25,8	25,8	26,1	27,7	37,4	40,7
Starting absorbed current	A	63	98	49	97	48	63	66	76	105	145	145	145	166
Fan motor rated power	kW	0,369	0,369	0,369	1,11	1,04	0,84	0,84	2,13	2,25	1,78	1,78	2x1,25	2x1,25
Fan motor rated current	A	1,82	1,82	1,82	4,49	4,49	3,56	3,56	3,45	3,45	2,87	2,87	2x5,45	2x5,45
Pump motor rated power	kW	0,20	0,20	0,20	0,29	0,29	0,31	0,32	0,37	0,37	0,37	0,37	0,55	0,55
Pump motor rated current	A	0,90	0,90	0,90	2,10	2,10	2,25	2,32	2,72	2,72	2,72	2,72	2,74	2,74
Power supply	V/f/Hz	230-1-50		400-3N-50	230-1-50	400-3N-50								
Auxiliary power supply	V/f/Hz	230-1-50												
Power cables	mm2	6	10	4	10	4	6	6	10	10	10	10	10	10
PCD connecting cables	mm2	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22
PCDS connecting cables	mm2	1	1	1	1	1	1	1	1	1	1	1	1	1
Safety fuse F	A	25	32	16	40	20	25	25	32	32	32	32	40	40
Circuit breaker IL	A	25	32	16	40	20	25	25	32	32	32	32	40	40

MPED		035	040	054	066	T30	T34	T40	T45	T54	T61	T69	T76
Maximum power input	kW	18,5	21,0	27,9	34,4	22,7	25,4	25,3	27,1	30,4	32,8	37,6	41,8
Maximum current absorption	A	42,7	47,2	51,8	63,0	49,9	54,5	54,5	57,5	55,9	60,1	68,3	75,5
Starting absorbed current	A	161	183	221	266	103	115	146	156	177	187	202	229
Fan motor rated power	kW	2x1,25	2x1,19	2x1,43	2x1,43	2x1,25	2x1,25	2x1,19	2x1,19	2x2,25	2x2,25	2x2,20	2x2,20
Fan motor rated current	A	2x5,45	2x5,16	2x2,26	2x2,26	2x5,45	2x5,45	2x5,16	2x5,16	2x3,64	2x3,64	2x3,55	2x3,55
Pump motor rated power	kW	0,55	0,55	1,26	1,26	0,55	0,55	0,55	0,55	1,26	1,26	1,26	1,26
Pump motor rated current	A	2,74	2,74	5,9	5,9	2,74	2,74	2,74	2,74	5,90	5,90	5,90	5,90
Power supply	V/f/Hz	400-3N-50											
Auxiliary power supply	V/f/Hz	230-1-50											
Power cables	mm2	16	16	16	10	16	16	16	16	16	16	25	25
PCD connecting cables	mm2	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22	AWG22
PCDS connecting cables	mm2	1	1	1	1	1	1	1	1	1	1	1	1
Safety fuse F	A	50	50	63	63	50	63	63	63	63	63	80	80
Circuit breaker IL	A	50	50	63	63	50	63	63	63	63	63	80	80

- The maximum input power is the mains power that must be available in order for the unit to work.
- The maximum current absorption refers to the current that will trigger the internal safety devices of the unit. It is the maximum current allowed in the unit This value may never be exceeded; it must be used as a reference for determining the size of the power supply line and the related safety devices (refer to the wiring diagram supplied with the units). Cross-section area of cables: 4 A/mm2 approx.

3 PLUMBING AND ELECTRICAL CONNECTIONS

3.3 ELECTRICAL DATA

MAIN ELECTRICAL CONNECTION OF THE ONE-PHASE AND THREE-PHASE UNITS

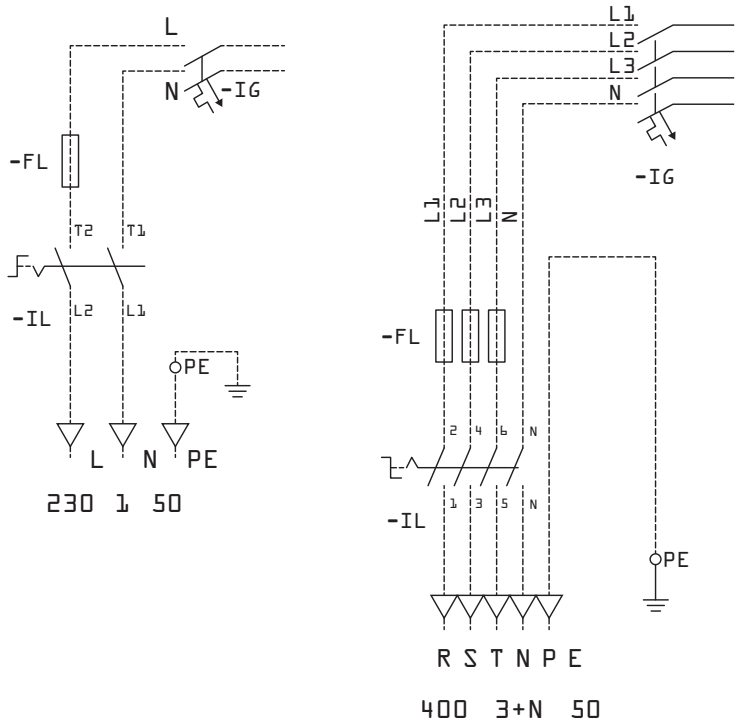
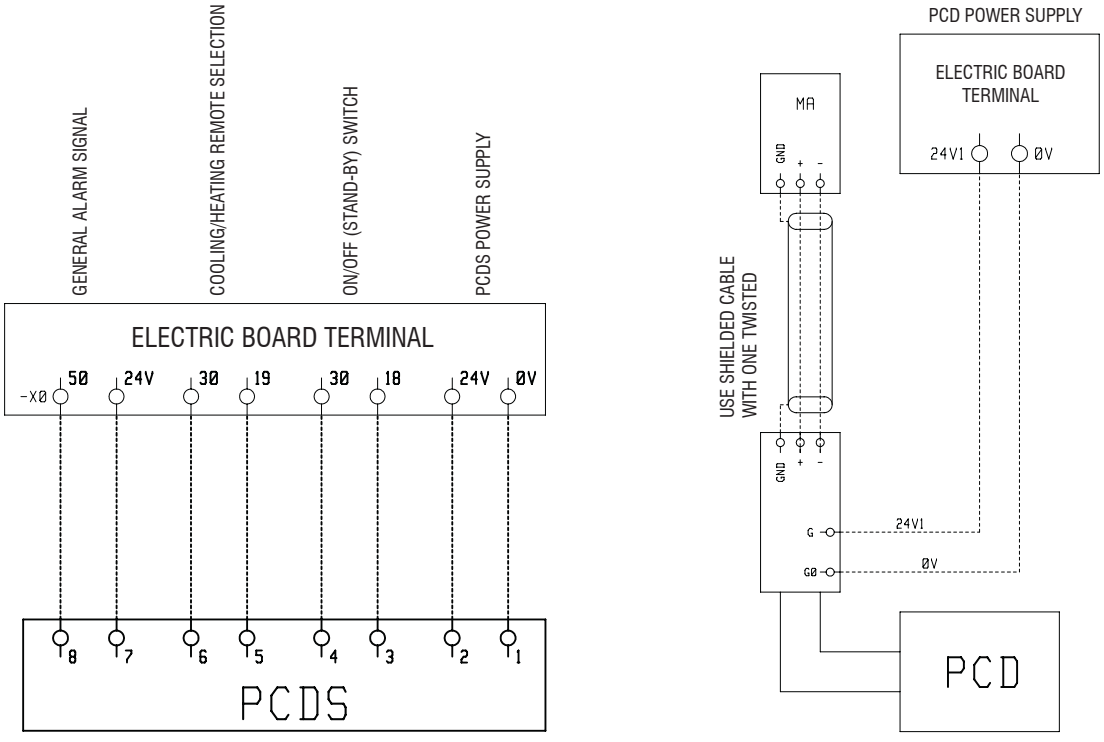


DIAGRAM SHOWING ELECTRICAL CONNECTIONS BETWEEN MPED AND PCDS / PCD REMOTE CONTROL PANEL



NOTE: On the terminal block of the electric control panel a voltage of 24V will be present at the 50/24V terminals in the event of an alarm; if it is desired to interface with a voltage-free contact, a relay must be applied for this purpose by the installer.

4 STARTING UP

THE FIRST START UP MUST BE CARRIED OUT EXCLUSIVELY BY QUALIFIED PERSONNEL AND AUTHORIZED BY GALLETTI SPA (SEE WARRANTY SHEET ATTACHED).

At first start-up of the installation make sure to comply with current national regulations.

4.1 PRELIMINARY CHECKS

When starting up the unit for the first time or after a seasonal period of quiescence, it is advisable to have the following checks performed by specialised personnel:

- Check that the electrical connections have been made properly and that all the terminals are securely tightened.
- Check that the external power supply is within +-5 % tolerance from the power supply reported on the unit identification label. If the power supply is subject to frequent voltage fluctuations, contact Galletti S.p.A. for advice on choosing suitable protections.
- Check for refrigerant leaks, with the aid of a leak detector if necessary.
- Check that the plumbing connections have been properly made according to the indications given on the plates to be found on the unit itself (water inlet, water outlet etc.).
- Make sure that the pump is not blocked.
- Make sure that the water circuit is duly bled to completely eliminate the presence of air: load the circuit gradually and open the air vent valves, which the installer should have set in place.

Warning ⚠ before starting the unit, make sure all the covering panels are in place and secured with the fastening screws provided. To start the unit, move the main switch to on. Use the keypad of the electronic control as directed in section 3.3 to select the cooling or heating mode.

Warning ⚠ You should not disconnect the unit from the power supply during periods when it is inoperative but only when it is to be taken out of service for a prolonged period (e.g. at the end of the season). To turn off the unit temporarily follow the directions provided in section 3.3.

Warning ⚠ do not cut off power using the main switch:
the latter device serves to disconnect the unit from the electricity supply when there is no passage of current, i.e. when the unit is already turned OFF.

4 STARTING UP

4.2 AIR FLOW RATE SETTING

The ducted unit's nominal operating point varies depending on the pressure drop of the duct downstream from the fan; therefore, for every installation it is necessary to check that the fan's air flow rate corresponds with the nominal air flow rate as a function of the duct's size.

The ducted unit's nominal operating point is calculated starting from the static pressure difference between the intake section (via an umbrella-handle shaped capillary tube) and the compartment's inner section (via 4 measuring points located along the compartment's circumference).
The air flow rate is computed on the basis of the static pressure difference according to the following equation:

$$qv = k \cdot \sqrt{\Delta p}$$

qv in [m3/h],
Δp in [Pa].
Where k is a constant value supplied by the fan manufacturer according to the diameter of the compartment used.

The nominal air flow rate can be set as follows:
- Manually, by means of a Base microchiller 2 controller
- Automatically, by means of an Advanced pCO controller

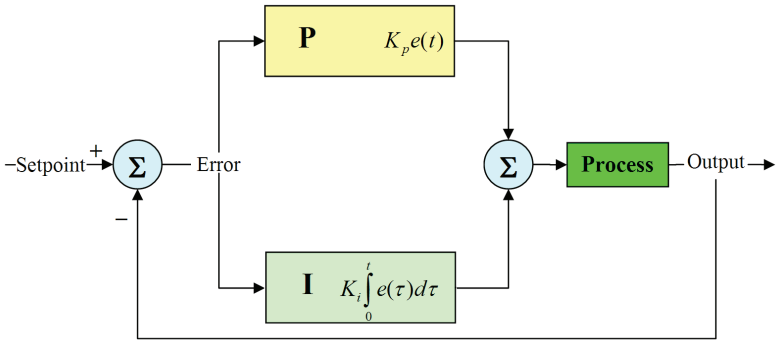
and sets a maximum value for the 0-10V signal of the condensation and evaporation control, which will correspond to the nominal air flow rate.

BASE CONTROLLER

The installer will vary the fan speed in order to measure, using a differential pressure gauge (belonging to him/her), the Δp corresponding to the nominal air flow rate. On board the unit will be provided the table of the relationship between Δp and nominal flow rate. The connection points for measuring the pressure drop on the fan nozzle are located directly on the unit's casing and are shown in the figure.

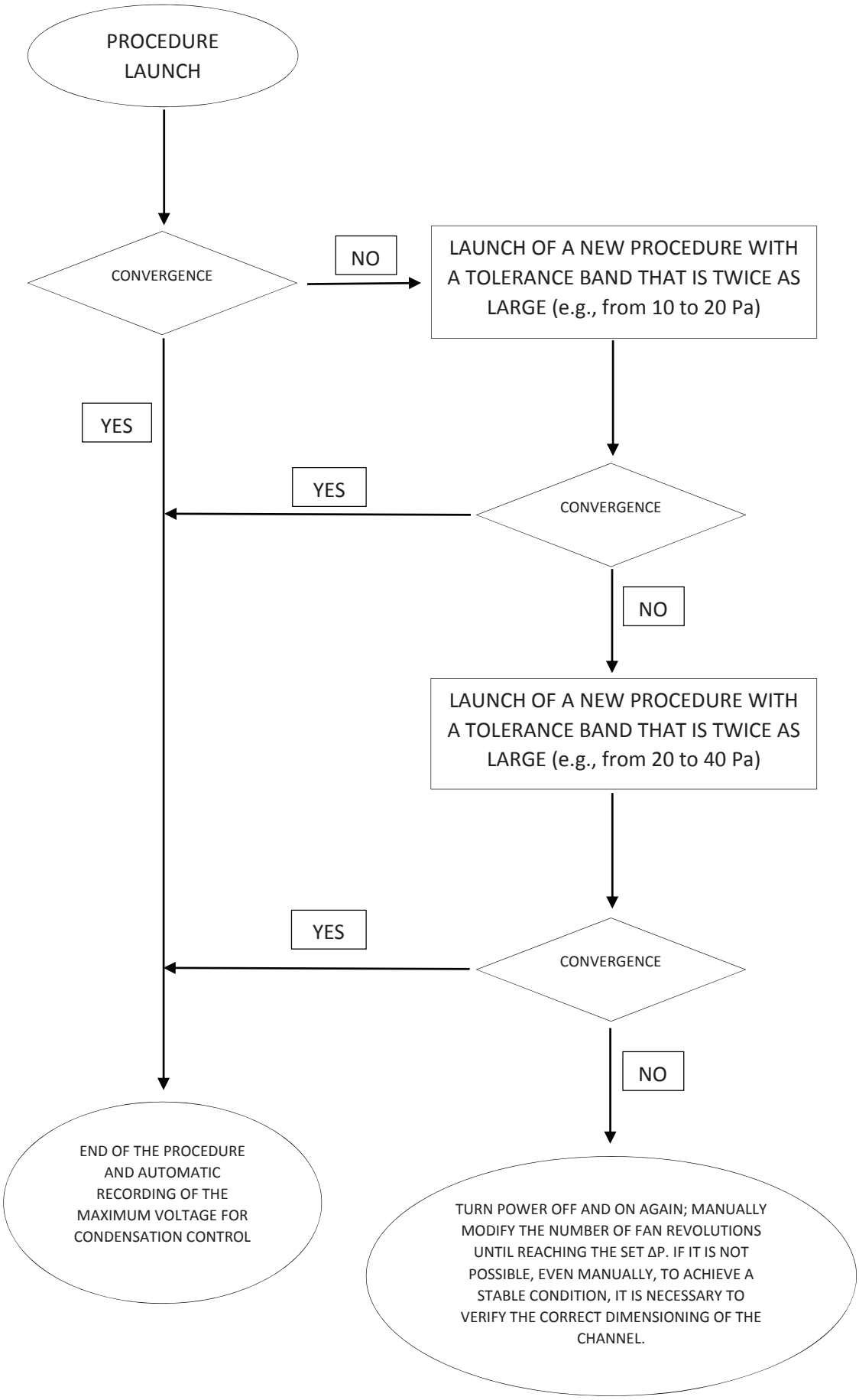
ADVANCED CONTROLLER

The automatic calibration of the flow rate is performed with a proportional-integrative logic on the known Δp value. By means of a differential pressure transducer, the pressure difference between the intake section and the compartment's inner section can be converted into a 4-20mA or 0-10V signal to be sent to the microprocessor controller; the internal software will transform this signal into a differential pressure value.
The retroactive action of the logic will compare this value with the known parameter Δp (depending on the unit model), so as to vary the number of revolutions of the fans and, therefore, the air flow rate up to the design value. The pair of values, Δp and fan air flow rate, thus determined is set in the advanced microprocessor as the nominal operating point, which is useful for establishing the limit value for condensation/evaporation control. The auto-calibration procedure will be performed with the unit off and will have a preset maximum duration.



4 STARTING UP

4.2 AIR FLOW RATE SETTING



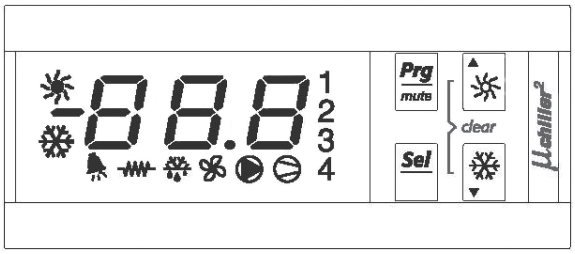
4 STARTING UP

4.2 AIR FLOW RATE SETTING

4.2.1 ΔP - AIR FLOW CORRESPONDENCE

SIZE	$\Delta P_{NOMINAL}$ [Pa]
MPED 007M	333
MPED 008 M	333
MPED 008	333
MPED 010 M	752
MPED 010	752
MPED 013	662
MPED 015	662
MPED 018	584
MPED 020	584
MPED 024	485
MPED 027	485
MPED 028	847
MPED 032	847
MPED 035	847
MPED 040	796
MPED 054	530
MPED 066	530
MPED T30	847
MPED T34	847
MPED T40	796
MPED T45	796
MPED T54	820
MPED T61	820
MPED T69 4R	782
MPED T76 4R	782

5 MICROPROCESSOR CONTROL



5.1 DESCRIPTION OF CONTROL PANEL

The control panel of the unit enables the user to display and set the unit's operating parameters and read the main operating data.
In addition it indicates what mode (cooling or heating) the unit is operating in and signals any alarms that may have been triggered.
Any new settings saved are stored in the card and used the next time the unit is switched on, even following a power failure.

5.1.1 REMOTE CONTROL PANELS (ACCESSORIES)

Installing a PCDS remote control panel enables you to switch the unit on and off and set the operating mode (cooling - heating) from a distance and have a cumulative alarm indicator (thanks to an alarm signalling relay integrated in the electronic control device).
Installing a PCD remote control panel instead provides remote access to all the electronic control functions installed in the unit.

5.1.2 MAIN FUNCTIONS

- Control over the temperature of water entering the evaporator.
- Management of the defrosting function (MPED H only).
- Control of fan speed (standard feature of MPED H, optional for MPED).
- Complete alarm management.
- Setup for serial line connection for supervisor system/tele-help.
- Setup for connection to a remote terminal that duplicates the functions of the electronic control (PCD remote control panel).

5.1.3 DEVICES CONTROLLED

- compressor
- fans
- cycle reversing valve (MPED H only);
- water circulation pump;
- antifreeze heating element (optional);
- electronic control internal alarm signalling relay (designed to control an indicator or buzzer).

5.2 USING THE CONTROL PANEL

5.2.1 DISPLAY

The display comprises 3 digits.
In normal operating conditions, the value displayed corresponds to the temperature read by the "Win" sensor, i.e. the unit's inlet water temperature.

5 MICROPROCESSOR CONTROL

5.2 USING THE CONTROL PANEL

5.2.2 INFORMATION ABOUT EQUIPMENT STATUS

Information regarding the status of the unit is provided by means of LEDs on the display.
Meaning of LEDs on the display:

SIMBOL	COLOR	MEANING	
		with LED ON	with LED OFF
1	Amber	Compressor 1 ON	Start up request
	Amber	Compressor 1 ON	
	Amber	Pump ON	Start up request
	Amber	Condenser fan ON	
	Amber	Defrost active	Defrost request
	Amber	heater ON	
	Red	Alarm active	
	Amber	Chiller mode (P6=1)	Chiller mode request (P6=1)
	Amber	Heat pump mode (P6=1)	Heat pump mode request (P6=1)

5.3 SWITCHING ON AND OFF AND CHANGINGTHE OPERATING MODE

The unit may be switched on and off from the control panel installed on the unit itself.
To enable remote ON-OFF switching from the PCDS or via an external switch (not supplied) connected to terminals 18-30 (normally jumpered) it is necessary to change parameter H7) from 00 to 01. (carry out the procedure of section 5.3.4, though having access from unit –H-).

Remote **ON/OFF** open: unit OFF (keyboard disabled)
Remote **ON/OFF** closed: unit ON (possibility to switch the unit ON and OFF from the keyboard)

Warning ⚠ Where remote ON-OFF switching is enabled (H7 = 01), after a power failure occurs and power is restored the unit will go into the mode indicated by the remote input without considering any changes that have been made from the unit control panel
That is:

remote **ON/OFF** open: the unit remains Off
remote **ON/OFF** closed: the unit starts again

5.3.1 SWITCHING THE UNIT ON AND OFF IN THE COOLING MODE

Pressing ▲ for more than 5 seconds allows the unit to be switched on or off in the cooling mode.
It is not possible to change over directly from the cooling mode to the heating mode: to do so it is necessary to select the heating mode using the PCDS remote control (accessory) or open terminal bridge 19-30 on the electric control board (see section 5.3.3).

5.3.2 SWITCHING THE UNIT ON AND OFF IN THE HEATING MODE (MPED H HEAT PUMP MODEL ONLY)

Pressing ▼ for more than 5 seconds allows the heating mode to be activated or deactivated.
It is not possible to change over directly from the heating mode to the cooling mode: to do so it is necessary to select the cooling mode using the PCDS remote control (accessory) or close terminal bridge 19-30 on the electric control board (see section 5.3.3).

5.3.3 CHANGING THE OPERATING MODE

The unit leaving the factory has been configured for a fast, easy connection to the PCDS remote control (accessory), which enables the user to change the operating mode and turn the unit on and off from a distance.
If the unit is not equipped with this accessory, to select the operating mode it is necessary to use terminals 19-30 on the electric control board as follows:
- terminals 19-30 closed for cooling
- terminals 19-30 open for heating

Warning ⚠ Only specialised personnel may access the electric control board. Therefore, to enable the user to switch the unit on and off and change the operating mode safely and conveniently from a distance, it is recommended to install a PCDS remote control (or remote switches outside the unit).

5 MICROPROCESSOR CONTROL

5.3 SWITCHING ON AND OFF AND CHANGINGTHE OPERATING MODE

5.3.4 Changing the operating mode from the keyboard on the unit.

However, it is possible to configure the electronic control in such a way to allow the operating mode to be changed simply by pressing keys on the unit itself: to this end it is necessary to change the value of the "**H6**" programming parameter as described below.

Warning ⚠ Do not change the values of the other parameters; this could undermine the efficiency of the unit and its safety devices. This operation should be left in the hands of specialised personnel or a Galletti service centre.

1: Hold the "**Prg**" and "**sel**" keys pressed together for, at least, 5 s;
2: the heating and cooling simbol adn the figure "**00**" are displayed;
3: use the arrows to set the password **66** and confirm by pressing "**sel**";
4: use the arrows to select the parameter menu (**S-P**) and press "**sel**";
5: use the arrows to select the **-H-** parameter group and press "**sel**";
6: use the arrows to selec the **H6** parameter and press "**sel**" to display its value;
7: use the arrows to set the 0 value and press "**sel**" to confirm;
8: press "**Prg**" to return to the previous menu;
9: to save the modifications, press "**Prg**" repeatedly until reaching the main menu.

NOTE:
a: The parameters that have been modified without being confirmed using the "sel" button return to the previous value
b: If no operations are performed on the keypad for 60 seconds, the controller exits the parameter modification menu by timeout and the changes are cancelled.

With this new configuration, the operating mode can be changed only from the keypad on the unit itself (or from the PCD remote control panel – accessory which remotely duplicates all its functions); terminals 19-30 will no longer have any effect.

5.4 DISPLAY AND SETTING OF OPERATING PARAMETERS

In normal operating conditions, the display will show the temperature of the water entering the unit.
Holding the "**sel**" key pressed for more than 5 seconds is possible to move on the parameter groups and, always with "**sel**", you can enter in the available parameters and values.
NB: Press "**sel**" to store the newly set parameters and exit the procedure; pressing "**Prg**" to exit without saving the changes

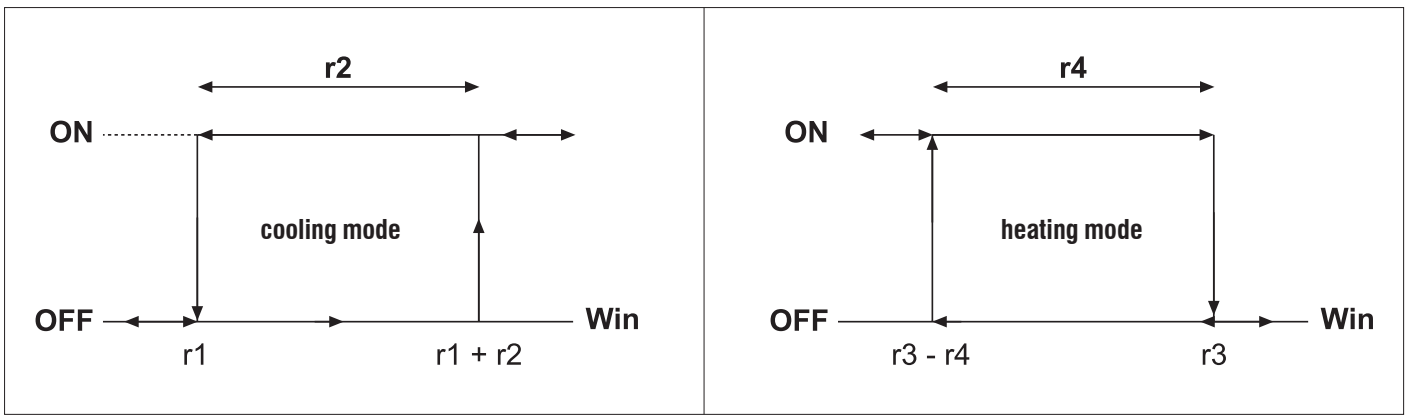
Warning ⚠ If no key is pressed within 60 seconds from the activation of the procedure, the control will return to the normal operating mode without memorising any parameter changes.

5.4.1 PARAMETERS

Code	Description
r1	Cooling set point (may be changed);
r2	Cooling set-point differential (may be changed);
r3	Heating set point (may be changed);
r4	Heating set-point differential (may be changed);
b02	Outlet water temperature (read only);
b04	Heat exchanger pressure probe (only for **MPED** units with condensation control or for **MPED H** - read only);
c10	Total hours of compressor operation (read only);
c15	Total hours of pump operation (read only).

5.5 REGULATION LOGIC

The graphs show the operating logic of the thermostat.



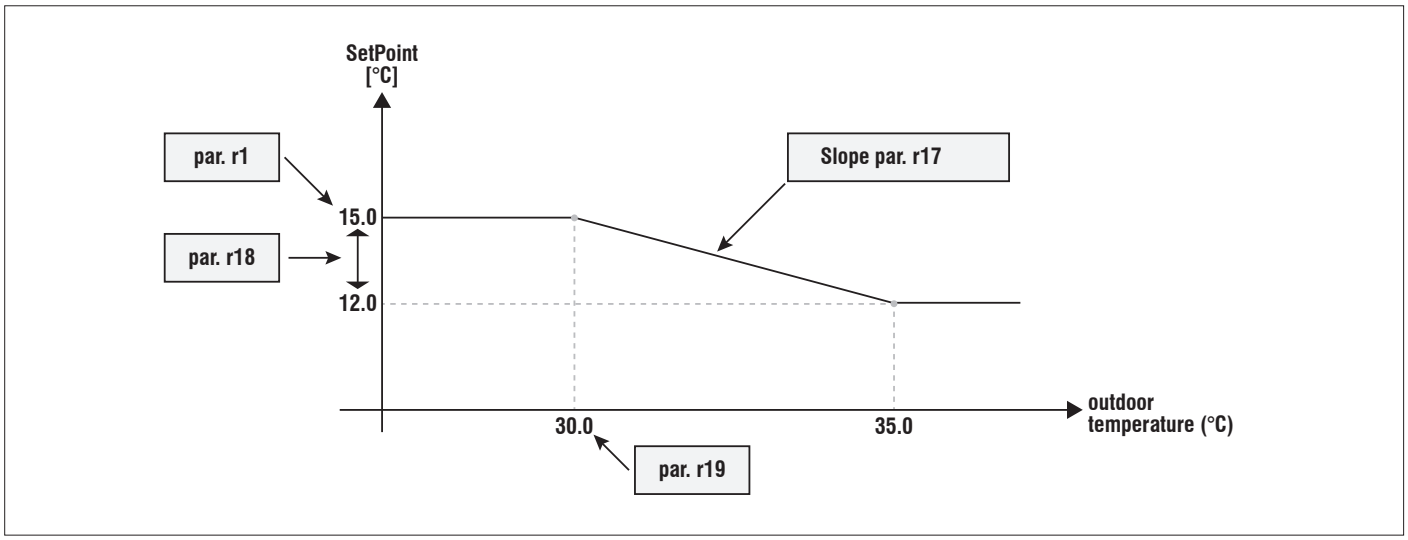
5 MICROPROCESSOR CONTROL

5.6 SET POINT COMPENSATION

Operating setpoint correction depending on outdoor temperature.

COOLING ONLY UNITS

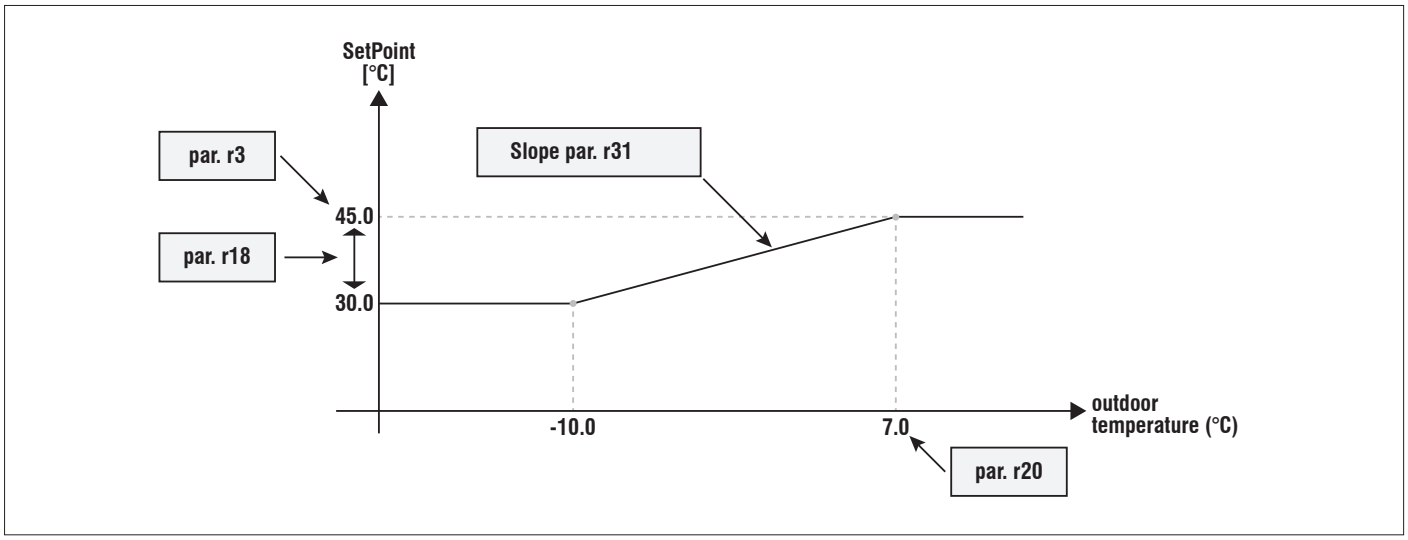
This logic, though not implemented as a standard feature in this type of unit, may be used to reduce its consumption of energy when outdoor temperatures are less hot, situations in which the demand for cooling may be assumed to be lower. This logic could adjust the setpoint in the following manner:



NB: the setpoint programmed by the user (par. r1), based on how the temperature offset configuration parameters are defined, will be used without corrections in low-demand situations.
In other situations, the setpoint actually being used to control the unit will thus not be displayable as a parameter on the controller; such a situation might however mislead the end user into making an unsuitable setpoint adjustment.

HEAT PUMP UNITS

Such units provide for the offset logic to be used in the heating mode in order to reduce the working setpoint as the outdoor temperature decreases.
The chiller will thus remain within the working range.
Based on the set parameters, the winter setpoint will follow the following logic:



NB: changing any of the offset parameters in the heating mode will have the effect of changing the entire logic; any such change must thus be studied so as to avoid unit malfunctioning.

5 MICROPROCESSOR CONTROL

5.7 SIGNALS AND ALARMS

LIST OF INDICATIONS

d1 Defrost status (**MPED H** only)
During the defrosting cycle, the message "d1" is displayed in turn with the inlet water temperature (Win).

dF1 Defrost error (**MPED H** only)
If the defrosting cycle ends because the maximum time has elapsed, not because the temperature threshold has been reached, the message "dF1" will be displayed. To deactivate the message, it is necessary to carry out the alarm cancellation procedure or another successfully completed defrosting cycle.
The alarm relay is not activated.

LIST OF ALARMS

When an alarm is triggered, the alarm code is displayed alternately with the inlet temperature (Win).

HP1: High pressure

The electronic control causes the compressor to shut down immediately, the alarm relay is activated and the display starts flashing. The alarm must be manually reset.

LP1: Low pressure

The alarm causes the compressor to shut down immediately or prevents it from starting, the alarm relay is activated and the display starts flashing.
The alarm must be manually reset.

FL: Water differential pressure switch

The alarm causes the pump, compressor and fan to shut down, the alarm relay is activated and the display starts flashing. The alarm is automatically reset.

A1: Antifreeze

The alarm is triggered by the evaporator outlet water temperature sensor (Wout).
The alarm causes the compressor and fan to shut down immediately, the alarm relay is activated and the display starts flashing. The alarm must be manually reset.

EPr, EPb: Eeprom error alarm

It indicates that a problem has occurred in the saving of parameters in the non-volatile memory of the unit (EEPROM). If the code shown is **EPr**, the unit will continue to function until the next time the power supply is cut off. If the error is still present when the power supply is restored, the display will start flashing with the digits **EPb** and the unit will not start.
The alarm is automatically reset.

E1, E2, E4: Sensor alarms

When a sensor alarm is triggered, the compressor, fans and pump are deactivated; the alarm relay is activated and the display starts flashing.

- **E1** Inlet water sensor;
- **E2** Outlet water sensor;
- **E4** pressure probe (only for **MPED** units with optional condensation control or **MPED H**).

The alarm is automatically reset.

ELS, EHS: Error due to high or low supply voltage

If the supply voltage is too low, the message ELS will appear; if it is too high EHS is displayed. In such conditions, the proper functioning of the unit is no longer guaranteed. If the EHS alarm is tripped, the compressor, pump and fan will be shut down.
The alarm is automatically reset.

EL1: Error due to line "disturbance"

It appears if "strong noise" is present in the power supply.

5.7.1 ALARM RESET

When alarms are reset:
- the alarm relay is deactivated;
- the temperature shown on the display stops flashing;
- the alarm code will cease being displayed.

In the case of automatically reset alarms, this will occur as soon as the cause of the alarm is eliminated;
In the case of manually reset alarms, it is necessary press ▲ and ▼ together for 5 seconds.
If the cause of the malfunctioning persists, the alarm will again be signalled.

6 OPERATING LIMITS

The graphs below illustrate the operating limits of **MPED** units (in the case of continuous operation) in relation to the outlet water temperature and outdoor air temperature.

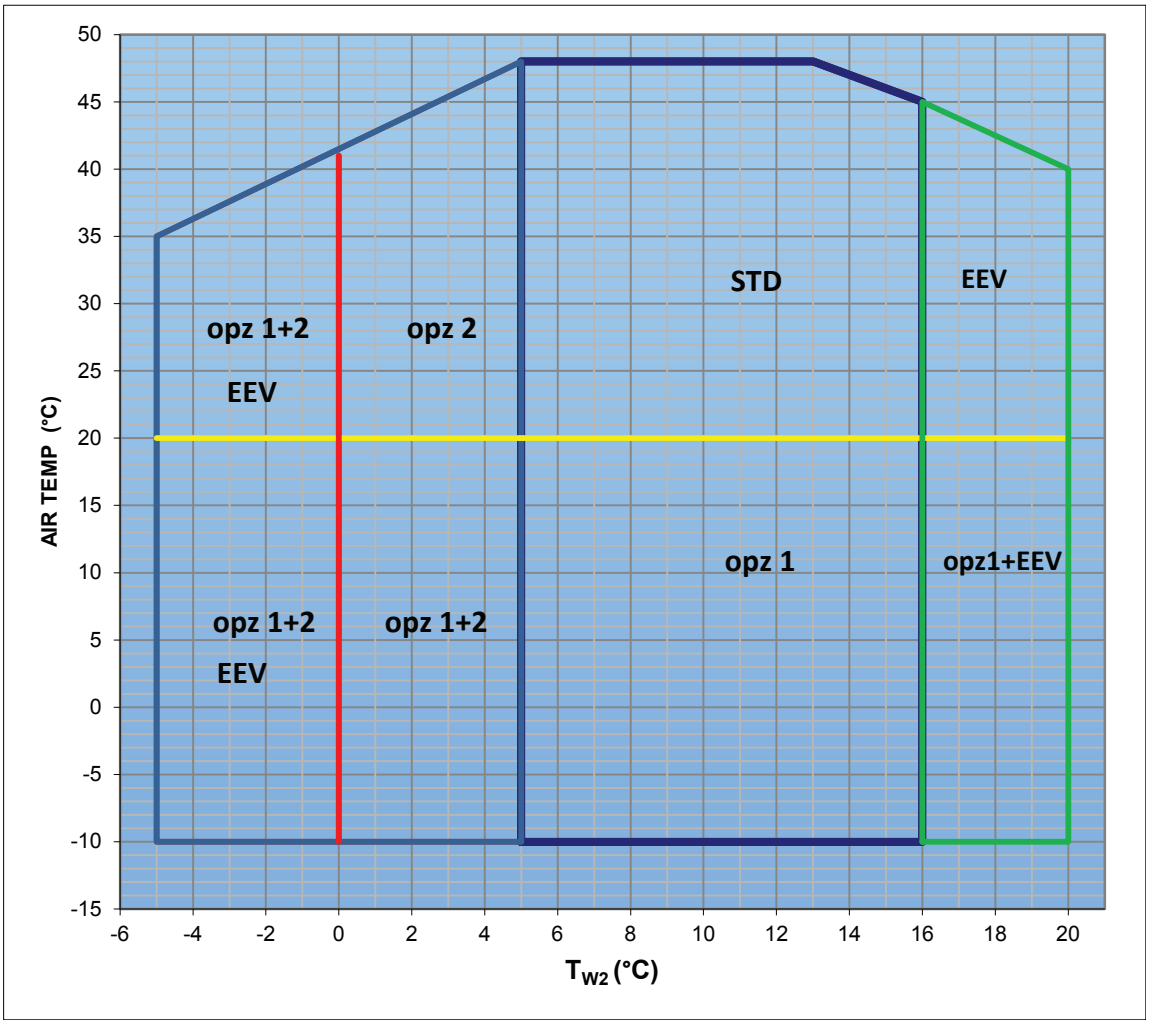
OPERATING LIMITS	CHILLER		HEAT PUMP	
	MIN	MAX	MIN	MAX
Inlet water temperature (°C)	8	20[1]	25	42
Outlet water temperature (°C)	5	15	28	53[2]
Thermal differential of water (°C)	3	8	3	8
Outdoor air temperature (°C)	15[3]	45	-10	20

1 For transitory periods (e.g. equipment start up) values up to 25 °C are allowed
2 Value that may be reached only for outdoor air temperatures exceeding 0°C.
3 With condensation control: Outdoor air T min -10 °C

Warning ⚠ The units are designed to work with water and air temperatures falling within the range defined by the operating limits. Attempting to operate the units beyond these limits could cause irreparable damage to the units themselves.

6.1 OPERATING LIMITS IN CHILLER MODE

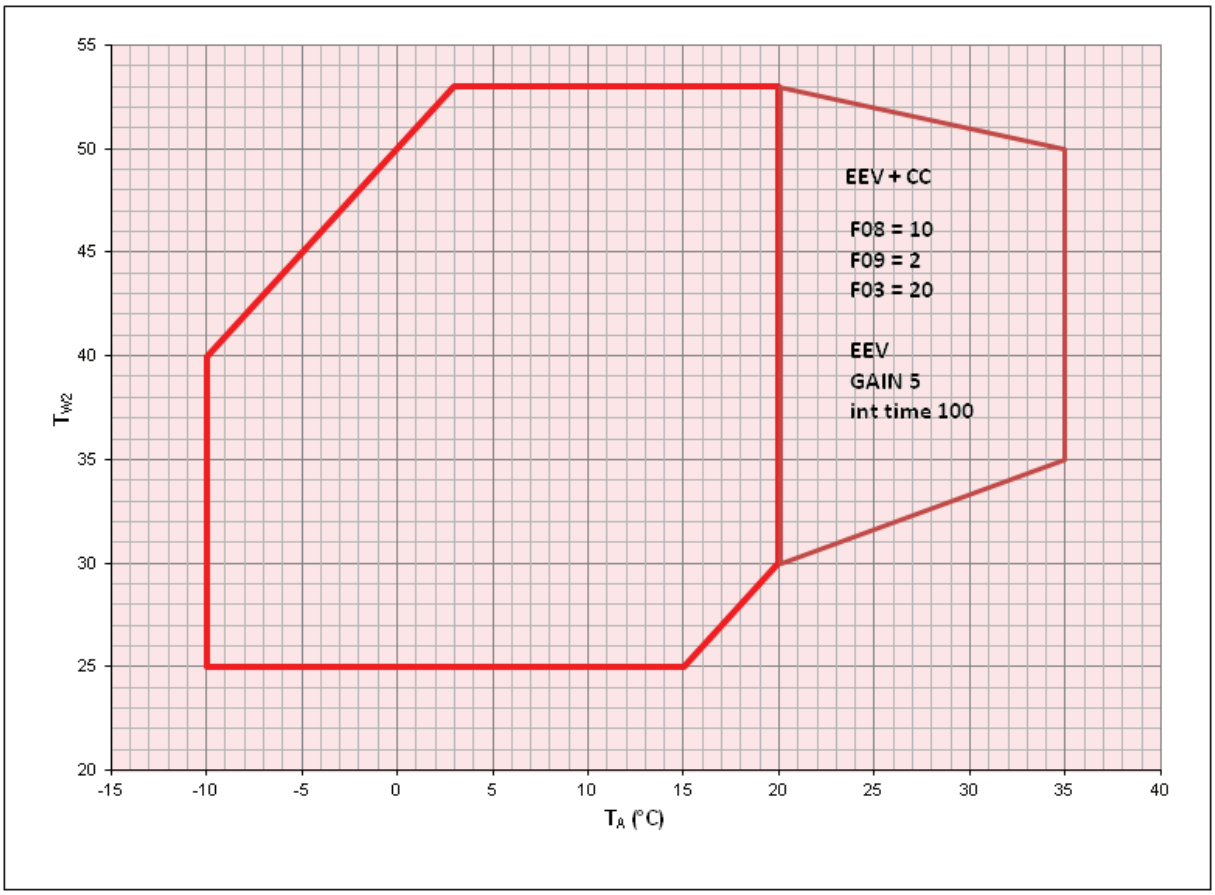
Tbs1 Outdoor temperature (dry bulb)
Tw2 Outlet water temperature
OPZ 1 Condensing control
OPZ 2 Glycol + low temperature option
OPZ 1+2 Condensation control + glycol + low temperature option
EEV Electronic expansion valve
STD Standard



6 OPERATING LIMITS

6.2 OPERATING LIMITS IN HEAT PUMP MODE

RH Relative humidity of outdoor air
Tbs1 Outdoor temperature (dry bulb)
Tw2 Outlet water temperature



Heat pump operation within the right area of the extended operating envelope (beyond standard limits) can be allowed only for units equipped with condensation control (or EC fans) and electronic expansion valve.

Parameters F08-F093-F03 refer to standard microprocessor controller.

Parameters GAIN and INT TIME are regulation parameters; they have to be modified inside the electronic expansion valve driver. Both modifications should only made in the factory or implemented on the field, but only by Galletti's authorized personnel.

6.3 THERMAL CARRYING FLUID

The units belonging to the **MPED** series can work with mixtures of water and up to 35% ethylene glycol.

7 CONTROL AND SAFETY DEVICES

All the control and safety devices are set and tested in the factory before the unit is dispatched.

7.1 CONTROL DEVICES

7.1.1 SERVICE THERMOSTAT

The service thermostat activates and deactivates the compressor according to the demand for chilled water (cooling mode) or heated water (heat pump mode), as determined by a sensor installed on the water exchanger inlet. This device is governed by the microprocessor control (see also the chapter regarding the microprocessor).

7.1.2 CONTROL DEVICE SETTINGS

Control devices		Set point	min	max	differenzial
Service thermostat (outlet water temp. cooling mode)	°C	11,5	8	20	2
Service thermostat (outlet water temp. heat pump mode)	°C	45	25	47	3

7.2 SAFETY DEVICES

7.2.1 HIGH PRESSURE SWITCH

The high pressure switch stops the compressor when the delivery pressure exceeds the set value.

7.2.2 REFRIGERANT CIRCUIT SAFETY VALVE (NOT AVAILABLE FOR MPED 09-15)

The safety valve is triggered in the event of a malfunctioning of the high pressure switch or in case of fire.

Warning ⚠ The safety valve is situated in the compressor compartment inside the unit. Never attempt to access internal components of the unit until you have disconnected the power supply.

7.2.3 LOW PRESSURE SWITCH

The low pressure switch stops the compressor when the intake pressure falls below the set value.

7.2.4 ANTI-RECYCLE TIMER

The function of the timer is to prevent excessively frequent compressor starts and stops. This device is a function included in the microprocessor control; it prevents the compressor from starting up again after a stop until a set period of time has elapsed (approximately 5 minutes).

7.2.5 ANTIFREEZE THERMOSTAT

The antifreeze thermostat situated at the evaporator outlet performs a dual function: it prevents ice from forming in the evaporator in the event of an excessive decrease in the water flow; it stops the unit in the event of a failure of the service thermostat.
This device is governed by the microprocessor control (see also the chapter regarding the microprocessor).

7.2.6 WATER DIFFERENTIAL PRESSURE SWITCH

The water differential pressure switch stops the unit in the event of an excessive reduction in the water flow, thus protecting it from the formation of ice (chiller operation) and excessively high condensation temperatures (heat pump operation)

7.2.7 WATER SAFETY VALVE

The water safety valve opens when the pressure within the water circuit reaches a level that may cause damage to the unit.

7.2.8 SAFETY DEVICE SETTINGS

Safety device	activation	differential	resetting
Maximum pressure switch (bars)	42		Manual
Pressure safety valve (bars)	45		Manual
Minimum pressure switch (bars)	2		Automatic
Antifreeze thermostat (°C)	3	3	Manual
Water safety valve (bars)	4		

8 ROUTINE MAINTENANCE AND CHECKS

It is recommended to carry out periodic checks of the safety devices (pressure switches and safety valves) and verify the absence of refrigerant leaks. After the first start-up, the periodic checks must be carried out in conformity with the schedule and the manners provided for by current national regulations.
To keep the unit in good working order and guarantee the expected levels of performance and safety, it is necessary to carry out some periodic routine checks: some may be performed directly by the user while others must be carried out solely by specialised personnel.

8.1 CHECKS TO BE PERFORMED BY THE USER

The checks and operations described in this section may be easily performed by the user, provided that the latter shows a minimum of attention.
- Remove any dirt that has built up around the coil or objects trapped in the mesh protecting the coil itself (leaves, paper etc., to be carried out monthly).

Warning ⚠ Be especially careful when working in proximity to finned coils since the aluminium fins are extremely sharp and can cause cuts.

- Check the level of water in the circuit using the water pressure gauge, which should indicate a pressure of about 1.5 bars (monthly).
- Check that the escape pipe of the water safety valve is tightly secured.
- Check the water circuit for leaks (monthly).
- If the unit is to remain out of service for a long time, drain the water (or other fluid present in the circuit) from the pipes and the unit itself.
  This is indispensable if during the period of quiescence the ambient temperature is expected to fall below the freezing point of the fluid used (seasonal operation).
  Drain the unit and parts of the circuit subject to the risk of freezing by opening the RS (optional) emptying tap.
  Before placing the unit back in service at the start of the season, refill the water circuit as directed in section 1.4
- Check that the noise emissions of the unit are regular (monthly).
- If necessary, release the pump rotor ("P" and "S" version)

8.2 CHECKS AND MAINTENANCE TO BE PERFORMED BY SPECIALISED PERSONNEL

Warnings

Important! All the operations described in this section MUST ALWAYS BE PERFORMED BY QUALIFIED PERSONNEL.

Warning ⚠ Before carrying out any work on the unit or accessing internal parts, make sure you have disconnected it from the mains electricity supply.

Warning ⚠ The upper part of the compressor casing and the outlet pipe reach high temperatures. Be especially careful when working in their vicinity.

Warning ⚠ Be especially careful when working in proximity to the finned coils: the aluminium fins are extremely sharp and can cause cuts.

Important! After completing maintenance jobs, always replace the panels enclosing the unit and secure them with the fastening screws provided.

The checks and operations described in this section must be carried out on a yearly basis by specialised personnel.
- Check the electric control board terminals to ensure that they are securely tightened: the movable and fixed contacts of the circuit breakers must be periodically cleaned and replaced whenever they show signs of deterioration.
- Check the compressor and pipes for oil leaks.
- Check the efficiency of the water differential pressure switch.
- Clean the metal filters mounted in the water pipes.
- Clean the finned coil by aiming a jet of compressed air in a direction opposite to the outflow of air, taking care not to bend the fins.

9 RETIRING THE UNIT

When the unit has reached the end of its working life and needs to removed and replaced, a series of operations should be carried out:

- the refrigerant gas it contains should be recovered by specialised personnel and sent to a waste collection facility;
- the lubricating oil in the compressor should also be recovered by specialised personnel and sent to a waste collection facility;
- if they cannot be reused, the framework and components should be scrapped and separated according to the type of material: this applies especially for the considerable quantities of copper, aluminium and steel present in the unit.

This will make the job of waste collection, disposal and recycling facilities easier and minimise the environmental impact of the dismantling.

Installation and maintenance should be carried out by technical personnel qualified for this type of machine, in compliance with current safety regulations.
When receiving the unit please check its state verifying if any damage occurred during the transport.
For installation and use of possible accessories please refer to the pertinent technical sheets.

10 TECHNICAL FEATURES

10.1 WATER CHILLERS RATED TECHNICAL DATA

MPED-C		007 M	008 M	008	010 M	010	013	015	018	020	024	027	028
Power supply	V-ph-Hz	230-1-50		400-3-50	230-1-50	400-3-50							
Cooling capacity (UNI EN 14511)	kW	6,66	8,35	8,48	9,17	9,18	12,8	14,9	17,5	19,9	24,2	27,9	27,9
Total power input (UNI EN 14511)	kW	2,40	3,51	3,24	3,75	3,81	4,61	5,56	7,01	7,87	8,55	9,37	9,73
EER (UNI EN 14511)		2,78	2,38	2,62	2,45	2,41	2,78	2,68	2,50	2,53	2,83	2,98	2,87
ESEER		2,96	2,87	3,05	2,92	2,93	3,36	3,29	2,92	2,89	3,15	3,16	3,45
Maximum power input	kW	3,32	5,28	5,28	7,26	7,81	9,46	11,0	13,7	13,8	13,5	14,4	15,3
Maximum current absorption	A	17	11	26	18	33	21	24	26	26	26	28	37
Starting absorbed current	A	63	49	98	48	97	63	66	76	105	145	145	145
n° of compressors / circuits		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
Refrigerant charge	kg	2,0	2,1	2,1	2,9	2,9	4,0	4,1	3,7	4,2	5,8	6,0	7,5
Low/high pressure switch	bar	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42
n° of axial fan		1	1	1	1	1	1	1	1	1	1	1	2
Air flow	m^3/h	3533	3533	3533	7666	7666	7192	7192	13384	13384	12191	12191	16276
Fan maximum head	Pa	157	157	157	320	320	386	386	311	311	430	430	240
Fan net available head	Pa	75	75	75	120	120	120	120	180	180	180	180	180
Water flow	l/h	1148	1438	1461	1591	1592	2224	2584	3033	3444	4200	4832	4823
Diameter of hydrualic connections	"	1	1	1	1	1	1	1	1,25	1,25	1,25	1,25	1,25
Water side pressure drop	kPa	6	6	6	34	34	61	38	53	53	51	37	40
Available pressure head	kPa	69	67	67	115	115	80	101	126	120	108	116	141
Water content escluding optionals	dm^3	1,5	1,5	1,5	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,5
Buffer tank	dm^3	20	20	20	30	30	30	30	50	50	50	50	125
Expansion tank	dm^3	1	1	1	5	5	5	5	5	5	5	5	8
Height	mm	966	966	966	1247	1247	1247	1247	1565	1565	1565	1565	1988
Length	mm	751	751	751	1012	1012	1012	1012	1131	1131	1131	1131	951
Depth	mm	758	758	758	1224	1224	1224	1224	1274	1274	1274	1274	1823
Inlet + radiated sound power level	dB(A)	74	73	73	75	75	74	74	79	79	78	78	80
Outlet sound power level	dB(A)	75	75	75	82	82	81	81	84	84	81	81	89
Inlet + radiated sound power level (LOW NOISE)	dB(A)	70	70	70	70	70	71	71	76	76	75	75	77
Inlet + radiated sound pressure level	dB(A)	46	45	45	47	47	46	46	51	51	50	50	52
Outlet sound pressure level	dB(A)	47	47	47	54	54	53	53	56	56	53	53	61
Unit with pump and tank transport weight	kg	123	127	127	211	211	216	219	265	281	297	313	427
Unit with pump and full tank operating weight	kg	132	136	136	227	227	232	236	301	317	333	350	534

- Cooling capacity: outdoor air temperature 35°C, water temperature 12°C / 7°C
- Sound power level measured according to standards ISO 3741 - ISO 3744 and EN 29614-1
- Sound pressure level measured at a distance of 10 m and a height of 1.5 m above the ground in a free field (fan side).
- The maximum electrical input is the mains electricity that must be available in order for the unit to work.
- The maximum current absorption refers to the current that will trigger the internal safety devices of the unit. It is the maximum current allowed in the unit. This value may never be exceeded; it must be used as a reference for determining the size of the power supply line and the related safety devices (refer to the wiring diagram supplied with the units).

10 TECHNICAL FEATURES

10.1 WATER CHILLERS RATED TECHNICAL DATA

MPED-C		032	035	040	054	066	T30	T34	T40	T45	T54	T61	T69	T76
Power supply	V-ph-Hz	400-3-50												
Cooling capacity (UNI EN 14511)	kW	31,3	34,7	39,4	51,0	65,6	29,8	33,9	39,3	44,2	54,2	61,4	69,3	75,6
Total power input (UNI EN 14511)	kW	11,3	12,7	13,9	19,8	26,2	11,5	13,8	14,8	17,6	21,7	24,7	26,8	30,8
EER (UNI EN 14511)		2,77	2,73	2,83	2,58	2,50	2,59	2,46	2,66	2,51	2,50	2,49	2,59	2,45
ESEER		3,33	3,33	3,44	3,43	3,04	3,63	3,56	3,68	3,57	3,15	3,19	3,43	3,46
Maximum power input	kW	17,3	18,5	21,0	28,6	35,2	22,7	25,4	25,3	27,1	30,7	33,2	37,8	42,0
Maximum current absorption	A	41	43	47	55	66	50	55	55	58	57	61	69	76
Starting absorbed current	A	166	161	183	221	266	103	115	146	156	177	187	202	229
n° of compressors / circuits		1/1	1/1	1/1	1/1	1/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Refrigerant charge	kg	7,5	7,8	10,8	13,0	15,0	7,8	7,8	10,9	10,9	11,0	11,0	16,0	16,0
Low/high pressure switch	bar	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42
n° of axial fan		2	2	2	2	2	2	2	2	2	2	2	2	2
Air flow	m^3/h	16276	16276	15776	20048	20048	16276	16276	15776	15776	24933	24933	24354	24354
Fan maximum head	Pa	240	240	285	515	515	267	267	307	307	160	160	200	200
Fan net available head	Pa	180	180	180	180	180	180	180	180	180	120	120	120	120
Water flow	l/h	5415	6008	6816	8829	11342	5156	5854	6799	7648	9378	10629	11989	13075
Diameter of hydrualic connections	"	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	2	2	2	2
Water side pressure drop	kPa	51	40	43	55	59	30	38	45	57	53	66	52	60
Available pressure head	kPa	123	128	117	107	92	148	133	116	94	136	119	127	115
Water content escluding optionals	dm^3	5,5	5,5	5,5	5,5	7,0	8,0	5,5	5,5	5,5	5,5	7,0	8,0	11,0
Buffer tank	dm^3	125	125	125	125	125	125	125	125	125	125	125	125	125
Expansion tank	dm^3	8	8	8	8	8	8	8	8	8	8	8	8	8
Height	mm	1988	1988	1988	1991	1991	1988	1988	1988	1988	2013	2013	2013	2013
Length	mm	951	951	951	979	979	951	951	951	951	1182	1182	1182	1182
Depth	mm	1823	1823	1823	1823	1823	1823	1823	1823	1823	2100	2100	2100	2100
Inlet + radiated sound power level	dB(A)	80	80	82	84	84	79	79	79	79	85	85	85	87
Outlet sound power level	dB(A)	89	89	86	85	85	86	86	86	86	88	88	88	88
Inlet + radiated sound power level (LOW NOISE)	dB(A)	77	77	79	81	81	76	76	76	76	82	82	82	84
Inlet + radiated sound pressure level	dB(A)	52	52	54	56	56	51	51	51	51	57	57	57	59
Outlet sound pressure level	dB(A)	61	61	58	57	57	58	58	58	58	60	60	60	60
Unit with pump and tank transport weight	kg	456	487	516	521	558	448	484	521	555	643	665	685	786
Unit with pump and full tank operating weight	kg	563	595	624	630	665	555	591	629	663	751	773	793	894

- Cooling capacity: outdoor air temperature 35°C, water temperature 12°C / 7°C
- Sound power level measured according to standards ISO 3741 - ISO 3744 and EN 29614-1
- Sound pressure level measured at a distance of 10 m and a height of 1.5 m above the ground in a free field (fan side).
- The maximum electrical input is the mains electricity that must be available in order for the unit to work.
- The maximum current absorption refers to the current that will trigger the internal safety devices of the unit. It is the maximum current allowed in the unit. This value may never be exceeded; it must be used as a reference for determining the size of the power supply line and the related safety devices (refer to the wiring diagram supplied with the units).

10 TECHNICAL FEATURES

10.2 HEAT PUMPS RATED TECHNICAL DATA

MPED-H		007 M	008 M	008	010 M	010	013	015	018	020	024	027	028
Power supply	V-ph-Hz	230-1-50		400-3-50	230-1-50	400-3-50							
Cooling capacity	kW	6,53	8,18	8,31	9,00	9,00	12,5	14,6	17,1	19,5	23,7	26,8	27,3
Cooling power input	kW	2,45	3,55	3,29	3,82	3,81	4,76	5,71	7,12	7,86	8,64	9,73	8,56
EER		2,67	2,30	2,53	2,36	2,36	2,63	2,56	2,40	2,48	2,74	2,75	3,19
ESEER		2,96	2,87	3,05	2,92	2,93	3,36	3,29	2,92	2,89	3,15	3,16	3,45
Heating capacity	kW	7,79	10,3	9,93	11,0	11,0	15,4	17,8	20,5	23,4	27,7	30,4	31,5
Heating power input	kW	2,62	3,84	3,44	4,20	4,20	5,34	6,12	7,72	8,27	8,98	9,75	9,09
COP		2,97	2,68	2,89	2,62	2,62	2,88	2,91	2,66	2,83	3,08	3,12	3,47
SCOP		3,18	2,95	3,15	2,95	2,95	3,25	3,37	2,95	2,95	3,29	3,42	3,35
Energy Efficiency		125	115	123	115	115	127	132	115	115	129	134	131
Energy Efficiency Class*		A+	A	A+	A	A	A+	A+	A	A	A+	A+	A+
Maximum power input	kW	3,32	5,28	5,28	7,26	7,81	9,46	11,0	13,7	13,8	13,5	14,4	15,3
Maximum current absorption	A	17	11	26	18	33	21	24	26	26	26	28	37
Starting absorbed current	A	63	49	98	48	97	63	66	76	105	145	145	145
n° of compressors / circuits		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
Refrigerant charge	kg	2,0	2,1	2,1	2,9	2,9	4,0	4,1	3,7	4,2	5,8	6,0	7,5
Low/high pressure switch	bar	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42
n° of axial fan		1	1	1	1	1	1	1	1	1	1	1	2
Air flow	m3/h	3533	3533	3533	7666	7666	7192	7192	13384	13384	12191	12191	16276
Fan maximum head	Pa	157	157	157	320	320	386	386	311	311	430	430	240
Fan net available head	Pa	75	75	75	120	120	120	120	180	180	180	180	180
Water flow in cooling mode	l/h	1125	1409	1431	1560	1561	2179	2532	2973	3376	4116	4628	4727
Water flow in heat pump	l/h	1348	1788	1720	1884	1884	2628	3053	3515	4020	4761	5237	5431
Diameter of hydrualic connections	"	1	1	1	1	1	1	1	1,25	1,25	1,25	1,25	1,25
Water pressure drop (cooling)	kPa	6	6	6	33	33	59	37	51	51	50	34	39
Water pressure drop (heating)	kPa	8	8	8	46	46	85	52	72	71	64	44	50
Available pressure head (cooling)	kPa	69	67	67	115	115	80	101	126	120	108	119	141
Available pressure head (heating)	kPa	66	63	63	104	104	59	87	106	99	92	105	127
Water content escluding optionals	dm3	1,5	1,5	1,5	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,5
Expansion tank	dm3	20	20	20	30	30	30	30	50	50	50	50	125
Buffer tank	dm3	1	1	1	5	5	5	5	5	5	5	5	8
Height	mm	966	966	966	1247	1247	1247	1247	1565	1565	1565	1565	1988
Length	mm	751	751	751	1012	1012	1012	1012	1131	1131	1131	1131	951
Depth	mm	758	758	758	1224	1224	1224	1224	1274	1274	1274	1274	1823
Inlet + radiated sound power level	dB(A)	74	73	73	75	75	74	74	79	79	78	78	80
Outlet sound power level	dB(A)	75	75	75	82	82	81	81	84	84	81	81	89
Inlet + radiated sound power level (LOW NOISE)	dB(A)	70	70	70	70	70	71	71	76	76	75	75	77
Inlet + radiated sound pressure level	dB(A)	46	45	45	47	47	46	46	51	51	50	50	52
Outlet sound pressure level	dB(A)	46	45	45	47	47	46	46	51	51	50	50	52
Unit with pump and tank transport weight	kg	126	130	130	215	215	220	224	270	286	302	318	433
Unit with pump and full tank operating weight	kg	135	139	139	232	232	237	241	306	322	338	355	540

- Cooling capacity: outdoor air temperature 35°C, water temperature 12°C / 7°C
- Heating capacity: outdoor air temperature 7°C dry bulb and 6.2°C wet bulb, water temperature 40°C/45°C
- Sound power level measured according to standards ISO 3741 - ISO 3744 and EN 29614-1
- Sound pressure level measured at a distance of 10 m and a height of 1.5 m above the ground in a free field (fan side).
- The maximum electrical input is the mains electricity that must be available in order for the unit to work.
- The maximum current absorption refers to the current that will trigger the internal safety devices of the unit. It is the maximum current allowed in the unit. This value may never be exceeded; it must be used as a reference for determining the size of the power supply line and the related safety devices (refer to the wiring diagram supplied with the units).

* Seasonal energy efficiency class for LOW TEMPERATURE room heating under AVERAGE climatic conditions [EUROPEAN REGULATION No 811/2013]

10 TECHNICAL FEATURES

10.2 HEAT PUMPS RATED TECHNICAL DATA

MPED-H		032	035	040	054	066	T30	T34	T40	T45	T54	T61	T69	T76
Power supply	V-ph-Hz	400-3-50												
Cooling capacity	kW	30,6	34,0	38,6	51,6	62,3	29,3	33,2	38,5	43,3	53,1	60,2	68,1	74,1
Cooling power input	kW	10,1	11,6	12,8	17,7	24,1	10,3	12,6	13,7	16,5	19,2	22,2	24,5	28,5
EER		3,03	2,93	3,02	2,92	2,59	2,84	2,63	2,81	2,62	2,77	2,71	2,78	2,60
ESEER		3,33	3,33	3,44	3,43	3,04	3,63	3,56	3,68	3,57	3,15	3,19	3,43	3,46
Heating capacity	kW	35,9	39,5	45,2	61,4	75,8	34,6	39,5	46,7	53,2	60,4	68,1	77,0	85,4
Heating power input	kW	10,5	11,6	13,3	18,1	23,3	10,8	12,8	14,1	16,5	19,2	22,6	24,4	27,9
COP		3,42	3,41	3,40	3,39	3,25	3,20	3,09	3,31	3,22	3,15	3,01	3,16	3,06
SCOP		3,36	3,44	3,43	3,27	3,24	3,23	3,30	3,38	3,36	2,95	2,95	2,95	2,95
Energy Efficiency		132	135	135	128	127	127	130	133	132	115	115	115	115
Energy Efficiency Class*		A+	A+	A+	A+	A+	A+	A+	A+	A+	A	A	A	A
Maximum power input	kW	17,3	18,5	21,0	28,6	35,2	22,7	25,4	25,3	27,1	30,7	33,2	37,8	42,0
Maximum current absorption	A	41	43	47	55	66	50	55	55	58	57	61	69	76
Starting absorbed current	A	166	161	183	221	266	103	115	146	156	177	187	202	229
n° of compressors / circuits		1/1	1/1	1/1	1/1	1/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Refrigerant charge	kg	7,5	7,8	10,8	13,0	16,0	7,8	7,8	10,9	10,9	13,0	13,0	19,5	19,5
Low/high pressure switch	bar	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42	2 / 42
n° of axial fan		2	2	2	2	2	2	2	2	2	2	2	2	2
Air flow	m3/h	16276	16276	15776	20048	20048	16276	16276	15776	15776	24933	24933	24354	24354
Fan maximum head	Pa	240	240	285	515	515	267	267	307	307	160	160	200	200
Fan net available head	Pa	180	180	180	180	180	180	180	180	180	120	120	120	120
Water flow in cooling mode	l/h	5307	5888	6681	8932	10776	5053	5737	6663	7495	9189	10423	11766	12818
Water flow in heat pump	l/h	6173	6813	7800	10575	13063	5976	6818	8042	9155	10412	11733	13292	14730
Diameter of hydrualic connections	"	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	2	2	2	2
Water pressure drop (cooling)	kPa	49	39	42	56	54	29	37	44	55	51	64	50	58
Water pressure drop (heating)	kPa	64	51	54	82	81	39	52	58	74	58	74	56	69
Available pressure head (cooling)	kPa	123	128	117	107	92	148	133	116	94	136	119	127	115
Available pressure head (heating)	kPa	109	114	99	76	52	131	113	95	65	126	100	110	87
Water content escluding optionals	dm3	5,5	5,5	5,5	7,0	8,0	5,5	5,5	5,5	5,5	7,0	8,0	11,0	12,0
Expansion tank	dm3	8	8	8	8	8	8	8	8	8	8	8	8	8
Buffer tank	dm3	125	125	125	125	125	125	125	125	125	125	125	125	125
Height	mm	1988	1988	1988	1991	1991	1988	1988	1988	1988	2013	2013	2013	2013
Length	mm	951	951	951	979	979	951	951	951	951	1182	1182	1182	1182
Depth	mm	1823	1823	1823	1823	1823	1823	1823	1823	1823	2100	2100	2100	2100
Inlet + radiated sound power level	dB(A)	80	80	82	84	84	79	79	79	79	85	85	85	87
Outlet sound power level	dB(A)	89	89	86	85	85	86	86	86	86	88	88	88	88
Inlet + radiated sound power level (LOW NOISE)	dB(A)	77	77	79	81	81	76	76	76	76	82	82	82	84
Inlet + radiated sound pressure level	dB(A)	52	52	54	56	56	51	51	51	51	57	57	57	59
Outlet sound pressure level	dB(A)	61	61	58	57	57	58	58	58	58	60	60	60	60
Unit with pump and tank transport weight	kg	462	493	522	530	570	455	491	528	562	653	674	695	796
Unit with pump and full tank operating weight	kg	569	601	630	640	680	562	598	636	670	761	782	803	904

- Cooling capacity: outdoor air temperature 35°C, water temperature 12°C / 7°C
- Heating capacity: outdoor air temperature 7°C dry bulb and 6.2°C wet bulb, water temperature 40°C/45°C
- Sound power level measured according to standards ISO 3741 - ISO 3744 and EN 29614-1
- Sound pressure level measured at a distance of 10 m and a height of 1.5 m above the ground in a free field (fan side).
- The maximum electrical input is the mains electricity that must be available in order for the unit to work.
- The maximum current absorption refers to the current that will trigger the internal safety devices of the unit. It is the maximum current allowed in the unit. This value may never be exceeded; it must be used as a reference for determining the size of the power supply line and the related safety devices (refer to the wiring diagram supplied with the units).

* Seasonal energy efficiency class for LOW TEMPERATURE room heating under AVERAGE climatic conditions [EUROPEAN REGULATION No 811/2013]

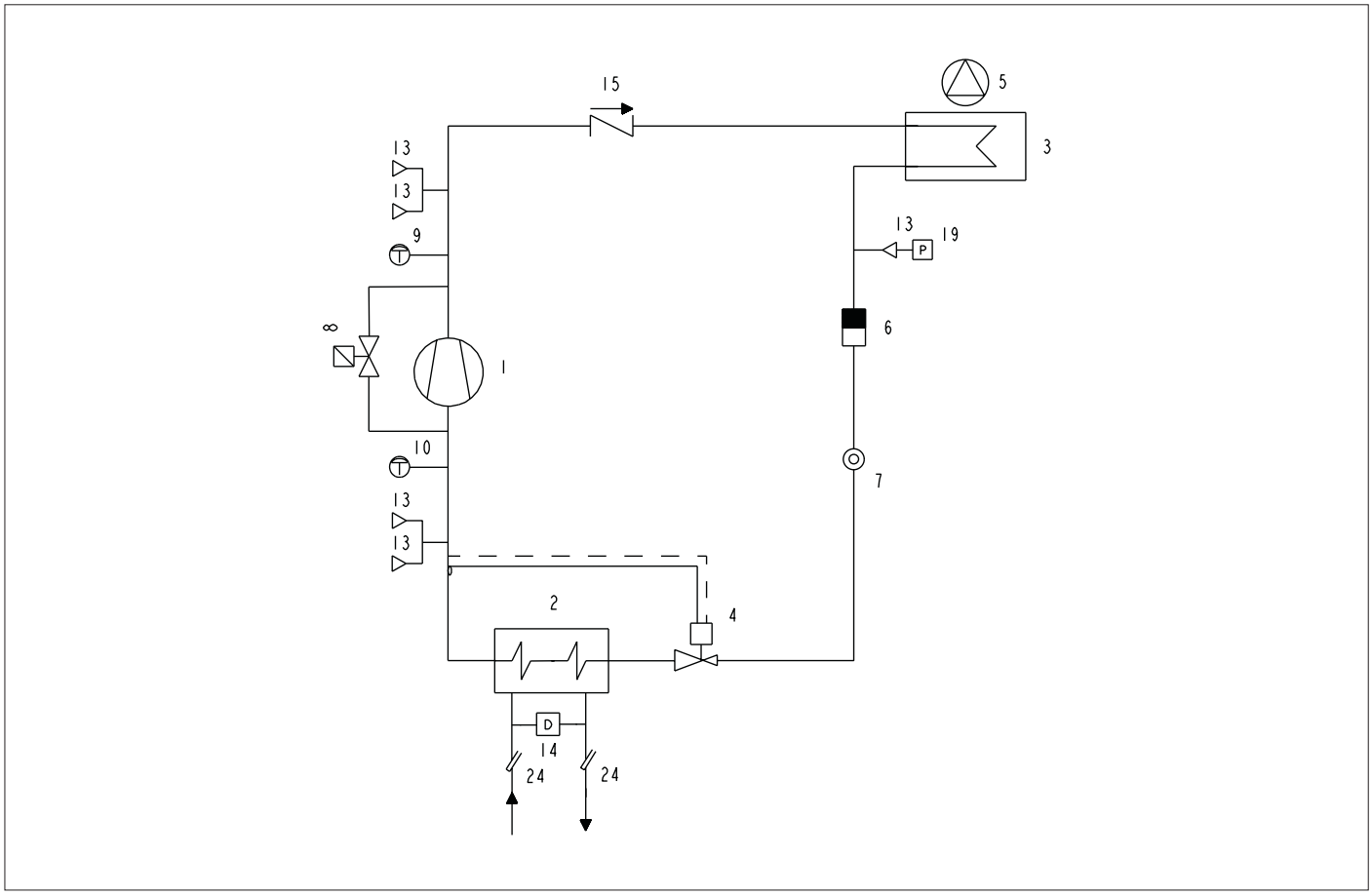
11 COOLING CIRCUITS

LEGEND

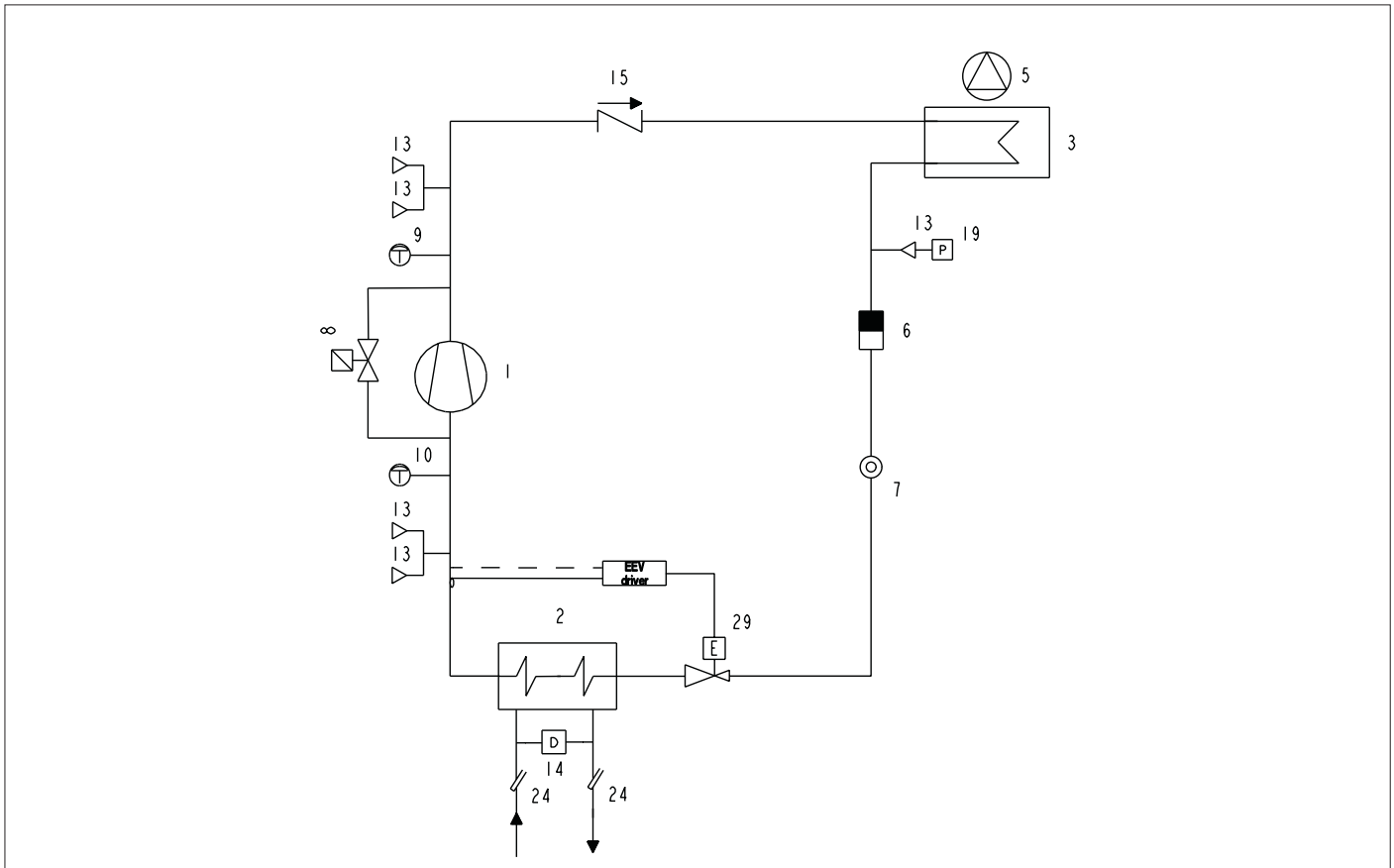
N°	COMPONENT	SIMBOL
1	Compressor	
2	Evaporator	
3	Condensator	
4	Thermostatic valve	
5	Electrical fan	
6	Filter	
7	Sight glass	
8	Solenoid valve	
9	High pressure switch	
10	Low pressure switch	
11	High pressure gauge	
12	Low pressure gauge	
13	Service connection	
14	Diff. pressure switch	
15	Check valve	
16	4 Way diversion valve	
17	Liquid separator	
18	Liquid receiver	
19	Pressure transducer	
20	Liquid distributor	
21	Oil pressure switch	
22	Desuperheater	
23	Shut-Off valve	
24	Pocket	
25	Security valve	
26	Fusible plug	
27	Flow switc	
28	Restrictor	
29	Electronic expansion valve	

11 COOLING CIRCUIT

11.1 MPED 07 WATER CHILLER COOLING CIRCUIT

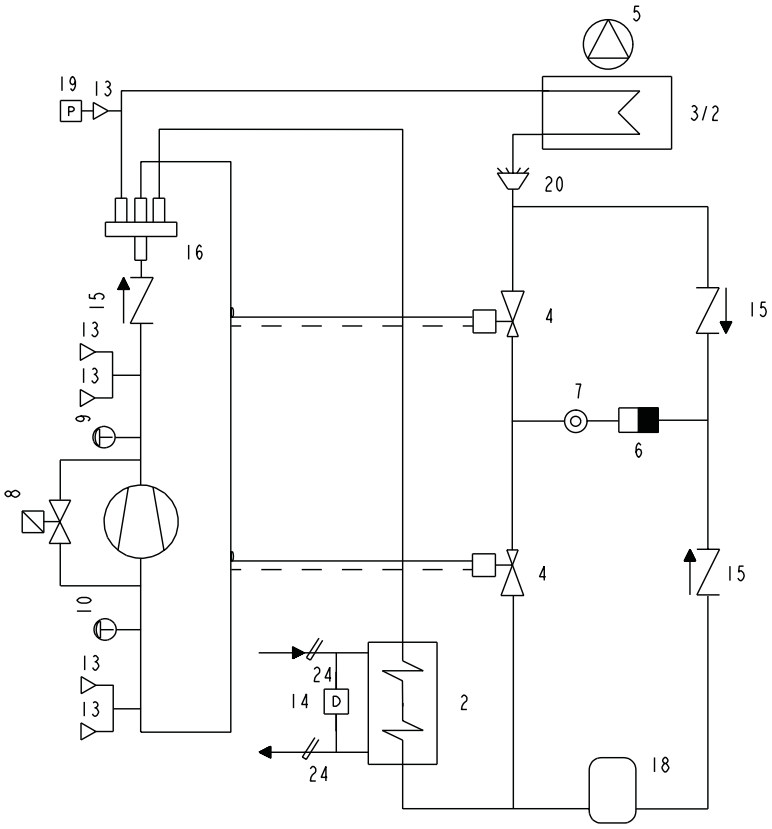


11.2 MPED 07 WATER CHILLER COOLING CIRCUIT WITH ELECTRONIC VALVE



11 COOLING CIRCUIT

11.3 MPED H 07 HEAT PUMP COOLING CIRCUIT



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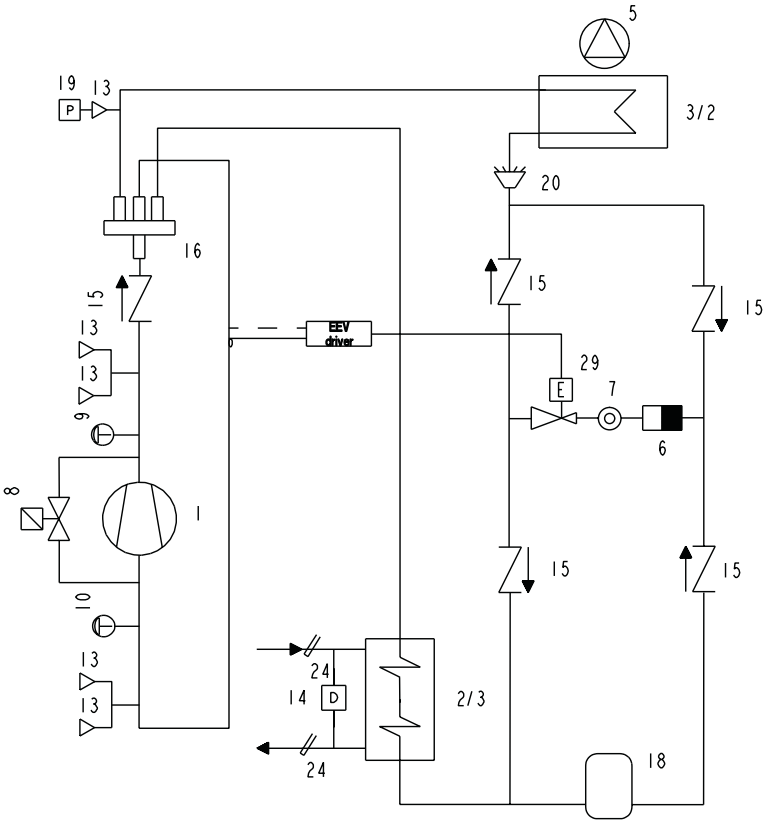
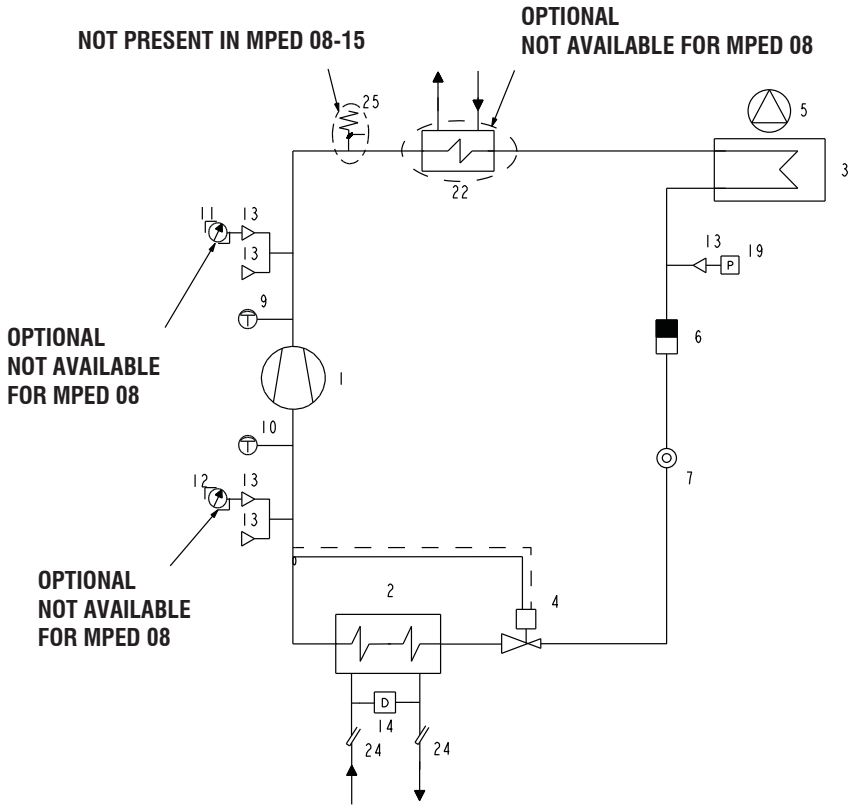
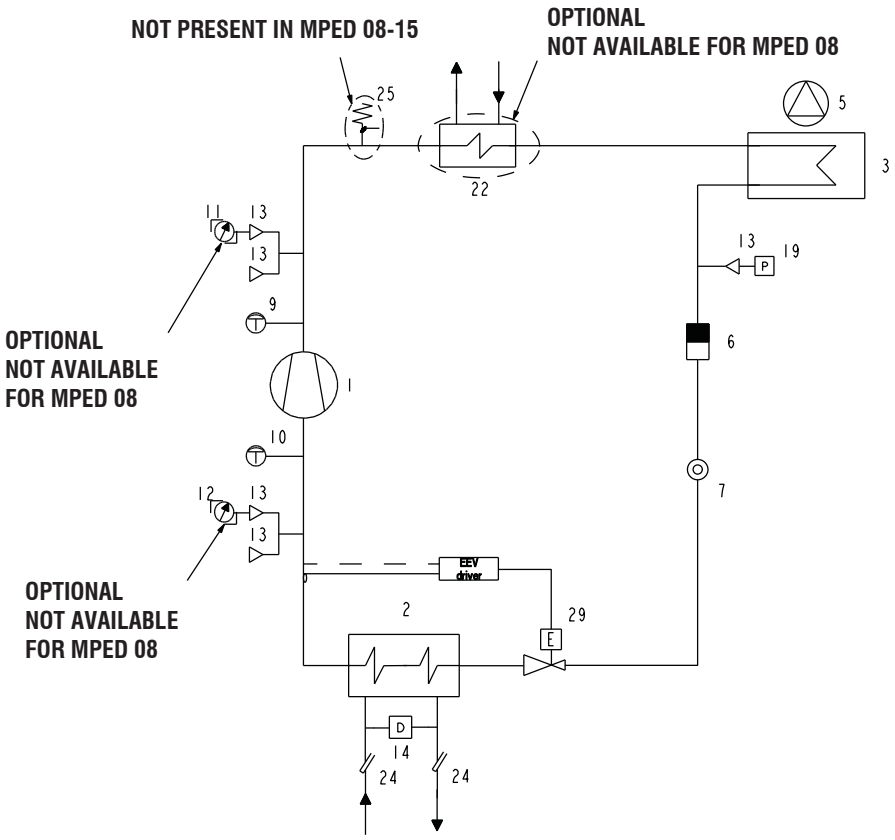


11 COOLING CIRCUIT

11.5 MPED 08 ÷ 27 WATER CHILLER COOLING CIRCUIT

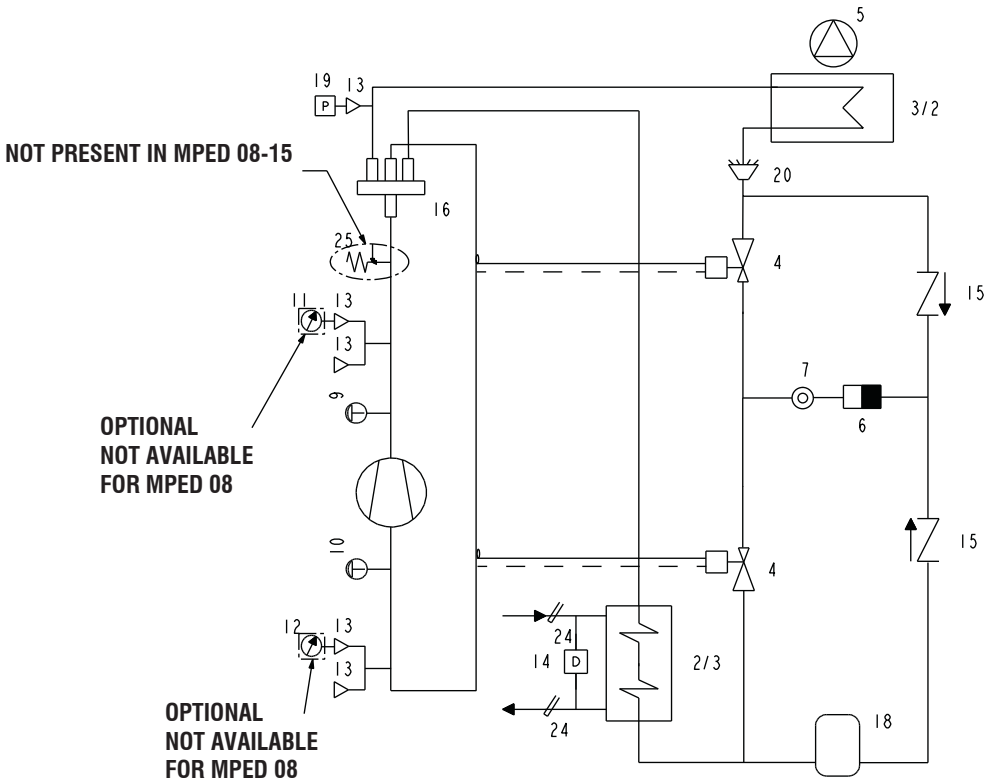


11.6 MPED 08 ÷ 27 WATER CHILLER COOLING CIRCUIT WITH ELECTRONIC VALVE



11 COOLING CIRCUIT

11.7 MPED H 08 ÷ 27 HEAT PUMP COOLING CIRCUIT



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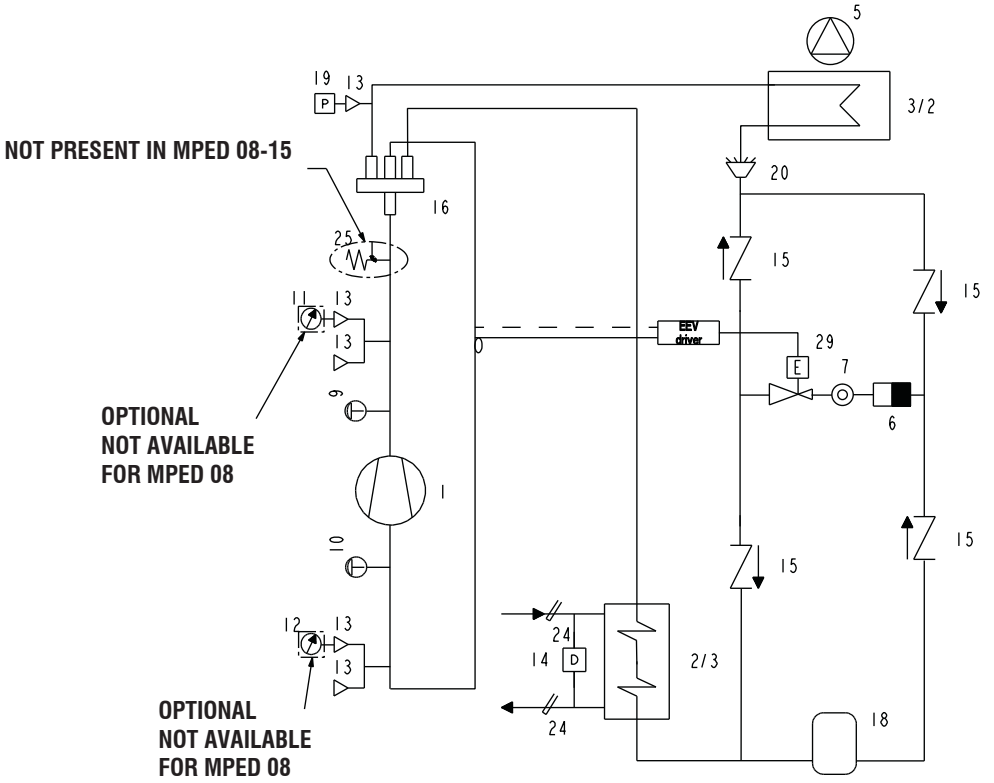
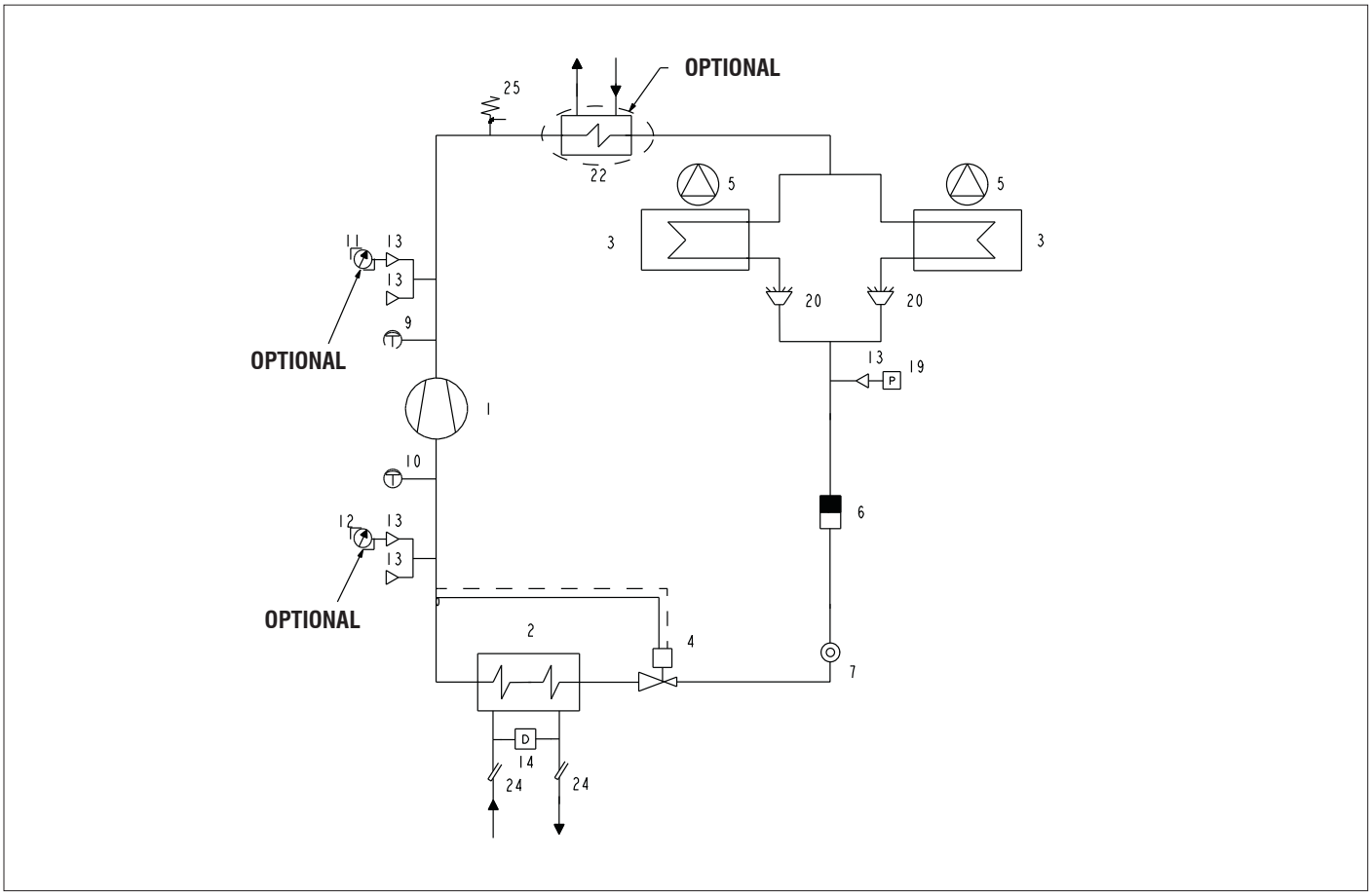
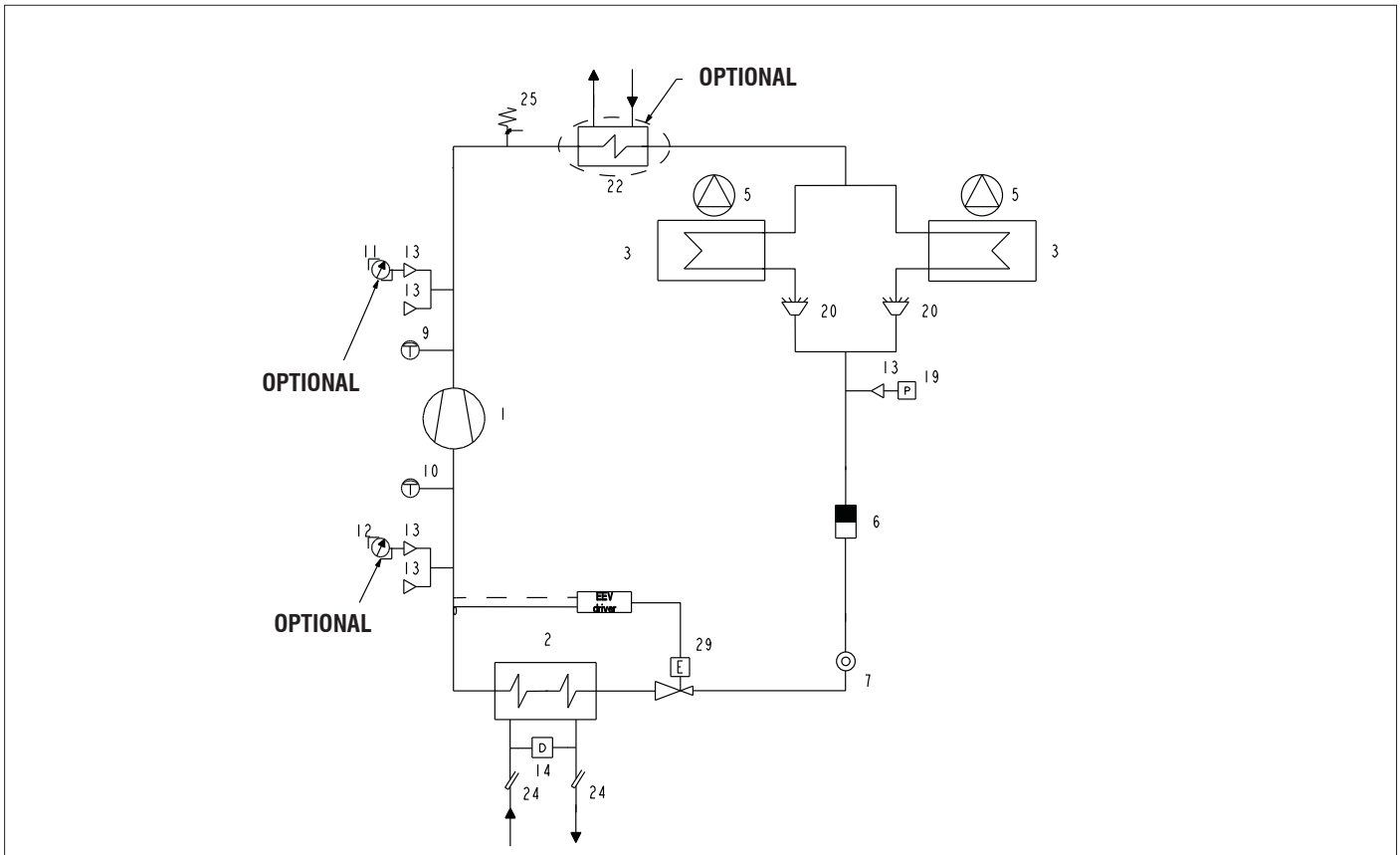


11 COOLING CIRCUIT

11.9 MPED 28 ÷ 66 WATER CHILLER COOLING CIRCUIT

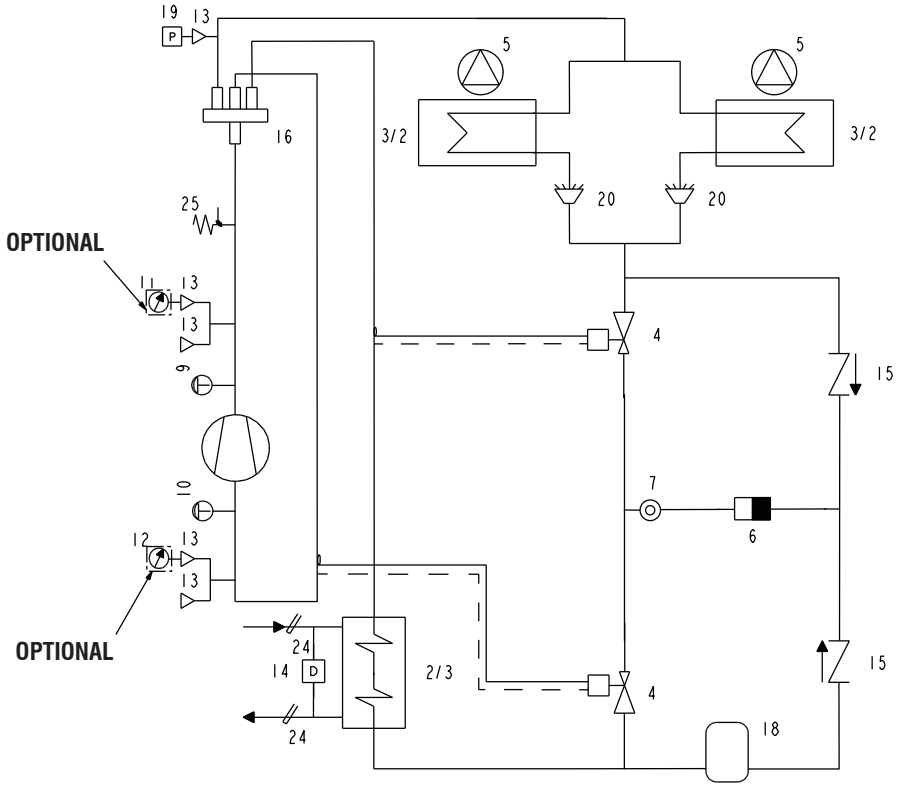


11.10 MPED 28 ÷ 66 WATER CHILLER COOLING CIRCUIT WITH ELECTRONIC VALVE

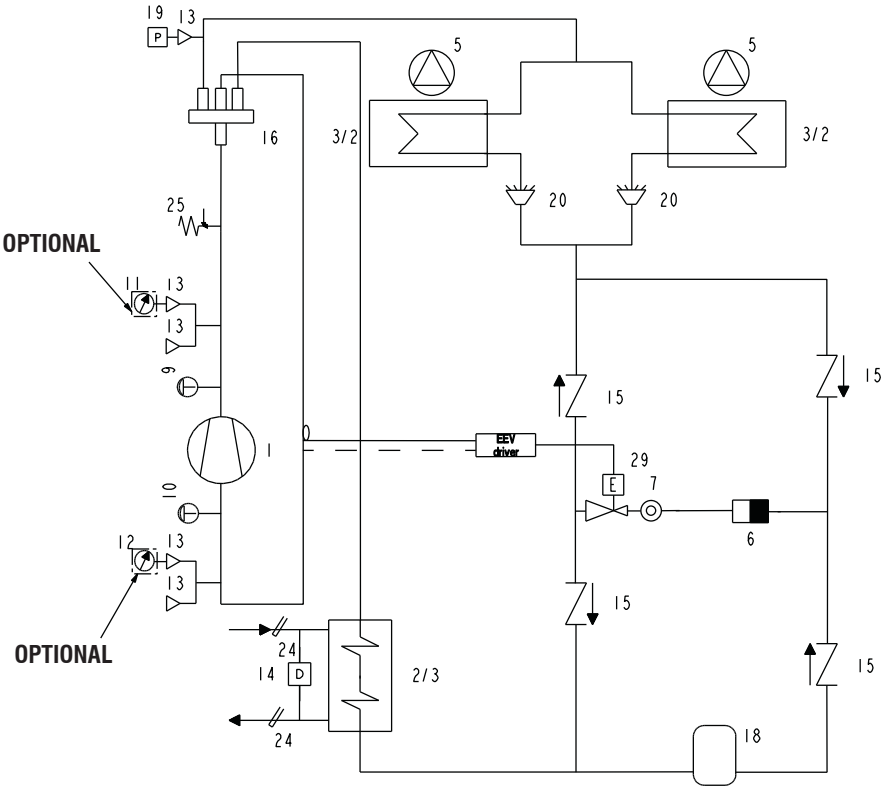


11 COOLING CIRCUIT

11.11 MPED H 28 ÷ 66 HEAT PUMP COOLING CIRCUIT

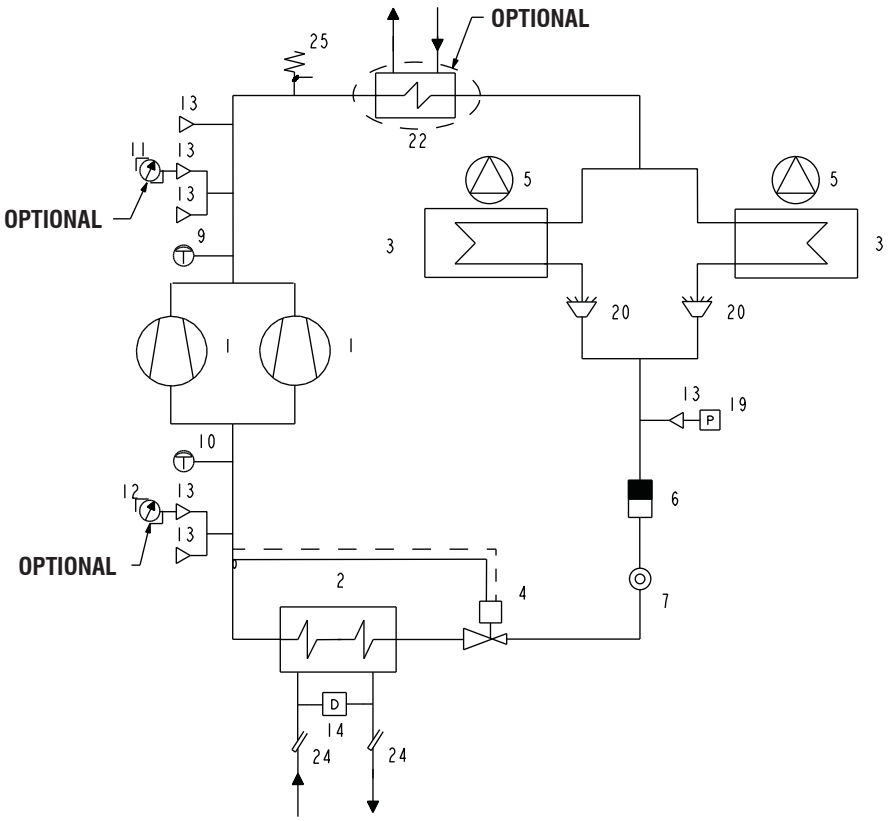


11.12 MPED H 28 ÷ 66 HEAT PUMP COOLING CIRCUIT WITH ELECTRONIC VALVE

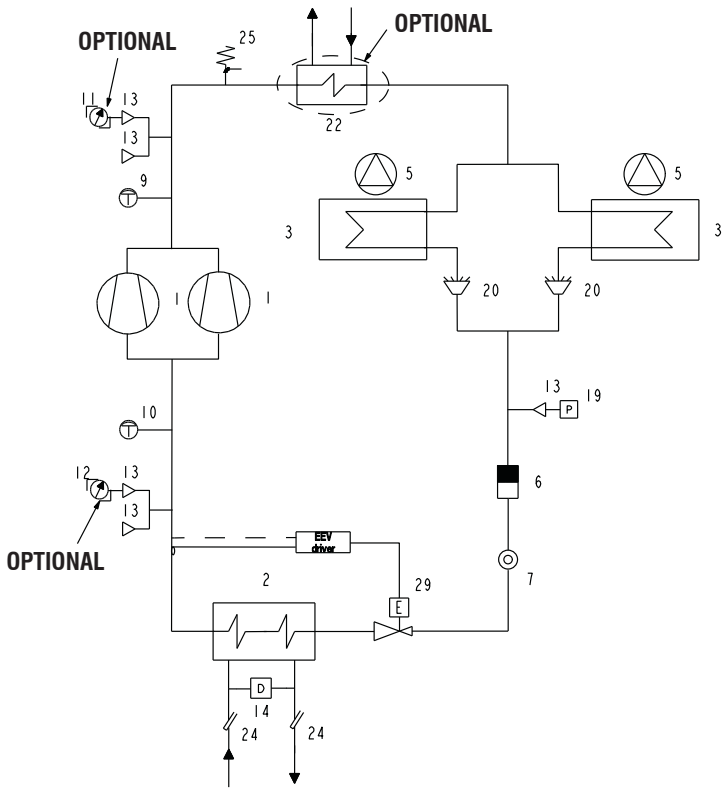


11 COOLING CIRCUIT

11.13 MPED 30 ÷ 76 T HEAT PUMP COOLING CIRCUIT

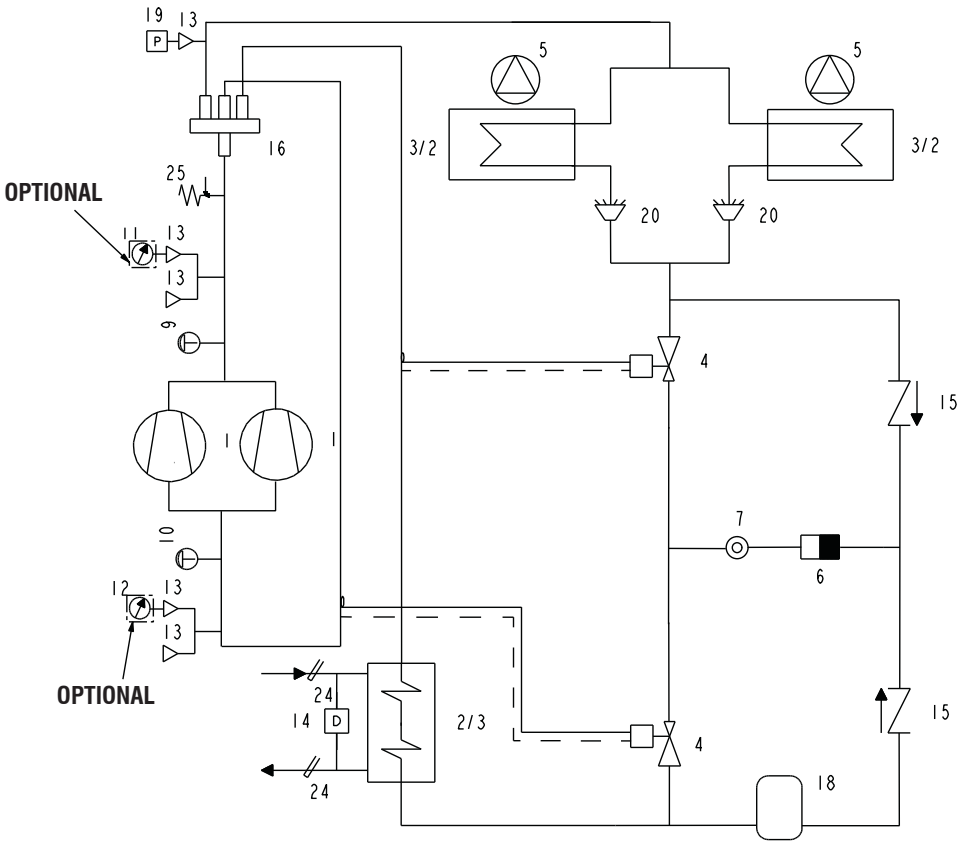


11.14 MPED 30 ÷ 76 T HEAT PUMP COOLING CIRCUIT WITH ELECTRONIC VALVE

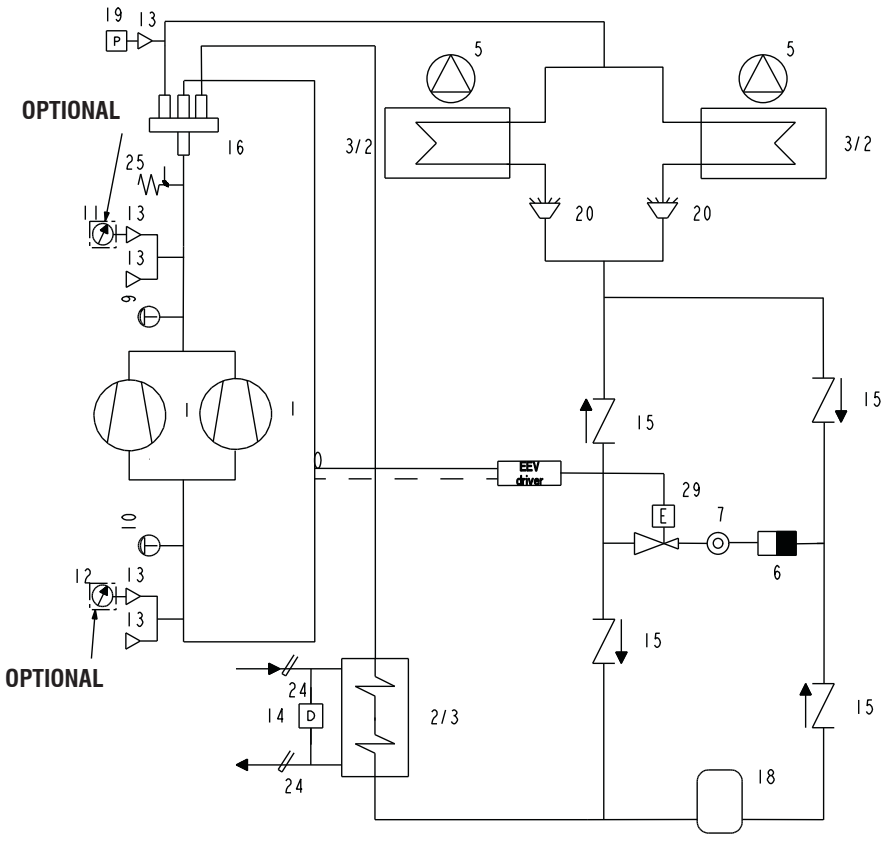


11 COOLING CIRCUIT

11.15 MPED H 30 ÷ 76 T HEAT PUMP COOLING CIRCUIT



11.16 MPED H 30 ÷ 76 T HEAT PUMP COOLING CIRCUIT WITH ELECTRONIC VALVE



12 TROUBLESHOOTING

In this section you will find a list of the most common problems that may cause the chiller unit to stop or malfunction.
Possible remedies are shown alongside a description of easily identifiable remedies.

Warning ⚠ Extreme care should be taken when performing work or repairs on the unit: overconfidence can result in injuries, even serious ones, to inexpert individuals. Operations marked with the letter "U" can be performed directly by the user, who must carefully follow the instructions provided in this manual. Operations marked with the letter "S" may be performed exclusively by specialised personnel. Once the cause has been identified, you are advised to contact a Galletti service centre or a qualified technician for help.

	SYMPTOM	Cooling	Heating	Who can take corrective action **U** = User **S** = specialised personnel	Possible control panel indication	Probable cause	Possible remedy
A	The unit does not start	**X**	**X**	**S**	**EU** **EO**	Faulty connection or contacts open Wrong voltage	Check the voltage and close the contacts
		X	**X**	**S**		Not enabled by remote controls	Check the efficiency of the water circulation pump, pressure switch, bleed air from the circuit; check whether contacts 16 and 30 on the terminal board are closed
		X	**X**	**U**		Anti-recycle timer active	Wait 5 minutes until the timer enables operation
		X	**X**	**S**	**E1**	Service thermostat sensor defective	Check and replace if necessary
		X	**X**	**U**		Not enabled by service thermostat.	System at the set temperature, no demand; check the setting
		X	**X**	**U**	**A1**	Not enabled by antifreeze thermostat	Check the water temperature Checking the antifreeze setting
		X	**X**	**S**	**E2**	Antifreeze sensor defective	Check whether it is functioning properly
		X	**X**	**S**		Tripping of main circuit breaker	Check for the presence of short circuits in the wiring or windings of the pump, fan and compressor motors or in the transformer.
		X	**X**	**S**	**L1** **H1**	Not enabled by high or low pressure switch	See items D-E
		X	**X**	**S**		Compressor defective	See item B
B	The compressor does not start	**X**	**X**	**S**		Compressor burnout or seizure	Replace the compressor
		X	**X**	**S**		Compressor contactor deenergized	Check the voltage at either end of the compressor contactor coil and verify the continuity of the coil itself
		X	**X**	**S**		Power circuit open	Locate the cause that tripped the protection; check for the presence of short circuits in the wiring or windings of the pump, fan and compressor motors or in the transformer
		X	**X**	**S**		Motor thermal protection open	The compressor has operated in critical conditions or there is insufficient refrigerant within the circuit: check the working conditions and make sure they fall within the operating limits. Refrigerant leak: refer to item G
C	The compressor starts up and stops repeatedly	**X**	**X**	**S**	**L1**	Minimum pressure switch has tripped	See item E
		X	**X**	**S**		Compressor contactor defective	Check and replace if necessary
		X	**X**	**U**		Wrong set-point or differential setting	Change them according to the indications given in the tables.
		X	**X**	**S**		Lack of refrigerant	See item G.

12 TROUBLESHOOTING

SYMPTOM	Cooling	Heating	Who can take corrective action **U** = User **S** = specialised personnel	Possible control panel indication	Probable cause	Possib le remedy
D The compressor does not start because the maximum pressure switch has tripped	X	X	S	H1	Pressure switch failure	Check and replace
	X	X	S	H1	Excessive refrigerant charge	Discharge the excess gas
	X		U	H1	Finned coil obstructed, insufficient air flow	Remove dirt from the coil and any obstacles to air flow.
	X		S	H1	Fan not working	See item F
		X	U	H1	Water circulation pump blocked	Release the pump
		X	S	H1	Water circulation pump defective	Check the pump and replace it if necessary.
	X	X	S	H1	Presence of incondensable gas in the cooling circuit	Recharge the circuit after having drained and evacuated it
	X	X	S	H1	Refrigerant filter clogged	Check and replace
E The compressor does not start because the minimum pressure switch has tripped	X	X	S	L1	Pressure switch failure	Check and replace
	X	X	S	L1	Unit completely empty	See item G
		X	U	L1	Finned coil obstructed, insufficient air flow	Remove dirt from the coil
	X		S	L1	Water circulation pump blocked	Release the pump
	X		S	L1	Water circulation pump blocked defective	Check the pump and replace it if necessary.
		X	S	L1	Presence of frost on the evaporating coil	See item O
		X	S	L1	Evaporator fan not working	See item F
	X	X	S	L1	Refrigerant filter clogged	Check and replace
	X	X	S	L1	Expansion valve is not working properly	Check and replace if necessary
	X	X	S	L1	Presence of humidity in the cooling circuit	Replace the filter and, if necessary, dry out the circuit and recharge
F The fans do not start	X	X	S	H1 L1	Fan contactor deenergized (MPED only)	Check the voltage at either end of the contactor coil and verify the continuity of the coil itself
	X	X	S	H1 L1	No power output by the fan speed control card (only MPED H or MPED with condensation control)	Check the contacts and replace if necessary
	X	X	S	H1 L1	The fan's internal thermal protection has tripped	Check the fan conditions and the air temperature while the unit is running.
	X	X	S	H1 L1	Fan motor defective	Check and replace if necessary
	X	X	S	H1 L1	Loose electrical connections	Check and fasten securely

12 TROUBLESHOOTING

SYMPTOM	Cooling	Heating	Who can take corrective action **U** = User **S** = specialised personnel	Possible control panel indication	Probable cause	Possible remedy
G Lack of gas	**X**	**X**	**S**	**L1**	Cooling circuit leak	Check the cooling circuit using a leak detector after pressurising the circuit to approximately 4 bars. Repair, evacuate and refill.
I Frost in liquid pipe downstream from a filter	**X**	**X**	**S**	**H1** **L1**	Liquid filter clogged	Replace the filter
L The unit works continuously without ever stopping	**X**	**X**	**S**		Lack of refrigerant gas	See item G
	X	**X**	**U**		Wrong setting of operating thermostat	Check the setting
	X	**X**	**S**		Thermal overload	Reduce the thermal load
	X	**X**	**S**		Compressor does not provide the rated heating capacity	Check and replace or overhaul
	X	**X**			Liquid filter clogged	Replace
M The unit works regularly but with an insufficient capacity	**X**	**X**	**S**		Low level of refrigerant	See item G
	X	**X**	**S**		4-way cycle reversing valve defective	Check the valve power supply and coils and replace the valve if necessary
N Frost in the compressor intake pipe	**X**	**X**	**S**		Expansion valve is not working properly	Check replace
	X		**S**		Water circulation pump blocked	Release the pump
	X	**X**	**S**		Water circulation pump defective	Check the pump and replace it if necessary
	X	**X**	**S**		Low level of refrigerant	See item G
	X	**X**	**S**		Liquid filter clogged	Replace
O The defrosting cycle is never activated		**X**	**S**		4-way cycle reversing valve defective	Check the valve power supply and coils and replace the valve if necessary
		X	**S**		The defrost thermostat has broken down or has been set incorrectly	Check and replace if defective or change the setting
P Abnormal noises detected in the system	**X**	**X**	**S**		The compressor is noisy	Check and replace if necessary
	X	**X**	**S**		The panels vibrate	Fasten properly

Galletti
AIR CONDITIONING

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Company **UNI EN ISO 9001** and **OHSAS 18001** certified