

ALEZIO S V200



Installation and Service Manual

Reversible air/water "Split Inverter" heat pump

ALEZIO S V200

MIV-4S/E 4-8 V200


MIV-4S/E 11-16 V200














MIV-4S/H 4-8 V200

MIV-4S/H 11-16 V200

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1 Safety instructions and recommendations

1.1 Safety

Operation	<p> Danger This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.</p>
Electrical	<p>The appliance is intended to be permanently connected to the domestic water mains network. Before any work on the appliance, carefully read all documents that accompany the product. These documents are also available on our website. See the last page. Install the appliance in accordance with national rules on electrical installation. A disconnection device must be fitted to the permanent pipes in accordance with installation rules. If a power supply cable comes with the appliance and it turns out to be damaged, it must be replaced by the manufacturer, its after sales service or persons with similar qualifications in order to obviate any danger. If the appliance is not wired in the factory, carry out the wiring according to the wiring diagram described in the chapter Electrical Connections. See the Installation and Service Manual. This appliance must be connected to the protective earthing. Earthing must comply with the prevailing installation standards. Earth the appliance before making any electrical connections. Type and calibre of the protective equipment: refer to the chapter Recommended cable cross-sections. See the Installation and Service Manual. To connect the appliance to the electricity mains, refer to the chapter Electrical Connections. See the Installation and Service Manual. In order to prevent any danger owing to the unexpected reset of the thermal circuit breaker, this appliance must not be powered through an external switch, such as a timer, or be connected to a circuit which is regularly switched on and off by the electricity provider.</p>

Domestic water	<p>Draining the appliance:</p> <ol style="list-style-type: none"> 1. Shut off the domestic cold water inlet. 2. Open a hot water tap in the installation. 3. Open a valve on the safety unit. 4. To drain, open the tap at the base of the tank. <p>The pressure limiter device (safety valve or safety unit) must be regularly operated in order to remove limescale deposits and ensure that it is not blocked. A pressure limiter device must be fitted to a discharge pipe. As water may flow out of the discharge pipe, the pipe must be kept open to the open air, in a frost-free environment, and at a continuous downward gradient. To ascertain the type or specifications of the pressure limiter and to find out how to connect it, refer to the chapter Connecting the domestic hot water tank to the drinking water mains. See the Installation and Service Manual.</p>
Hydraulics	<p> Caution Respect the minimum and maximum water pressure and temperature to ensure the appliance operates correctly. See chapter on Technical Specifications.</p>
Installation	<p> Important Allow the space required to install the appliance correctly, referring to the chapter Dimensions of the Appliance. See the Installation and Service Manual.</p>

1.2 General instructions

The system must satisfy each point in the rules in force in the country that govern works and interventions in individual homes, blocks of flats or other buildings.

Only qualified professionals are authorised to work on the appliance and the heating installation. They must respect prevailing local and national regulations during fitting, installation and maintenance of the installation.

Commissioning must be performed by a qualified professional.

1.3 Electrical safety

Before making any electrical connections, earth the appliance in accordance with prevailing standards.



Danger

Danger of electric shock: the length of the conductors between the traction arrester device and the terminal blocks must be such that the active conductors are put under tension before the earth conductor.

Only qualified professionals may carry out electrical connections, always with the power off.

Separate the very low voltage cables from the 230/400 V circuit cables.

1.4 Refrigerant safety



Warning

Refrigerant fluid and pipes:

- Use only **R410A** refrigerant fluid to fill the installation.
- Use tools and pipe components especially designed for use with **R410A** refrigerant fluid.
- Use copper pipes deoxidised with phosphorus to carry the refrigerant fluid.
- Store the refrigerant connection pipes away from dust and humidity (risk of damage to the compressor).
- Do not use a load cylinder.
- Protect the heat pump components, including the insulation and structural elements. Do not overheat the pipes as brazed components may cause damage.
- Contact between the refrigerant fluid and a flame may result in emissions of toxic gases.

France: Pursuant to Article L. 113-3 of the French Consumer Code, the installation of equipment must be done by a certified operator whenever the refrigerant load is in excess of two kilograms or when a refrigerant connection is necessary (the case with split systems, even when fitted with a quick coupling device).

All work on the refrigeration circuit must be done by a qualified professional, according to prevailing codes of practice and safety in the profession (recovery of the refrigerant, brazing under nitrogen). All brazing work must be done by qualified welders.

Do not touch the refrigeration connection pipes with your bare hands while the heat pump is running. Danger of burn or frost injury.

In the event of a refrigerant leakage:

1. Switch off the appliance.
2. Open the windows.
3. Do not use a naked flame, do not smoke, do not operate electrical contacts.
4. Avoid contact with the refrigerant. Danger of frost injuries.

Locate the probable leak and seal it immediately. Use only original parts to replace a defective refrigeration component.

Use only dehydrated nitrogen for detecting leaks or for pressurised tests.

Do not allow the refrigerant fluid to escape into the atmosphere.

1.5 Domestic water safety

In accordance with safety rules, a safety valve calibrated to 0.7 MPa (7 bar) is mounted on the tank's domestic cold water inlet.

A pressure reducer (not provided) is required when the supply pressure exceeds 80% of the safety valve or safety unit calibration and must be located upstream of the appliance.

There must be no cut-off devices between the safety valve or unit and the domestic hot water tank.

The hydraulic installation must be capable of handling a minimum flow rate at all times.

Heating water and domestic water must not come into contact with each other. Domestic water must not circulate through the exchanger.

Limit temperature at the draw-off point: the maximum domestic hot water temperature at the draw-off point is subject to special regulations in the various countries in which the appliance is sold in order to protect the user. These special regulations be observed when installing the appliance.

Take precautions with the domestic hot water. Depending on the heat pump settings, the domestic hot water temperature may exceed 65°C.

In order to limit the risk of being scalded, a thermostatic mixing valve must be installed on the domestic hot water flow pipes.

1.6 Hydraulic safety

When making the hydraulic connection, it is imperative that the standards and corresponding local directives be respected.

If radiators are connected directly to the heating circuit: install a differential valve between the indoor module and the heating circuit.

Fit drainage valves between the indoor module and the heating circuit.

Do not add any chemical products to the heating water without first consulting a water treatment specialist. For example: antifreeze, water softeners, products to increase or reduce the pH value, chemical additives and/or inhibitors. These may cause faults in the heat pump and damage the heat exchanger.

1.7 Recommendations for the installation

Install the heat pump's indoor module in a frost-free location.

Insulate the pipes to reduce heat losses to a minimum.

Apply refrigerant oil to the beaded parts to facilitate tightening and improve the seal.

Keep this document close to the place where the appliance is installed.

Do not make any modifications to the heat pump without the written consent of the manufacturer.

To benefit from extended warranty cover, no modifications should be made to the appliance.

Install the heat pump indoor module and outdoor unit on a solid, stable structure able to bear its weight.

Do not install the heat pump in a place that has an atmosphere with a high salt content.

Do not install the heat pump in a place exposed to steam and combustion gases.

Do not install the heat pump in a place that may be covered in snow.

1.8 Specific instructions for service, maintenance and breakdowns

Maintenance work must be carried out by a qualified professional.

Only a qualified professional is authorised to set, correct or replace the safety devices.

Before any work, switch off the mains electricity to the heat pump, the indoor unit and the hydraulic or electrical back-up if present.

Wait for approx. 20-30 seconds for the outdoor unit capacitors to be discharged, and check that the lights on the outdoor unit PCBs have gone out.

Before working on the refrigeration circuit, switch off the appliance and wait a few minutes. Certain items of equipment such as the compressor and the pipes can reach temperatures in excess of 100°C and high pressures, which may cause serious injuries.

Locate and correct the cause of power cut before resetting the safety thermostat.

Only genuine spare parts may be used.

Removal and disposal of the heat pump must be carried out by a qualified professional in accordance with prevailing local and national regulations.

After maintenance or repair work, check the entire heating system to ensure that there are no leaks.

Remove the casing only to perform maintenance and repair work. Put the casing back in place after maintenance and repair work.

The user must make sure the refrigerant pipes are checked annually for leaks for any heat pump with a charge greater than 5 tonnes of CO₂ equivalent.

1.9 Liabilities

Manufacturer's liability	<p>Our products are manufactured in compliance with the requirements of the various Directives applicable. They are therefore delivered with the CE marking and any documents necessary. In the interests of the quality of our products, we strive constantly to improve them. We therefore reserve the right to modify the specifications given in this document.</p> <p>Our liability as manufacturer may not be invoked in the following cases:</p> <ul style="list-style-type: none"> • Failure to abide by the instructions on installing the appliance. • Failure to abide by the instructions on using the appliance. • Faulty or insufficient maintenance of the appliance.
Installer's liability	<p>The installer is responsible for the installation and initial commissioning of the appliance. The installer must observe the following instructions:</p> <ul style="list-style-type: none"> • Read and follow the instructions given in the manuals provided with the appliance. • Install the appliance in compliance with prevailing legislation and standards. • Carry out initial commissioning and any checks necessary. • Explain the installation to the user. • If maintenance is necessary, warn the user of the obligation to check the appliance and keep it in good working order. • Give all the instruction manuals to the user.

2 Symbols used

2.1 Symbols used in the manual

This manual uses various danger levels to draw attention to special instructions. We do this to improve user safety, to prevent problems and to guarantee correct operation of the appliance.



Danger

Risk of dangerous situations that may result in serious personal injury.



Danger of electric shock

Risk of electric shock.



Warning

Risk of dangerous situations that may result in minor personal injury.



Caution

Risk of material damage.



Important

Please note: important information.



See

Reference to other manuals or pages in this manual.

2.2 Symbols used on the appliance

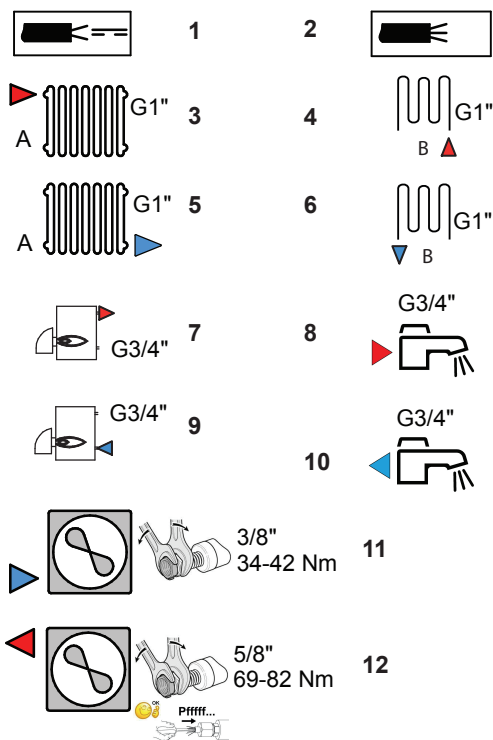
Fig.1 Symbols used on the appliance



- 1 Alternating current
- 2 Protective earthing

MW-6000066-3

Fig.2 Symbols used on the connection label

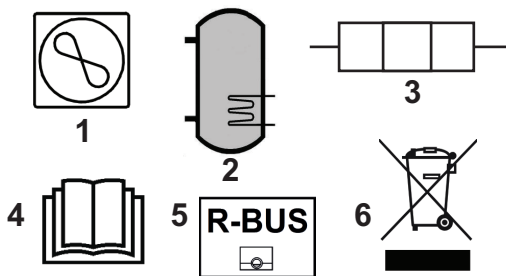


MW-3000554-02

- 1 Sensor cable - low voltage
- 2 Power supply cable 230 V / 400 V
- 3 Heating circuit flow
- 4 Circuit B flow
- 5 Heating circuit return
- 6 Circuit B return (optional)
- 7 Return from boiler back-up
- 8 Domestic hot water outlet
- 9 Flow to boiler back-up
- 10 Domestic cold water inlet
- 11 3/8" refrigerant fluid connection – liquid line
- 12 5/8" refrigerant fluid connection – gas line

2.3 Symbols used on the data plate

Fig.3 Symbols used on the data plate



MW-3000555-02

- 1 Information on the heat pump: type of refrigerant fluid, maximum operating pressure and output absorbed by the indoor module
- 2 Information on the domestic hot water tank: volume, maximum operating pressure and standby losses of the domestic hot water tank
- 3 Information on the electrical back-up: power supply and maximum output (only for versions with electrical back-up)
- 4 Before installing and commissioning the appliance, carefully read the instruction manuals provided
- 5 The symbol indicates compatibility with SMART TC.
- 6 Dispose of used products in an appropriate recovery and recycling structure

3 Technical specifications

3.1 Homologations

3.1.1 Directives

This product complies with the requirements of the following European Directives and Standards:

- Pressure Equipment Directive 2014/68/EU
- Low Voltage Directive 2014/35/EU
Generic standard: EN 60335-1
Relevant standard: EN 60335-2-40
- Electromagnetic Compatibility Directive 2014/30/EU
Generic standards: EN 61000-6-3, EN 61000-6-1
Relevant Standard: EN 55014

This product conforms to the requirements of European Directive 2009/125/EC on the ecodesign of energy-related products.

In addition to the legal requirements and guidelines, the supplementary guidelines in this manual must also be followed.

Supplements or subsequent regulations and guidelines that are valid at the time of installation shall apply to all regulations and guidelines specified in this manual.

■ EC Declaration of Conformity

The unit complies with the standard type described in the EC declaration of conformity. It has been manufactured and commissioned in accordance with European directives.

The original declaration of conformity is available from the manufacturer.

3.1.2 Factory test

Before leaving the factory, each indoor module is tested on the following items:

- Tightness of the heating circuit
- Electrical safety
- Tightness of the refrigerant circuit
- Tightness of the domestic hot water circuit

3.2 Technical data

3.2.1 Heat pump

The specifications are valid for a new appliance with clean heat exchangers.

Maximum operating pressure: 0.3 MPa (3 bar)

Tab.1 Conditions of use

	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
Limit water operating temperatures in heating mode	+18 °C / +55 °C	+18 °C / +60 °C	+18 °C / +60 °C	+18 °C / +60 °C	+18 °C / +60 °C	+18 °C / +60 °C	+18 °C / +60 °C
Outdoor air operating temperature limits in heating mode	-15 °C / +35 °C	-15 °C / +35 °C	-20 °C / +35 °C	-20 °C / +35 °C	-20 °C / +35 °C	-20 °C / +35 °C	-20 °C / +35 °C

	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
Water operating temperature limits in cooling mode	+7 °C / +25 °C	+7 °C / +25 °C	+7 °C / +25 °C	+7 °C / +25 °C	+7 °C / +25 °C	+7 °C / +25 °C	+7 °C / +25 °C
Outdoor air operating temperature limits in cooling mode	+7 °C / +46 °C	+7 °C / +46 °C	+7 °C / +46 °C	+7 °C / +46 °C	+7 °C / +46 °C	+7 °C / +46 °C	+7 °C / +46 °C

Tab.2 Heating mode: outside air temperature +7 °C, water temperature at the outlet +35 °C. Performances in accordance with EN 14511-2.

Measurement type	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
Heat output	kW	4.60	5.82	7.9	11.39	11.39	14.65	14.65
Coefficient of Performance (COP)		5.11	4.22	4.34	4.65	4.65	4.22	4.22
Absorbed electrical power	kWe	0.90	1.38	1.82	2.45	2.45	3.47	3.47
Nominal water flow rate ($\Delta T = 5K$)	m ³ /h	0.80	1.00	1.36	1.96	1.96	2.53	2.53

Tab.3 Heating mode: outside air temperature +2 °C, water temperature at the outlet +35 °C. Performances in accordance with EN 14511-2.

Measurement type	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
Heat output	kW	3.47	3.74	6.80	10.19	10.19	12.90	12.90
Coefficient of Performance (COP)		3.97	3.37	3.30	3.20	3.20	3.27	3.27
Absorbed electrical power	kWe	0.88	1.11	2.06	3.19	3.19	3.94	3.94

Tab.4 Cooling mode: outside air temperature +35 °C, water temperature at the outlet +18 °C. Performances in accordance with EN 14511-2.

Measurement type	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
Cooling output	kW	3.80	4.69	7.90	11.16	11.16	14.46	14.46
Energy efficiency ratio (EER)		4.28	4.09	3.99	4.75	4.75	3.96	3.96
Absorbed electrical power	kWe	0.89	1.15	2.00	2.35	2.35	3.65	3.65

Tab.5 Common specifications

Measurement type	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
Total dynamic head at nominal flow rate	kPa	65	63	44	25	25	—	—
Nominal air flow rate	m ³ /h	2680	2700	3300	6000	6000	6000	6000
Power voltage of the outdoor unit	V	230	230	230	230	400	230	400
Start-up amperage	A	5	5	5	5	3	6	3
Maximal amperage	A	12	13	17	29.5	13	29.5	13
Acoustic power - Inner side ⁽¹⁾	dB(A)	49	49	49	48	48	48	48
Acoustic power - Outside	dB(A)	61	65	67	69	69	70	70
Refrigerant fluid R410A	kg	1.3	1.4	3.2	4.6	4.6	4.6	4.6

Measurement type	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
R410A refrigerant ⁽²⁾	tCO ₂ e	2.714	2.923	6.680	9.603	9.603	9.603	9.603
Refrigerant connection (Liquid - Gas)	inch	1/4 - 1/2	1/4 - 1/2	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8
Max. pre-charged length	m	7	10	10	10	10	10	10

(1) Noise radiated by the enclosure - Test run in accordance with the NF EN 12102 standard, temperature conditions: air 7 °C, water 55 °C (except for AWHP 4.5 MR: air 7 °C, water 45 °C inner and outer sides)

(2) The quantity of refrigerant in tonnes of CO₂ equivalent is calculated using the following formula: quantity (in kg) of refrigerant x GWP/ 1000. The Global-Warming Potential (GWP) of R410A gas is 2088.

3.2.2 Heat pump weight

Tab.6 Indoor module

Indoor module	Unit	MIV-4S/E 4-8 V200	MIV-4S/H 4-8 V200	MIV-4S/E 11-16 V200	MIV-4S/H 11-16 V200
Weight (empty)	kg	138	137	140	139
Total weight with water	kg	333	332	335	334

Tab.7 Outdoor unit

Outdoor unit	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2 AWHP 16 MR-2	AWHP 11 TR-2 AWHP 16 TR-2
Weight (empty)	kg	54	42	75	118	130

3.2.3 Domestic hot water tank

Tab.8 Technical specifications primary circuit (heating water)

Specification	Unit	Value
Maximum operating temperature Version with hydraulic back-up	°C	90
Maximum operating temperature Version with electrical back-up	°C	75
Minimum operating temperature	°C	7
Maximum operating pressure	MPa (bar)	0.3 (3.0)
Domestic hot water tank exchanger capacity	Litres	11.3
Exchange surface	m ²	1.7

Tab.9 Technical specifications secondary circuit (domestic water)

Specification	Unit	Value
Maximum operating temperature	°C	80
Minimum operating temperature	°C	10
Maximum operating pressure	MPa (bar)	1.0 (10.0)
Water capacity	Litres	177

Tab.10 Common specifications (in accordance with the EN 16147 standard). Water set point temperature: 53 °C (except for AWHP 4.5 MR: 54 °C) – Outdoor temperature: 7°C – Inside air temperature: 20°C

	AWHP 4.5 MR (cycle M)	AWHP 6 MR-3 (cycle L)	AWHP 8 MR-2 (cycle L)	AWHP 11 MR-2 AWHP 11 TR-2 (cycle L)	AWHP 16 MR-2 AWHP 16 TR-2 (cycle L)
Charging time	1 hour 40 minutes	2 hours	1 hour 58 minutes	1 hour 33 minutes	1 hour 11 minutes
Coefficient of performance domestic hot water (COP _{DHW})	2.50	2.72	2.72	2.72	2.72

3.2.4 Combination heaters with medium-temperature heat pump

Tab.11 Technical parameters for heat pump combination heaters (parameters declared for medium-temperature application)

Product name			MIV-4S V200 AWHP 4.5 MR	MIV-4S V200 AWHP 6 MR-3	MIV-4S V200 AWHP 8 MR-2
Air-to-water heat pump			Yes	Yes	Yes
Water-to-water heat pump			No	No	No
Brine-to-water heat pump			No	No	No
Low-temperature heat pump			No	No	No
Equipped with a supplementary heater			Yes	Yes	Yes
Heat pump combination heater			Yes	Yes	Yes
Rated heat output under average conditions⁽¹⁾	<i>Prated</i>	kW	4	4	6
Rated heat output under colder conditions	<i>Prated</i>	kW	5	4	6
Rated heat output under warmer conditions	<i>Prated</i>	kW	4	5	6
Declared capacity for heating for part load at an indoor temperature of 20 °C and outdoor temperature T_j					
$T_j = -7$ °C	<i>Pdh</i>	kW	3.8	3.5	5.6
$T_j = +2$ °C	<i>Pdh</i>	kW	4.3	4.5	2.9
$T_j = +7$ °C	<i>Pdh</i>	kW	4.5	4.8	6.4
$T_j = +12$ °C	<i>Pdh</i>	kW	5.5	5.2	4.3
$T_j =$ bivalent temperature	<i>Pdh</i>	kW	3.9	3.6	5.2
$T_j =$ operation limit temperature	<i>Pdh</i>	kW	3.9	3.6	5.2
Bivalent temperature	T_{biv}	°C	-10	-10	-10
Degradation coefficient ⁽²⁾	<i>Cdh</i>	—	1.0	1.0	1.0
Seasonal space heating energy efficiency under average conditions	η_s	%	134	137	129
Seasonal space heating energy efficiency under colder conditions	η_s	%	109	116	119
Seasonal space heating energy efficiency under warmer conditions	η_s	%	179	172	169
Declared coefficient of performance or primary energy ratio for part load at an indoor temperature of 20 °C and outdoor temperature T_j					
$T_j = -7$ °C	<i>COPd</i>	-	1.64	1.89	1.95
$T_j = +2$ °C	<i>COPd</i>	-	3.46	3.53	3.22
$T_j = +7$ °C	<i>COPd</i>	-	4.96	4.74	4.57
$T_j = +12$ °C	<i>COPd</i>	-	7.90	7.08	6.55
$T_j =$ bivalent temperature	<i>COPd</i>	-	1.20	1.52	1.70
$T_j =$ operation limit temperature	<i>COPd</i>	-	1.20	1.52	1.70
Operation limit temperature for air-to-water heat pumps	<i>TOL</i>	°C	-10	-10	-10

Product name			MIV-4S V200 AWHP 4.5 MR	MIV-4S V200 AWHP 6 MR-3	MIV-4S V200 AWHP 8 MR-2
Heating water operating limit temperature	$WTOL$	°C	55	60	60
Electrical power consumption					
Off mode	P_{OFF}	kW	0.009	0.009	0.009
Thermostat-off mode	P_{TO}	kW	0.049	0.049	0.049
Stand-by	P_{SB}	kW	0.009	0.015	0.014
Crankcase heater mode	P_{CK}	kW	0.000	0.055	0.055
Supplementary heater					
Rated heat output	P_{sup}	kW	0.0	0.0	0.0
Type of energy input			Electricity	Electricity	Electricity
Other specifications					
Capacity control			Variable	Variable	Variable
Sound power level, indoors - outdoors	L_{WA}	dB	49 – 61	49–65	49 – 67
Annual energy consumption under average conditions	Q_{HE}	kWh	2353	2124	3499
Annual energy consumption under colder conditions	Q_{HE}	kWh	4483	3721	4621
Annual energy consumption under warmer conditions	Q_{HE}	kWh	1249	1492	1904
Rated air flow rate, outdoors for air-to-water heat pumps	—	m ³ /h	2100	2100	3300
Declared load profile			L	L	L
Daily electricity consumption	Q_{elec}	kWh	4.020	4.816	4.816
Annual electricity consumption	AEC	kWh	845	968	968
Water heating energy efficiency					
Daily fuel consumption	Q_{fuel}	kWh	0.000	0.000	0.000
Annual fuel consumption	AFC	GJ	0	0	0
(1) The rated heat output P_{rated} is equal to the design load for heating $P_{designh}$, and the rated heat output of a supplementary heater P_{sup} is equal to the supplementary capacity for heating $sup(T_j)$.					
(2) If Cdh is not determined by measurement, the default degradation coefficient is $Cdh = 0.9$.					

Tab.12 Technical parameters for heat pump combination heaters (parameters declared for medium-temperature application)

Product name			MIV-4S V200 AWHP 11 MR-2 AWHP 11 TR-2	MIV-4S V200 AWHP 16 MR-2 AWHP 16 TR-2
Air-to-water heat pump			Yes	Yes
Water-to-water heat pump			No	No
Brine-to-water heat pump			No	No
Low-temperature heat pump			No	No
Equipped with a supplementary heater			Yes	Yes
Heat pump combination heater			Yes	Yes
Rated heat output under average conditions⁽¹⁾	P_{rated}	kW	6	9
Rated heat output under colder conditions	P_{rated}	kW	4	7
Rated heat output under warmer conditions	P_{rated}	kW	8	13
Declared capacity for heating for part load at an indoor temperature of 20 °C and outdoor temperature T_j				
$T_j = -7$ °C	P_{dh}	kW	5.9	9.0
$T_j = +2$ °C	P_{dh}	kW	5.3	6.5
$T_j = +7$ °C	P_{dh}	kW	9.0	12.9
$T_j = +12$ °C	P_{dh}	kW	7.7	10.0
$T_j =$ bivalent temperature	P_{dh}	kW	6.3	8.8
$T_j =$ operation limit temperature	P_{dh}	kW	6.3	8.8

Product name			MIV-4S V200 AWHP 11 MR-2 AWHP 11 TR-2	MIV-4S V200 AWHP 16 MR-2 AWHP 16 TR-2
Bivalent temperature	T_{biv}	°C	-10	-10
Degradation coefficient ⁽²⁾	Cdh	—	1.0	1.0
Seasonal space heating energy efficiency under average conditions	η_s	%	125	121
Seasonal space heating energy efficiency under colder conditions	η_s	%	113	113
Seasonal space heating energy efficiency under warmer conditions	η_s	%	167	161
Declared coefficient of performance or primary energy ratio for part load at an indoor temperature of 20 °C and outdoor temperature T_j				
$T_j = -7$ °C	$COPd$	-	1.87	1.85
$T_j = +2$ °C	$COPd$	-	3.17	3.02
$T_j = +7$ °C	$COPd$	-	4.54	4.34
$T_j = +12$ °C	$COPd$	-	6.19	5.75
$T_j =$ bivalent temperature	$COPd$	-	1.20	1.35
$T_j =$ operation limit temperature	$COPd$	-	1.20	1.35
Operation limit temperature for air-to-water heat pumps	TOL	°C	-10	-10
Heating water operating limit temperature	$WTOL$	°C	60	60
Electrical power consumption				
Off mode	P_{OFF}	kW	0.009	0.009
Thermostat-off mode	P_{TO}	kW	0.023	0.035
Stand-by	P_{SB}	kW	0.023	0.023
Crankcase heater mode	P_{CK}	kW	0.055	0.055
Supplementary heater				
Rated heat output	P_{sup}	kW	0.0	0.0
Type of energy input			Electricity	Electricity
Other specifications				
Capacity control			Variable	Variable
Sound power level, indoors - outdoors	L_{WA}	dB	48–69	48 – 70
Annual energy consumption under average conditions	Q_{HE}	kWh	3999	5861
Annual energy consumption under colder conditions	Q_{HE}	kWh	3804	5684
Annual energy consumption under warmer conditions	Q_{HE}	kWh	2580	4120
Rated air flow rate, outdoors for air-to-water heat pumps	—	m ³ /h	6000	6000
Declared load profile			L	L
Daily electricity consumption	Q_{elec}	kWh	4.816	4.816
Annual electricity consumption	AEC	kWh	968	968
Water heating energy efficiency	η_{wh}	%	106.00	106.00
Daily fuel consumption	Q_{fuel}	kWh	0.000	0.000
Annual fuel consumption	AFC	GJ	0	0
(1) The rated heat output P_{rated} is equal to the design load for heating $P_{designh}$, and the rated heat output of a supplementary heater P_{sup} is equal to the supplementary capacity for heating $sup(T_j)$.				
(2) If Cdh is not determined by measurement, the default degradation coefficient is $Cdh = 0.9$.				



See

The back cover for contact details.

3.2.5 Sensor specifications

■ Outside sensor specifications

Tab.13 Outside sensor

Temperature	°C	-20	-16	-12	-8	-4	0	4	8	12	16	20	24
Resistance	Ohm	2392	2088	1811	1562	1342	1149	984	842	720	616	528	454

■ Heating flow sensor specifications

Tab.14

Temperature	°C	0	10	20	25	30	40	50	60	70	80	90
Resistance	Ohm	32014	19691	12474	10000	8080	5372	3661	2535	1794	1290	941

■ Specifications of the heat pump flow and return temperature sensors (PT1000)

Tab.15

Temperature	°C	-10	0	10	20	30	40	50	60	70	80	90	100
Resistance	Ohm	961	1000	1039	1077	1117	1155	1194	1232	1271	1309	1347	1385

3.2.6 Circulating pump



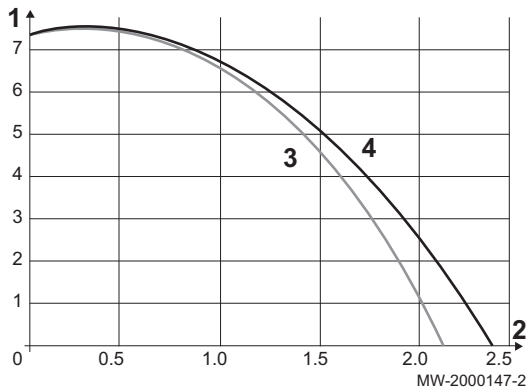
Important

The benchmark for the most efficient circulating pumps is $EEL \leq 0.20$.

The circulating pump in the indoor module is a variable speed pump. It adapts its speed to the distribution network.

The speed of the circulating pump is controlled to reach a set point flow rate. This set point depends on the **HP069** parameter. This value is automatically configured according to the output of the outdoor unit when the codes CN1 and CN2 are configured when the appliance is first started.

Fig.4 Pressure available

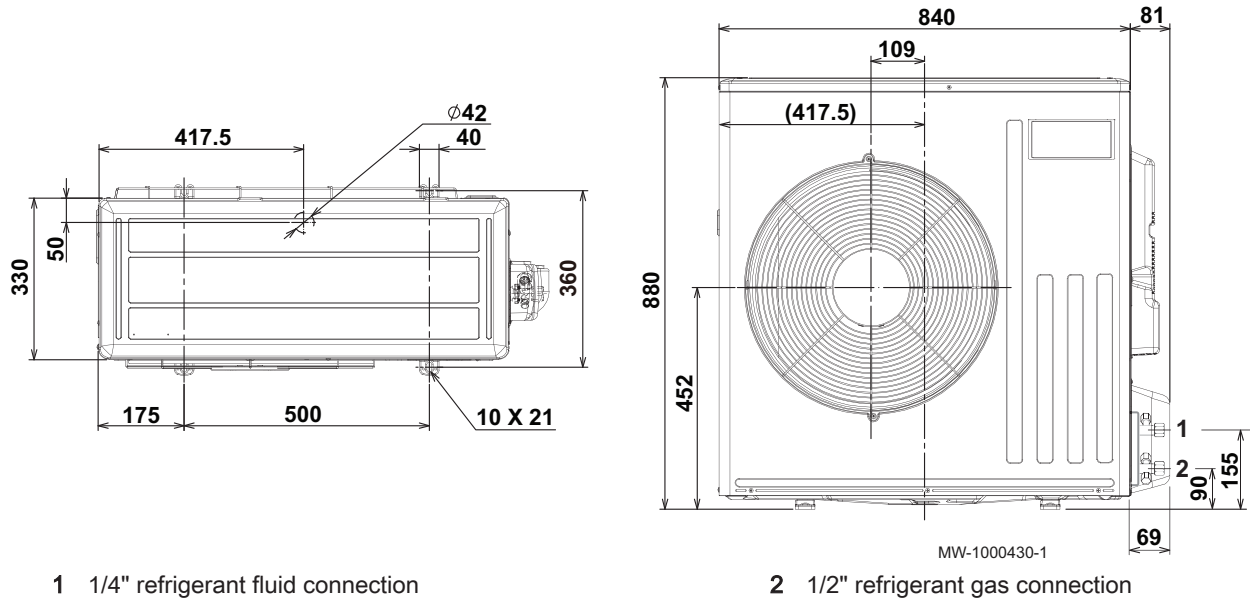


- 1 Available pressure in metres of water column (mWc)
- 2 Water flow rate in cubic metres per hour (m³/h)
- 3 Available pressure for 4 to 8 kW outdoor units
- 4 Available pressure for the 11 and 16 kW outdoor units

3.3 Dimensions and connections

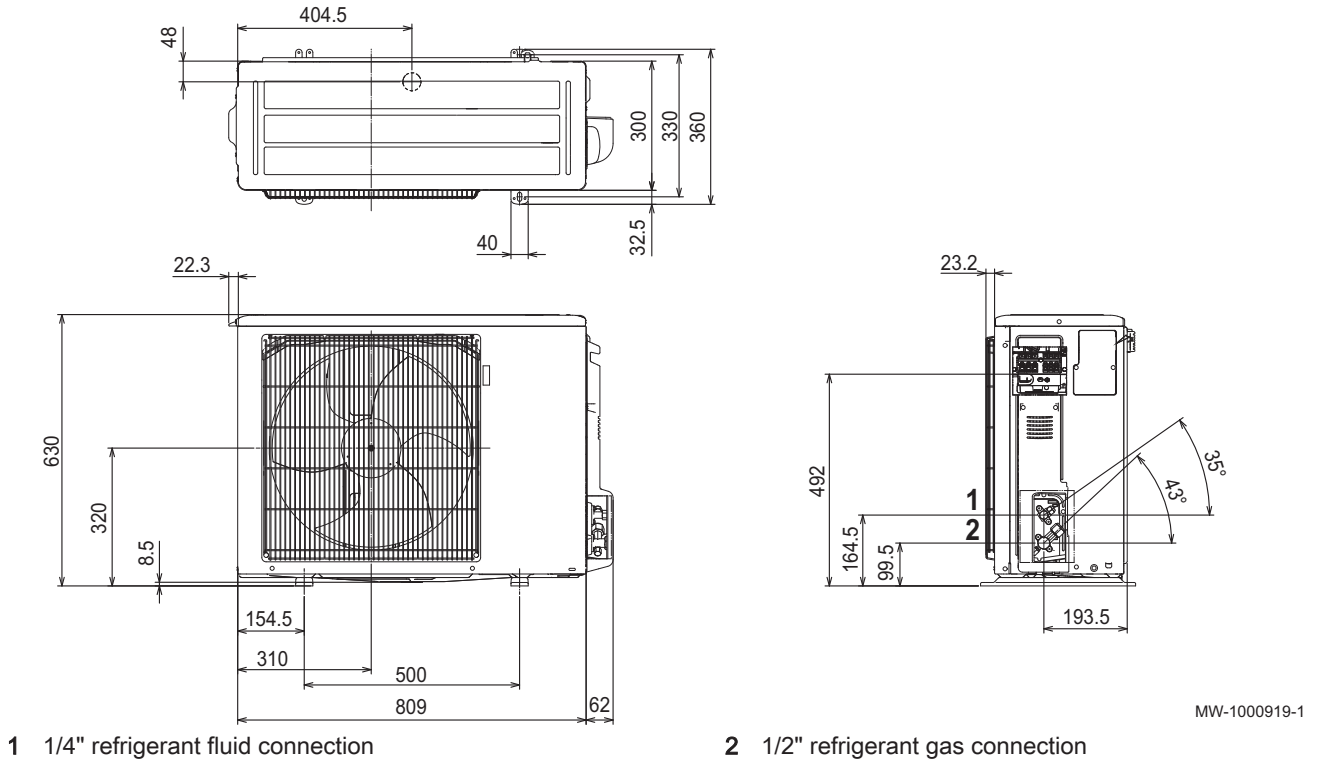
3.3.1 AWHP 4.5 MR

Fig.5



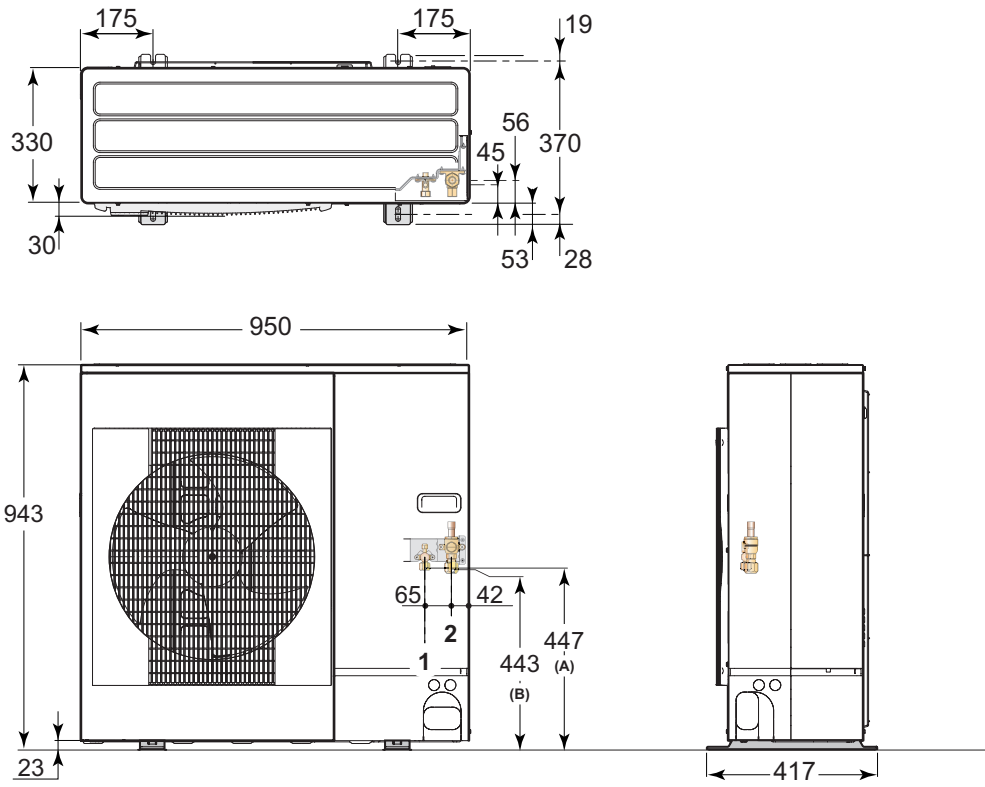
3.3.2 AWHP 6 MR-3

Fig.6



3.3.3 AWHP 8 MR-2

Fig.7



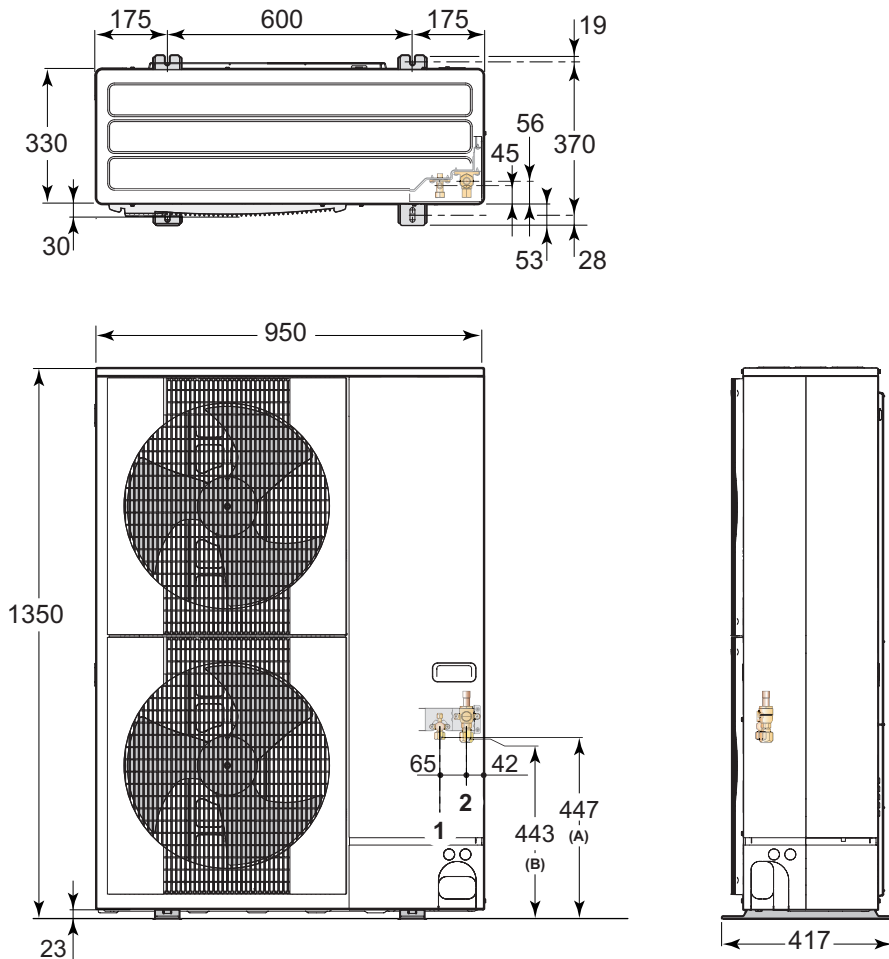
1 3/8" refrigerant fluid connection

2 5/8" refrigerant gas connection

MW-M001442-2

3.3.4 AWHP 11 MR-2 – AWHP 16 MR-2 – AWHP 11 TR-2 –
AWHP 16 TR-2

Fig.8



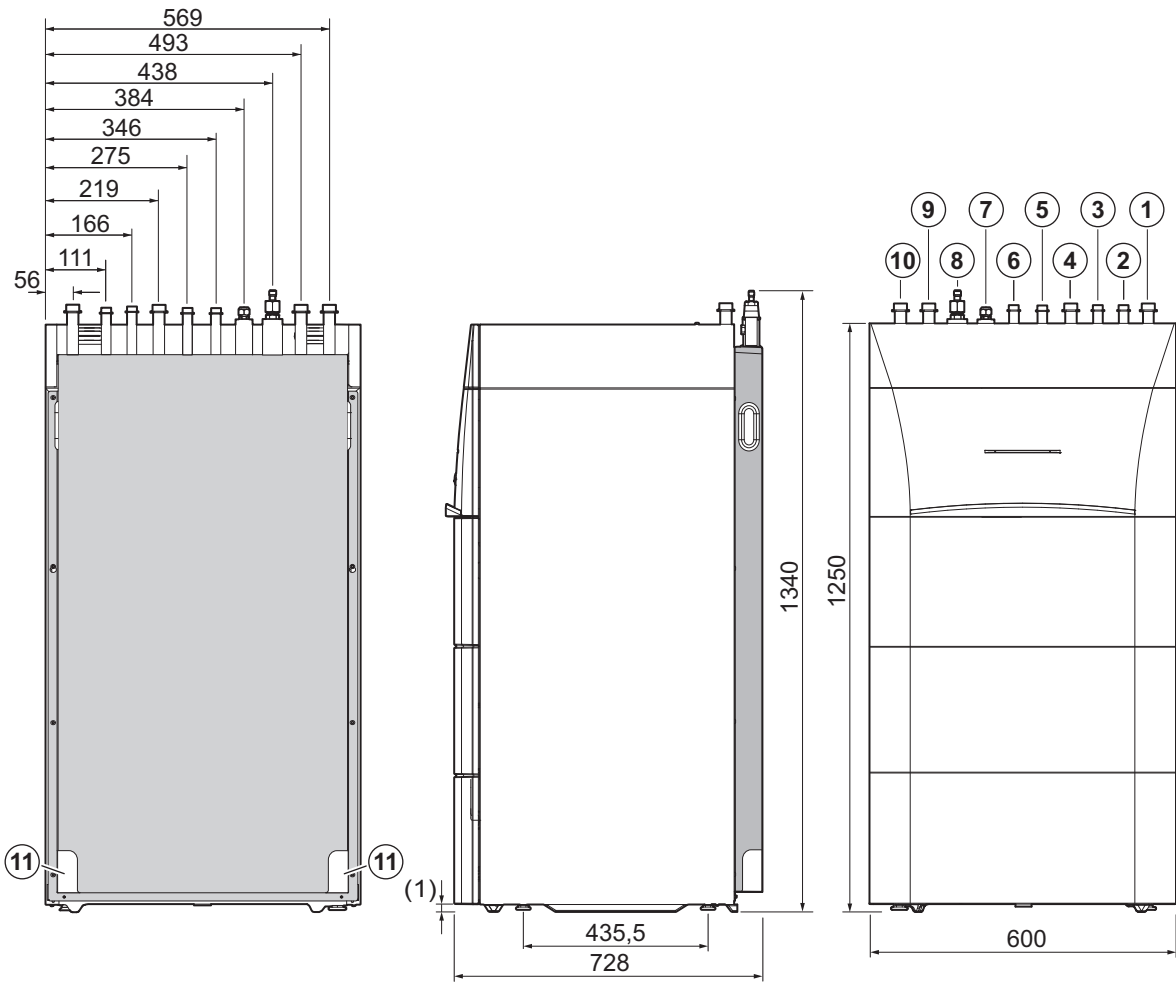
MW-M001443-2

1 3/8" refrigerant fluid connection

2 5/8" refrigerant gas connection

3.3.5 Indoor module

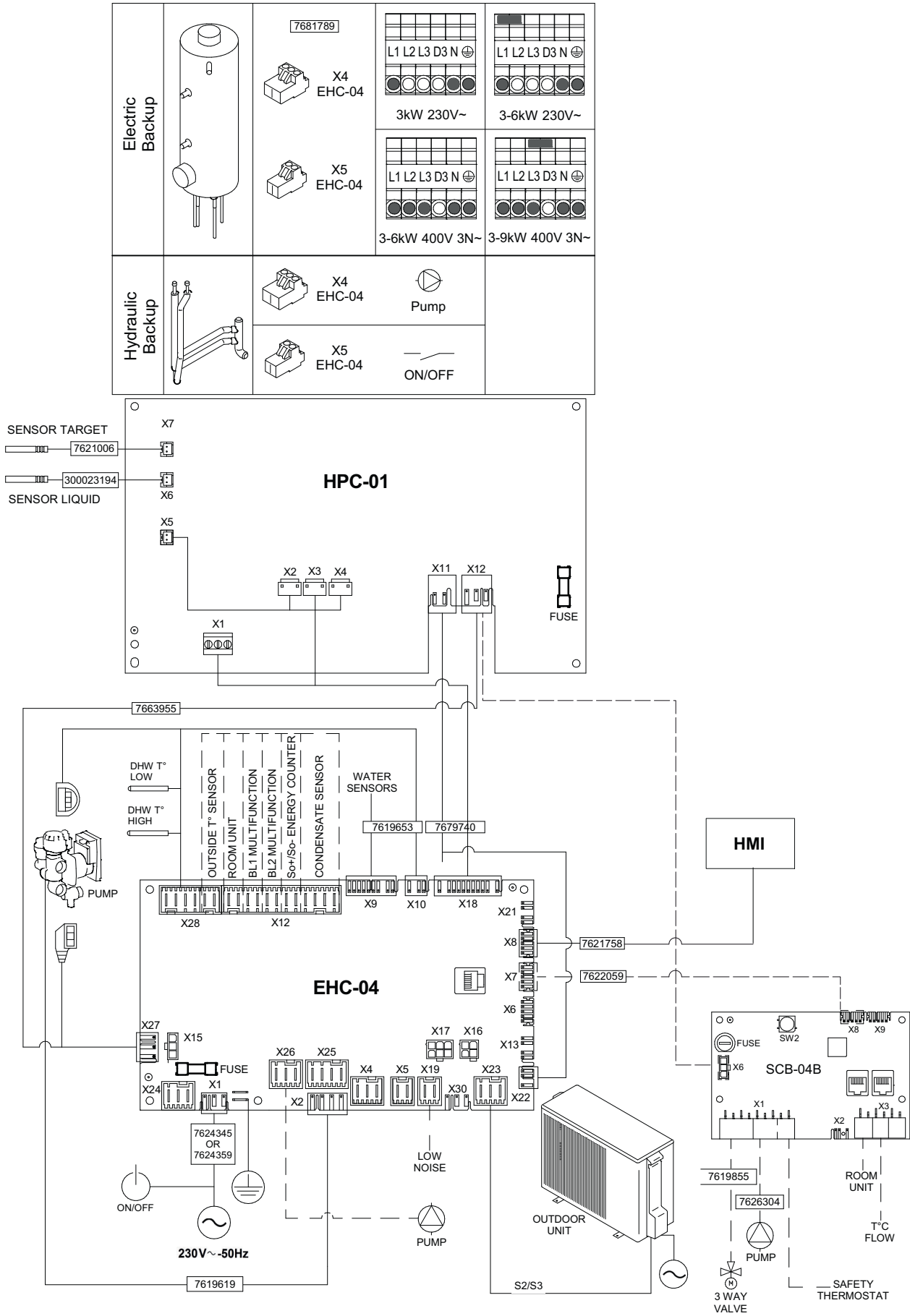
Fig.9 Dimensions and connections



MW-5000762-03

- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Heating circuit flow G1" 2 Flow from back-up boiler G3/4" (H versions only) 3 Return to back-up boiler G3/4" (H versions only) 4 Heating circuit return G1" 5 Domestic cold water inlet G3/4" 6 Domestic hot water flow G3/4" | <ul style="list-style-type: none"> 7 Refrigerant fluid connection 3/8" - liquid line 8 Refrigerant fluid connection 5/8" - gas line 9 Second circuit flow (optional) 10 Second circuit return (optional) 11 Condensate discharge (1) Adjustable feet |
|--|--|

3.4 Electrical diagram



MW-5000743-2

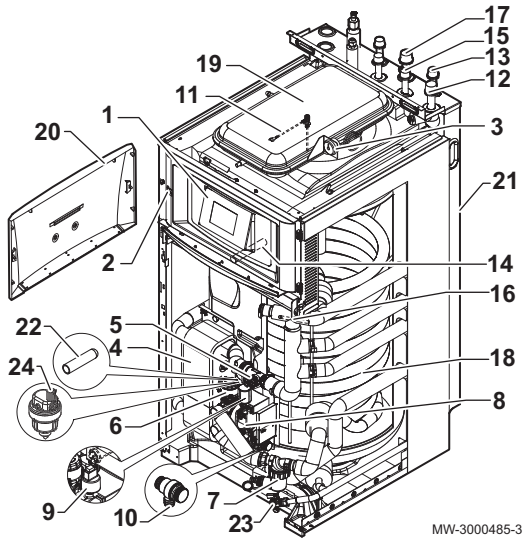
Tab.16 Electrical diagram legend

BL1 MULTIFUNCTION	BL1 multifunction input
BL2 MULTIFUNCTION	BL2 multifunction input
CONDENSATE SENSOR	Condensation sensor
DHW T° LOW	Bottom domestic hot water sensor
DHW T° HIGH	Top domestic hot water sensor
EHC-04	Hybrid heat pump control system central unit PCB
ELECTRICAL BACKUP	Electrical back-up
FUSE	Fuse
HMI	User interface
HPC-01	HPC PCB (interface for the outdoor unit)
HYDRAULIC BACKUP	Hydraulic back-up
LOW NOISE	Optional connection cable for Silent mode (IWR RLB)
OUTDOOR UNIT	Outdoor unit
OUTSIDE T° SENSOR	Outdoor temperature sensor
PUMP	Circulating pump
ROOM UNIT	Room thermostat/Opentherm thermostat/ON/OFF thermostat/room sensor
SAFETY THERMOSTAT	Safety thermostat
SCB-04	PCB for controlling a second circuit (Optional)
SENSOR LIQUID	Water level sensor
SENSOR TARGET	Heat exchanger temperature sensor
So+/So- ENERGY COUNTER	Energy meter
T°C FLOW	Outlet sensor
WATER SENSORS	Sensors, water side
3 WAY VALVE	Three-way valve

4 Description of the product

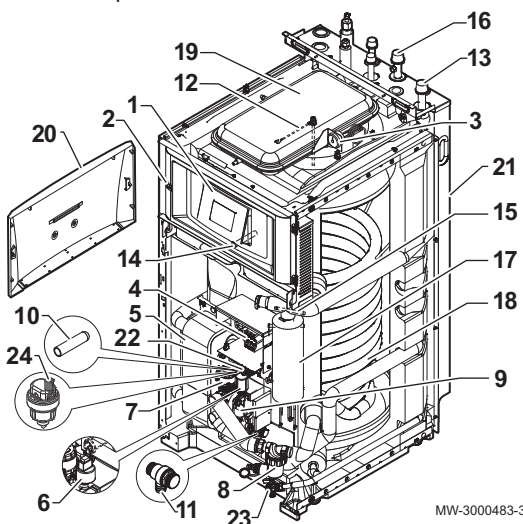
4.1 Main components

Fig.10 Indoor module with hydraulic back-up



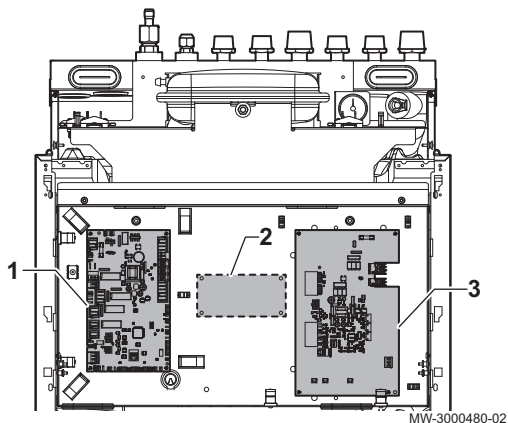
- 1 User interface
- 2 ON/OFF button
- 3 Mechanical manometer
- 4 Plate heat exchanger (condenser)
- 5 Flow meter
- 6 3-way valve with reversal motor for heating/domestic hot water
- 7 Magnetic sieve filter
- 8 Main circulating pump
- 9 Electronic pressure gauge
- 10 Safety valve
- 11 Magnesium anode
- 12 Heating circuit flow
- 13 Return from the back-up boiler
- 14 Immersion sleeve for the top domestic hot water sensor
- 15 Flow to the back-up boiler
- 16 System temperature sensor
- 17 Heating circuit return
- 18 Heat exchanger for the production of domestic hot water in the tank (coil)
- 19 Expansion vessel
- 20 User interface access door
- 21 Rear panel
- 22 Immersion sleeve for the bottom domestic hot water sensor
- 23 Domestic hot water tank drain valve
- 24 Air vent

Fig.11 Indoor module with electrical back-up



- 1 User interface
- 2 ON/OFF button
- 3 Mechanical manometer
- 4 Electrical back-up terminal block
- 5 Plate heat exchanger (condenser)
- 6 Electronic pressure gauge
- 7 3-way valve with reversal motor for heating/domestic hot water
- 8 Magnetic sieve filter
- 9 Main circulating pump
- 10 Immersion sleeve for the bottom domestic hot water sensor
- 11 Safety valve
- 12 Magnesium anode
- 13 Heating circuit flow
- 14 Immersion sleeve for the top domestic hot water sensor
- 15 System temperature sensor
- 16 Heating circuit return
- 17 Electrical back-up
- 18 Heat exchanger for the production of domestic hot water in the tank (coil)
- 19 Expansion vessel
- 20 User interface access door
- 21 Rear panel
- 22 Flow meter
- 23 Domestic hot water tank drain valve
- 24 Air vent

Fig.12 Position of the PCBs



- 1 EHC-04 central unit PCB: control system for the heat pump and the first heating circuit (direct circuit)
- 2 Position for second circuit control system PCB: manages a second heating circuit
- 3 HPC-01 PCB: PCB for interface with the outdoor unit

4.2 Operating principle

The outdoor unit produces heat or cold and transfers it to the indoor module via the refrigerant in the plate exchanger.

The indoor module is equipped with a specific control system which is used to adjust the temperature of the heating water to the needs of the home.

4.3 Standard delivery

Delivery includes several packages:

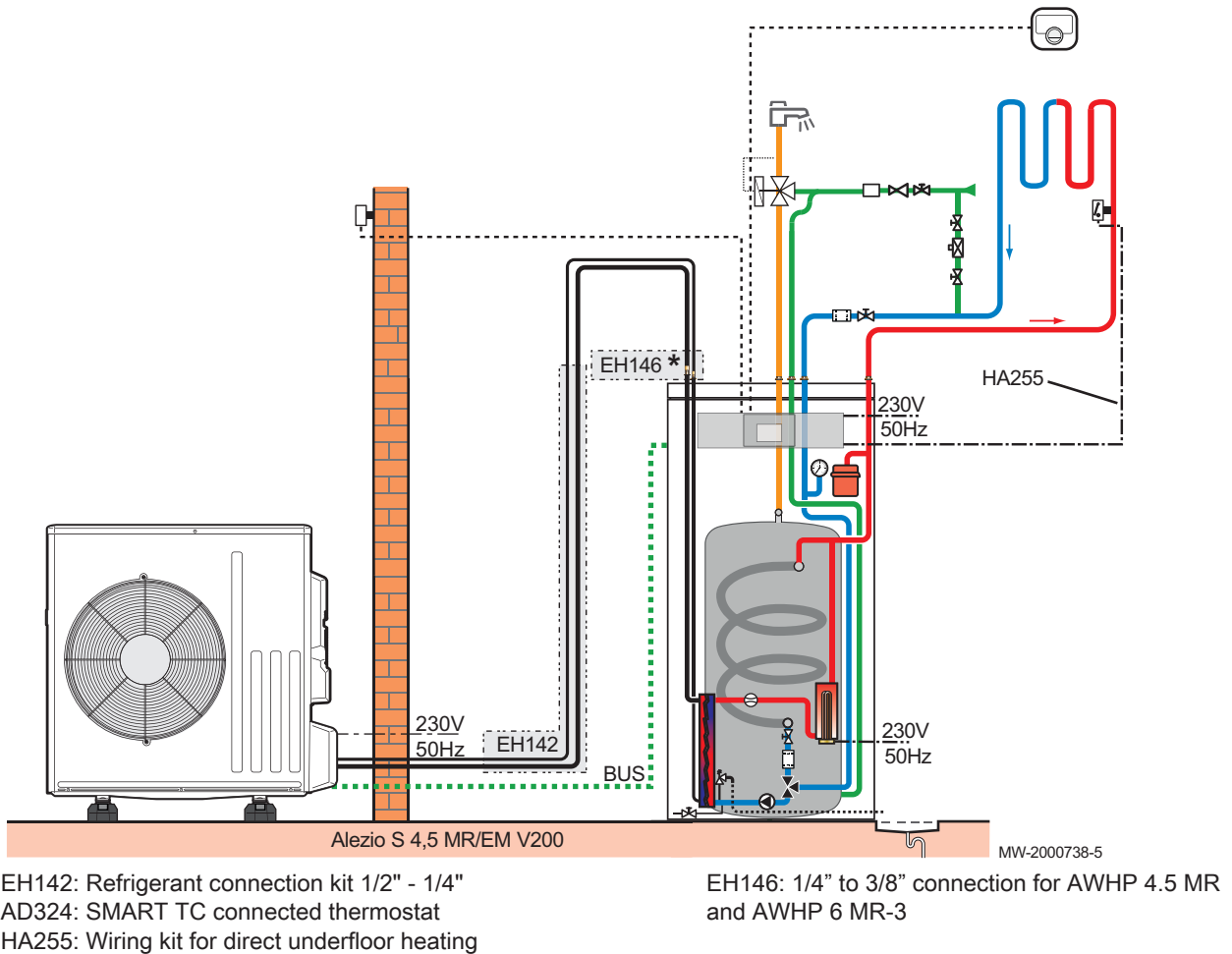
Tab.17

Package	Contents
Outdoor unit	<ul style="list-style-type: none"> • An outdoor unit • A manual
Indoor module	<ul style="list-style-type: none"> • An indoor module • An outside sensor • A filter to be installed on the heating return • An accessories bag containing: <ul style="list-style-type: none"> - hoses, - connectors, - etc. • An installation and service manual • A user guide • Terms of warranty

5 Connecting diagrams and configuration

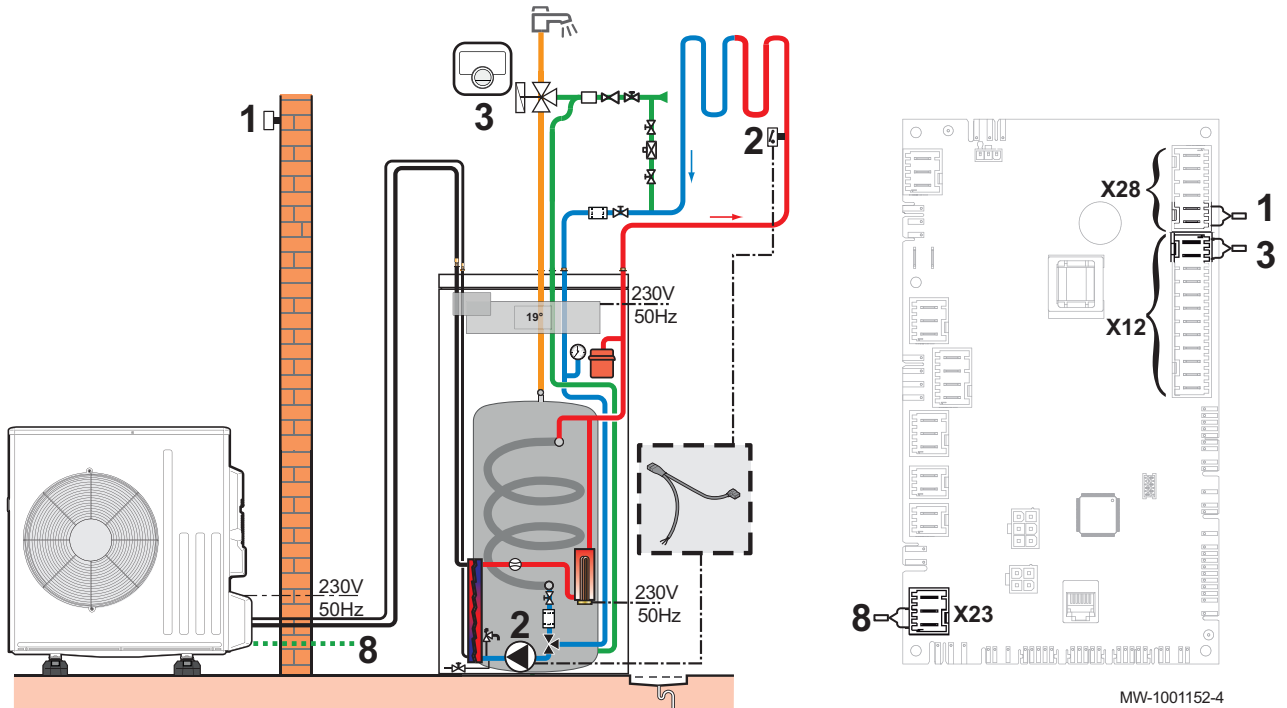
5.1 Installation with electrical back-up and one direct circuit

Fig.13



5.1.1 Carrying out the electrical connections and the parameter settings

Fig.14



- 1 Outdoor temperature sensor
- 2 Wiring kit for direct underfloor heating
- 3 Thermostat
- 8 Outdoor unit bus connection

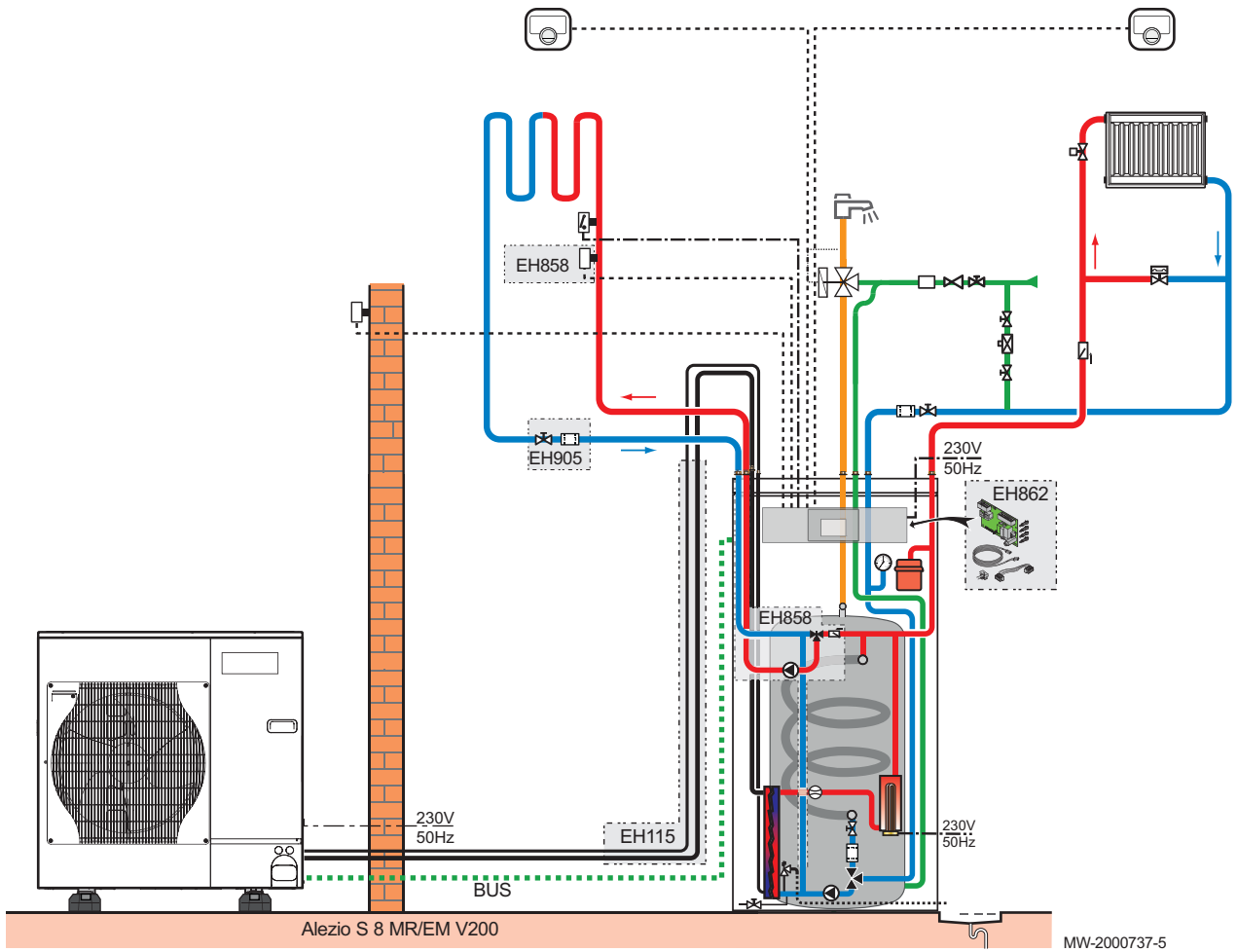
1. Connect the accessories and options to the EHC-04 PCB, respecting the 230-400V and 0-40V cable feed-throughs.
2. On initial start-up, or after a reset of the factory parameters, set the CN1 and CN2 parameters according to the output of the outdoor unit.
3. Select the number corresponding to the installation type by pressing the + or - key.

Installation type	No.
1 direct underfloor heating + 1 domestic hot water tank	06

- ⇒ Selecting the installation type enables automatic configuration of the parameters required for the control panel to operate correctly (gradient, maximum circuit temperature, etc.).
- 4. Confirm the selection by pressing the ← key.
- ⇒ The main parameters are set.

5.2 Installation with electrical back-up and two circuits

Fig.15

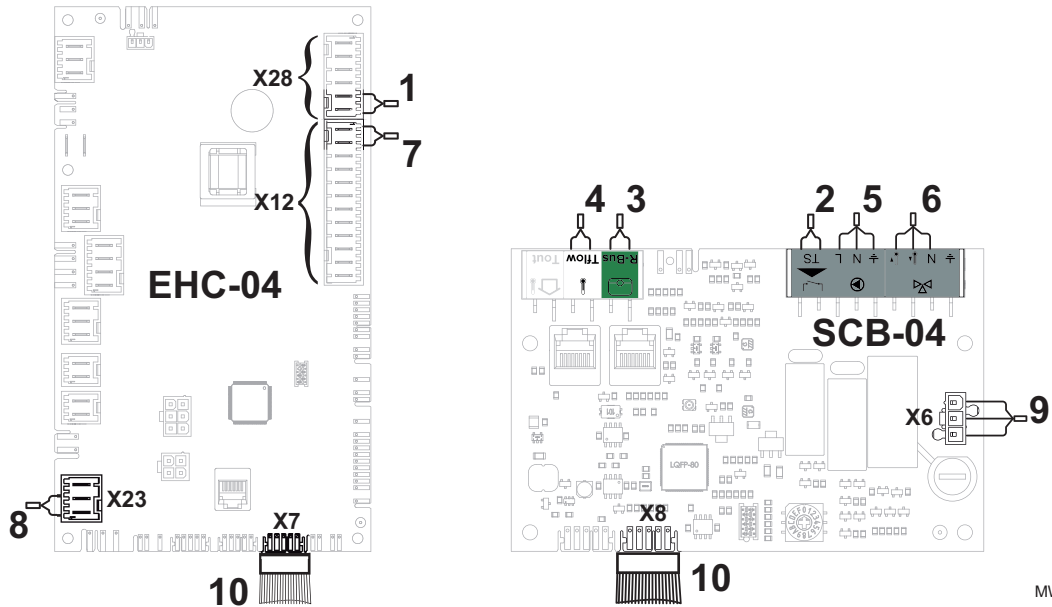
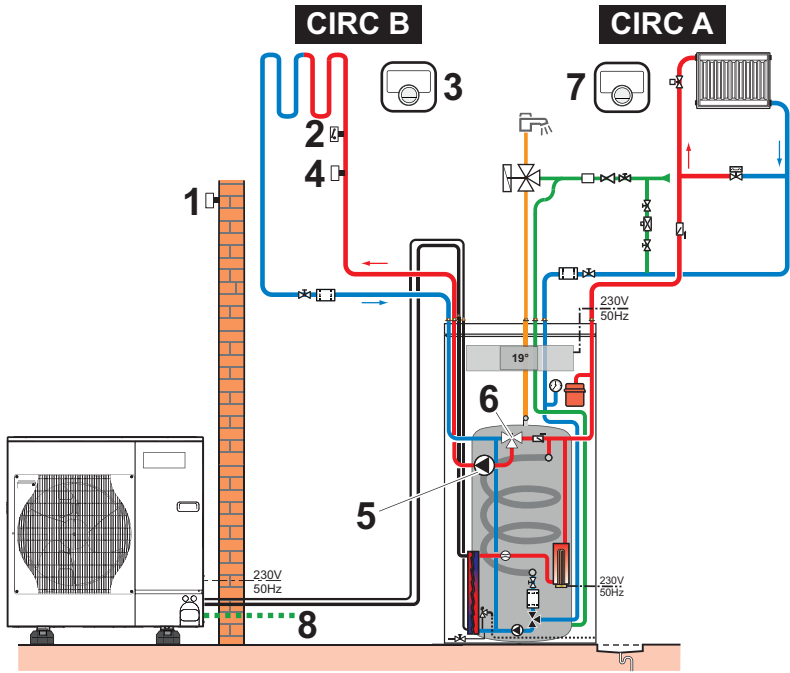


EH858: second circuit mixing valve kit
 AD324: SMART TC connected thermostat
 EH115: Refrigerant connection 5/8" – 3/8", 10 m

EH905: filter kit
 EH862: second circuit control system PCB kit

5.2.1 Carrying out the electrical connections and the parameter settings

Fig.16



MW-1001150-4

- 1 Outdoor temperature sensor
- 2 Safety thermostat for underfloor heating flow
- 3 Circuit B thermostat
- 4 Flow sensor for the second circuit kit
- 5 Pump power supply for the second circuit kit
- 6 3-way valve for the second circuit kit
- 7 Circuit A thermostat
- 8 Outdoor unit bus connection
- 9 230 V power supply connection between the HPC-01 and SCB-04 PCBs
- 10 BUS connection linking the EHC-04 and SCB-04 PCBs

1. Connect the accessories and options to the **EHC-04** PCB, respecting the 230-400V and 0-40V cable feed-throughs.
2. Connect the accessories and options to the **SCB-04** PCB, respecting the 230-400V and 0-40V cable feed-throughs.
3. On initial start-up, or after a reset of the factory parameters, set the CN1 and CN2 parameters according to the output of the outdoor unit.

4. Select the number corresponding to the installation type by pressing the **+** or **-** key.

Installation type	No.
1 direct heating circuit + 1 domestic hot water tank + 1 mixing valve	04

⇒ Selecting the installation type enables automatic configuration of the parameters required for the control panel to operate correctly (gradient, maximum circuit temperature, etc.).

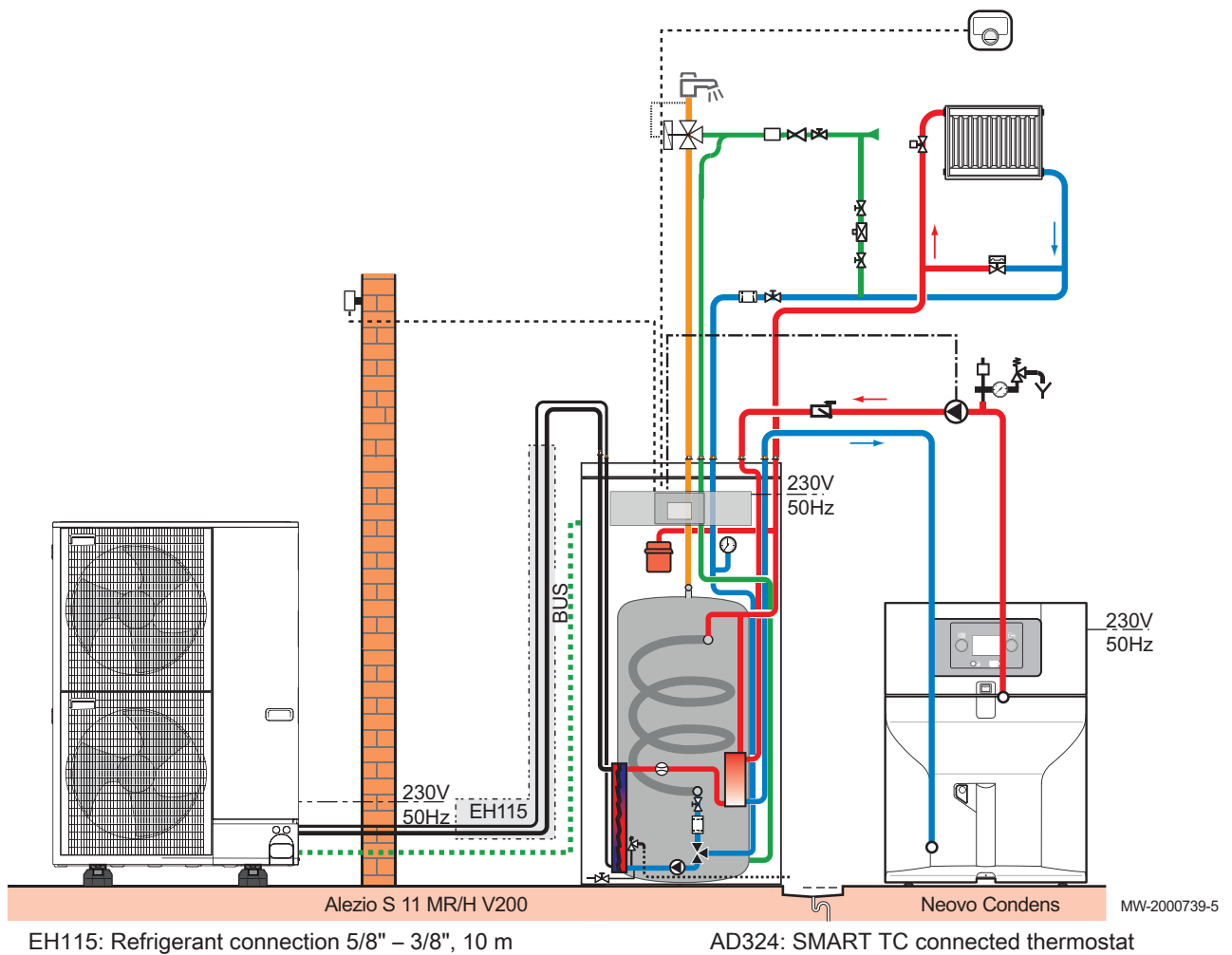
5. Confirm the selection by pressing the **←** key.

6. Set the **CP050** parameter to **0**.

⇒ The main parameters are set.

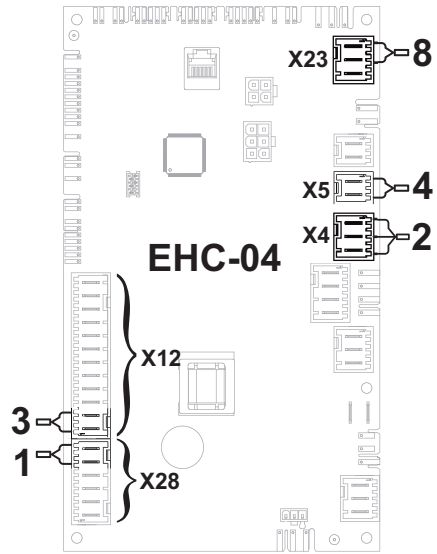
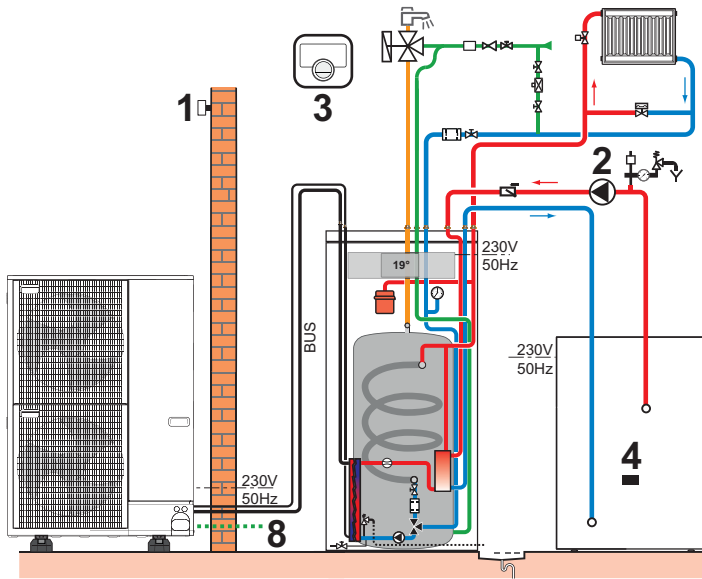
5.3 Installation with hydraulic back-up and one direct circuit

Fig.17



5.3.1 Carrying out the electrical connections and the parameter settings

Fig.18



MW-1001151-5

- 1 Outdoor temperature sensor
- 2 Hydraulic back-up pump
- 3 ThermostatSMART TC

- 4 ON/OFF contact for the hydraulic back-up
- 8 Outdoor unit bus connection

1. Connect the accessories and options to the **EHC-04** PCB, respecting the 230-400 V and 0-40 V cable feed-throughs.
2. On initial start-up, or after a reset of the factory parameters, set the CN1 and CN2 parameters according to the output of the outdoor unit.
3. Select the number corresponding to the installation type by pressing the **+** or **-** key.

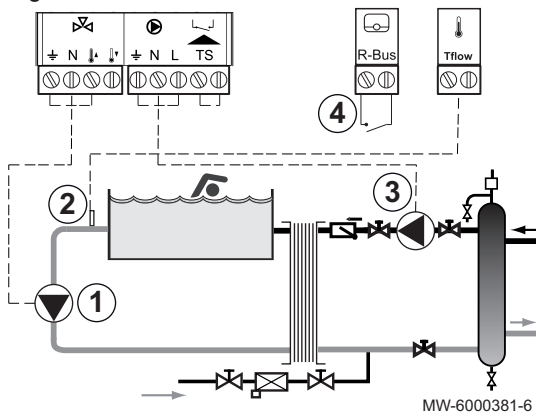
Installation type	No.
1 direct heating circuit and 1 domestic hot water tank	02

- ⇒ Selecting the installation type enables automatic configuration of the parameters required for the control panel to operate correctly (gradient, maximum circuit temperature, etc.).
- 4. Confirm the selection by pressing the **←** key.
 - ⇒ The main parameters are set.
- 5. If necessary, configure the hybrid operating mode for the hydraulic back-up.
- 6. Setting up the back-up boiler

5.4 Connecting a swimming pool

The swimming pool is not heated when the contact is open (factory setting). Only the frost protection continues to run.

Fig.19



The electrical connection for a swimming pool is made to the optional SCB-04 PCB.

1. Connect the swimming pool secondary pump to the terminal block.
2. Connect the swimming pool temperature sensor to the TFlow terminal block.
3. Connect the swimming pool primary pump to the terminal block.
4. Connect the swimming pool heating cut-off control to the R-Bus terminal block.

5.4.1 Configuring the heating of a swimming pool

Important

- The **SCB-04** optional PCB is required for controlling the swimming pool heating.
 - To ensure the swimming pool heat pump operates correctly, ensure a low-loss header is provided.
- For the pool to be heated, a swimming pool thermostat is required.
 - The thermostat contact is open when the swimming pool temperature is higher than the thermostat set point.
 - When the contact is closed, the swimming pool is heated.
1. Go to the **Installer** menu.
 2. Access the **Installer** menu by entering the code **0012** by pressing the **+** and **-** keys.
 3. Confirm access by pressing the **←** key.
 4. Access the circuit B and SCB-04 PCB parameters by pressing the **+** or **-** key.
 5. Confirm the selection by pressing the **←** key.
 6. Configure the following parameters:

Tab.18 Heating configuration for a swimming pool

Parameter	Description	Value to be set
CP020	Circuit type	3
CP540	Swimming pool water temperature set point	26 °C

Important

Back-up operation follows the same logic as heating mode. If necessary, it is possible to block operation of the back-ups with the **BL** inputs.

6 Installation

6.1 Preparation



Important

Fit all of the options onto the indoor module before the appliance is put into its final position.

6.2 Installation regulations



Warning

The components used for the connection to the cold water supply must comply with the prevailing standards and regulations in the country concerned.

Pursuant to Article L. 113-3 of the French Consumer Code, the installation of equipment must be done by a certified operator whenever the refrigerant load is in excess of two kilograms or when a refrigerant connection is necessary (the case with split systems, even when fitted with a quick coupling device).



Caution

Installation of the heat pump must be done by a qualified professional in accordance with prevailing local and national regulations.

Regulations for France: residential buildings

- Standard DTU 62-16: Installation of heat pumps
- Standard DTU 65-17: Hot water radiator heating system
- Standard DTU 65-14: Installation of hot water underfloor heating.
- Standard DTU 65-11: Safety devices for central heating installations relating to the building
- Set of recommendations: Hot water central heating systems - Book 3114 from the Centre Scientifique et Technique du Bâtiment (Scientific and Technical Centre for Building).
- Local Sanitary Regulations (RSD)
- For appliances connected to the electricity network: Standard NF C 15-100 - Low voltage electrical installations.

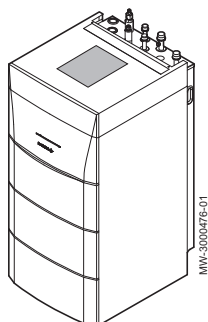
Regulations for France: establishments open to the general public

- Safety regulations against fire and panic in establishments open to the general public: Articles CH - Heating, ventilation, refrigeration, air conditioning and production of steam and domestic hot water.
- Instructions specific to each type of establishment open to the general public (hospitals, stores, etc.).

6.2.1 Data Plates

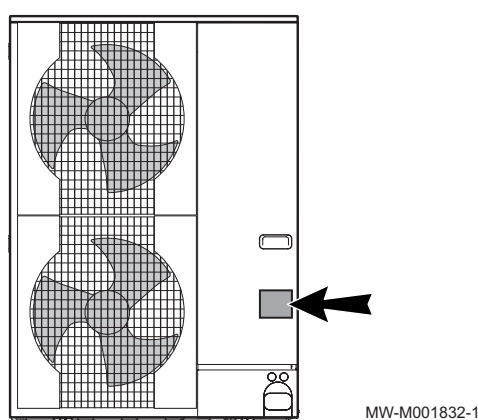
■ Data plate on the indoor module

Fig.20



■ Data plate on the outdoor unit

Fig.21



6.3 Respecting the distance between the indoor module and the outdoor unit

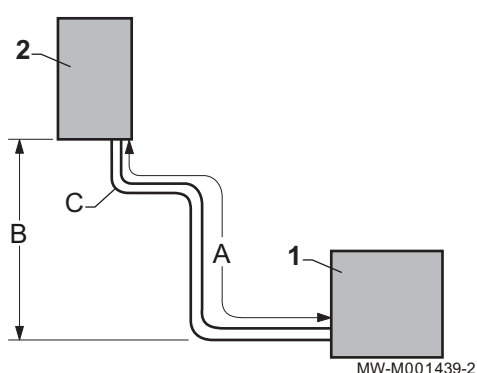
To ensure that the heat pump functions correctly, respect the minimum and maximum connection lengths between the indoor module and the outdoor unit.

1. Respect distances A, B and C between the outdoor unit 1 and the indoor module 2.

Tab.19

	A: Maximum/ minimum length	B: Maximum height differ- ence	C: Maximum number of el- bows
AWHP 4.5 MR	2 to 30 m	30 m	10
AWHP 6 MR-3	2 to 40 m	30 m	15
AWHP 8 MR-2	2 to 40 m	30 m	15
AWHP 11 MR-2	2 to 75 m	30 m	15
AWHP 11 TR-2	2 to 75 m	30 m	15
AWHP 16 MR-2	2 to 75 m	30 m	15
AWHP 16 TR-2	2 to 75 m	30 m	15

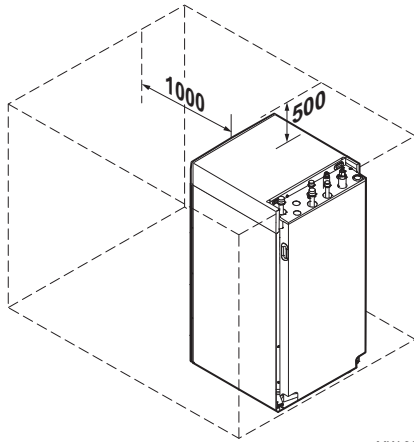
Fig.22



2. Make one or two horizontal loops with the refrigerant connections to reduce disruption.
If the length of the refrigerant connections is less than 2 m, disruptions can occur:
 - Functional disruptions caused by a fluid overload,
 - Noise pollution caused by the circulation of the refrigerant.

6.4 Positioning the indoor module

Fig.23



MW-3000458-01

6.4.1 Allowing sufficient space for the indoor module

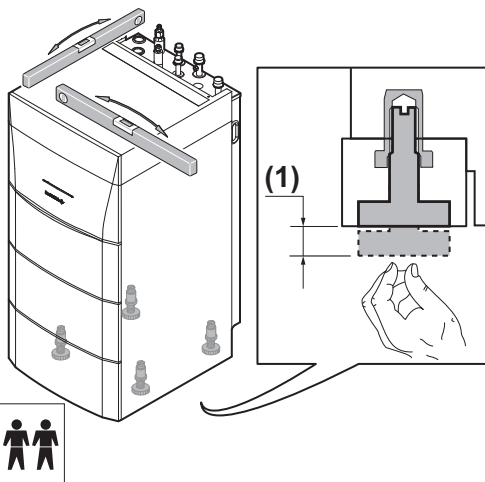


Warning

Do not install the appliance in a cupboard.

Allow sufficient space around the heat pump indoor module to ensure adequate access and facilitate maintenance.

Fig.24



MW-3000464-01

6.4.2 Levelling the indoor module

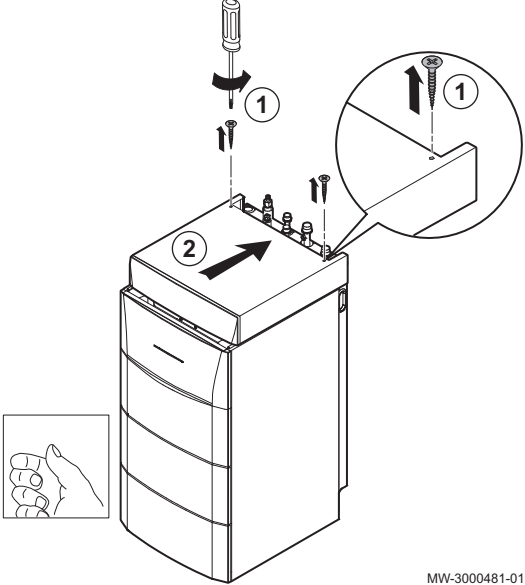
Level the indoor module using the four adjustable feet.

- (1) Adjustment range: 0 to 20 mm
Minimum requirement: extend the foot by at least 10 mm.

6.4.3 Disassembling the indoor module.

To prepare the installation, open the appliance.

Fig.25

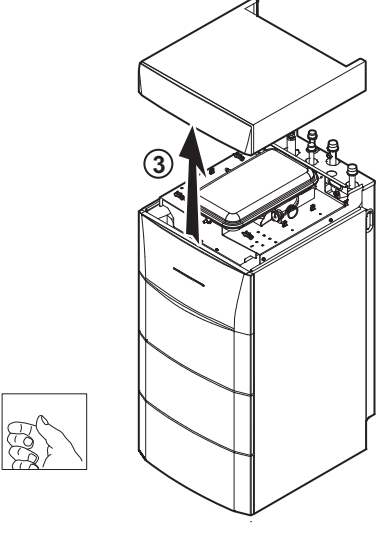


1. Unscrew the two screws from the top panel.

i Important
Do not lose the two toothed washers. During the reinstallation of the top panel, the toothed washers act to ground the unit.

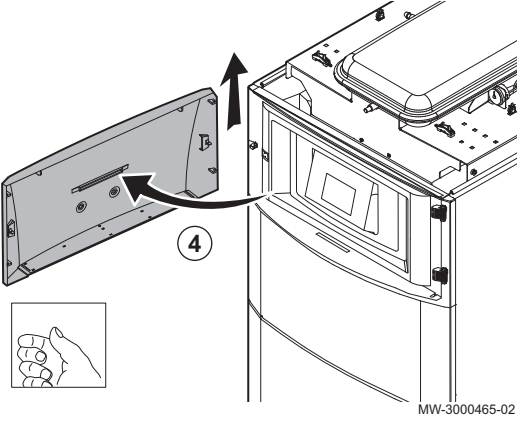
2. Push the top panel towards the back.

Fig.26



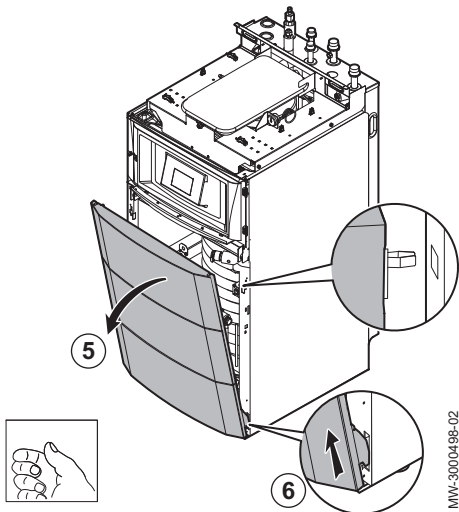
3. Raise the top panel.

Fig.27



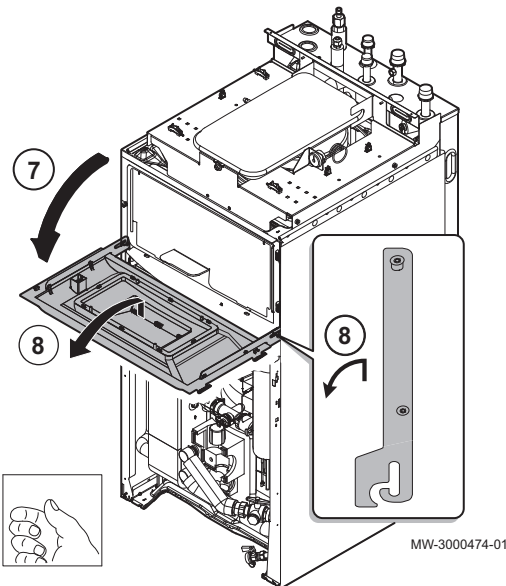
4. Open and remove the user interface access door

Fig.28



5. Pivot the front panel towards you by pulling firmly on both sides.
6. Remove the front panel by pulling firmly upwards.

Fig.29



7. Lift and pivot the control system module bracket.
8. Tilt the control system module bracket forwards and hang it in a horizontal position.

i Important
Keep a good hold of the user interface module in order not to pull out or disconnect the electrical connections in the user interface module.

9. To reassemble the appliance, reassemble the pieces in the reverse order.

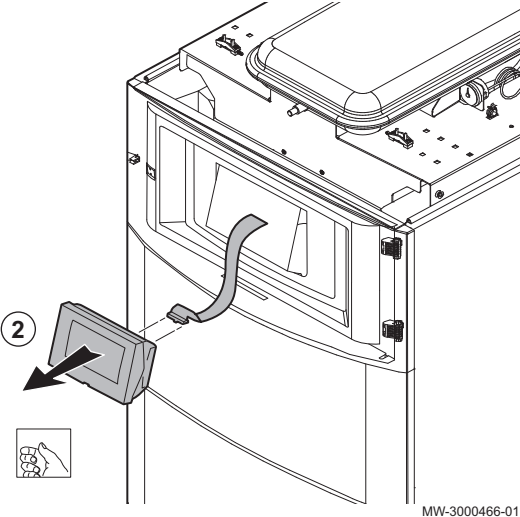
6.4.4 Reversing the opening direction of the user interface door

As standard, the user interface access door opens to the left. To open the door to the right, proceed as follows:

1. Access the user interface by unscrewing the top panel and removing the user interface door.

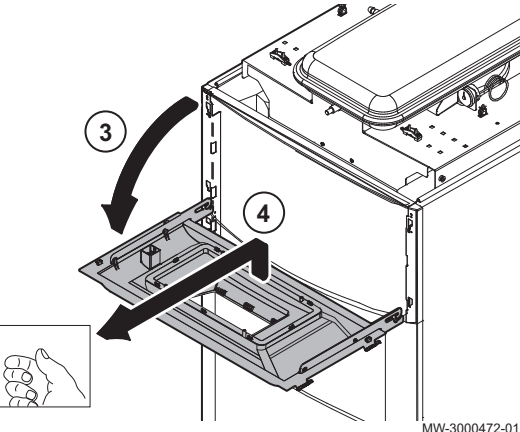
See
Disassemble the indoor module.

Fig.30



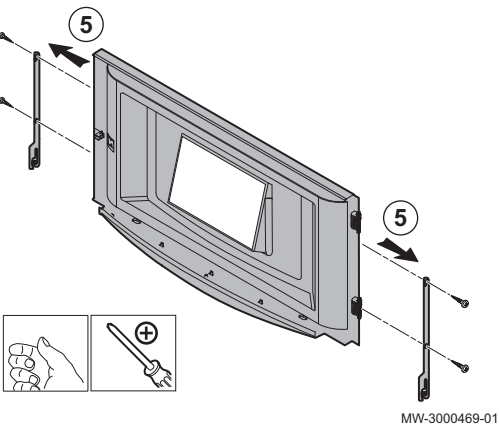
2. Take the user interface module out of its housing and disconnect it.

Fig.31



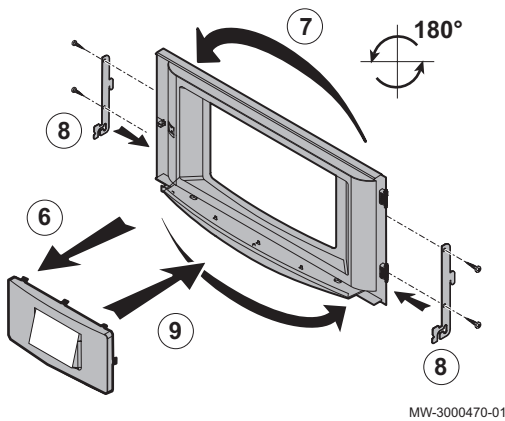
3. Lift and pivot the control system module bracket.
4. Remove the user interface support.

Fig.32



5. Unscrew the four lateral holding screws and remove the side hooks.

Fig.33



6. Unclip the control module bracket.
7. Pivot the control system module bracket by 180° and put it back in place.
8. Refit the side hooks and put the screws back in place.
9. Clip the control module bracket back in place.
10. Refit the user interface door on the right-hand side.

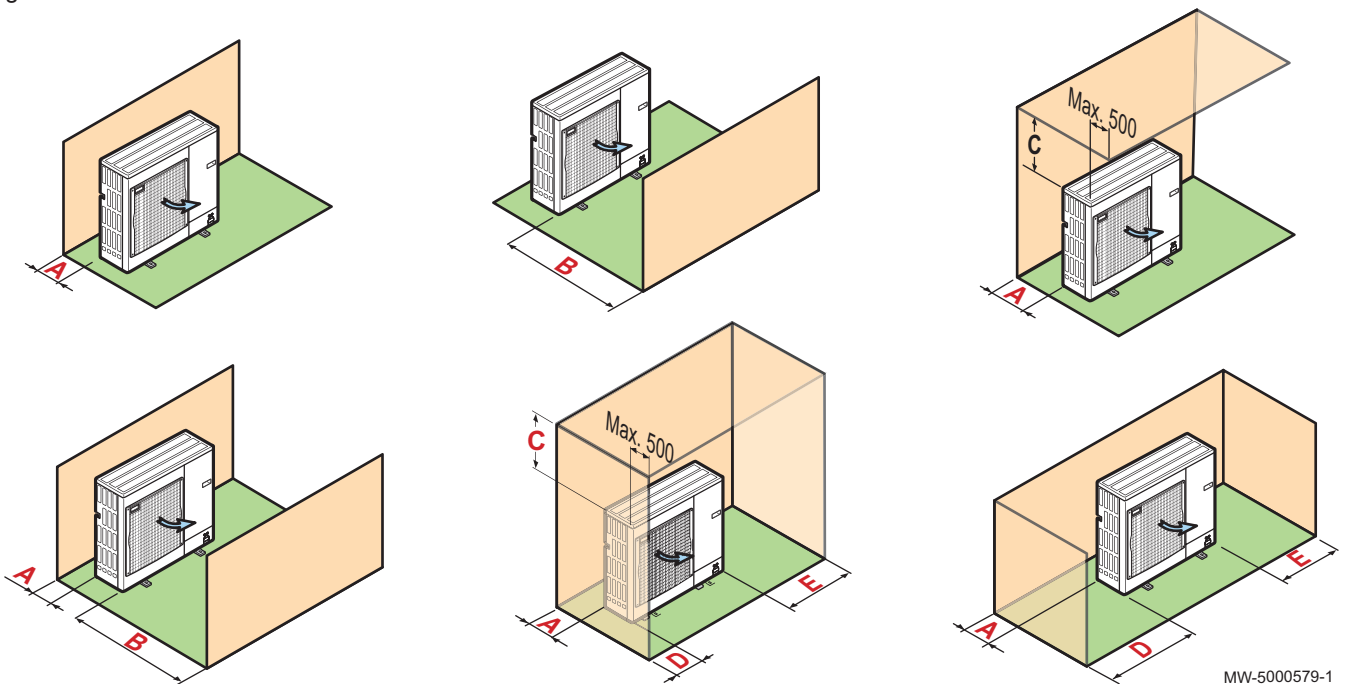
MW-3000470-01

6.5 Putting the outdoor unit in place

6.5.1 Allowing sufficient space for the outdoor unit

Minimum distances from the wall are necessary in order to guarantee optimum performance.

Fig.34



MW-5000579-1

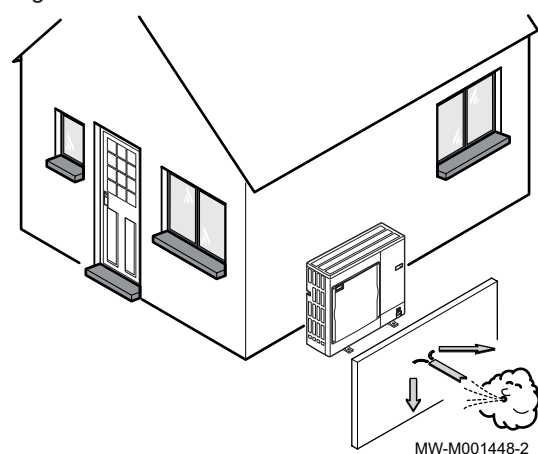
1. Respect the minimum positioning distances of the outdoor unit from the wall.

Tab.20 Minimum distances in mm

	A	B	C	D	E	F	G
AWHP 4.5 MR	100	500	200	1000	300	150	100
AWHP 6 MR-3	100	500	200	1000	300	150	100
AWHP 8 MR-2	100	500	200	1000	300	150	100
AWHP 11 MR-2	150	1000	300	1500	500	250	200
AWHP 11 TR-2							
AWHP 16 MR-2	150	1000	300	1500	500	250	200
AWHP 16 TR-2							

6.5.2 Selecting the location of the outdoor unit

Fig.35



To ensure the outdoor unit operates correctly, its location must meet certain conditions.

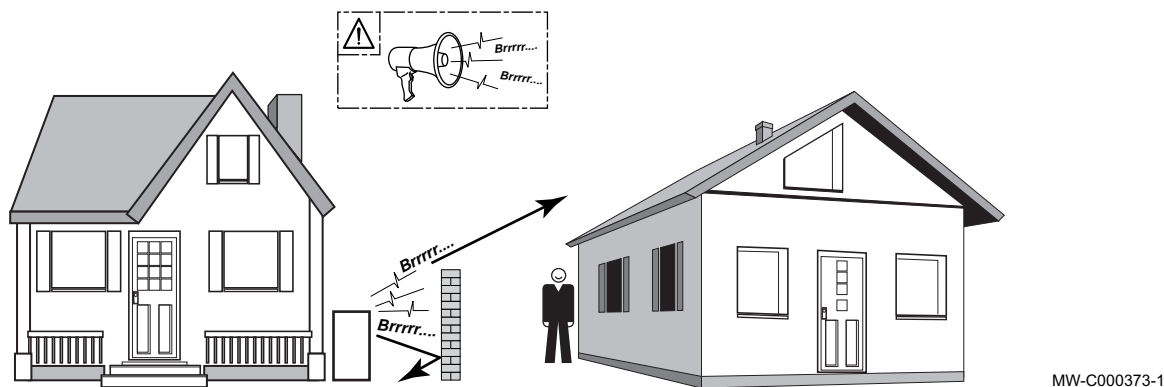
1. Decide on the ideal location for the outdoor unit, bearing in mind the space it requires and any legal directives and in relation to neighbours as it is a source of noise.
2. Observe the IP24 protection rating of the outdoor unit during installation.
3. Avoid the following locations:
 - Prevailing winds. Nothing must obstruct the free circulation of air around the outdoor unit (intake and outlet).
 - Close to sleep zones,
 - Close to a terrace.
 - Opposite a wall with windows,
4. Ensure the support meets the following specifications:

Specifications	Examples
Flat surface that can support the weight of the outdoor unit and its accessories	<ul style="list-style-type: none"> • Concrete base, • Sill, • Concrete blocks, No rigid connection to the building served to avoid the transmission of vibration
Sufficient above ground elevation (100 to 500 mm) to keep it above water	<ul style="list-style-type: none"> • Base with a metal frame to allow condensates to be discharged correctly. • The width of the base must not exceed the width of the outdoor unit. The condensates discharge must be regularly cleaned in order to prevent any blockages

6.5.3 Choosing the location of a noise abatement screen

When the outdoor unit is too close to neighbours, a noise abatement screen can be fitted to reduce noise pollution.

Fig.36



1. Locate the noise abatement screen as close as possible to the source of noise whilst allowing for the free circulation of air in the exchanger on the outdoor unit and maintenance work.
2. Respect the minimum positioning distances of the outdoor unit from the noise abatement screen.

6.5.4 Selecting the location of the outdoor unit in cold and snowy regions

Wind and snow can significantly reduce the performance of the outdoor unit, the location of the outdoor unit must meet the following conditions.

Fig.37



MW-6000252-2

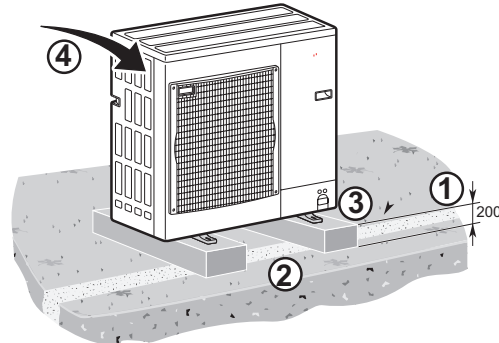
1. Install the outdoor unit sufficiently high off the ground to allow condensates to be discharged correctly.
2. Ensure the base meets the following specifications:

Specifications	Reason
Maximum width equal to the width of the outdoor unit.	
Height at least 200 mm greater than the average depth of the covering of snow.	This helps to protect the exchanger from snow and prevent the formation of ice during the defrosting operation.
Location as far as possible from the thoroughfare.	The condensates discharge may freeze, causing a potential hazard (sheet of black ice).

3. If the outside temperatures drop below zero, take the necessary precautions to prevent the risk of freezing in the evacuation pipes.
4. Place the outdoor units beside each other and not on top of each other to prevent the condensates from the lower unit to freeze.

6.5.5 Installing the outdoor unit on the ground

Fig.38



MW-5000655-1

When mounting on the ground, a concrete base must be installed, with no rigid connection to the building served to avoid the transmission of vibrations. Position the AWHP floor support, package EH112 or the rubber floor support, package EH879.

The data plate must be accessible at all times.

1. Dig a run-off channel with a pebble bed.
2. Install a concrete base frame with a minimum height of 200 mm capable of bearing the weight of the outdoor unit.
3. Position the AWHP floor support, package EH112 or the rubber floor support, package EH879.
4. Install the outdoor unit on the concrete base frame.

6.6 Hydraulic connections

6.6.1 Special precautions for the connection of the heating circuit

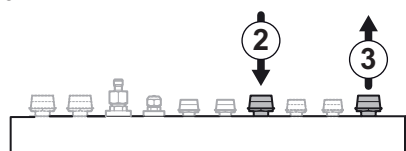
- During connection, it is imperative that the standards and corresponding local directives be respected.
- Depending on the heating system installation, install a filter on the heating return circuit.
- Depending on the heating system installation, install a magnetic and/or mechanical sludge collector on the heating return circuit, just before the heat pump.
- If components made from composite materials are used (polyethylene connection pipes or flexible hose), we recommend components with an anti-oxygen barrier.
Germany: anti-oxygen barrier according to the DIN 4726 standard.

6.6.2 Connecting the heating circuit

Heating installations must be able to guarantee a minimum flow rate at all times. This is defined by the parameter **HP010**. The nominal flow rate sought by the heat pump for optimum running is defined by the parameter **HP069**. If the flow rate is too low, the heat pump may shut itself down for its own protection; the heating, cooling and domestic hot water functions are then no longer guaranteed.

1. Install an automatic air vent at the highest point on the heating circuit.
2. Connect the heating return for the indoor module.
3. Connect the heating flow for the indoor module.

Fig.39



MW-1001252-1



Caution

In case of a direct circuit with radiators fitted with thermostatic valves, install a differential valve to ensure flow. In the case of standard valves, leave one radiator permanently open to allow water to circulate and to ensure a minimum flow.



Important

If the direct circuit is connected to underfloor heating, connect a safety thermostat.

4. Install the filter provided in the accessories bag on the heating return of the indoor module.
5. Calculate the volume of water in the heating circuit and check the volume of the appropriate expansion vessel using the DTU 65–11. Use the maximum temperature of the circuit in heating mode or, failing that, a minimum temperature of 55 °C. If the volume of the integrated expansion vessel (8 l) is not sufficient, add an external vessel on the heating circuit.

6.6.3 Connecting the safety valve drain pipe

1. Connect the drain pipe to the waste water discharge.



Caution

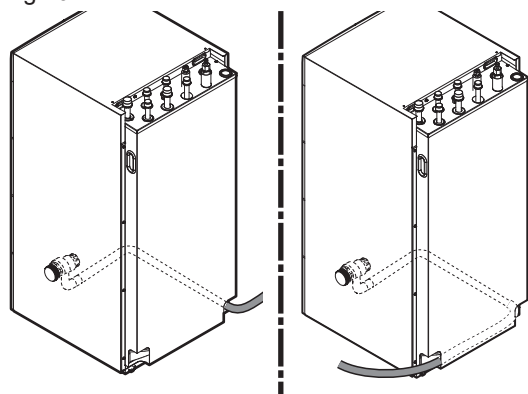
The safety valve drain pipe must not be obstructed.



Caution

The drain pipe can be installed on the right or left.

Fig.40



MW-1001255-2

6.6.4 Special precautions for the connection of the domestic hot water circuit

■ Domestic cold water connection

- Install a water drain in the boiler room and a funnel-siphon for the safety unit.
- Fit a non-return valve to the domestic cold water circuit.



Important

Make the connection to the cold water supply according to the hydraulic installation diagram.



Important

The components used for the connection to the cold water supply must comply with the prevailing standards and regulations in the country concerned.

■ **Water operating pressure**

The tanks on our domestic hot water heaters can run at a maximum operating pressure of 1.0 MPa (10 bar). The recommended operating pressure is under 0.7 MPa (7 bar).

■ **Sizing the safety unit**

The safety unit and its connection to the domestic hot water tank must be of at least the same diameter as the domestic cold water supply pipes on the tank's DHW circuit.

There must be no cut-off devices between the safety valve or unit and the domestic hot water tank.

The discharge pipe from the safety unit must have a continuous and sufficient gradient, and its cross section must be at least equal to the cross section of the opening of the safety unit outlet (to prevent the flow of water being hindered if the pressure is too high).

The outlet pipe in the safety valve or unit must not be blocked.

Fit the safety valve above the DHW tank to avoid draining the tank during servicing. Install a drain valve at the bottom of the domestic hot water tank.

■ **Isolation valves**

Hydraulically isolate the primary and domestic circuits with isolation valves to facilitate maintenance on the domestic hot water tank. The valves make it possible to carry out maintenance on the domestic hot water tank and its components without draining the entire installation.

These valves are also used to isolate the domestic hot water tank when conducting a pressurised check on the tightness of the installation if the test pressure is greater than the admissible operating pressure for the domestic hot water tank.

6.6.5 Connecting the domestic hot water circuit



Warning

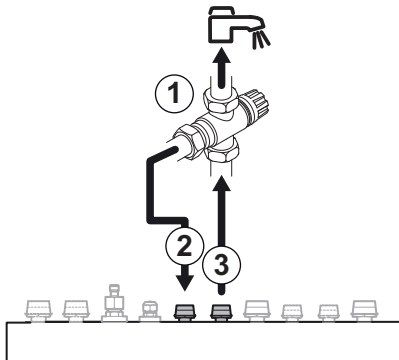
When making the connection, it is imperative that the standards and corresponding local directives be respected.



Caution

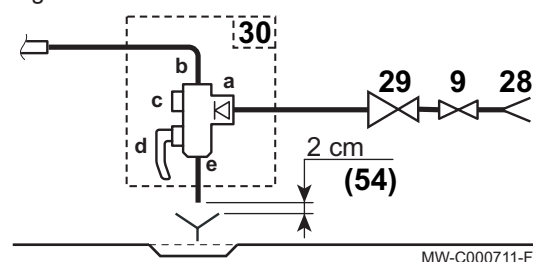
Limit temperature at the draw-off point: the maximum domestic hot water temperature at the draw-off point is subject to special regulations in the various countries in which the appliance is sold in order to protect the user. These special regulations be observed when installing the appliance.

1. Install a domestic water thermostatic mixing valve (not provided) on the domestic hot water tank outlet (mandatory for France).



MW-1001254-1

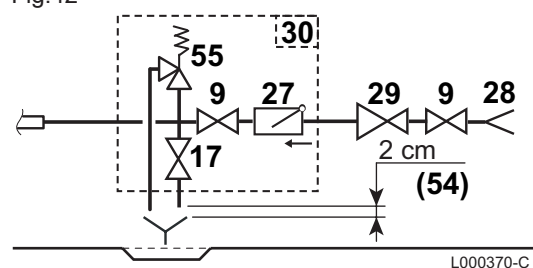
Fig.41



■ Safety unit (only for France)

- 9 Isolation valve
- 28 Domestic cold water inlet
- 29 Pressure reducer
- 30 Safety unit
- 54 End of the discharge pipe free and visible 2 to 4 cm above the flow funnel
- a Cold water inlet with an integrated non-return valve
- b Connection at the cold water inlet of the DHW tank
- c Stop cock
- d Safety valve 0.7 MPa (7 bar)
- e Drain opening

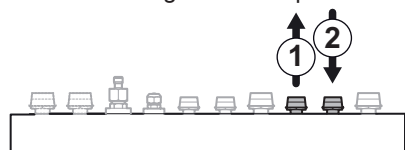
Fig.42



■ Safety unit (except France)

- 9 Isolation valve
- 17 Drain valve
- 27 Non-return valve
- 28 Domestic cold water inlet
- 29 Pressure reducer
- 30 Safety unit
- 54 End of the discharge pipe free and visible 2 to 4 cm above the flow funnel
- 55 Safety valve 0.7 MPa (7 bar)

Fig.43 Connecting the back-up boiler



MW-1001256-1

6.7 Refrigeration connections

6.6.6 Connecting the back-up boiler

1. Connecting the boiler flow.
2. Connect the boiler return, integrating the $\frac{3}{4}$ " non-return valve and the $\frac{3}{4}$ " nipple, supplied in the accessories bag.
3. Put a filter in place on the boiler outlet.

6.7.1 Preparing the refrigerant connections



Danger

Only a qualified professional may carry out the installation in conformity with current legislation and standards.

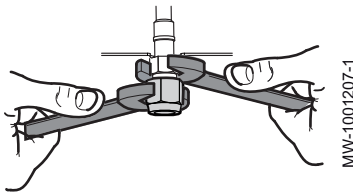
To allow exchanges between the indoor module and the outdoor unit, fit 2 refrigerant connections: flow and return.

Pursuant to Article L. 113-3 of the French Consumer Code, the installation of equipment must be done by a certified operator whenever the refrigerant load is in excess of two kilograms or when a refrigerant connection is necessary (the case with split systems, even when fitted with a quick coupling device).

1. Install the refrigerant connection pipes between the indoor module and the outdoor unit.
2. Respect the minimum curve radii of 100 to 150 mm.
3. Adhere to the minimum and maximum distances between the indoor module and the outdoor unit.
4. Cut the pipes with a pipe cutter and deburr.
5. Angle the opening in the pipe downwards to ensure no particles can get inside, while preventing oil traps.
6. If the pipes are not connected immediately, plug them to prevent moisture from entering.

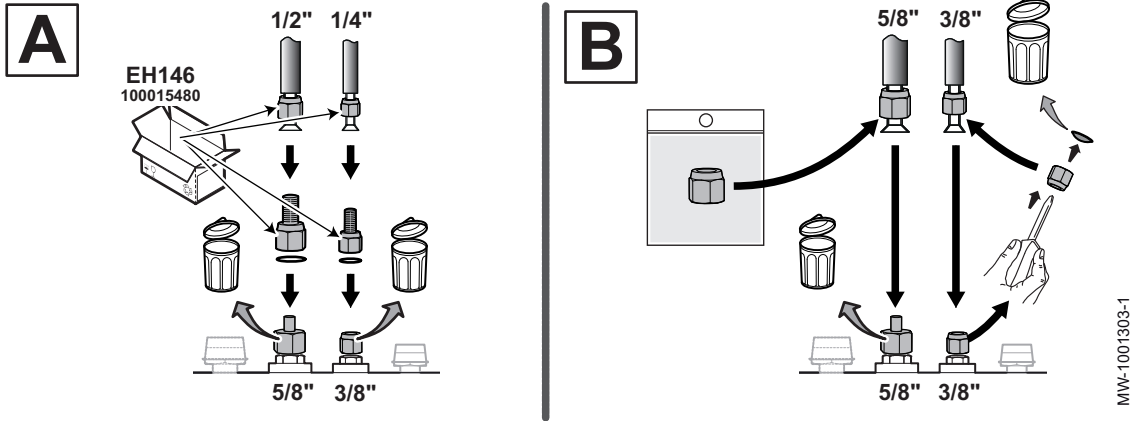
6.7.2 Connect the refrigerant connections to the indoor module

Fig.44



Caution
Keep the refrigerant connection in place on the indoor module with a spanner so as not to twist the internal pipe.

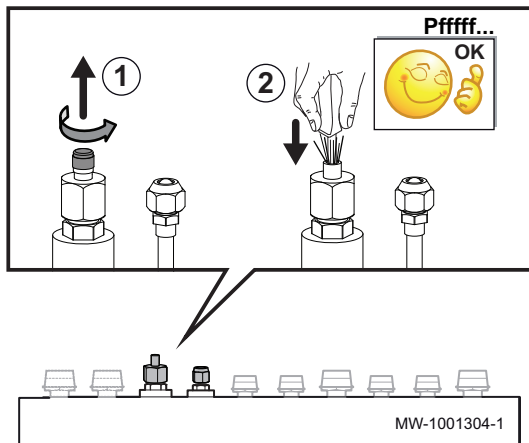
Fig.45



Tab.21

Association with an outdoor unit	Indoor module gas line fitting	Indoor module fluid line fitting
A: 4.5 and 6 kW	<ul style="list-style-type: none"> • 5/8" <=> 5/8" to 1/2" adapter from package EH146 <=> 1/2" nut from package EH146 • Discard the original 5/8" nut 	<ul style="list-style-type: none"> • 3/8" <=> 3/8" to 1/4" adapter from package EH146 <=> 1/4" nut from package EH146 • Discard the original 3/8" nut
B: 8, 11 and 16 kW	<ul style="list-style-type: none"> • 5/8" <=> 5/8" nut from the accessories bag • Discard the original 5/8" nut 	<ul style="list-style-type: none"> • 3/8" <=> Original 3/8" nut • Remove and discard the cap

Fig.46



1. Partially unscrew the "gas" nut.
2. Check the exchanger leak-tightness. Push a screwdriver gently into the 5/8" nut.
⇒ A release noise should be heard, which is proof that the exchanger is watertight.
3. Undo the nuts on the indoor module.
4. Fit the connections as shown in the above table, using the copper seals for the adapters and adhering to the torque load.

Tab.22 Tightening torque applied

External diameter of the pipe (mm/inch)	External diameter of the cone fitting (mm)	Torque load (N.m)
6.35 - 1/4	17	14 - 18
9.52 - 3/8	22	34 - 42
12.7 - 1/2	26	49 - 61
15.88 - 5/8	29	69 - 82
19.05 - 3/4	36	100 - 120

5. Bead the pipes.
6. Connect the pipes and tighten the nuts, adhering to the torque load and applying refrigerant oil to the beaded parts to facilitate tightening and improve leak-tightness.

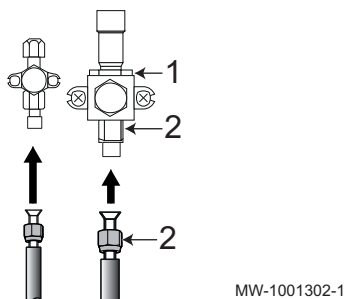
6.7.3 Connecting the refrigerant connections to the outdoor unit



Caution

Keep the refrigerant connection in place on the outdoor unit with a spanner so as not to twist the internal pipe.

Fig.47

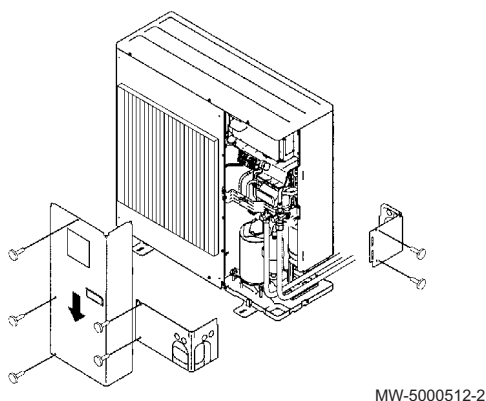


- 1 Do not use a spanner on this part of the valve, there is a danger of the refrigerant leaking.
- 2 Recommended position of the spanners for tightening the nut.

Tab.23

Association with an outdoor unit	Indoor module gas line fitting	Indoor module fluid line fitting
4.5 to 16 kW	Original nut	Original nut

Fig.48



1. Remove the protective side panels from the outdoor unit.
2. Unscrew the nuts on the stop valves.
3. Slip the nuts onto the pipes.
4. Bead the pipes.
5. Apply refrigerant oil to the beaded parts to facilitate tightening and improve the seal.
6. Connect the pipes and tighten the nuts with a torque wrench.

Tab.24

External diameter of the pipe (mm/inch)	External diameter of the cone fitting (mm)	Torque load (N.m)
6.35 - 1/4	17	14 - 18
9.52 - 3/8	22	34 - 42
12.7 - 1/2	26	49 - 61
15.88 - 5/8	29	69 - 82
19.05 - 3/4	36	100 - 120

6.7.4 Adding the necessary quantity of refrigerant fluid

Add refrigerant fluid via the refrigerant stop valve using a safety loader, if the refrigerant pipes exceed the lengths below.



Caution

Prevent oil traps.

If the pipes are not connected immediately, plug them to prevent moisture from entering.

Tab.25 For AWHP 4.5 MR

Length of refrigeration pipe	7 m	10 m	15 m	20 m	30 m	Yg/m
Charging ⁽¹⁾	0	+ 0.045 kg	+ 0.120 kg	+ 0.195 kg	+ 0.345 kg	15 ⁽²⁾

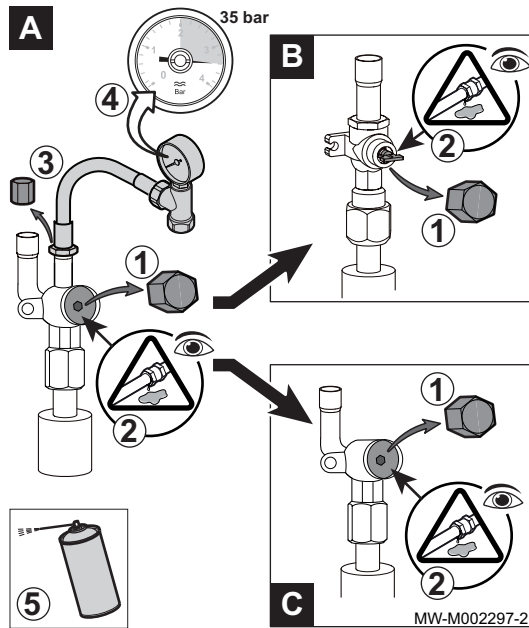
(1) The outdoor unit is pre-charged with 1.300 kg of refrigerant fluid.
 (2) Calculation: $Xg = Yg/m \times (\text{pipe length (m)} - 7)$

Tab.26 Quantity of refrigerant fluid to be added

Length of refrigeration pipe	11 to 20 m	21 to 30 m	31 to 40 m	41 to 50 m	51 to 60 m	61 to 75 m
AWHP 6 MR-3	0.2 kg	0.4 kg	0.6 kg	not permitted	not permitted	not permitted
AWHP 8 MR-2	0.2 kg	0.4 kg	1.0 kg	not permitted	not permitted	not permitted
AWHP 11 MR-2	0.2 kg	0.4 kg	1.0 kg	1.6 kg	2.2 kg	2.8 kg
AWHP 11 TR-2	0.2 kg	0.4 kg	1.0 kg	1.6 kg	2.2 kg	2.8 kg
AWHP 16 MR-2	0.2 kg	0.4 kg	1.0 kg	1.6 kg	2.2 kg	2.8 kg
AWHP 16 TR-2	0.2 kg	0.4 kg	1.0 kg	1.6 kg	2.2 kg	2.8 kg

6.7.5 Test the leak-tightness

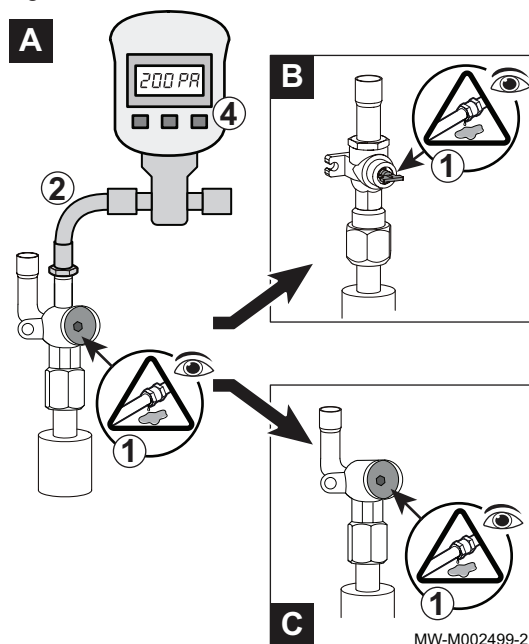
Fig.49



1. Open the plugs in the **A** and **B / C** stop valves.
2. Check that **A** and **B / C** stop valves are closed.
3. Remove the plug from the service connection on **A** stop valve.
4. Connect the pressure gauge and the nitrogen bottle to the stop valve **A** then progressively build up the pressure in the refrigerant connection pipes and the indoor module to 35 bar, in 5 bar increments.
5. Check the leak-tightness of the fittings using a leak detector spray. If leaks appear, repeat the steps in order and check the leak-tightness once again.
6. Release the pressure and release the nitrogen.

6.7.6 Evacuation

Fig.50



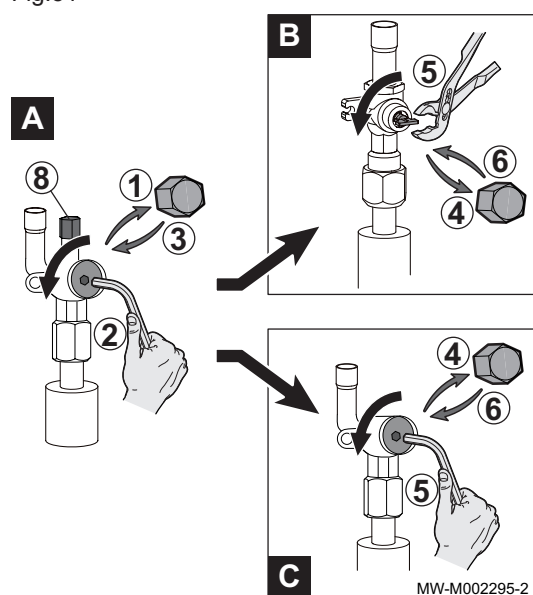
1. Check that the **A** and **B / C** stop valves are closed.
2. Connect the vacuum gauge and the vacuum pump to the service connection on **A** stop valve.
3. Produce a vacuum in the indoor module and the refrigerant connection pipes.
4. Check the vacuum pressure using the recommendations table below:

Tab.27

Outdoor temperature	°C	≥ 20	10	0	- 10
Vacuum pressure to be reached	Pa (bar)	1000 (0.01)	600 (0.006)	250 (0.0025)	200 (0.002)
Evacuation time after reaching the vacuum pressure	h	1	1	2	3

5. Close the valve between the vacuum gauge / vacuum pump and **A** stop valve.
6. After shutting off the vacuum pump, immediately open the valves.

Fig.51



6.7.7 Opening the valves

1. Remove the cap from the refrigerant fluid stop valve, fluid end.
2. Open valve **A** with a hexagonal spanner by turning anti-clockwise until it stops.
3. Put the cap back in place.
4. Remove the cap from refrigerant gas stop valve **B** or **C**.
5. Open the valve.

Valve B	Open the valve with pliers by turning it a quarter turn anti-clockwise.
Valve C	Open the valve with a hexagonal spanner by turning anti-clockwise until it stops.

6. Put the cap back in place.
7. Disconnect the vacuum gauge and the vacuum pump.
8. Put the cap back in place on valve **A**.
9. Tighten all the caps with a torque wrench with a torque load of 20 to 25 N·m.
10. Check the leak-tightness of the connections using a leak detector.
11. If the refrigeration pipes are more than 10 metres long, add the required quantity of refrigerant fluid.

6.8 Electrical connections

6.8.1 Recommendations



Warning

- Only qualified professionals may carry out electrical connections, always with the power off.
- Earth the appliance before making any electrical connections.

- Make the electrical connections on the appliance in accordance with the requirements of the prevailing standards,
- Make the electrical connections on the appliance in accordance with the information given in the electrical schematics delivered with the appliance,
- Make the electrical connections on the appliance in accordance with the recommendations of these instructions.



Important

Earthing must comply with the prevailing installation standards.

- France: NFC 15–100.
- Belgium: RGEI



Caution

- The installation must be fitted with a main switch.
- Three phase models must always be fitted with neutral.



Caution

Power the appliance via a circuit that includes an omnipolar switch with contact opening distance of 3 mm or more.

- Single phase models: 230 V (+6%/-10%) 50 Hz
- Three-phase models: 400 V (+6%/-10%) 50 Hz

When making electrical connections to the mains, respect the following polarities.

Tab.28

Colour of the wire	Polarity
Brown wire	Live
Blue wire	Neutral
Green/yellow wire	Earth

**Caution**

Secure the cable with the cable clamp provided. Be careful that you do not invert any of the wires.

6.8.2 Recommended cable cross section

The electrical characteristics of the mains power supply available must correspond to the values given on the data plate.

The cable will be carefully chosen according to the following information:

- Maximum intensity of the outdoor unit. See table below.
- Distance of the appliance from the original power supply.
- Upstream protection.
- Neutral operating conditions.

**Important**

The maximum permissible current on the power supply cable must not exceed 6 A.

Tab.29 Outdoor unit

	Power supply type	Cable cross section (mm ²)	Circuit breaker curve C (A)	Maximum amperage (A)
AWHP 4.5 MR	Single phase	3 x 2.5	16	12
AWHP 6 MR-3	Single phase	3 x 2.5	16	13
AWHP 8 MR-2	Single phase	3 x 4	25	17
AWHP 11 MR-2	Single phase	3 x 6	32	29.5
AWHP 11 TR-2	Three phase	5 x 2.5	16	13
AWHP 16 MR-2	Single phase	3 x 10	40	29.5
AWHP 16 TR-2	Three phase	5 x 2.5	16	13

Tab.30 Indoor module

Circuit breaker curve C	A	10
-------------------------	---	----

Tab.31 Connection between the indoor module and the outdoor unit

BUS cable cross section ⁽¹⁾	mm ²	2 x 0.75
(1) Connection cable linking the outdoor unit to the indoor module		

Tab.32 Connecting the electrical back-up

	Unit	Single phase	Three phase
Cable cross section	mm ²	3 x 6	5 x 2.5
Circuit breaker curve C	A	32	16

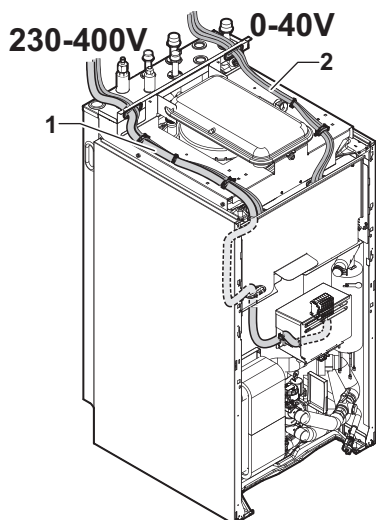
6.8.3 Routing the cables



Caution

Separate the sensor cables from the 230/400 V circuit cables. Attach all the cables to the upper panel using one of the cable clamps provided in the accessories bag.

Fig.52 Routing the cables



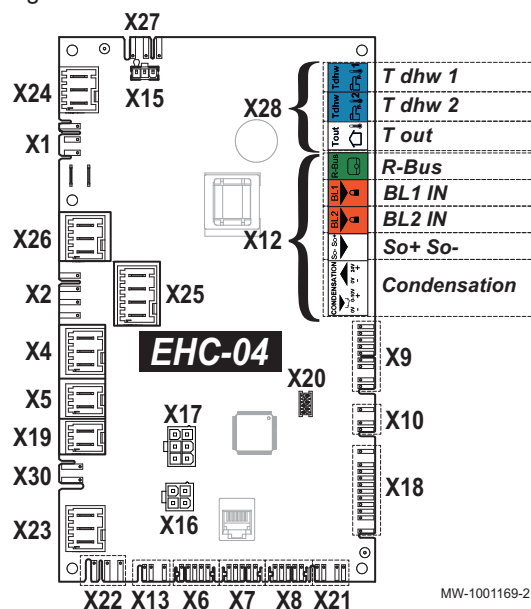
MW-3000517-01

- 1 230 - 400 V circuit cables
- 2 0 - 40 V sensor cables

6.8.4 Description of the connection terminal blocks

■ EHC-04 PCB terminal block

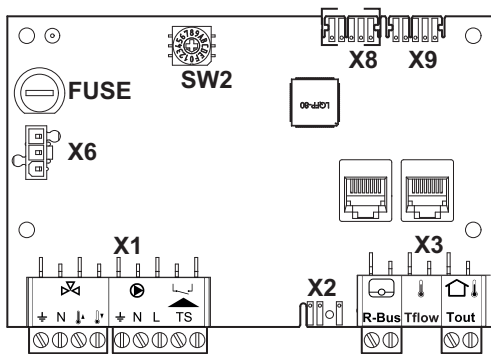
Fig.53



MW-1001169-2

- X1 230 V - 50 Hz power supply
- X2 Main circulating pump
- X4 - Hydraulic version: Hydraulic back-up pump
- Electrical version: Electrical back-up - stage 1
- X5 - Hydraulic version: Hydraulic back-up ON/OFF contact
- Electrical version: Electrical back-up - stage 2
- X7 CAN bus to the SCB-04 PCB
- X8 Indoor module user interface
- X9 Sensors
- X10 Main circulating pump command signal
- X12 Options
 - R-Bus: Room temperature sensor, SMART TC thermostat, on/off thermostat, modulating thermostat or OpenTherm thermostat
 - BL1 IN / BL2 IN: Multi-function inputs
 - So+/So- : Electric energy meter
 - Condensation: condensation sensor
- X17 Not used
- X18 Input/output for the HPC-01 PCB
- X19 Optional connection cable for Silent mode
- X22 Bus connection to the PCB managing the HPC-01 outdoor unit
- X23 Outdoor unit bus connection
- X24 Not used
- X25 Heating / Domestic hot water directional valve
- X26 Pump - only if connecting a buffer tank
- X27 230 V power supply for the SCB-04 PCB and the HPC-01 PCB
 - T out: Outdoor temperature sensor
 - T dhw 1: Temperature sensor at the top of the domestic hot water tank
 - T dhw 2: Temperature sensor at the bottom of the domestic hot water tank

Fig.54

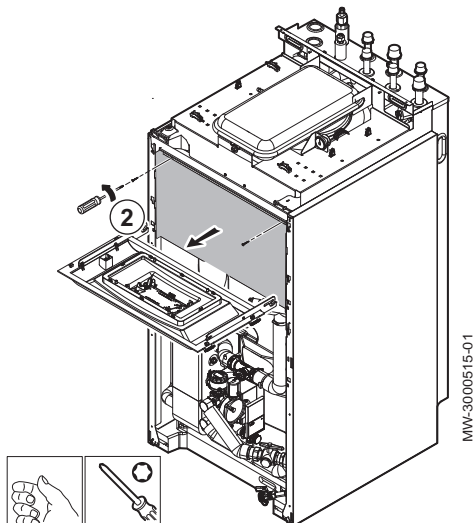


MW-3000557-03

■ **Optional SCB-04 PCB terminal block**

- X1** Power supply for the pump/Three-way valve/Safety valve input
- X2** PWM pump
- X6** 230 V power supply
- X3**
 - R-Bus: Room temperature sensor, SMART TC thermostat, on/off thermostat, modulating thermostat or OpenTherm thermostat
 - Tout: Outdoor temperature sensor
 - Tflow: Flow sensor
- X8** CAN bus to the EHC-04 PCB
- X9** Bus CAN

Fig.55



MW-3000515-01

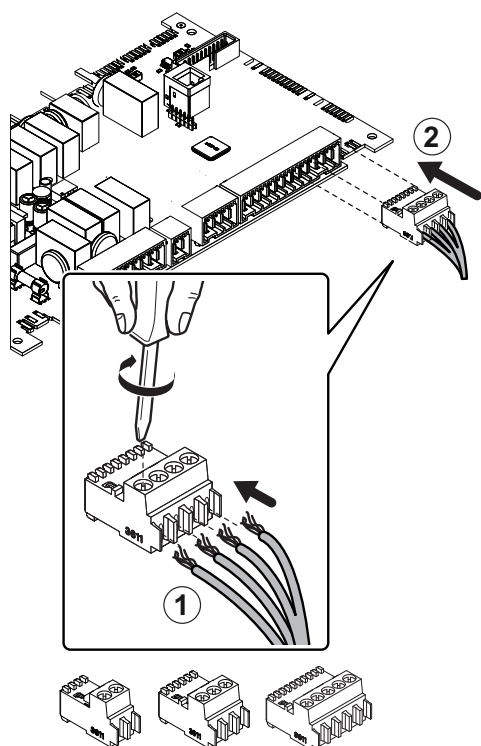
6.8.5 Accessing the PCBs

1. Disassemble the indoor module.
2. Unscrew the two screws on the protective cover for the PCBs.



For more information, see
Disassembling the indoor module., page 36

Fig.56



MW-6000148-2

6.8.6 Connecting the cables to the PCBs

Keyed connectors are present on different terminal blocks as standard. Use these to connect the cables to the PCBs. If there are no connectors on the terminal block to be used, use the connector provided with the kit.

Coloured stickers are provided with certain accessories. Use these to mark each end of the cable with the same colour before passing the cables into the cable feed-throughs.

1. Insert and screw down the wires in the corresponding connector inlets.
2. Insert the connector into the corresponding terminal block.
3. Feed the cable into the cable duct and adjust the length of the cable accordingly.
4. Lock it in position with a cable clamp or a traction arrester device.

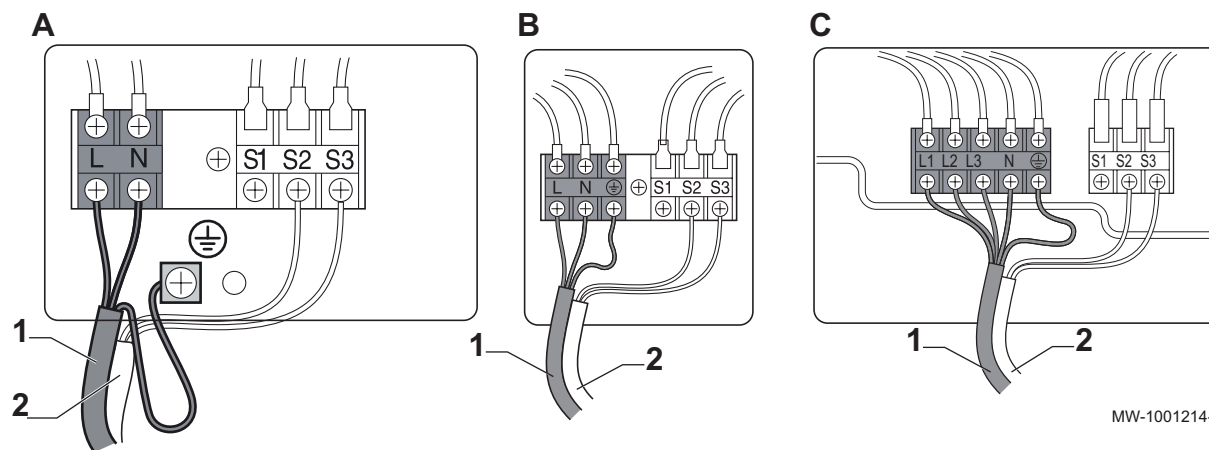


Caution

Danger of electric shock: the length of the conductors between the traction arrester device and the terminal blocks must be such that the active conductors are put under tension before the earth conductor.

6.8.7 Electrically connecting the outdoor unit

Fig.57

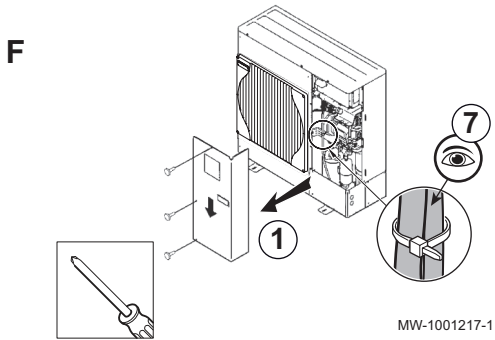
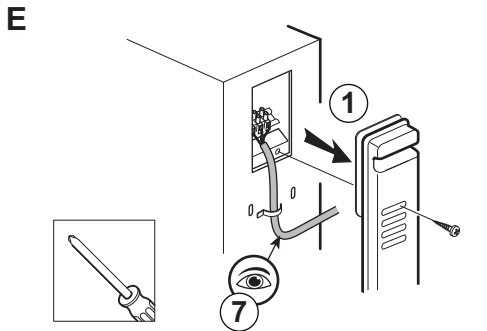
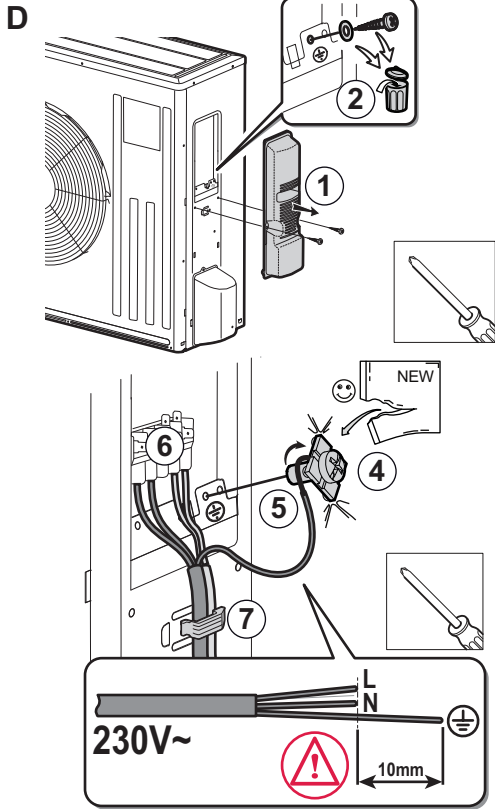


MW-1001214-1

- 1 Power supply
2 Communication bus
A AWHP 4.5 MR

- B AWHP 6 MR-3 / AWHP 8 MR-2 / AWHP 11 MR-2 / AWHP 16 MR-2
C AWHP 11 TR-2 / AWHP 16 TR-2

Fig.58



- D AWHP 4.5 MR
- E AWHP 6 MR-3
- F AWHP 8 MR-2 / AWHP 11 MR-2 / AWHP 16 MR-2 AWHP 11 TR-2 / AWHP 16 TR-2

1. Remove the service panel.
2. AWHP 4.5 MR only: remove the earth connection screw from the appliance and discard.
3. Check the cross-section of the cable used, as well as its protection in the electric panel.
4. AWHP 4.5 MR only: secure the screw and square washer provided on the stripped part of the earth wire ⊕.

Danger
 The stripped part of the earth wire must be fitted underneath the washer against the base frame.

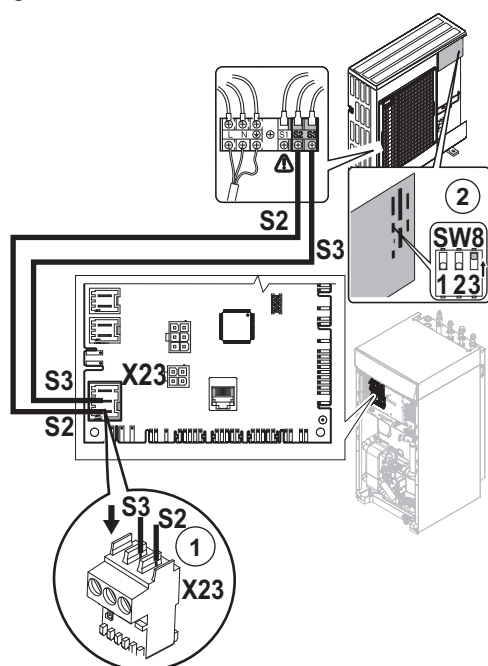
5. Connect the earth wire.

Danger
 The earth wire must be 10 mm longer than the N and L wires.

6. Connect the cables to the appropriate terminals.
7. Feed the cable into the cable duct and adjust the length of the cable accordingly. Lock it in position with a cable clamp or a traction arrester device.

Caution
 Danger of electric shock: the length of the conductors between the traction arrester device and the terminal blocks must be such that the active conductors are put under tension before the earth conductor.

Fig.59



MW-3000493-01

6.8.8 Connecting the outdoor unit bus

1. Connect the outdoor unit bus between the S2 and S3 terminals on the **X23** connector in the indoor module's **EHC-04** central unit PCB.
2. Position the **SW8-3** switch (except with the AWHP 4.5 MR) for the outdoor unit PCB to **ON**.



Danger

Do not connect anything to S1.

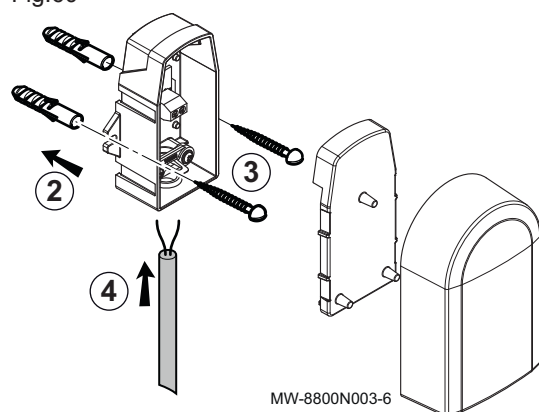
3. Put the service panel back in place.



Important

The outdoor unit must have a separate electricity supply and a dedicated circuit breaker.

Fig.60



MW-8800N003-6

6.8.9 Fitting the outdoor sensor

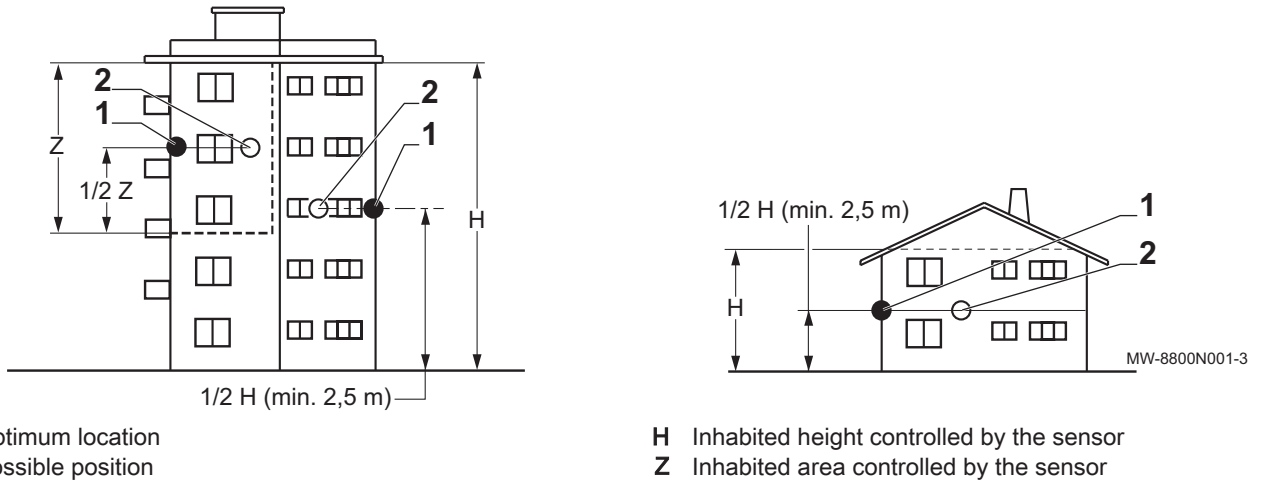
1. Choose a recommended location for the outdoor sensor.
2. Put the 2 plugs in place, delivered with the sensor.
Plugs diameter 4 mm/drill diameter 6 mm
3. Secure the sensor using the screws provided (diameter 4 mm).
4. Connect the cable to the outdoor temperature sensor.

■ Recommended positions

Place the outside sensor in a position that covers the following characteristics:

- On a façade of the area to be heated, on the north if possible.
- Half way up the wall of the area to be heated.
- Under the influence of changes in the weather.
- Protected from direct sunlight.
- Easy to access.

Fig.61



■ Positions to be avoided

Avoid placing the outside sensor in a position with the following characteristics:

- Masked by part of the building (balcony, roof, etc.).
- Close to a disruptive heat source (sun, chimney, ventilation grid, etc.).

Fig.62

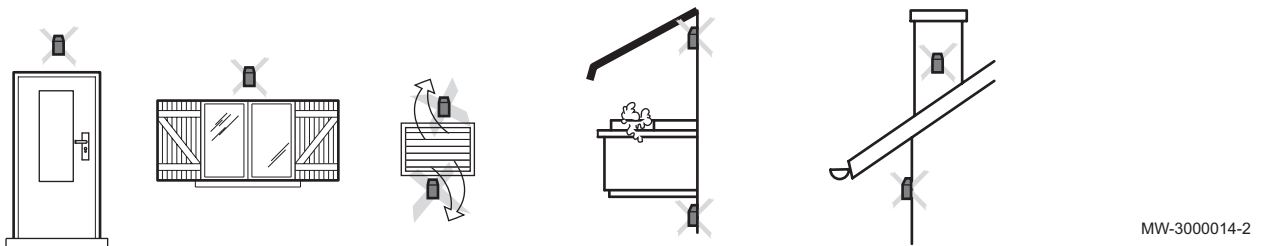
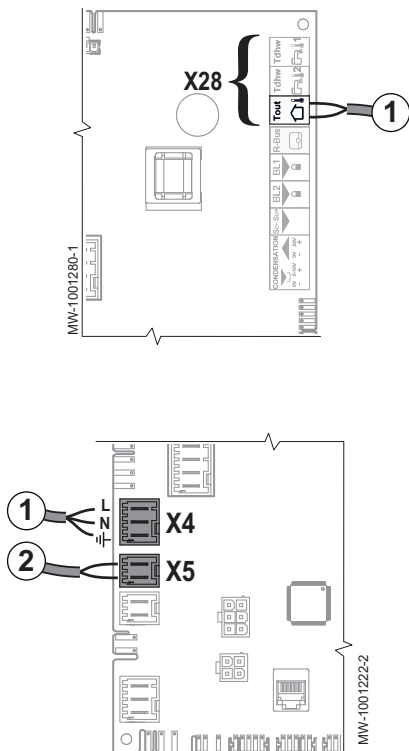


Fig.63



6.8.10 Connecting the outside sensor

1. Connect the outside sensor to the **Tout** input on the **X28** connector on the indoor module's **EHC-04** central unit PCB.



Important

Use a cable with a minimum cross-section of 2x0.35 mm² and a length of 30 m.

6.8.11 Connecting the hydraulic back-up.

1. Connect the back-up boiler pump (live / neutral / earth) to the **X4** connector on the **EHC-04** central unit PCB in the indoor module.
2. Connect the dry **ON/OFF** contact in the back-up boiler to the **X5** connector in the **EHC-04** central unit PCB in the indoor module.

6.8.12 Connecting the power supply for the electrical back-up

The single-phase indoor module with electrical back-up is connected at 3 or 6 kW.

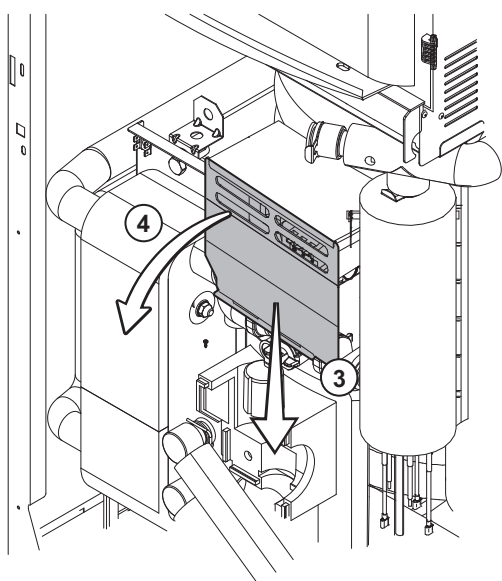
The three-phase indoor module with electrical back-up is connected at 6 or 9 kW.

1. Choose the maximum output of the electrical back-up according to the size of the home and its energy performance. There are 2 output stages, as shown in the following table.
 - The minimum output is stage 1 on the immersion heater.
 - The maximum output uses stage 1 and adds a stage 2 of the immersion heater. Stage 2 always operates with stage 1 and never alone.

Tab.33 Electrical back-up power supply

Back-up power supply	Output of the electrical back-up		
	Maximum output = stage 1 + stage 2	Minimum output: stage 1	Stage 2
Single phase	3 kW = 3 kW + 0 kW	3 kW	0 kW
	6 kW = 3 kW + 3 kW	3 kW	3 kW
Three phase	6 kW = 3 kW + 3 kW	3 kW	3 kW
	9 kW = 3 kW + 6 kW	3 kW	6 kW

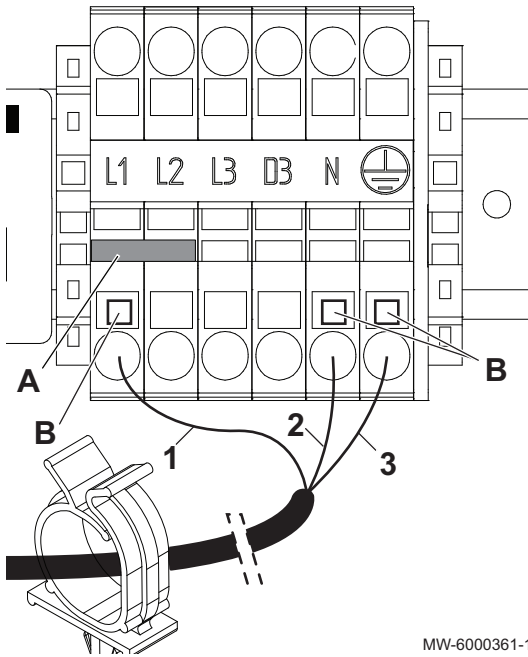
Fig.64 Accessing the terminal block



MW-3000467-01

2. Feed the electrical back-up power supply cable into the cable duct reserved for the 230- / 400-V circuit cables.
3. Press down on the protective flap on the electrical back-up terminal block.
4. Remove the protective flap from the electrical back-up terminal block.

Fig.65 Single-phase power supply



MW-6000361-1

5. Single-phase power supply:

- 5.1. Insert the bridge according to the output of the electrical back-up, taking care to push it to the bottom of the connector.
- 5.2. Connect the electrical back-up power supply (press the orange button **B** to be able to insert the wire into the connector correctly and secure it).
- 5.3. Insert the electrical back-up power cord into the cable way located in the bottom part of the junction box.



Important

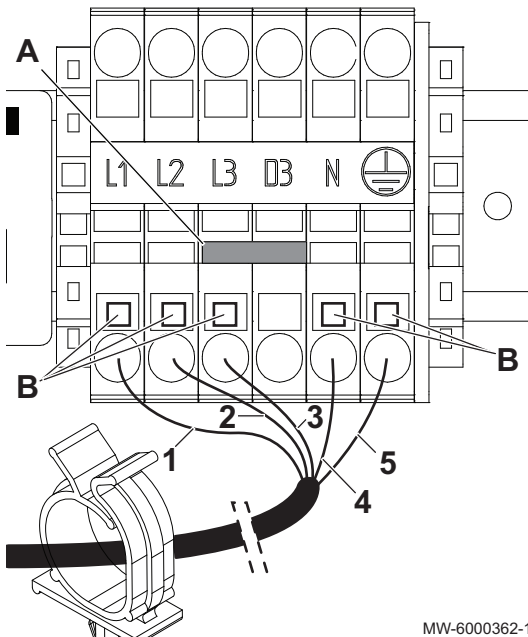
The bridge can be found in a bag inside the indoor module.

- A** Bridge
- B** Orange button
- 1** Live (L1)
- 2** Neutral
- 3** Earth

Tab.34 Bridging for single-phase power supply

Maximum output	Bridge to be installed
3 kW	Do not install a bridge
6 kW	Put the bridge A in place

Fig.66 Three-phase power supply



MW-6000362-1

6. Three-phase power supply:

- 6.1. Insert the bridge according to the output of the electrical back-up, taking care to push it to the bottom of the connector.
- 6.2. Connect the electrical back-up power supply (press the orange button to be able to insert the wire into the connector correctly and secure it).
- 6.3. Insert the electrical back-up power cord into the cable way located in the bottom part of the junction box.



Important

The bridge can be found in a bag inside the indoor module.

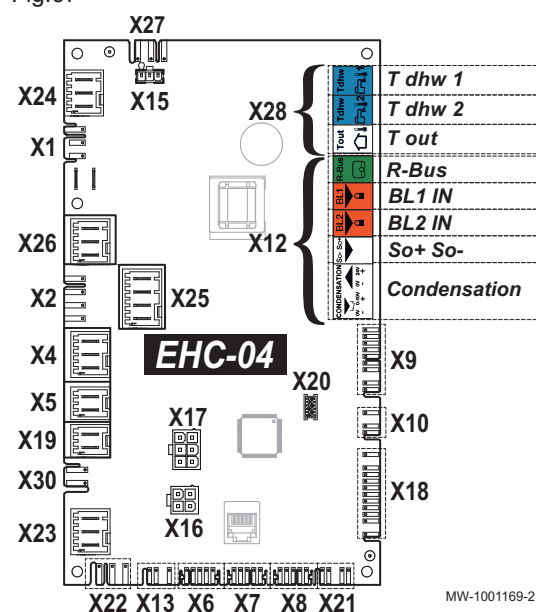
- A** Bridge
- B** Orange button
- 1** Live 1 (L1)
- 2** Live 2 (L2)
- 3** Live 3 (L3)
- 4** Neutral
- 5** Earth

Tab.35 Bridging for three-phase power supply

Maximum output	Bridge to be installed
6 kW	Do not install a bridge
9 kW	Put the bridge A in place

6.9 Connecting the options

Fig.67



MW-1001169-2

1. Connect the options according to the configuration of the installation to the X12 or X19 connector on the **EHC-04** PCB in the indoor module.

Tab.36 Connecting the options to X12

X12 connector	Description
R-Bus terminals	Connection for room temperature sensor, SMART TC thermostat, on/off thermostat, modulating thermostat or OpenTherm thermostat
BL1 IN and BL2 IN	Connecting the multifunction inputs
SO+/SO- input	Connection of an energy meter
Condensation terminals	Connection of a condensation sensor for under-floor cooling.

Tab.37 Connecting the options to X19

Connector	Description
X19	Silent mode connection cable option

6.9.1 Connecting an on/off or modulating thermostat

The on/off or modulating thermostat is connected to the **R-Bus** terminals on the **EHC-04** PCB or the optional **SCB-04** PCB.

The PCBs are delivered with a bridge on the **R-Bus** terminals.

The **R-Bus** input can be configured to add the flexibility of using several types of on/off thermostat or OT.

Tab.38 Control parameter for the OT input on the R-Bus terminals

Parameter	Description
CP640	Configuration of the contact direction of the OT input for heating mode.
CP690	Reversal of the direction of the logic in cooling mode compared to heating mode

Tab.39 Default settings for the CP640 and CP690 parameters

Value of the CP640 parameter	Value of the CP690 parameter	Heating if the OT contact is	Cooling if the OT contact is
1 (Default value)	0 (Default value)	closed	closed
0	0	open	open
1	1	closed	open
0	1	open	closed

6.9.2 Connecting a thermostat with heating/cooling contact

The **AC** thermostat is only connected to the **R-Bus** and **BL1** terminals of the **EHC-04** PCB, with a single heating circuit.

The PCBs are delivered with a bridge on the **R-Bus** input.

Tab.40

Value of the parameter CP640	Value of the parameter AP098	Blocking input status BL1	Operating mode for the heat pump	If R-Bus contact open	If R-Bus contact closed
1 (default value)	1 (default value)	Open	Cooling	No cooling demand	Cooling demand
1 (default value)	1 (default value)	Closed	Heating	No heating demand	Heating demand
1	0	Open	Heating	No heating demand	Heating demand
1	0	Closed	Cooling	No cooling demand	Cooling demand
0	1	Open	Cooling	Cooling demand	No cooling demand
0	1	Closed	Heating	Heating demand	No heating demand
0	0	Open	Heating	Heating demand	No heating demand
0	0	Closed	Cooling	Cooling demand	No cooling demand

1. Connect the "heating/cooling" thermostat contact to the **BL1** input on the **EHC-04** PCB for the heat pump.
2. Connect the "On/Off" thermostat contact to the **R-Bus** input on the **EHC-04** PCB for the heat pump.
3. In the Installer/**EHC-04** menu, configure the **BL1** input to "Heating/Cooling", by setting the **AP001** parameter to 11.
4. In the Installer/**EHC-04** menu, set the contact direction of the **BL1** input with the **AP098** parameter.
5. In the Installer/**CIRCA0** menu, set the contact direction of the **R-Bus** input with the **CP640** parameter.

6.10 Filling the installation

6.10.1 Filling the heating circuit

Before filling the heating system, flush it thoroughly.

i Important

- Do not use glycol.
- The use of glycol in the heating circuit invalidates the warranty.

1. Fill the installation until a pressure of 1.5 to 2 bars is reached. Read the pressure on the mechanical pressure gauge.

i Important

The mechanical pressure gauge, situated under the top panel, close to the expansion vessel, is only used when filling the indoor unit with water. After the heat pump is switched on, the pressure will be shown on the display.

2. Check for any water leaks.
3. Completely vent the indoor module and the installation for optimum running.

■ Treatment of the heating water

In many cases, the heat pump and the heating system can be filled with mains water, without treating the water.

**Caution**

Do not add any chemical products to the heating water without first consulting a water treatment specialist. For example: antifreeze, water softeners, products to increase or reduce the pH value, chemical additives and/or inhibitors. These may cause faults in the heat pump and damage the heat exchanger.

**Important**

- Flush the installation with at least 3 times the volume of water contained in the heating system.
- Flush the DHW circuit with at least 20 times its volume of water.

The water in the installation must comply with following characteristics:

Tab.41 Heating water specifications

Specifications	Unit	Total system output
		≤ 70 kW
Hydrogen potential (pH)		7.5 - 9
Conductivity at 25°C	µS/cm	10 to 500
Chlorides	mg/litre	≤ 50
Other components	mg/litre	< 1
Total water hardness	°f	7 - 15
	°dH	4 - 8.5
	mmol/l	0.7 - 1.5

**Important**

If water treatment proves necessary, De Dietrich recommends the following manufacturers:

- Cillit
- Climalife
- Fernox
- Permo
- Sentinel

■ Flushing new installations and installations less than 6 months old

1. Clean the installation with a powerful universal cleaner to eliminate debris from the system (copper, hemp, flux).
2. Thoroughly flush the installation until the water runs clear and shows no impurities.

■ Flushing an existing installation

1. Remove any sludge from the installation.
2. Flush the installation.
3. Clean the installation with a universal cleaner to eliminate debris from the system (copper, hemp, flux).
4. Thoroughly flush the installation until the water runs clear and shows no impurities.

6.10.2 Filling the domestic hot water circuit

1. Flush the domestic circuit and fill the tank through the cold water inlet pipe.
2. Open a hot water tap.
3. Completely fill the domestic hot water tank via the cold water inlet pipe, leaving a hot water tap open.
4. Close the hot water tap when the water flow is regular, without any noises in the pipes.
5. Check for any water leaks.

6. Degas all of the domestic hot water pipes by repeating steps 2 to 4 for each hot water tap in the system.



Important

Carefully degas the domestic hot water tank and the distribution network in order to eliminate noises and hammering caused by trapped air moving in the pipes during draw-off.

7. Check the safety devices (particularly the safety valve or safety unit), referring to the instructions provided with those components.

■ **Domestic water quality**

In regions where the water is very hard ($T_h > 20 \text{ °fH}$ (11 °dH)), we recommend fitting a softener.

The water hardness must always be between 12 °fH (7 °dH) and 20 °fH (11 °dH) to be capable of providing effective protection against corrosion.

The softener does not bring about a derogation from our warranty provided that it is approved and set pursuant to the codes of practice and the recommendations given in the instructions for the softener and is regularly inspected and maintained.

7 Commissioning

7.1 General

The heat pump is commissioned:

- When it is used for the first time;
- After a prolonged shut-down;
- After any event that may require complete reinstallation.

Commissioning of the heat pump allows the user to review the various settings and checks to be made to start up the heat pump in complete safety.

7.2 Checklist before commissioning

7.2.1 Checking the heating circuit

1. Check the volume of the expansion vessel(s) is sufficient for the volume of water in the heating installation.
2. Check that the heating circuit contains adequate water. If necessary, top up with more water.
3. Check that the water connections are properly sealed.
4. Check that the heating circuit has been correctly purged.
5. Check that the filters are not clogged. Clean them if necessary.
6. Check that the valves and thermostatic radiator valves are open.
7. Check that all settings and safety devices are working correctly.

7.2.2 Checking the electrical connections

1. Check the mains electricity connection to the outdoor unit.
2. Check the mains electricity connection to the indoor module.
3. Depending on the back-up used, carry out the following checks:

Back-up	Check
Hydraulics	Check the connection between the indoor module and the boiler
Electrical	Check the connection of the electrical back-up power supply

4. Check the connection of the communication cable between the indoor module and the outdoor unit.
5. Check the conformity of the circuit breaker used for the indoor unit, outdoor unit and the back-ups.
6. Check the positioning and connection of the sensors.
7. Check the connection of the circulating pump(s).
8. Check for the presence of the recommended circuit breaker (curve C).
9. Tighten the terminal blocks.
10. Check the separation of the power and safety extra-low voltage cables.
11. Check the connection of the underfloor heating safety thermostat (if used).

7.2.3 Checking the refrigeration circuit

1. Check the position of the outdoor unit, distance from the wall.
2. Check the tightness of the refrigerant connections.
3. Ensure that the evacuation pressure has been checked by filling.
4. Ensure that the evacuation time and the outside temperature have been checked during evacuation.

7.3 Commissioning procedure

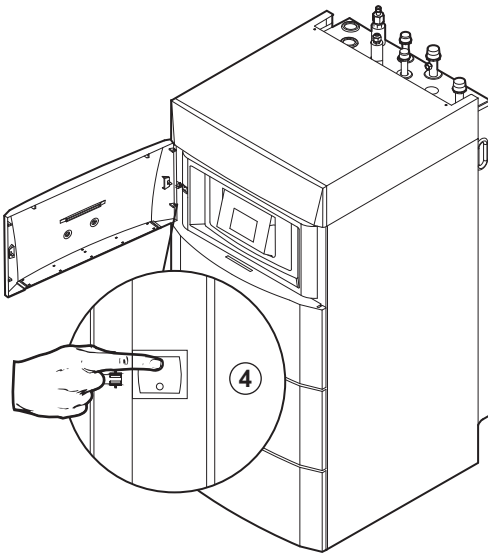


Caution

Initial commissioning must be performed by a qualified professional.

1. Refit all the panels, fascias and covers on the indoor module and outdoor unit.
2. Arm the indoor module and outdoor unit circuit breakers on the electric panel by setting them to the **I** position.
3. If necessary, arm the electrical back-up circuit breaker on the electrical panel by setting it to the **I** position.
4. Switch on the heat pump and throw the ON/OFF switch.
 ⇒ The heat pump is switched on. When powering up for the first time, the control panel displays the **CNF** menu which enables the type of outdoor unit present in the installation to be set.
5. Set the **CN1** and **CN2** parameters according to the table below.
6. The heat pump begins the start-up cycle.

Fig.68 Powering up



MW-3000468-03

7.3.1 CNF Menu

The **CNF** menu is used to configure the hybrid heat pump according to the type of back-up and the output of the outdoor unit installed.

Tab.42 Value of the **CN1** and **CN2** parameters with a hydraulic back-up

Output of the outdoor unit	CN1	CN2
4.5 kW	18	7
6 kW	2	7
8 kW	3	7
11 kW	4	7
16 kW	5	7

Tab.43 Value of the **CN1** and **CN2** parameters with an electrical back-up

Output of the outdoor unit	CN1	CN2
4.5 kW	17	7
6 kW	7	7
8 kW	8	7
11 kW	9	7
16 kW	10	7



For more information, see

Configuring a convection fan or underfloor cooling, page 88

7.3.2 Start-up cycle

During the start-up cycle, the display shows various brief items of information for checking.

These items of information are displayed one after the other.

1. Display of the control panel version
2. **SCAN** to search for the various options connected
3. **LOAD** to recover information from the various control boards
4. Software version of the central unit PCB
5. Parameter version of the central unit PCB
6. The venting cycle is run automatically on start-up of the appliance, if an error occurs or during **RESET** manual reset.

Fig.69

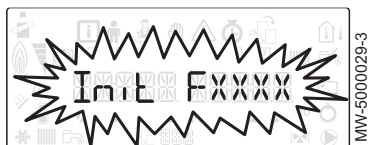


Fig.70



Fig.71



Fig.72

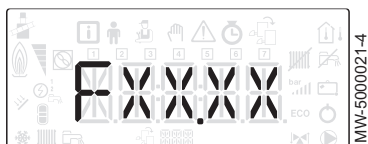


Fig.73

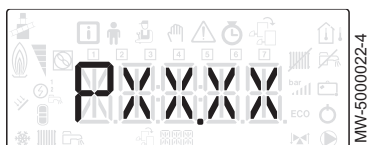


Fig.74



7.4 Using the installation wizard on the control panel

When the control panel is first powered up, the installation wizard launches automatically.

1. Select the desired language by pressing the **+** or **-** key.
2. Confirm the selection by pressing the **←** key.

Fig.75

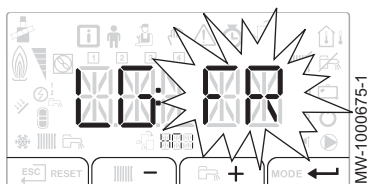


Fig.76

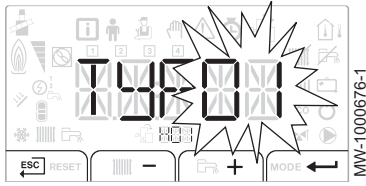
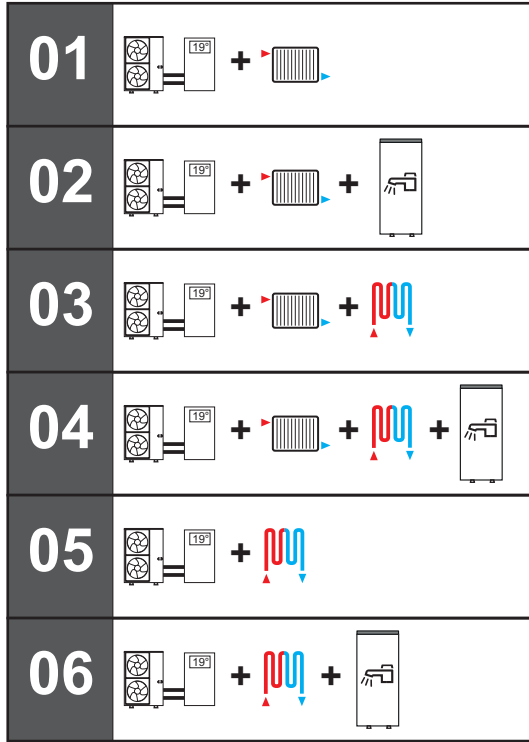


Fig.77



MW-10001142-2

3. Select the number corresponding to the installation type by pressing the **+** or **-** key. Selecting the installation type enables automatic configuration of the parameters required for the control panel to operate correctly (gradient, maximum circuit temperature, etc.). For a configuration which differs from those proposed here, press the **ESC** key on the control panel and configure the parameters manually.

Installation type	No.
One direct heating circuit	01
One direct heating circuit and one domestic hot water tank	02
One direct heating circuit and one underfloor heating circuit with mixing valve	03
One direct heating circuit and one domestic hot water tank and one underfloor heating circuit with mixing valve	04
One direct underfloor heating circuit	05
One direct underfloor heating circuit and one domestic hot water tank	06

4. Confirm the selection by pressing the **←** key.
5. Set the heating curve.
⇒ The main parameters are set.
6. Apply the required settings based on the additional options connected.

7.5 Checking the minimum flow of the direct circuit

Heating installations must be able to guarantee a minimum flow rate at all times. If the flow rate is too low, the heat pump may shut itself down for its own protection; the heating, cooling and domestic hot water functions are then no longer guaranteed.

1. Check the water flow rate in the installation during heating operation as defined by the following parameters:

Tab.44

Parameter	Description
AM056	Water flow rate in the installation

Tab.45

Parameter	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
HP069: Installation target flow rate set point depending on the heat pump output	l/min	12	17	23	32	32	46	46
HP011: Warning threshold indicating that the water flow rate in the heating circuit is insufficient. The Water Flow Rate Error message will be displayed on the home screen if the flow falls below the following threshold:	l/min	7	7	9	14	14	14	14
HP010: Minimum authorised water flow rate in the heating circuit	l/min	5	5	8	12	12	12	12

2. Set the differential pressure valves to guarantee an optimum flow rate at least equal to the value of the **HP010** parameter in the installation when the thermostatic valves are closed.
 - ⇒ If the flow is lower than this value, the heat pump will not start up for safety reasons.

7.6 Checking the minimum flow of the second circuit and the pump settings

1. Checking the minimum water flow of the second circuit and the settings of the circulating pump.

Tab.46

Parameter	Description
AM056	Water flow rate in the installation

Tab.47

	Unit	AWHP 4.5 MR	AWHP 6 MR-3	AWHP 8 MR-2	AWHP 11 MR-2	AWHP 11 TR-2	AWHP 16 MR-2	AWHP 16 TR-2
Minimum authorised flow rate for circuit B	l/min	9	9	11	16	16	16	16

2. Cut the demand on circuit A.
 - ⇒ The circulating pump is shut down. If necessary, disconnect the power supply of the pump on circuit A to ensure it shuts down.
3. Create a demand on the second circuit.
4. Check that the mixing valve is fully open (to 100%), white tab on the base of the motor.
5. Check the flow circulating in the installation and the condenser by reading the value of the **AM056** parameter in the information menu.
6. Set the circulating pump using the red button in order to achieve a minimum water flow that is equal to the values shown in the table.
 - ⇒ If the flow is lower than this value, the heat pump will not start up for safety reasons.

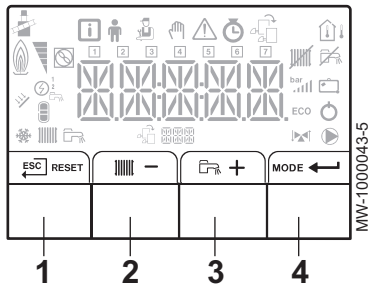
7.7 Final instructions for commissioning

1. If necessary, deactivate the heat pump's domestic hot water mode.
2. Simulate a heat demand to start up heating mode.
3. Check start-up of the outdoor unit and the back-ups connected.
4. Check the flow rate in the installation in comparison to the minimum flow rate.
5. Put the heat pump in shut-down/frost protection mode.
6. After about 10 minutes, vent the air in the heating system.
7. Check the hydraulic pressure on the user interface. If necessary, top up the water level in the heating system.
8. Check the fouling level of the filter(s) inside and outside the heat pump. If necessary, clean the filter(s).
9. Restart the heat pump and deactivate shutdown/frost protection mode
10. Explain how the system works to the users.
11. Hand over all manuals to the user.

8 Operation

8.1 Control panel description

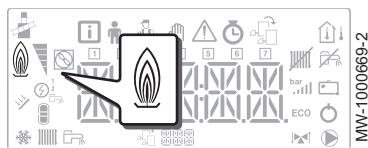
Fig.78



8.1.1 Description of the keys

- 1 : back to the previous level without saving the modifications made
RESET: manual reset
- 2 : accessing the heating parameters
- : lowering the value
- 3 : accessing the domestic hot water parameters
+ : raising the value
- 4 **MODE**: MODE display
: accessing the menu selected or confirming the value modification

Fig.79

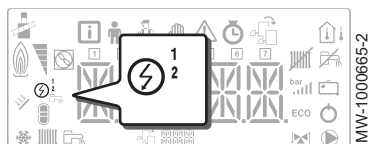


8.1.2 Description of the display

■ Hydraulic back-up

- Hydraulic back-up in demand

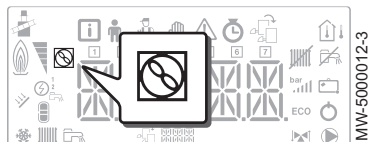
Fig.80



■ Electrical back-up

- Stage 1 of the electrical back-up
- Stage 2 of the electrical back-up

Fig.81



■ Status of the Compressor

- Steady symbol: compressing running

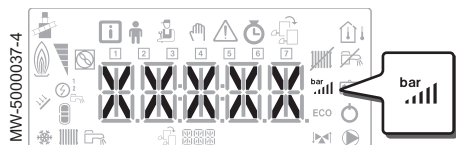
Fig.82



■ Operating modes

- Steady symbol: heating function enabled
- Flashing symbol: heating production running
- Steady symbol: domestic hot water function enabled
- Flashing symbol: domestic hot water production running
- Heating or cooling function disabled
- Domestic hot water function disabled

Fig.83



■ Hydraulic pressure in the system

The display alternates between the hydraulic pressure for the system and the measured flow temperature.

- bar [bar chart icon] Steady symbol: displayed when indicating the system's hydraulic pressure value
- bar [flashing bar chart icon] Flashing symbol: pressure in the system too low
- XXX Pressure value in the system (in bar) or flow temperature (in °C)

Fig.84



■ Cooling mode

- [Steady snowflake icon] Steady symbol: cooling mode on
- [Flashing snowflake icon] Flashing symbol: cooling request pending

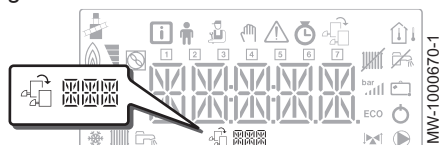
Fig.85



■ Menu display

- [Information icon] **Information** menu: displays the measured values and the statuses of the appliance
- [User icon] **User** menu: provides access to the User level setting parameters
- [Installer icon] **Installer** menu: provides access to the Installer level setting parameters
- [Manual Forcing icon] **Manual Forcing** menu: the appliance runs at the set point displayed, the pumps operate and the three-way valves are not controlled.
- [Malfunction icon] **Malfunction** menu: the appliance has malfunctioned. This information is signalled by an error code and a flashing display.
 - Sub-Menu **COUNTERS**
 - **TIME PROG** sub-menu: Timer programming dedicated to heating and domestic hot water production
 - Sub-Menu **CLOCK**
- [PCB selection icon] **PCB selection** menu: access to information on the additional PCBs connected

Fig.86



■ Display of PCB names

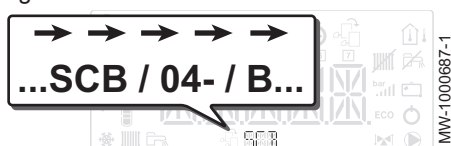
- [PCB selection icon] The name of the PCB for which the parameters are displayed is scrolling across the screen on 3 characters.

Fig.87



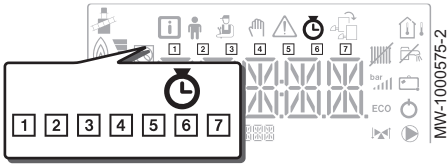
Central unit PCB **EHC-04**: direct circuit and domestic hot water

Fig.88



Additional PCB **SCB-04** : 2nd circuit

Fig.89



■ COUNTERS / TIME PROG / Sub-Menus CLOCK

- 🕒 - COUNTERS sub-menu (CNT)
- TIME PROG sub-menu: Timer programming dedicated to heating and domestic hot water production (CIRC A, CIRC B, ECS)
 - 1 Timer program for Monday
 - 2 Timer program for Tuesday
 - 3 Timer program for Wednesday
 - 4 Timer program for Thursday
 - 5 Timer program for Friday
 - 6 Timer program for Saturday
 - 7 Timer program for Sunday
- CLOCK sub-menu (CLK)

Fig.90



■ Temperature sensors

- 🏠 Room temperature sensor connected:
 - fixed symbol for WINTER mode,
 - flashing symbol for SUMMER mode.
- 🏠 Outside temperature sensor connected:
 - fixed symbol for WINTER mode,
 - flashing symbol for SUMMER mode.

Fig.91

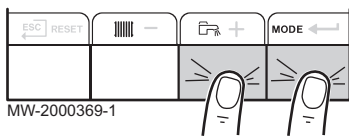


■ Other Information

- 🔧 **Test Menu:** forced operation in heating and cooling mode
- ↔ Three-way valve connected
- ↔ Three-way valve closed
- ↔ Three-way valve open
- 🌀 Pump running

8.2 Browsing in the menus

Fig.92



Press any key to turn on the backlight for the control panel screen.

If no key is pressed within 3 minutes, the control panel backlight will go out.

Press the 2 right-hand keys together to access the different menus:

Tab.48 Menus available

📄	Information menu
👤	User menu
🔧	Installer menu The installer must enter the code 0012 using the + and - keys.
👉	Manual Forcing menu
⚠	Malfunction menu
🕒	COUNTERS sub-menu TIME PROG sub-menu CLOCK sub-menu
🔧	PCB selection menu <div style="border: 1px solid black; padding: 2px; display: inline-block;"> i Important The icon is displayed only if an optional PCB has been installed. </div>

Fig.93



Fig.94

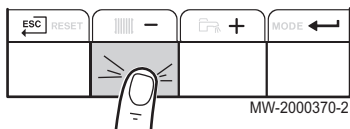
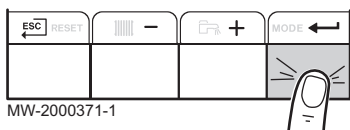


Fig.95

**Important**

The different menus are only accessible when the icons flash.

Press the **+** key to:

- access the next menu,
- access the next sub-menu,
- access the next parameter,
- increase the value.

Press the **-** key to:

- access the previous menu,
- access the previous sub-menu,
- access the previous parameter
- decrease the value.

Press the confirmation key **←** to confirm:

- a menu,
- a sub-menu,
- a parameter,
- a value.

When the temperature is displayed, briefly pressing the back key **←** will return to the time display.

8.3 Description of the PCBs

Fig.96 PCB controlling the heat pump

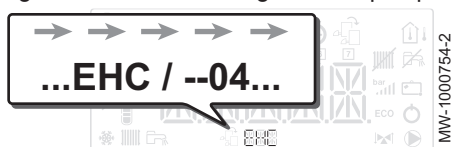
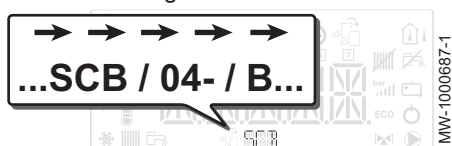


Fig.97 Management of a second circuit



When commissioning the heat pump, the PCB displayed in the main menu is **EHC-04**. The name of the PCB scrolls along the bottom of the screen: **EHC-04**.

Only the installer can access the parameters and settings for each PCB.

In order to control an installation that has an additional circuit, it will be necessary to install the **SCB-04** PCB. The name of the PCB scrolls along the bottom of the screen: **SCB-04**.

**Important**

Given that numerous settings can be made on the two PCBs, depending on the circuit concerned, the name of the PCB will be represented by **000** in the rest of the manual.

**For more information, see**

Configuring a convection fan or underfloor cooling, page 88

8.4 Start-up

1. Switch on the outdoor unit and the indoor module.
2. The heat pump begins its start-up cycle.
 - ⇒ If the start-up cycle runs normally, an automatic venting cycle is initiated. Otherwise, an error message is displayed.

8.5 Shutdown

8.5.1 Switching off the heating



Important

Heating mode can be managed via the **TIME PROG** sub-menu dedicated to timer programming.



Important

If the heating function is shut off, then the cooling will also be shut off.

Fig.98

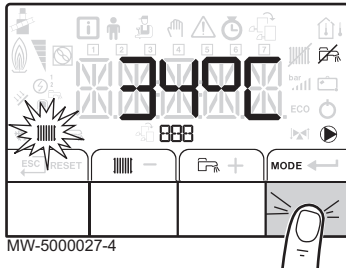


Fig.99

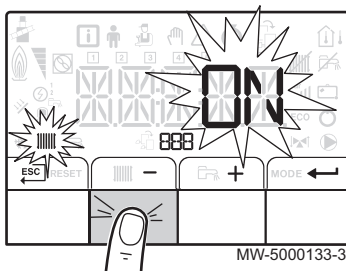
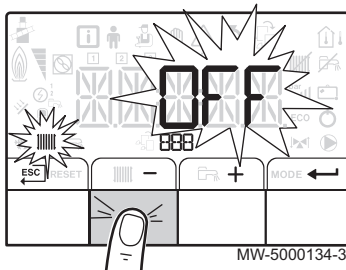


Fig.100



1. Go to stop mode by pressing the **MODE** key.

2. Select the heating mode by pressing the **-** key.
3. Confirm by pressing the **←** key.

4. Select the heating shut-down pressing the **-** key.
 - ⇒ The screen displays: **OFF**.
 - The frost protection function continues to run.
 - The heating and cooling have been shut down.



Important

Press the **+** key to restart the appliance: the screen will display **ON**.

5. Confirm by pressing the **←** key.
6. Go back to the main display by pressing the **ESC** key.



Important

The display disappears after a few seconds of inactivity.

8.5.2 Stopping domestic hot water production

i Important
Domestic hot water production can be managed via the TIME PROG sub-menu dedicated to timer programming.

Fig.101

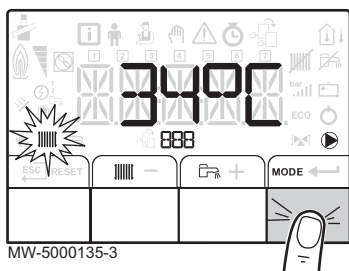


Fig.102

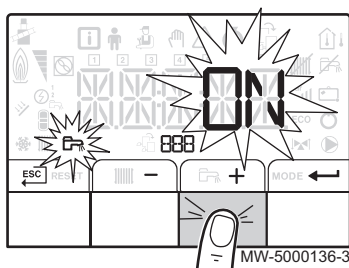
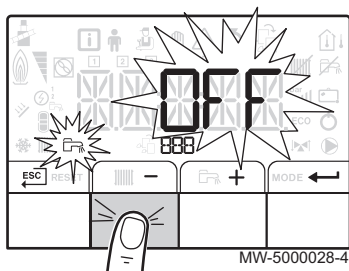


Fig.103



1. Go to stop mode by pressing the **MODE** key.

2. Select domestic hot water production mode pressing the **+** key.
3. Confirm by pressing the **←** key.

4. Select domestic hot water production shut-down by pressing the **-** key.
 - ⇒ The screen displays: *OFF*.
 - The frost protection function continues to run.
 - Production of domestic hot water has been shut down.

i Important
Press the **+** key to restart the appliance: the screen will display *ON*.

5. Confirm by pressing the **←** key.
6. Go back to the main display by pressing the **ESC** key.

i Important
The display disappears after a few seconds of inactivity.

8.5.3 Shutting down the cooling function

i Important
If the heating function is shut off, then the cooling will also be shut off.

1. Access the **⌚** menu.
2. Confirm access by pressing the **←** key.
3. Select **CIRCA** or **CIRCB** by pressing the **+** or **-** key.
4. Confirm the selection by pressing the **←** key.
5. Select **TP.C** by pressing the **+** or **-** keys.
6. Confirm the selection by pressing the **←** key.
7. Modify the timer program to stop cooling.

8.6 Frost Protection

If the temperature of the heating water in the heat pump falls too much, the integrated protection device switches itself on. This device functions as follows:

- If the water temperature is lower than 5°C, the circulating pump starts up.
- If the water temperature is lower than 3°C, the back-up starts up.
- If the water temperature is higher than 10°C, the back-up shuts down and the circulating pump continues to run for a short time.

The radiator valves in rooms where there is a risk of frost must be fully open.

9 Settings

9.1 Modifying the installer parameters



Caution

Altering the factory settings may impair operation of the appliance.

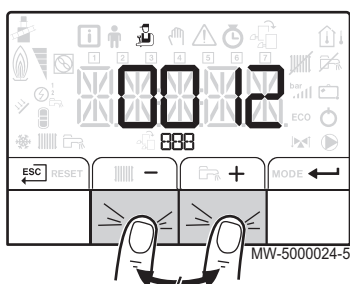
The parameters in the **Installer** menu may only be changed by a qualified professional.

1. Go to the **Installer**  menu.

Fig.104



Fig.105



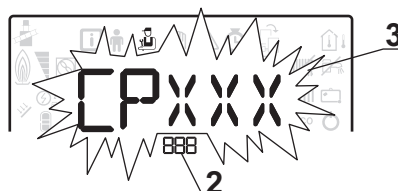
2. Access the **Installer** menu by entering the code `0012` by pressing the **+** and **-** keys.
3. Confirm access by pressing the **←** key.
4. Select the desired sub-menu by pressing the **+** or **-** key.
5. Confirm the selection by pressing the **←** key.
6. Select the required parameter by pressing the **+** and **-** keys to scroll through the list of adjustable parameters.
7. Confirm the selection by pressing the **←** key.
8. Modify the value of the parameter using the **+** and **-** keys.
9. Confirm the new value of the parameter by pressing the **←** key.
10. Go back to the main display by pressing the **ESC** key.

9.2 Installer menu

Fig.106



- 1 Sub-menu available
- 2 Name of the PCB or circuit



- 3 Setting parameters

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Tab.49 List of Installer  sub-menus

Important

Only the parameters used by the device are described in this manual.

Sub-menu	Description	Name of the PCB or circuit
CIRCA	Main heating circuit	EHC -- 04
CIRCB	Additional heating circuit B	SCB04-B
ECS	Domestic hot water circuit	EHC -- 04
EHC-04	EHC-04 central unit PCB	EHC -- 04
SCB04-B	Additional PCB for circuit B	SCB04-B

9.2.1 Installer CIRCA and CIRCB menu

CP : Circuits Parameters = Heating circuit parameters

Tab.50

Parameter	Description	Factory setting CIRCA	Factory setting CIRCB
CP000	Maximum Flow Temperature setpoint zone For circuit A: Can be set from 7 °C to 100 °C	Electrical back-up: 75 Hydraulic back-up: 90	50
CP020	Type of circuit A, connected to the EHC-04 PCB: <ul style="list-style-type: none"> • 0 = heating circuit deactivated • 1 = radiators. Cooling not possible. • 2 = underfloor heating. Cooling possible. • 3 = not available • 4 = not used • 5 = convection fan. Cooling possible. Type of circuit B, connected to the SCB-04 PCB: <ul style="list-style-type: none"> • 0 = heating circuit deactivated • 1 = radiators. Cooling not possible. • 2 = underfloor heating with mixing valve. Cooling possible. • 3 =Swimming pool • 4 = not used • 5 = convection fan. Cooling possible. • 6 and above = not used 	2	2
CP030	Bandwith of mixing valve zone where modulation takes place. Can be set from 4 °C to 16 °C	not available	12
CP040	Pump post runtime of the zone Can be set from 0 Min to 20 Min	3	4
CP050	Shift between calculated setpoint and mixing valve circuit setpoint Can be set from 0 °C to 16 °C	not available	4
CP060	Wished room zone temperature on holiday period Can be set from 5 °C to 20 °C	6	6
CP070	Max RoomTemperature limit of the circuit in reduced mode, that allows switching to comfort mode Can be set from 5 °C to 30 °C	16	16
CP210	Comfort footpoint of the temperature of heat curve of the circuit <ul style="list-style-type: none"> • can be set from 16 to 90 °C • set to 15 = the curve base temperature is set automatically and is the same as the room set point temperature 	15	15
CP220	Reduced footpoint of the temperature of heat curve of the circuit <ul style="list-style-type: none"> • can be set from 6 to 90 °C • set to 15 = the curve base temperature is set automatically and is the same as the room set point temperature 	15	15
CP230	Heating curve temperature gradient of the zone Can be set from 0 to 4	0.7	0.7
CP240	Adjustment of the influence of the zone room unit Can be set from 0 to 10	3	3
CP270	Mixing flow temperature setpoint cooling of the zone Can be set from 11 °C to 23 °C	18	18
CP280	Fan flow setpoint cooling of the zone Can be set from 7 °C to 23 °C	7	20
CP340	Type of Reduced Night Mode, stop or maintain heating of circuit <ul style="list-style-type: none"> • 0 = Stop heat demand • 1 = Continue heat demand 	1	0

Parameter	Description	Factory setting CIRCA	Factory setting CIRCB
CP470	Setting of the screed drying program of the zone 0 = deactivated Can be set from 1 to 30 days	0	0
CP480	Setting of the start temperature of the screed drying programm of the zone Can be set from 20 °C to 50 °C	20	20
CP490	Setting of the stop temperature of the screed drying programm of the zone Can be set from 20 to 50 °C	20	20
CP500	Enable/Disable Flow temperature sensor of the zone • 0 =Off • 1 =On Do not modify this setting	not available	0
CP640	Opentherm Logic level contact of the zone • 0 = contact open for heating demand • 1 = contact closed for heating demand	1	1
CP650	Desired reduced room temperature setpoint in cooling mode per zone Can be set from 20 °C to 30 °C	29	29
CP690	Reversed Opentherm contact in cooling mode for heat demand per zone • 0 =No • 1 =Yes	0	0
CP750	Maximal Zone Preheat time Can be set from 0 Min to 240 Min	0	0
CP780	Selection of the control strategy for the zone • 0 = Extra Slow • 1 = Slowest • 2 = Slower • 3 = Normal • 4 = Faster • 5 = Fastest	0	0
ADV	Advanced parameters ADV	CIRCA sub-menu: not available	CIRCB sub-menu: available

9.2.2 Installer CIRCA and CIRCB\ADV menu

Tab.51

ADV	Description of the ADV advanced parameters	Factory setting CIRCB
CP330	The time needed by the valve to be fully opened Can be set from 0 Sec to 240 Sec Do not modify this setting	60
CP520	Power setpoint per zone Can be set from 0 % to 100 % Do not modify this setting	100
CP530	Pulse Width Modulation pump speed per zone Can be set from 0 % to 100 % Do not modify this setting	20

ADV	Description of the ADV advanced parameters	Factory setting CIRCB
CP730	Selection of heat up speed of the zone <ul style="list-style-type: none"> • 0 =Extra Slow • 1 =Slowest • 2 =Slower • 3 =Normal • 4 =Faster • 5 =Fastest Do not modify this setting	2
CP740	Selection of Cool down speed of the zone <ul style="list-style-type: none"> • 0 =Slowest • 1 =Slower • 2 =Normal • 3 =Faster • 4 =Fastest Do not modify this setting	2
CP770	The zone is after a Buffer tank <ul style="list-style-type: none"> • 0 =No • 1 =Yes Do not modify this setting	1

9.2.3 Installer DHW menu

A domestic hot water sensor must be connected to the EHC-04 board to display these parameters.

DP : Direct Hot Water Parameters = Domestic hot water tank parameters

Tab.52

Parameter	Description	Factory setting
DP051	Domestic Hot Water ECO or CONFORT setting <ul style="list-style-type: none"> • 0 =ECO (Only HP) • 1 =Comfort (HP+Boiler) 	0
DP120	Hysteresis temperature relative to the DHW temperature setpoint Can be set from 0 °C to 40 °C	8
DP130	Offset added on the DHW temperature to obtain the dynamic generator setpoint.	20
DP213	Post run time of the DHW pump/3 way valve after DHW production Can be set from 0 Min to 99 Min	3
ADV	Advanced parametersADV	

9.2.4 Installer DHWADV menu

A domestic hot water sensor must be connected to the EHC-04 board to display these parameters.

DP : Direct Hot Water Parameters = Domestic hot water tank parameters

Tab.53 List of ADV parameters in the sub-menu of the Installer  menu

ADV	Description of the ADV advanced parameters	Factory setting
DP004	Legionella mode protection calorifier <ul style="list-style-type: none"> • 0 =Disabled • 1 = on: the domestic hot water tank is superheated to 65 °C for 20 minutes once a week. • 2 = automatic: the domestic hot water tank is remotely controlled. 	0
DP046	Maximum domestic hot water temperature Can be set from 10 °C to 70 °C	70

ADV	Description of the ADV advanced parameters	Factory setting
DP047	Maximum time allowed to produce Domestic Hot Water Can be set from 1 to 10 hours	3 (4.5 kW - 6 kW - 8 kW) 2 (11 kW - 16 kW)
DP048	Minimum heating time before Domestic Hot Water production Can be set from 0 to 10 hours	2
DP055	Enable/disable the TAS protection of the DHW tank Can be set from 0 to 1	0
DP090	Delay for starting the next generator (backup stage) in DHW mode Can be set from 0 Min to 120 Min	90
DP100	Delay for stopping the next generator (backup stage) in DHW mode Can be set from 0 Min to 120 Min	2
DP110	Delay for starting the next generator (backup stage) in DHW mode Can be set from 0 Min to 255 Min	5
DP150	Enable DHW Thermostat function <ul style="list-style-type: none"> • 0 =Off • 1 =On 	1
DP160	Setpoint for DHW anti legionella Can be set from 60 °C to 90 °C Do not modify this setting	65

9.2.5 Installer EHC-04 and SCB-04 menu

AP : Appliance Parameters = Appliance parameters

Tab.54

Parameter	Description	Factory setting EHC-04	Factory setting SCB-04
AP001	Blocking input setting (1: Full blocking, 2: Partial blocking, 3: User reset locking) BL1: <ul style="list-style-type: none"> • 1 = Full blocking of the installation – frost protection not guaranteed • 2 = Partial blocking of the installation – frost protection active • 3 =User reset locking • 4 =Backup Relieved • 5 =Heat Pump Relieved • 6 =HP & backup relieved • 7 =High, Low Tariff • 8 =Photovoltaic HP Only • 9 =PV HP And backup • 10 =Smart Grid ready • 11= heating/cooling 	2	not available
AP028	Defines the type of cooling used. <ul style="list-style-type: none"> • 0 =Off • 1 =Active cooling on • 2 = Free cooling on, not used 	0	1
AP063	Maximum central heating flow temperature setpoint Can be set from 20 °C to 90 °C	Hydraulic back-up: 90 Electrical back-up: 75	not available
AP075	Outdoor temperature neutral band between heating and cooling. The generator is stopped. Can be set from 0 to 10 °C	4	4
AP079	Inertia of the building used for heat up speed Can be set from 0 to 10 <ul style="list-style-type: none"> • 0 = 10 hours for a building with low thermal inertia, • 3 = 22 hours for a building with normal thermal inertia, • 10 = 50 hours for a building with high thermal inertia. Modification of the factory setting is only useful in exceptional cases.	3	3

Parameter	Description	Factory setting EHC-04	Factory setting SCB-04
AP080	Outside temperature below which the antifreeze protection is activated: <ul style="list-style-type: none"> • can be set from -29 to 20 °C • set to -30 °C = function deactivated 	3	3
AP091	Outdoor sensor type 0 =Auto	0	-
AP098	Blocking input 1 contact direction configuration <ul style="list-style-type: none"> • 0 = input active on Open contact • 1 = input active on Closed contact 	1	not available
AP099	Blocking input 2 contact direction configuration <ul style="list-style-type: none"> • 0 = input active on Open contact • 1 = input active on Closed contact 	1	not available
AP100	Blocking input 2 setting <ul style="list-style-type: none"> • 1 = Full blocking of the installation – frost protection not guaranteed • 2 = Partial blocking of the installation – frost protection active • 3 =User reset locking • 4 =Backup Relieved • 5 =Heat Pump Relieved • 6 =HP & backup relieved • 7 =High, Low Tariff • 8 =Photovoltaic HP Only • 9 =PV HP And backup • 10 =Smart Grid ready • 11 =Heating Cooling 	2	not available

HP : Heat-pump Parameters = Heat pump parameters

Tab.55

Parameter	Description	Factory setting EHC-04
HP000	Outside bivalent temperature Outside bivalent temperature above which back up are not allowed to operate	10
HP054	COP threshold above which heat pump is authorized to operate when hybrid mode is primary energy Can be set from 1 to 5 °C Value accepted when HP061=2	2.5
HP061	Hybrid mode management: <ul style="list-style-type: none"> • 0 =No Hybrid • 1 =Hybrid Cost • 2 =Primary Energy • 3 =Hybrid CO2 	1
HP065	Electrical CO2 emission in heating mode Can be set from 0 to 100 (x0.01) Value accepted when HP061=3	18
HP066	Electrical CO2 emission in DHW mode Can be set from 0 to 100 (x0.01) Value accepted when HP061=3	4
HP067	Gas or Oil CO2 emission Can be set from 0 to 100 (x0.01) Value accepted when HP061=3	23
HP068	Boiler in appliance efficiency Can be set from 0 to 100%	100
PP015	Central heating pump post run time Post-circulation of the heating pump: <ul style="list-style-type: none"> • can be set from 0 to 98 minutes • set to 99 = runs continuously 	3

Parameter	Description	Factory setting EHC-04
AD	Auto detect	available
CNF	Reset factory parameters	See the data plate.
ADV	ADV advanced parameters	not available

9.2.6 Installer EHC-04 and SCB-04\ADV menu

AP : Appliance Parameters = Appliance parameters

ADV	Description of the ADV advanced parameters	Factory setting EHC-04	Factory setting SCB-04
AP002	Enable manual heat demand function In this mode, the temperature set point used will be that for the AP026 parameter.	0	
AP006	Appliance will report low water pressure below this value Can be set from 0 bar to 6 bar	0.3	not available
AP009	Number of heat generator operating hours for raising a service notification Can be set from 0 to 65534 hours	17400	not available
AP010	Service: • 0 =None • 1 =Custom notification • 2 =ABC notification	0	not available
AP011	Hours powered to raise a service notification Can be set from 0 to 65534 hours	17400	not available
AP026	Flow temperature setpoint for manual heat demand Can be set from 7 to 80°C Set point used when manual mode is active (AP002 = 1)	40	not available
AP058	Warning message indicating that pressure is low Can be set from 0 bar to 2 bar	0.8	not available
AP072	Type of the humidity sensor used • 0 =No • 1 =OnOff • 2 =0-10V sensor	0	
AP101	Disable (0) or Enable (1) the de-aeration cycle • 0 =Off • 1 =Auto • 2 =On	1	not available
AP102	Configuration of the boiler pump as zone pump or system pump (feed lowloss header) • 0 =No • 1 =Yes	1	not available

HP : Heat-pump Parameters = Heat pump parameters

Tab.56

ADV parameter	Description of the ADV advanced parameters	Factory setting EHC-04
HP002	Maximum flow temperature of the heat pump without backups Can be set from 20 °C to 90 °C	65 (6 kW - 8 kW - 11 kW - 16 kW) 60 (4.5 kW)
HP003	Minimum flow temperature allowed in cooling mode Can be set from 5 °C to 30 °C	5

ADV parameter	Description of the ADV advanced parameters	Factory setting EHC-04
HP010	Minimum flow rate in heating mode Can be set from 0 l/m to 90 l/m	5 for 4.5 kW 5 for 6 kW 8 for 8 kW 12 for 11 kW 12 for 16 kW
HP011	Minimum flow rate that triggers a warning message indicating that flow is going low Can be set from 0 l/m to 95 l/m	7 for 4.5 kW 7 for 6 kW 9 for 8 kW 14 for 11 kW 14 for 16 kW
HP030	Delay time for starting the next generator (backup stage) in central heating mode Can be set from 0 Min to 600 Min	0
HP031	Delay time for stopping the next generator (backup stage) in central heating mode Can be set from 0 Min to 600 Min 0 = auto mode: use parameters HP047 to HP050	4
HP033	Pulse valency of the electrical meter Can be set from 0 Wh to 1000 Wh	1
HP034	Capacity first electrical backup stage Can be set from 0 kW to 10 kW Value accepted when HP031 = 0	0
HP035	Capacity second electrical backup stage Can be set from 0 kW to 10 kW Value accepted when HP031 = 0	0
HP036	Rate of glycol added in the installation <ul style="list-style-type: none"> • 0 =0% glycol • 1 =20% glycol • 2 =30% glycol • 3 =40% glycol 	0
HP047	Maximum time at maximum outside temperature to start back up in CH mode when dynamic timer selected Can be set from 1 to 10 minutes Value accepted when HP031 = 0	8
HP048	Maximum time at maximum outside temperature to start back up in CH mode when dynamic timer selected Can be set from 0 to 60 minutes Value accepted when HP031 = 0	30
HP049	Minimum outside temperature for dynamic timer when dynamic mode is selected Can be set from -30 to 0 °C Value accepted when HP031 = 0	-10
HP050	Maximum outside temperature for dynamic timer when dynamic mode is selected Can be set from -30 to +20 °C Value accepted when HP031 = 0	15
HP051	Minimum operating temperature for the heat pump Can be set from -20 to +5 °C	-15 °C for 4.5 kW -15 °C for 6 kW -20 °C for 8 kW -20 °C for 11 kW -20 °C for 16 kW
HP058	Enabling heat pump silent mode <ul style="list-style-type: none"> • 0 =No • 1 =Yes Requires a specific option. Not available for AWHP 4.5 MR.	0
HP069	Heat pump flow speed setpoint depending on heat pump power configuration Can be set from 0 to 100 l/min	12 for 4.5 kW 17 for 6 kW 23 for 8 kW 32 for 11 kW 46 for 16 kW

ADV parameter	Description of the ADV advanced parameters	Factory setting EHC-04
HP079	Maximum offset applied on the dynamic cooling setpoint when a 0-10V humidity sensor is used Can be set from 0 to 15 °C	5
HP086	Activation of hydraulic management mode for the configuration with a low-loss header, or for a buffer tank connected as a low-loss header • 0 =No • 1 =Yes	0
HP087	Buffer tank hysteresis to start and stop heating Can be set from 0 to 30 °C	6
HP091	Offset temperature of heating setpoint when photovoltaic function is activated Can be set from 0 to 30 °C	0
HP092	Offset temperature of DHW setpoint when photovoltaic function is activated Can be set from 0 to 30 °C	0
HP094	Start time of the low noise when function activated Can be set from 00:00 to 23:59 Value accepted when HP058 = 1	22:00
HP095	Stop time of the low noise when function activated Can be set from 00:00 to 23:59. Value accepted when HP058 = 1	06:00
HP108	Activation time delays for the back-ups between stage 1 and stage 2 (electrical back-up) in central heating mode	4
PP016	Maximum central heating pump speed (%) Maximum pump speed in heating mode Can be set from 20 to 100%	100%
PP018	Minimum central heating pump speed (%) Minimum pump speed in heating mode Can be set from 20 to 100%	30%
AD	Auto detect	available
CNF	Reset factory parameters	See the data plate
ADV	ADV advanced parameters	not available

9.3 Setting the parameters

9.3.1 Language selection

1. Access the **User** menu.
2. Select the **HMI** sub-menu.
3. Select the **AP103** parameter corresponding to language selection by pressing the **+** or **-** keys.
4. Confirm by pressing the **←** key.

Fig.107

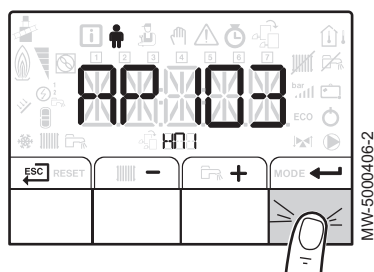


Fig.108

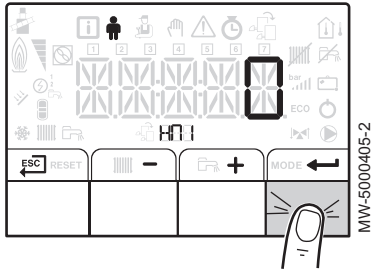
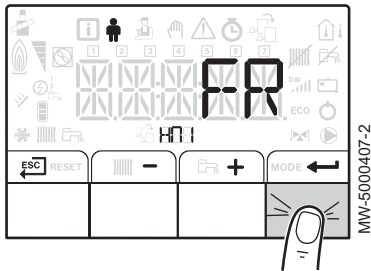


Fig.109



5. Access the languages available by pressing the ← key.

6. Select the language by pressing the + or - keys until the desired language is displayed.

7. Confirm by pressing the ← key.

8. Go back to the main display by pressing the ESC key.

Fig.110

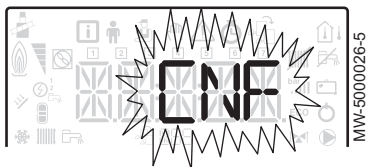
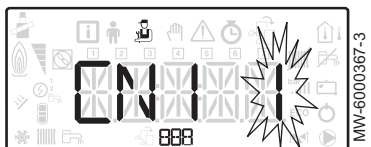


Fig.111



9.3.2 Selecting the type of outdoor unit and the type of back-up (CN1 et CN2)

1. Go to the **Installer** menu.
2. Access the **Installer** menu: enter the code **0012** by pressing the + and - keys.
3. Confirm access by pressing the ← key.
4. Access the **EHC-04** PCB parameters by pressing the + or - key.
5. Select the **CNF** menu (control panel reset) by pressing the + or - keys.
6. Confirm by pressing the ← key.
7. Refer to the table below and enter the values corresponding to the type of outdoor unit and the type of back-up by pressing on the + or - keys.
8. Confirm the selection by pressing the ← key.
9. Go back to the main display by pressing the ESC key.

■ CNF Menu

The **CNF** menu is used to configure the hybrid heat pump according to the type of back-up and the output of the outdoor unit installed.

Tab.58 Value of the **CN1** and **CN2** parameters with a hydraulic back-up

Output of the outdoor unit	CN1	CN2
4.5 kW	18	7
6 kW	2	7
8 kW	3	7
11 kW	4	7
16 kW	5	7

Tab.59 Value of the **CN1** and **CN2** parameters with an electrical back-up

Output of the outdoor unit	CN1	CN2
4.5 kW	17	7
6 kW	7	7
8 kW	8	7
11 kW	9	7
16 kW	10	7



For more information, see

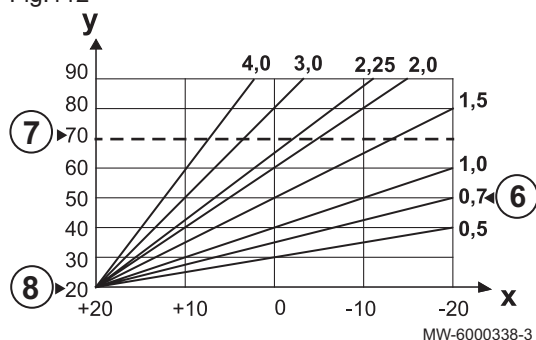
Configuring a convection fan or underfloor cooling, page 88

9.3.3 Setting the heating curve

The heating base point temperature is used to impose a minimum operating temperature on the heating circuit.

The minimum operating temperature may be constant if the circuit gradient is zero.

Fig.112



1. Go to the **Installer** menu.
2. Access the **Installer** menu by entering the code **0012** by pressing the **+** and **-** keys.
3. Confirm access by pressing the **←** key.
4. Select the desired circuit or PCB by pressing the **+** or **-** key.

Circuit	PCB
A	EHC-04
B	SCB-04

5. Confirm the selection by pressing the **←** key.
6. Set the heating gradient using the **CP230** parameter.
7. If necessary, set the maximum flow set point using the **CP000** parameter.
8. If necessary, set the curve base temperature in daytime mode using the **CP210** parameter.
9. If necessary, set the curve base temperature in night mode using the **CP220** parameter.
10. Go back to the main display by pressing the **ESC** key.

9.3.4 Configuring the estimated electrical energy consumption function

Tab.60


Connections	The electrical energy meter is connected to the S0+/S0- input on the EHC-04 PCB. Do not install meters for the electrical back-ups.
Energy meter specifications	<ul style="list-style-type: none"> • Minimum power supply voltage range: 24 V +/-10 % • Minimum admissible intensity: 20 mA • Minimum pulse time: 25 ms • Maximum frequency: 20 Hz • Pulse weight: between 1 and 1000 Wh <p>If the meter pulse weight is given in number of pulses/kWh, the pulse weight must be between the following numbers: 1, 2, 4, 5, 8, 10, 20, 25, 40, 50, 100, 125, 200, 250, 500 or 1000.</p>

Energy metering provides information on:

- electrical energy consumption,

- the production of thermal energy for heating, domestic hot water and cooling modes.

The thermal energy from the hydraulic or electrical back-up is also factored in to provide the full tally of restored thermal energy.

1. Go to the **Installer**  menu.
2. Access the **Installer** menu: enter the code **0012** by pressing the **+** and **-** keys.
3. Confirm access by pressing the **←** key.
4. Select **EHC-04** by pressing the **+** or **-** key.
5. Confirm access by pressing the **←** key.
6. Configure the **HP033** parameters according to the type of energy meter installed. By default, the pulse weight is set to 1 Wh, the setting range of the **HP033** parameter goes from 0 (no metering) to 1000 Wh. If the pulse weight is in kWh, use the following table.

Tab.61 If the pulse weight is given in kWh

Any numbers other than those stated in the table will not work.

Number of pulses per kWh	Values to be configured for the HP033 parameter
1	1000
2	500
4	250
5	200
8	125
10	100
20	50
25	40
40	25
50	20
100	10
125	8
200	5
250	4
500	2
1000	1

7. Configure the **HP034** and **HP035** parameters.

Tab.62

Situation	Configuration
If a hydraulic back-up is fitted	Set the HP034 and HP035 parameters to 0.
If an electrical back-up is fitted	Set the HP034 and HP035 parameters according to the configuration of the electrical back-up stages output.

9.3.5 Configuring a hydraulic back-up

1. Configure the back-up boiler according to its control panel.
- **Configuring a boiler equipped with a room thermostat input**
 1. Set the following installer parameters on the boiler control panel.

Tab.63 Setting with IniControl 2 control panel

Parameter	Setting
E.TEL	THERM A
TPC J / TPC N	Domestic hot water set point temperature +5°C
PENTE CIRC.A	0.0

Tab.64 Setting with another control panel

Parameter	Setting
Heating / Boiler thermostat set point temperature	Domestic hot water set point temperature +5°C

2. Switch off the control panel.
3. Disconnect the outside temperature sensor.
4. Mount a 1-kOhm resistor instead of the outside sensor.



See
Boiler installation manual.

■ Configuring a boiler not equipped with a room thermostat input

1. Set the following installer parameters on the boiler control panel:
 - Switch the boiler control system to 24h/24 comfort mode.
 - Heating set point temperature = Domestic hot water set point temperature + 5°C.



See
Boiler installation manual.

9.3.6 Configuring the hybrid operating mode of a hydraulic back-up



Important
Hybrid operating mode is only available for appliances with a hydraulic back-up.

The hybrid function consists of an automatic switch between the heat pump and the boiler, according to the cost, the consumption or emission of CO₂ of each heat generator.

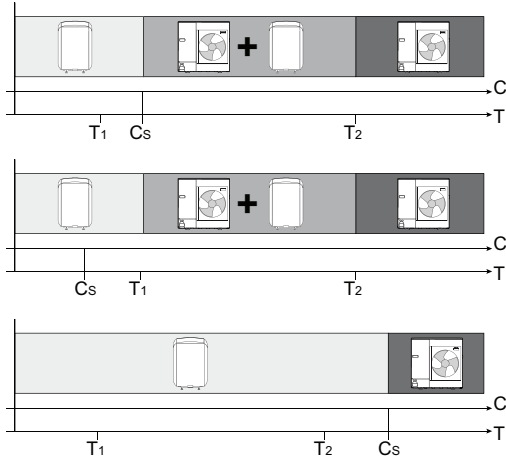
Tab.65 Calculating the threshold coefficient of performance

If the coefficient of performance of the heat pump is higher than the threshold coefficient of performance, the heat pump takes priority. Otherwise only the boiler back-up is enabled. The heat pump coefficient of performance depends on the outside temperature and the heating water set point temperature.

HP061 parameter	Description
HP061 = 1	<p>Optimisation of energy costs for the consumer (factory setting): the control system chooses the cheapest generator according to the coefficient of performance of the heat pump and according to energy cost. The switch between the heat pump and the boiler occurs at the value of the threshold coefficient of performance calculated according to energy cost optimisation mode with the energy cost parameters.</p> <ul style="list-style-type: none"> • HP062: Peak rate cost of electricity • HP063: Off-peak rate cost of electricity • HP064: Cost of fossil energy (oil or gas) – price per m³ or per litre – Can be set from 0.01 to 2.50 €/kWh
HP061 = 2	<p>Optimisation of primary energy consumption: The control system chooses the generator that consumes the least primary energy. The switch between the heat pump and the boiler occurs at the HP054 threshold coefficient of performance value according to the primary energy consumption optimisation mode.</p>

HP061 parameter	Description
HP061 = 3	<p>Optimisation of CO₂ emissions: The control system chooses the generator that emits the least CO₂. The switch between the heat pump and the boiler occurs at the threshold coefficient of performance value calculated according to the CO₂ emissions optimisation mode:</p> <ul style="list-style-type: none"> • HP065: Electricity CO₂ emissions in heating mode • HP066: Electricity CO₂ emissions in domestic hot water production mode • HP067: Gas or oil CO₂ emissions
HP061 = 0	No optimisation: The heat pump always starts up first, regardless of the conditions. The boiler back-up starts up afterwards, if necessary.

Fig.113



MW-5000542-1

Influence of outdoor temperatures and bi-valency

- C** COP: Coefficient of performance
- C_S** Threshold coefficient of performance
- T** Outdoor temperature
- T₁** **HP051** parameter: Minimum outdoor temperature for the heat pump to stop
- T₂** **HP000** parameter: Bi-valency outdoor temperature

9.3.7 Configuring a convection fan or underfloor cooling

This function is only available when the type of circuit selected is underfloor heating or a convection fan: **CP020** parameter set to 2 or 5.

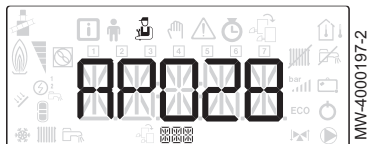


Important

The heating should be activated in order for cooling to function.

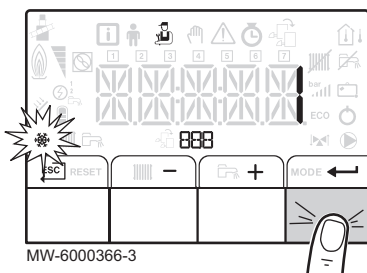
1. Go to the **Installer** menu.
2. Access the **Installer** menu by entering the code **0012** by pressing the **+** and **-** keys.
3. Confirm access by pressing the **←** key.
4. Access the **EHC-04 PCB** parameters by pressing the **+** or **-** key.
5. Select the **AP028** parameter corresponding to cooling by pressing the **+** or **-** keys.
6. Confirm by pressing the **←** key.
7. Select value 1 by pressing the **+** key to activate the cooling function.
8. Confirm by pressing the **←** key.
9. Go back to the main display by pressing **ESC**.
10. Program the desired cooling hours in the menu, circuit A or B, **TP.C** sub-menu.
11. Go back to the main display by pressing **ESC**.

Fig.114




MW-4000197-2

Fig.115



MW-6000366-3

12. If necessary, force cooling or configure cooling temperatures in the **User**  menu, circuits A and B:

Tab.66

Parameter	Description
AP015	Cooling is forced, regardless of the outdoor temperature
AP016	Activating/deactivating heating: deactivating heating also deactivates cooling
CP270	Cooling set point for the flow temperature on the mixing valve circuit
CP280	Cooling set point for the flow temperature on the convection fan circuit

13. Check the setting for the **CP690** parameters according to the thermostat or room sensor used.



For more information, see
 CNF Menu, page 64
 Description of the PCBs, page 71

9.3.8 Screed drying with the aid of the heat pump

The screed drying program reduces the drying time of a freshly poured screed floor.

- The settings for these temperatures must follow the screed layer's recommendations.
- Activation of this function via the **CP470** parameter (setting other than 0) forces the permanent display of the screed drying function and deactivates all other control system functions.
- When the screed drying function is active on one circuit, all other circuits and the domestic hot water circuit continue to run.
- It is possible to use the screed drying function on circuits A and B. The parameter settings must be made on the PCB that controls the circuit concerned.

Screed drying curve

- 1 Number of days
- 2 Heating set point temperature (°C)
- 3 Screed drying start temperature
- 4 Screed drying stop temperature
- 5 Start of the screed drying function
- 6 Number of days on which the screed drying function is activated
- 7 End of the screed drying function, back to normal running

Fig.116

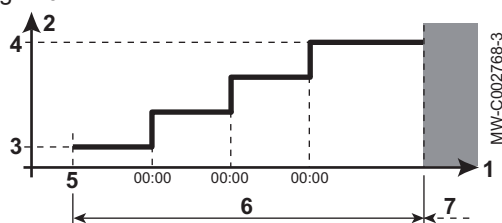
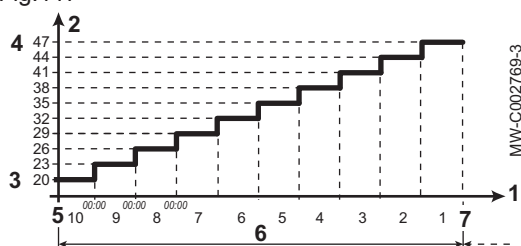


Fig.117




Example



Important

Every day at midnight, the screed drying start temperature set point is recalculated and the remaining number of days on which the screed drying function is running decreases.

1. Go to the **Installer**  menu.
2. Access the **Installer** menu by entering the code **0012** by pressing the **+** and **-** keys.
3. Confirm access by pressing the **←** key.
4. Select the desired circuit or PCB by pressing the **+** or **-** key.

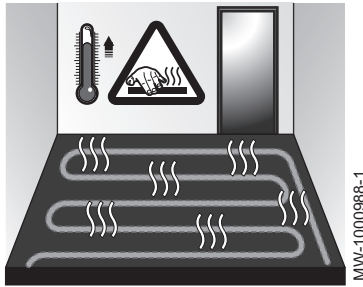
Circuit	PCB
A	EHC-04
B	SCB-04

5. Configure the following parameters

Tab.67 Screed drying management parameter

Parameter	Description
CP470	Number of days of screed drying
CP480	Circuit screed drying start temperature setting
CP490	Circuit screed drying programme stop temperature setting

Fig.118



9.3.9 Drying screed without the heat pump outdoor unit

The indoor module can be used for drying screed using the electrical back-up. It is not necessary to connect the outdoor unit.

1. Switch on the indoor module and activate the screed drying function.
2. Adjust the parameters for screed drying.
 - ⇒ If the outdoor unit is not connected, the back-ups will start automatically.

9.3.10 Setting the parameters for using photovoltaic energy

When lower cost electrical energy is available, such as photovoltaic energy, the heating circuit and domestic hot water tank (if present) can be overheated. Underfloor cooling cannot be supplied with power in this way.

1. Activate overheating authorisation for the heating circuit or the domestic hot water tank by adjusting the **AP001** parameter or the **AP100** parameter.

Parameter	Description
AP001 or AP100	Hydraulic back-up: 8 (Photovoltaic with heat pump only) Electrical back-up: 9 (Photovoltaic with electrical back-up)

2. Connect a dry contact to the **BL1** or **BL2** input.
3. Set the offset for the heating set point temperature when the Photovoltaic function is active (**HP091** parameter).
4. Set the offset for the domestic hot water set point temperature when the Photovoltaic function is active (**HP092** parameter).

9.3.11 Connecting the installation to a Smart Grid

The heat pump can receive and manage control signals from the "smart" energy distribution network (**Smart Grid Ready**). Based on the signals received by the terminals of the **BL1 IN** and **BL2 IN** multifunction inputs, the heat pump shuts down or voluntarily overheats the heating system in order to optimise electricity consumption.

Tab.68 Operation of the heat pump in a Smart Grid

BL1 IN input	BL2 IN input	Operating
Inactive	Inactive	Normal: The heat pump and the electrical back-up operate normally
Active	Inactive	Shutdown: The heat pump and the electrical back-up are shut down

BL1 IN input	BL2 IN input	Operating
Inactive	Active	Economy: The heat pump voluntarily overheats the system without the electrical back-up
Active	Active	Super Economy: The heat pump voluntarily overheats the system with the electrical back-up

Overheating is activated depending on whether the dry contact on inputs BL1 and BL2 is open or closed, and the AP098 and AP099 parameters which control the activation of functions depending on whether the contacts are open or closed.

1. Connect the **Smart Grid** signal inputs to the **BL1 IN** and **BL2 IN** inputs on the EHC-04PCB. **Smart Grid** signals come from dry contacts.
Germany: Connect the **SG1** and **SG2** terminals respectively from the electricity meter to the **BL1 IN** and **BL2 IN** inputs on the EHC-04 power circuit board.
2. Set the **AP001** and **AP100** parameters to 10.
⇒ The heat pump is ready to receive and manage **Smart Grid** signals.
3. Choose the contact directions of the **BL1 IN** and **BL2 IN** multifunction inputs by setting the **AP098** and **AP099** parameters.

Tab.69

Parameter	Description
AP098	Configuration of the BL1 contact direction <ul style="list-style-type: none"> • 0 = input active on open contact • 1 = input active on close contact
AP099	Configuration of the BL2 contact direction <ul style="list-style-type: none"> • 0 = input active on open contact • 1 = input active on close contact

4. Configure the temperature offsets for the voluntary overheating by configuring the **HP091** and **HP092** parameters.

Tab.70

Parameter	Description
HP091	Heating set point temperature offset when the Photovoltaic function is running
HP092	Domestic hot water set point temperature offset when the Photovoltaic function is running

9.3.12 Reducing the noise level of the outdoor unit

Silent mode is used to reduce the noise level on the outdoor unit during a given time range, particularly at night. This mode gives temporary precedence to silent running rather than temperature control.

Important

- Silent mode only operates if the silent running kit (package EH 572) is connected to the outdoor unit.
This function is not compatible with the AWHP 4.5 MRoutdoor unit.

Silent mode is managed by the following parameters which can be found in the Installer menu, **EHC-04, ADV**:

Tab.71

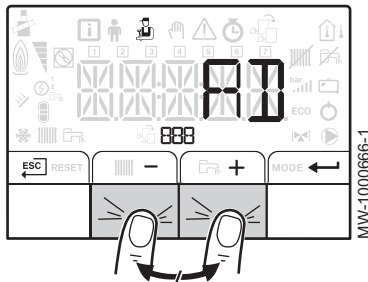
Parameter	Description
HP058	Enabling heat pump silent mode
HP094	Start time of the low noise when function activated
HP095	Stop time of the low noise when function activated

9.3.13 Detecting an additional or replacement PCB

The automatic detection function is used if a control PCB has been removed, replaced or added.

1. Go to the **Installer** menu.
2. Access the **Installer** menu by entering the code **0012** by pressing the **+** and **-** keys.
3. Confirm access by pressing the **←** key.
4. Select the **EHC-04** main PCB by pressing the **+** or **-** key.
5. Confirm the selection by pressing the **←** key.
6. Select the auto detection parameter by pressing the **+** or **-** keys.
7. Confirm auto detection by pressing the **←** key.
⇒ The automatic detection function is running.

Fig.119



9.4 COUNTERS /TIME PROG / CLOCK menus ⌚

Tab.72 List of sub-menus ⌚

Sub-menu	Description
CNT	COUNTERS
CIRCA	Timer programming for the main heating circuit
CIRCB	Timer programming for the additional heating circuit B
DHW	Timer programming for the domestic hot water circuit
CLK	Setting the clock and the date

9.4.1 COUNTERS, TIME PROG, CLOCK ⌚\CNT menus

Tab.73 Choosing the menu

Counters	Selection
Circuit A counters	Choose the EHC-04 menu
Circuit B counters	Choose the SCB04-B menu
Counters connected to the operation of the heat pump	Choose the EHC-04 menu

Tab.74 Available counters

Parameter	Description	Unit	EHC-04	SCB04-B
AC001	Number of hours that the appliance has been on mains power	hours	X	X
AC005	Energy consumed for central heating	kWh	X	
AC006	Energy consumed for domestic hot water	Wh	X	
AC007	Energy consumed for cooling	Wh	X	
AC008	Energy delivered for central heating	kWh	X	
AC009	Energy delivered for domestic hot water	kWh	X	
AC010	Energy delivered for cooling	kWh	X	
AC013	Seasonal COP		X	
AC026	Counter that shows the number of pump running hours	hours	X	
AC027	Counter that shows the number of pump starts	-	X	

Parameter	Description	Unit	EHC-04	SCB04-B
AC028	Total working time of the first stage of backup	hours	X	
AC029	Total working time of the second stage of backup	hours	X	
AC030	Total startings of the first stage of backup	-	X	
AC031	Total startings of the second stage of backup	-	X	
DC002	Numbers of Domestic Hot Water diverting valve cycles	-	X	
DC003	Number of hours during which the diverting valve is in DHW position	hours	X	
DC004	Number of compressor start-ups during domestic hot water production		X	
DC005	Number of compressor start-ups		X	
PC002	Number of compressor start-ups	-	-	X
PC003	Number of compressor operating hours	hours	X	
CODE	Enter the installer code to access the following parameters.		X	
AC002	Number of hours that the appliance has been producing energy since last service	hours	X	
AC003	Number of hours since the previous servicing of the appliance	hours	X	
AC004	Number of heat generator starts since the previous servicing.		X	
AC013	Seasonal coefficient of performance		X	
SERVICE	Resetting the maintenance service CLR: the AC002 , AC003 , and AC004 counters are reset to zero.		X	

9.4.2 COUNTERS, TIME PROG, CLOCK CIRCA, CIRCB and DHW menus

Tab.75

Menu	Description
CIRCA	<ul style="list-style-type: none"> • TP.H: Timer programming for heating 06:00 - 23:00 ON 23:00 - 06:00 OFF • TP.C: Timer programming for cooling 14:00 - 23:00 ON 23:00 - 14:00 OFF
CIRCB	Timer programming for heating 06:00 - 23:00 ON 23:00 - 06:00 OFF
DHW	Timer programming for domestic hot water 06:00 - 23:00 ON 23:00 - 06:00 OFF

9.4.3 COUNTERS, TIME PROG, CLOCK CLK menus

Tab.76

CLK parameter	Unit	HMI
HOURS	Can be set from 0 to 23	available
MINUTE	Can be set from 0 to 59	available
DATE	Can be set from 1 to 31	available
MONTH	Can be set from 1 to 12	available
YEAR	Can be set from 2000 to 2100	available

9.5 Description of the parameters

9.5.1 Running the back-up in heating mode

■ Start-up conditions for the back-up

i Important

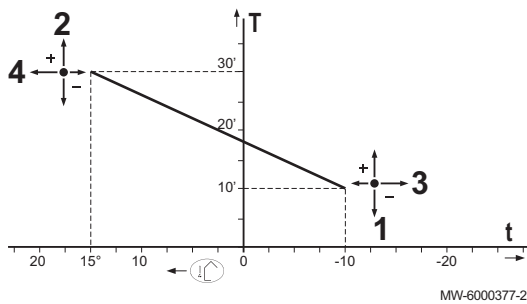
- If the **AP001** and **AP100** parameters are configured to 4, 6 or 8 and the corresponding **BL** input is active, the back-ups will be deactivated and will only start up for safety reasons and to enable defrosting.
- If the **HP030** and **HP031** parameters are set to 0, the activation and deactivation time delays on the back-up are set according to the outside temperature.

In heating mode, the back-up is managed by the following parameters:

Tab.77 Parameter for heating production

Parameter	Description
AP016	Activate or deactivate processing of the heating demand for central heating
HP030	Start-up time delay for the next back-up generator in central heating mode (t1).
HP031	Shutdown time delay for the next generator in central heating mode (t2).
AP001	Selection of the BL blocking function when a signal is applied at the input (BL1).
AP100	BL2 input function configuration.

Fig.120



The time delay curve for tripping the back-up is defined by the **HP047**, **HP048**, **HP049** and **HP050** parameters.

- 1 **HP047**: Minimum duration of the time delay for tripping the back-up
 - 2 **HP048**: Maximum duration of the time delay for tripping the back-up
 - 3 **HP049**: Minimum outside temperature for the time delay for tripping the back-up
 - 4 **HP050**: Maximum outside temperature for the time delay for tripping the back-up
- T Time (minutes)
t Outdoor temperature (°C)

■ Back-up operation if an error occurs on the outdoor unit

If an error occurs on the outdoor unit during a system heating demand, the boiler or electrical back-up starts up immediately to guarantee heating comfort.

■ Back-up operation if defrosting the outdoor unit

When the outdoor unit is undergoing defrosting, the control unit ensures full protection of the system by starting up the back-ups if necessary.

Additional protection is provided if the water temperature falls too sharply. In this case, the outdoor unit is shut down.

■ Operating principle when the outside temperature falls below the operating threshold of the outdoor unit

If the outside temperature is below the minimum operating temperature of the outdoor unit as defined by the parameter **HP051**, the outdoor unit is not permitted to operate.

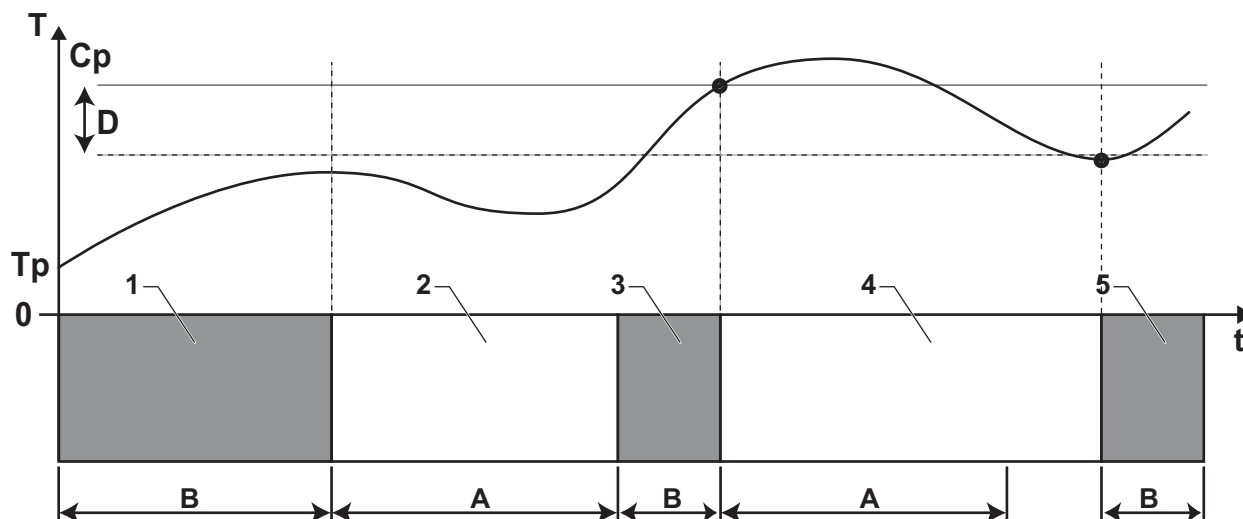
If the system has a demand pending, the back-up or electric boiler starts up immediately to guarantee heating comfort.

9.5.2 Operation of the switch between heating and production of domestic hot water

The system does not allow the simultaneous production of heating and domestic hot water.

The switch logic between domestic hot water mode and heating mode operates as follows:

Fig.121



MW-5000541-1

- A DP048:** Minimum heating duration between two domestic hot water production runs
- B DP047:** Maximum authorised duration for domestic hot water production
- Cp DP070:** Domestic hot water "Comfort" set point temperature
- or

- DP080:** Domestic hot water "Reduced" set point temperature
- T** Temperature
- Tp DM001:** Domestic hot water temperature (lower temperature sensor)
- DM006:** Domestic hot water temperature (upper temperature sensor)
- t** Time
- D DP120:** Set point temperature differential triggering the domestic hot water tank to be charged

Tab.78

Live	Operating description
1	Domestic hot water production only. When switching on, if domestic hot water production is enabled and acceleration of domestic hot water production is not required (DP051 set to 0), a domestic hot water production cycle starts for a maximum duration that can be adjusted and set by the DP047 parameter. In the event of insufficient heating comfort, the heat pump is running too long in domestic hot water mode: reduce the maximum duration of domestic hot water production.
2	Heating only. Production of domestic hot water is off. Even if the domestic hot water set point is not reached, a minimum heating period is forced. This period can be adjusted and defined with the DP048 parameter. After the heating period, tank loading is again enabled.
3	Domestic hot water production only. When the domestic hot water set point is reached, a period in heating mode begins.
4	Heating only. When the DP120 differential is reached, domestic hot water production is triggered. If there is not enough domestic hot water (e.g. if the domestic hot water does not heat up quickly enough): reduce the trip differential (hysteresis) by modifying the value of the DP120 parameter. The DHW tank will then heat up the water more quickly.
5	Domestic hot water production only.

9.5.3 Running the back-up in domestic hot water mode

■ Start-up conditions for the back-up

The start-up conditions for the back-up producing domestic hot water are described in the following table.

Tab.79

Parameter	Setting
AP001	The function of the BL1 blocking input is not set to 4, 6 or 8
AP100	The function of the BL2 blocking input is not set to 4, 6 or 8


■ Operating description

The behaviour of the hydraulic or electrical back-up in domestic hot water mode depends on the configuration of the **DP051** parameter.

Tab.80 Behaviour of the hydraulic or electrical back-up

Value of the parameter DP051	Operating description
0	The system gives priority to the heat pump during domestic hot water production. Recourse to the hydraulic or electrical back-up is only taken if the DP090 time delay has elapsed in domestic hot water mode, unless hybrid mode is activated. In that case, hybrid logic takes over.
1	Domestic hot water production mode gives priority to comfort by accelerating domestic hot water production by simultaneously using the heat pump and the hydraulic or electrical back-up. In this mode, there is no maximum time for domestic hot water production as the use of the back-ups helps to ensure domestic hot water comfort more quickly.

9.6 Reading out measured values

The measured values are available in the **Information ** menu of the different PCBs.



Certain parameters are displayed:

- according to certain system configurations,
- according to the options, circuits or sensors actually connected.

Tab.81 Choosing the menu

Counters	Selection
Measured values on circuit A	Choose menu EHC-04
Measured values on circuit B	Choose menu SCB04-B
Measured values connected to the operation of the heat pump	Choose menu EHC-04

Tab.82 Values available (X) in the sub-menus **EHC-04**, **SCB04-B**

Parameter	Description	Unit	EHC-04	SCB04-B
AM002	"Silent mode" status		X	
AM010	The current pump speed	%	X	
AM012	Current main status of the appliance.  See Control system sequence chapter		X	X
AM014	Current sub status of the appliance.  See Control system sequence chapter		X	X
AM015	Is the pump running?		X	

Parameter	Description	Unit	EHC-04	SCB04-B
AM016	Flow temperature of appliance.	°C	X	
AM019	Water pressure of the primary circuit.	bar	X	
AM027	Instantaneous outside temperature	°C	X	X
AM040	Temperature used for hot water control algorithms.	°C	X	
AM056	Water flow rate in the system	l/min	X	
AM091	Seasonal mode active (summer / winter) <ul style="list-style-type: none"> • 0: Winter • 1: Frost protection • 2: Summer neutral band • 3: Summer 		X	X
AM101	Internal system flow temperature setpoint		X	
CM030	Measure of the Room temperature of the zone	°C	X	X
CM040	Measure Zone Flow Temperature or DHW temperature	°C		X
CM060	Current Pump speed of zone	%		X
CM120	Zone Current Mode: <ul style="list-style-type: none"> • 0 =Scheduling • 1 / =Manual • 2 =Antifrost • 3 =Temporary 		X	X
CM130	Current activity of the zone: <ul style="list-style-type: none"> • 0 =Anti frost • 1 =Reduced • 2 =Comfort • 3 =Anti legionella 		X	X
CM190	Wished room temperature setpoint of the zone	°C	X	X
CM210	Current Outside Temperature of the zone	°C	X	X
DM001	Domestic Hot Water tank temperature (bottom sensor)	°C	X	
DM006	Domestic Hot Water tank temperature (top sensor)		X	
DM009	Automatic/derogation status of Domestic Hot Water mode: <ul style="list-style-type: none"> • 0 =Scheduling • 1 =Manual • 2 =Antifrost • 3 =Temporary 	°C	X	
DM029	Domestic Hot Water temperature setpoint	°C	X	
HM001	Heat pump flow temperature after condenser	°C	X	
HM002	Heat pump return temperature after condenser.	°C	X	
HM033	Flow temperature setpoint in cooling mode	°C	X	
HM034	Heat pump PCU backup flow temperature	°C	not used	
HM035	Heat pump PCU backup return temperature	°C	not used	
HM036	Heat pump PCU backup domestical hot water temperature	°C	not used	
HM037	Heat pump PCU back up Internal Setpoint	°C	not used	
HM038	Heat pump PCU back up status		not used	
HM039	Heat Pump PCU back up Sub Status		not used	
HM040	Heat Pump PCU back up Output power	%	not used	
HM041	Heat pump PCU back up locking code		not used	
HM042	Heat pump PCU back up blocking code		not used	
HM046	Heat pump 5V signal output setpoint	V	X	
PM002	Central heating setpoint of the appliance	°C	X	
Fxx.xx	Software version for the selected PCB		X	X
Pxx.xx	Parameter version for the selected PCB		X	X

Tab.83 Values available (X) in the *HMI* sub-menu

Parameter	Description	EHC--04	SCB04-B
F02.01	HMI software version	X	X
P00.01	HMI parameter version	X	X

9.6.1 Control system sequence

Tab.84 List of statuses and sub-statuses

Status Appliance: AM012 parameter	Appliance sub status: AM014 parameter
0	<ul style="list-style-type: none"> • 00= total system shut-down
1= heating / cooling / domestic hot water demand	<p>Heat Demand</p> <ul style="list-style-type: none"> • 00 = off The set point is reached. The compressor can start up whenever necessary. • 01= anti-short cycle The heating set point has been reached. The compressor is not authorised to restart. • 02= reversal valve switch to heating position • 03= power supply to the hybrid pump • 04= pending start-up conditions on the heat pump and the back-ups • 62= three-way valve switch to domestic hot water position
3= operating in heating mode	<ul style="list-style-type: none"> • 30= normal operation The compressor or the back-ups are running. • 31= internal set point limited If the heating set point on the heat pump differs from the system set point. • 60= pump post-operation Heat pump and back-up shut-down, system pump operation. • 65= compressor bypass The back-ups are operating. • 66= the temperature exceeds the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 67= the outside temperature is lower than the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 68= the hybrid function requests compressor shut-down The compressor has stopped. The back-ups are operating. • 69= defrosting running The compressor is running. • 70= defrosting conditions not met The compressor has stopped. The back-ups are operating. • 71= defrosting running The compressor and the back-ups are running. • 88 = BL-Back-up limited Back-ups shed • 89 = BL-Heat pump limited Compressor shed • 90 = BL-Heat pump & back-up limited Compressor and back-ups shed • 91 = BL-Off-peak rate Off-peak cost • 92 = PV-with Heat pump Photovoltaic powered by compressor only • 93 = PV-with Heat pump & back-up Photovoltaic powered by compressor and back-ups • 94 = BL-Smart Grid Smart Grid Ready function

Status Appliance: AM012 parameter	Appliance sub status: AM014 parameter
4= operating in domestic hot water mode	<ul style="list-style-type: none"> • 30= normal operation The compressor or the back-ups are running. • 31= internal set point limited If the heating set point on the heat pump differs from the system set point. • 60= pump post-operation Heat pump and back-up shut-down, system pump operation. • 65= compressor bypass The back-ups are operating. • 66= the temperature exceeds the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 67= the outside temperature is lower than the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 68= the hybrid function requests compressor shut-down The compressor has stopped. The back-ups are operating. • 69= defrosting running The compressor is running. • 70= defrosting conditions not met The compressor has stopped. The back-ups are operating. • 71= defrosting running The compressor and the back-ups are running. • 88 = BL-Back-up limited Back-ups shed • 89 = BL-Heat pump limited Compressor shed • 90 = BL-Heat pump & back-up limited Compressor and back-ups shed • 91 = BL-Off-peak rate Off-peak cost • 92 = PV-with Heat pump Photovoltaic powered by compressor only • 93 = PV-with Heat pump & back-up Photovoltaic powered by compressor and back-ups • 94 = BL-Smart Grid Smart Grid Ready function
6	Pump Post Run <ul style="list-style-type: none"> • 60= pump post-operation Heat pump and back-up shut-down, system pump post-operation.
7	Cooling Active <ul style="list-style-type: none"> • 30= normal operation Cooling is active. • 75= compressor shut-down owing to the condensation detector • 78= correction of the temperature set point Increase in the cooling set point owing to the condensation detector. • 82= temperature lower than the minimum cooling temperature Compressor shut-down.

Status Appliance: AM012 parameter	Appliance sub status: AM014 parameter
8= controlled compressor shut-down	<p>Controlled Stop</p> <ul style="list-style-type: none"> • 00= off: the heating or cooling set point has been reached • 01= anti-short cycle The heating set point has been reached. The compressor is not authorised to restart. • 60= pump post-operation Heat pump and back-up shut-down, system pump post-operation. • 67= the outside temperature is lower than the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 68= the hybrid function requests compressor shut-down The compressor has stopped. The back-ups are operating. • 75= compressor shut-down owing to the condensation detector • 76= compressor shut-down owing to the flow rate • 79= compressor and back-up bypass in heating / domestic hot water mode • 80= compressor and back-up bypass in cooling mode • 82= temperature lower than the minimum cooling temperature Compressor shut-down.
9	<p>Blocking Mode</p> <ul style="list-style-type: none"> • 30= normal operation. The compressor or the back-ups are running. • 31= internal set point limited If the heating set point on the heat pump differs from the system set point. • 60= pump post-operation Heat pump and back-up shut-down, system pump running. • 65= compressor bypass The back-ups are operating. • 66= the temperature exceeds the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 67= the outside temperature is lower than the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 68= the hybrid function requests compressor shut-down The compressor has stopped. The back-ups are operating. • 69= defrosting running The compressor is running. • 70= defrosting conditions not met The compressor has stopped. The back-ups are operating. • 71= defrosting running. The compressor and the back-ups are running. • 88 = BL-Back-up limited Back-ups shed • 89 = BL-Heat pump limited Compressor shed • 90 = BL-Heat pump & back-up limited Compressor and back-ups shed • 91 = BL-Off-peak rate Off-peak cost • 92 = PV-with Heat pump Photovoltaic powered by compressor only • 93 = PV-with Heat pump & back-up Photovoltaic powered by compressor and back-ups • 94 = BL-Smart Grid Smart Grid Ready function
10	Locking Mode
11	Load test min

Status Appliance: AM012 parameter	Appliance sub status: AM014 parameter
12	<p>Load test CH max</p> <ul style="list-style-type: none"> • 30= normal operation. The compressor or the back-ups are running. • 31= internal set point limited If the heating set point on the heat pump differs from the system set point. • 60= pump post-operation Heat pump and back-up shut-down, system pump post-operation. • 65= compressor bypass and back-ups running • 66= the temperature exceeds the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 67= the outside temperature is lower than the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 68= the hybrid function requests compressor shut-down The compressor has stopped. The back-ups are operating. • 69= defrosting running The compressor is running. • 70= defrosting conditions not provided The compressor has stopped. The back-ups are operating. • 71= defrosting running. The compressor and the back-ups are running.

Status Appliance: AM012 parameter	Appliance sub status: AM014 parameter
16	<p>Frost protection</p> <ul style="list-style-type: none"> • 30= normal operation The compressor or the back-ups are running. • 31= internal set point limited If the heating set point on the heat pump differs from the system set point. • 60= pump post-operation Heat pump and back-up shut-down, system pump post-operation. • 65= compressor bypass and back-ups running • 66= the temperature exceeds the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 67= the outside temperature is lower than the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 68= the hybrid function requests compressor shut-down The compressor has stopped. The back-ups are operating. • 69= defrosting running The compressor is running. • 70= defrosting conditions not met The compressor has stopped. The back-ups are operating. • 71= defrosting running. The compressor and the back-ups are running.
17	<p>DeAiration</p> <ul style="list-style-type: none"> • 30= normal operation The compressor or the back-ups are running. • 31= internal set point limited If the heating set point on the heat pump differs from the system set point. • 60= pump post-operation Heat pump and back-up shut-down. • 65= compressor bypass and back-ups running • 66= the temperature exceeds the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 67= the outside temperature is lower than the compressor's maximum operating temperature The compressor has stopped. The back-ups are operating. • 68= the hybrid function requests compressor shut-down The compressor has stopped. The back-ups are operating. • 69= defrosting running The compressor is running. • 70= defrosting conditions not met The compressor has stopped. The back-ups are operating. • 71= defrosting running. The compressor and the back-ups are running.

10 Maintenance

10.1 Checking operation of the appliance

Fig.122

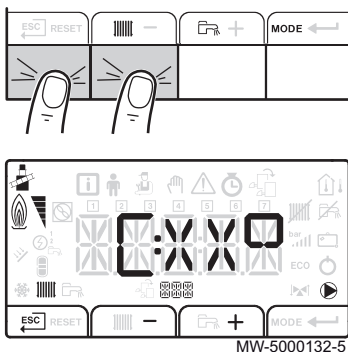
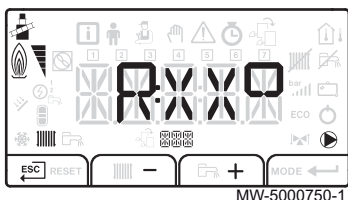


Fig.123



You can force the heating or cooling mode for the heat pump and back-up in order to check that they are working correctly.

1. Access the Test menu by pressing the two keys on the left simultaneously.
⇒ **XX** represents the flow temperature

2. Switch from **C:XX** heating to **R:XX** cooling mode using the **-** and **+** keys.
3. Exit the Test menu and go back to the main display by pressing the **ESC** key.

10.2 Standard inspection and maintenance operations



Caution

Only qualified professionals are authorised to carry out maintenance work on the heat pump and the heating system.



Caution

Before working on the refrigeration circuit, switch off the appliance and wait a few minutes. Certain items of equipment such as the compressor and the pipes can reach temperatures in excess of 100°C and high pressures, which may cause serious injuries.



Danger of electric shock

Before any work, switch off the mains electricity to the heat pump and the hydraulic or electrical back-up if present.



Danger of electric shock

Check the discharge from the capacitors of the outdoor unit.

An annual inspection with a leak-tightness check in accordance with prevailing standards is obligatory.

Maintenance operations are important for the following reasons:

- To guarantee optimum performance.
- To extend the life of the equipment.
- To provide an installation which offers the user optimum comfort over time.



Caution

Do not drain the installation, except in cases of absolute necessity. E.g.: several months' absence with the risk of temperatures in the building falling below freezing.

1. Check the leak-tightness of the refrigerant circuit using a sniffer leak detector.
2. Check the operation of the user interface.

10.2.1 Checking the safety components

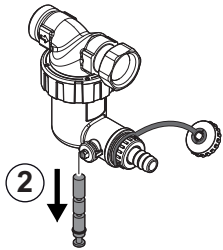
1. Check that the safety components are operating correctly, particularly the safety valve on the heating circuit.
2. Check that the expansion vessel is operating correctly by checking and adjusting the inflation pressure. France: according to DTU65.11.
3. Check the leak-tightness of the refrigerant circuit using a sniffer leak detector.
4. Check the electrical connections.
5. Check operation of the control panel.
6. Change any and all parts and cables considered defective.
7. Check all screws and nuts (cover, support, etc.).
8. Change damaged sections of lagging.

10.2.2 Clean the magnetic sieve filters

To prevent the plate heat exchanger from becoming clogged, the magnetic filters on the heating circuit return, the second heating circuit return (if present) and in the appliance must be cleaned every year as part of the annual maintenance.

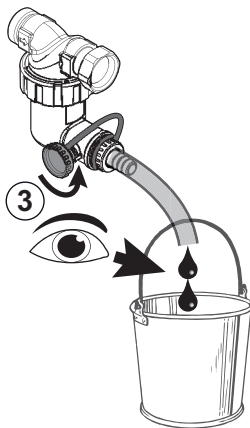
■ Magnetic filter annual maintenance

1. Power off the appliance.
2. Remove the magnet from the filter.
⇒ The magnetic particles stuck inside the filter will drop to the bottom and be ejected.



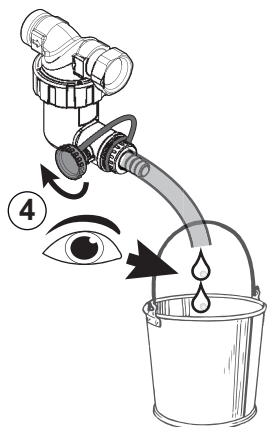
MW-1001305-1

3. Connect a pipe to the filter valve, then open the screw on the valve by a quarter turn.

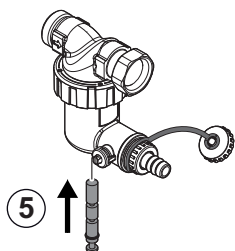


MW-1001306-1

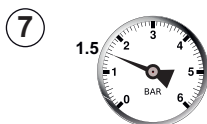
- If the water running out of the pipe is clear, re-close the screw on the valve. If necessary, open and close the valve several times to create surges, and clean the filter better.



MW-1001307-1



MW-1001308-1



MW-1001309-1

- Refit the magnet. Pushing it in fully.
- Power the appliance back on.

- Check the pressure in the installation. If the pressure is less than 1.5 bar, top up the water.
- Activate the heating and check the flow rate in the installation. If the flow rate is too low, clean the filter fully.



For more information, see

Full cleaning of the magnetic filter, page 107

10.2.3 Check the hydraulic pressure



Important

The recommended hydraulic pressure is between 1.5 bar and 2 bar.

The hydraulic pressure must be at least 0.8 bar.

If the appliance is switched on, check the displayed hydraulic pressure, which alternates on the main screen of the control panel IniControl 2.

The pressure can also be found in the **i** Information menu (AM019).

If the appliance is switched off, use the mechanical pressure gauge near the expansion vessel to take the reading.

- Remove the top panel by unscrewing the two screws.
- Push the top panel towards the front.
- Raise the top panel.
- Check the hydraulic pressure.
- Refill the central heating system if the hydraulic pressure is lower than 0.8 bar.

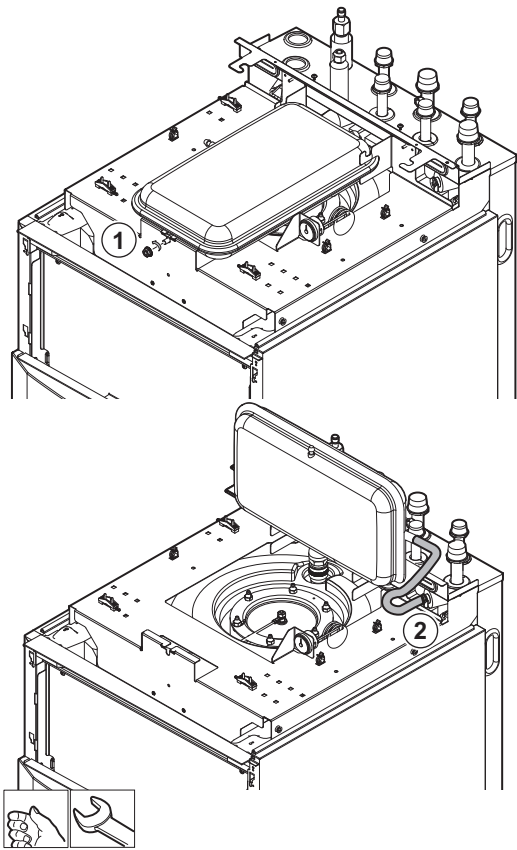
10.2.4 Checking the magnesium anode

Check the condition of the anodes at the end of the first year. Determine the periodicity of subsequent checks after the first check, according to the wear and tear on the anodes. Magnesium anodes must be checked at least every 2 years.

Use a new lip gasket and retainer ring.

- Remove the screw on the expansion vessel.

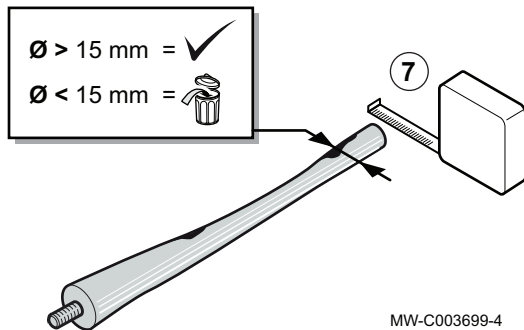
Fig.124 Expansion vessel maintenance position



MW-3000600-01

2. Put the expansion vessel into the maintenance position to access the inspection hatch.
3. Remove the inspection hatch and dispose of the lip gasket/retainer ring unit.
4. Descale the domestic hot water tank if necessary.

Fig.125 Checking the magnesium anode



MW-C003699-4

5. Measure the diameter of the anode. Replace the anode if its diameter is less than 15 mm.
6. Fit the new lip gasket/retainer ring unit and place it in the inspection opening, taking care to position the tab on the lip gasket outside the domestic hot water tank.
7. Reassemble the anode/inspection hatch unit.

10.2.5 Cleaning the casing

1. Clean the outside of the appliance using a damp cloth and a mild detergent.

10.2.6 Draining the installation

■ Draining the heating circuit

1. Connect a suitable hose (internal diameter: 8 mm) to the drain cock on the heating circuit.



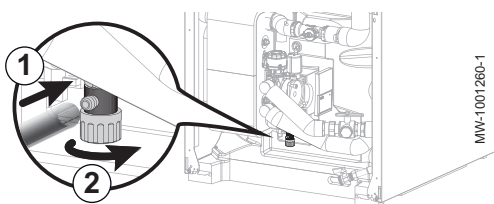
Important

A hose can be found in the accessories bag.

2. Open the drain valve.
3. Await the complete drainage of the heating circuit.

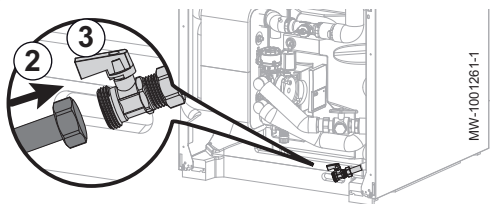
■ Draining the domestic hot water circuit

1. Close the system's water inlet valve.



MW-1001260-1

Fig.126 Drain the domestic hot water circuit



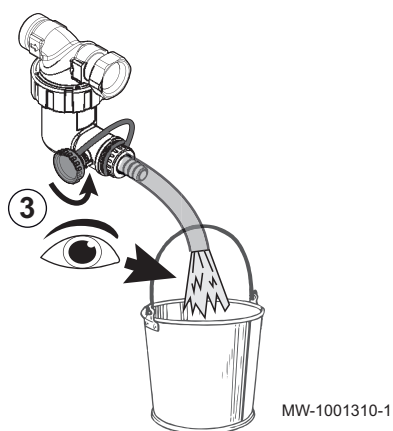
2. Connect a suitable hose fitted with a 3/4" female connection to the drain valve on the domestic hot water circuit.
3. Open the drain valve on the domestic hot water circuit.
4. Open a hot water tap to completely drain the indoor module.

10.3 Specific maintenance operations

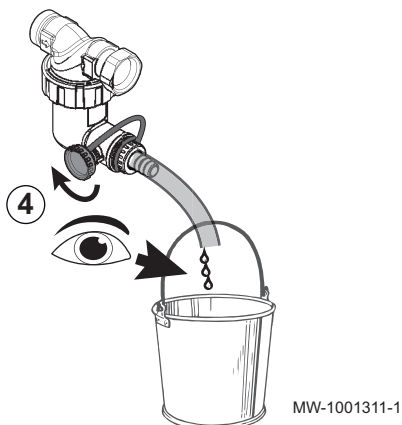
10.3.1 Full cleaning of the magnetic filter

If the flow rate in the installation is too low, fully clean the magnetic filter. This operation requires the appliance to be fully drained.

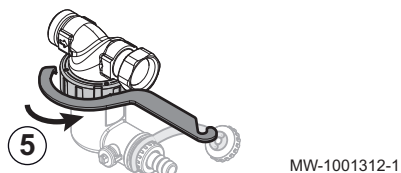
1. Power off the appliance.
2. Isolate the appliance from the water supply.
3. Drain the appliance: connect a pipe to the filter valve, then open the screw on the valve by a quarter turn.

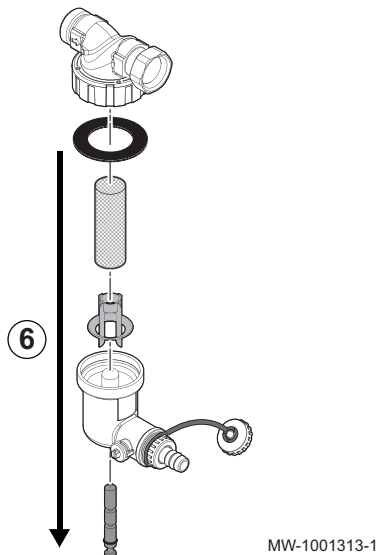


4. Once water stops running out of the pipe, re-close the screw on the valve.



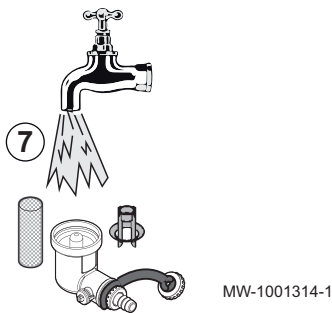
5. Unscrew the sludge collector.





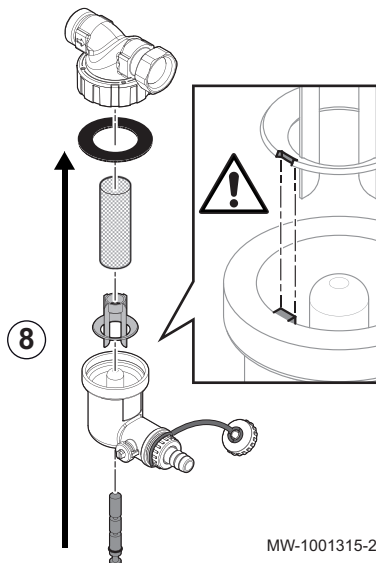
MW-1001313-1

6. Dismantle the various parts of the sludge collector.
 ⇒ The magnetic particles stuck inside the filter will drop to the bottom.



MW-1001314-1

7. Clean the various parts with clean water.



MW-1001315-2

8. Refit the sludge collector.



Caution

Risk of breakage. Observe the keyway of the plastic part: align the notch with the pin.

9. Open the stop valves and reactivate the water supply to the appliance.
 10. Re-commission the appliance.

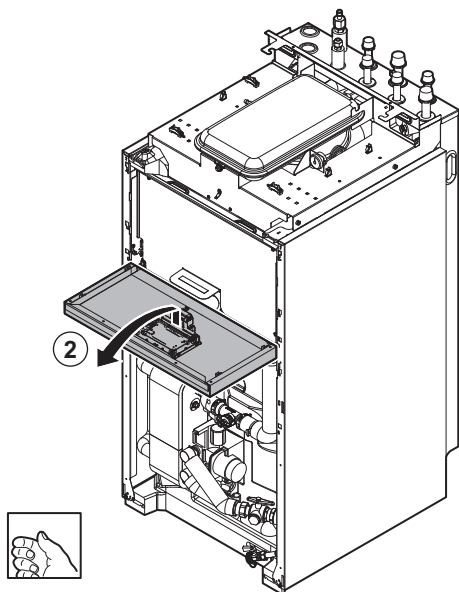
10.3.2 Replacing the battery in the control panel

If the indoor unit is switched off, the control panel battery takes over to keep the correct time.

The battery must be replaced when the time is no longer saved.

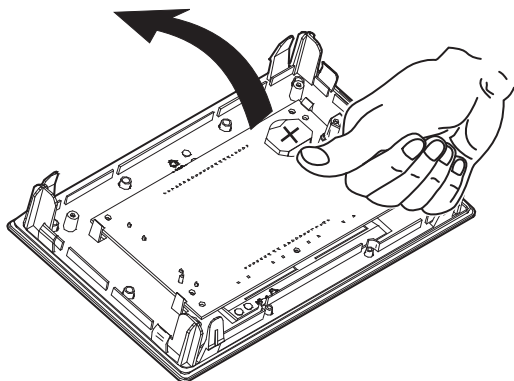
1. Open and remove the control panel door.
2. Remove the front panel by pulling firmly at both sides.

Fig.127 Accessing the back of the control panel



MW-3000516-02

Fig.128 Remove the battery



MW-3000475-01

3. Tilt the control panel bracket forwards and hang it in a horizontal position.

**Important**

Keep a good hold of the control panel bracket in order not to pull out or disconnect the electrical connections in the control panel.

4. Remove the battery located in back plate of the control panel by pushing it gently forwards.
5. Insert a new battery.

**Important**

Battery type:

- CR2032, 3V
- Do not use rechargeable batteries.
- Do not discard used batteries in the dustbin. Take them to an appropriate collection place.

6. Re-assemble everything.

11 Troubleshooting

11.1 Resetting the safety thermostat



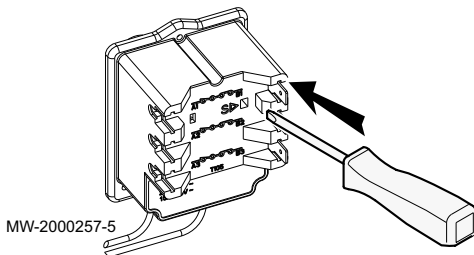
Danger

Before carrying out any work on the indoor module, cut off its power supply and the electrical back-up immersion heater.

If you suspect that the safety thermostat was triggered:

1. Cut off the power supply to the indoor module and the electrical back-up immersion heaters by lowering the circuit breakers on the distribution board.
2. Locate and correct the cause of power cut before resetting the safety thermostat.
3. Remove the front panel of the indoor module and the protective cap.
4. If the safety thermostat has been triggered, use a flat-headed screwdriver to press the reset button on the thermostat. If not, look for an alternative cause for the power to the immersion heater having been cut.
5. Replace the front panel of the indoor module and the protective cap.
6. Switch the mains supply to the indoor module and the electrical back-up immersion heater back on.

Fig.129



11.2 Error messages

Fig.130

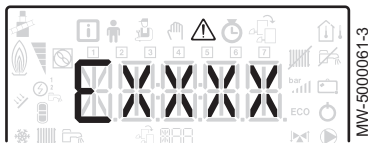
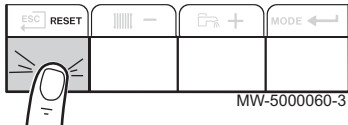


Fig.131



Resetting the control panel allows the appliance to be restarted.

The message **RESET** appears when a fault code is detected. After resolving the problem, pressing the **RESET** key resets the appliance's functions and thus eradicates the fault.

If several faults occur, they are displayed one after the other.

1. Reset the control panel by pressing the **RESET** key for 3 seconds, when an error message is displayed.
 ⇒ In economy mode, the appliance will not run a domestic hot water heating cycle after a central heating cycle.
2. Display the current operating status by briefly pressing the **←** key.

11.2.1 Error codes

An error code is a temporary status, resulting from the detection of a heat pump anomaly. The control panel attempts automatic restart of the heat pump until it switches on.

When one of the following codes is displayed and the heat pump cannot restart automatically, contact a maintenance technician.

Tab.85 List of temporary error codes

Error code	Message	Description
H00.17	DHW sensor Closed	Domestic Hot Water tank temperature sensor is either shorted or measures a temperature above range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.32	TOutside Open	Outside temperature sensor is either removed or measures a temperature below range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.33	TOutside Closed	Outside temperature sensor is either shorted or measures a temperature above range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.47	HP flow sensor removed or below range	Heat pump flow temperature sensor is either removed or measures a temperature below range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.48	THp Flow Closed	Heat pump flow temperature sensor is either shorted or measures a temperature above range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.49	THp Flow Missing	Heat pump flow temperature sensor was expected but not detected <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.51	THp Return Open	Heat pump return temperature sensor is either removed or measures a temperature below range
H00.52	THp Return Closed	Heat pump return temperature sensor is either shorted or measures a temperature above range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.57	T DHW Top Open	Domestic Hot Water top temperature sensor is either removed or measures a temperature below range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H00.58	T DHW Top Closed	Domestic Hot Water top temperature sensor is either shorted or measures a temperature above range <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the sensor. • Check that the sensor has been fitted properly. • Check the Ohmic value of the sensor. • Replace the sensor if necessary.
H02.00	Reset In Progress	Reset In Progress

Error code	Message	Description
H02.02	Wait Config Number	Waiting For Configuration Number Waiting for configuration parameters to be entered <ul style="list-style-type: none"> • Configure CN1 / CN2 depending on the output of the outdoor unit installed (CNF menu). Central unit PCB replaced: heat pump not configured
H02.03	Conf Error	Configuration Error The configuration parameters entered are incorrect. <ul style="list-style-type: none"> • Configure CN1 / CN2 depending on the output of the outdoor unit installed (CNF menu).
H02.04	Parameter Error	Parameter Error <ul style="list-style-type: none"> • Restore the factory settings. • If the error is still present: change the central unit PCB. PCB settings cannot be read <ul style="list-style-type: none"> • Configure CN1 / CN2 depending on the output of the outdoor unit installed (CNF menu). • Check the correct parameter settings.
H02.05	CSU CU mismatch	CSU does not match CU type <ul style="list-style-type: none"> • Software change (software number or version parameter inconsistent with the memory).
H02.07	Water Press Error	Water Pressure Error active <ul style="list-style-type: none"> • Check the hydraulic pressure in the heating circuit. • Check the wiring between the central unit PCB and the pressure sensor. • Check the connection of the pressure sensor.
H02.09	Partial block	Partial blocking of the device recognized BL input on the central unit PCB terminal block open <ul style="list-style-type: none"> • Check the contact on the BL input. • Check the wiring. • Check the AP001 and AP100. parameters.
H02.10	Full Block	Full blocking of the device recognized BL input on the central unit PCB terminal block open <ul style="list-style-type: none"> • Check the contact on the BL. input. • Check the wiring. • Check the AP001 and AP100. parameters.
H02.23	System flow error	System water flow error active Flow problem Insufficient flow: open a radiator valve. The circuit is clogged: <ul style="list-style-type: none"> • Check that the filters are not obstructed and clean them if necessary. • Clean and flush the installation, No circulation: <ul style="list-style-type: none"> • Check that the valves and thermostatic valves are open, • Check that the circulating pump is working, • Check the wiring, • Check the pump supply: if the pump does not work, replace it. Too much air: completely vent the indoor module and the installation for optimum running. Incorrect wiring: check the electrical connections. Flow meter: <ul style="list-style-type: none"> • Check the electrical connections and the direction of the flow meter (arrow to the right). • Replace the flow meter if necessary
H02.25	ACI error	Titan Active System short circuited or on an open circuit <ul style="list-style-type: none"> • Check the connection cable. • Check that the anode has not short-circuited and is not broken.

Error code	Message	Description
H02.36	Funcnt device lost	Functional device has been disconnected No communication between the central unit PCB and the additional circuit PCB <ul style="list-style-type: none"> • Check the connection of the supply cable between the PCBs. • Check the connection of the BUS cable between the PCBs. • Run automatic detection.
H02.37	Uncritic device lost	Uncritical device has been disconnected No communication between the central unit PCB and the additional circuit PCB <ul style="list-style-type: none"> • Check the connection of the supply cable between the PCBs. • Check the connection of the BUS cable and the PCBs. • Run automatic detection.
H02.60	Unsupported function	The zone doesn't support the selected function
H06.01	HP Unit Failure	Heat Pump Unit Failure occurred Heat pump outdoor unit fault <ul style="list-style-type: none"> • Check the wiring between the central unit PCB and the communication bus on the outdoor unit. • Check the connection of the communication cable between the central unit PCB and the interface PCB. • Check the connection of the supply cable between the central unit PCB and the interface PCB. • Check the connection of the outdoor unit supply cable.

11.2.2 Fault codes

If a fault code is still present after several automatic start-up attempts, the heat pump switches to error mode.

The heat pump will only resume normal operation once the causes of the fault have been eliminated by the installer.

As a result of:

- a manual reset,
- a reset by a maintenance message.

Tab.86 List of fault codes

Error code	Message	Description
E00.00	TFlow Open	Flow temperature sensor is either removed or measures a temperature below range
E00.01	Flow temp sensor shorted or above range	Flow temperature sensor is either shorted or measures a temperature above range

Error code	Message	Description
E02.13	Blocking Input	Blocking Input of the Control Unit from device external environment Input BL open. <ul style="list-style-type: none"> • Check the wiring. • Check the component connected to the BL. contact • Check the component connected to the AP001 and AP100. contact
E02.24	System flow locking active	System water flow locking active Insufficient flow: open a radiator valve The circuit is clogged: <ul style="list-style-type: none"> • Check that the filters are not obstructed and clean them if necessary. • Clean and flush the installation. No circulation: <ul style="list-style-type: none"> • Check that the valves and thermostatic valves are open. • Check that the filters are not obstructed. • Check that the circulating pump is working. • Check the wiring. • Check the pump supply: if the pump does not work, replace it. Too much air <ul style="list-style-type: none"> • Completely vent the indoor module and the installation for optimum running. • Check that the automatic air vents are properly open (also check the hydroblock). Completely vent the indoor module and the installation for optimum running. Incorrect wiring: check the electrical connections. Flow meter: <ul style="list-style-type: none"> • Check the electrical connections and the direction of the flow meter (arrow to the right). • Replace the flow meter if necessary.



For more information, see
Accessing the error memory, page 114

11.2.3 Alarm codes

An alarm code is a temporary heat pump status, resulting from the detection of an anomaly. If an alarm code still remains after several automatic start-up attempts, the system goes into fault mode.

Tab.87 List of alarm codes

Error code	Message	Description
A02.06	Water Press Warning	Water Pressure Warning active
A02.18	OBD Error	Object Dictionary Error
A02.22	System flow warning	System water flow warning active
A02.55	Invalid or miss SerNR	Invalid or missing device serial number



For more information, see
Accessing the error memory, page 114

11.3 Accessing the error memory ⚠

The error and fault codes are listed together in the memory.

1. Access the menus by pressing the two keys on the right simultaneously.

Fig.132

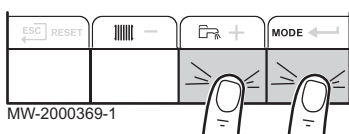


Fig.133

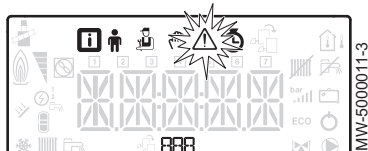


Fig.134

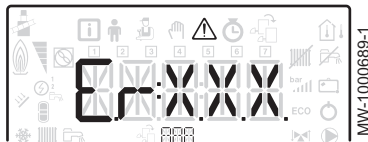











Fig.135





2. Select the Malfunction menu  by pressing the  key.


3. Select the PCB by pressing the  or  key. The  icon appears. Confirm the PCB selection by pressing the  key: the PCB name appears.

i Important
The **Er:xxx** parameter flashes. **000** corresponds to the number of stored errors.


4. Go to the error details by pressing the  key.
5. Scroll through the errors by pressing the  or  key. When this menu opens, the row of the error in the memory appears briefly. The PCB name appears. Go back to the error list by pressing the  key.

i Important
The errors are stored from the most recent to the oldest.

6. Go back to the **Er:xxx** display by pressing the  key. Press the  key: the **CLR** parameter flashes after the errors. **000** corresponds to the PCB selected.

⇒ Clear the error memory by pressing the  key.

7. Exit the Malfunctions menu by pressing the  key.

For more information, see
 Error codes, page 110
 Alarm codes, page 114
 Fault codes, page 113

12 Decommissioning and disposal

12.1 Decommissioning procedure

To decommission the heat pump temporarily or permanently:

1. Switch off the heat pump.
2. Shut off the electrical power supply to the heat pump: outdoor unit and indoor module.
3. Shut off the supply to the electrical back-up if an electrical back-up is present.
4. Shut off the supply to the boiler if hydraulic back-up is present.
5. Drain the central heating system.

12.2 Disposal and recycling

Fig.136



Warning

Removal and disposal of the heat pump must be carried out by a qualified professional in accordance with prevailing local and national regulations.

1. Switch off the heat pump.
2. Cut the mains supply to the heat pump.
3. Recover the refrigerant fluid in accordance with prevailing regulations



Important

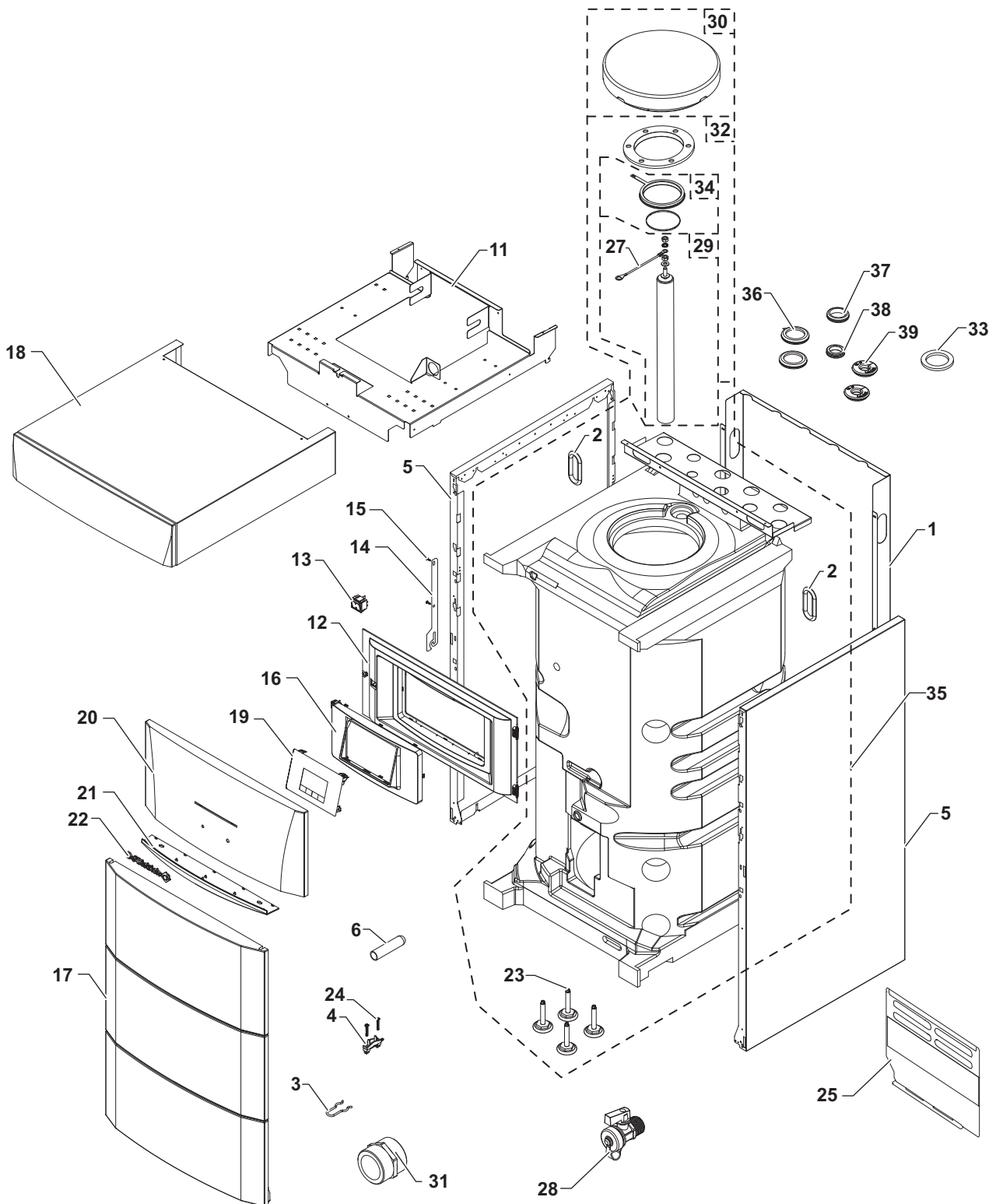
Do not allow the refrigerant fluid to escape into the atmosphere.

4. Disconnect the refrigerant connections.
5. Close the water mains.
6. Drain the installation.
7. Dismantle all hydraulic connections.
8. Dismantle the heat pump.
9. Scrap or recycle the heat pump in accordance with prevailing local and national regulations.

13 Spare parts

13.1 Indoor module

Fig.137 Base frame

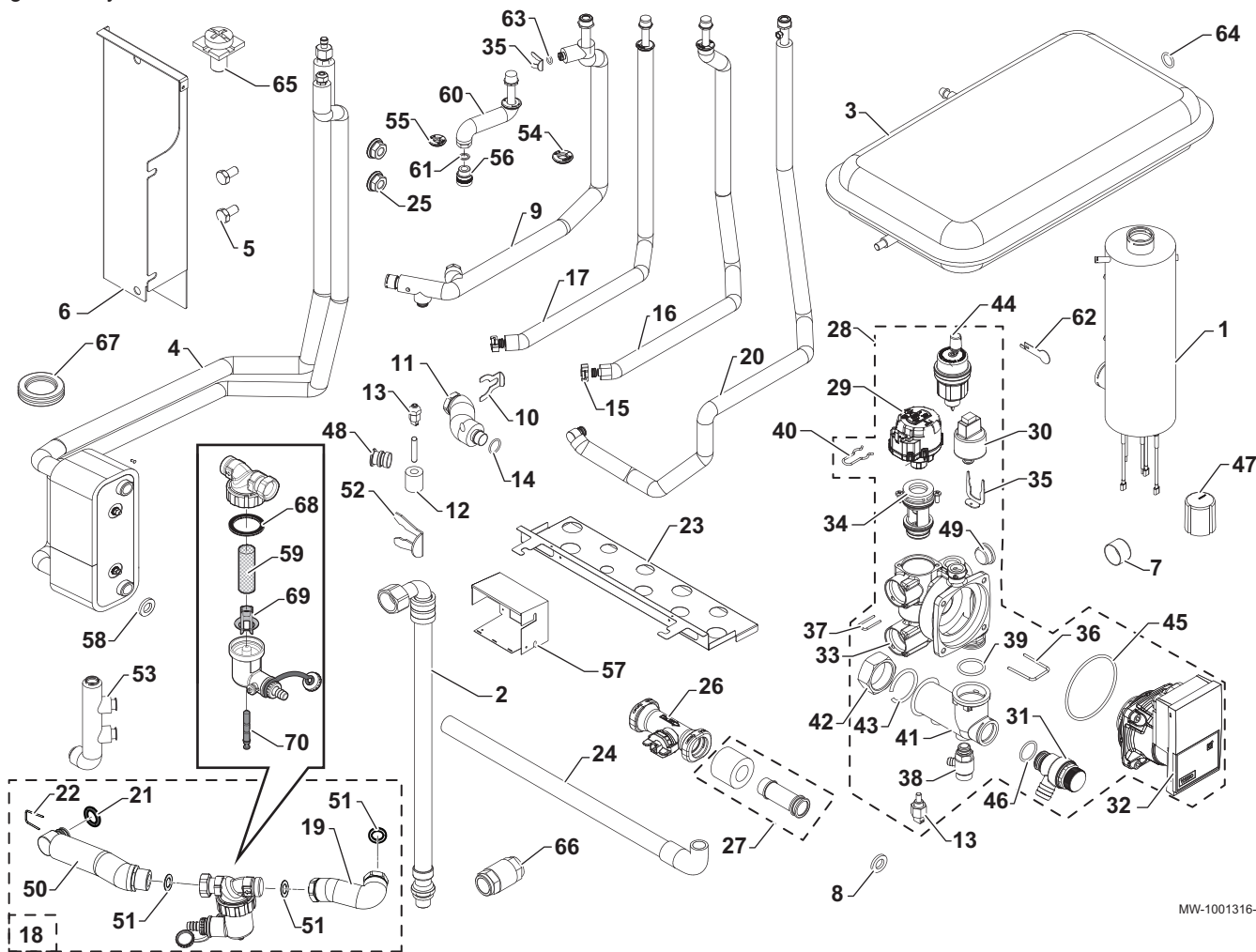


MW-3000494-01

Tab.88 List of spare parts for the base frame

Marker	Reference	Description	MIV-4S/E 4-8 V200	MIV-4S/H 4-8 V200	MIV-4S/E 11-16 V200	MIV-4S/H 11-16 V200
1	7657368	Rear panel	x	x	x	x
2	BRO303892	Feed-through 112x56	x	x	x	x
3	200019786	Door spring kit	x	x	x	x
4	7618888	Traction arrester device	x	x	x	x
5	300024463	Side panel	x	x	x	x
6	95365613	Contact spring for sensor pocket	x	x	x	x
11	7681887	Expansion vessel bracket	x	x	x	x
12	7615287	ADVANCE control panel/ Control system module support	x	x	x	x
13	300024488	White bipolar switch	x	x	x	x
14	7619159	Control panel hook	x	x	x	x
15	300025953	EJOT KB 35x12 screw	x	x	x	x
16	7616612	Control panel support	x	x	x	x
17	200019243	Complete front panel	x	x	x	x
18	7675087	Top panel	x	x	x	x
19	7658767	Control panel with HMI IniControl 2 display	x	x	x	x
20	300026529	Complete ADVANCE door and handle	x	x	x	x
21	300026530	Door handle	x	x	x	x
22	97525389	Logo – length 125 mm	x	x	x	x
23	7657308	Adjustable foot M8x35x60 (x4)	x	x	x	x
24	7610590	EJOT WN 5451 screw 25x15	x	x	x	x
25	7619590	Protection	x	x	x	x
27	89604901	Anode earthing wire	x	x	x	x
28	94902073	1/2" drain valve	x	x	x	x
29	200010231	Complete magnesium anode, Ø 40 (1x40x410)	x	x	x	x
30	300024943	Inspection hatch insulation	x	x	x	x
31	94950132	Nipple G3/4"	x	x	x	x
32	200022461	Upper hatch + anode + gasket	x	x	x	x
33	95013062	Green gasket	x	x	x	x
34	89705511	Gasket kit, Ø 112 (7 mm) + Retainer ring, 5 mm	x	x	x	x
35	7675078	Complete tank	x	x		
36	7685542	Pipe grommet, Ø 42	x	x	x	x
37	95320562	Grommet 300x350x10	x	x	x	x
38	300015690	Grommet 042 2300	x	x	x	x
39	7617171	Pipe grommet, Ø 18	x	x	x	x

Fig.138 Hydraulic circuit



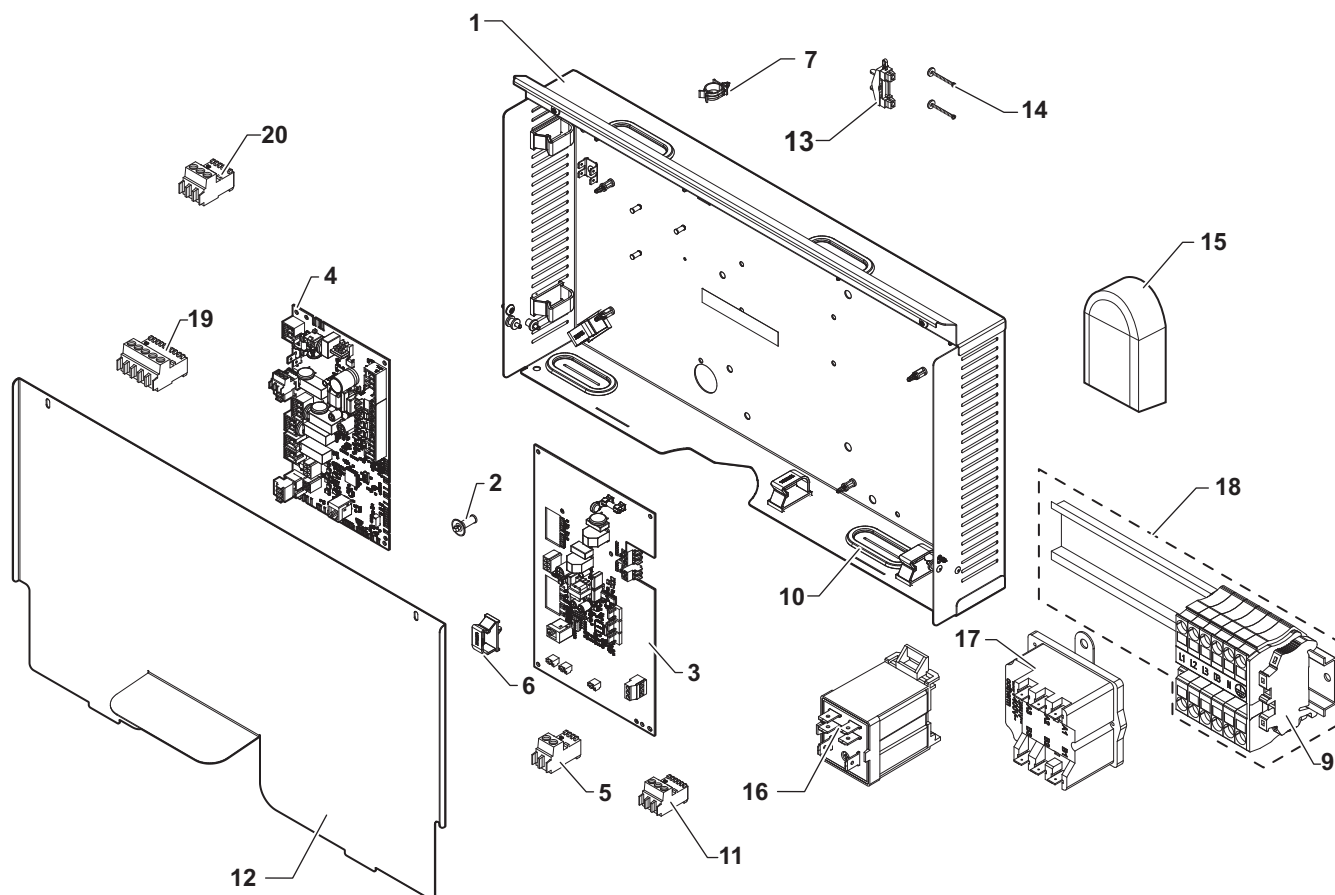
MW-1001316-1

Tab.89 List of spare parts for the hydraulic circuit

Marker	Reference	Description	MIV-4S/E 4-8 V200	MIV-4S/H 4-8 V200	MIV-4S/E 11-16 V200	MIV-4S/H 11-16 V200
1	7618852	Preheater, 3/6/9 kW	x		x	
2	300025392	DN 3/8" - 1/2" straight hose	x	x	x	x
3	S62753	Expansion vessel RP 250 - capacity 8 litres	x	x	x	x
4	7693102	Condenser 4 -8	x	x		
4	7693103	Condenser 11 -16			x	x
5	95610593	Screw H M10x20 6.8 ZN8	x	x	x	x
6	7682394	Condenser assembly support	x	x	x	x
7	S62733	Pressure gauge	x	x	x	x
8	95013059	Green gasket Ø 18.5x12x2	x	x	x	x
9	7657028	Heating flow pipe (complete)	x	x	x	x
10	300023113	Pin for DN20	x	x	x	x
11	7622038	Flow meter exchanger pipe (complete)	x	x	x	x
12	7623411	Temperature sensor insulation PT100	x	x	x	x
13	7609871	Temperature sensor PT1000	x	x	x	x
14	300023277	O-ring - Ø 21.89x2.62	x	x	x	x
15	96350203	Clips for quick connection Ø 25		x		x
16	7658147	Hydraulic return pipe		x		x
17	7658138	Hydraulic flow pipe		x		x
18	7705208	Filter kit	x	x	x	x
19	7705515	Complete filter tank pipe	x	x	x	x
20	7676850	Complete heating return pipe	x	x	x	x

Marker	Reference	Description	MIV-4S/E 4-8 V200	MIV-4S/H 4-8 V200	MIV-4S/E 11-16 V200	MIV-4S/H 11-16 V200
21	95023311	O-ring 21x3.5 EPDM	x	x	x	x
22	7611475	Pin 25x2.5	x	x	x	x
23	7681889	Pipe bracket	x	x	x	x
24	7682224	Safety valve pipe	x	x	x	x
25	95890434	Serrated base nut H M8	x	x	x	x
26	300022989	Flow meter, HUBA DN20	x	x	x	x
27	7622042	Flow meter collector pipe (complete)	x	x	x	x
28	7675590	Complete hydroblock	x	x	x	x
29	7675593	Three-way valve motor	x	x	x	x
30	7611586	HUBA pressure switch	x	x	x	x
31	7611577	3-bar safety valve	x	x	x	x
32	7606561	YONOS circulating pump motor	x	x	x	x
33	7607701	Hydroblock body	x	x	x	x
34	7675592	Three-way valve cartridge	x	x	x	x
35	7611607	Safety valve pin	x	x	x	x
36	7607673	Retaining pin 28.5x3	x	x	x	x
37	7611606	Pressure switch clip	x	x	x	x
38	7606586	Drain valve	x	x	x	x
39	7607684	O-ring 25.07x2.62 EPDM	x	x	x	x
40	7611585	Three-way valve pin	x	x	x	x
41	7616569	Collector	x	x	x	x
42	7622530	Removable nut 1"	x	x	x	x
43	7622531	Ring nut 1"	x	x	x	x
44	7606593	Air ventOTMA	x	x	x	x
45	7606572	O-ring Ø 68x4	x	x	x	x
46	7101096	O-ring gasket 17.86x2.62 mm	x	x	x	x
47	0303384	Protective cap for pressure gauge	x	x	x	x
48	300025325	T for quick connection plug	x	x	x	x
49	7611590	Plug	x	x	x	x
50	7705513	Complete hydroblock filter pipe	x	x	x	x
51	95013062	Gasket Ø 30x21x2	x	x	x	x
52	300024235	Blocking pin	x	x	x	x
53	7618992	Collector	x	x	x	x
54	7617311	Pipe grommet, Ø 22	x	x	x	x
55	7617171	Pipe grommet, Ø 18	x	x	x	x
56	7605675	MF 3/4" dielectric union	x	x	x	x
57	7618899	Preheater support	x	x	x	x
58	95013062	Gasket Ø 30x21x2	x	x	x	x
59	7715767	Filter	x	x	x	x
60	7657436	Domestic hot water flow pipe	x	x	x	x
61	95013060	Gasket Ø 24x17x2	x	x	x	x
62	300023286	Bulb blocking pin	x	x	x	x
63	95023308	EPDM O-ring 9.19x2.62	x	x	x	x
64	95013058	Gasket Ø 14x8x2	x	x	x	x
65	7665153	Earth connection screw	x	x	x	x
66	94914285	Non-return valve 3/4"	x	x	x	x
67	300001936	Grommet membrane Ø 29x37x44-2	x	x	x	x
68	7715766	Gasket	x	x	x	x
69	7715768	Plastic insert	x	x	x	x
70	7715769	Magnet + O-ring	x	x	x	x

Fig.139 Control panel



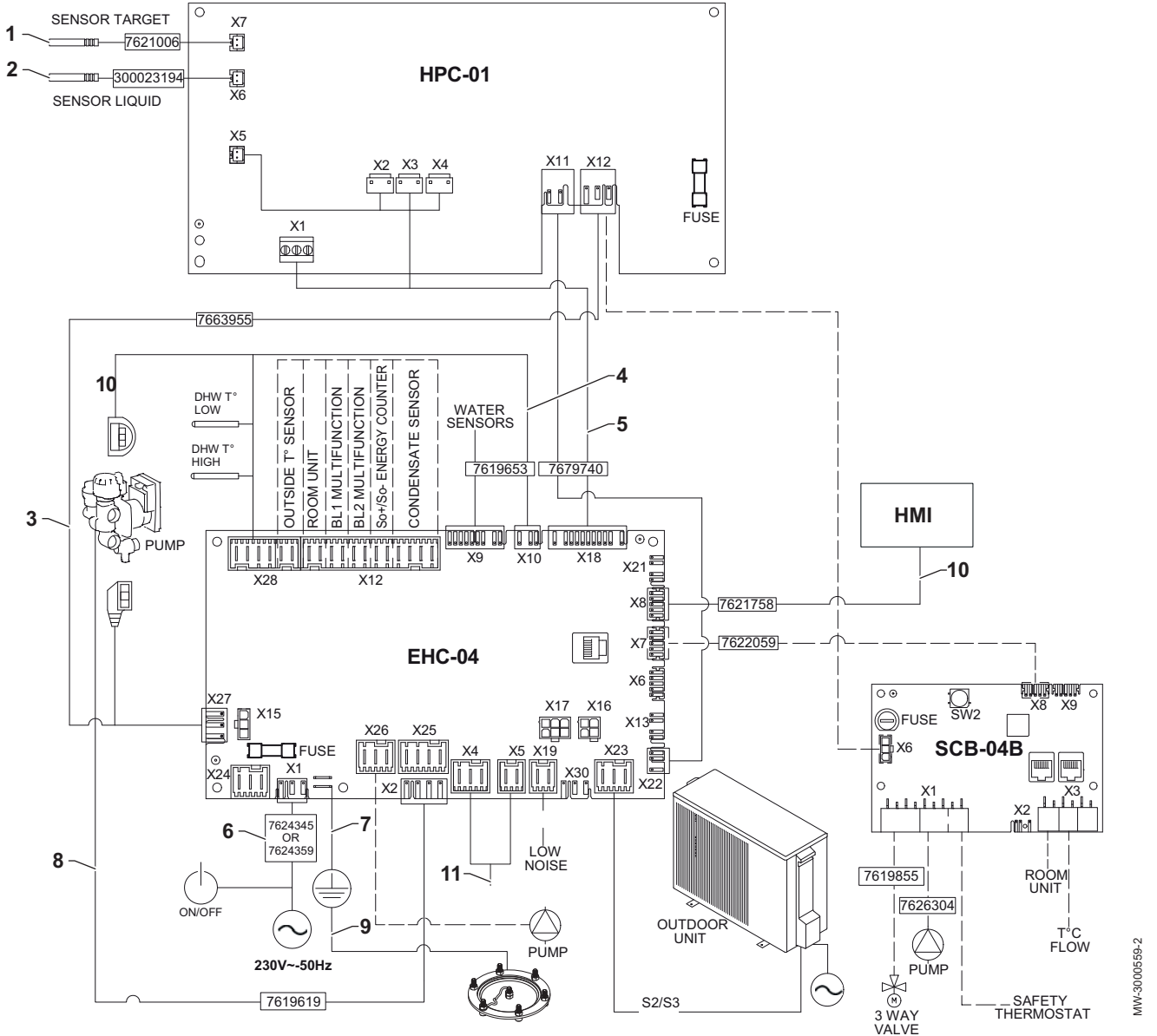
MW-3000491-01

Tab.90 List of spare parts for the control panel

Marker	Reference	Description	MIV-4S/E 4-8 V200	MIV-4S/H 4-8 V200	MIV-4S/H 11-16 V200	MIV-4S/H 11-16 V200
1	7673581	Control panel base	x	x	x	x
2	7626821	RICHCO spacer LCBS	x	x	x	x
3	7653678	HPC-01 interface PCB	x	x	x	x
4	7646936	EHC-04 central unit PCB	x	x	x	x
5	7680712	RAST5 2PTS connector		x		x
5	7632095	RAST 5 connector, green	x	x	x	x
5	7632096	RAST5 3611 connector	x	x	x	x
6	300024354	Cable clamp to clip	x	x	x	x
7	95320950	Cable clamp	x	x	x	x
9	7608561	WAGO connection terminal	x		x	
10	7681470	Oblong grommet	x	x	x	x
11	7680714	RAST5 3PTS connector	x	x	x	x
11	300009074	RAST5 3PTS connector	x	x	x	x
11	7674749	RAST5 connector, white	x	x	x	x
12	7675721	Cover for PCBs	x	x	x	x
13	95320187	Cable clamp 222.01.0087	x	x	x	x
14	95740600	Yellow screw CB Z 3.5x25 ZN	x	x	x	x
15	95362450	Outdoor temperature sensorAF60	x	x	x	x
16	7611483	Support with FINDERrelay	x		x	
17	200018815	ThermostatCOTHERM BSDP 0002	x		x	
18	7621071	Electrical back-up terminal block	x	x	x	x

Marker	Reference	Description	MIV-4S/E 4-8 V200	MIV-4S/H 4-8 V200	MIV-4S/H 11-16 V200	MIV-4S/H 11-16 V200
19	200009251	RAST5 3 PTS VS connector	x	x	x	x
20	300009070	RAST5 361102k09m08 connector	x	x	x	x

Fig.140 Cable harness for appliances with hydraulic and/or electrical back-up



Tab.91 Spare parts list for the harnesses

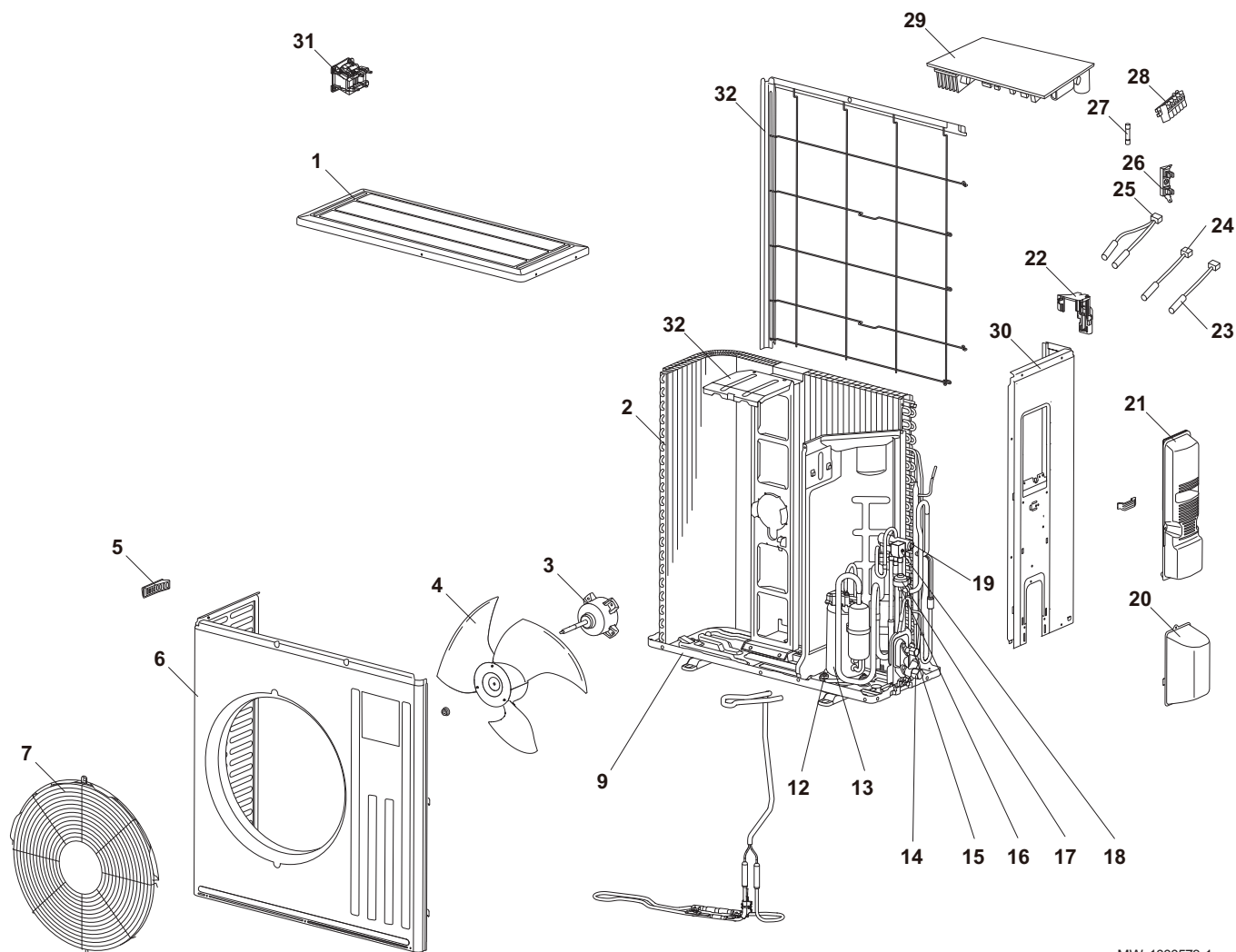
Marker	Reference	Description	MIV-4S/H 4-8 V200	MIV-4S/H 11-16 V200	MIV-4S/E 11-16 V200
1	7621006	FTC liquid sensor, red	x		x
2	300023194	FTC refrigerant sensor	x		x
3	7663955	Power supply cable harness for PCBs	x		x
4	7619653	Sensor harness	x		x
5	7679740	HPC cable harness	x		x
6	7624345	Main harness + ON/OFF button	x		x
7	7622643	PCB earthing cable (complete)	x		x
8	7619619	Cable harness for three-way valve internal power supply	x		x

Marker	Reference	Description	MIV-4S/H 4-8 V200MIV-4S/H 11-16 V200	MIV-4S/E 4-8 V200MIV-4S/E 11-16 V200
9	7622410	Earthing cable (complete)	x	x
10	7621758	L-bus harness	x	x
11	7681789	Preheater harness		x

13.2 Outside unit

13.2.1 AWHP 4.5 MR

Fig.141 AWHP 4.5 MR



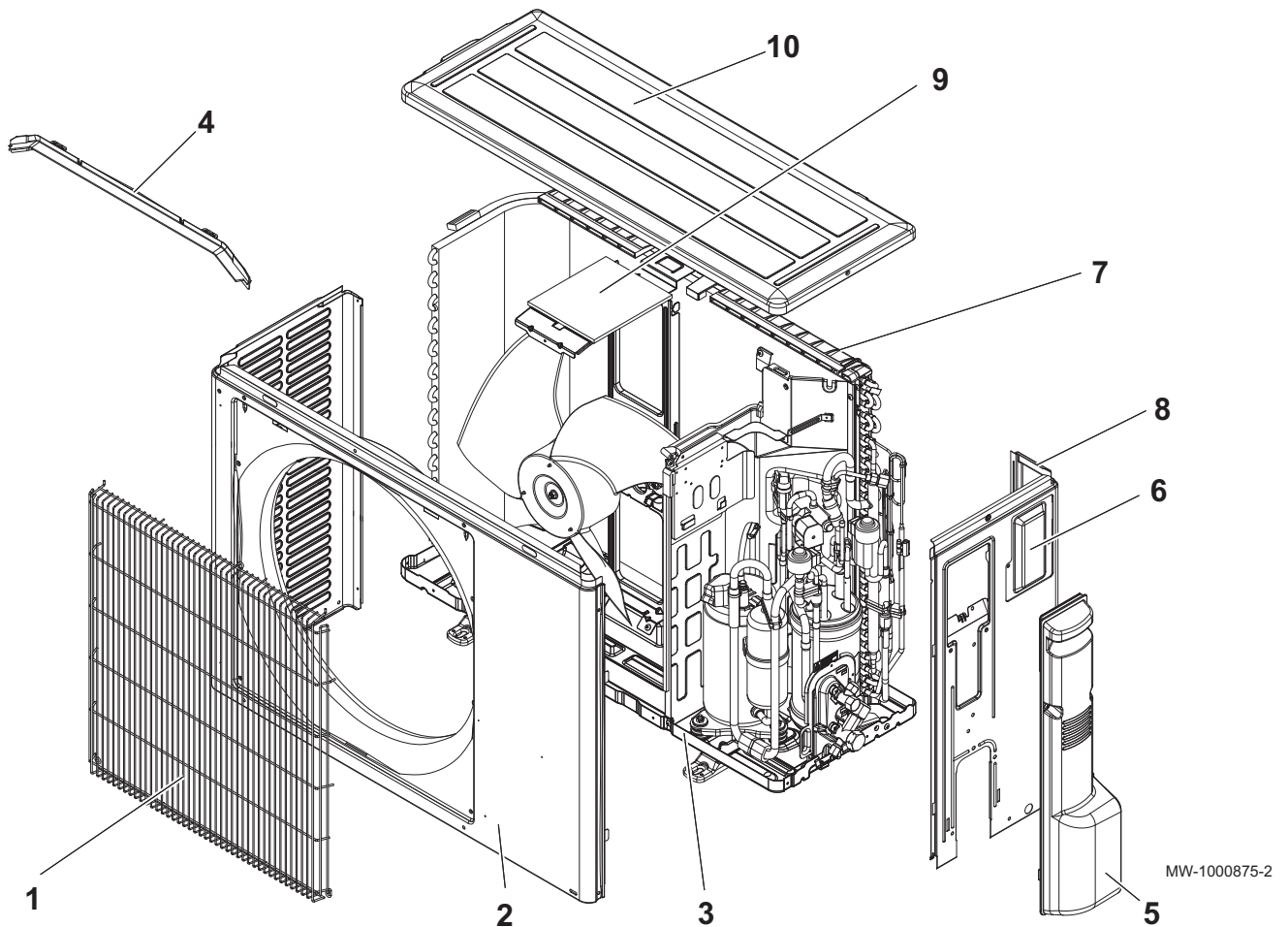
MW-1000573-1

Marker	Reference	Description
1	7652649	Top panel
2	7652667	Coil (evaporator/condenser)
3	7652668	Fan motor
4	7652669	Fan rotor
5	7652670	Grip
6	7652671	Front panel
7	7652672	Fan grate
9	7652673	Base frame
12	7652674	Compressor anti-vibration mount kit
13	7652675	SNB130FGBMT compressor
14	7652676	1/2" stop valve (gas) Ø 12.7 mm

Marker	Reference	Description
15	7652677	1/4" stop valve (hydraulic) Ø 6.35 mm
16	7652678	Expansion valve
17	7652679	Expansion valve coil LEV
18	7652680	Solenoid valve coil 21S4
19	7652681	4-way valve
20	7652682	Stop valve access panel
21	7652684	Electrical supply access panel
22	7652685	Sensor support
23	7652686	Outside temperature sensor RT65
24	7652687	Battery temperature sensor RT68
25	7652688	Sensor kit RT61–RT62
26	7652690	Fuse holder
27	7652691	Fuse T20AL / 250 V
28	7652692	Supply terminal
29	7652693	Central unit PCB
30	7652694	Side panel, right
31	7652695	Coil L61
32	7652696	Rear protection grid
33	7652697	Fan motor support
	7652698	Capillary tubes (100) Ø 4 mm x Ø 2.4 mm
	7652699	Condensate discharge

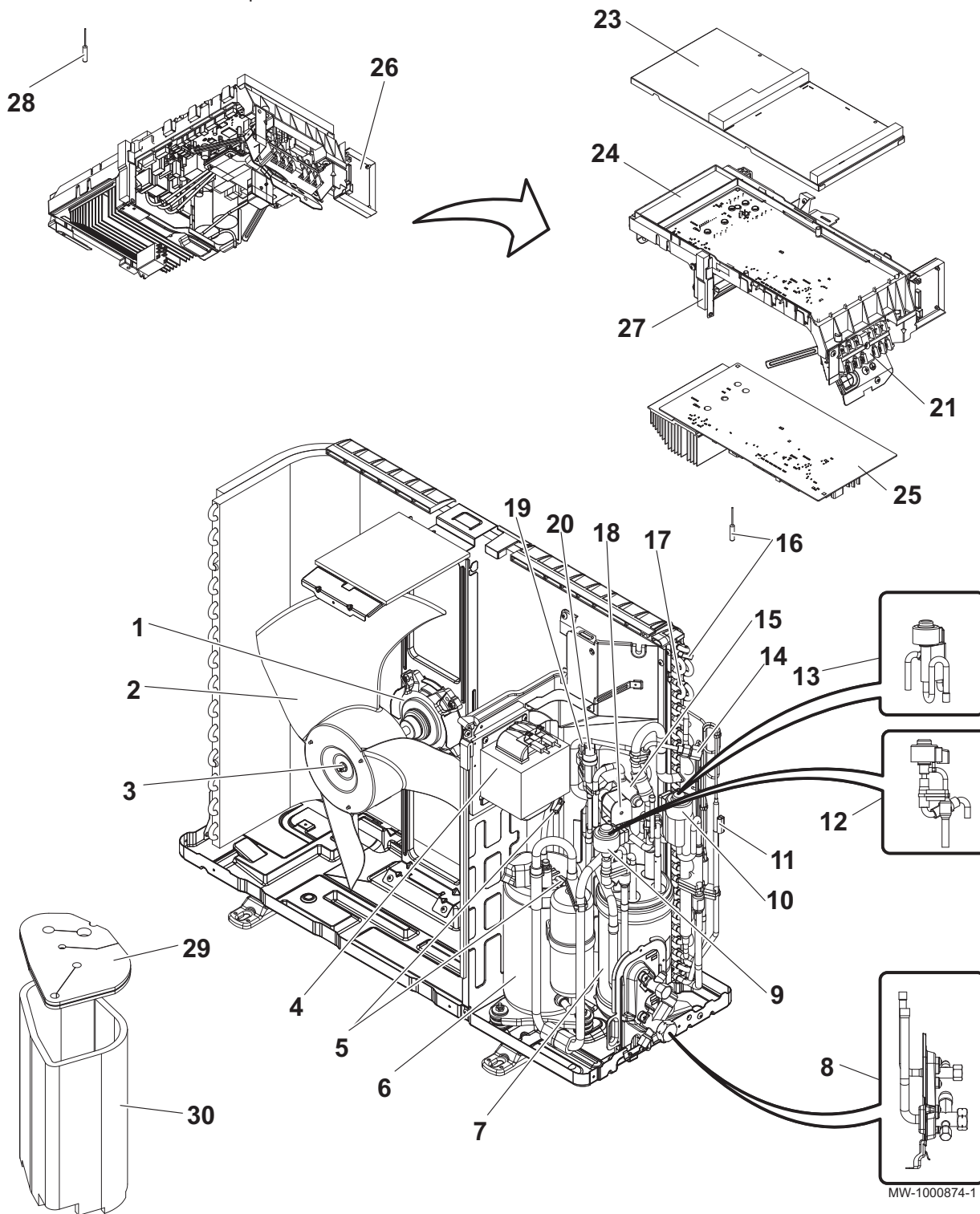
13.2.2 AWHP 6 MR-3

Fig.142 AWHP 6 MR-3: base frame



Marker	Reference	Description
1	7673303	Fan grate
2	7673305	Front panel
3	7673306	Base panel
4	7673313	Cable duct
5	7673307	Maintenance access panel
6	7673308	Hatch
7	7673309	Rear protection grid
8	7673310	Side panel, right
9	7673311	Motor bracket
10	7673312	Top panel

Fig.143 AWHP 6 MR-3: electric part

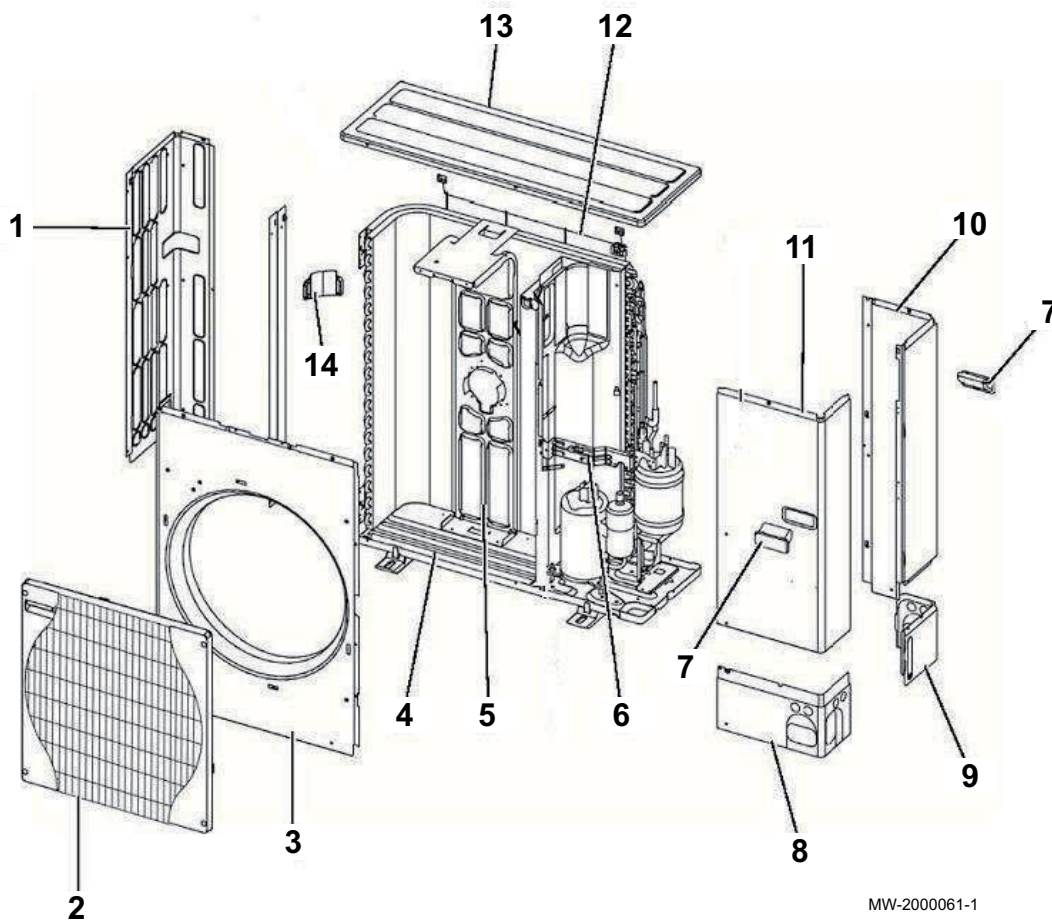


Marker	Reference	Description
1	7673314	Fan motor
2	7673315	Fan rotor
3	7604150	Nut
4	7673316	Self ACL
5	7673317	TH4–TH34 temperature sensor
6	7673318	SNB130FTCM2 compressor
7	7673319	Power receiver
8	7673320	CPLT 1/4 F - 1/2 F stop valves
9	7673321	LEV-B coil
10	7673322	LEV-A coil

Marker	Reference	Description
11	7673323	TH3 temperature sensor
12	7673324	CPLT LEV-B expansion valve
13	7673325	CPLT LEV-A expansion valve
14	300018092	Load plug
15	300023668	4-way valve
16	7673326	TH6-7 temperature sensor
17	7673327	Coil (evaporator/condenser)
18	7673328	21S4 4-way valve coil
19	7673329	HP pressure switch sensor
20	300018123	41.5-bar HP pressure switch
21	300023673	Connection terminal block
23	7673330	Cover
24	7673331	Support
25	7673332	Central unit PCB
26	7673333	Relay card
27	7673334	Radiator support
28	7673335	TH8 radiator sensor
29	7673336	Compressor top insulation
30	7673337	Compressor insulation
0	7673338	10 A / 250 V fuse
0	7673339	3,15 A / 250 V fuse
0	7673340	Compressor cable harness

13.2.3 AWHP 8 MR-2

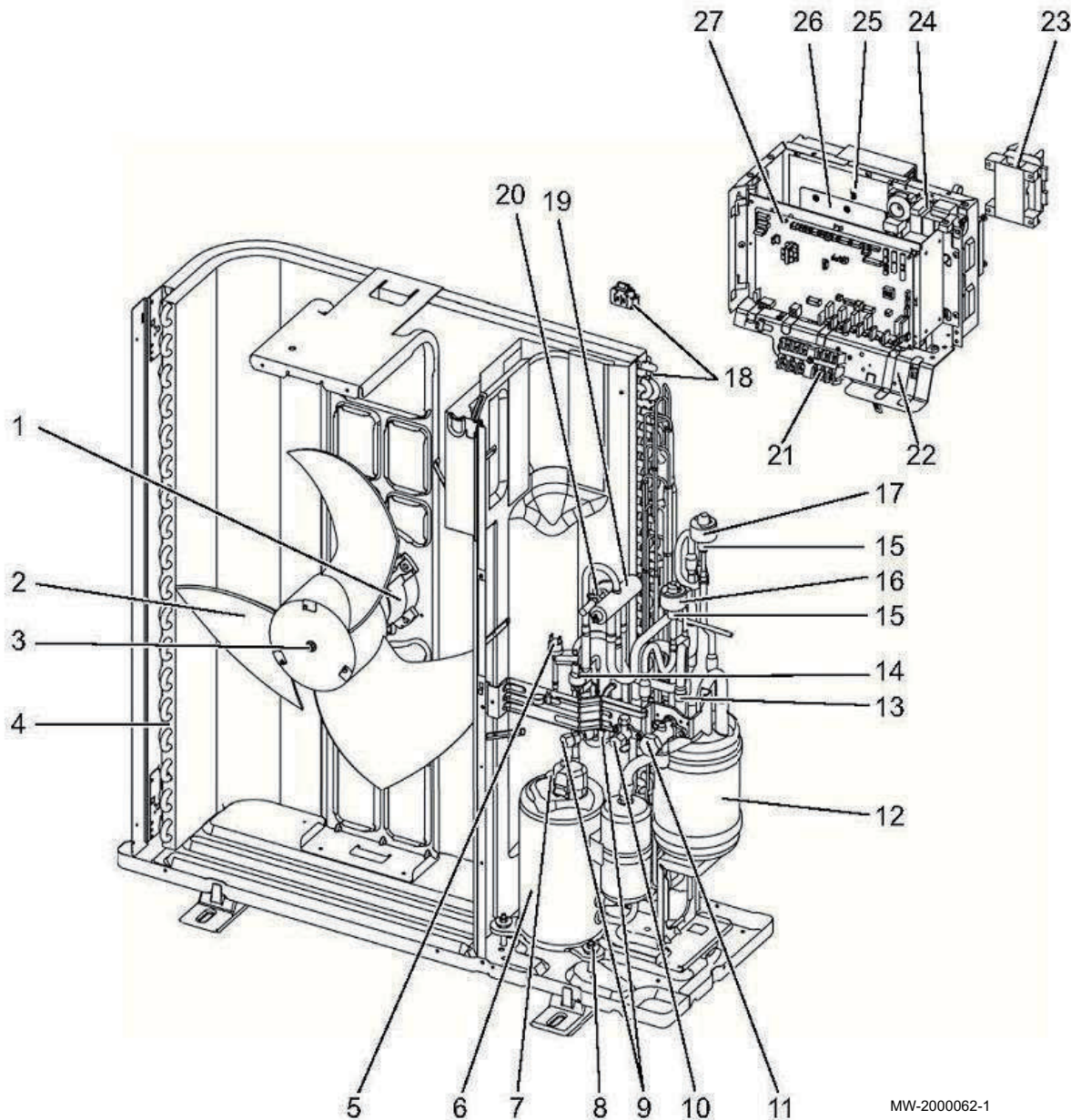
Fig.144 AWHP 8 MR-2: base frame



MW-2000061-1

Marker	Reference	Description	Model
1	7614219	Side panel, left	
2	7614220	Fan grid	
3	7614221	Front panel	
4	7614222	Base panel	SERVICE REF. : AWHP 8 MR-2
4	7705552	Base panel	SERVICE REF. : AWHP 8 MR-2 R2.UK
5	7614223	Motor bracket	SERVICE REF. : AWHP 8 MR-2
5	7705553	Motor bracket	SERVICE REF. : AWHP 8 MR-2 R2.UK
6	7614224	Valve bracket	
7	7614225	Grip	
8	7614226	Lower front panel	
9	7614227	Lower rear panel	
10	7614228	Side panel, right	SERVICE REF. : AWHP 8 MR-2
10	7705557	Side panel, right	SERVICE REF. : AWHP 8 MR-2 R2.UK
11	7614230	Maintenance access panel	
12	7614231	Rear protection grate	
13	7614232	Top panel	
14	7614233	Grip	

Fig.145 AWHP 8 MR-2: electric part



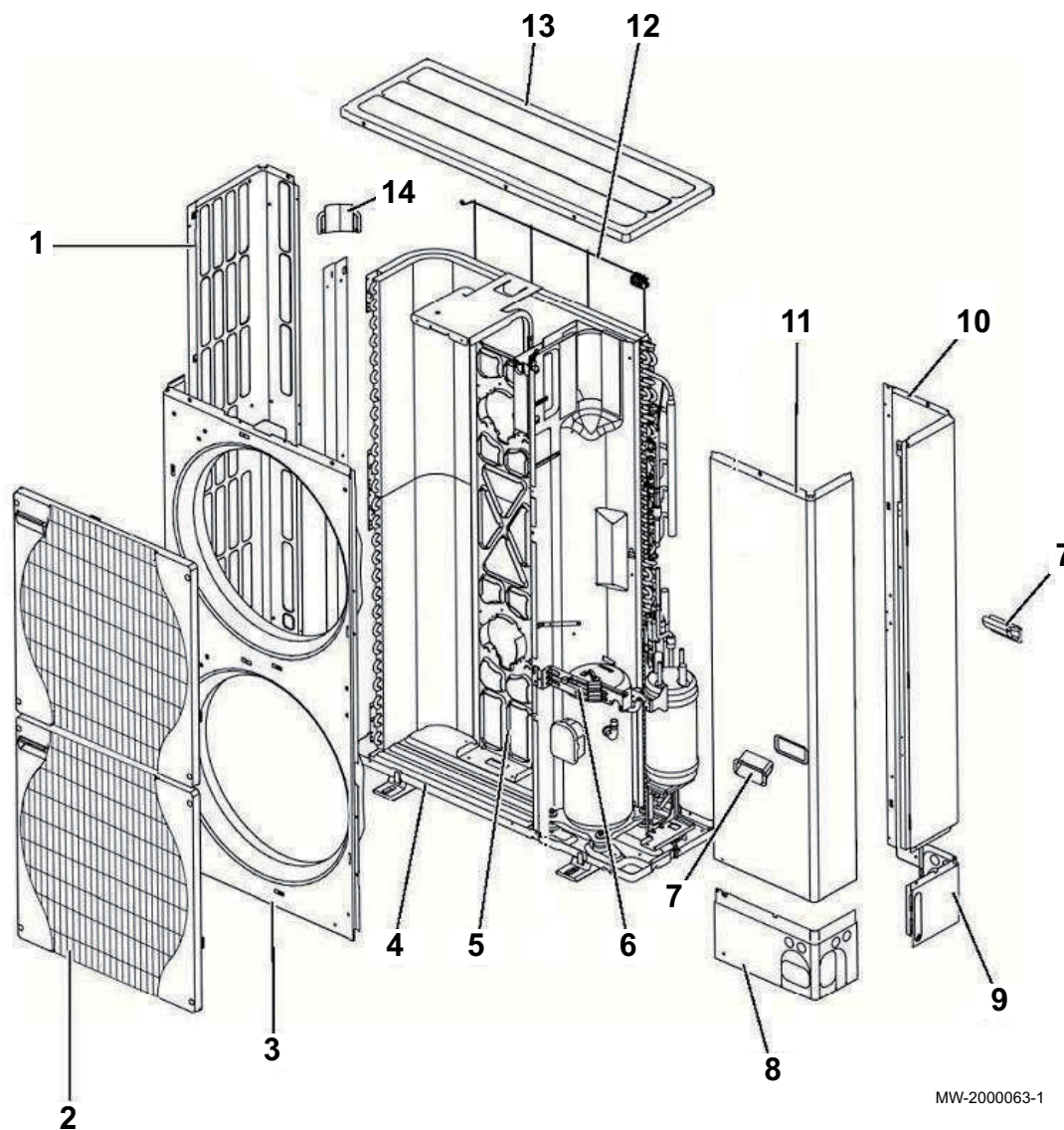
MW-2000062-1

Marker	Reference	Description	Model
1	7614234	Fan motor	SERVICE REF. : AWHP 8 MR-2
1	7705558	Fan motor	SERVICE REF. : AWHP 8 MR-2 R2.UK
2	7614236	Fan	
3	7614237	Nut	
4	7614238	Battery (evaporator/condenser)	
5	7614239	High pressure pressure switch	
6	7614240	Compressor TNB220FLHMT	SERVICE REF. : AWHP 8 MR-2
6	7652256	Compressor SNB220FAGMC L1	SERVICE REF. : AWHP 8 MR-2 R1.UK + SERVICE REF. : AWHP 8 MR-2 R2.UK
7	7614241	TH34 compressor discharge temperature sensor	
8	7614242	Anti-vibration stud	SERVICE REF. : AWHP 8 MR-2
8	7705559	Anti-vibration stud	SERVICE REF. : AWHP 8 MR-2 R2.UK
9	7614243	Load plug	
10	7614244	Stop valve 3/8"	
11	7614245	Stop valve 5/8"	

Marker	Reference	Description	Model
12	7614246	Output reserve header	
13	7614247	Filter	
14	7614248	High pressure sensor	
15	7614250	Expansion valve	
16	7614251	Linear expansion valve coil	
17	7614252	Linear expansion valve coil	
18	7614253	Outside sensor battery TH6/7	
19	7614254	4-way valve	
20	7614255	Coil	SERVICE REF. : AWHP 8 MR-2
20	7705561	Coil 21S4	SERVICE REF. : AWHP 8 MR-2 R2.UK
21	7614278	Terminal block	SERVICE REF. : AWHP 8 MR-2
21	7705562	Terminal block	SERVICE REF. : AWHP 8 MR-2 R2.UK
22	7614279	Control panel	
23	7614280	Self (DCL)	SERVICE REF. : AWHP 8 MR-2
23	7705563	Self 18 MH	SERVICE REF. : AWHP 8 MR-2 R2.UK
24	7614282	EMI-suppressor filter	
25	7614283	Dissipator sensor TH8	SERVICE REF. : AWHP 8 MR-2
25	7705564	Dissipator sensor TH8	SERVICE REF. : AWHP 8 MR-2 R2.UK
26	7614284	Output PCB	SERVICE REF. : AWHP 8 MR-2
26	7652259	Output PCB	SERVICE REF. : AWHP 8 MR-2 R1.UK + SERVICE REF. : AWHP 8 MR-2 R2.UK
27	7614285	Central unit PCB	SERVICE REF. : AWHP 8 MR-2
27	7652258	Central unit PCB	SERVICE REF. : AWHP 8 MR-2 R1.UK + SERVICE REF. : AWHP 8 MR-2 R2.UK
0	7614286	Gas sensor TH4	
0	7614288	Liquid sensor TH3	
0	7705560	Silencer	SERVICE REF. : AWHP 8 MR-2 R2.UK

13.2.4 AWHP 11 MR-2 – AWHP 16 MR-2 – AWHP 11 TR-2 – AWHP 16 TR-2

Fig.146 Base frame

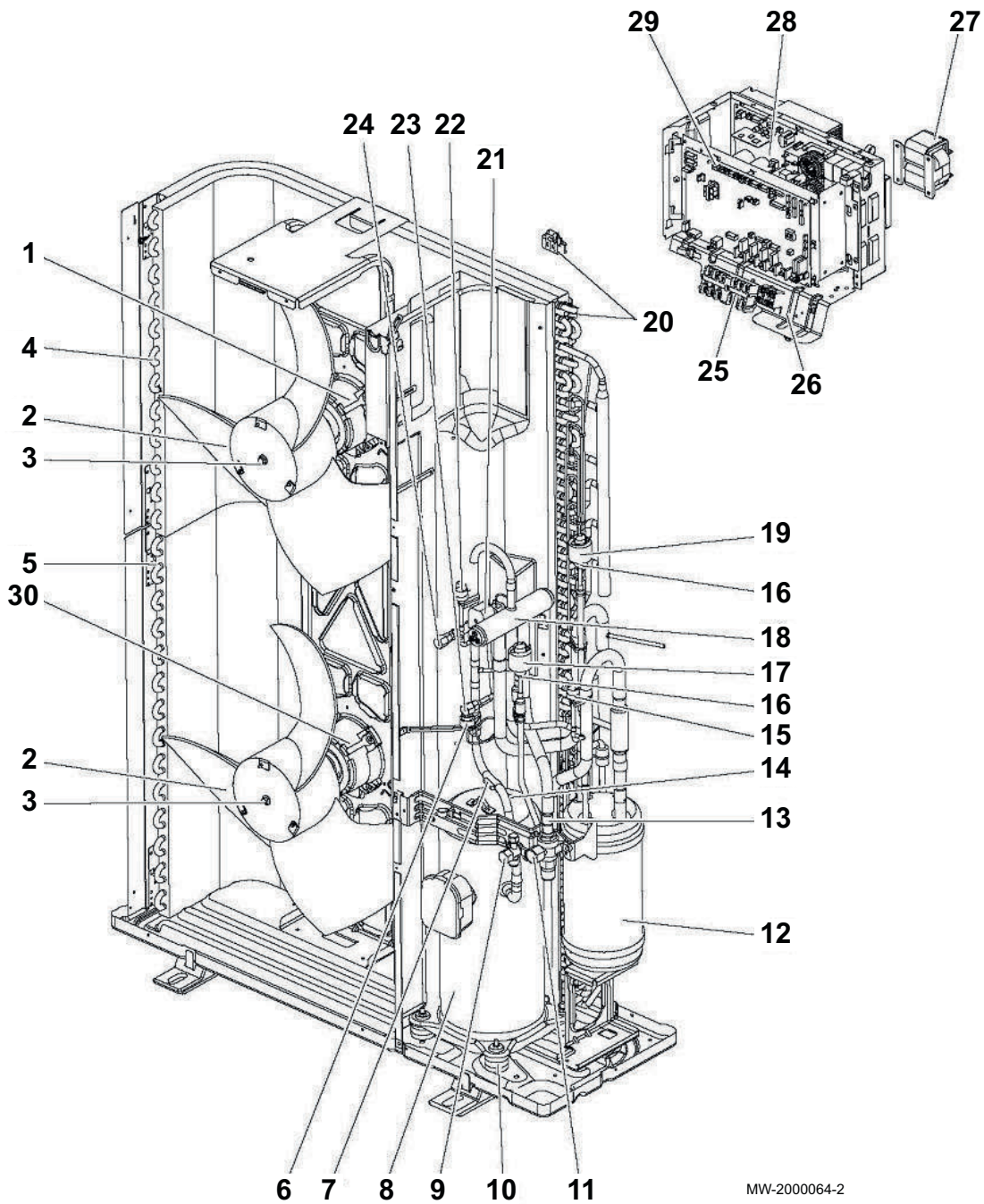


MW-200063-1

Marker	Reference	Description	Model
1	7614289	Side panel, left	
2	7614220	Fan grid	
3	7614290	Front panel	
4	7614292	Base panel	
5	7614293	Motor bracket	
5	7717095	Motor bracket	SERVICE REF. : AWHP 11 MR-2 R2.UK SERVICE REF. : AWHP 16 MR-2 R2.UK SERVICE REF. : AWHP 11 TR-2 R2.UK SERVICE REF. : AWHP 16 TR-2 R2.UK
6	7614224	Valve bracket	
7	7614225	Grip	
8	7614226	Lower front panel	
9	7614227	Lower rear panel	
10	7614294	Side panel, right	
11	7614295	Maintenance access panel	
12	7614296	Rear protection grid	

Marker	Reference	Description	Model
13	7614232	Top panel	
14	7614233	Grip	

Fig.147 AWHP 11 MR-2 – AWHP 16 MR-2 : electric part

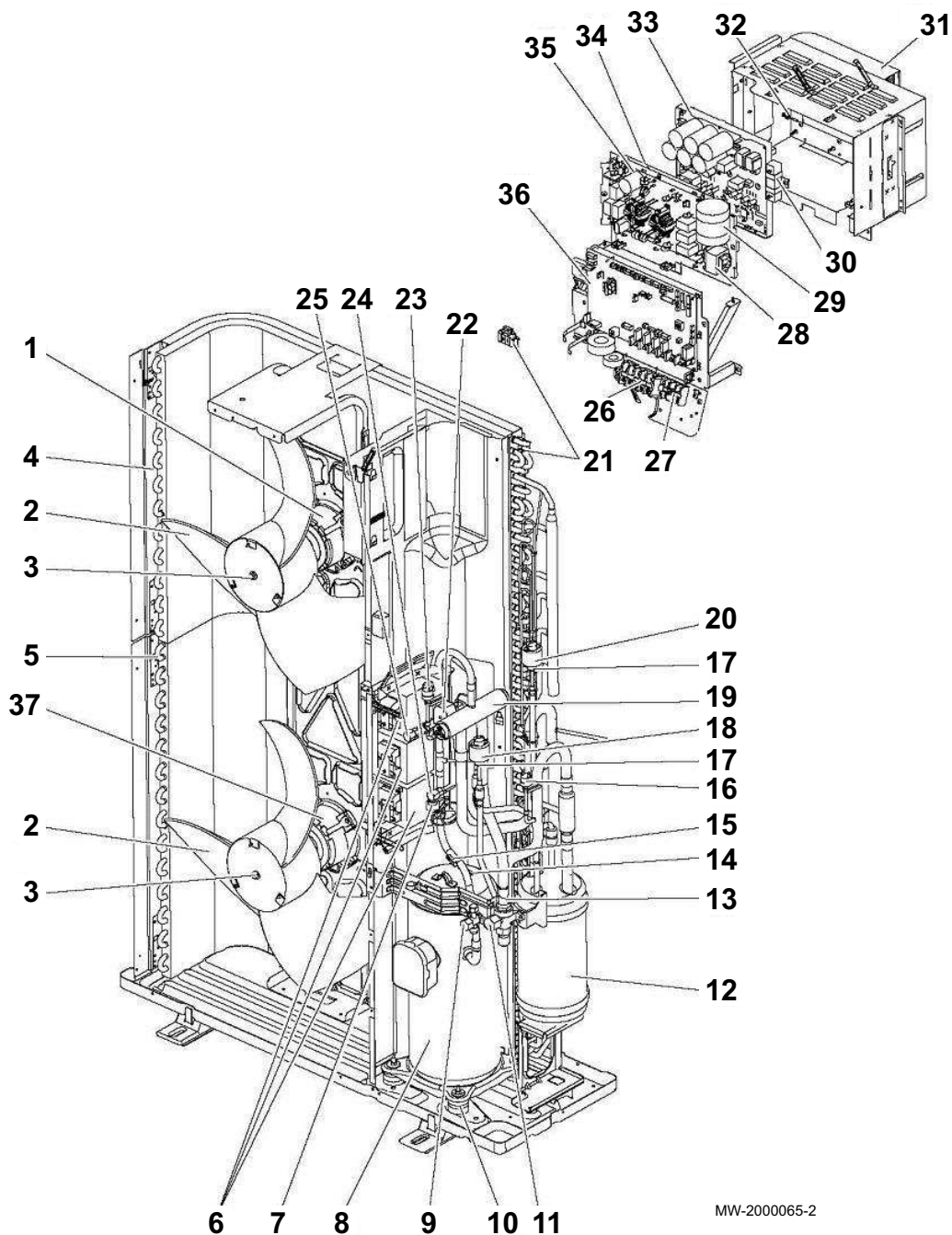


MW-2000064-2

Marker	Reference	Description	Models
1	7614234	Fan motor	SERVICE REF. : AWHP 11-16 MR-2 SERVICE REF. : AWHP 11 MR-2 R1.UK SERVICE REF. : AWHP 16 MR-2 R1.UK
1	7717096	Fan motor	SERVICE REF. : AWHP 11 MR-2 R2.UK SERVICE REF. : AWHP 16 MR-2 R2.UK
2	7614236	Fan	
3	7614237	Nut	
4	7614297	Top battery (evaporator / condenser)	
5	7614298	Bottom battery (evaporator / condenser)	

Marker	Reference	Description	Models
6	7614248	High pressure sensor	
7	7614299	Gas sensor TH4	
7	7717098	Gas sensor TH4	SERVICE REF. : AWHP 11 MR-2 R2.UK SERVICE REF. : AWHP 16 MR-2 R2.UK
8	7614300	Compressor ANB33FNEMT	AWHP 11 MR-2
8	7614301	Compressor ANB42FNEMT	AWHP 16 MR-2
9	7614244	Stop valve 3/8"	
10	7614302	Anti-vibration stud	
11	7614304	Stop valve 5/8"	
12	7614305	Power receiver	
13	7614247	Filter	
14	7614306	TH34 sensor	
15	7614307	Low pressure pressure switch	
16	7614308	Expansion valve	
17	7614251	Linear expansion valve coil	
18	7614309	4-way valve	
19	7614252	Linear expansion valve coil	
20	7614253	Outside sensor battery TH6/7	
21	7614310	Coil	
21	7717099	Coil	SERVICE REF. : AWHP 11 MR-2 R2.UK SERVICE REF. : AWHP 16 MR-2 R2.UK
22	7614239	High pressure pressure switch	
23	7614243	Load plug	
24	7614312	Load plug	
25	7614278	Connection terminal block	
26	7614313	Complete control panel	AWHP 11 MR-2
26	7614314	Complete control panel	AWHP 16 MR-2
27	7614316	Self	
28	7614317	Output PCB	SERVICE REF. : AWHP 11 MR-2 SERVICE REF. : AWHP 16 MR-2
28	7652253	Output PCB	SERVICE REF. : AWHP 11 MR-2 R1.UK SERVICE REF. : AWHP 16 MR-2 R1.UK SERVICE REF. : AWHP 11 MR-2 R2.UK SERVICE REF. : AWHP 16 MR-2 R2.UK
29	7614319	Central unit PCB	SERVICE REF. : AWHP 11 MR-2 SERVICE REF. : AWHP 16 MR-2
29	7652250	Central unit PCB	SERVICE REF. : AWHP 11 MR-2 R1.UK SERVICE REF. : AWHP 16 MR-2 R1.UK SERVICE REF. : AWHP 11 MR-2 R2.UK SERVICE REF. : AWHP 16 MR-2 R2.UK
30	7614234	Fan motor	SERVICE REF. : AWHP 11-16 MR-2 SERVICE REF. : AWHP 11 MR-2 R1.UK SERVICE REF. : AWHP 16 MR-2 R1.UK
30	7717097	Fan motor	SERVICE REF. : AWHP 11 MR-2 R2.UK SERVICE REF. : AWHP 16 MR-2 R2.UK
	7614321	Liquid sensor TH3	
	7614322	Capacitor	

Fig.148 AWHP 11 TR-2 – AWHP 16 TR-2: electric part



MW-2000065-2

Marker	Reference	Description	Models
1	7614234	Fan motor	SERVICE REF. : AWHP 11-16 TR-2 SERVICE REF. : AWHP 11 TR-2 R1.UK SERVICE REF. : AWHP 16 TR-2 R1.UK
1	7717096	Fan motor	SERVICE REF. : AWHP 11 TR-2 R2.UK SERVICE REF. : AWHP 16 TR-2 R2.UK
2	7614236	Fan	
3	7614237	Nut	
4	7614297	Top battery (evaporator / condenser)	
5	7614298	Bottom battery (evaporator / condenser)	
6	7614323	Self	
7	7614248	High pressure sensor	
8	7614330	Compressor ANB33FNMT	AWHP 11 TR-2
8	7614332	Compressor ANB42FNMT	AWHP 16 TR-2

Marker	Reference	Description	Models
9	7614244	Stop valve 3/8"	
10	7614302	Anti-vibration stud	
11	7614304	Stop valve 5/8"	
12	7614305	Power receiver	
13	7614247	Filter	
14	7614333	TH34 1 compressor discharge sensor	
15	7614286	Gas sensor TH4	
15	7717100	Gas sensor TH4	SERVICE REF. : AWHP 11 TR-2 R2.UK SERVICE REF. : AWHP 16 TR-2 R2.UK
16	7614307	Low pressure pressure switch	
17	7614308	Expansion valve	
18	7614251	Linear expansion valve coil	
19	7614309	4-way valve	
20	7614252	Linear expansion valve coil	
21	7614335	Outside sensor battery TH6/7	
22	7614255	Coil	
23	7614239	High pressure pressure switch	
24	7614243	Load plug	
25	7614312	Load plug	
26	7614337	Connection terminal block L	
27	7614338	Connection terminal block S	
28	7614339	Self	
29	7614340	Capacitor	
30	7614342	Resistor	
31	7614343	Complete control panel	AWHP 11 TR-2
31	7614344	Complete control panel	AWHP 16 TR-2
32	7614346	Dissipator sensor TH8	
33	7614347	Output PCB	SERVICE REF. : AWHP 11 TR-2 SERVICE REF. : AWHP 16 TR-2
33	7652254	Output PCB	SERVICE REF. : AWHP 11 TR-2 R1.UK SERVICE REF. : AWHP 16 TR-2 R1.UK SERVICE REF. : AWHP 11 TR-2 R2.UK SERVICE REF. : AWHP 16 TR-2 R2.UK
34	7614348	Converter board	SERVICE REF. : AWHP 11 TR-2 SERVICE REF. : AWHP 16 TR-2
34	7652562	Converter board	SERVICE REF. : AWHP 11 TR-2 R1.UK SERVICE REF. : AWHP 16 TR-2 R1.UK SERVICE REF. : AWHP 11 TR-2 R2.UK SERVICE REF. : AWHP 16 TR-2 R2.UK
35	7614349	Electronic filter board	
36	7614285	Central unit PCB	SERVICE REF. : AWHP 11 TR-2 SERVICE REF. : AWHP 16 TR-2
36	7652250	Central unit PCB	SERVICE REF. : AWHP 11 TR-2 R1.UK SERVICE REF. : AWHP 16 TR-2 R1.UK SERVICE REF. : AWHP 11 TR-2 R2.UK SERVICE REF. : AWHP 16 TR-2 R2.UK
37	7614234	Fan motor	SERVICE REF. : AWHP 11 TR-2 SERVICE REF. : AWHP 16 TR-2 SERVICE REF. : AWHP 11 TR-2 R1.UK SERVICE REF. : AWHP 16 TR-2 R1.UK
37	7717097	Fan motor	SERVICE REF. : AWHP 11 TR-2 R2.UK SERVICE REF. : AWHP 16 TR-2 R2.UK
	7614350	Liquid sensor TH3	

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