Glow-worm

Installation and Servicing

Envirosorb$_2$ 7 / 12 / 14

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INTRODUCTION

1 Instructions guidance

1.1 Product documentation

The instructions are an integral part of the appliance and must be handed to the user on completion of the installation in order to comply with the current regulation.

- Carefully read the manual, to understand all the information to enable safe installation, use and servicing. No liability can be accepted in the event of damage for not complying with the guidance in this instruction manual.

These instructions consist of, Installation, Servicing, Fault Finding and Replacement of Parts. The instructions are an integral part of the appliance and must be handed to the user on completion of the installation.

1.2 Associated documents

- 1 Instructions for user
- Instructions for other system components

1.3 Explanation of symbols

DANGER: Risk of injuries.

DANGER: Risk of electric shock.

ATTENTION: Risk of damage to the appliance or to its surroundings.

IMPORTANT: Important information.

1.4 Guarantee registration

Thank you for installing a new Glow-worm appliance in your home. Glow-worm appliances are manufactured to the very highest standard so we are pleased to offer our customers a Comprehensive Guarantee.

This product is guaranteed for 24 months from the date of installation or 30 months from the date of manufacture, whichever is the shorter, for parts and labour.

The second year of guarantee, from the beginning of the 13th month onwards after installation or manufacture, is conditional upon the heat pump having been serviced by a **competent person** approved at the time by the Health and Safety Executive, in accordance with the manufacturer's recommendations. We strongly recommend regular servicing of your appliance, but where the condition is not met, any chargeable spare parts or components issued within the applicable guarantee period still benefit from a 12 month warranty from the date of issue by the manufacturer.

We recommend you complete and return as soon as possible your guarantee registration card (delivered with the hydraulic module). If your guarantee registration card is missing you can obtain a copy or record your registration by telephoning the Glow-worm Customer Service number 01773 828100.

2 Appliance description

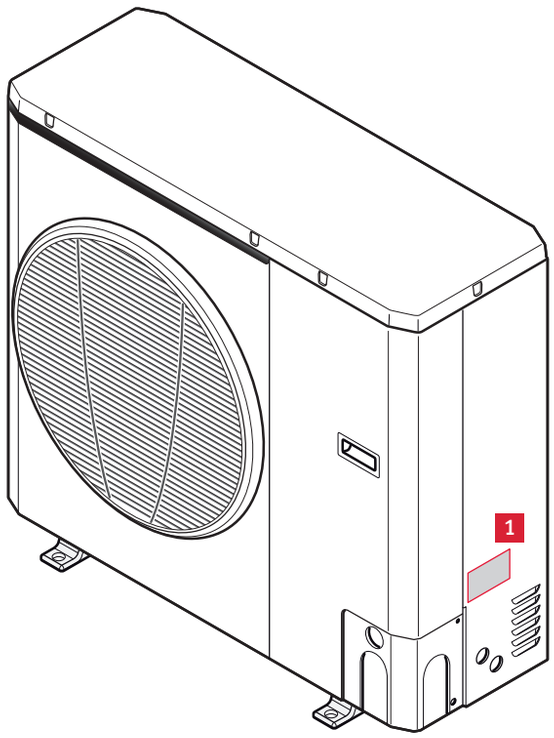
2.1 Safety devices

- This appliance is designed for use in heating with an external temperature of between -20°C and 30°C. Outside this range, the heat pump stops.
- A set of security devices based on measuring the temperature within the circuits and the current in the compressor protects it against excess pressure in the refrigerating fluid.
- A flow detector protects the appliance as a whole.
- To prevent stagnation of the refrigerant fluid when the compressor is stopped, a safety device is activated when the outside temperature lowers. The compressor is then heated by a low electrical current through the motor windings,
- A temperature sensor on exit from the compressor limits the functioning of the heat pump when the temperature measured by this sensor is greater than 100°C. From 117°C, the heat pump stops.
- A temperature sensor on the finned heat exchanger and a tachometer on the fan checks that the fan is working.
- A water flow sensor ensures the security of the water circulation. If the flow is too low (‹ 420 l/h), the appliance stops and re-starts when the flow comes within the normal functioning range (›500l/h).

2.2 Data label

The data label certifies the country where the appliance is intended to be installed.

Data label location:



Key
1 Data label

2.3 Regulation and statutory requirements

2.3.1 CE Mark

The CE mark indicates that the appliances described in this manual are in compliance with the following directives:

- European directive n°2004-108 from the European Parliament and Council relative to electromagnetic compatibility
- European directive n°2006-95 from the European Parliament and Council relative to low voltage
- European directive No. 97-23 of the European Parliament and the Council regarding pressure equipment
- European directive No. 2007-1494 of the Commission, dated December 17, 2007, determining, in accordance with Directive No. 2006-842 of the European Parliament and the Council, the label type and the additional requirements as regards the labelling of products and equipment containing certain fluorinated greenhouse effect gas.
- European directive No. 2006-842 of the European Parliament and the Council of May 17, 2006 on certain fluorinated greenhouse gasses (OJEU of June 14, 2006)

2.3.2 Local regulations

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by a competent person approved at the time by the Health and Safety Executive and that it meets the requirements of the appropriate Building Regulations.
The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme.

- Visit www.centralheating.co.uk for more information.

benchmark
COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

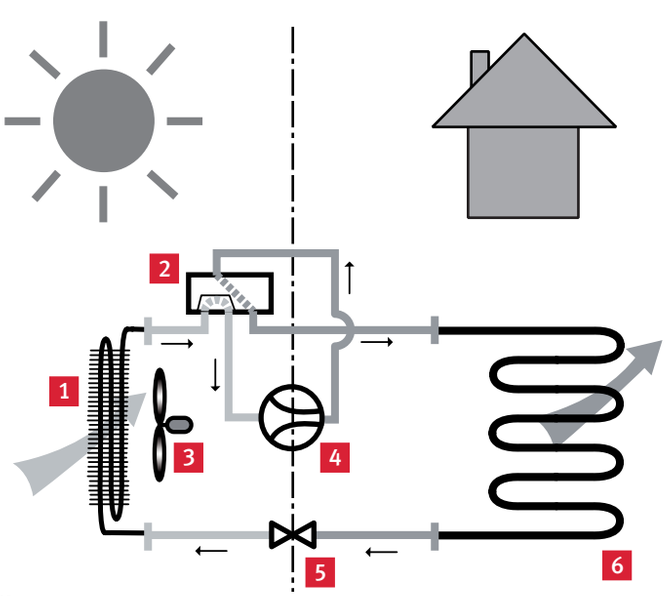
2.4 Concept of operation

A heat pump (HP) is a thermodynamic machine which transfers heat from one location to another. To do so, it employs the characteristics of a refrigerant fluid.

The system is composed of the following circuits:

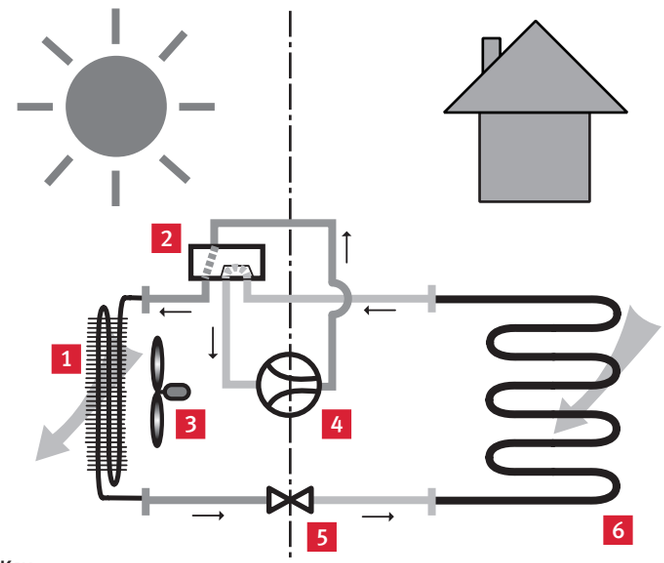
- The refrigeration circuit which transfers heat to the water circuit following the evaporation, compression, condensation and expansion of the fluid.
- The heating circuit.

2.4.1 In heating mode



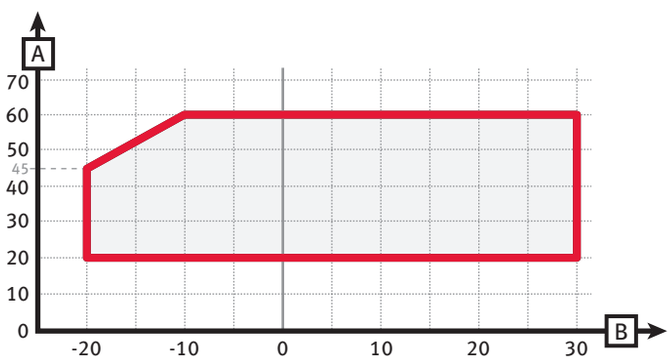
Key
1 Finned heat exchanger
2 Reverse cycle valve
3 Ventilating fan
4 Compressor
5 Pressure regulator
6 Exchanger with plates

2.4.2 In defrosting and cooling mode



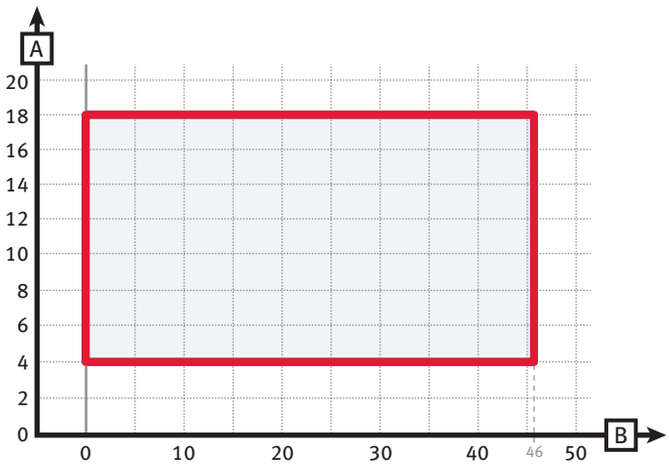
Key
1 Finned heat exchanger
2 Reverse cycle valve
3 Ventilating fan
4 Compressor
5 Pressure regulator
6 Exchanger with plates

2.4.3 Min. and Max. temperature settings in heating



Key
A Water temperature
B Air temperature

2.4.4 Min. and Max. temperature settings in cooling

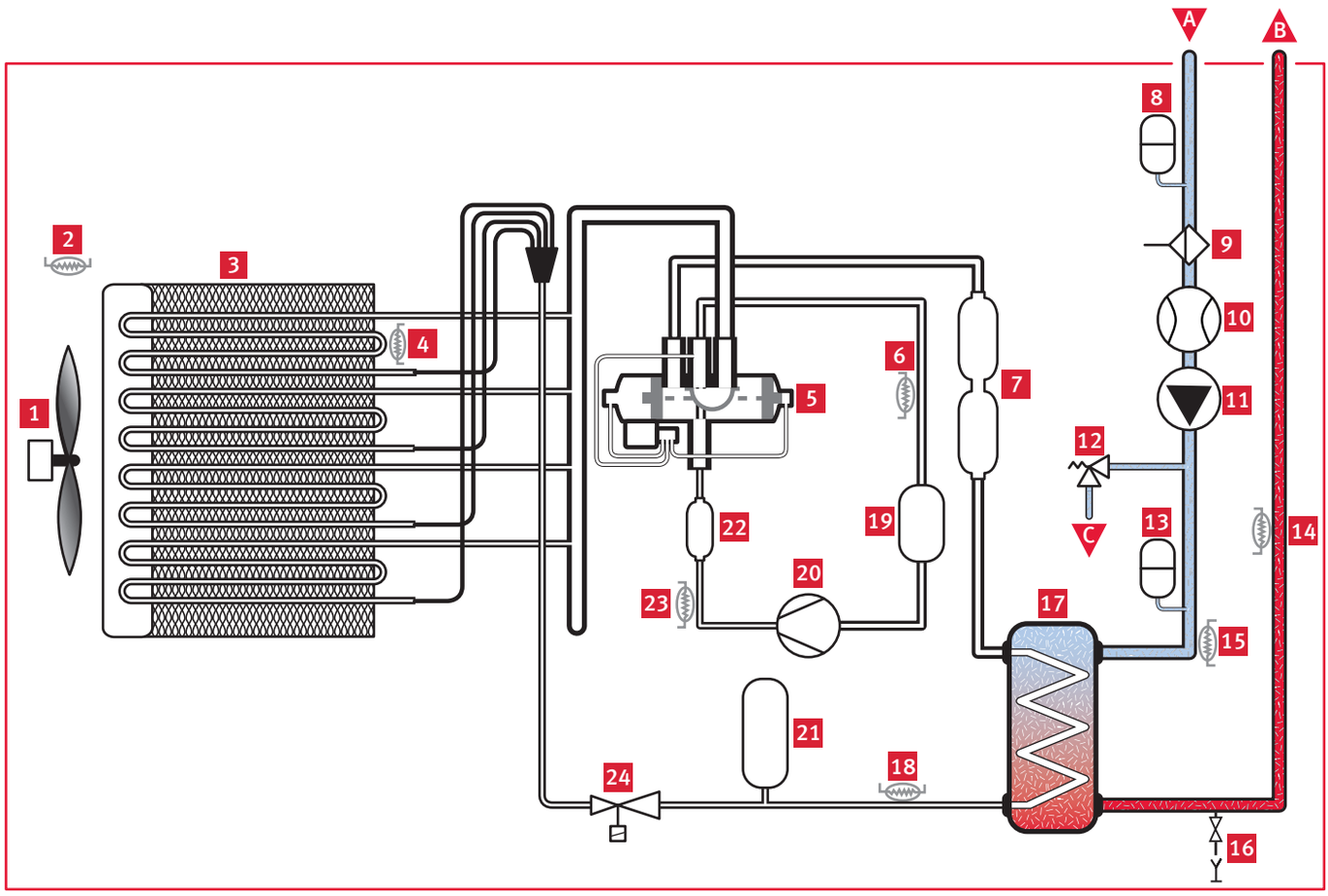


Key
A Water temperature
B Air temperature

2.4.5 Principle for controlling the heat pump

Control using the Glow Worm control unit. This configuration is recommended in the case of an installation with the Glow Worm hydraulic unit. The Glow Worm system of active management of the heat pump using dry 12V contacts. The command unit is used only as a configuration tool.

2.5 Hydraulic and refrigerant schematic



Key

1 Fan (1 fan for the 7 kW model, 2 fans for the 12 and 14 kW models)
2 Outside air temperature sensor
3 Finned heat exchanger
4 Finned heat exchanger temperature sensor
5 4-way cycle inversion gate
6 Temperature sensor for compressor suction
7 Silencer
8 Expansion vessel (in this position for the 7 kW model)
9 Automatic purge vent for the heat pump circuit
10 Water flow detector for the heat pump circuit
11 Circulator for the heat pump circuit
12 Safety valve for the heat pump circuit
13 Expansion vessel (in this position for the 12 and 14 kW models)
14 Flow temperature sensor for the heat pump
15 Return temperature sensor for the heat pump
16 Draining valve for the heat pump circuit
17 Plate to plate exchanger
18 Pre-expansion temperature sensor
19 Anti-slugging bottle
20 Rotary compressor
21 Liquid tank
22 Silencer
23 Compressor discharge temperature sensor
24 Electronic expansion unit

A Heat pump return
B Heat pump flow
C Evacuation from the safety valve to a container for recovering glycol water

3 Safety instructions and regulations

3.1 Safety instructions

Incorrect installation can cause electric shock or appliance damage.

- Never disable security devices and do not try to adjust them.
- Be sure to consider the following handling techniques and precautions:
- Grip the appliance at its base
- Use safety clothing where appropriate, e.g. gloves, safety footwear.
- Ensure safe lifting techniques are used:
- Keep back straight.
- Avoid twisting at the waist.
- Avoid upper body/top heavy bending.
- Always grip using the palm of the hand.
- Use designated hand holds.
- Keep load as close to body as possible.
- Always use assistance if required.
- Under no circumstances must the user interfere with or adjust sealed parts.
- When assembling the connections, correctly position the seals to avoid any leakage of water.
- This appliance contains metal parts (components) and care should be taken when handling and cleaning, with particular regard to edges.

The basic safety instructions must be followed before attempting to maintain or replace spare parts:

- Stop the appliance.
- Electrically isolate the appliance from the power supply.
- Hydraulically isolate the appliance using the isolation valves if provided.
- Should you need to replace hydraulic components, drain the appliance.
- Protect all the electrical components from water while working on the appliance.
- Use only original spare parts.
- Use only new O-rings and gaskets.
- After having completed work on water carrying components, check for their tightness.
- When work on the appliance is completed, perform an operational test and check for safety.

R410A Refrigerant

Important: any action carried out on the refrigerant circuit must be performed by qualified personnel.

- Use only R410A refrigerant.
- The tools used for charging, for measuring pressure, for creating a vacuum and for the recovery of the fluid must be compatible with and employed solely for R410A.
- Welding is to be carried out with nitrogen and the circuit's air-tightness is to be tested under pressure, with nitrogen.
- Refilling must be effected during the liquid phase.
- In case of leakage, do not add fluid: drain the remaining fluid from the circuit and eliminate, in accordance with the applicable regulations.

Evacuating refrigerant into the atmosphere is prohibited. The refrigerant must be properly recovered in a container suitable for recycling.

- Create a vacuum in the circuit with a maximum pressure of 30 mbar (static pressure).
- Bleed the circuit before any welding work.

Do not smoke or light flames during the emptying and filling of the circuit. The gases emitted during the combustion of the refrigerant are flammable.

3.2 Regulations

3.2.1 Statutory requirements

IMPORTANT

Where no British Standards exists, materials and equipment should be fit for their purpose and of suitable quality and workmanship.

The installation of this appliance must be carried out by a competent person in accordance the rules in force in the countries of destination.

Manufacturer's instructions must not be taken as overriding statutory requirements.

Standards

On installing and commissioning the appliance you must adhere to the technical rules, standards and provisions in effect at the time.

Reminder of existing regulatory acts

- EC regulation No. 20372000 from the 29th of June 2000 This European regulation repeals regulation No. 3093/94 and presents the elimination schedules of CFC and HCFC. It also deals with the collection of refrigerants, system leaks, particularly systems containing more than 3 kg of CFC or HCFC, as well as the minimum level of qualification required by the technicians.
- EC regulation No. 0842/2006 from the 17th of May 2006 regarding the containment, use, collection and disposal of the fluorinated greenhouse gases, the labelling and elimination of the products and equipment containing these gases, the restriction of use and banning of certain products from the market, as well as the training and certification of personnel and companies operating in the activities targeted by this regulation: refrigeration, air-conditioning, heat pumps and fire protection systems containing greenhouse gases.

3.2.2 Other regulations

Control of Substances Hazardous to Health

Under Section 6 of The Health and Safety at Work Act 1974, we are required to provide information on substances hazardous to health. The adhesives and sealants used in this appliance are cured and give no known hazard in this state.

The refrigerant used in this appliance is R410a the use of which is strictly controlled by F Gas regulation EN842/2006.

4 Recycling

The recycling of the packaging must be carried out by the qualified professional who installed the appliance. The recycling of any refrigerant fluid must be carried out by a suitably qualified refrigerant engineer.

4.1 Appliance

Most of the appliance is made of recyclable materials.

This symbol indicates that this appliance must not be disposed of with household waste, that it should be selectively collected for energy recovery, reuse or recycling.

- Take the appliance to an appropriate collection point for the treatment, evaluation and recycling. The collection point must accept appliances containing refrigerant fluids for their recovery via recycling either within the elimination centre or by an authorised service provider.

By complying with this directive, you will contribute to the preservation of natural resources and the protection of human health.

4.2 Packaging

The competent person who installed the appliance must:

- Sort the waste so as to separate those which can be recycled (cardboard, plastics...) from those that cannot.
- Dispose of the waste in compliance with regulations in force.

4.3 Refrigerant

The appliance contains R410A refrigerant. The refrigerant should only be handled by an approved specialist. Avoid all contact with skin and eyes.

R410A fluorinated greenhouse gases are contained within a fully sealed system (Kyoto Protocol PES 1975).

Under normal use and conditions, the refrigerant is not dangerous.

Degassing refrigerant fluid into the atmosphere is prohibited, except when necessary to ensure personal safety.

Prior to disposing of the appliance, the refrigerant must be properly recovered in a container suitable for recycling.

The personnel approved for this recuperation must have an appropriate certification according to the regulations in force.

5 Guarantee / Responsibility

5.1 Detailed guarantee

Thank you for installing a new Glow-worm appliance in your home.

Glow-worm appliances are manufactured to the very highest standard so we are pleased to offer our customers a Comprehensive Guarantee.

This product is guaranteed for 24 months from the date of installation or 30 months from the date of manufacture, whichever is the shorter, for parts and labour.

The second year of the parts guarantee, from the beginning of the 13th month onwards after installation or manufacture, is conditional upon the heat pump having been serviced by a competent person approved at the time by the Health and Safety Executive, in accordance with the manufacturer's recommendations. We strongly recommend regular servicing of your appliance, but where the condition is not met, any chargeable spare parts or components issued within the applicable guarantee period still benefit from a 12 month warranty from the date of issue by the manufacturer.

5.2 Appliance use / manufacturer responsibility

The guarantee detailed above is applicable on the condition that:

- The appliance is installed by a competent person in accordance with installation instructions.
- The appliance is used for normal domestic purposes and in accordance with the manufacturer's operating and maintenance instructions.
- The appliance is serviced, maintained, by a competent person.
- The repair or replacement of parts during the guarantee period does not have the effect of extending the period.

The manufacturer has no responsibility whatsoever for any damage resulting from:

- Any defects or damage resulting from incorrect or poor installation, inadequate servicing, or maladjustment.
- Any defects in the system to which the appliance is connected.
- Tout défaut résultant d'une protection antigel non adaptée.
- Any deterioration or maladjustment following changes in the nature or pressure of the water used, or a change in the characteristics of the electrical supply voltage.

• For further details, refer to your Terms and Conditions.

This appliance is intended to be installed only within the designated countries displayed on the type plate.

This appliance is not designed to be used by persons (including children) with physical, sensory or mental restrictions, or a lack of experience or knowledge. To ensure the safety of these persons, they must seek help from and be guided by persons who are competent to explain the usage of this appliance.

• Make sure that children do not play with this appliance.

TECHNICAL DATA

This technical data is valid for a new appliance with its own heat exchangers.

6 Envirosorb

Description	Unit	7	12	14
Min. operating outside temperature (in heating)	°C	-20	-20	-20
Max. operating outside temperature (in heating)	°C	30	30	30
Specifications, with radiators				
(flow : 45°C, return : 40°C, outside dry temperature (wet) 7 (6)°C)				
Heating output	kW	7.4	12.95	14
Power input	kW	2.34	4.3	4.36
Rated electrical current	A	10	18.7	19
COP* A7(6) W45-40		3.16	3.01	3.21
Specifications, with underfloor heating				
(flow : 35°C, return : 30°C, outside dry temperature (wet) : 7 (6)°C)				
Heating output	kW	7.2	11.9	14.5
Power input	kW	1.84	3.04	3.57
Rated electrical current	A	8	13.2	15.6
COP* A7(6) W35-30		**3.91**	**3.91**	**4.06**
Refrigerant circuit				
Type of refrigerant				
Quantity of refrigerant	kg	1.81	2.485	3.385
Type of compressor		Rotary		
Type of oil		Polyolester		
Type of regulator		Electronic		
Fan speed	rpm	1000	805	1050
Maximum operating pressure (PS)	bar	45	45	45
	Pa	45×10^5	45×10^5	45×10^5
Heat pump circuit				
Max. supply pressure.	bar	3	3	3
	Pa	3×10^5	3×10^5	3×10^5
Min. supply pressure	bar	0.5	0.5	0.5
	Pa	50×10^3	50×10^3	50×10^3
Nominal water flow rate in heating mode	l/h	1200	2100	2500
Flow rate detection threshold	l/h	500	500	500
Min. volume of the installation	l	28	42	49
Max volume of heat pump circuit, without auxiliary tank, for a water outlet temperature of 35°C	l	65	95	95
Minimum flow temperature setting (in heating)	°C	20	20	20
Maximum flow temperature setting (in heating)	°C	60	60	60
Volume of water in the heat pump	l	1.2	2.3	2.3

Description	Unit	7	12	14
Electrical				
Supply voltage/frequency	V/Hz	1/N/PE 230V 50Hz		
Fuse		15 type B	25 type D	25 type D
Maximum absorbed power (P max)	kW	2.7	5.1	5.1
Maximum absorbed current (I max)	A	14	23	20
Index of electrical protection		IPX4	IPX4	IPX4
Electrical classification		1	1	1

Description	Unit	7	12	14
Dimensions				
Height	mm	821	1363	1363
Width	mm	908	908	908
Depth	mm	326	326	326
Ø Water circuit connections	"	1	1	1
Nett total weight	kg	71	105	130
Sound power level : overall exterior noise (according to EN 12102 and EN ISO 9614-1)	dBA	64	67	68

* **Coefficient Of Performance (according to EN 14511)**
** **Energy Efficiency Ratio (according to EN 14511)**

Fluorinated greenhouse gases as identified in the Kyoto protocol, are contained within a fully sealed system.

INSTALLATION

All the drawings dimensions are shown in mm.

7 Appliance location

7.1 Heat pump location

7.1.1 Instructions

- Before choosing a site for the appliance, carefully read the safety warnings and installation manual.
- Ensure there is sufficient space available for the appliance, taking care that minimum clearances are adhered to ensure that the connections to the water, gas and flue can be accessed and inspected (see chapter Clearances).
- Observe current regulations.
- Install the appliance outside.
- Do not install the appliance:

- near a heat source,
- near flammable materials,
- near the ventilation points of adjacent buildings
- beneath deciduous trees.

- Take into account the following when installing the heat pump:

- prevailing winds,
- the noise generated by the fan and the compressor
- the visual impact on the surrounding neighbourhood.

- Avoid areas exposed to strong winds directed against the appliance's air outlet.
- Set the appliance on one of the following supports:

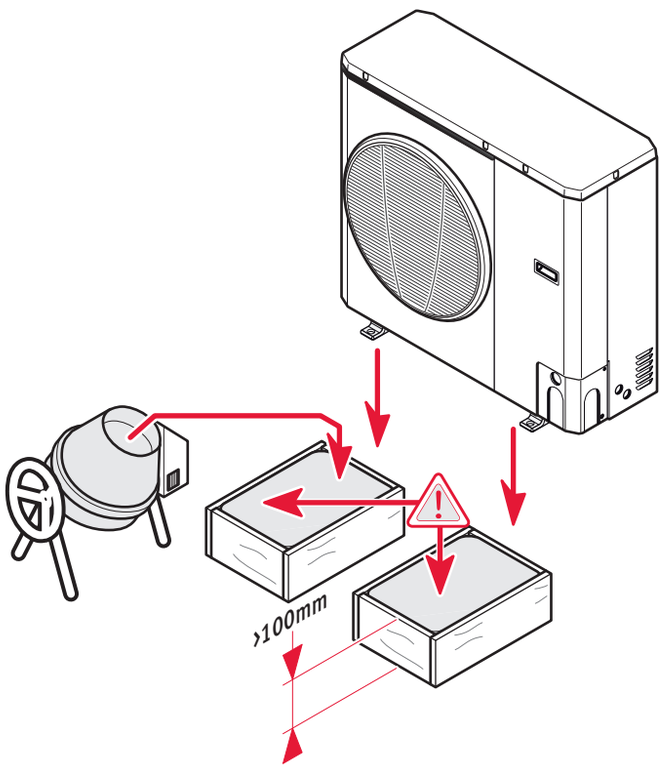
- concrete slabs,
- crane beam,
- concrete blocks.

- Do not install the fan facing the nearby windows. If necessary, install a noise barrier.
- To avoid transmission of vibrations to the surrounding buildings:

- use hoses for water connections,
- install anti-vibration pads.

- Ensure that the appliance is protected from water and from snow.
- Do not expose the heat pump to corrosive or dusty atmospheres (near to dirt roads, for example).
- Do not place near to stale air extraction fans.
- Allow room for electricity cables (high and low voltage).
- Explain these requirements to the appliance user.

7.1.2 Discharge of condensates

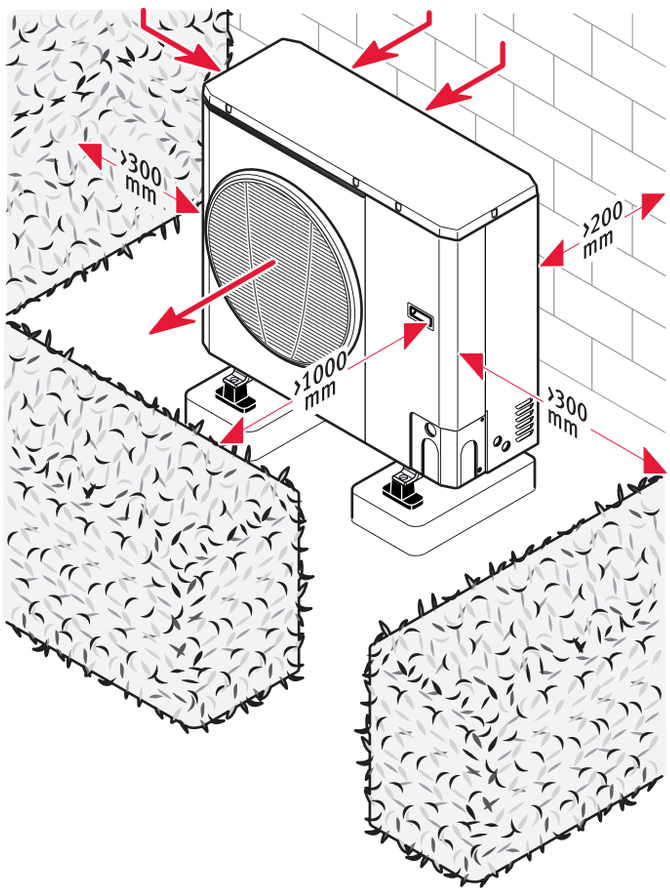


- Make allowance for a condensate discharge circuit.

7.1.3 Regulations

- Please ensure that all correct permissions have been obtained from the local planning office, prior to siting the appliance.

7.2 Clearances



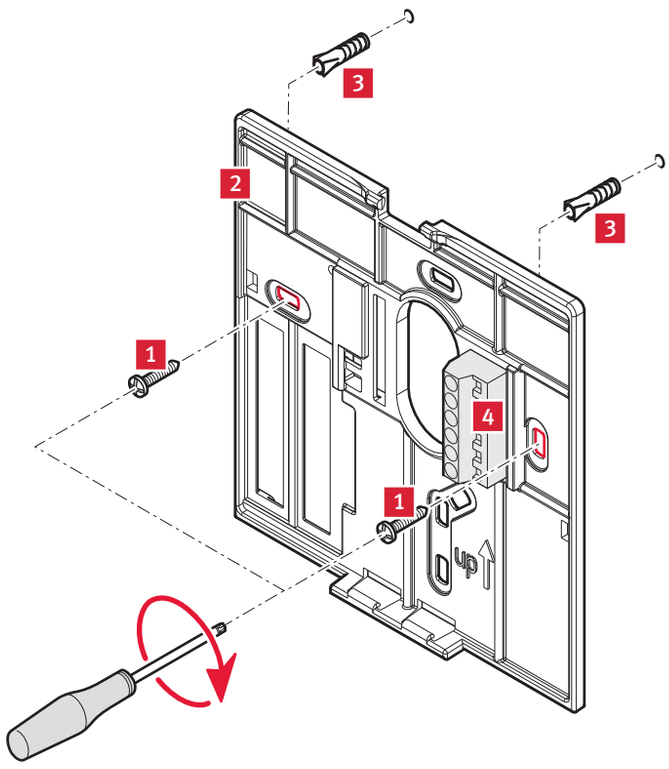
- Respect the minimum dimensions shown in the drawing above in order to ensure a correct air flow and to facilitate maintenance operations.
- Make sure that the available space is sufficient for the installation of the water system piping.

7.3 Command unit location

- Install the command unit in a room protected from frost

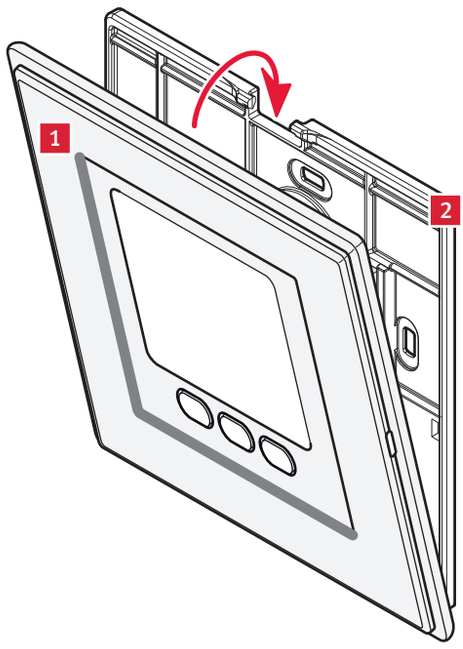
8 Installing the command unit

- Make sure that the materials used for performing the installation are compatible with those of the appliance.
- Determine the place of assembly. See the chapter "Location".



Key
1 Mounting screw
2 Wall support
3 Rawlplug
4 Electric terminal block

- Separate the command unit from the wall support (3).
- Pass the electrical connection cables through the hole on the left of the connector and connect them onto terminal (4). See the chapter "Installation examples".
- Position the support (3) on a wall.
- Drill holes for the fixing screws in accordance with the 2 fixing holes on the wall support (3).
- Insert the rawlplugs (2) in the holes.
- Fix the support (3) with the fixing screws (supplied).

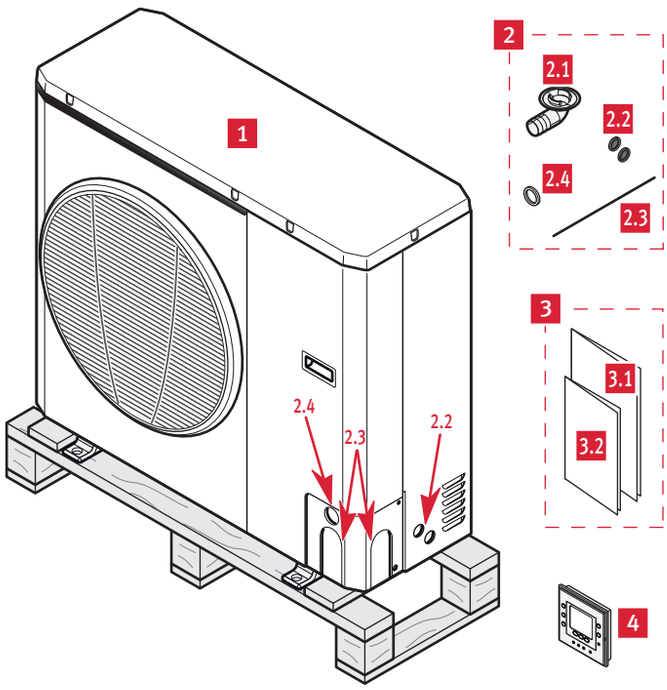


Key
1 Command unit
2 Wall support

- Assemble the command unit (1) on the wall support (2).

9 Installing the heat pump

9.1 Scope of delivery



Key

1	Heat pump	(x1)
2	Packet of accessories	(x1)
2.1	Condensate connection	(x1)
2.2	Leak-tight seal for passing mains and low-voltage cables	(x2)

2.3	Protection against the sharp edges of the sheet metal for the cable passage (if necessary)	(x1)
2.4	Leak-tight seal for the cable passage (if necessary)	(x1)
3	Packet of documents	(x1)
3.1	Installation manual	(x1)
3.2	Instructions for use	(x1)
4	Command unit	(x1)

- Check the contents of the package.

9.2 Recommendations before installation

9.2.1 Design of the heating circuit

The heat emitters may be either low temperature (underfloor heating, etc.), or medium temperature (warm radiator, etc.).

We recommend that you provide sufficient flow for the temperature difference between flow and return to be equal to 7 C for a underfloor heating and 15 C for radiators.

The route of the piping will be designed to take all measures necessary to avoid air pockets and facilitate the permanent venting of the installation. Vents must be provided at each high point of the pipes, and on all the radiators.

Always leave a radiator open.

We recommend installing a drainage valve at the lowest point of the installation.

In the case of the use of thermostatic valves, it is imperative not to fit to all radiators, taking care to fit these valves in rooms with high input and never in rooms where the room thermostats are installed.

- If it is an old installation, it is essential to rinse the radiator circuit before installing the new appliance and to add an anti-sludge filter.
- If a component of the system is not to be installed immediately, protect the various connections so plaster and paint cannot compromise the seal on the subsequent connection.

- Install the following components on the heating circuit return:
  - a heating filter,
  - 2 quarter-turn shut-off valves (1 each side of the filter),
  - an air separator (if necessary),
  - an anti-sludge filter (if necessary).

- In the case of a underfloor heating, install a security device to prevent overheating, with manual reset (55°C) on the heating circuit flow. Connect the overheating security device to the glycol pump of the heat pump.

9.2.2 Design of the heat pump circuit

Installation pipework must be designed and installed to ensure venting of air from the system is possible.

Ensure that the water flow rate of the water circuit corresponds to the nominal water flow rate of the appliance (see ¨Technical data¨ chapter).

- Install the following components on the rear section of the heat pump:
  - a filter,
  - a ¼ shut –off valve on each side of the filter,
  - a drain valve,
  - an air separator (if necessary)
  - a sludge deposit (if necessary).

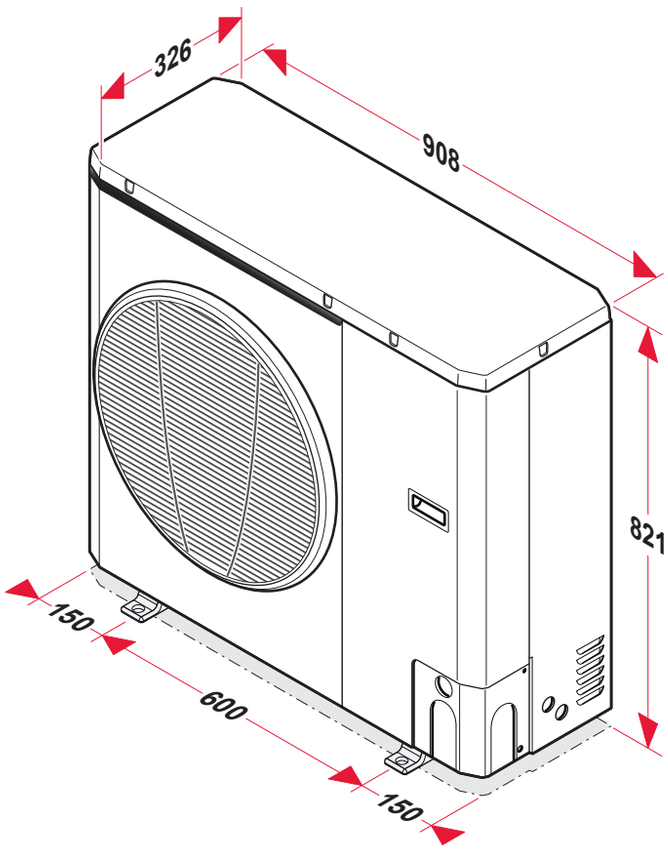
- Install a ¼ turn shutoff valve in the flow of the heat pump.

In order to avoid the transmission of vibrations to surrounding structures, use flexible hoses for the hydraulic connections at least 1 metre from the heat pump.

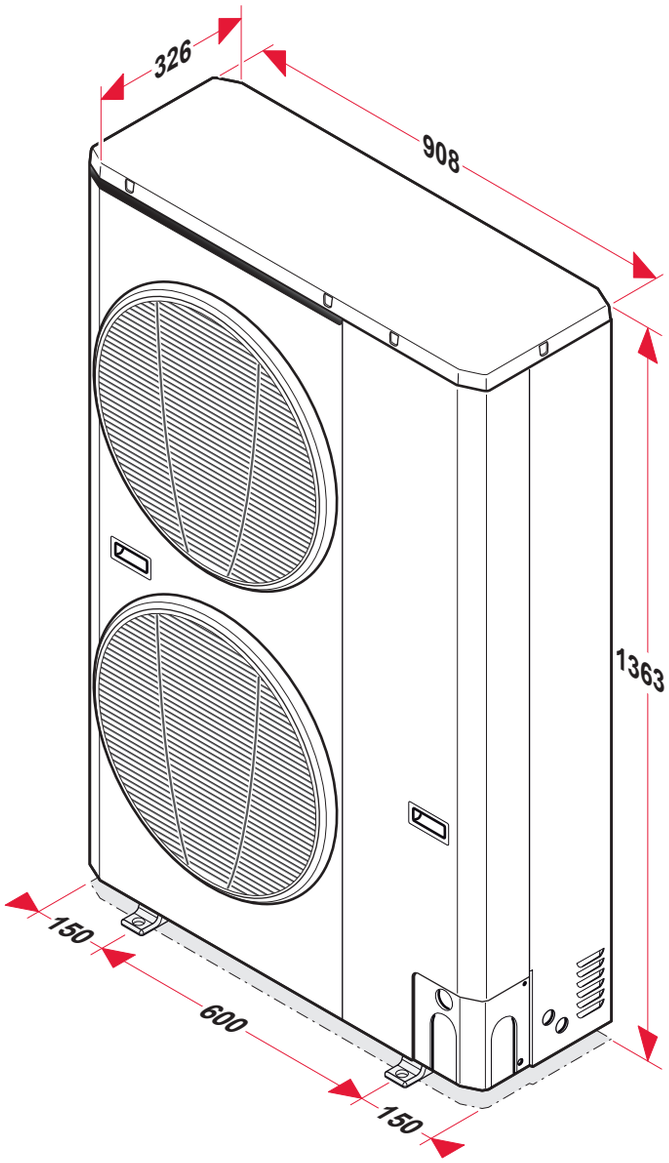
Insulate the pipes with a UV- and hightemperature-resistant insulation.

9.3 Dimensions

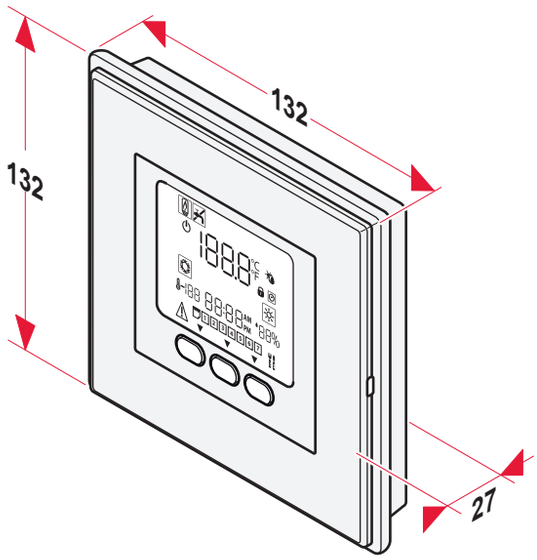
9.3.1 Envirosorb 7



9.3.2 Envirosorb 12, Envirosorb 14



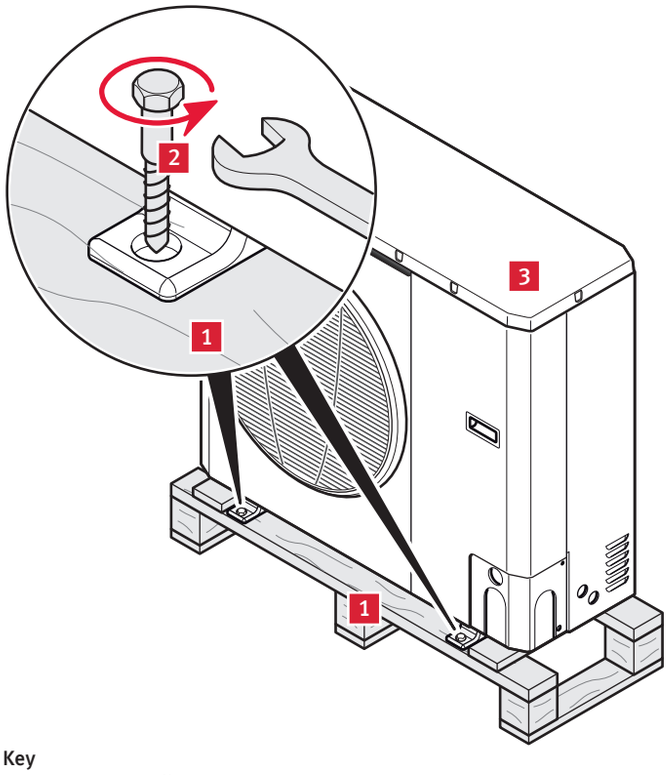
9.3.3 Command unit



9.4 Mounting

9.4.1 Unpacking the appliance

- Carefully remove the packaging and protections without damaging the parts of the appliance.

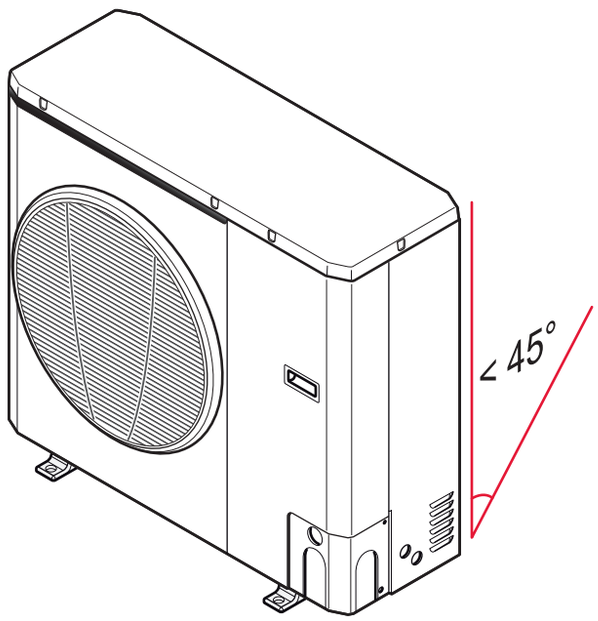


Key
1 Transport pallet
2 Attachment screws
3 Heat pump

- Remove the screws from the transport pallet at the front and rear of the unit.

9.4.2 Transportation of the appliance

With regards to the Manual Handling Operations, 1992 Regulations, the following lift operation exceeds the recommended weight for a one man lift.



Warning! Two people at minimum are necessary to move the appliance.

Warning! Do not lean the appliance more than 45° during transportation as this may damage the refrigeration circuit which could lead to a complete system failure.

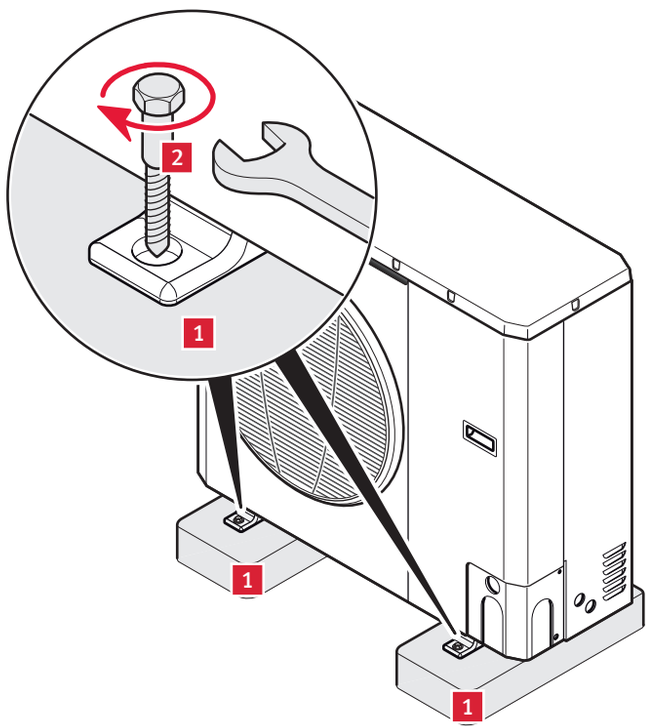
We recommend that you move the appliance with a trolley or with suitable handling equipment.

If you move the appliance with a two-wheeled trolley, respect the following regulations:

- Only lift the appliance from the back.
- Attach the appliance to the two-wheeled trolley with a strap.
- Protect surfaces in contact with the trolley to avoid scratching or damaging the appliance.
- Use a sufficiently solid ramp to lower the appliance from the pallet.
- Move the appliance to the installation site.

9.5 Positioning the appliance

With regards to the Manual Handling Operations, 1992 Regulations, the following lift operation exceeds the recommended weight for a one man lift.

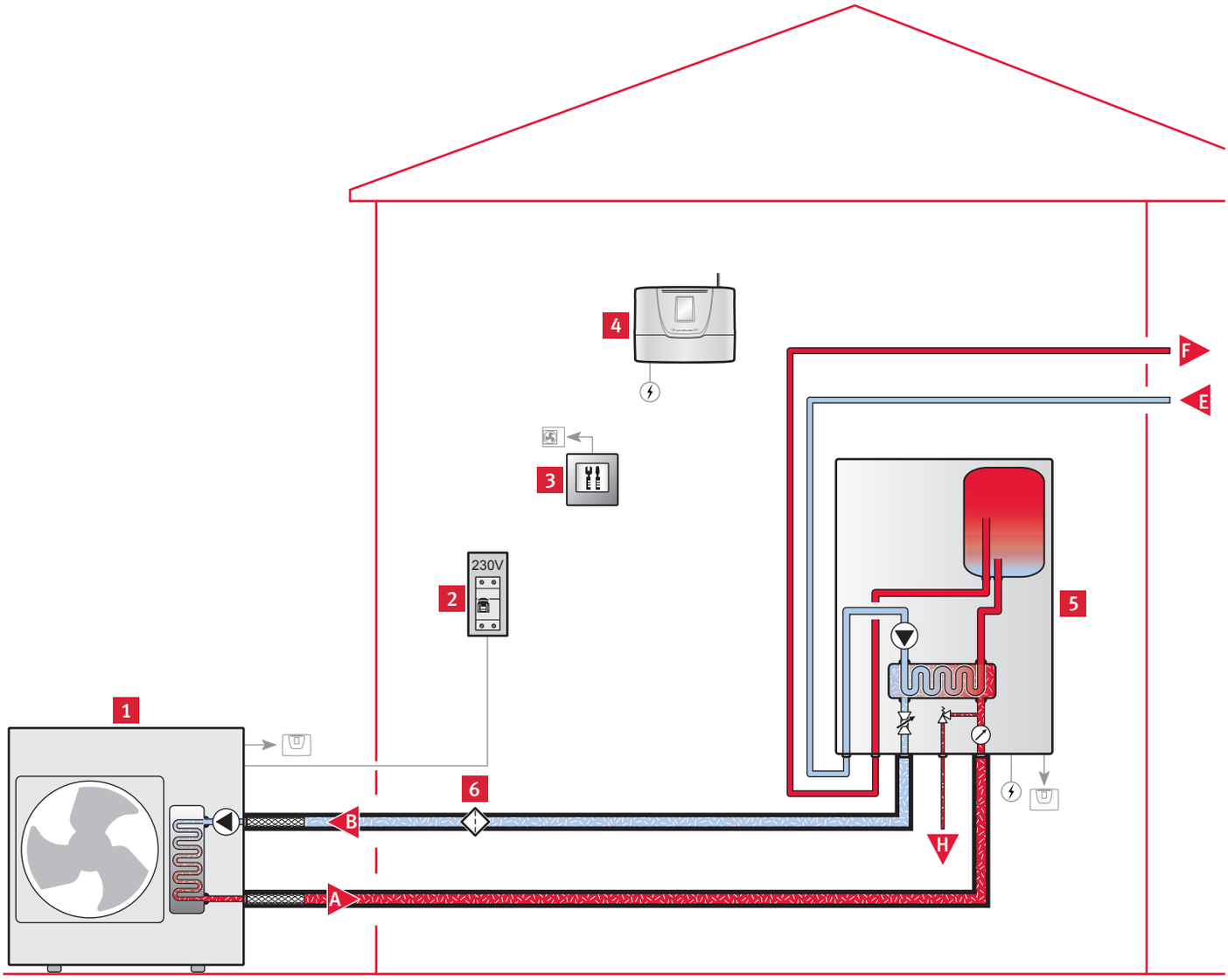


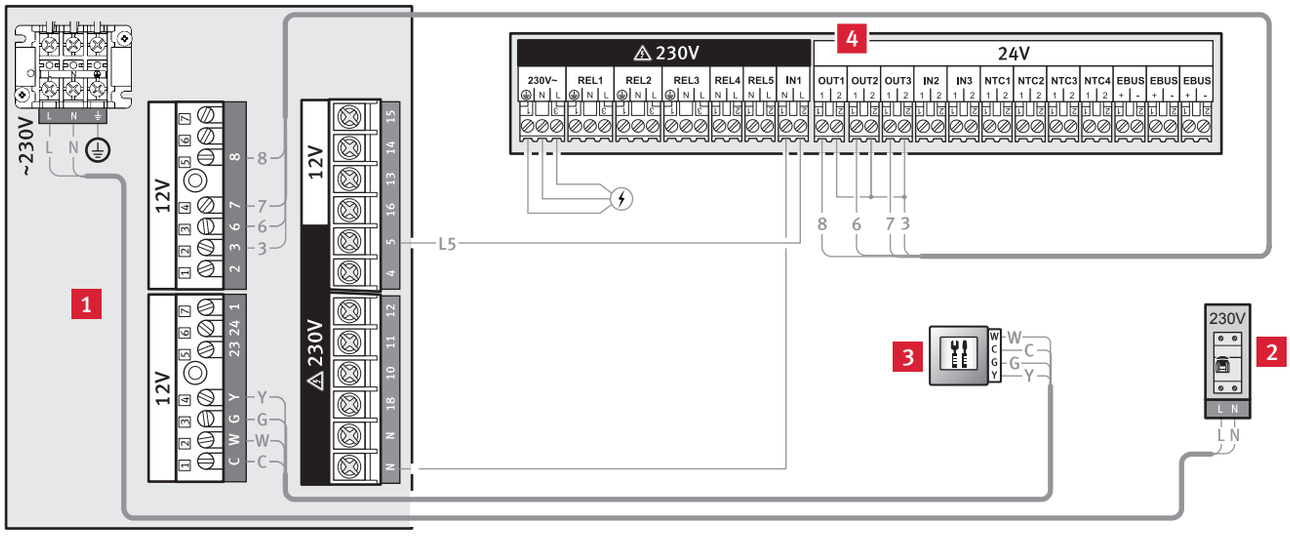
Key
1 Concrete block
2 Mounting screw

- Fix the heat pump onto the concrete blocks (1) using the fixing screws.

10 Examples of installation

10.1 Installation with hydraulic module, control by control unit





Key
1 Heat pump
2 Power supply and electrical protection for the heat pump (*)
3 Command unit for the heat pump
4 Glow Worm control unit (*)
5 Glow Worm hydraulic module (*)
6 Anti-sludge filter (*)
A Flow heat pump circuit
B Return heat pump circuit
E Return heating circuit
F Flow heating circuit
H Discharge from the safety valve to a container for recovering glycol water solution
(*) Not delivered with the appliance

Application conditions

- Command unit used as configuration tool (see the chapter "Location of the appliance"),
- Installation with underfloor heating (‹ 53°C) or low-temperature radiator (‹60°C),

For the dimensioning of the cables and the electrical protection on the appliances, see the chapter "Electrical connection".

	Envirosorb		
	7	12	14
Minimum volume of the installation (l)	28	42	49
Max volume of heat pump circuit, without additional vessel, for a water outlet temperature of 35°C (l)	65	95	95
Volume of water in the heat pump	1.2	2.3	2.3
Nominal water flow rate (m³/h)	1.2	2.1	2.5

Adjusting the heat pump's command unit

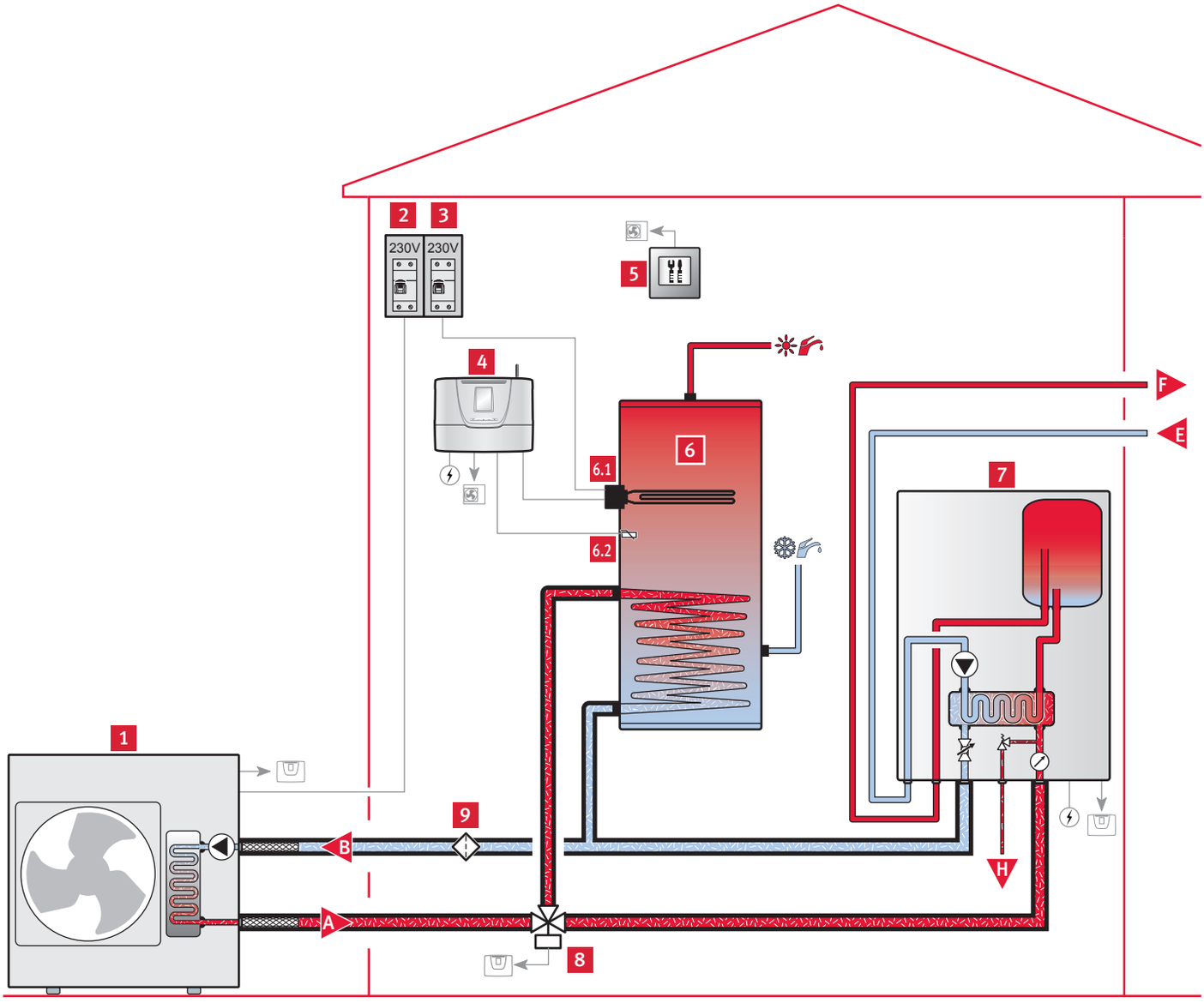
- To find out the description of each function, see the chapter "Specific adjustment".

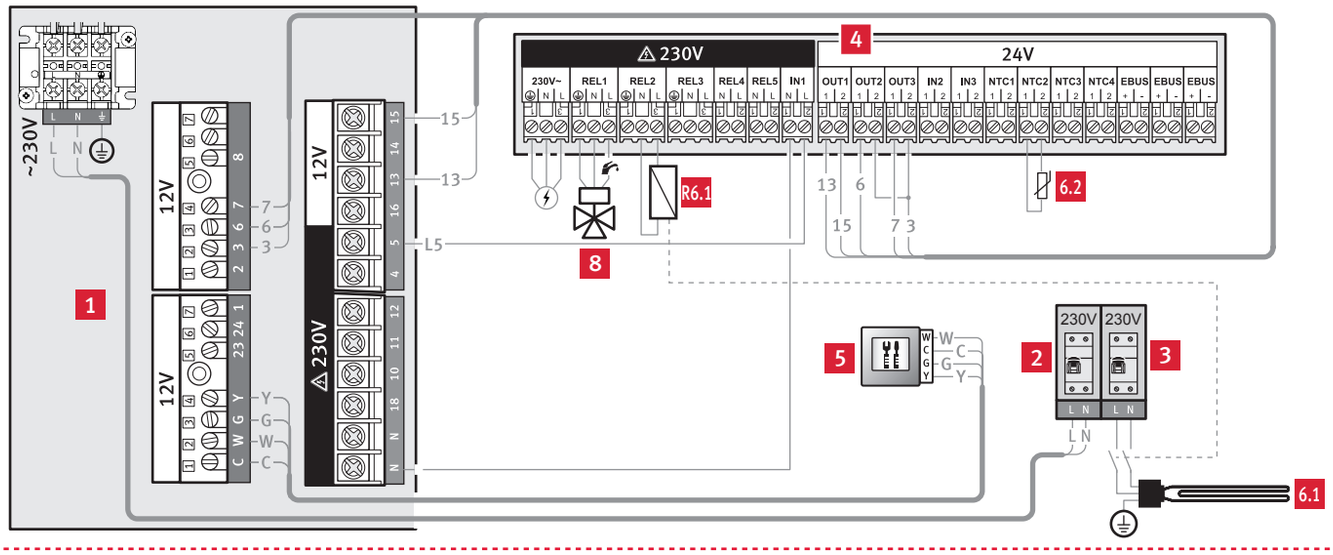
The setting of codes 112, 114, 117, 122, 123, 124, 125, 126 must be identical on the heat pump command unit and the systempro control unit.

Menu	Name of the function	Value	Factory setting
100	Type of system regulation	2	2
101	Configuration of the command unit	0	0
112	External calibrated adjustment graphs	7 - 12 (*)	8
114	ECO heating mode	1 - 20°C (*)	5°C
117	External calibrated adjustment graphs for cooling	0 (*)	2
122	Maximum reference exterior temperature	24 - 46°C (*)	40°C
123	Exterior temperature from which the heat pump stops in cooling mode	0 - 30°C (*)	22°C
124	Minimum temperature of water in the installation in cooling mode	4 - 20°C (*)	4°C
125	Maximum temperature of water in the installation in cooling mode	4 - 20°C (*)	12°C
126	Configurations exterior sensor	2	2
146	Configuration for stopping the heat pump if control by S1 contact input	1	2
147	Configuration of the output between terminal channels 5 and N	1	1
148	Limit exterior temperature (T0)	-20°C	-20°C
155	Functioning of main circulator	0	1

(*) Refer to the system installation manual for pairing the settings of these codes.

10.2 Installation with hydraulic module, DHW tank, control by control unit





Key
1 Heat pump
2 Power supply and electrical protection for the heat pump (*)
3 Power supply and electrical protection for the booster heating (*)
4 Glow Worm control unit (*)
5 Command unit for the heat pump
6 Domestic hot water tank (option) (*)
6.1 Electrical booster element
6.2 Temperature sensor for hot water tank
7 Glow Worm hydraulic module (*)
8 3-way valve (with return spring) for the domestic hot water tank (*)
9 Anti-sludge filter (*)
R6.1 Additional electrical heater relay
A Flow heat pump circuit
B Return heat pump circuit
E Return heating circuit
F Flow heating circuit
H Discharge from the safety valve to a container for recovering glycol water solution
(*) Not delivered with the appliance

If the "Domestic hot water tank" option is chosen, it must be connected electrically to the systempro control unit (see the installation manual for the system).

Application conditions

- Command unit used as configuration tool (see the chapter "Location of the appliance"),
- Installation with underfloor heating (‹ 53°C) or low-temperature radiator (‹60°C),
- Control unit for the system not included.

For the dimensioning of the cables and the electrical protection on the appliances, see the chapter "Electrical connection".

	Envirosorb		
	7	12	14
Minimum volume of the installation (l)	28	42	49
Max volume of heat pump circuit, without additional vessel, for a water outlet temperature of 35°C (l)	65	95	95
Volume of water in the heat pump	1.2	2.3	2.3
Nominal water flow rate (m³/h)	1.2	2.1	2.5

Adjusting the heat pump's command unit

- To find out the description of each function, see the chapter "Specific adjustment".

The setting of codes 112, 117, 122, 123, 124, 125, 126 must be identical on the heat pump command unit and the systempro control unit.

Menu	Name of the function	Value	Factory setting
100	Type of system regulation	2	2
101	Configuration of the command unit	0	0
112	External calibrated adjustment graphs	7 - 12 (*)	8
117	External calibrated adjustment graphs for cooling	0 (*)	2
122	Maximum reference exterior temperature	24 - 46°C (*)	40°C
123	Exterior temperature from which the heat pump stops in cooling mode	0 - 30°C (*)	22°C
124	Minimum temperature of water in the installation in cooling mode	4 - 20°C (*)	4°C
125	Maximum temperature of water in the installation in cooling mode	4 - 20°C (*)	12°C
126	Configurations exterior sensor	2	2
146	Configuration for stopping the heat pump if control by S1 contact input	1	2
147	Configuration of the output between terminal channels 5 and N	1	1
148	Limit exterior temperature (T0)	-20°C	-20°C
153	Mode of activation hot-water demand contact S5	1	1
155	Functioning of main circulator	0	1

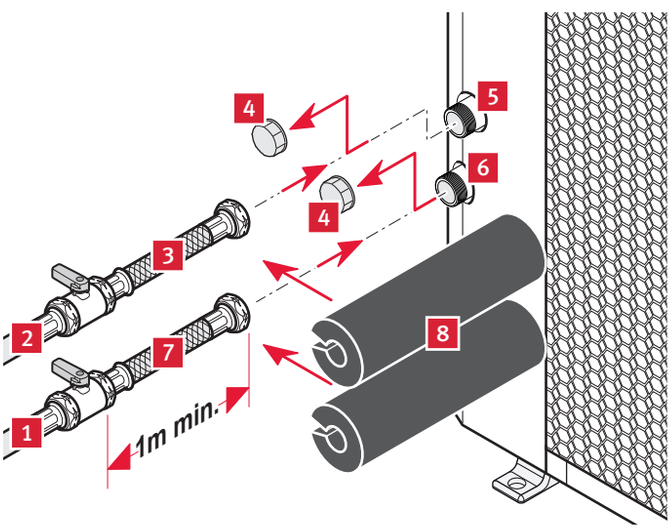
(*) Refer to the system installation manual for pairing the settings of these codes.

11 Hydraulic connection

- Take care to clean the pipes before assembly removing any debris or burrs. Grease and oils may need to be removed they are not possible to remove by cleansing and flushing. Foreign bodies in the system may enter the appliance and interrupt its operation.
- Do not use any solvent products, due to the risk of damaging the circuit.
- Only use original seals supplied with the appliance.

Make sure that mechanical connections are not overtightened.

Insulate the pipes (between the heat pump and the installation including those underground) with an UV- and high-temperature-resistant insulation.



key
1 Heat pump flow circuit ¼ turn shut-off valve in the direction of the building (not included) (*)
2 Return circuit ¼ turn shut-off valve in the direction of the heat pump (not included) (*)
3 Return circuit hose in the direction of the heat pump (not supplied)
4 Cap
5 Return connection (Ø1 ") to the heat pump
6 Flow heat pump connection (Ø1 ") to the building
7 Flow heat pump circuit hose in the direction of the building (not supplied))
8 Insulation (not supplied)
(*) To be installed as close as possible to the heat pump

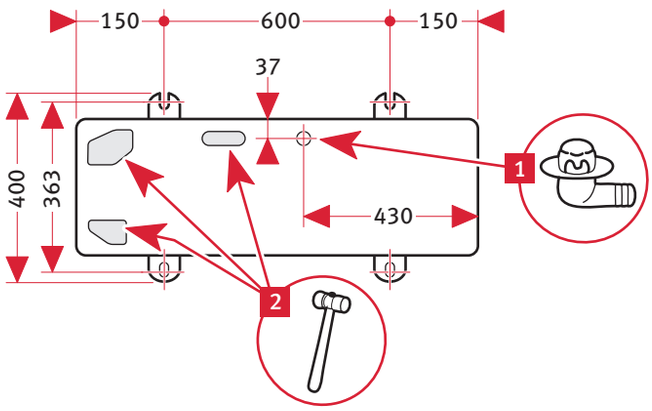
- Remove the protection caps (4) located on the connections.
- Comply with the values given in the table below when making the hydraulic connections of the heat pump circuit.

Max linear distance (without elbows or additional pressure drops)	Tubes to be installed
≤ 20 m	¾" or Ø internal = 20 mm
≤ 30 m	1" or Ø internal = 26 mm

- Connect a hose and a shut-off valve to the return connection to the heat pump.
- Connect a hose and a shut-off valve to the flow heat pump connection in the direction of the building.
- Install the filter on the heat pump return pipe. Install it between 2 shut-off valves in order to be able to remove if from the circuit and clean it periodically.
- Insulate all exposed pipework.

12 Discharge of condensate

When the appliance is operational, it will produce condensation that needs to be drained off.



Key
1 Evacuation bend for condensates
2 Holes pre-cut in the base of the heat pump

- Install the bend (1) delivered with the appliance and connect it to an evacuation pipe with an internal diameter of 16 mm (not supplied).
- Make sure that the condensates evacuation pipe does not freeze.

The discharge capacity of the condensate increases if the pre-cut holes (2) present in the base are open. Open the pre-cut holes using a hammer.

If you choose to open the pre-cut holes (2) present in the base, take the necessary precautions to recover the condensates and stop them freezing.

13 Electrical connection

Incorrect installation can cause electric shock or appliance damage. The electrical connection of the appliance must be made only by a qualified engineer.

The appliance must be connected directly to an accessible, fixed, switched, electrical outlet.

The manufacturer declines any responsibility for damages to persons or others caused by the incorrect installation of the appliance earthing. This includes failure to comply with current standards.

Electrical components have been tested to meet the equivalent requirements of BSEN 7671 and the BEAB regulations.

The cables connecting the installation's electrical panel and the heat pump must be:
- Suitable for a fixed installation.

- weather resistant.
- equipped with wires adapted to appliance's power rating.

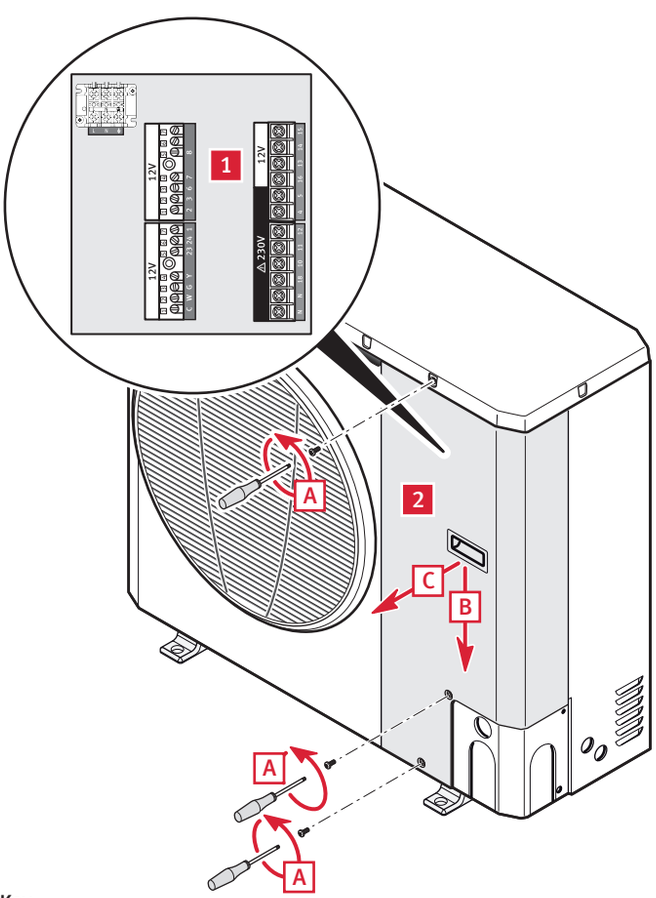
- Connect the heat pump to an electrical panel via an independent protection system (differential breaker with at least 3 mm between each contact). See the table below.

Additional protection may be required during installation to ensure buffer category II.

The power supply cut-off devices must allow complete disconnection of the power under the conditions required for over-voltage category III.

Description	Unit	7	12	14
Electricity supply	V-ph-Hz	230 - 1 - 50		
Acceptable voltage range	V	207/254		
Maximum power absorbed	kW	2.7	5.1	5.1
Maximum current	A	14	23	20
Power fuse (gL)	A	15 Type B	25 Type D	25 Type D
Maximum current in glycol pump	A	2		

13.1 Access to main board

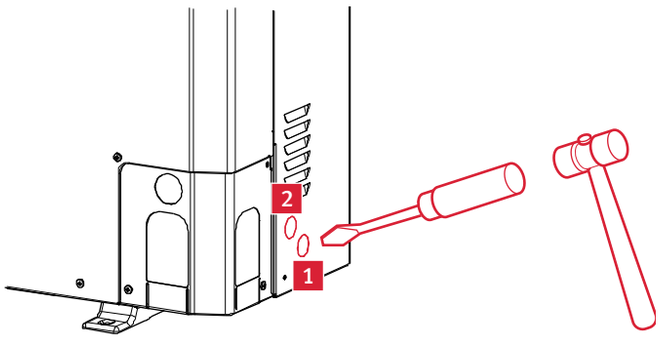


Key
1 Terminal blocks for 230 V and 12 V connection
2 Front panel

- Remove the fastening screws (A).
- Slide the front panel (2) downwards (B) and pull it towards yourself (B) using the handle.
- To close the appliance, carry out the operations in reverse order.

13.2 Cable passage

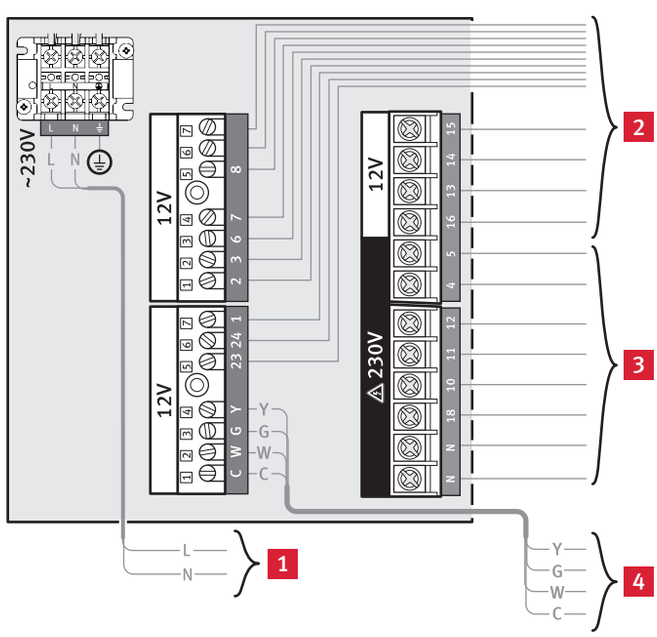
The low and mains voltage cables must be inserted in different sleeves.



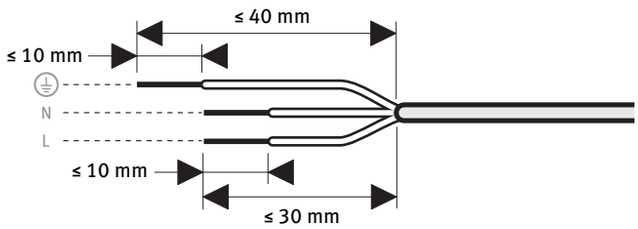
Key
1 Mains-voltage cable passage
2 Low-voltage cable passage

- Insert the electrical power cables in passages (1) and (2) provided for this purpose.
- Make sure that the electrical cables are not in contact with the compressor and the hot pipes.
- Fix the electrical cables with the clamps installed inside the heat pump.

13.4 Electrical wiring



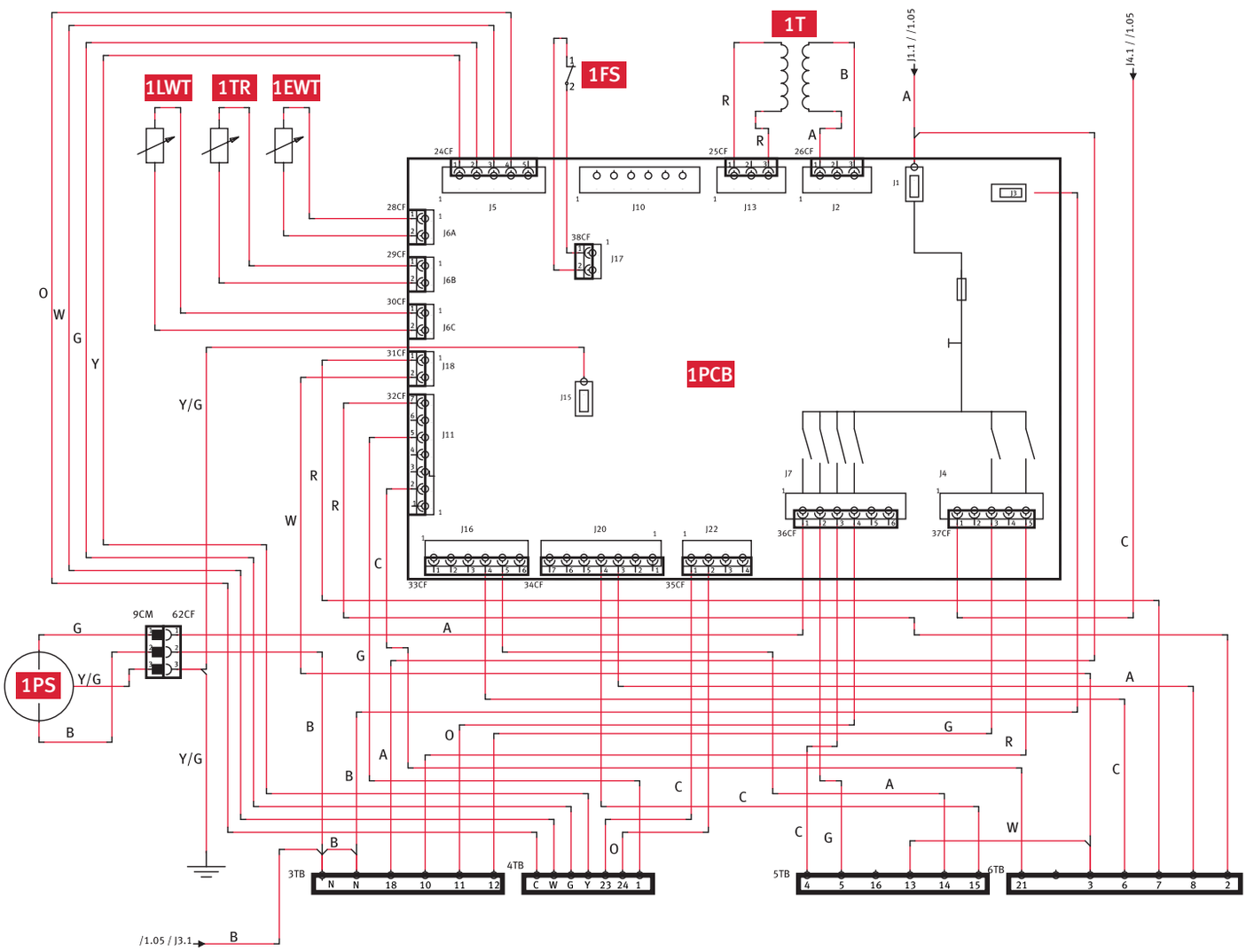
Key		Recommended cable section
1	230 V power cable	H07RN-F 3 x 2.5 mm²
2	12 V cable	0.75 mm²
3	230 V cable (outputs 2A maximum)	0.75 mm²
4	Connection cable for the command unit	4 x 0.75 mm²



- Attach the electrical cables using the cable pass-through located in the electrical box in order to ensure good resistance to pulling (for the 14kW model, use the anti-wrench connector supplied with the appliance).

13.5 Wiring diagram

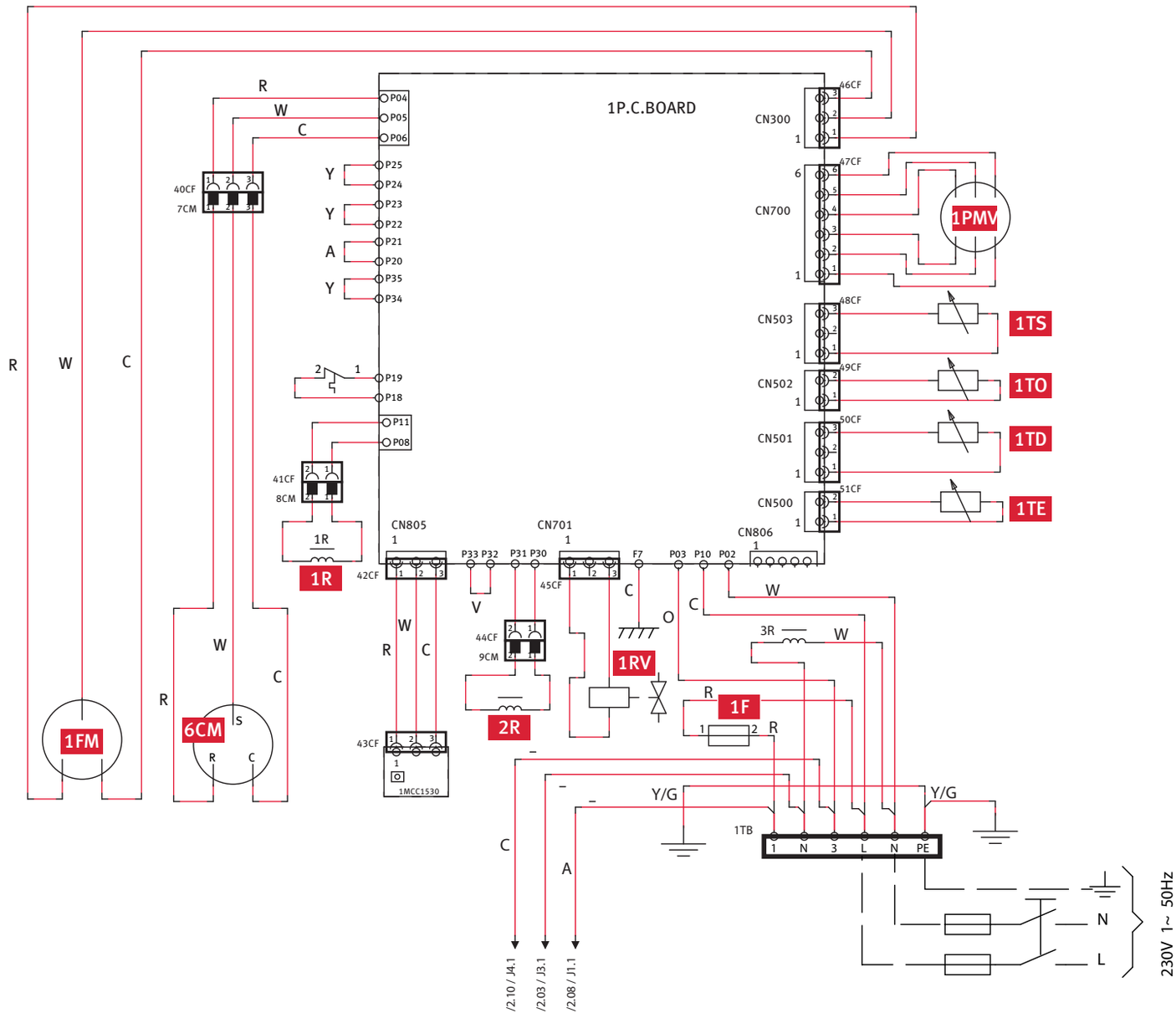
13.5.1 Command board 7kW, 12kW, 14kW



Key

1PS	Circulator
1LWT	Flow temperature sensor for heat pump circuit
1TR	Temperature sensor for detecting the end of defrost
1EWT	Temperature sensor for flow of heat pump circuit
1FS	Flow detector
1T	Transformer
1PCB	Command board

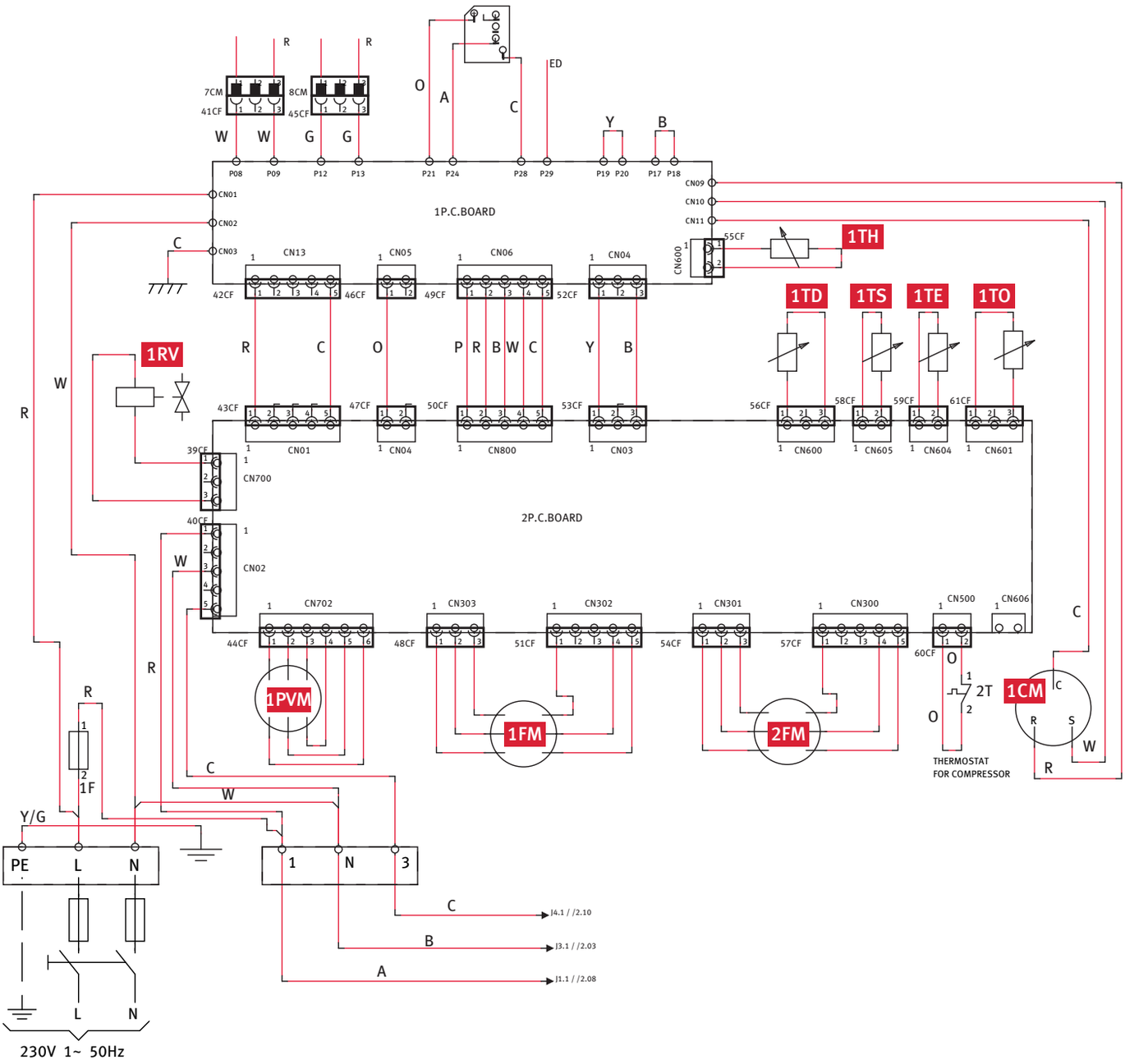
13.5.2 Board of power 7kW



Key

1FM	Fan motor
1PMV	Electronic expansion unit
1TS	Temperature sensor for compressor suction
1TO	Exterior temperature sensor
1TD	Compressor discharge temperature sensor
1TE	Temperature sensor for plate to plate exchanger
1RV	4-way cycle inversion gate
1R	Filtering coil 1
2R	Filtering coil 2
6CM	Compressor engine
1F	Fuse

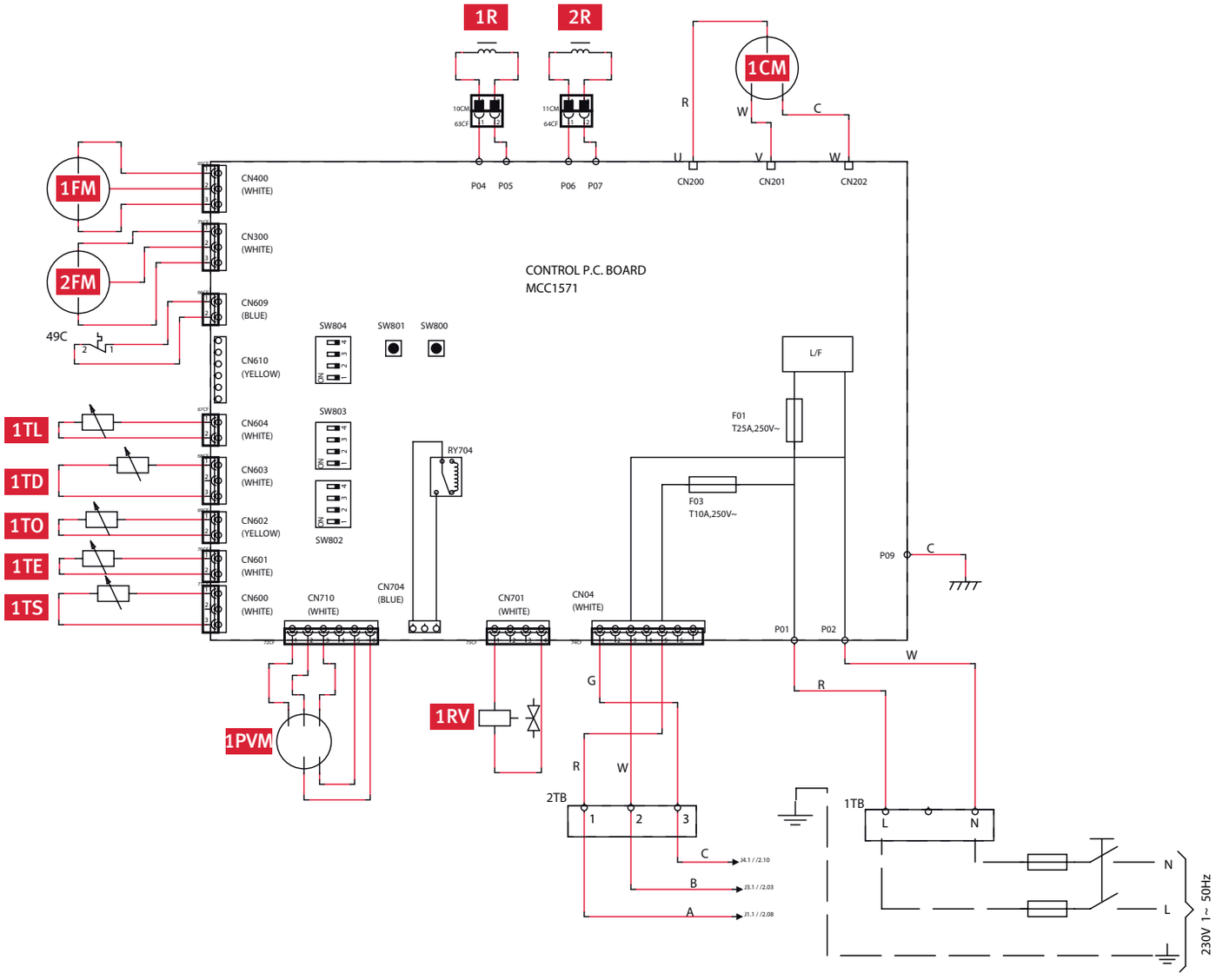
13.5.3 Board of power 12kW



Key

1RV	4-way cycle inversion gate
1TH	Temperature sensor for the finned heat exchanger
1TD	Compressor discharge temperature sensor
1TS	Temperature sensor for compressor suction
1TE	Temperature sensor for plate to plate exchanger
1TO	Exterior temperature sensor
1CM	Compressor
1FM	Fan 1
2FM	Fan 2
1PVM	Electronic expansion unit

13.5.4 Board of power 14kW



Key

1RV	4-way cycle inversion gate
1TL	Temperature sensor for the finned heat exchanger
1TD	Compressor discharge temperature sensor
1TS	Temperature sensor for compressor suction
1TE	Temperature sensor for plate to plate exchanger
1TO	Exterior temperature sensor
1CM	Compressor
1FM	Fan 1
2FM	Fan 2
1R	Filtering coil 1
2R	Filtering coil 2
1PVM	Electronic expansion unit

14 Commissioning

At the time of commissioning, complete all relevant sections of the Benchmark Checklist located on the inside back pages of this document.

- Check that the differential breaker is installed.
- Check that the hydraulic and electrical connections are correct.
- Check that the filter on the heat pump return is installed.
- Check the airtightness of the connections.
- Open all the hydraulic circuits' valves.

14.1 Filling the glycol circuit

Warning! Do not dispose of glycol into drains and the environment.

We recommend that you use propylene glycol enriched with corrosive inhibitors.

- Mix 1 part propylene glycol with 2 parts water. This 30% mixture ensures antifreeze protection down to an exterior temperature of -15 °C.
- Use an antifreeze test kit to ensure accurate dosing.
- Make sure that the hydraulic circuit is purged.
- In order to drain the glycol circuit after filling, use a fill pump.
- Put the heat pump circuit under pressure between 1.5 and 2 bars.

The level of glycol may decrease during the first month following the commissioning of the installation. It may also vary in accordance with the outdoor temperature.

Any residue of glycol solution should be kept in an appropriate container to be re-used for the next filling.

- Ensure any leftover glycol solution is left with the end user and retained in a safe place.

14.2 Activating the heat pump

Make sure that all the electrical connections have been made.

Make sure that the setting for the maximum temperature at heating flow is compatible with the installation.

- Position the circuit breaker located on the electrical circuit box and connected to the heat pump to the ON position.

The main screen for the command unit is displayed.

- See the chapter "Example installation" to enter all the settings corresponding to your installation.

14.3 Activating the options

- See the instructions for each option to activate them and enter their settings.

14.4 Heating system test

- Ensure that there is a heating demand to the control unit. In the case of a multi-zone configuration, perform the test zone by zone and ensure that the appropriate zone gets warmer.
- Ensure that all the heating circuit's thermostatic valves are open.
- Balance the heat emitters, if necessary.

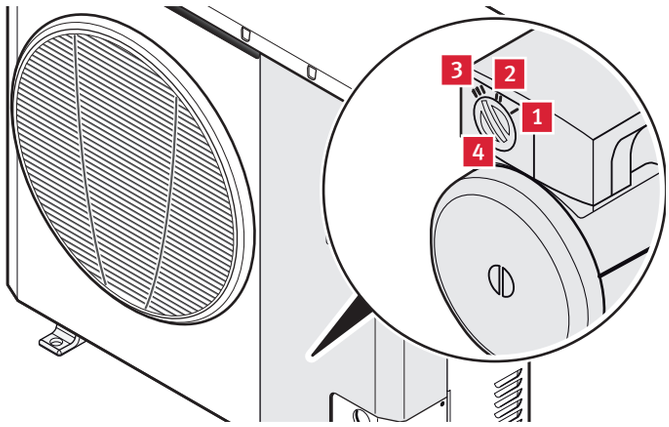
15 Specific adjustment

15.1 Adjusting the heating circuit

The maximum heating output temperature must be adjusted in accordance with the characteristics of your installation.

Ensure that the heating curve setting is compatible with the installation.

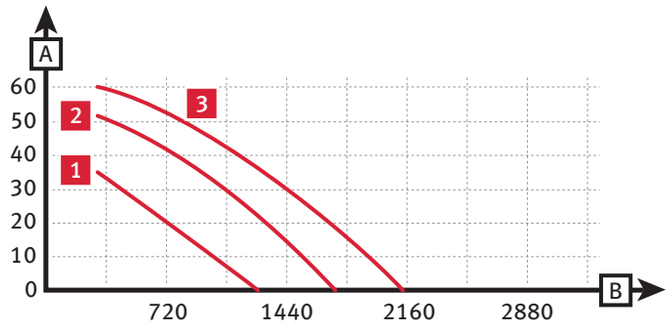
Make sure that the functioning mode for the boiler's circulator is not in permanent mode, but synchronised with heating demand (with the room thermostat).



Key
1 Speed I
2 Speed II
3 Speed III
4 Speed selector

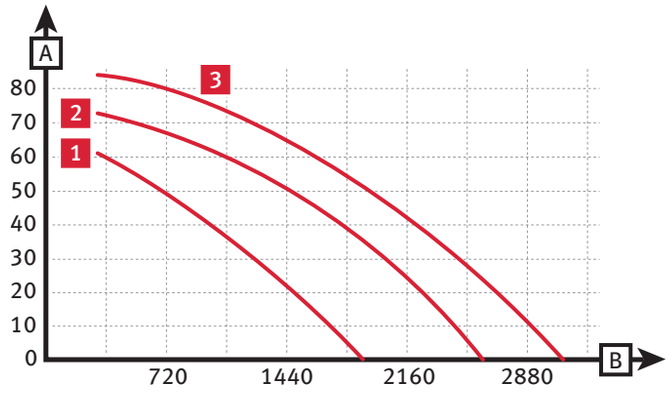
- Turn the circulator's speed selector to choose speed I.
- Open all the thermostatic valves on the radiators to the maximum.
- Adjust the temperature to the maximum on all the room thermostats in your home.
- Put your installation into service by forcing a heating request when the circulator should start.
- Wait 10 to 15 min and measure the difference in temperature between flow and return of the heat pump (temperatures can be displayed using parameters 137 (return) and 138 (flow)). The difference should be between 5 and 6°C.
- If the difference is greater than 6°C, select a higher pump speed or reduce the circuit pressure drops.

Envirosorb 7 flow/pressure curves



Key
1 Speed I
2 Speed II
3 Speed III
A Available pressure (kPa)
B Flow in the circuit (l/h)

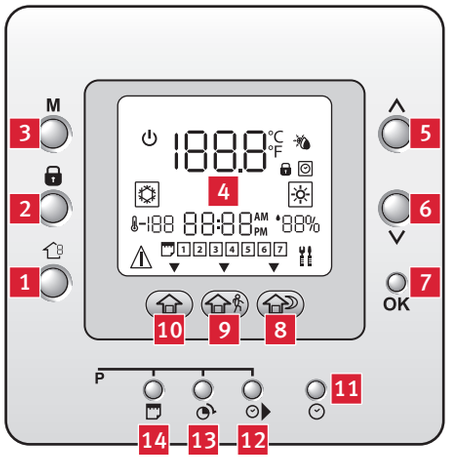
Envirosorb 12, Envirosorb 14 flow/pressure curves



Key
1 Speed I
2 Speed II
3 Speed III
A Available pressure (kPa)
B Flow in the circuit (l/h)

15.2 Settings for the command unit

15.2.1 Overall view



Key
1 Selection of “standby” mode in the weekly programming
2 Hold the selected temperature or runs the scheduled program
3 Choice of functioning mode
4 Display
5 Scroll up
6 Scroll down
7 Validation
8 Temperature Night
9 Temperature Eco
10 Temperature Comfort
11 Setting day/time/minute
12 Programme: time when time interval begins
13 Programme: choice of time interval
14 Programme: group of days

15.2.2 Appliance configuration parameters

If the parameters are changed, it is important to leave the control box connected for at least 10 seconds so that the change is properly saved.

- Press simultaneously on the button (⌂) and (**M**) for 3 seconds. The parameter number is displayed and its value blinks.
- Press the button (∧) to access the parameter "302".
- Press the button (**M**). The value of the parameter flashes.

Description of parameter 302	Setting		Factory setting
	Min	Max	
0 = Cooling only 1 = Heating + cooling 2 = Heating only	0	2	2

- Press the buttons (∨/∧) to modify the value.
- Press the button (**M**) to confirm the parameter setting.

The other parameters 301, 303, 304, 305 and 306 must not be modified.

- Press the button (**OK**) to exit the menu and validate the settings.

15.2.3 Parameters set by the installer

This menu lets you enter the settings intended for the final user.

- Press simultaneously on buttons (⌂) and (⌂) for 3 seconds. The parameter number is displayed and its value blinks.
- Press the button (**M**) to access the parameter. The value of the parameter flashes.
- Press the buttons (∨/∧) to modify the value.
- Press the button (**M**) to confirm the parameter setting.
- Press the buttons (∨/∧) to move to the next parameter.
- Perform the previous operations again for the other parameters.
- Press the button (**OK**) to exit the menu and validate the settings.

Code	Function	Description	Setting		Factory setting	Modifiable parameter
			Min	Max		
1	Default functioning mode	Choose the default functioning mode for the heat pump: 0 = Stopped 2 = Cooling 3 = Heating	0	3	0	Yes
2	Protection against frost	Function to protect the installation against frost when the heat pump is stopped. 1 = Deactivated 2 = Activated	1	2	1	Yes
3	Temperature triggering protection against frost	Choose the ambient temperature of the dwelling from which the installation's protection against frost is activated.	6°C	12°C	6°C	Yes
4	Correction of the ambient temperature	This parameter lets you correct the heat pump's temperature setting by increasing or reducing the temperature of the water in the installation to improve the adjustment of the ambient temperature of the room.	-5°C	+5°C	0°C	Yes
5	Silent mode	This mode lets you reduce the noise emitted by the heat pump (at night, for example), by reducing the frequency at which the compressor functions. 1 = Deactivated 2 = Activated	1	2	1	Yes
6	Compressor frequency reduction	This parameter defines the percentage reduction of the compressor frequency.	50%	100%	75%	Yes
7	Temperature of the dwelling	This parameter displays the current temperature level: 1 = Temperature Comfort 2 = Temperature Night 3 = Temperature Eco	1	3	-	No
8	Ambient temperature setting	This parameter displays the ambient temperature setting when you press one of the buttons "Comfort", "Night" and "Eco".	12°C	38°C	-	No
9	Ambient temperature	This parameter displays the ambient temperature of the room measured by the sensor installed in the command unit.	-20°C	50°C	-	No
10	Humidity rate	This parameter displays the rate of humidity of the room measured by the sensor installed in the command unit.	0	100	-	No
11	Exterior temperature	This parameter displays the exterior temperature measured by the heat pump.	-30°C	90°C	-	No
12	Not used					
13	Correction to the ambient temperature (command unit position)	This parameter corrects the measurement of the ambient temperature following an error in positioning the command unit.	-5°C	+5°C	0°C	Yes
14	Programme time intervals	Choose the number of time intervals available for weekly programming: 2 = 2 time intervals 4 = 4 time intervals 6 = 6 time intervals	2	4	6	Yes
15	"Comfort" heating temperature	Choose the ambient temperature in heating mode for the "Comfort" temperature.	12°C	38°C	20°C	Yes
16	"Comfort" cooling temperature	Choose the ambient temperature in cooling mode for the "Comfort" temperature.	12°C	38°C	24°C	Yes
17	"Night" heating temperature	Choose the ambient temperature in heating mode for the "Night" temperature.	12°C	38°C	18°C	Yes
18	"Night" cooling temperature	Choose the ambient temperature in cooling mode for the "Night" temperature.	12°C	38°C	26°C	Yes
19	"Eco" heating temperature	Choose the ambient temperature in heating mode for the "Eco" temperature.	12°C	38°C	15°C	Yes
20	"Eco" cooling temperature	Choose the ambient temperature in cooling mode for the "Eco" temperature.	12°C	38°C	28°C	Yes
21	Ambient temperature setting	This parameter displays the ambient temperature of the room where the command unit is installed.	12°C	38°C	-	No
22	Displaying fault codes	This parameter displays the last occurring fault code.	-	-	-	No
23	Fault history	Every 4 seconds, this parameter displays the latest fault codes that appear.	-	-	-	No

15.2.4 Reinitialisation of parameters

This function is used to reinitialise the control box parameters (factory settings).

The return to factory settings is irreversible. All the personalised settings of the control box will be lost.

- Press the 2 buttons (⌂) and (**M**) for 10 seconds.

When selecting for the first time, the figure 999 appears in the temperature display area and the figure 10 appears in the time display area.

- Hold down the (∨) button until 0 is displayed on the screen. The message “FD” is displayed in the temperature area.

The control box then restores the factory default parameters.

- Restart the entire system to complete the restore.

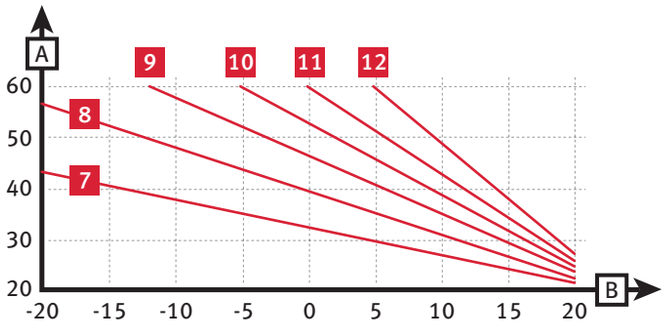
15.2.5 After-sales service parameters

This menu lets you make adjustments to the following functions according to the appliances connected, and reset all these parameters.

- Press simultaneously on button (⌂) and (🔒) for 3 seconds. The parameter number is displayed and its value blinks.
- Press the button (M) to access the parameter. The value of the parameter flashes.
- Press the buttons (V/Λ) to modify the value.
- Press the button (M) to confirm the parameter setting.
- Press the buttons (V/Λ) to move to the next parameter.
- Perform the previous operations again for the other parameters.
- Press the button (OK) to exit the menu and validate the settings.

Code	Function	Description	Setting		Factory setting	Modifiable parameter
			Min	Max		
100	Type of system regulation	1 = Not used 2 = Regulation with system of management by contact 3 = Not used 4 = Not used 5 = Not used 6 = Not used 7 = Not used	1	7	2	Yes
101	Configuration of the command unit	0 = Command unit used as configuration tool 1 = Not used 2 = Not used	0	2	0	Yes
102	Updates to the command unit software	This parameter displays the latest update to the software that is made on the heat pump's command unit.	-	-	-	No
103	Version of the command unit's software	This parameter displays the version of the heat pump's command unit software	-	-	-	No
104	Test modes	By activating these various test modes, you can trigger special functions on the appliance. 0 = No test 1 = Force the circulator 2 = Force output between terminals 5 and N (code 147) 3 = Force output between terminals 4 and N (code 106) 4 = Force output between terminals 11 and N (code 108) 5 = Force output between terminals 12 and N (code 156) 6 = Force the 3-way gate 7 = Not used 8 = Not used	0	9	0	Yes
105	Reset the counter for the circulator functioning time	This parameter resets, to zero, the functioning time counter for the heat pump's circulator.	000 (no)	165 (yes)	000 (no)	Yes
106	Configuration of the output between terminal channels 4 and N	Configuration of the booster heating 1 = Command booster heating 2 = Not used	1	2	1	Yes
107	Humidity rate threshold	This parameter defines the humidity rate threshold from which the dehumidifier is switched on.	20%	100%	50%	Yes
108	Configuration of the output between terminal channels 11 and N	Configuration of dehumidifier 1 = Not used 2 = Dehumidifier command	1	2	2	Yes
109	Threshold for protection against frost	This parameter defines the temperature level of the installation's water from which protection against frost is activated. This threshold corresponds to the set temperature to which you should add 3°C.	0°C	6°C	0°C	Yes
110	Reset the counter for the compressor's functioning time	This parameter resets, to zero, the functioning time counter for the heat pump's compressor.	000 (no)	165 (yes)	000 (no)	Yes
111	Status of water flow detector	This parameter lets you check the state of the water flow detector 1 = Sufficient water flow detected 0 = No water flow or insufficient flow	-	-	-	No

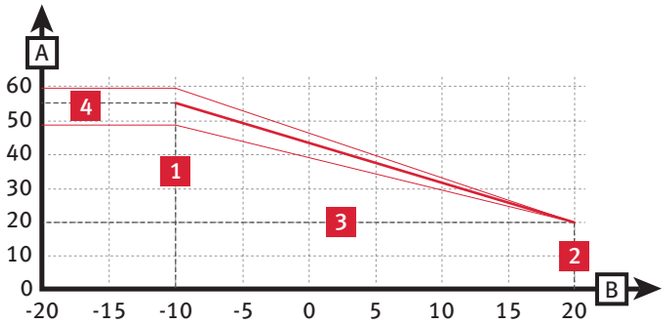
Predefined heating curves (code 112)



Key
7 Heating graph n°7
8 Heating graph n°8 (factory setting)
9 Heating graph n°9
10 Heating graph n°10
11 Heating graph n°11
12 Heating graph n°12
A Heating flow temperature (°C)
B Exterior temperature (°C)

Code	Function	Description	Setting		Factory setting	Modifiable parameter
			Min	Max		
112	Predefined heating curves	0 = Personalised graph (see codes 118 to 121) 1 to 6 = Not used 7 to 12 = Pre-defined graphs (see above graphs)	1	12	8	Yes
114	ECO heating mode	Reduction offset for the installation's water temperature setting in heating mode.	1°C	20°C	5°C	Yes
116	ECO cooling mode	Increase offset for the installation's water temperature setting in cooling mode.	1°C	10°C	5°C	Yes
117	Not used					

Personalised heating curves (codes 118, 119, 120, 121)



Key
1 Code 118
2 Code 119
3 Code 120
4 Code 121
A Heating flow temperature (°C)
B Exterior temperature (°C)

Code	Function	Description	Setting		Factory setting	Modifiable parameter
			Min	Max		
Setting codes 118 to 121 is necessary only if code 112 = 0.						
118	Minimum reference exterior temperature	Choose the minimum reference exterior temperature for the region where the heat pump is installed.	-20°C	10°C	-7°C	Yes
119	Exterior temperature from which the heat pump stops in heating mode	When the exterior temperature reaches the input value, heat pump stops. Choose the exterior temperature from which the heat pump must stop in heating mode.	10°C	30°C	20°C	Yes
120	Minimum temperature of water in the installation in heating mode	Choose the minimum temperature of the water in the installation in heating mode.	20°C	60°C	40°C	Yes
121	Maximum temperature of the water in the installation in heating mode	Choose the maximum temperature of the water in the installation in heating mode.	20°C	60°C	55°C	Yes
122	Not used					
123	Not used					
124	Not used					
125	Not used					

Code	Function	Description	Setting		Factory setting	Modifiable parameter
			Min	Max		
126	Configurations exterior sensor	Choose the type of exterior-temperature sensor: 1 = Remote sensor (connected onto terminal block 23 and 24) 2 = Sensor installed on the heat pump.	1	2	2	Yes
127	Exterior temperature	This parameter displays the external temperature measured by the sensor installed in the heat pump.	-	-	-	No
128	Temperature of the cooling circuit battery	This parameter displays the temperature of the heat pump's cooling circuit battery.	-	-	-	No
129	Compressor suction temperature	This parameter displays the compressor's suction temperature.	-	-	-	No
130	Compressor discharge temperature	This parameter displays the compressor's discharge temperature.	-	-	-	No
131	Functioning state of the heat pump	This parameter displays the functioning state of the heat pump: 0 = Stopped 2 = Cooling mode 3 = Heating mode 4 = Fault 5 = Defrost mode	-	-	-	No
132	Maximum frequency of compressor	This parameter displays the maximum frequency of the compressor allowed by the heat pump's command board.	-	-	-	No
133	Required compressor frequency	This parameter displays the compressor frequency required by the heat pump's command board.	-	-	-	No
134	Real compressor frequency	This parameter displays the real frequency of the compressor variator.	-	-	-	No
135	Counter that times the functioning of the compressor	This parameter displays the number of hours during which the compressor has functioned since first activation.	-	-	-	No
136	Capacity of the heat pump	This parameter displays the capacity of the heat pump.	-	-	-	No
137	Return temperature of the heat pump circuit	This parameter displays the return temperature of the heat pump's circuit.	-	-	-	No
138	Flow temperature of the heat pump's circuit	This parameter displays the flow temperature of the heat pump's circuit.	-	-	-	No
139	Temperature of the cooling fluid in the plate to plate exchanger	This parameter displays the temperature of the cooling fluid in the plate to plate exchanger	-	-	-	No
140	State of functioning of the system	This parameter displays the state of functioning of the system: 0 = Stopped 1 = Standby mode 2 = Cooling mode 3 = Heating mode 4 = Booster heating functioning 5 = Booster cooling functioning 4 = Nominal heating 5 = Nominal cooling 8 = Frost protection mode 9 = Defrost 10 = Protection against overheating 11 = Guard interval 12 = System fault	-	-	-	No
141	Fault codes	This parameter displays the fault codes for the heat pump.	-	-	-	No
142	Version of the heat pump's software	This parameter displays the version of the heat pump's software.	-	-	-	No
143	Update to the heat pump's software	This parameter displays the latest update made to the heat pump's software.	-	-	-	No
144	Counter that times the functioning of the circulator	This parameter displays the number of hours during which the circulator has functioned since first activation.	-	-	-	No
145	Temperature setting calculated for the installation's water	This parameter displays the temperature setting for the installation's water calculated by the command board according to climatic graphs.	-	-	-	No

Code	Function	Description	Setting		Factory setting	Modifiable parameter
			Min	Max		
146	Configuration for stopping the heat pump if control by S1 contact input	1 = Immediate halt (as soon as contact S1 moves into the open position, the heat pump stops). 2 = Gradual halt (as soon as contact S1 opens, the speed of the compressor gradually reduces. This configuration is used to delay the shutdown of the compressor after contact S1 switches to the open position and to limit the number of compressor cycles per hour to 3.	1	2	2	Yes
147	Configuration of the output between terminal channels 5 and N	1 = Unit alarm 2 = Ambient temperature setting reached	1	2	1	Yes
148	Limit exterior temperature (T0)	This parameter defines the exterior temperature that is the functioning limit and where the heat pump stops. In this configuration, only the booster heating functions. See the chapter "Configuring the booster heating".	-20°C	65°C	-20°C	Yes
149	Choice of display in the command unit's temperature zone	1 = Ambient temperature 2 = Temperature of water leaving the installation 3 = Temperature of water returning to the installation 4 = Temperature of the cooling fluid in the plate to plate exchanger 5 = Compressor suction temperature 6 = Compressor discharge temperature 7 = Exterior temperature	1	7	1	Yes
150	Exterior temperature bivalence point (T1)	This temperature defines the external temperature from which the power of the heat pump alone is not sufficient to meet the needs of the installation. Below this temperature, the booster heating and the heat pump can function together. See the chapter "Configuring the booster heating".	30°C	-20°C	0°C	Yes
151	Delays for switching on booster heating	This parameter defines the period from which the booster heating is switched on when: T0 < exterior T° < T1.	1	60	20 minutes	Yes
152	Differential stop/ start booster heating	This parameter defines the differential between the installation's water temperature setting and the water temperature from which the booster heating switches on when: T0 < exterior T° < T1.	1°C	20°C	5°C	Yes
153	Mode of activation hot-water demand contact S5	1 = Always active (demand for hot water is always met) 2 = Activated only in heating and cooling modes (demand for hot water is met only in heating or cooling mode)	1	2	1	Yes
154	Booster heating functioning	This parameter defines the functioning of the booster heating when: exterior T° < T0. 0 = Continuous functioning 1 = ON/OFF functioning depends on the ambient temperature. In case of a thermostat fault, switch to mode 3. 2 = ON/OFF functioning depends on the installation's water temperature.	1	2	1	Yes
155	Functioning of main circulator	This parameter defines the functioning mode for the main circulator for an external temperature < T0 (code 148) 0 = Stopped 1 = ON/OFF cycle identical to the booster heating 2 = Continuous operation	0	2	1	Yes
156	Configuration of the output between terminals 12 and N	Configuration of the output (connection between terminal channels 12 and N) 0 = Not used 1 = ON/OFF cycle identical to the main pump The water pump works continuously in case of demand for hot water. 2 = ON/OFF cycle identical to the main pump The pump is halted in case of demand for hot water.	0	2	2	Yes
157	Functioning of the additional circulator	This parameter defines the functioning mode for the additional circulator for an external temperature < T0 (code 148) 0 = Stopped 1 = ON/OFF cycle identical to the booster heating 2 = Continuous operation	0	2	1	Yes
158	Differential on the temperature setting from the ambient air	This parameter defines the differential on the ambient temperature setting in the case where the parameter 100 is configured to 4 (regulation with the command unit used as the room thermostat).	+/- 0.2°C	+/- 1°C	+/- 0.3°C	No

16 User information

At the end of the installation, the installer must:

- explain the operation of the appliance and its safety devices to the user, if necessary provide a demonstration and answer any questions;
- hand over to the user all the required documentation,
- fill in the documents where necessary;
- advise the user of the precautions necessary to prevent damage to the system, appliance and the building;
- remind the user to service the appliance annually.
- The user shall not interfere with or adjust sealed components.
- All servicing must be carried out by a competent person approved at the time by the Health and Safety Executive.

MAINTENANCE

Any work carried out on the refrigerant circuit must be conducted by qualified engineers.

The faults described in this chapter require the services of a qualified professional and, if necessary, a Glow-worm Groupservice engineer.

17 Trouble-shooting

17.1 Fault diagnosis

The following checks should be performed before proceeding onto specific diagnostics:

- Make sure that the electricity supply has not been interrupted and that the appliance is connected correctly.
- Ensure that the isolating valves are open.
- Check that all external controls are connected correctly.

17.2 Fault codes

The faults described in this chapter should be carried out by a qualified engineer or a Glow-worm Groupservice engineer.

17.2.1 Fault codes accessible from the install menu

When the symbol "⚠" blinks at the bottom left of the control box, the appliance has a fault. You should access parameters 22 (last fault code) and 23 (history of last 4 faults) on the installer menu.

- Simultaneously press the (⌂) and (⌂) buttons for 3 seconds, the parameter number is displayed and its value blinks.
- Press the buttons (∨/∧) until parameter 22 or 23 is displayed.
- Press the (M) button to access the parameter, the value of the parameter blinks.
- Press the (∨/∧) buttons to modify the value.
- Press the (M) button to confirm the parameter setting.
- Press the (OK) button to exit the menu and confirm the settings.
- Refer to the "Hydraulic and refrigerant schematic" chapter to identify the sensor positions.

Code	Description
3	Heat pump return temperature sensor fault (n°15)
4	Pre-regulator temperature sensor fault (n°18)
5	Remote outside air temperature sensor fault
6	Loss of communication with the command unit
7	Control box ambient air temperature sensor fault
8	Power matching fault between the electronic control circuit board and the appliance
9	Water flow rate (n°10) or circulator pump (n°11) sensor fault
10	Outside air temperature greater than the maximum in heating (parameter 119)
11	Air temperature higher than the maximum value for heating
12	Outside air temperature greater than the maximum in cooling (parameter 123)
14	Loss of compressor signal
15	Heat pump outlet temperature sensor fault (n°14)
17	Outside air temperature sensor fault (n°2)
18	Protection against short-circuits in G-Tr variator
20	Error in controlling the position of the compressor rotor
21	Error in current variator sensor
22	Fin exchanger (n°4) or compressor intake (n°6) temperature sensor fault
23	Compressor outlet temperature sensor fault (n°23)
24	Outside fan fault
26	Other outside faults
27	Compressor blocked
28	Compressor outlet temperature error
29	Compressor breakdown
30	Low pressure switch
31	Over-pressure valve

17.2.2 Specific faults shown on the control box main screen

The faults listed below are identified directly on the control box main screen.

Fault	Description
Control box ambient temperature sensor fault	In the case of an anomaly in the temperature sensor measurement, the temperature display is replaced by "--".
Control box ambient humidity sensor fault	In the case of an anomaly in the humidity sensor measurement, the ambient humidity display is replaced by "--".
Control box EEPROM fault	If the control box non-volatile memory (EEPROM) is defective, the code "E4" is displayed in the control box temperature display area. If the power is cut after this fault is displayed, the installer and after-sales parameters will be restored to their default values and the installation-specific parameters will be erased. This fault can result in poor operation of the installation. In the case of an "E4" fault, replace the control box.
Communications fault	If communication between the control box and the heat pump control circuit board is disturbed, error "E3" is displayed in the ambient temperature display area. In this case, check the communication cable between the control box and the heat pump.

18 Servicing

To ensure the continued efficient and safe operation of the appliance it is recommended that it is checked and serviced as necessary at regular intervals. The frequency of servicing will depend upon the particular installation conditions and usage.

- Servicing/maintenance should be carried out by a competent person approved at the time by the Health and Safety Executive in accordance with the rules in force in the countries of destination.
- To obtain service, please call your installer or Glow-worm's own service organisation.
- After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist located on the inside back pages of this document.

IMPORTANT: any action carried out on the refrigerant circuit must be performed by qualified authorised personnel.

The refrigerant fluid contains gases that, when released into the atmosphere, may affect the environment by depleting the ozone layer, contributing to the greenhouse effect and an increase in temperature. The risk of leakage cannot be excluded for devices intended to operate for many years and subject to the effects of the environment.

- See the "Safety instructions" chapter for a list of operations to be performed prior to the maintenance of the application.
- Once the maintenance operations have been completed, consult the ¨Start Up¨ chapter to restart the appliance.

Annual Maintenance

- Check the proper functioning of safety devices.
- Check the pressure of the water system.
- Check that there are no traces of rust or oil around the cooling circuit's components.
- Ensure that the appliance's components are neither worn nor broken.
- Check that the wires are firmly attached to the electrical terminals.
- Check the appliance's earthing.
- Check the starting temperature of the heat pump and the adjustment points.
- Check for any ice in the compressor.
- Remove any dust from the power supply.
- Clean the air / refrigerant battery and make sure that air circulates between the fins and around the unit.
- Check that the fan rotates freely.
- Check the pressure of the expansion vessel.

19 Replacement of Parts

- Do not use reconditioned or copy parts, only use original parts supplied by Glow-worm.
- If a part is required, contact the Glow-worm service organisation.
- Please quote the name and serial number of the appliance, this information will be on the data plate on the side of the appliance.
- If in doubt seek advice from the local gas company or Glowworm's own service organisation.

Replacement of parts must be carried out by a competent person approved at the time by the Health and Safety Executive.

19.2.1 Mains supply cable

The main supply cable must be replaced by a qualified and competent electrician.

- If the main supply cable is damaged, replace it refering to the chapter "Electrical connection".

20 Spare parts

In order to guarantee the safe and prolonged life of the product, manufacturers genuine spare parts must be used.

This appliance displays a CE Mark of conformity. Only use the manufacturer's genuine, new spare parts.

- Ensure that spare parts are correctly mounted in the right position and direction. After fitting any spare part or servicing, the appliance must be tested for its safe operation.

AIR TO WATER HEAT PUMP COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the heat pump and associated equipment as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions will invalidate the warranty but does not affect statutory rights.

Customer Name

Address

Telephone Number

Heat Pump Make and Model

Heat Pump Serial Number

Commissioned by *(print name)* | Certified Operative Reg. No. [1]

Company Name & Address | Commissioning Date

Telephone No.

Building Regulations Notification Number *(if applicable)* [2]

CONTROLS - SYSTEM AND HEAT PUMP *Tick the appropriate boxes if applicable*

1. Time & Temperature Control to Heating	Room Thermostat & Programmer/Timer ☐	Programmable Roomstat ☐	Load/Weather Compensation ☐	Optimum Start Control ☐
2. Time & Temperature Control to Hot Water			Cylinder Thermostat & Programmer/Timer ☐	Combined with Heat pump main controls ☐
3. Heating Zone Valves (including underfloor loops)			Fitted ☐	Not Required ☐
4. Hot Water Zone Valves			Fitted ☐	Not Required ☐
5. Thermostatic Radiator Valves			Fitted ☐	Not Required ☐
6. Heat Pump Safety Interlock [3]			Built In ☐	Provided ☐
7. Outdoor Sensor			Fitted ☐	Not Required ☐
8. Automatic Bypass System			Fitted ☐	Not Required ☐
9. Buffer Vessel Fitted			Yes ☐ No ☐	If YES, Volume ☐ Litres

ALL SYSTEMS

The heating system has been filled and pressure tested	Yes ☐
Expansion vessel for heating is sized, fitted & charged in accordance with manufacturer's instructions	Yes ☐
The heat pump is fitted on a solid/stable surface capable of taking its weight	Yes ☐
The system has been flushed and cleaned in accordance with BS7593 and heat pump manufacturer's instructions	Yes ☐
What system cleaner was used?	
What inhibitor was used?	Qty ☐ litres
Is the system adequately frost protected?	Yes ☐

OUTDOOR UNIT

Are all external pipeworks insulated?	Yes ☐
Is the fan free from obstacles and operational?	Yes ☐
Has suitable consideration been made for waste water discharge?	Yes ☐

CENTRAL HEATING MODE

Heating Flow Temperature ☐ °C Heating Return Temperature ☐ °C

DOMESTIC HOT WATER MODE *Measure and Record*

Is the heat pump connected to a hot water cylinder? ☐ Unvented ☐ Vented ☐ Thermal Store ☐ Not Connected

Hot water has been checked at all outlets ☐ Yes Have Thermostatic Blending Valves been fitted? ☐ Yes ☐ Not required

ADDITIONAL SYSTEM INFORMATON

Additional heat sources connected: ☐ Gas Boiler ☐ Oil Boiler ☐ Electric Heater ☐ Solar Thermal Other _____

ALL INSTALLATIONS

The heating, hot water and ventilation systems complies with the appropriate Building Regulations	Yes ☐
All electrical work complies with the appropriate Regulations	Yes ☐
The heat pump and associated products have been installed and commissioned in accordance with the manufacturer's instructions	Yes ☐
The operation of the heat pump and system controls have been demonstrated to the customer	Yes ☐
The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer	Yes ☐

Commissioning Engineer's Signature

Customer's Signature

(To confirm demonstration of equipment and receipt of appliance instructions)

Notes: [1] Installers should be members of an appropriate Competent Persons Scheme. [2] All installations in England and Wales must be notified to Local Area Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer. [3] May be required for systems covered by G3 Regulations

benchmark COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

www.centralheating.co.uk

Service Record

It is recommended that your heating system is serviced regularly and that the appropriate Service Interval Record is completed.

Service Provider
Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

Service 1 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 2 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 3 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 4 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 5 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 6 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 7 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 8 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 9 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Service 10 Date:
Engineer Name:
Company Name:
Telephone No.
Operative ID No.
Comments:

Signature:

Subject to engineering changes

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GLOW-WORM

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Belper, Derbyshire.
DE56 1JT

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Because of our constant endeavour for improvement, details may vary slightly from those shown in these instructions.

Glow-worm