EN

# TECHNICAL MANUAL FOR CHILLERS AND HEAT PUMPS


# MPE D

## 7 kW - 76 kW

## DUCTABLE VERSION

Air condensed duct water chillers and heat pumps
PERFORMA MPE series

CE

eco R410A

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**DECLARATION OF CONFORMITY**

Galletti S.p.A. with head office in Via Romagnoli 12/a Bentivoglio (Bologna) - Italia, declares herewith under its own responsibility that all water chillers and heat pumps series: (see table below) units for air-conditioning systems for civil conditioning application, are produced in accordance with following directives: **CEE 73/23, 89/392, 91/368, 93/44, 93/68, 89/336, 97/23 (PED)**.

These units are made by assembly of components (compressors, heat exchangers with braze welded plates, liquid receiver, pipelines , regulating and safety valves), each component, if requested by the law, has its own declaration in accordance with the directives in force: the determination of the units belonging category is the result of the analyse of all components subjected to the **PED** directive and correspond to the highest class between the used components.

For each unit series the conformity of the assembly has been evaluated by notified bodies through the application of procedure for evaluation (forms) according to the annex II of the **97/23 PED** directive, as reported in the following table:

**Bentivoglio, 02/07/2014**
**Galletti S.p.A.**
**Luca Galletti**

CE

| Serie<br>Range | Grandezza<br>Size | Organismo Notificato<br>Notified body | N° certificato<br>certificate | Procedura di valutazione di conformità<br>Conformity Compliance Module | Categoria PED<br>PED category | Marcatura<br>Marking |
|---|---|---|---|---|---|---|
| **MCC - MCC H** | 6-7-9-12-15 | 0425 | 2422/0 | Modulo D1 | I | CE |
| **MCC - MCC H** | 18-22-25-33-37 | 0425 | | Modulo D1 | II | CE + PED |
| **MCW - MCW / H** | 5-7-10-12-15-18-20 | 0425 | | Modulo D1 | I | CE |
| **MCW - MCW / H** | 22-27-31-39 | 0425 | | Modulo D1 | II | CE + PED |
| **MPE - MPEH** | 4-5-7-8-10-13-15-18 | 0425 | | Modulo D1 | I | CE |
| **MPE - MPEH** | 20-24-27-28-32-35-40-54-66 | 0425 | | Modulo D1 | II | CE + PED |
| **MPE - MPEH** | T30-T34-T40-T45-T54-T61-T69-T76 | 0425 | | Modulo D1 | II | CE + PED |
| **MPE D - MPE D H** | 7-8-10-13-15-18 | 0425 | | Modulo D1 | I | CE |
| **MPE D - MPE D H** | 20-24-27-28-32-35-40-54-66 | 0425 | | Modulo D1 | II | CE + PED |
| **MPE D - MPE D H** | T30-T34-T40-T45-T54-T61-T69-T76 | 0425 | | Modulo D1 | II | CE + PED |
| **MPI** | 15 | 0425 | | Modulo D1 | I | CE |
| **MPI** | 27 | 0425 | | Modulo D1 | II | CE + PED |
| **MPI DC** | 8-10-14-15-18 | 0425 | | Modulo D1 | I | CE |
| **MPI DC** | 23-27-29 | 0425 | | Modulo D1 | II | CE + PED |
| **HWMC** | 10 | 0425 | | Modulo D1 | I | CE |
| **HWMC** | 13-18-23-29 | 0425 | | Modulo D1 | II | CE + PED |
| **MCP** | 7-9 | 0425 | | Modulo D1 | I | CE |
| **MCP** | 10-13-15-18-27-32-40-T18-T22-T24-T30 | 0425 | | Modulo D1 | II | CE + PED |
| **LCE - LCE H** | 42-52-62-72-82-91/2/4-101/2/4-121/2/4-141/2/4-161/2/4-174-194-214 | 0425 | | Modulo D1 | II | CE + PED |
| **LEW** | 41-42-51-52-61-62-71-72-81-82-91-92-111-112-131-132-141-144-161-162-164-181-182 | 0425 | | Modulo D1 | II | CE + PED |

Galletti S.p.A. via L.Romagnoli 12/a
40010 Bentivoglio (BO) Italia

Made in Italy
**CATEGORIA 1**

Serial number
Code
Date of production
Cooling capacity (W)
Heating capacity (W)
Power supply
Power input (kW)
Weight (kg)
Max power input (kW)
Max running amperage (A)
HP Power input (kW)
Refrigerant
Max refrigerant pressure (bar)
Max refrigerant temperature (°C)

## UNIT IDENTIFICATION

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

TRANSLATION OF ORIGINAL INSTRUCTIONS

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

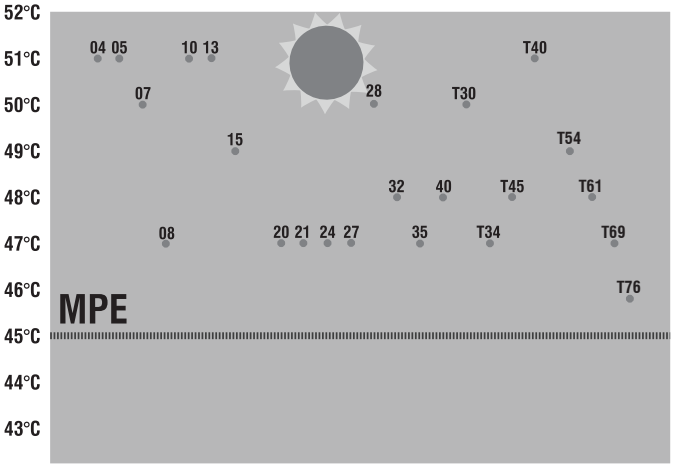
The technical and dimensional data reported in this manual may be modified in view of any product improvement.

# 1 LA SERIE

PERFORMA (MPE) water chillers and heat pumps are designed for outdoor installation in both residential and industrial applications.
The range uses R410A refrigerant, which assures high levels of performance with relatively low energy consumption and features 19 models in the chiller and heat pump version, with cooling capacities ranging from 7 to 66 kW and heating capacities from 8 to 75 kW.

### BEYOND CONVENTIONAL WORKING LIMITS

The finned block heat exchangers have been optimised for R410A and use 8 mm copper pipes, which permit a better heat exchange and quiet operation of the fans.
Their generous sizing guarantees the production of chilled water even with outdoor air temperatures as high as 51°C and all models of the range assure an average energy efficiency ratio (EER) of 2.95 in the cooling mode and heating efficiency (COP) of 3.25, corresponding to the Eurovent Energy Efficiency Class A

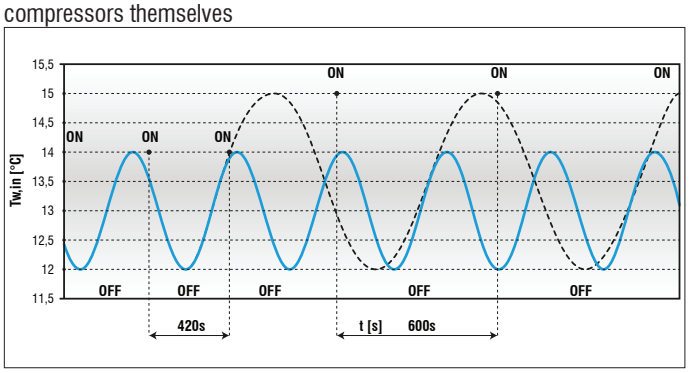



### EFFICIENCY IN ALL CONDITIONS

The actual thermal load of an air conditioning system is less than 60% of the rated load capacity 90% of the time; the MPE T version with single-circuit dual compressor answers this demand by offering high efficiency during operation under partial load conditions (ESEER>4) and also guarantees the unit's operation at the worst temperature conditions.
In such conditions the microprocessor controller activates the capacity control mode, doubling the condensing surface available to the single compressor.
The axial-type fans with airfoil-shaped blades and 6- and 8-pole motors with electronic speed control (optional) guarantee quiet operation and optimal performance of the unit in all conditions.

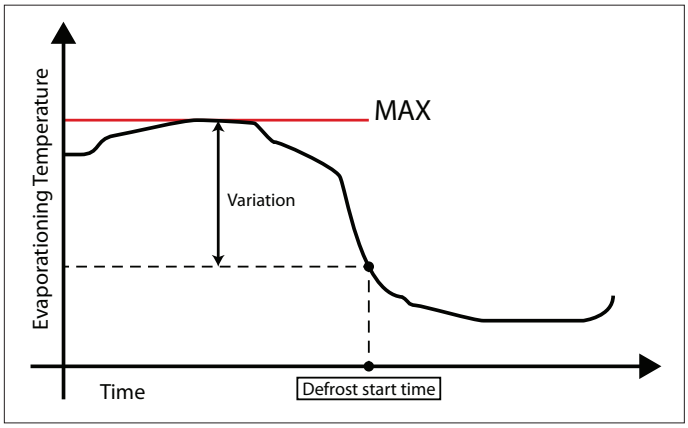
### SELF-ADAPTIVE

The electronic control system allows the setpoint to be adjusted automatically according to the outdoor temperature in order to reduce consumption and broaden the working temperature range.
The unit can also function in systems with a low water content, even without the use of a storage reservoir, thanks to the automatic adjustment which limits the number of compressor starts and thus extends the life of the compressors themselves




### SMART DEFROST SYSTEM

The exclusive defrost system (optional feature available with the advanced controller) can correctly identify an impairment of performance in the outdoor exchanger due to the formation of ice and minimise the process time in relation to normal operation of the unit.




### RADIAL FANS

The impellers are made in a single piece with an alloy of special materials developed so as to ensure high rotational speeds, and thus a high power density of the fan. The impellers' design was developed using complex simulation models optimized through experimental tests performed on prototypes. The result is a uniform air flow over the impeller's entire cross section, in order to guarantee very low pressure loss. A uniform air flow profile also results in fewer noise sources and, therefore, extremely low noise levels during operation.
The MPE DUCTED radial fans can be equipped with a permanent magnet (brushless) electric motor, controlled by an inverter, which enables continuous adjustment in the number of fan revolutions.
The great advantage of brushless motors is the significant reduction in power consumption, which in instant operations reaches up to 1/3 of that of conventional motors and at around 50% in integrated operations, with a corresponding reduction in CO2 emissions!

# 2 CONSTRUCTIVE FEATURES

**STRUCTURE**
Painted galvanised sheet steel structure (RAL9002) for an attractive look and effective resistance to corrosive agents.
Fastening devices are made of non-oxidizable materials, or carbon steel that has undergone surface-passivating treatments.
The compressor compartment is completely sealed and may be accessed on 3 sides thanks to easy-to-remove panels that greatly simplify maintenance and/or inspection.
Sound insulation, available on request, can further reduce the noise emissions of the unit.

**CUSTOMISED HYDRAULIC KIT**
- High head pump made entirely of stainless steel, already configured for use with mixtures of water and ethylene glycol up to 35% and provided with internal thermal protection.
  It is housed in the compressor compartment and is easy to reach thanks to the removable perimeter panels.
- Expansion tank.
- Safety valve.
- Filling cock (included).
- Automatic vent valve.
- Water differential pressure switch and outlet water temperature probe with anti-freeze thermostat function.
- Mechanical Y filter supplied as a standard feature on all models to protect the evaporator (included).

**COOLING CIRCUIT**
- Scroll-type compressor (rotary up to 7 kW) housed in a compartment that can be sound insulated.
- Brazed plate heat exchangers made of STAINLESS STEEL and optimised for use with R410A.
- Finned block condenser with 8 mm copper piping and aluminium fins, characterised by ample heat exchange surfaces.
- Dehydrating filter.
- Flow indicator with humidity indicator.
- Thermostatic valve with external equalisation and integrated MOP function.
- Cycle-reversing valve (MPED H).
- Single-acting valves (MPED H).
- Liquid receiver (MPED H)
- High and low pressure switches.
- Safety valve.
- Schrader valves for checks and/or maintenance.
- Refrigerant pressure gauges (optional)

**VENTILATION SECTION**
Statically and dynamically balanced centrifugal fans with backward-curved blades, directly mounted on the electric motor.
All units are equipped with phase-cut speed regulator controlled by the ratiometric pressure probe or by means of EC fans.
The ventilation compartment is completely insulated with anti-condensation material and is separated from the compressor/electrical system compartment for inspection purposes when the unit is working (without interfering with the finned block exchanger)
The absence of belt drive and the frontally removable fan considerably reduce maintenance work.
The use of finned block heat exchangers with 8mm diameter pipes reduces pressure drops on the air side, thus significantly improving the noise levels of the units.

**FINNED BLOCK HEAT EXCHANGER**
Made of 8mm diameter copper pipes and aluminium fins, generously sized.
The special engineering of the heat exchangers allows defrost cycles to be carried out at maximum speed in the models with heat pump operation, which brings clear benefits in terms of the integrated efficiency of the whole cycle.

**ELECTRONIC MICROPROCESSOR CONTROL**
The electronic control enables the complete control of the MPED unit. It can


be easily accessed through a polycarbonate flap with IP65 protection rating.

The self-adaptive logic enables the unit to operate even in systems where the water content is low, without the use of an inertial water storage reservoir. By reading the outdoor air temperature, it can automatically change the setpoint to adapt it to the outdoor load conditions or keep the unit running even in the harshest winter conditions.
The basic controller comes complete with the MODBUS protocol and enables an immediate connection to ERGO networks.
Main functions
- Control over the temperature of water entering the evaporator.
- Management of the defrosting function (MPED-H)
- Control of fan speed (optional)
- Complete alarm management.
- Dynamic control of the setpoint according to the outdoor air temperature.
- Can be connected to an RS485 serial line for supervisory / teleassistance operation;
- Option of connecting a remote terminal that duplicates the control functions.

Devices controlled:
- Compressor
- Fans
- Cycle-reversing valve (MPED-H).
- Water circulation pump.
- Antifreeze heating elements (optional)
- Alarm signalling relay

On request, it is possible to install the advanced controller whose functions extend to:
- LAN networks
- Smart Defrost System

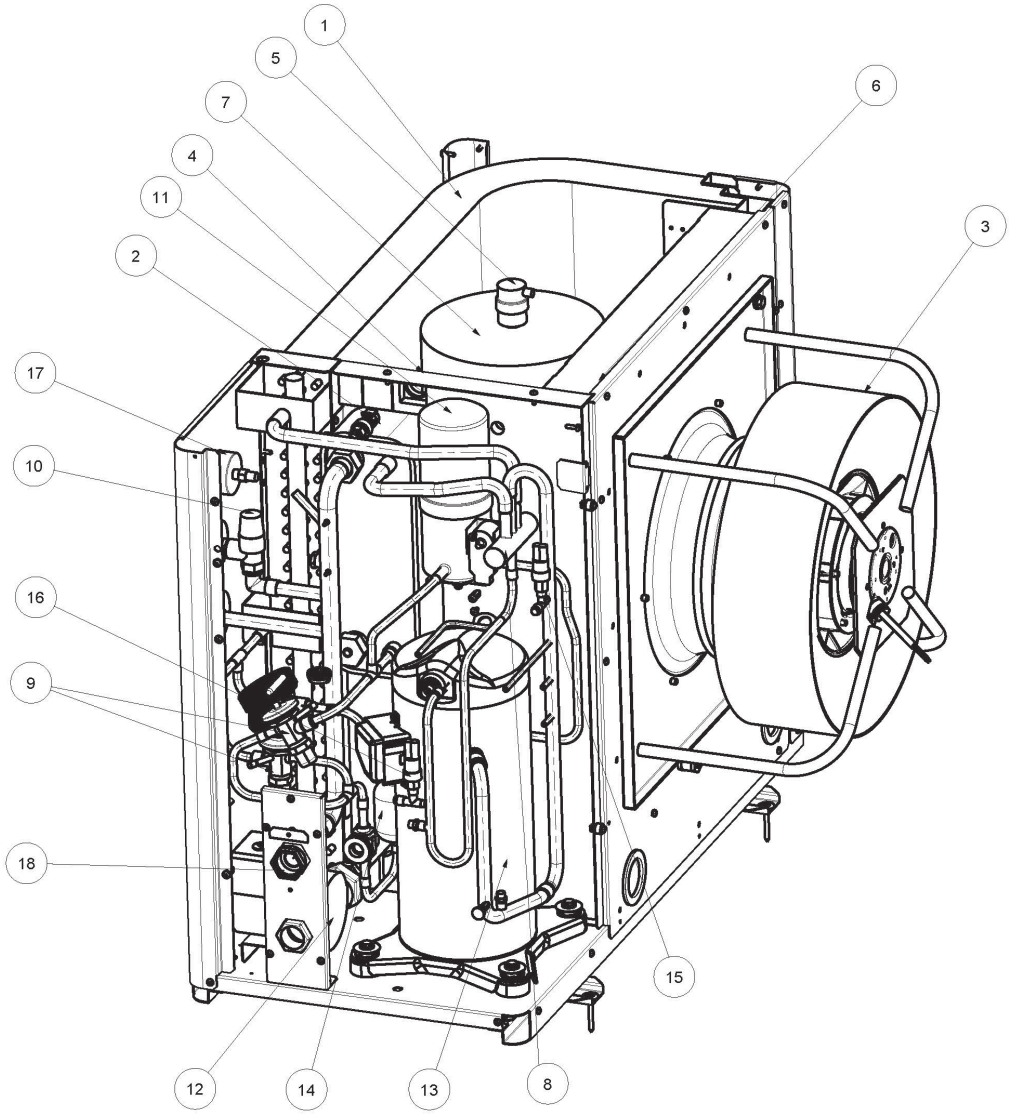
**ELECTRIC CONTROL BOARD**
The electric control board is constructed and wired in accordance with EEC Directive 73/23, Directive 89/336 on electromagnetic compatibility and related standards. Made of steel sheet, it is also protected by the enclosing panels of the machine.

**OPTIONS**
Incorporable hydronic kits
Condensation control
Low noise execution
Refrigerant pressure gauges
Antifreeze heating elements on the water circuit
Electronic thermostatic valve
Heat recovery 25% (chiller)
Special exchangers (hydrophilic treatment, copper-copper, cataphoresis, anti-corrosion)
Air flow rate setting system

**ACCESSORIES AVAILABLE**
Remote control boards
Base vibration dampers
Metal grilles to protect exchangers

# 3 LAYOUT OF COMPONENTS

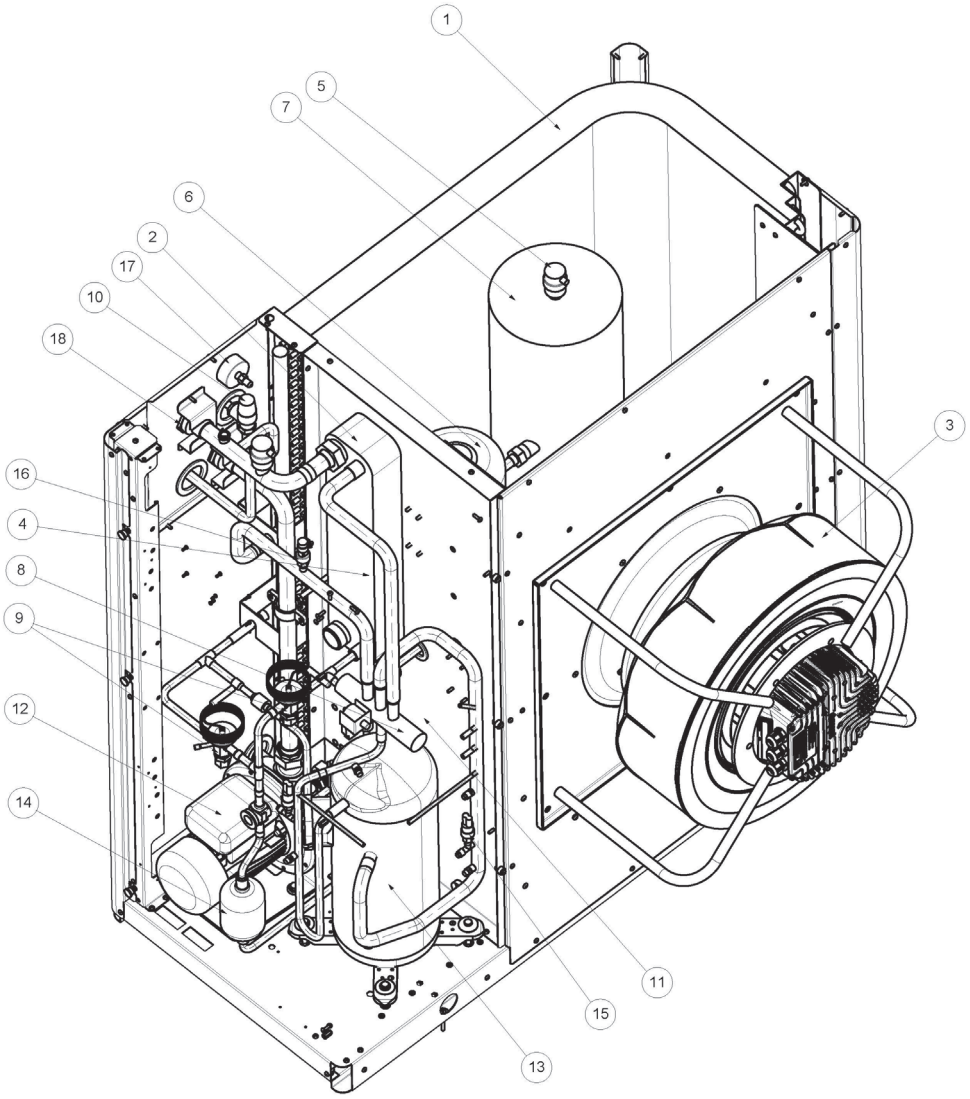
## MPED 07 - 08




| | 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 |

# 3 LAYOUT OF COMPONENTS

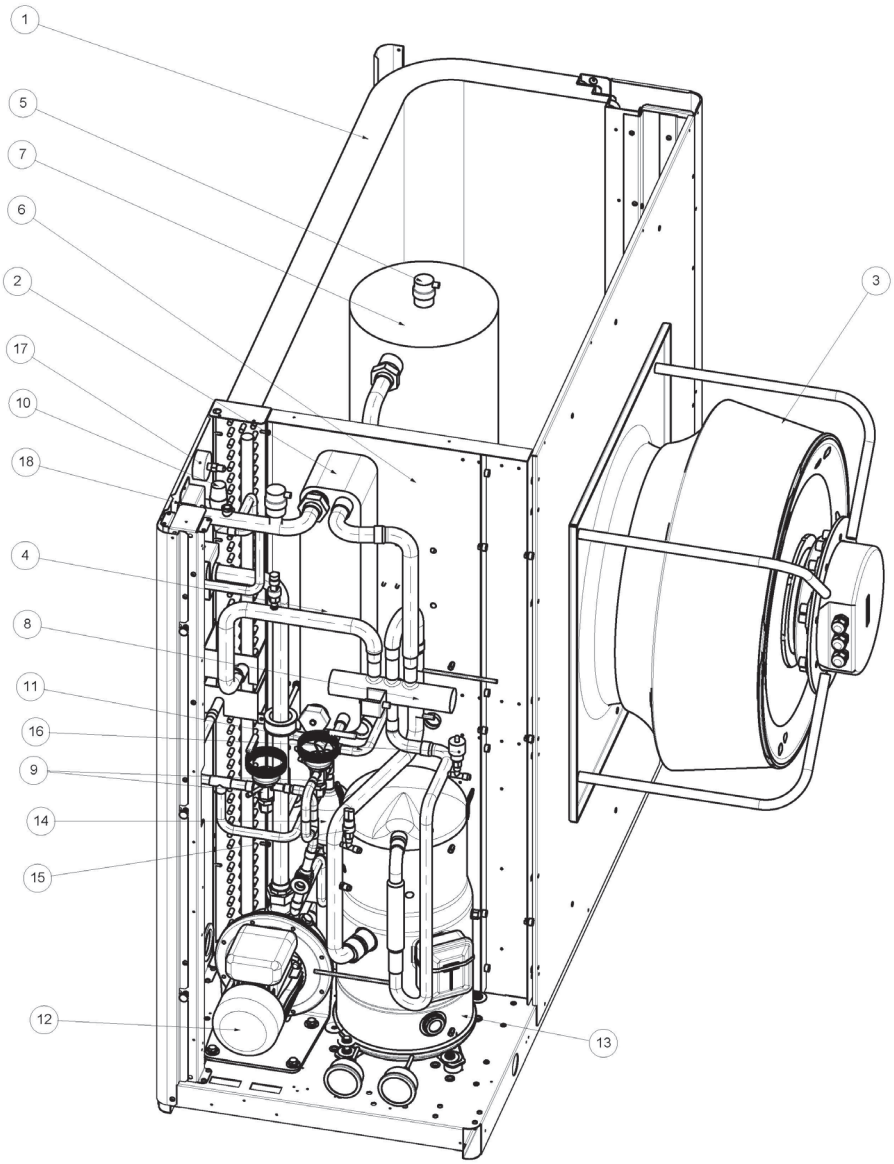
## MPED 10 - 15




| | 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 |

# 3 LAYOUT OF COMPONENTS

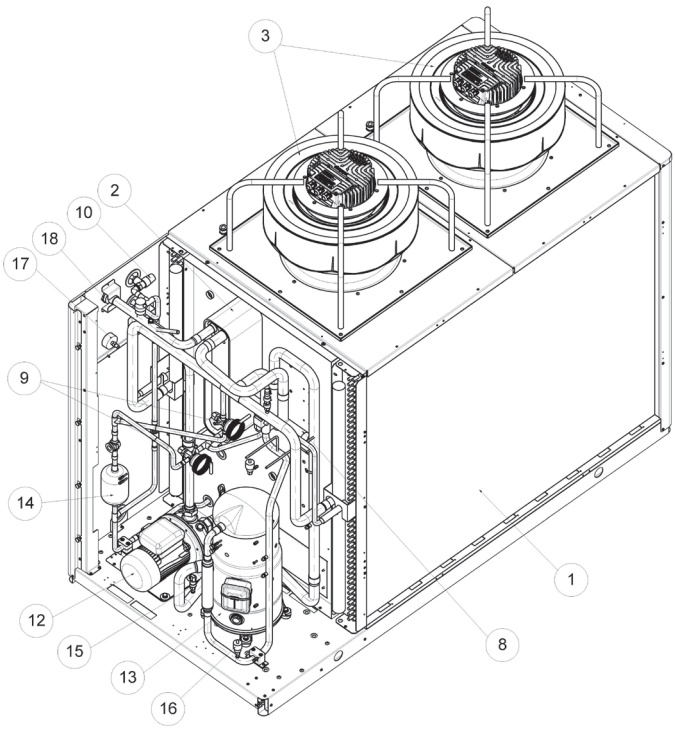
## MPED 18 - 27

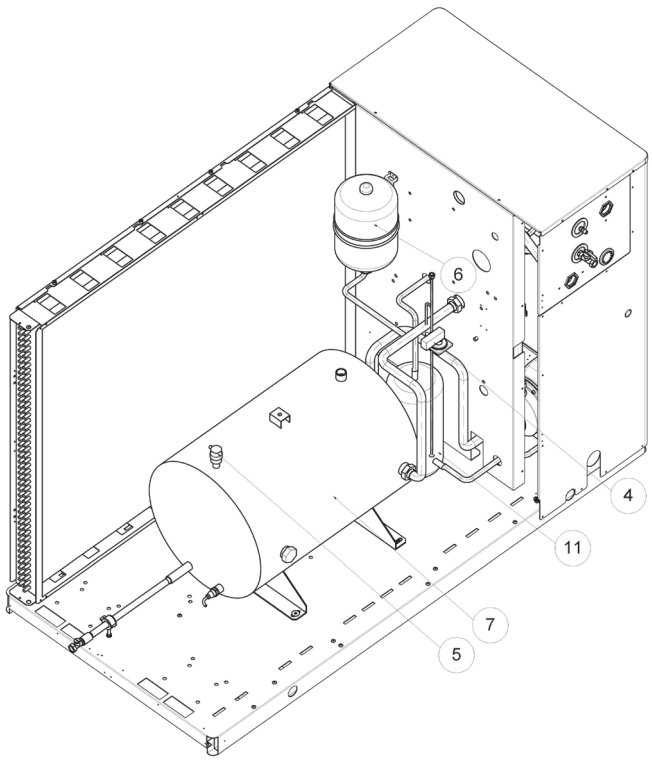



| | DESCRIPTION | | |
|---|---|---|---|
| **1.** | R410A-air heat-exchanger | **11.** | Water safety valve |
| **2.** | R410A-water heat-exchanger | **12.** | Liquid receiver (fan housing) |
| **3.** | Fans | **13.** | Pump |
| **4.** | Water differential pressure switch (fan housing) | **14.** | Compressor |
| **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 |

# 3 LAYOUT OF COMPONENTS

## MPED 28 - 40

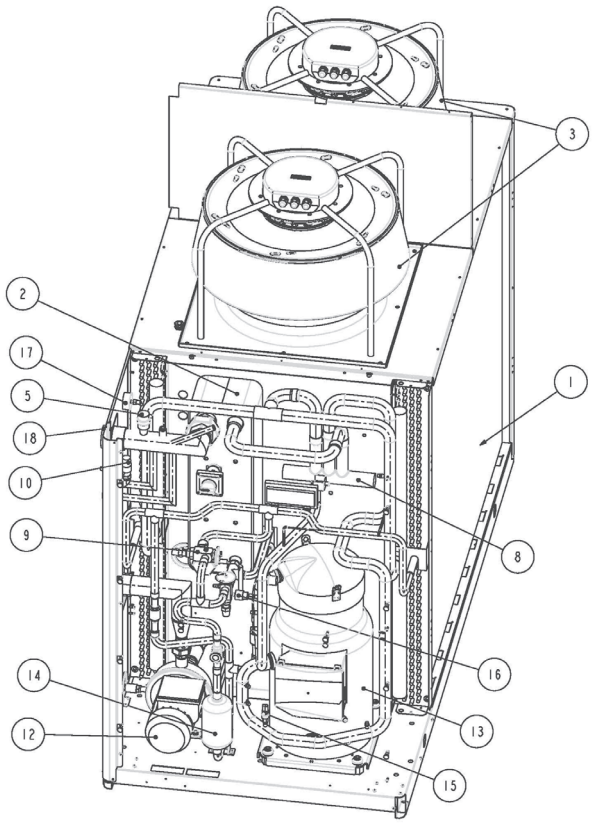


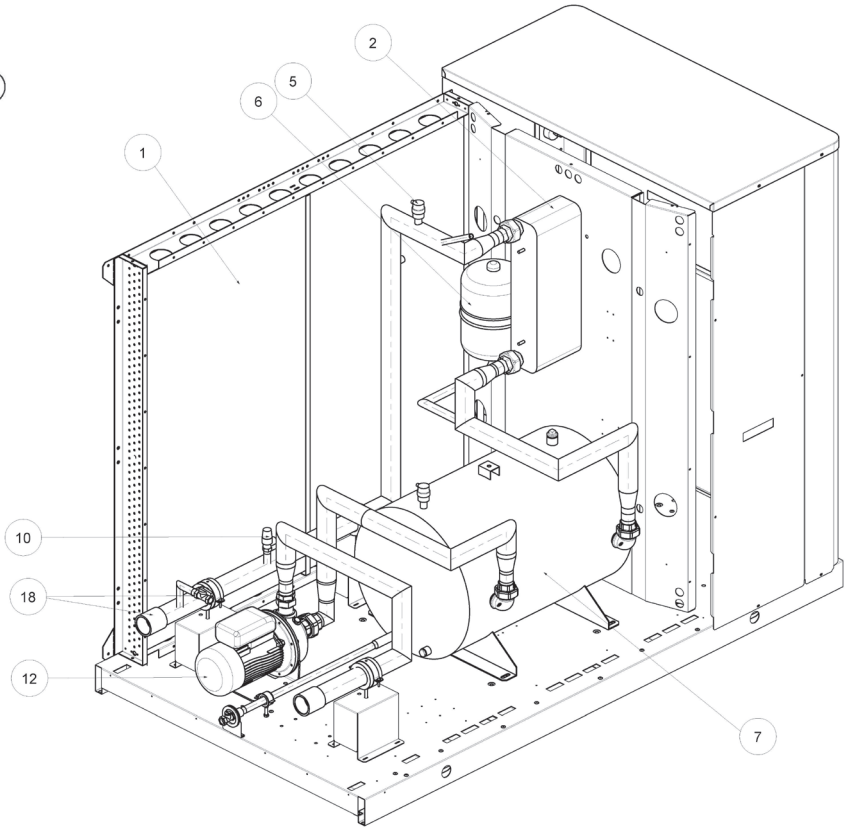




| | DESCRIPTION | | |
|---|---|---|---|
| **1.** | R410A-air heat-exchanger | **11.** | Water safety valve |
| **2.** | R410A-water heat-exchanger | **12.** | Liquid receiver (fan housing) |
| **3.** | Fans | **13.** | Pump |
| **4.** | Water differential pressure switch (fan housing) | **14.** | Compressor |
| **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 |

# 3 LAYOUT OF COMPONENTS

## MPED 54 - 66

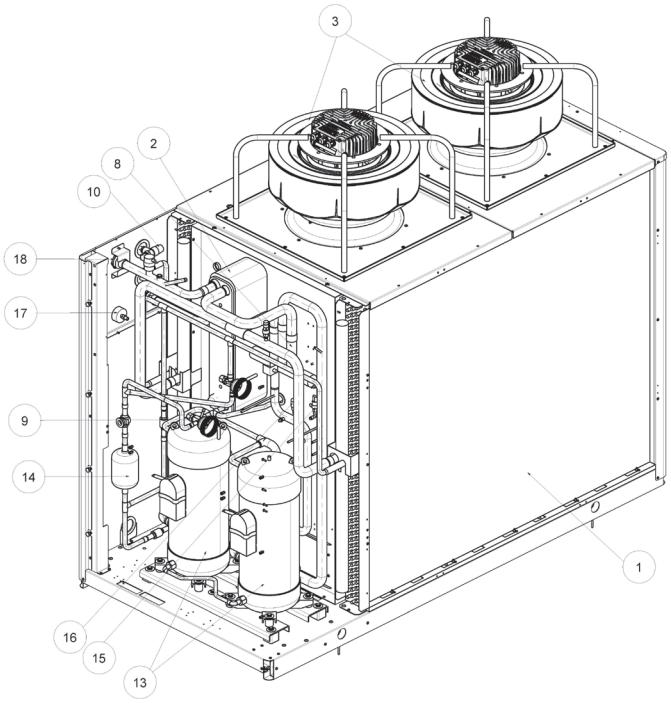


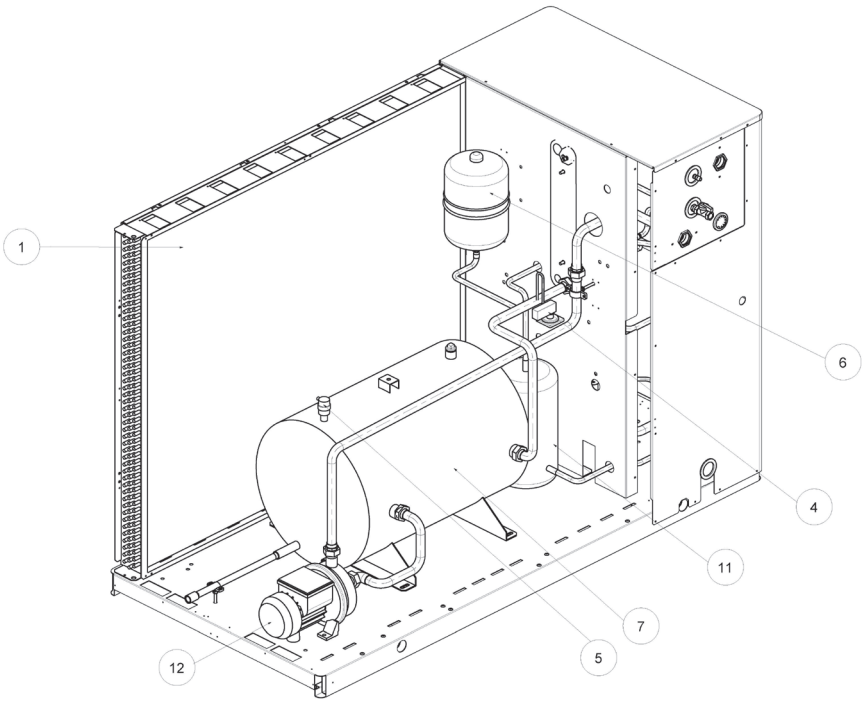




| | DESCRIPTION | | |
|---|---|---|---|
| **1.** | R410A-air heat-exchanger | **11.** | Water safety valve |
| **2.** | R410A-water heat-exchanger | **12.** | Liquid receiver (fan housing) |
| **3.** | Fans | **13.** | Pump |
| **4.** | Water differential pressure switch (fan housing) | **14.** | Compressor |
| **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 |

# 3 LAYOUT OF COMPONENTS

## MPED 30 - 45T

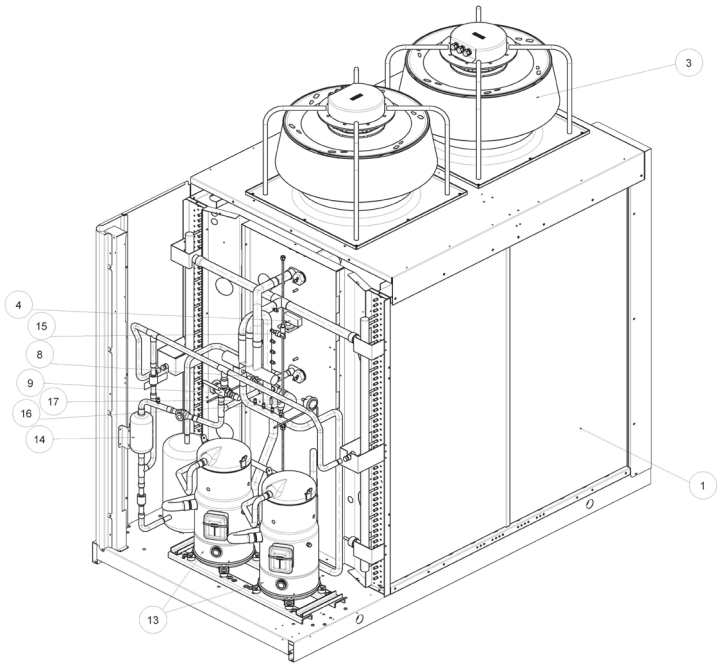


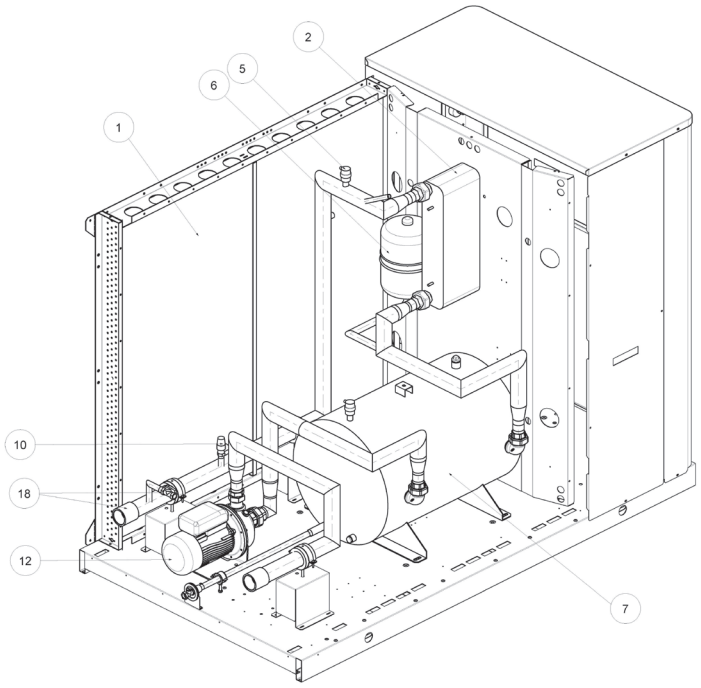




| | DESCRIPTION | | |
|---|---|---|---|
| **1.** | R410A-air heat-exchanger | **11.** | Water safety valve |
| **2.** | R410A-water heat-exchanger | **12.** | Liquid receiver (fan housing) |
| **3.** | Fans | **13.** | Pump |
| **4.** | Water differential pressure switch (fan housing) | **14.** | Compressor |
| **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 |

# 3 LAYOUT OF COMPONENTS

## MPED 54T - 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 |

# 4 MODELS AND CONFIGURATIONS

**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.

**MODELS AND VERSIONS**

The MPED series features 19 models of varying capacity in both heat pump and cooling only versions.
All models are charged with R410A refrigerant.
N.B. The choice of some options may preclude the choice of others or make some other fields become mandatory. Contact Galletti S.p.A. 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) |

# 5 TECHNICAL CHARACTERISTICS

## 5.1 RATED TECHNICAL DATA OF WATER CHILLERS

| 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).

# 5 TECHNICAL CHARACTERISTICS

## 5.1 RATED TECHNICAL DATA OF WATER CHILLERS

| 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 | 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 | 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 | dm³ | 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 | dm³ | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 |
| Expansion tank | dm³ | 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).

# 5 TECHNICAL CHARACTERISTICS

## 5.2 RATED TECHNICAL DATA OF HEAT PUMPS

| 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]

# 5 TECHNICAL CHARACTERISTICS

## 5.2 RATED TECHNICAL DATA OF HEAT PUMPS

| 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]

# 5 TECHNICAL CHARACTERISTICS

## 5.3 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

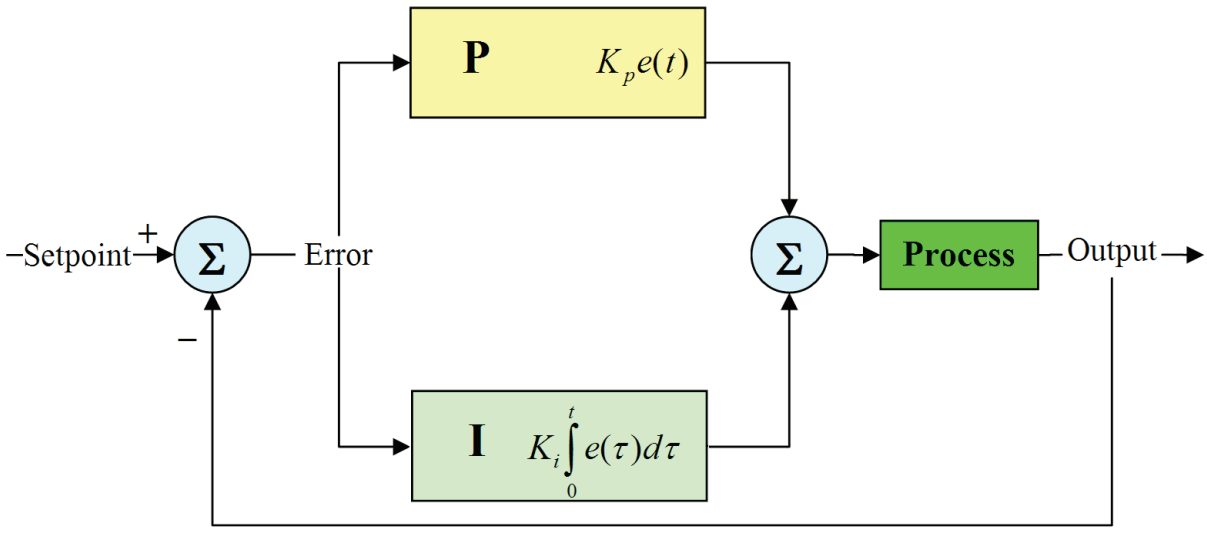
and sets a maximum value for the 0-10V signal of the condensation and evaporation control, which will correspond to the nominal air flow rate.

### 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.

### 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.



## 6 PERFORMANCE

In order to define the performances of MPED subject to conditions different from rated conditions, a computer program for the correct choice of the units is provided by Galletti SpA.

With a few input data it will be possible to get information on the behaviour of a MPED referring to the desired operating conditions.

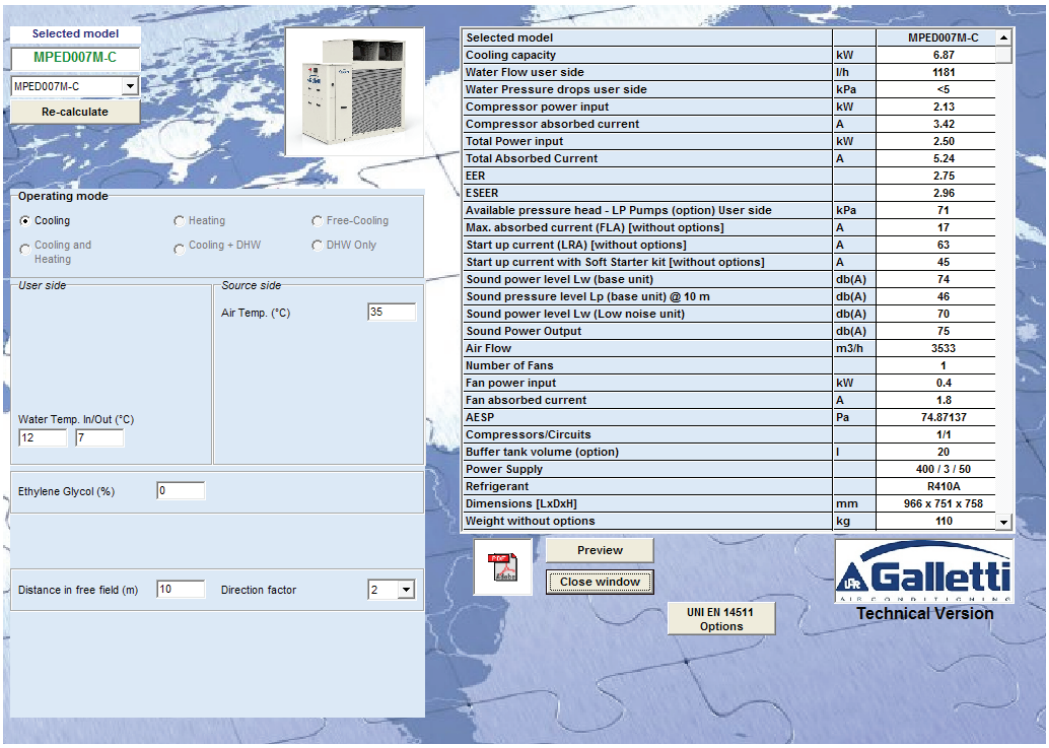
It will be sufficient to enter the following data:
- Inlet air temperature
- Inlet water temperature
- Outlet water temperature
- Ethylene glycol percentage (default 0)
- Directivity factor and distance

Output data
- Cooling / heating capacity
- Water flow rate on user side
- Water pressure drop on user side
- Total power input
- Total Absorbed current
- Compressor Power Input
- Compressor Absorbed current
- EER
- ESEER
- COP
- Pump available head

- Maximum current (FLA)
- Inrush current (LRA)
- Inrush Current with Soft Starter kit
- Sound power level LW
- Sound pressure level Lp

- Air flow rate
- Number of fans
- Fan input power
- Fan input current
- Compressors/Circuits
- Tank Capacity (optional)
- Power supply

The selection report generated by the software includes the drawing with overall dimensions.




| Selected model | | MPED007M-C |
|---|---|---|
| Cooling capacity | kW | 6.87 |
| Water Flow user side | l/h | 1181 |
| Water Pressure drops user side | kPa | <5 |
| Compressor power input | kW | 2.13 |
| Compressor absorbed current | A | 3.42 |
| Total Power input | kW | 2.50 |
| Total Absorbed Current | A | 5.24 |
| EER | | 2.75 |
| ESEER | | 2.96 |
| Available pressure head - LP Pumps (option) User side | kPa | 71 |
| Max. absorbed current (FLA) [without options] | A | 17 |
| Start up current (LRA) [without options] | A | 63 |
| Start up current with Soft Starter kit [without options] | A | 45 |
| Sound power level Lw (base unit) | db(A) | 74 |
| Sound pressure level Lp (base unit) @ 10 m | db(A) | 46 |
| Sound power level Lw (Low noise unit) | db(A) | 70 |
| Sound Power Output | db(A) | 75 |
| Air Flow | m3/h | 3533 |
| Number of Fans | | 1 |
| Fan power input | kW | 0.4 |
| Fan absorbed current | A | 1.8 |
| AESP | Pa | 74.87137 |
| Compressors/Circuits | | 1/1 |
| Buffer tank volume (option) | l | 20 |
| Power Supply | | 400 / 3 / 50 |
| Refrigerant | | R410A |
| Dimensions [LxDxH] | mm | 966 x 751 x 758 |
| Weight without options | kg | 110 |

### 6.4 INTEGRATED CAPACITIES

In the heat pump operation (heating mode), the actual heating capacities of units may be lower than the values shown in the table, due to defrosting cycles. To obtain the actual heating capacity, multiply the capacity values by the corrective coefficients given below.

| Control | Air temperature- dry bulb (°C) | | | |
|---|---|---|---|---|
| | -5 | 0 | 5 | >5 |
| mchiller2 | 0,89 | 0,88 | 0,94 | 1 |
| PCO XS | 0,91 | 0,9 | 0,94 | 1 |

## 7 SOUND LEVEL

**LEGEND**

**LpA** Total sound pressure level, weighted A, measured in an open field, at a distance of 10 m, with a directivity factor of 2.
**Lw** Sound power level by octave band, not weighted
**LwA** Total sound power level, weighted A

| Model | Lw | | | | | | | Lw A | | Lp A | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Total | Low-noise version | Total | Low-noise version |
| | dB | dB | dB | dB | dB | dB | dB | dB (A) | dB (A) | dB (A) | dB (A) |
| MPED 007 M | 59,2 | 65,2 | 67,7 | 69,0 | 66,3 | 67,4 | 58,2 | 75 | 73 | 47 | 45 |
| MPED 008 M | 57,8 | 63,9 | 66,4 | 67,7 | 64,9 | 66,0 | 56,8 | 73 | 71 | 45 | 43 |
| MPED 008 | 57,8 | 63,9 | 66,4 | 67,7 | 64,9 | 66,0 | 56,8 | 73 | 71 | 45 | 43 |
| MPED 010 M | 71,0 | 77,0 | 79,5 | 80,8 | 78,0 | 79,1 | 69,9 | 86 | 84 | 58 | 56 |
| MPED 010 | 71,0 | 77,0 | 79,5 | 80,8 | 78,0 | 79,1 | 69,9 | 86 | 84 | 58 | 56 |
| MPED 013 | 69,6 | 75,6 | 78,1 | 79,4 | 76,6 | 77,7 | 68,5 | 85 | 83 | 57 | 55 |
| MPED 015 | 69,6 | 75,6 | 78,1 | 79,4 | 76,6 | 77,7 | 68,5 | 85 | 83 | 57 | 55 |
| MPED 018 | 72,8 | 78,8 | 81,3 | 82,6 | 79,8 | 80,9 | 71,7 | 88 | 86 | 60 | 58 |
| MPED 020 | 72,8 | 78,8 | 81,3 | 82,6 | 79,8 | 80,9 | 71,7 | 88 | 86 | 60 | 58 |
| MPED 024 | 70,6 | 76,6 | 79,1 | 80,4 | 77,6 | 78,7 | 69,5 | 86 | 84 | 58 | 56 |
| MPED 027 | 67,9 | 73,9 | 76,5 | 77,8 | 75,0 | 76,1 | 66,9 | 83 | 81 | 55 | 53 |
| MPED 028 | 72,3 | 78,3 | 80,9 | 82,1 | 79,4 | 80,5 | 71,3 | 88 | 86 | 60 | 58 |
| MPED 032 | 72,3 | 78,3 | 80,9 | 82,1 | 79,4 | 80,5 | 71,3 | 88 | 86 | 60 | 58 |
| MPED 035 | 72,3 | 78,3 | 80,9 | 82,2 | 79,4 | 80,5 | 71,3 | 88 | 86 | 60 | 58 |
| MPED 040 | 72,3 | 78,3 | 80,8 | 82,1 | 79,4 | 80,5 | 71,3 | 88 | 86 | 60 | 58 |
| MPED 054 | 69,9 | 75,9 | 78,5 | 79,8 | 77,0 | 78,1 | 68,9 | 85 | 83 | 57 | 55 |
| MPED 066 | 69,9 | 75,9 | 78,5 | 79,8 | 77,0 | 78,1 | 68,9 | 85 | 83 | 57 | 55 |
| MPED 030 T | 75,2 | 81,2 | 83,7 | 85,0 | 82,2 | 83,4 | 74,1 | 91 | 89 | 63 | 61 |
| MPED 034 T | 75,2 | 81,2 | 83,7 | 85,0 | 82,2 | 83,4 | 74,1 | 91 | 89 | 63 | 61 |
| MPED 040 T | 74,5 | 80,5 | 83,0 | 84,3 | 81,5 | 82,7 | 73,4 | 90 | 88 | 62 | 60 |
| MPED 045 T | 74,5 | 80,5 | 83,0 | 84,3 | 81,5 | 82,7 | 73,4 | 90 | 88 | 62 | 60 |
| MPED 054 T | 71,1 | 77,1 | 79,7 | 81,0 | 78,2 | 79,3 | 70,1 | 86 | 84 | 58 | 56 |
| MPED 061 T | 71,1 | 77,1 | 79,7 | 81,0 | 78,2 | 79,3 | 70,1 | 86 | 84 | 58 | 56 |
| MPED 069 T | 70,7 | 76,7 | 79,2 | 80,5 | 77,7 | 78,9 | 69,7 | 86 | 84 | 58 | 56 |
| MPED 076 T | 72,1 | 78,1 | 80,7 | 81,9 | 79,2 | 80,3 | 71,1 | 87 | 85 | 59 | 57 |

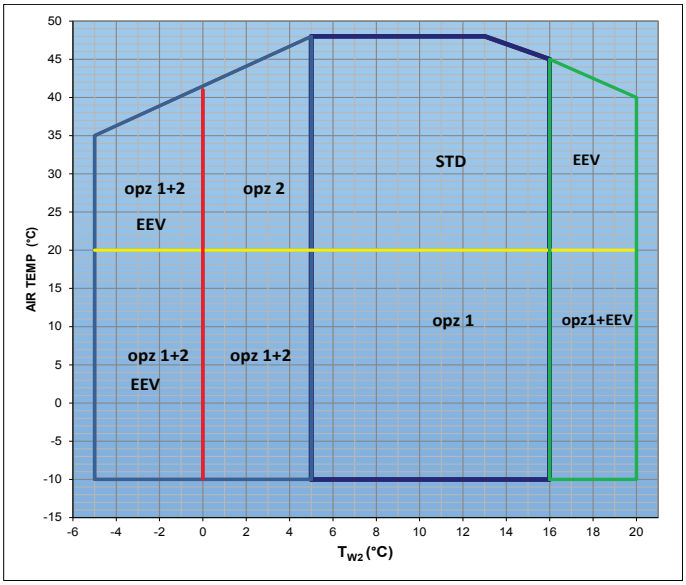
# 8 OPERATING LIMITS

The graphs below illustrate the operating limits of **MPED** (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 | 50 [2] |
| Thermal differential of water (°C) | 3 | 8 | 3 | 8 |
| Outdoor air temperature (°C) | 15 [3] | 45 | -5 | 20 |

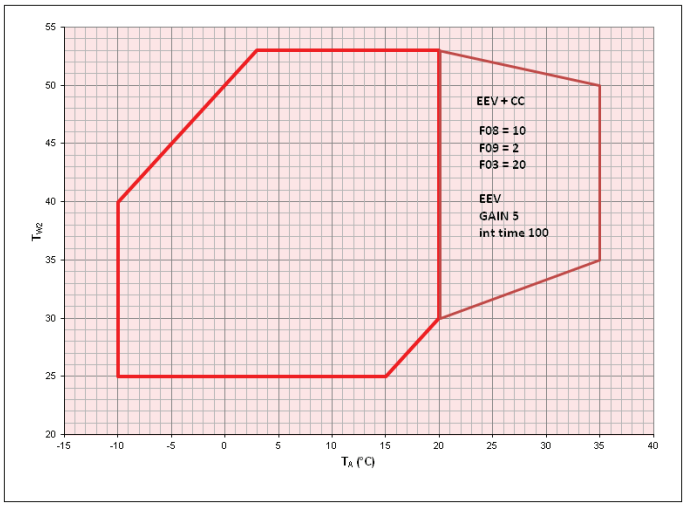
1. For transitory periods (e.g. equipment start up) values up to 25 °C are allowed
2. Value that may be reached only for outdoor air temperatures exceeding 0°C.
3. With condensation control: outdoor air T min - 10°C

**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.




## 8.1 OPERATING LIMITS IN CHILLER MODE

**TBS1** Outdoor temperature (dry bulb)
**Tw2** Water outlet temperature
**OPZ 1** Condensation control
**OPZ 2** Glycol + low temperature option
**OPZ 1+2** Condensation control + glycol + low temperature option
**EEV** Electronic valve
**STD** Standard




## 8.2 OPERATING LIMITS IN HEAT PUMP MODE

**RH** Relative humidity of outdoor air
**Tbs1** Outdoor temperature (dry bulb)
**Tw2** Water outlet 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.

## 8.3 THERMAL CARRIER FLUID

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

# 9 CALCULATION FACTORS

## 9.1 CHANGE IN OPERATING PARAMETERS WITH DT OTHER THAN 5°C

After identifying the unit's performance in the terms of the desired outlet water temperature, correct the value by multiplying it by the following corrective coefficients.

| $\Delta T_W$ | $C_{PF/PT}$ | $C_{PA}$ | $C_{Qw}$ | $C_{\Delta pw1}$ |
|---|---|---|---|---|
| 3 | 0,975 | 1 | 1,63 | 2,64 |
| 4 | 0,99 | 1 | 1,24 | 1,53 |
| 5 | 1 | 1 | 1 | 1 |
| 6 | 1,015 | 1 | 0,85 | 0,72 |
| 7 | 1,03 | 1 | 0,74 | 0,54 |
| 8 | 1,04 | 1 | 0,65 | 0,42 |

$\Delta T_W$ Difference between water inlet temperature and water outlet temperature
$C_{PF/PT}$ Corrective coefficient of cooling/heating capacity
$C_{PA}$ Correction coefficient of electrical input
$C_{Qw}$ Correction coefficient of water flow rate
$C_{\Delta pw1}$ Correction coefficient of pressure drop

## 9.2 WATER AND GLYCOL MIXTURE

Based on the minimum outlet water temperature, you can derive the percentage of ethylene glycol and the corrective coefficient using the table below.

| PERCENTAGE OF ETHYLENE GLYCOL | 0% | 10% | 20% | 30% | 40% |
|---|---|---|---|---|---|
| Minimum temp. of water produced | 5°C | 2°C | -5°C | -10°C | -15°C |
| Mixture freezing temp. (°C) | 0°C | -4°C | -14°C | -18°C | -24°C |
| Capacity correction factor | 1,000 | 0,998 | 0,994 | 0,989 | 0,983 |
| Water flow rate correction factor | 1,000 | 1,047 | 1,094 | 1,140 | 1,199 |
| Pressure drop correction factor | 1,000 | 1,157 | 1,352 | 1,585 | 1,860 |

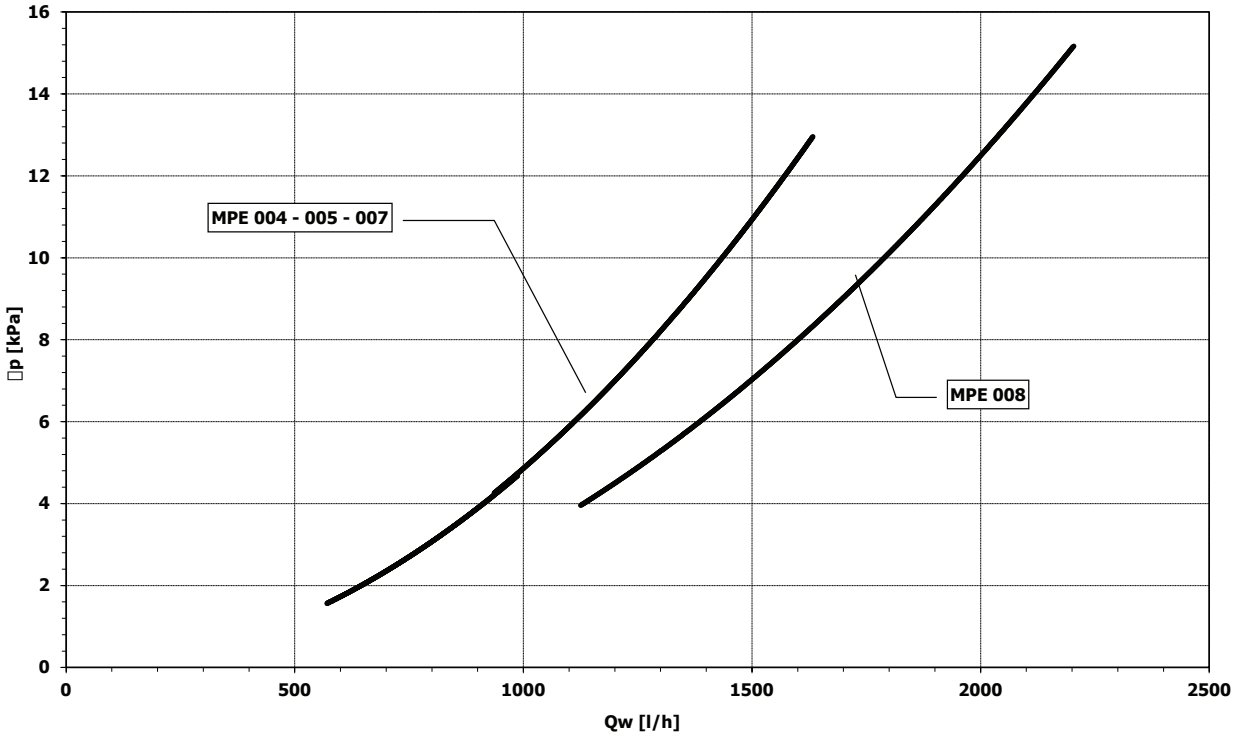
**Warning** ⚠ The use of propylene glycol is not admitted with standard pumps. For further information, contact the manufacturer.

# 10 PRESSURE DROPS

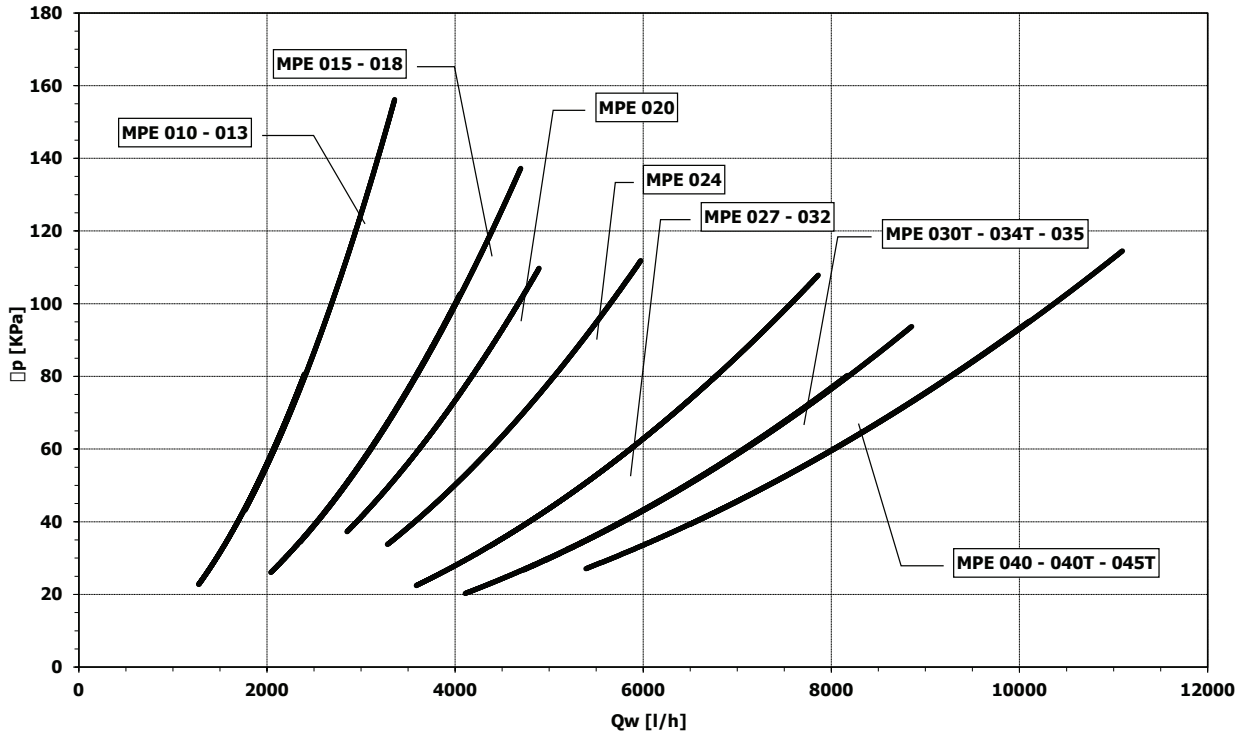
## 10.1 PRESSURE DROPS ON THE WATER SIDE

The diagram shows the evaporator pressure drops (**Δp**) as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C.

### MPED 07 ÷ 08



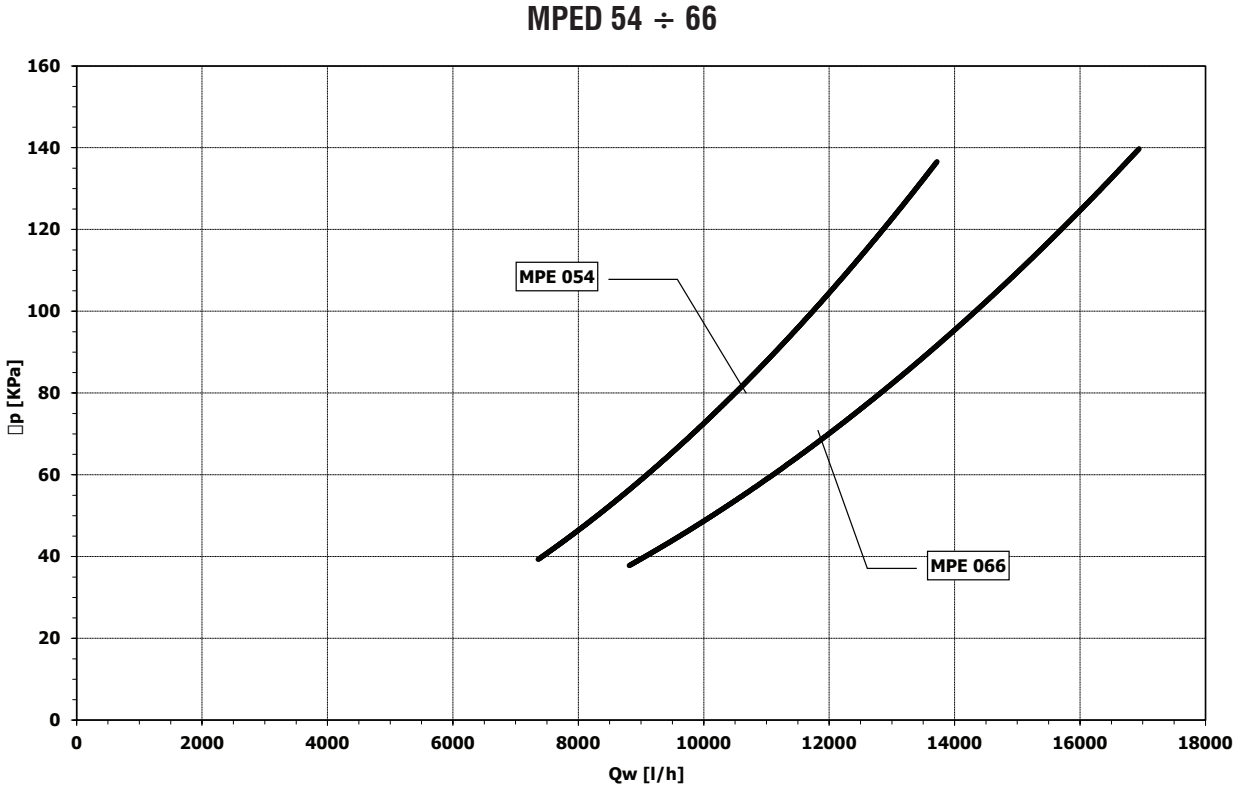

### MPED 10 ÷ 45 T



# 10 PRESSURE DROPS

## 10.1 PRESSURE DROPS ON THE WATER SIDE

The diagram shows the evaporator pressure drops (Δ**p**) as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C.

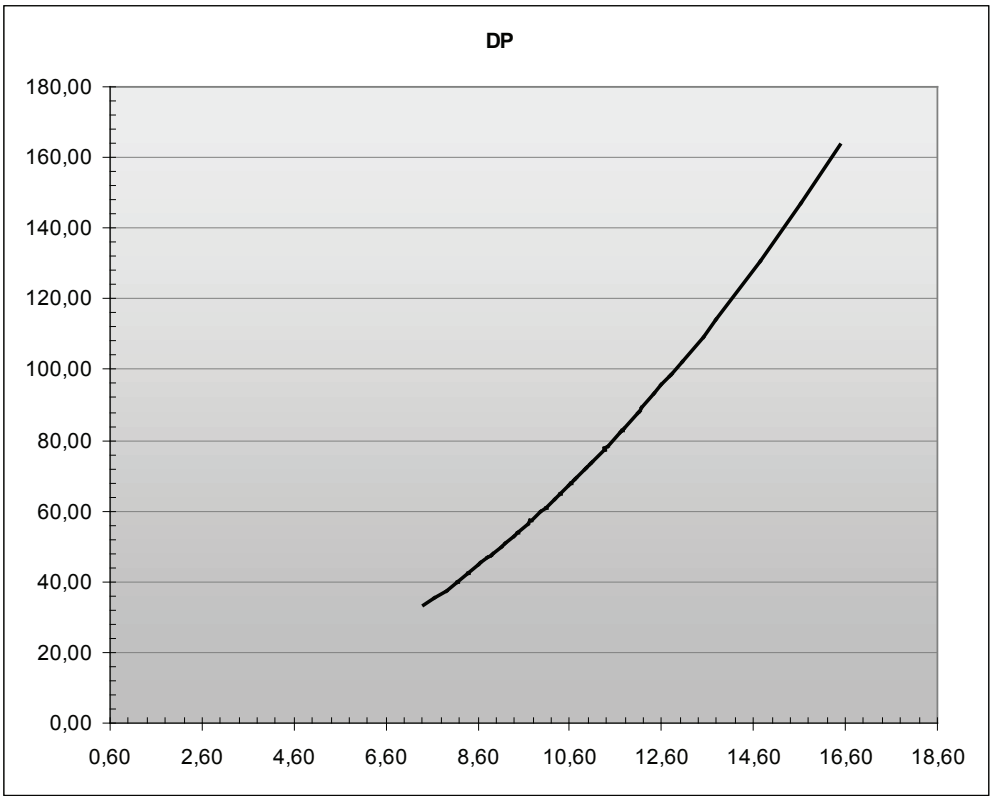


# 10 PRESSURE DROPS

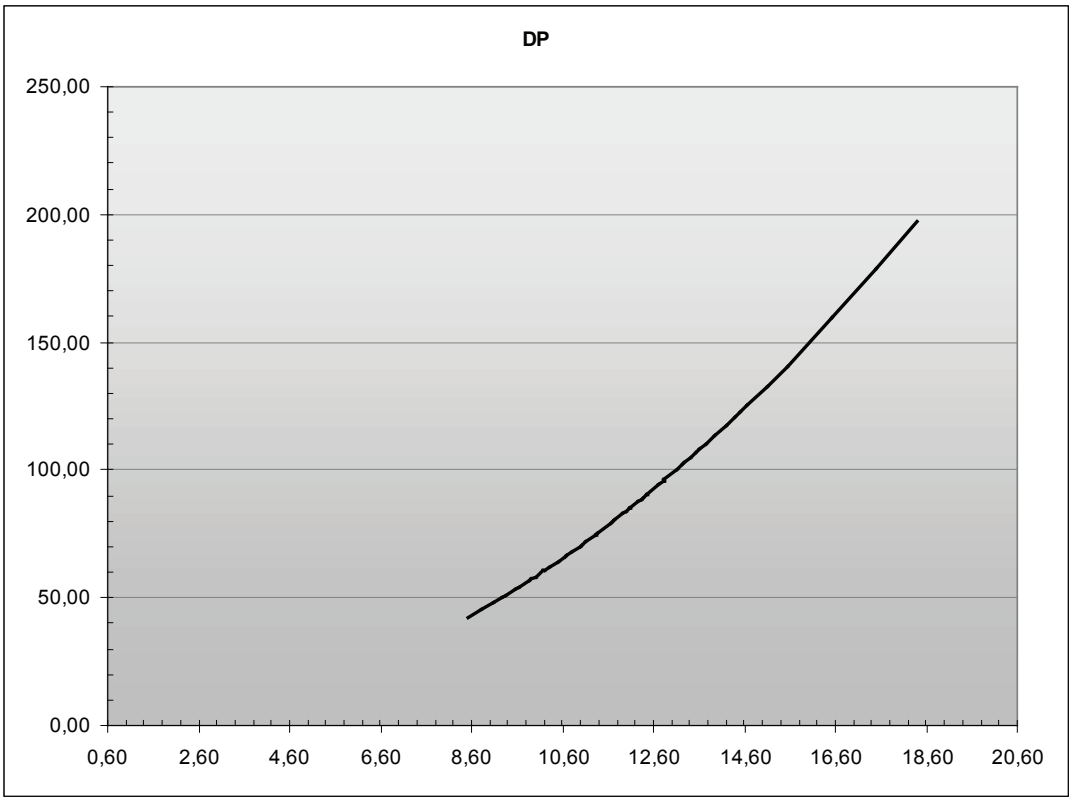
## 10.1 PRESSURE DROPS ON THE WATER SIDE

The diagram shows the evaporator pressure drops (**Δp**) as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C.

### MPED 54 TT




### MPED 61 T

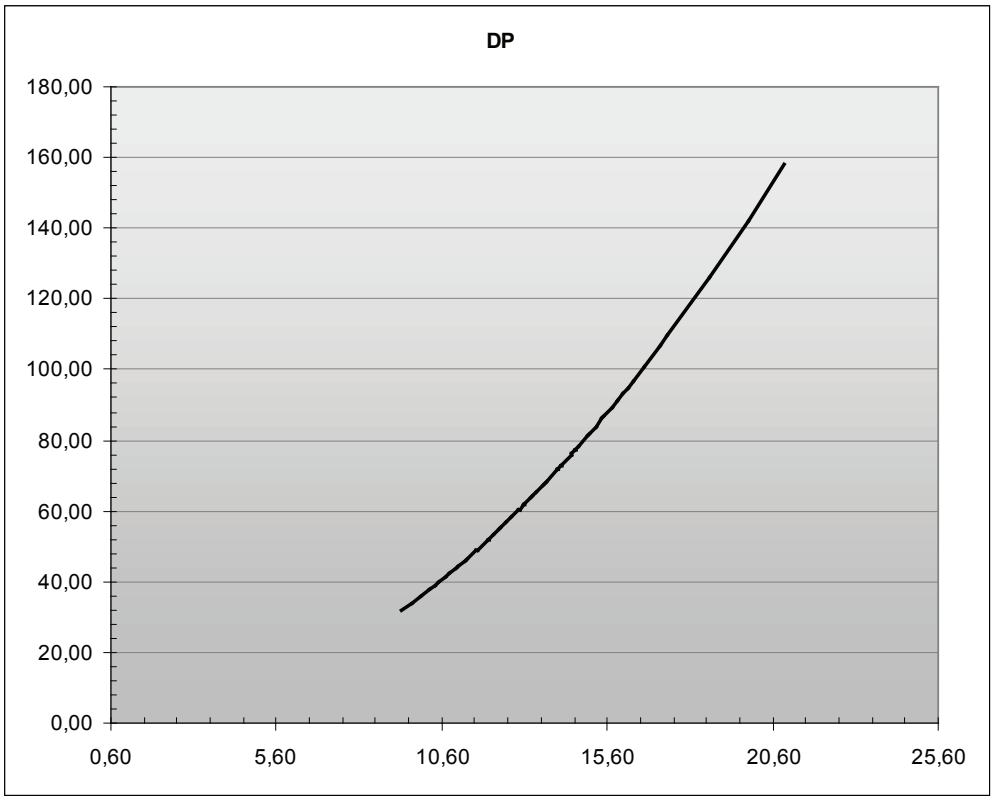


# 10 PRESSURE DROPS

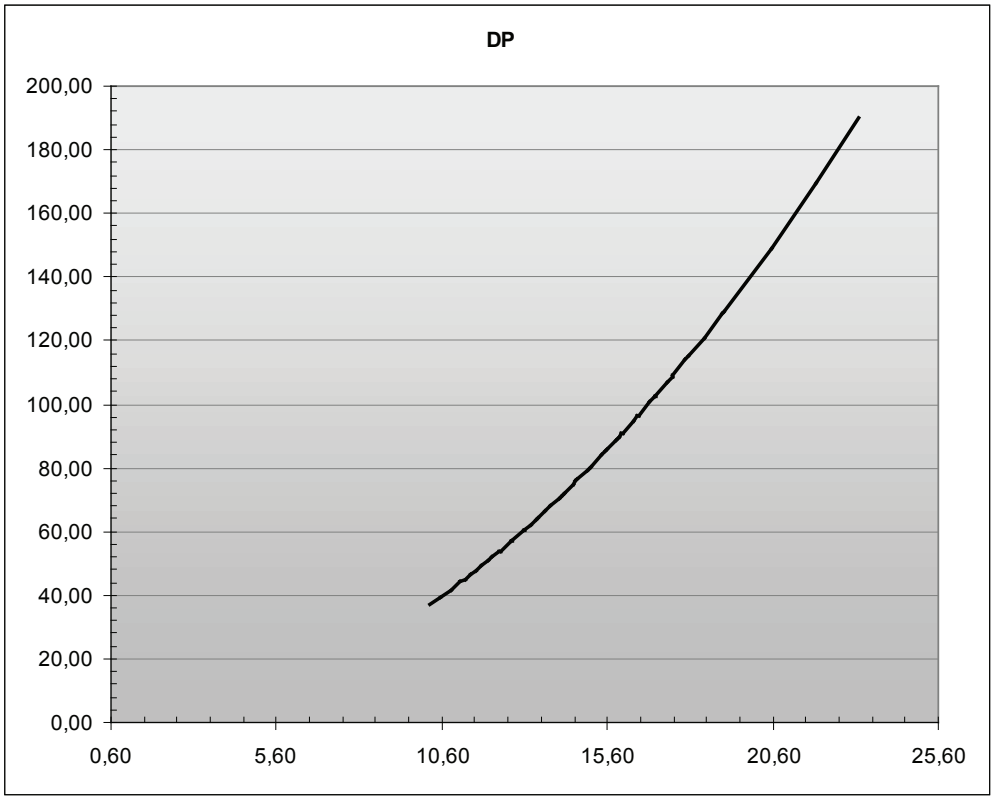
## 10.1 PRESSURE DROPS ON THE WATER SIDE

The diagram shows the evaporator pressure drops (Δ**p**) as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C.

**MPED 69 T**




**MPED 76 T**

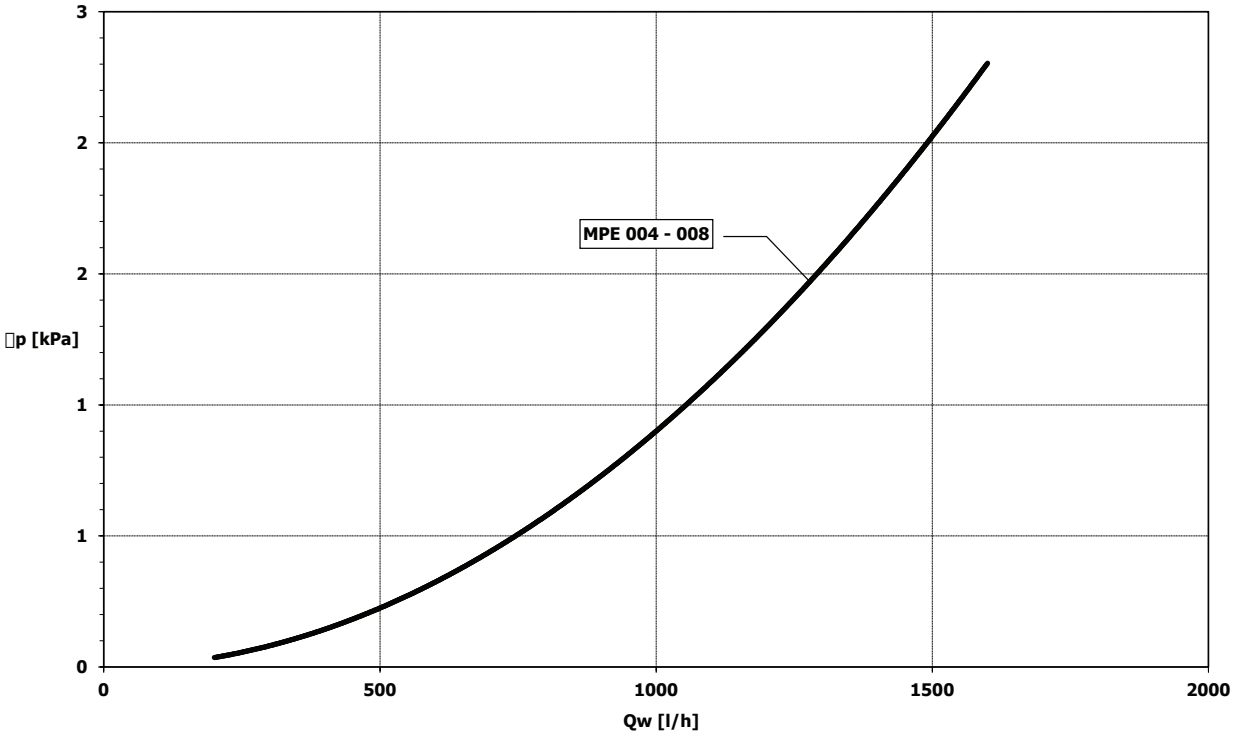


# 10 PRESSURE DROPS

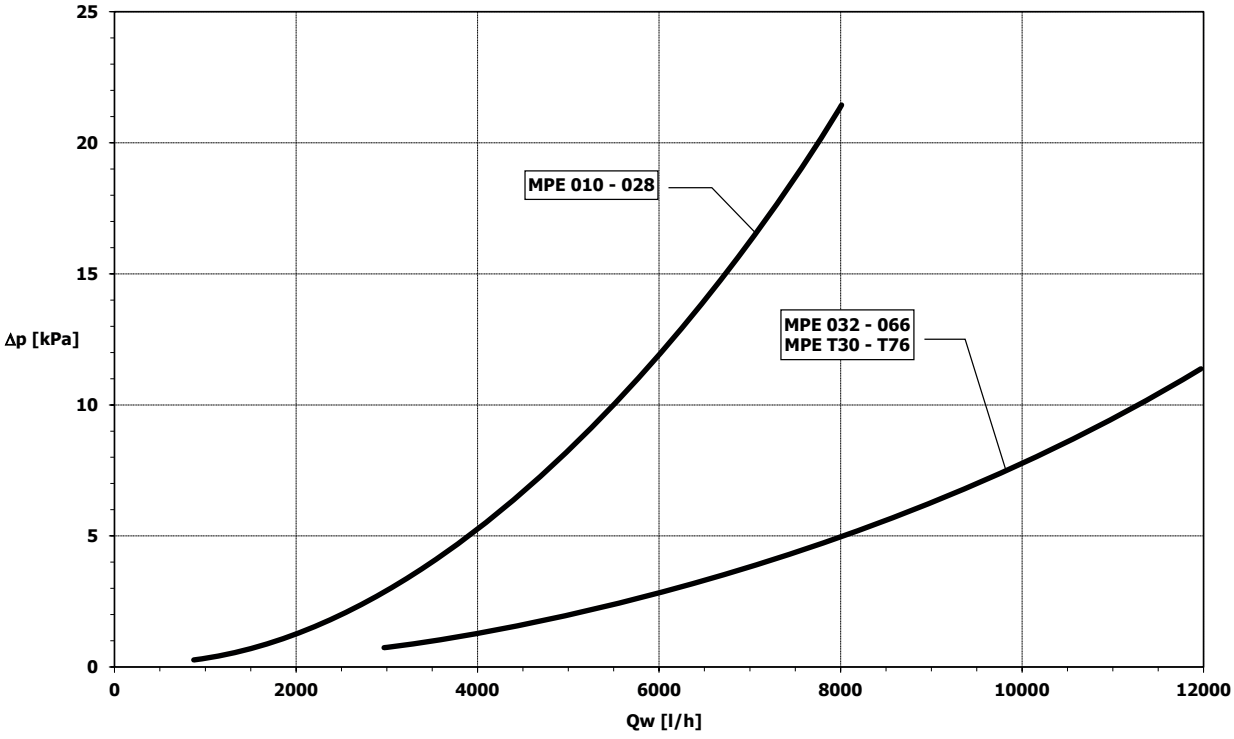
## 10.2 PRESSURE DROPS OF Y FILTER

The diagram shows the Y filter pressure drops (**Δp**) as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C.

### MPED 07 ÷ 08



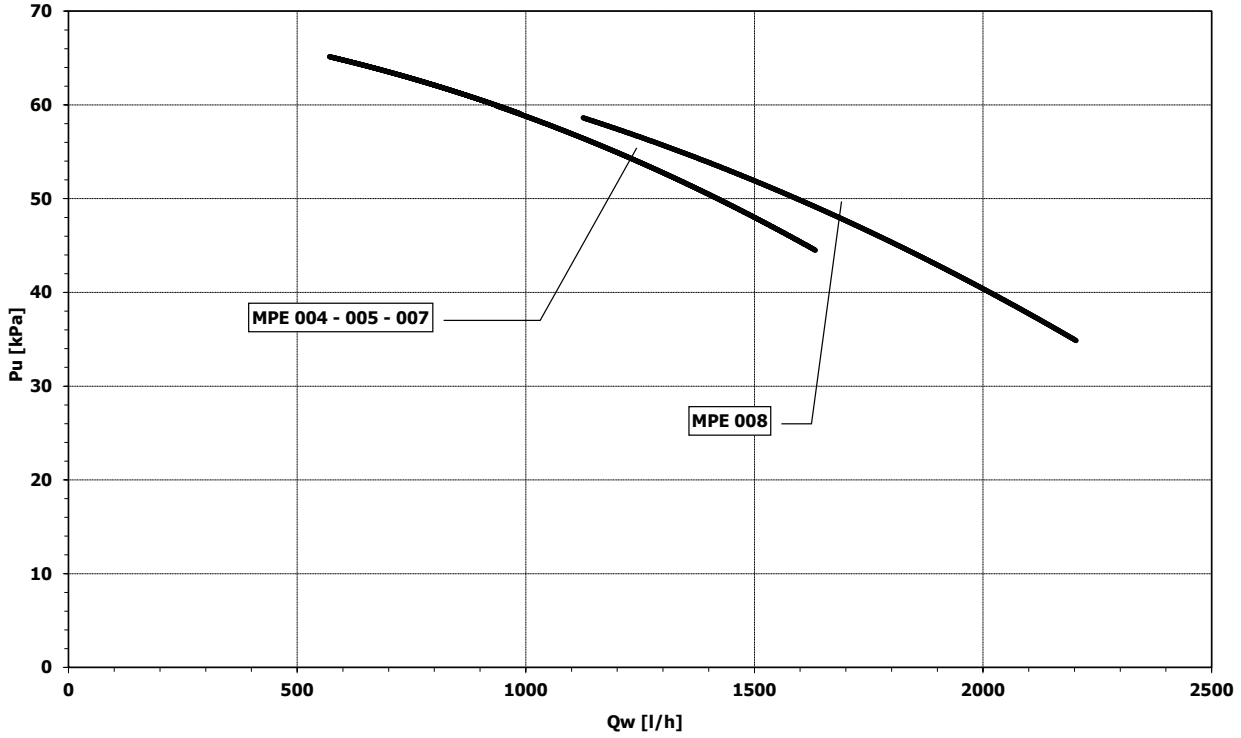

### MPED 10 ÷ 66 - MPED 30 ÷ 45 T



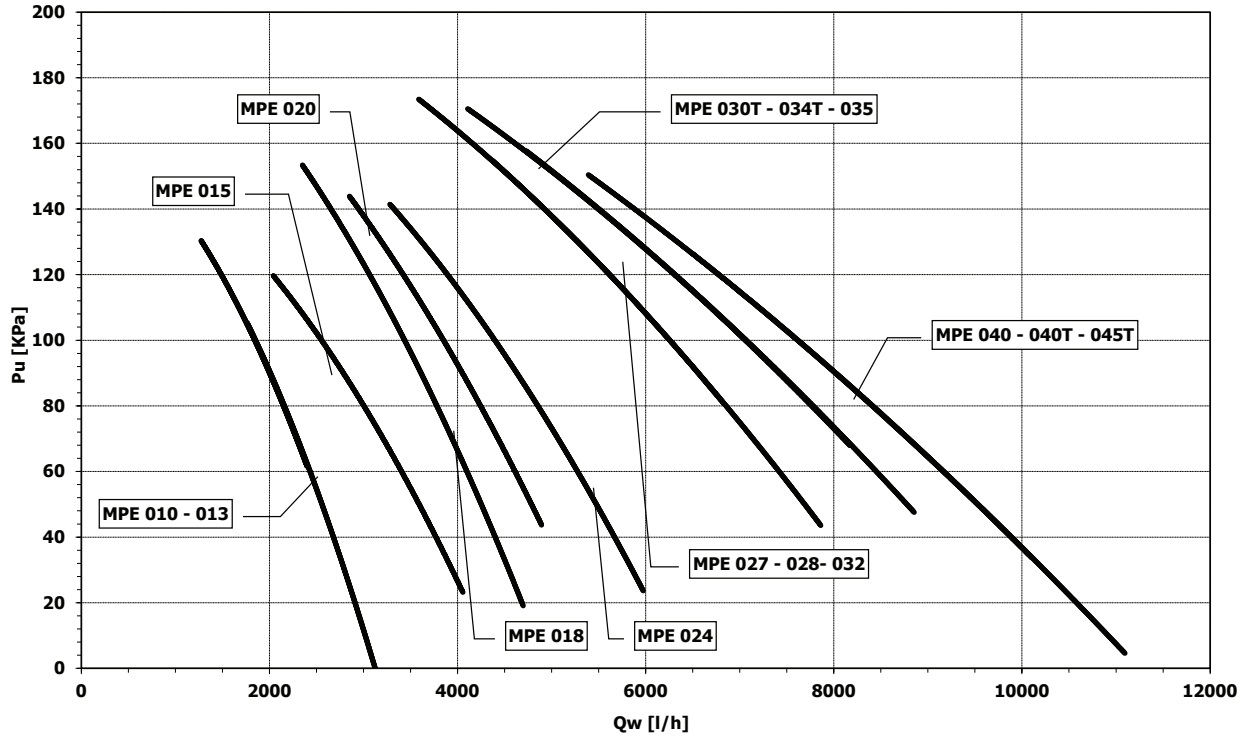
## 11 AVAILABLE HEAD OF THE UNIT

The diagram below shows the available head (**Pu**) of the unit as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C, net of pressure drops. Pressure drops of the Y filter are not counted.

**MPED 07 ÷ 08**

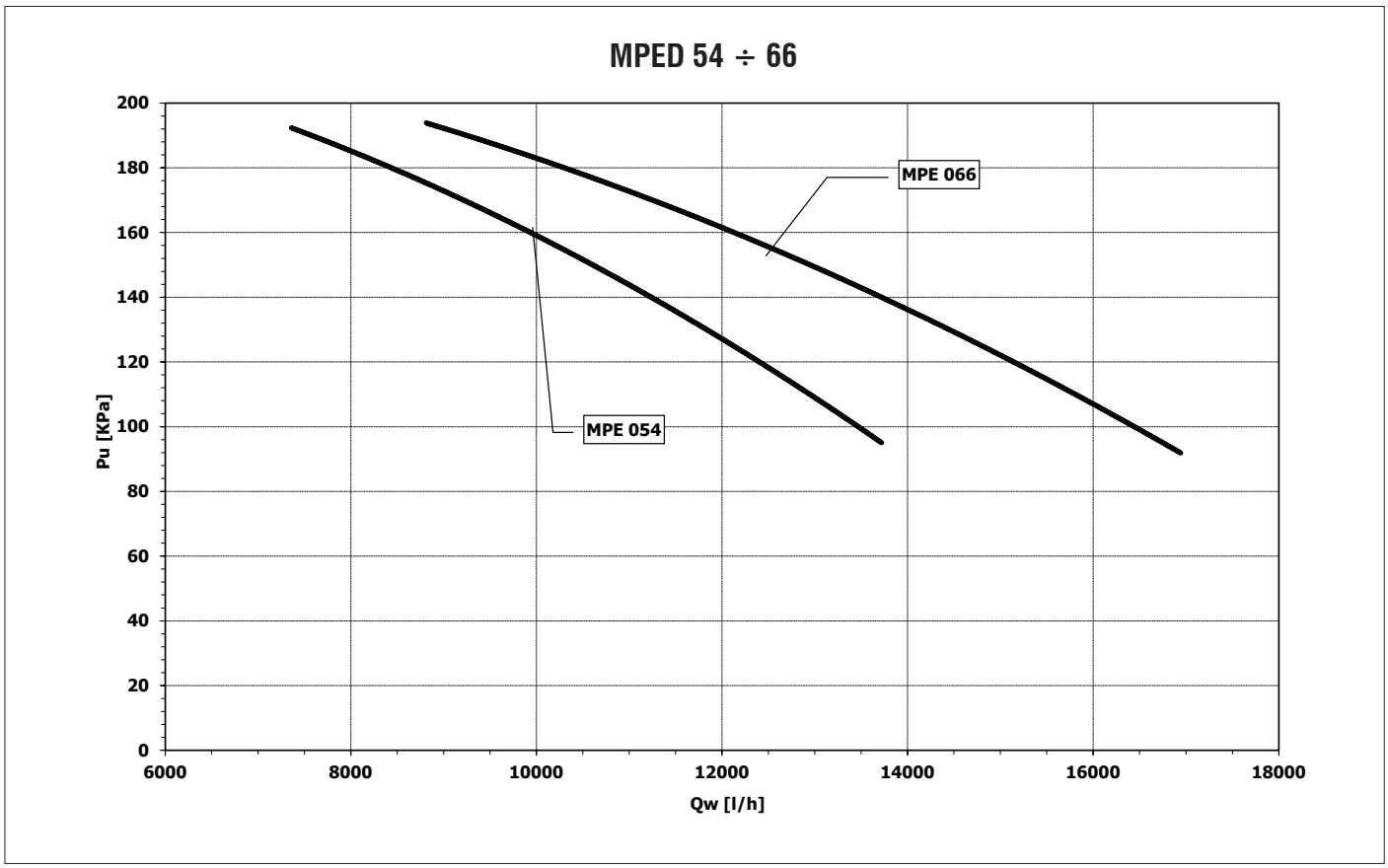


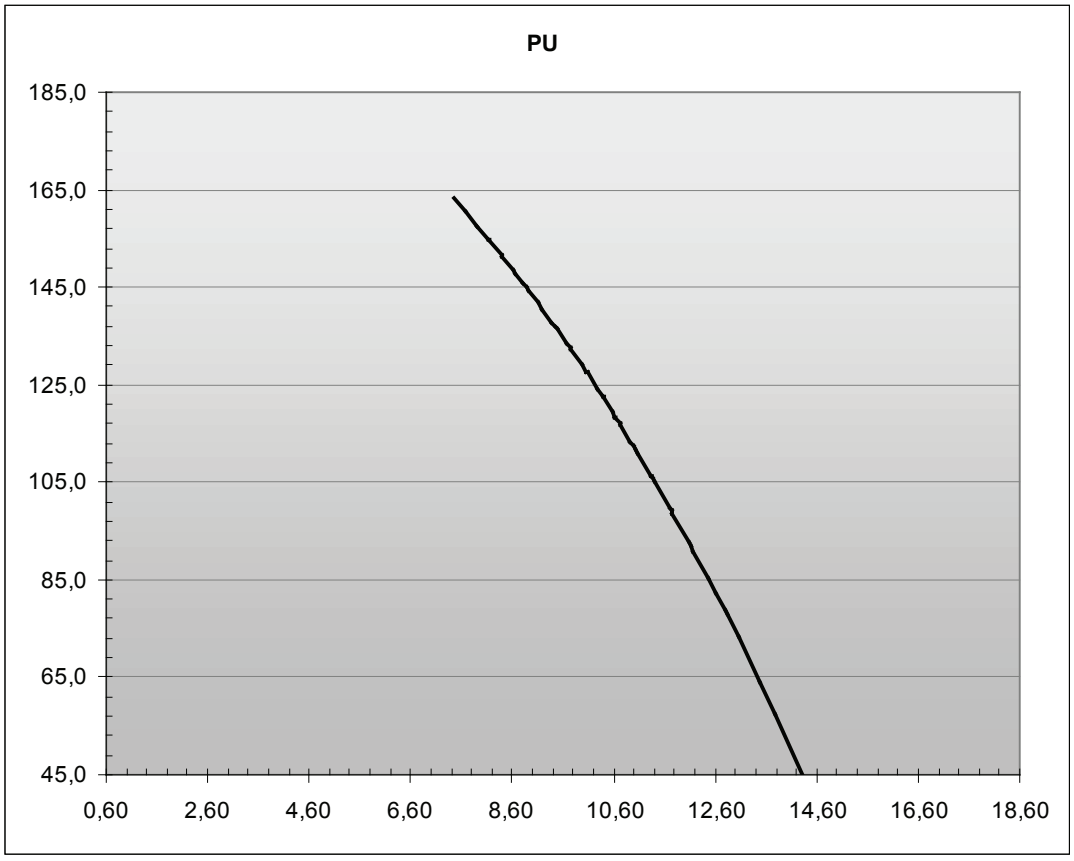

**MPED 10 ÷ 45 T**



## 11 AVAILABLE HEAD OF THE UNIT

The diagram below shows the available head (**Pu**) of the unit as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C, net of pressure drops. Pressure drops of the Y filter are not counted.

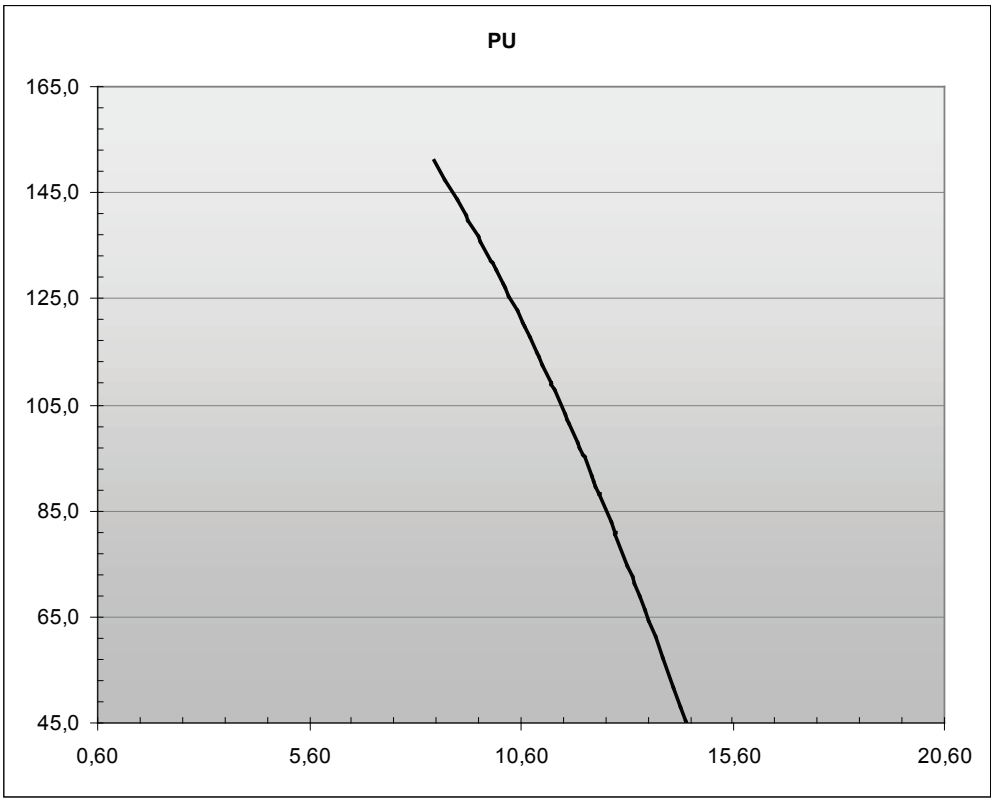


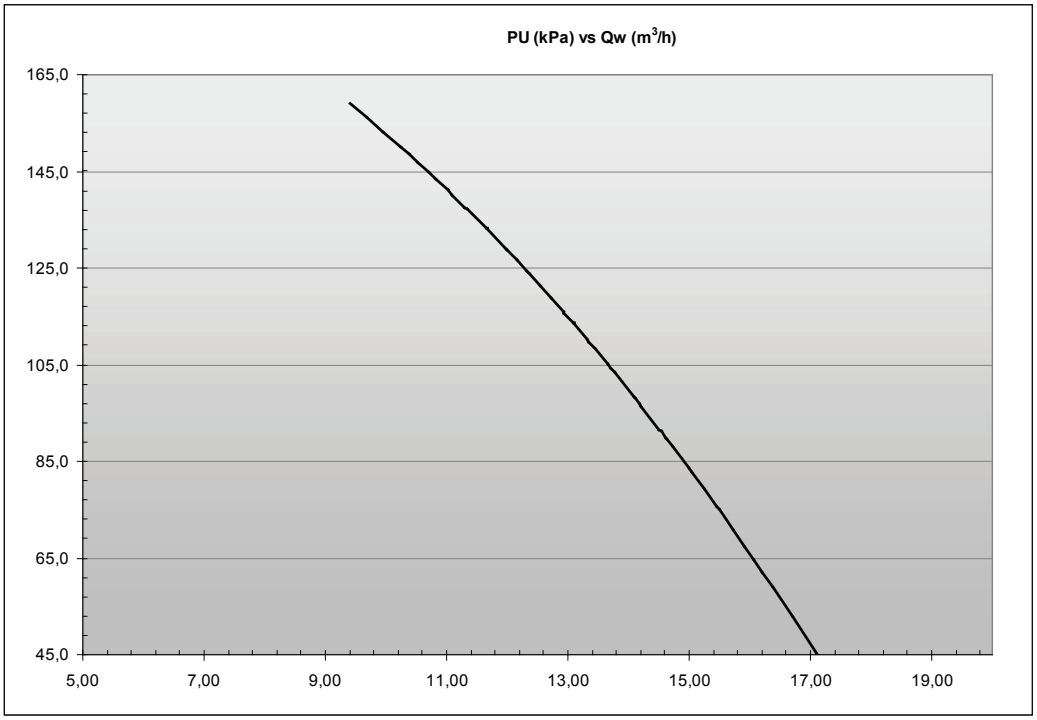
## 11 AVAILABLE HEAD OF THE UNIT

The diagram below shows the available head (**Pu**) of the unit as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C, net of pressure drops. Pressure drops of the Y filter are not counted.

### MPED 61 T



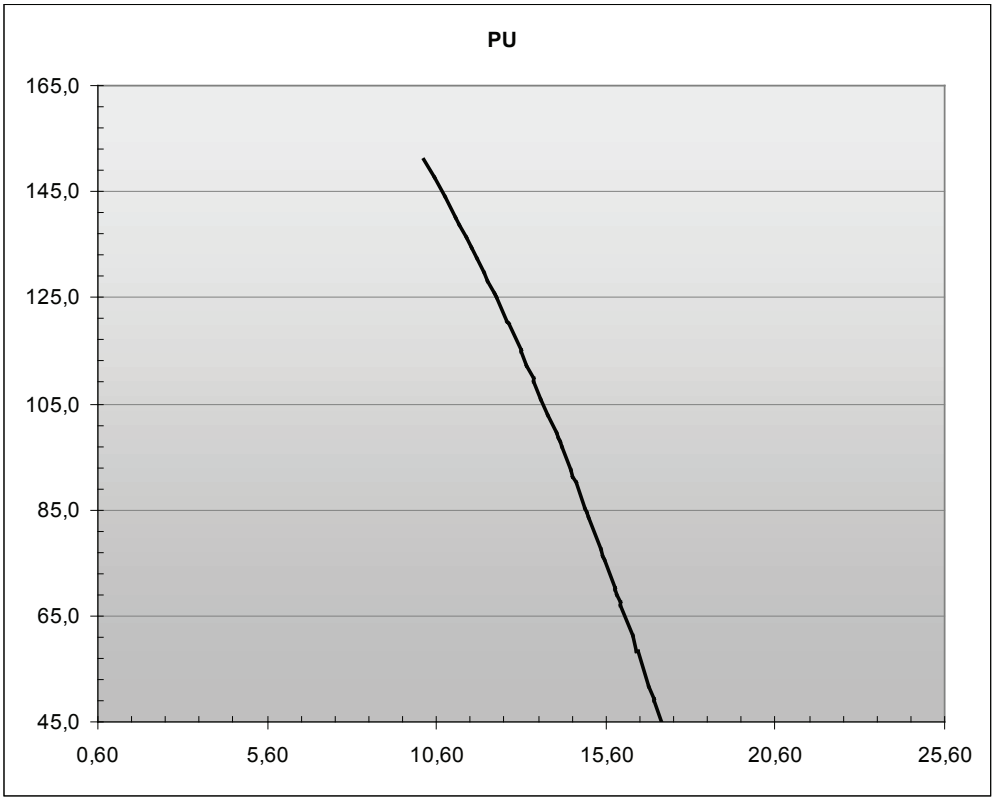

### MPED 69 T



## 11 AVAILABLE HEAD OF THE UNIT

The diagram below shows the available head (**Pu**) of the unit as a function of the water flow rate (**Qw**), assuming an average water temperature of 10°C, net of pressure drops. Pressure drops of the Y filter are not counted.

**MPED 76 T**



# 12 WATER CIRCUIT

When setting up the water circuit of the unit, it is advisable to follow the directions below and in any case comply with local or national regulations.
Connect the pipes to the chiller using flexible couplings to prevent the transmission of vibrations and to compensate thermal expansions.

It is recommended to install the following components on the pipes:
- Temperature and pressure indicators for routine maintenance and monitoring of the unit. Checking the pressure on the water side will enable you to verify whether the expansion tank is working efficiently and to promptly detect any water leaks within the equipment.
- Traps on incoming and outgoing pipes for temperature measurements, which can provide a direct reading of the operating temperatures.
- Regulating valves (gate valves) for isolating the unit from the water circuit.
- Metal mesh filter (supplied), with a mesh size no greater than 1 mm, to be fitted on the inlet pipe to protect the exchanger from scale or impurities present in the pipes.
- Air vent valves, to be placed at the highest points of the water circuit for the purpose of bleeding air. (The internal pipes of the unit are fitted with small air vent valves for bleeding the unit itself: this operation may only be carried out when the unit is disconnected from the power supply).
- Drainage valve and, where necessary, a drainage tank for emptying out the equipment for maintenance purposes or when the unit is taken out of service at the end of the season. (A 1" drainage valve is provided on the optional water buffer tank: this operation may only be carried out when the unit is disconnected from the power supply).

It is of fundamental importance that the incoming water supply is hooked up to the connection marked "Water Inlet".
Otherwise the evaporator would be exposed to the risk of freezing since the antifreeze thermostat would not be able to perform its function; moreover the reverse cycle would not be respected in the cooling mode, resulting in additional risks of malfunctioning.

The dimensions and position of plumbing connections are shown in the dimension tables at the end of the manual.

The water circuit must be set up in such a way as to guarantee that the nominal flow rate of the water supplied to the evaporator remains constant (+/- 15%) in all operating conditions. A standard feature of MPED units is a device for controlling the flow rate (flow switch or differential pressure switch) in the water circuit in the immediate vicinity of the evaporator.

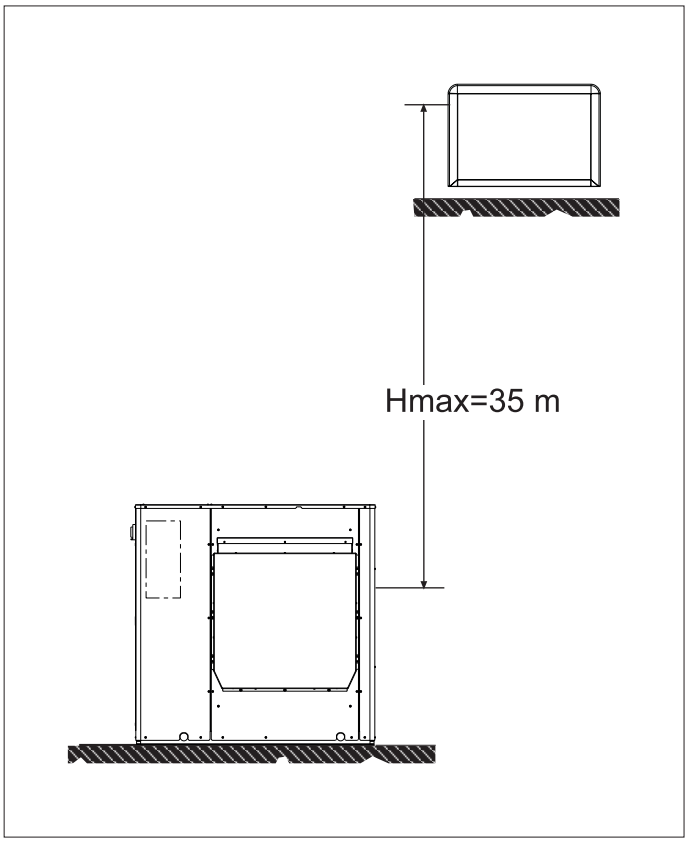
## 12.1 SYSTEM WATER CONTENT AND CHARGING OF EXPANSION TANK

In models without a water storage reservoir it is necessary to assure that the content of water within the system does not fall below 3.5 litres/kW in the case of cooling-only models and 4.5 litres/kW in the case of heat pump models. This level is necessary to prevent the water temperature from falling below the indoor unit enabling threshold during defrost cycles.

**N.B. kW in reference to rated capacity**
The expansion tank is pre-charged to a pressure of 1.5 bars, sufficient for systems with a maximum height difference (H in the figure at the side) of 13 metres. For greater height differences, refer to the table below in order to adjust the charging pressure of the expansion tank accordingly.
In no case should you exceed the maximum height difference Hmax = 35 m.

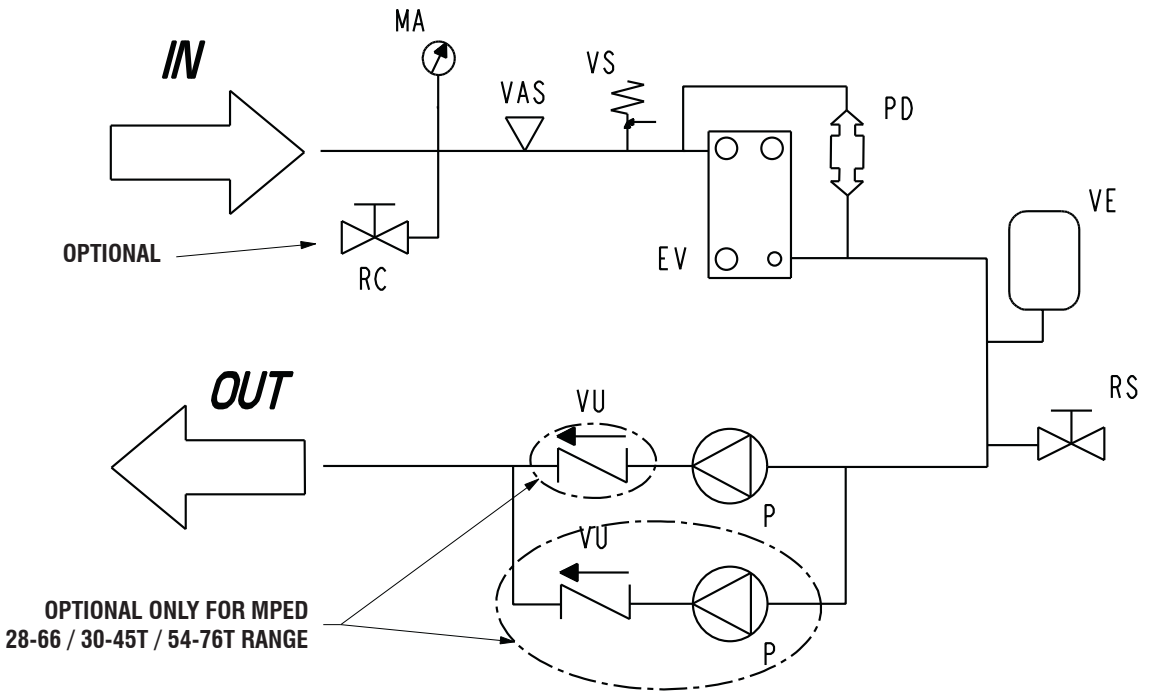
| Models | H (m) | pi (bar) | Cmax (l) |
|---|---|---|---|
| MPED 004-008 | <5 | 0,7 | 38 |
| | 7 | 0,9 | 36 |
| | 10 | 1,2 | 32 |
| | 13 | 1,5 | 29 |
| | 15 | 1,7 | 27 |
| MPED 010-027 | <13 | 1,5 | 145 |
| | 15 | 1,7 | 133 |
| | 20 | 2,2 | 105 |
| | 25 | 2,7 | 77 |
| | 30 | 3,1 | 49 |
| MPED 028-066 T30-T45 | <13 | 1,5 | 231 |
| | 15 | 1,7 | 213 |
| | 20 | 2,2 | 168 |
| | 25 | 2,7 | 124 |
| | 30 | 3,1 | 79 |

| | LEGEND |
|---|---|
| **H** | Height difference of system |
| **$p_i$** | Charging pressure of expansion tank |
| **$C_{max}$** | Maximum system water content |

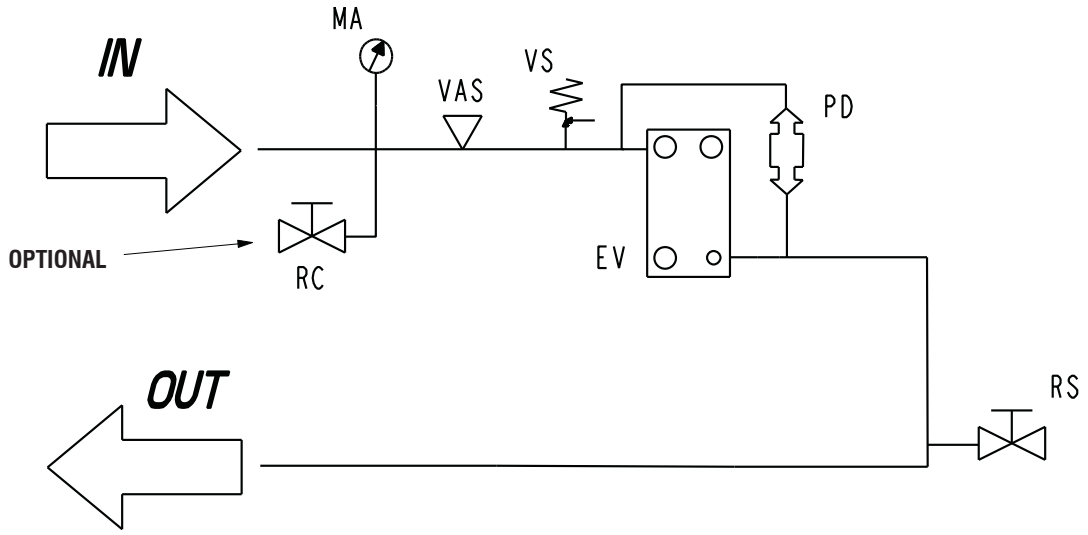


## 12 WATER CIRCUIT

MPED (EVAPORATOR AND PUMP)



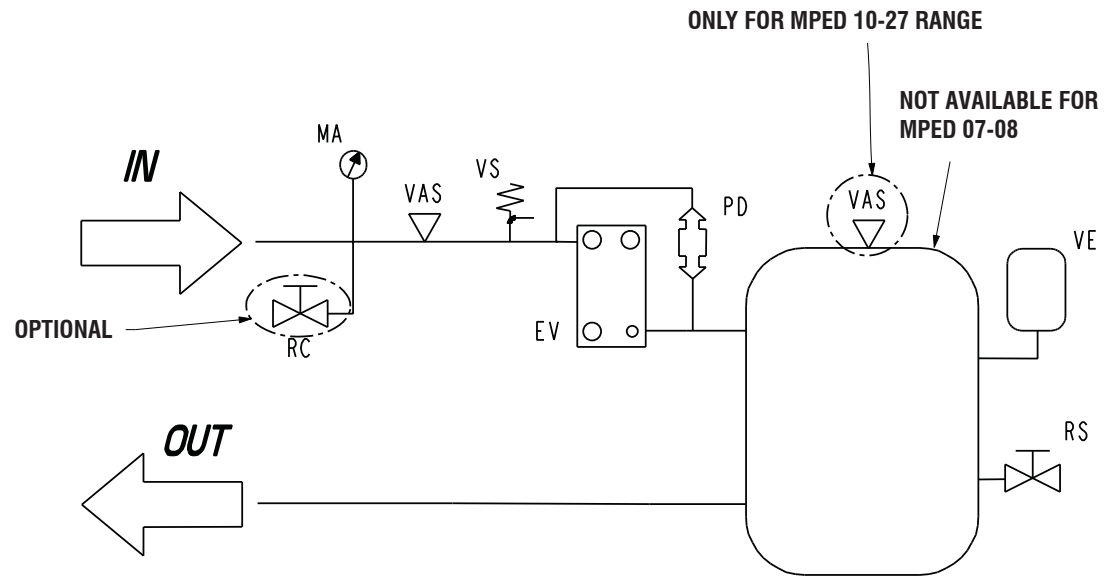

MPED (EVAPORATOR)



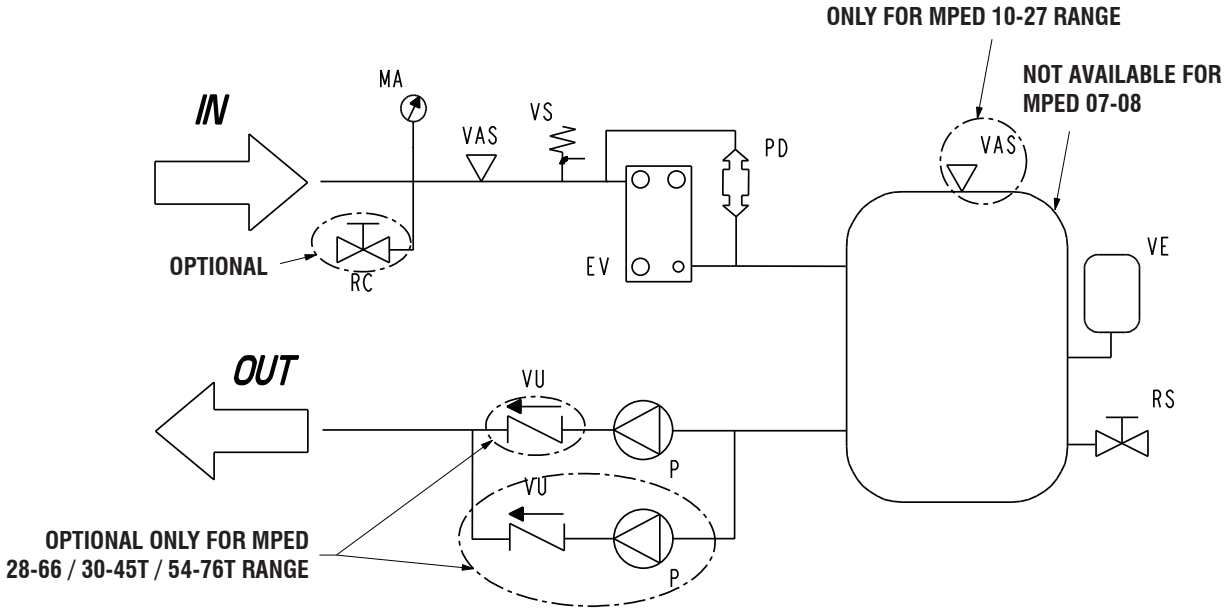

| | LEGEND | | |
|---|---|---|---|
| **VS** | Safety valve | **VE** | Expansion vessel |
| **EV** | Evaporator | **P** | Pump |
| **PD** | Water differential pressure switch | **RS** | Drain |
| **MA** | Water gauge | **RC** | Water charge |
| **VAS** | Air bleed hole | **VU** | Check valve |

## 12 WATER CIRCUIT

MPED (EVAPORATOR AND BUFFER TANK)



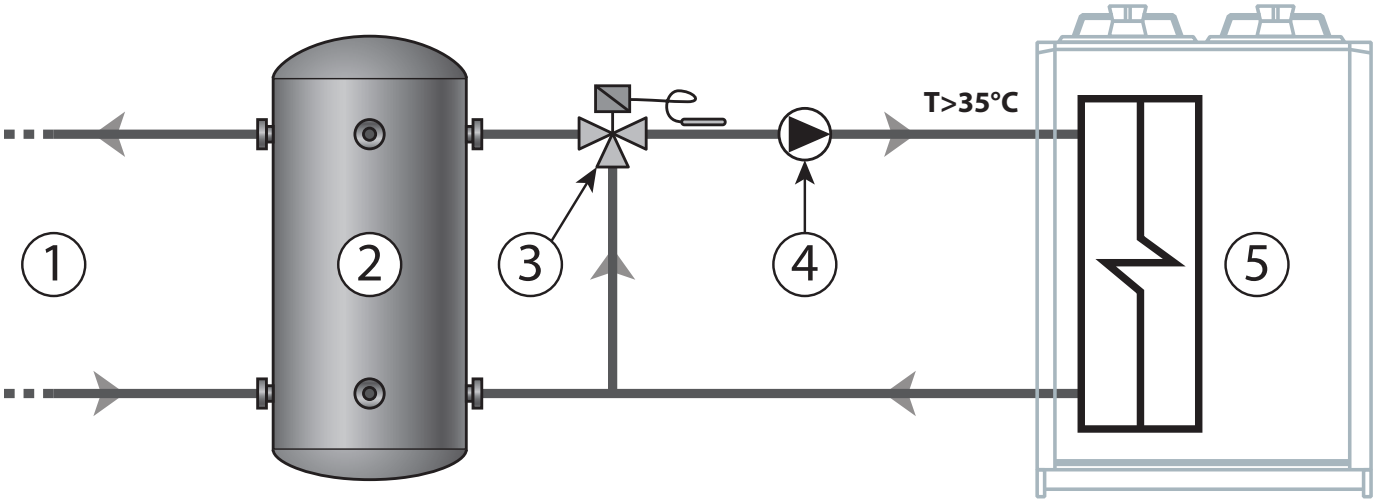

MPED (EVAPORATOR, PUMP AND BUFFER TANK)




| | 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 |

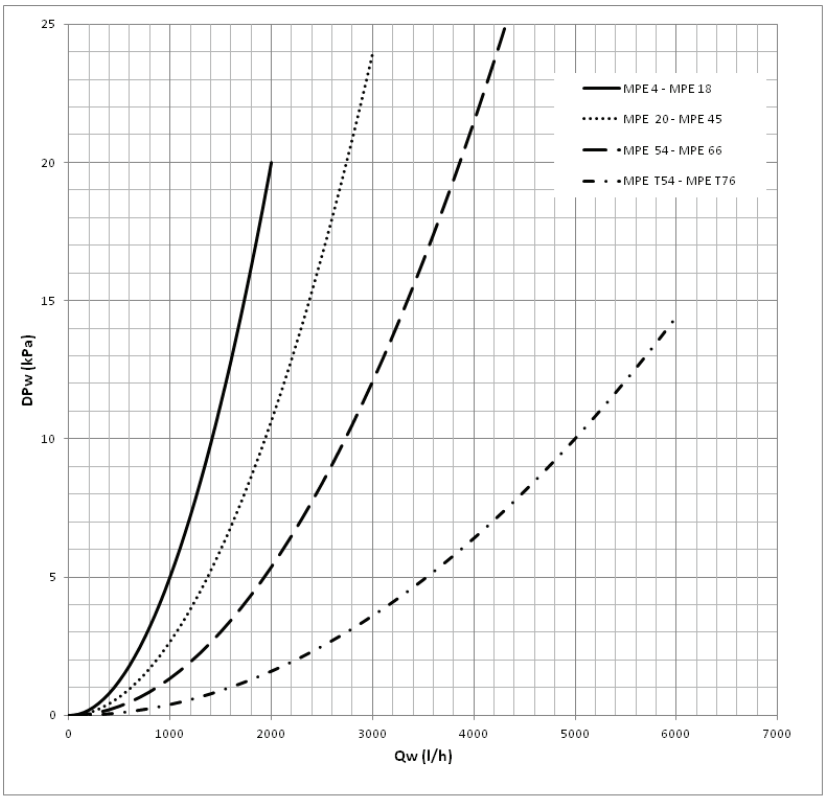
## 12.2 DE-SUPERHEATER FOR PARTIAL HEAT RECOVERY

The partial heat recovery option is provided by a braze-welded plate heat exchanger placed in series on the compressor delivery (typically in series in relation to the finned pack condenser). Its size is designed to limit pressure drops on the refrigerant side to a minimum.
All machines configured with heat recovery use as per standard modulating condensation control. In order to avoid any unbalance in the cooling circuit, if there are start-ups with very low water temperatures at recovery (<35°C), the hydraulic recovery circuit must be set up as indicated in the following figure: a low water temperature at recovery would cause a drop in the condensation temperature and therefore an insufficient pressure jump on the expansion valve with the ensuing risk of the safety devices being triggered.




**1** Utility side
**2** Storage tank
**3** Mixing valve
**4** Circulation pump
**5** On-board de-superheater

The bulb of the 3-way mixer valve is placed at the de-superheater exchanger inlet. By mixing the hot water produced by the recovery with colder water from the tank, it reduces the time needed for the system to reach full operating capacity to a few moments.
A buffer tank must be placed between the unit and the utility since the demand for hot water and its availability are not simultaneous, because it needs the compressors to be running.
It should be pointed out that the heat recovery output is linked to the dispensed cooling output and that, therefore, in partial load situations it is also reduced just the same; this aspect must be taken into consideration for the dimensions of the buffer tank.
The partial heat recovery option is supplied only with the de-superheater exchanger. The other components of the circuit laid out in the previous figure are not included in the supply.



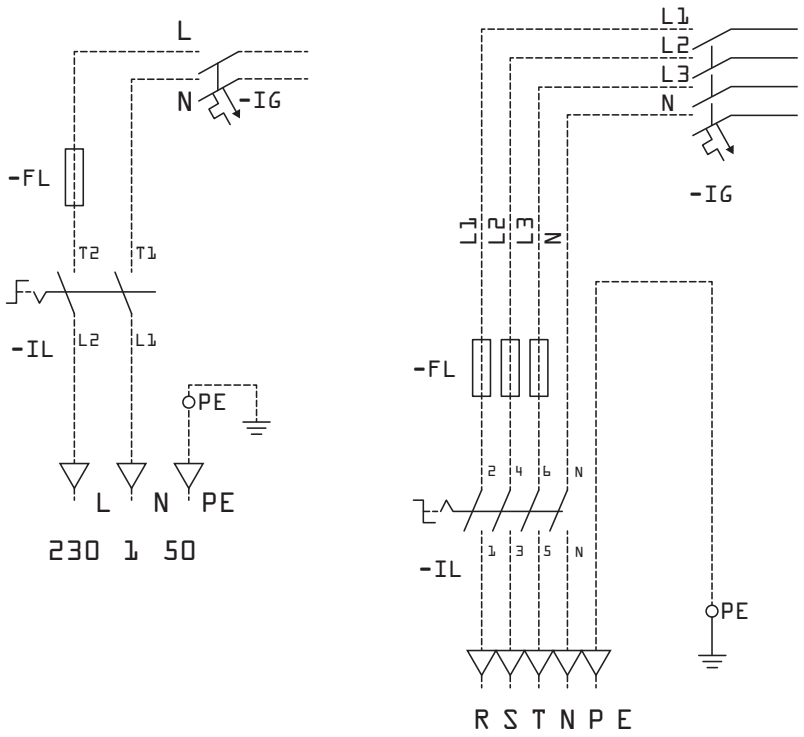
# 13 ELECTRICAL DATA AND CONNECTIONS

| 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 |

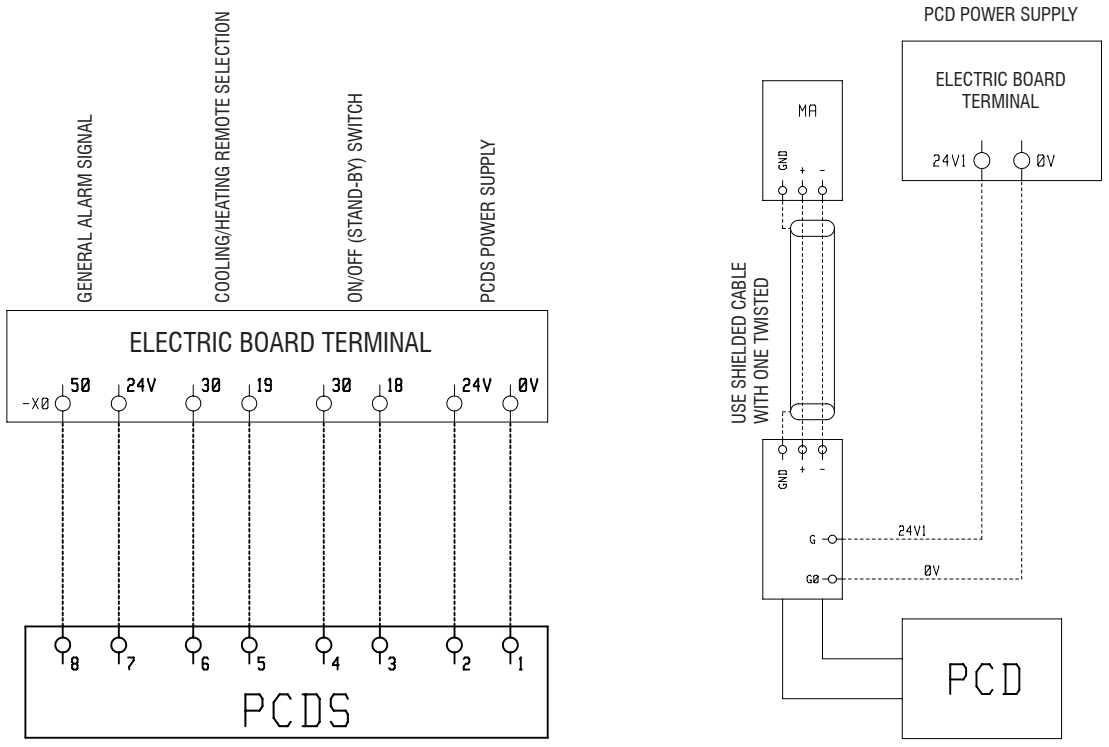
| MPED | | 035 | 040 | 054 | 066 | T30 | T34 | T40 | T45 | T54 | T61 | T69 | T76 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum power input | kW | 18,5 | 21,0 | 27,9 | 34,4 | 22,7 | 25,4 | 25,3 | 27,1 | 30,4 | 32,8 | 37,6 | 41,8 |
| Maximum current absorption | A | 42,7 | 47,2 | 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.

## 13 ELECTRICAL DATA AND CONNECTIONS



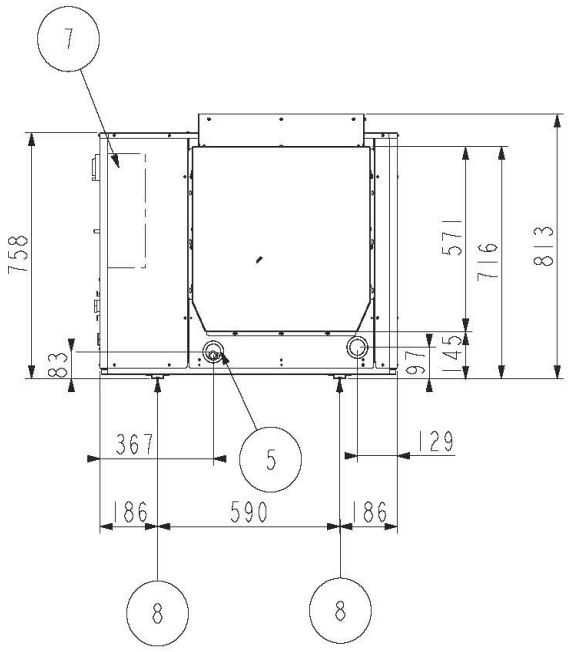

### DIAGRAM SHOWING ELECTRICAL CONNECTIONS BETWEEN MPED AND PCDS / PCD REMOTE CONTROL PANEL

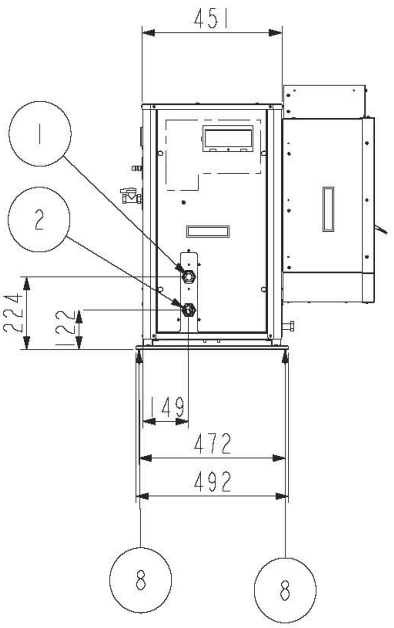


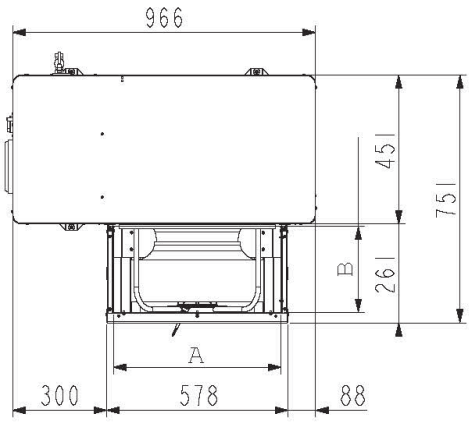

**NOTE:** On the terminal block of the electric control panel a voltage of 24V will be present at the 50/24V terminals in the event of an alarm; if it is desired to interface with a voltage-free contact, a relay must be applied for this purpose by the installer.

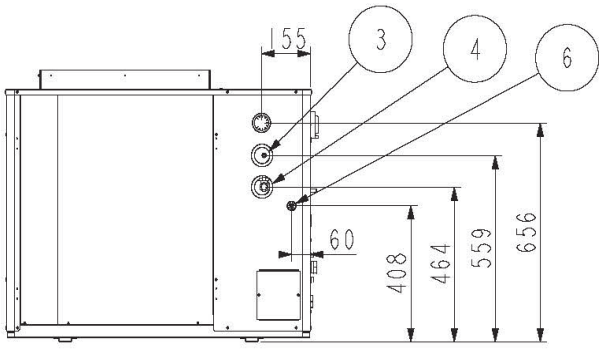
# 14 OVERALL DIMENSIONS

## MPED 07 ÷ 08

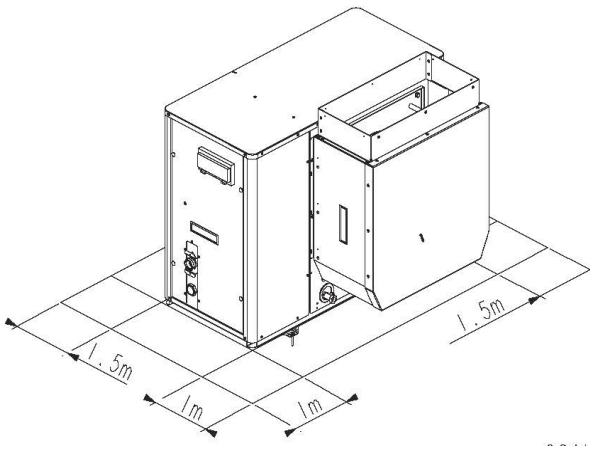


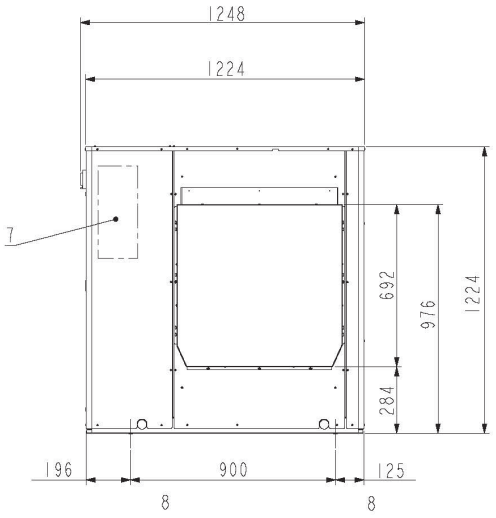



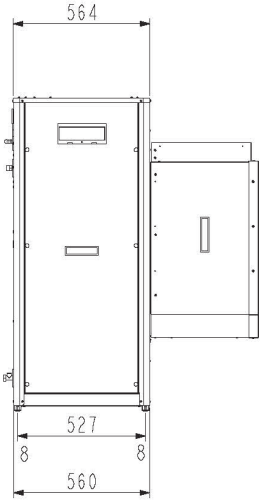

| LEGEND | |
|---|---|
| 1 | Water in 1" female |
| 2 | Water out 1" female |
| 3 | Safety valve discharge outlet provided with rubber ring holder |
| 4 | Water supply 1/2" male (optional tap) |
| 5 | Drain manifold 1/2" female |
| 6 | Power supply Ø 28 mm |
| 7 | Electric control board |
| 8 | Dampers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

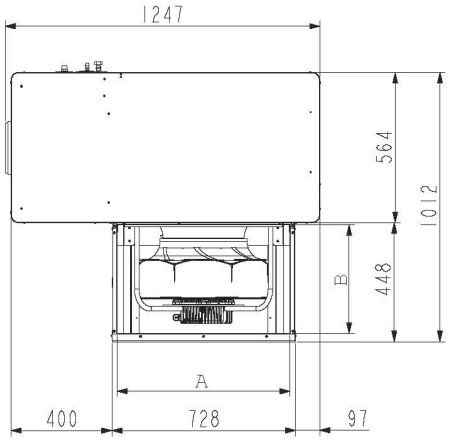


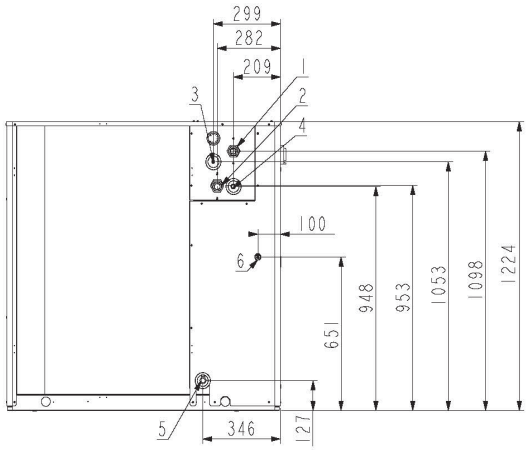
## 14 OVERALL DIMENSIONS

### MPED 10 ÷ 15

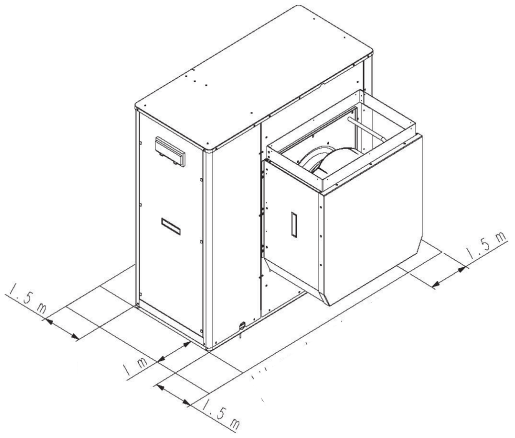


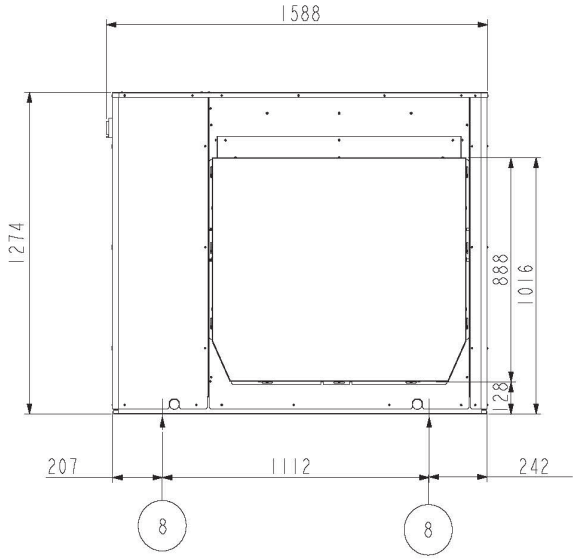



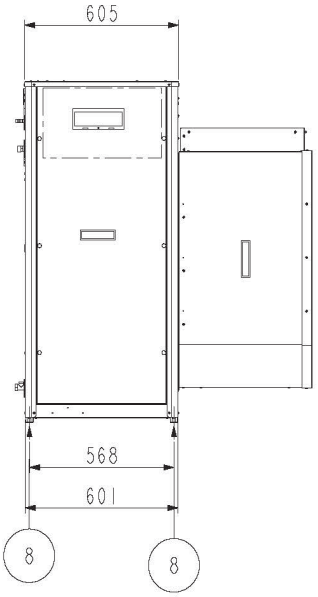

| LEGEND | |
|---|---|
| 1 | Water in 1" female |
| 2 | Water out 1" female |
| 3 | Safety valve discharge outlet provided with rubber ring holder |
| 4 | Water supply $^1/_2$" male (optional tap) |
| 5 | Drain manifold $^1/_2$" female |
| 6 | Power supply Ø 28 mm |
| 7 | Electrical control board |
|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

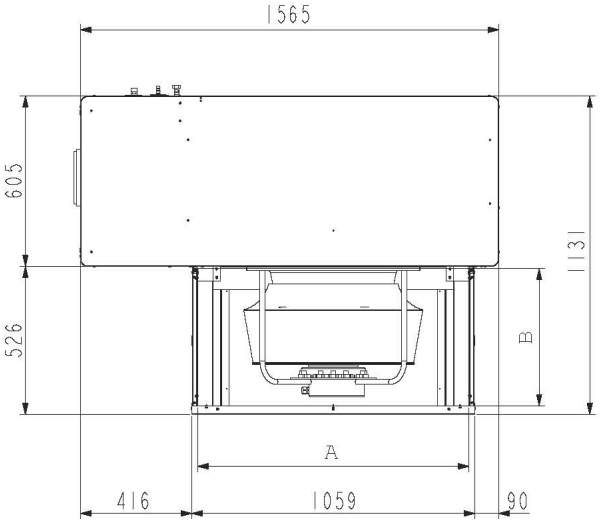


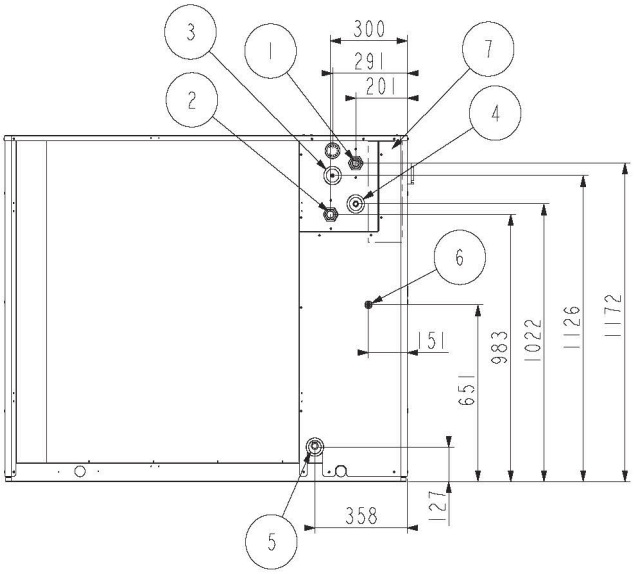
# 14 OVERALL DIMENSIONS

## MPED 18 ÷ 27

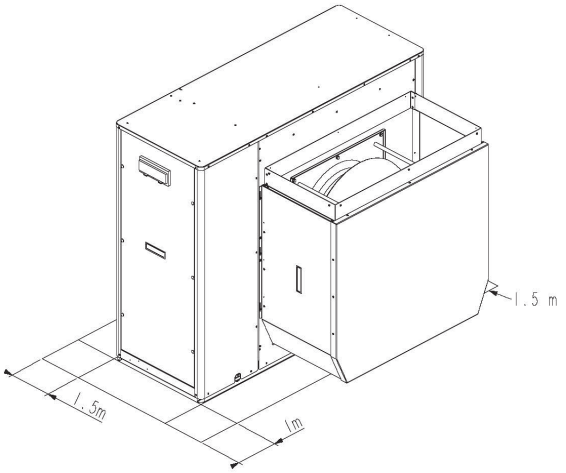


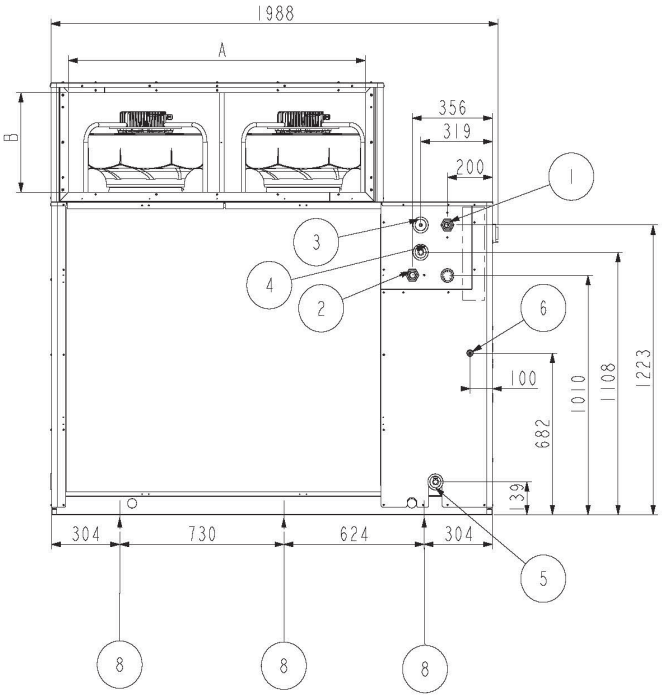



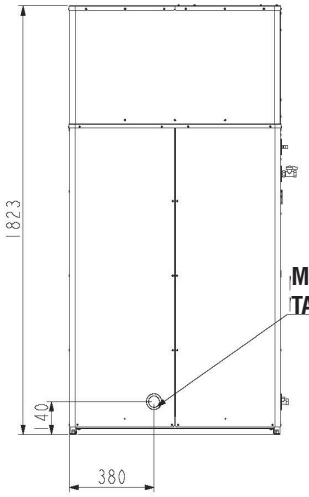

| LEGEND | |
|---|---|
| 1 | Water in 1" $^1/_4$ female |
| 2 | Water out 1" $^1/_4$ female |
| 3 | Safety valve discharge outlet provided with rubber ring holder |
| 4 | Water supply $^1/_2$" male (optional tap) |
| 5 | Drain manifold $^1/_2$" female |
| 6 | Power supply Ø 28 mm |
| 7 | Electrical control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

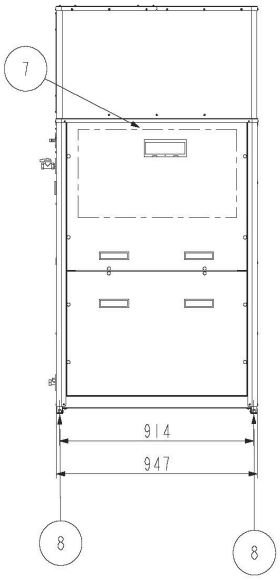


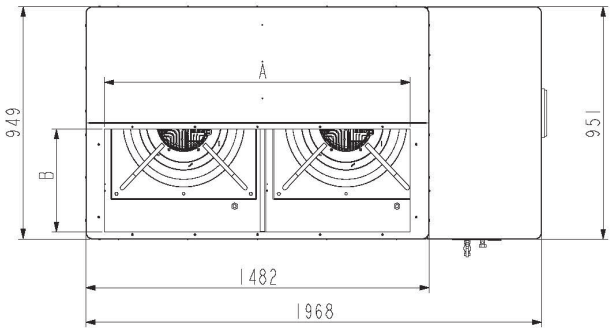
## 14 OVERALL DIMENSIONS

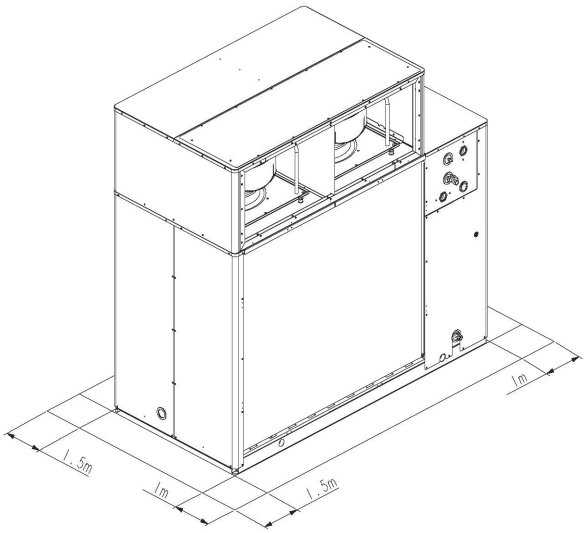
### MPED 28 ÷ 40 - MPED 30 ÷ 45 T



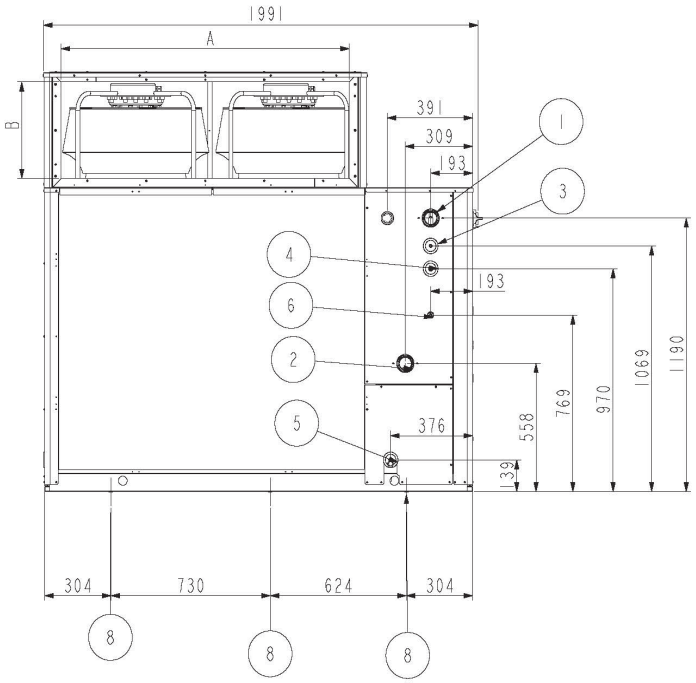



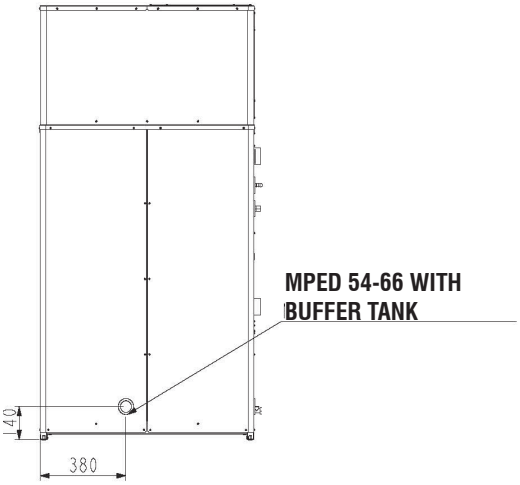



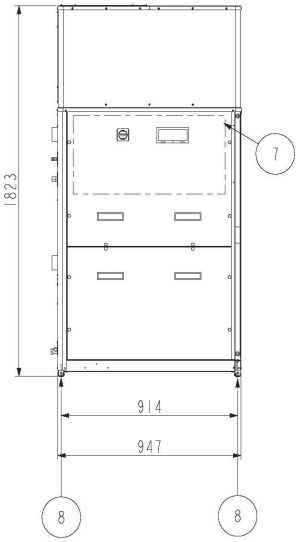

| LEGEND | |
|---|---|
| 1 | Water in 1" $^1/_4$ female |
| 2 | Water out 1" $^1/_4$ female |
| 3 | Safety valve discharge outlet provided with rubber ring holder |
| 4 | Water supply $^1/_2$" male (optional tap) |
| 5 | Drain manifold $^1/_2$" female |
| 6 | Power supply Ø 37 mm |
| 7 | Electrical control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

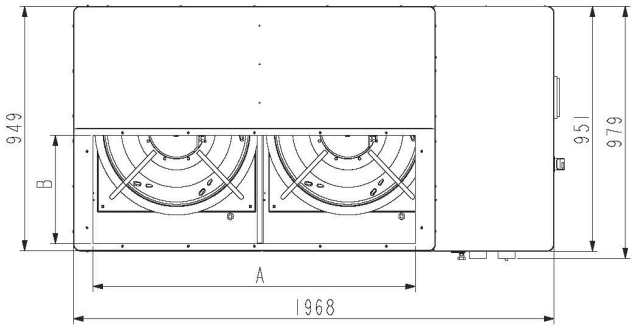
# 14 OVERALL DIMENSIONS

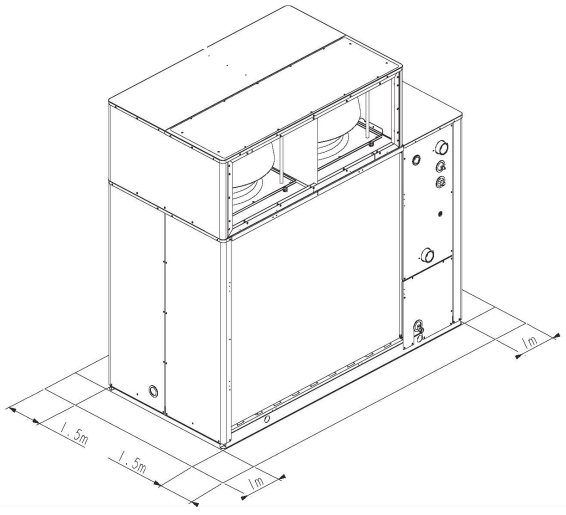
## MPED 54 ÷ 66



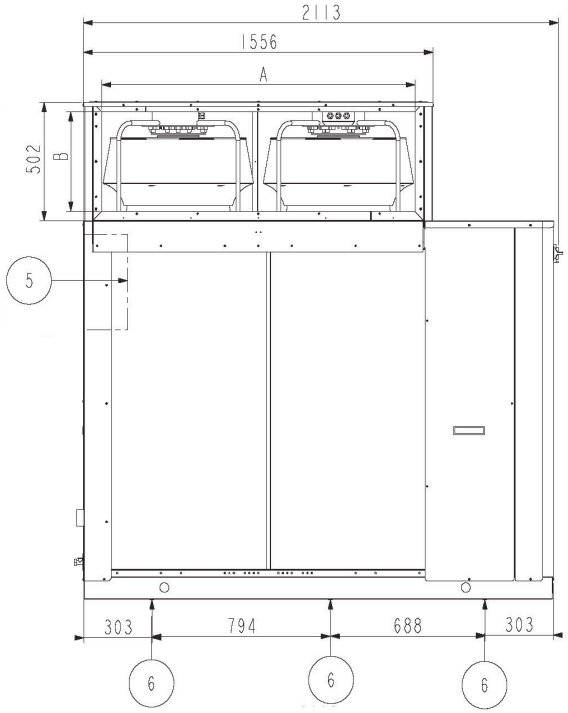



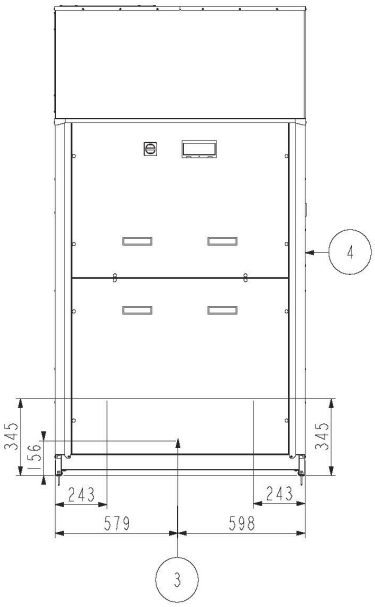



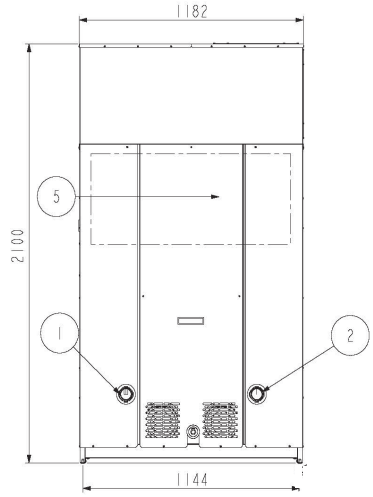

| LEGEND | |
|---|---|
| 1 | Water inlet 2" female |
| 2 | Water outlet 2" female |
| 3 | Safety valve discharge outlet provided with rubber ring holder |
| 4 | Water supply ½" male |
| 5 | Water drainage ½" female |
| 6 | Power supply |
| 7 | Electric control board |
| 8 | Fastening points for vibration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

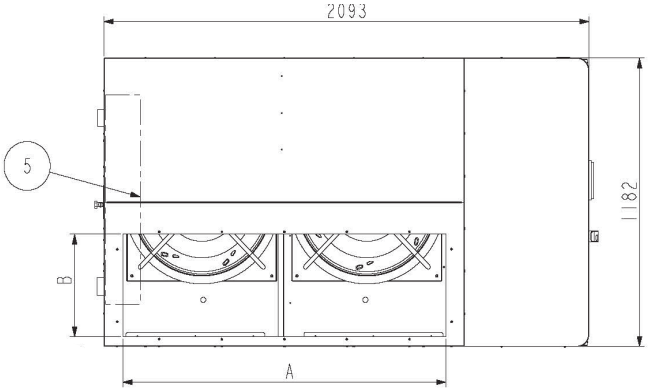
## 14 OVERALL DIMENSIONS

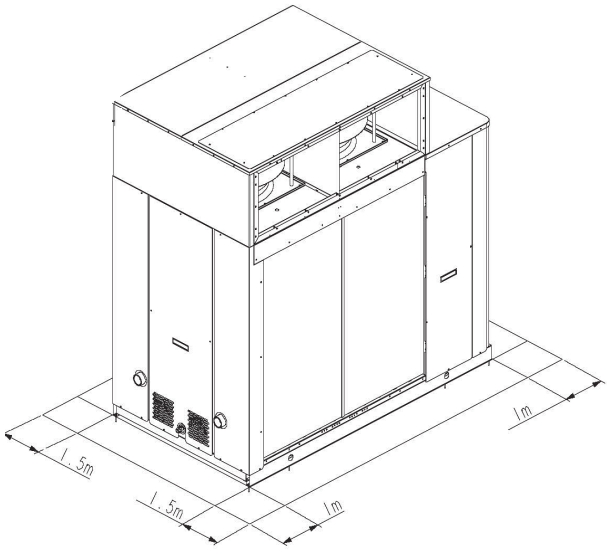
### MPED 54 ÷ 76T




| 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 |

# 14 OVERALL DIMENSIONS

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 |

## 15 INSTALLATION CLEARANCE REQUIREMENTS AND SITING

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, 2, 3 and 4.
There must be no obstacles blocking the path of the air flow from the fans.
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.

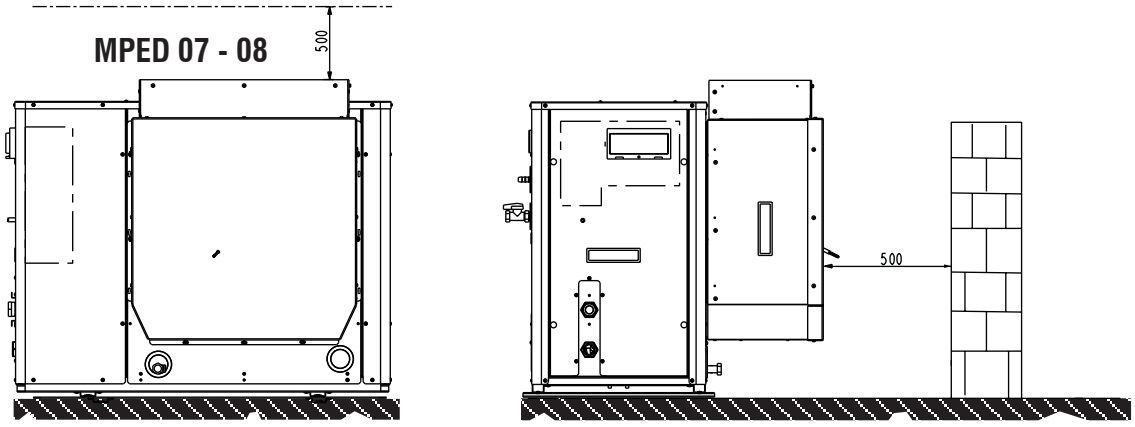
In the design of the MPED series, special care has been taken to minimise noise and vibrations transmitted to the ground.
Even greater insulation may be obtained, however, by using vibration damping base supports (available as optional accessories).
If vibration damping base supports are adopted, it 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.

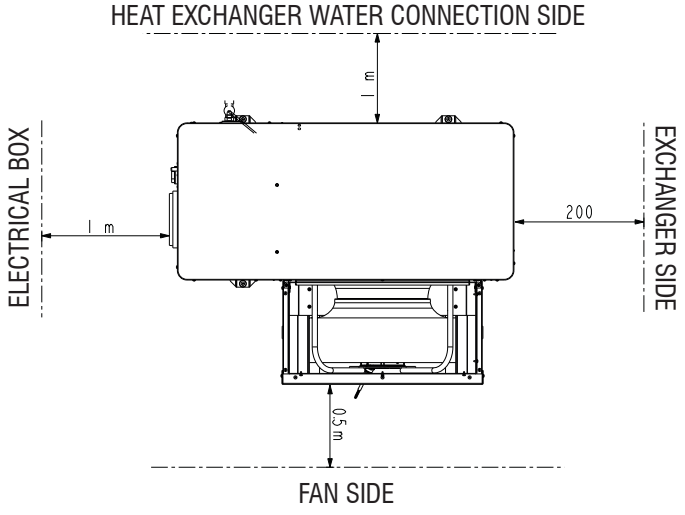
MPED water chillers and heat pumps are air-cooled units suitable for indoor installation. It is necessary to install air intake and outlet ducts that must be sized for the nominal air flow rate and the available useful pressure of each model. At the same time avoid installations that may allow air recirculation to take place between the intake and the outlet.
The figure shows a typical installation with air outlet from above.
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;
- To 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 proper accessibility for maintenance or repairs.

**This device is not intended to be used by children or by people with physical, sensory or mental impairments, except under supervision. Make sure that children do not have access to the device.**

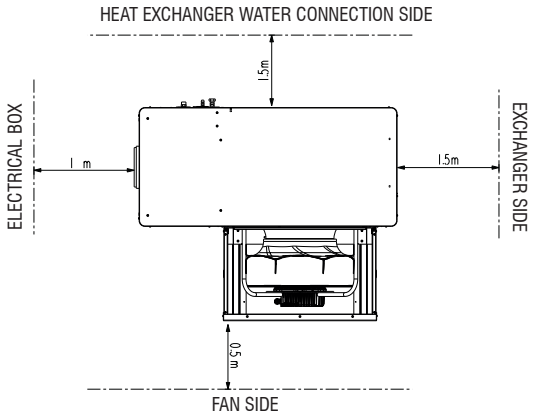
1



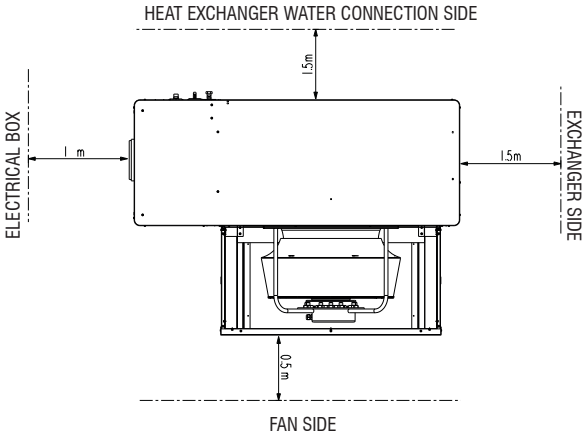

2



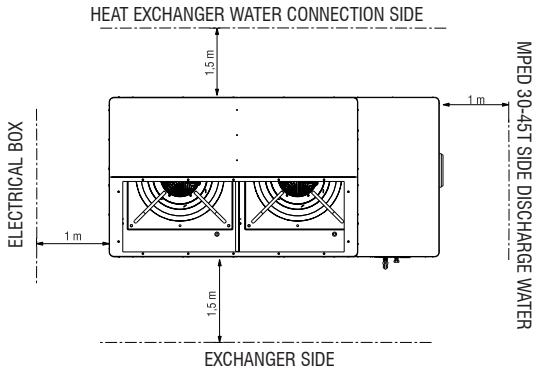
**MPED 10 - 15**



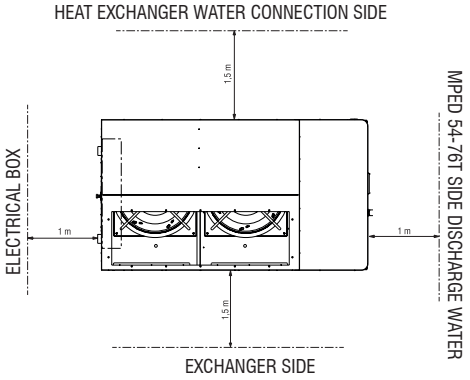

**MPED 18 - 27**



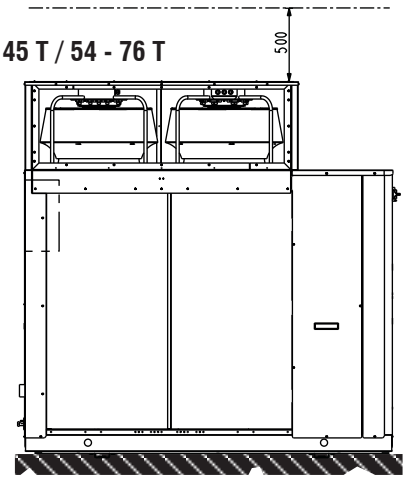

**MPED 28 - 66 / 30 - 45 T**




**MPED 54 - 76 T**

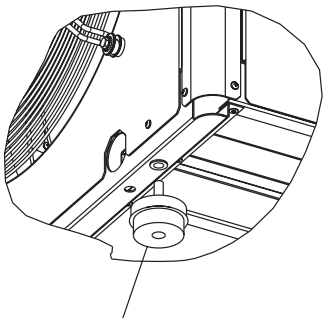



**MPED 28 - 66 / 30 - 45 T / 54 - 76 T**




## 15.1 DAMPERS SITING

| MPED | N°DAMPERS |
|---|---|
| 04 - 08 | 4 |
| 10 - 15 | 4 |
| 18 - 27 | 4 |
| 28 - 66 | 6 |
| 30 - 45 T | 6 |
| 54 - 76 T | 6 |



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