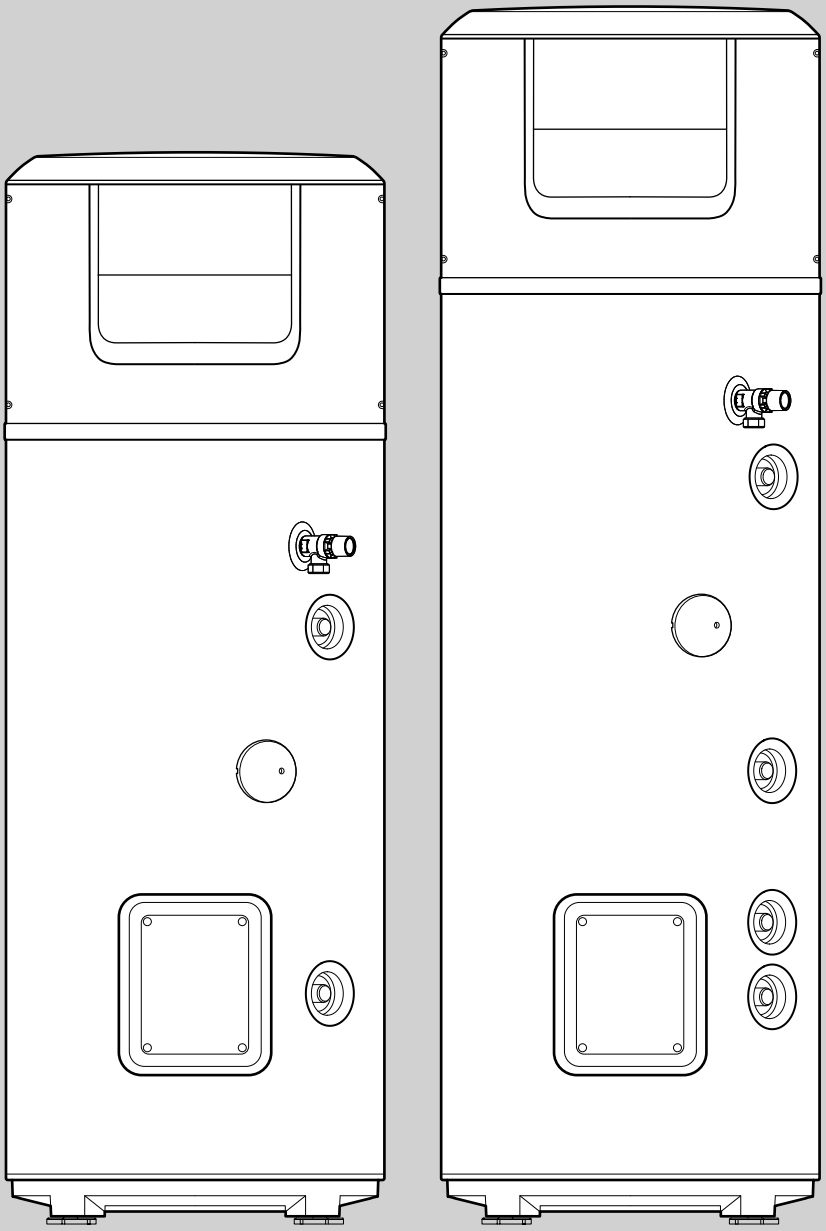
HEAT PUMP WATER HEATER

EN - Instructions for installation, use, maintenance



200D 250I

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

kiwa approved product UK WATER SUPPLY REGULATIONS

kiwa approved product UK BUILDING REGULATIONS

GENERAL SAFETY INSTRUCTIONS

1. **Read the instructions and warning in this manual carefully, they contain important information regarding safe installation, use and maintenance. This manual is an integral part of the product. Hand it on to the next user/owner in case of change of property.**
2. The manufacturer shall not liable for any injury to people, animals or damage to property caused by improper, incorrect or unreasonable use or failure to follow the instructions reported in this publication.
3. It is forbidden to perform repair work on the cooling circuit and on the components belonging entirely to it at the installation site. These interventions must be carried out only at a workshop that is suitably equipped for servicing units with **flammable refrigerants** and by qualified personnel.
   Annex HH IEC 60335-2-40.
4. Installation and maintenance must be performed by professionally qualifi ed personnel as specifi ed in the relative paragraphs. Only use original spare parts. Failure to observe the above instructions can compromise the safety of the appliance and **relieves** the manufacturer of any liability for the consequences. Installation must be carried out in accordance with national regulations and installation standards for products with flammable gases.
5. **Do not** leave the packaging materials (staples, plastic bags, expanded polystyrene, etc.) within the reach of children they can cause serious injury.
6. **The appliance may not be used by persons under 3 years of age, with reduced physical, sensory or mental capacity, or lacking the requisite experience and familiarity, unless under supervision or following instruction in the safe use of the appliance and the hazards attendant on such use. DO NOT permit children to play with the appliance. Children aged 3 to 8 can only operate the tap connected to the appliance. User cleaning and maintenance may not be done by unsupervised children.**
7. **Do not** touch the appliance when barefoot or if any part of your body is wet.
8. Before using the device and after routine or extraordinary maintenance, we recommend filling the appliance's tank with water and draining it completely to remove any residual impurities.
9. If the appliance is equipped with a power cord, the latter may only be replaced by an authorised service centre or professional technician in order to avoid hazards.
10. It is mandatory to screw o the water inlet pipe of the unit a safety valve in accordance with national regulations. In countries which have enacted EN 1487, the safety group must be calibrated to a maximum pressure of 0,7 MPa and include at least a cock, check valve and control, safety valve and hydraulic load cut-out.
11. Do not tamper with the overpressure safety device (valve or safety group), if supplied together with the appliance; trip it from time to time to ensure that it is not jammed and to remove any scale deposits.
12. It is **normal** water drips from the overpressure safety device when the appliance is heating. For this reason, the drain must be connected, always left open to the atmosphere, with a drainage pipe installed in a continuous downward slope and in a place free of ice.
13. Make sure you drain the appliance and disconnect it from the power grid when it is out of service in an area subject to subzero temperatures.
14. Water heated to over 50 °C can cause immediate serious burns if delivered directly to the taps. Children, disabled persons and the aged are particularly at risk. We recommend installing a thermostatic mixer valve on the water delivery line, marked with a red collar.
15. Do not leave flammable materials in contact with or in the vicinity of the appliance.
16. Do not place anything under the water heater which may be damaged by a leak..
17. **The water heater is supplied with a sufficient amount of R290 refrigerant (propane) for its operation. This type of refrigerant, despite being highly flammable, is an efficient refrigerant with a low global warming potential (GWP).**
    The water heater must not be placed near appliances that generate heat or near dangerous and/or flammable materials.
18. **It is forbidden** to install the device in a public space accessible to the general public.
19. **It is forbidden** to install the device outdoors or in a place partially covered or exposed to the weather.
20. The appliance must be installed in a controlled environment, such as a technical or domestic room.

SAFETY REGULATIONS

Key to symbols:

⚠ *Failure to comply with this warning implies the risk of personal injury, in some circumstances even fatal.*

⚠ *The unit contains R290 flammable gas. Failure to comply with the warning implies the risk of fire and/or explosions.*

△ *Failure to comply with this warning may result in serious damage to property, plants or animals. The manufacturer is not liable for damage resulting from improper use of the product or failure to install it as instructed herein.*

The appliance must be stored in a room without ignition sources operating continuously (open flames, an operating gas-fired appliance, or an operating electric heater)

⚠ Risk of fire and/or explosion.

Never use equipment other than that recommended by the manufacturer to speed up defrosting or for cleaning purposes.

⚠ Risk of fire and/or explosion.

Do not perforate or burn the appliance.

⚠ Risk of fire and/or explosion.

The R290 refrigerant (propane) is a flammable and odourless refrigerant.

⚠ Risk of fire and/or explosion.

It is forbidden to perform repair work on the cooling circuit and on the components belonging entirely to it at the installation site. These interventions may be carried out only at a workshop that is suitably equipped for servicing units with flammable refrigerants and by qualified personnel. Annex HH IEC 60335-2-40.

⚠ Risk of fire and/or explosion.

The refrigerant charging operations may only be carried out by qualified personnel with adequate equipment. Annex HH IEC 60335-2-40.

⚠ Risk of fire and/or explosion.

The water heater is supplied with the R290 refrigerant quantity of 0.15 kg. The maximum permissible charge quantity (0.15 kg) always refers to the individual water heater circuit; multiple water heaters may be installed in the same room, including cascade installations.

⚠ Risk of fire and/or explosion.

Maintenance operations or repairs may only be carried out by qualified personnel with the appropriate Personnel Certification certifying their knowledge of and ability to manage plants containing HC-type gases such as R290 (propane), and with adequate equipment.

⚠ Risk of fire and/or explosion.

Install the appliance on a solid basement which is not subject to vibration.

△ Noisiness during operation.

When drilling holes in the wall for installation purposes, take care not to damage any electrical wiring or existing piping.

⚠ Electrocution caused by contact with live wires.

△ **Damage to existing installations.**
Flooding caused by water leaking from damaged pipes.

Perform all electrical connections using wires which have a suitable section. The connection product must be carried out following the instructions provided in the relative paragraph.

⚠ Fire caused by overheating due to electrical current passing through undersized cables.

Protect all connection pipes and wires in order to prevent them from being damaged.

⚠ Electrocution caused by contact with live wires.

△ Flooding caused by water leaking from damaged
piping.

Make sure the installation site and any systems to which the appliance must be connected comply with the applicable norms in force.

⚠ Electrocution caused by contact with live wires which have been installed incorrectly.

△ Damage to the appliance caused by improper operating conditions.

Use manual tools and equipment that are suitable for the intended use (in particular, ensure that the tool is not worn and that

the handle is intact and securely fixed); use them correctly and prevent them falling from a height. Put them safely back in place after use.

⚠ Personal injury caused by flying splinters or fragments, inhalation of dust, knocks, cuts, puncture wounds and abrasions.

△ Damage to the appliance or surrounding objects caused by falling splinters, knocks and incisions.

Use electrical equipment that is suitable for the intended use; use the equipment correctly, keep passages clear of the power supply cable, prevent the equipment falling from a height, disconnect and put back in place after use.

⚠ Personal injury caused by flying splinters or fragments, inhalation of dust, knocks, cuts, puncture wounds and abrasions.

△ Damage to the appliance or surrounding objects caused by falling splinters, knocks and incisions.

Make sure that any portable ladders are securely positioned, that they are sufficiently resistant, that the steps are intact and not slippery, that these do not move around when someone climbs on them and that someone supervises at all times.

⚠ Personal injury caused by falling from a height or cuts (stepladders shutting accidentally).

Make sure that the work area has adequate hygiene and health conditions in terms of lighting, ventilation and the solidity of relevant structures.

⚠ Personal injury caused by knocks, stumbling etc.

Protect the appliance and all areas in the vicinity of the work place using suitable material.

△ Damage to the appliance or surrounding objects caused by falling splinters, knocks and incisions.

Handle the appliance with suitable protection and with care..

△ Damage to the appliance or surrounding objects from shocks, knocks, incisions and squashing.

During all work procedures, wear individual protective clothing and equipment. It is forbidden to touch the product installed, without shoes or with parts of the body are weti.

△ Personal injury caused by electrocution, falling splinters or fragments, inhalation of dust, shocks, cuts, puncture wounds, abrasions, noise and vibration.

Reset all safety and control functions affected by any work performed on the appliance and make sure that they operate correctly before restarting the appliance.

△ Damage or shutdown of the appliance caused by out-of-control operation.

Before handling, empty all components that may contain hot water, carrying out any bleeding if necessary.

⚠ Personal injury caused by burns.

Descale the components, in accordance with the instructions of the safety data sheet included with the product used, while ventilating the room and wearing protective clothing; avoid mixing different products and protect the appliance and surrounding objects.

⚠ Personal injury caused by acidic substances coming into contact with skin or eyes; inhaling or swallowing harmful chemical agents.

△ Damage to the appliance or surrounding objects due to corrosion caused by acidic substances.

If there is a smell of burning or smoke coming out of the appliance, disconnect the power supply, open the windows and notify the technician.

⚠ Personal injuries from burns, inhalation of fumes, intoxication.

Do not stand on the appliance.

⚠ Possible injuries or damage to the appliance.

Never leave the appliance open, without casing, beyond the minimum time necessary for installation.

⚠ Possible damage to the appliance.

INSTRUCTIONS AND TECHNICAL NORMS

The purchaser pays for the appliance's installation, which must be carried out by qualified personnel only, in conformity with national regulations in force and any provisions emitted by local authorities or bodies responsible for public health, and in accordance with the specific manufacturer indications contained in this manual. The manufacturer is responsible for the product's conformity to the relevant construction directives, laws and regulations in force at the time the product is first commercialised. The designer, installer and user are each exclusively responsible, in their respective fields, for knowing and observing the legal requirements and technical regulations concerning the design, installation, operation and maintenance of the appliance.
Any reference to laws, regulations or technical specifications contained in this manual is purely for information purposes; any new laws introduced or modifications to existing laws are not in any way binding on the manufacturer towards third parties. It is necessary to ensure that the power supply network to which the product is connected complies with the EN 50160 norm (under penalty of warranty invalidation). Relative to France, ensure that installation complies with the NFC 15-100 norm. The tampering of product integral parts and/or supplied accessories invalidates the warranty.

FIELD OF APPLICATION

This appliance is intended for hot water production for domestic use or similar, at temperatures below boiling point.
The appliance must be hydraulically connected to a domestic water supply line and to a power supply network.
Air ducts may be used for the entry and discharge of processed air.
It is forbidden to use of the appliance for uses other than those specified. Any alternative use of the appliance constitutes improper use and is prohibited; in particular, the appliance may not be used in industrial cycles and/or installed in environments exposed to corrosive or explosive materials. The manufacturer shall not be held liable for any damage due to faulty installation, improper use or uses deriving from behaviour that is are not reasonably predictable, and incomplete or careless implementation of the instructions contained in this manual.

OPERATING PRINCIPLE

The efficiency of a heat pump operation is measured by the Coefficient of Performance (COP), i.e. the ratio between the energy supplied to the appliance (in this case, the heat transferred to the water to be heated) and the electrical energy used (by the compressor and the appliance's auxiliary devices). The COP varies according to the type of heat pump and to its relative conditions of operation.
For example, a COP value equal to 3 indicates that for every 1 kWh of electrical energy used, the heat pump supplies 3 kWh of heat to the medium to be heated, of which 2 kWh are extracted from the free source.

PACKAGING AND SUPPLIED ACCESSORIES

The appliance is anchored to a wooden pallet and is protected with polystyrene top cover, wooden edge protectors, and external cardboard; all the materials are recyclable and eco-compatible.
The following accessories are included:
- Connection pipe for condensation water.
- 2 ¾" dielectrics joints.
- Instruction manual and warranty document.
- Energy label and product fiche.

PRODUCT CERTIFICATIONS

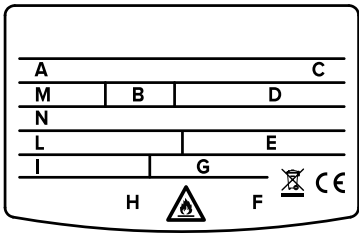
The CE marking applied to the appliance certifies that it complies with the essential requirements of the following European Directives:
- 2014/35/EU on electrical safety (LVD) (EN/IEC 60335-1; EN/IEC 60335-2-21; EN/IEC 60335-2-40);
- 2014/30/EC on electromagnetic compatibility (EMC) (EN 55014-1 EN 55014-2; EN 61000-3-2; EN 61000-3-3);
- RoHS3 (2015/863) concerning restrictions on the use of particular hazardous substances in electrical and electronic appliances (EN 63000);
- Regulation (EU) No. 814/2013 relating to ecodesign (no. 2014/C 207/03 - transitional methods of measurement and calculation).

The performance inspection is carried out according to the following technical standards:
- EN 16147;
- CAHIER DE CHARGE_103-15/D Chauffe-eau Thermodynamiques pour la marque NF électricité performance;
- Sound power level measurement is carried out according to EN 12102-2

This product conforms to:
- Regulation (EC) No. 1907/2006 (REACH);
- Regulation (EU) No. 812/2013 (labelling);
- (Italian) Ministerial Decree No. 174 of 06/04/2004 that transposes European Directive no. 98/83 on water quality;
- Radio Equipment Directive (RED): ETSI 301489-1, ETSI 301489-17.
- Radio Equipment Directive (RED): ETSI 301489-1, ETSI 301489-17.
  - Operating frequency 2.4 GHz (5 GHz not supported)
  - Maximum power of the transmitted signal is < 20 dBm

IDENTIFICATION OF THE APPLIANCE

The main information for identifying the appliance is contained on the adhesive data plate located on the water heater casing.

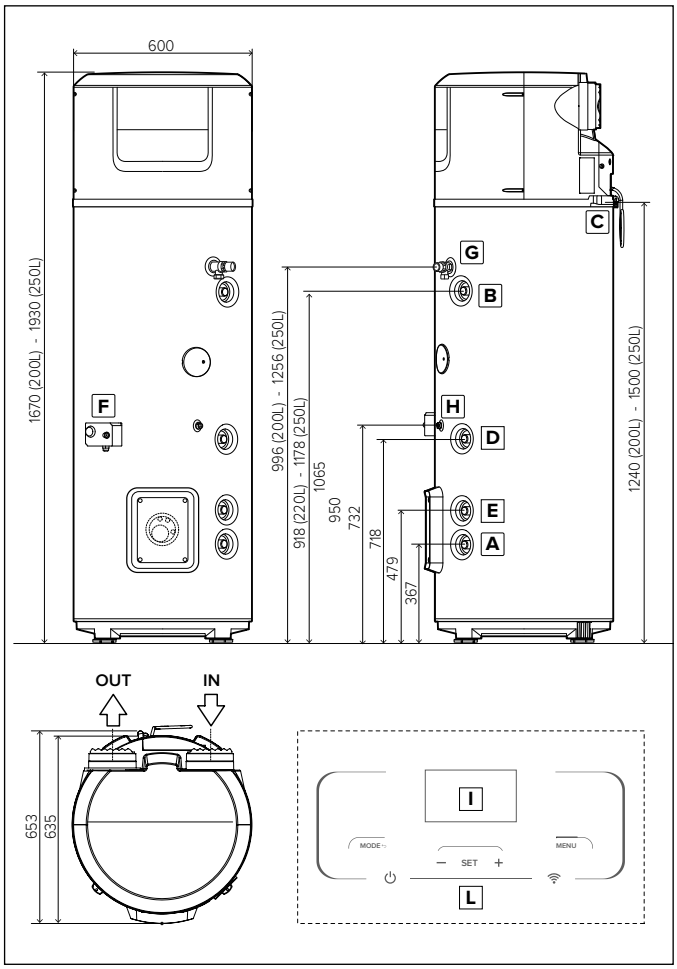


A	Model
B	Tank capacity
C	Serial no.
D	Power supply voltage, frequency, maximum absorbed power
E	Max./min. pressure of the refrigeration circuit
F	Marks and symbols
G	Absorbed power – heating element mode
H	Maximum tank pressure
I	Max./min. power in heat pump mode
L	Tipo di refrigerante e carica
M	Maximum tank pressure
N	GWP global warming potential / Quantity of fluorinated greenhouse gases

PRODUCT DESCRIPTION

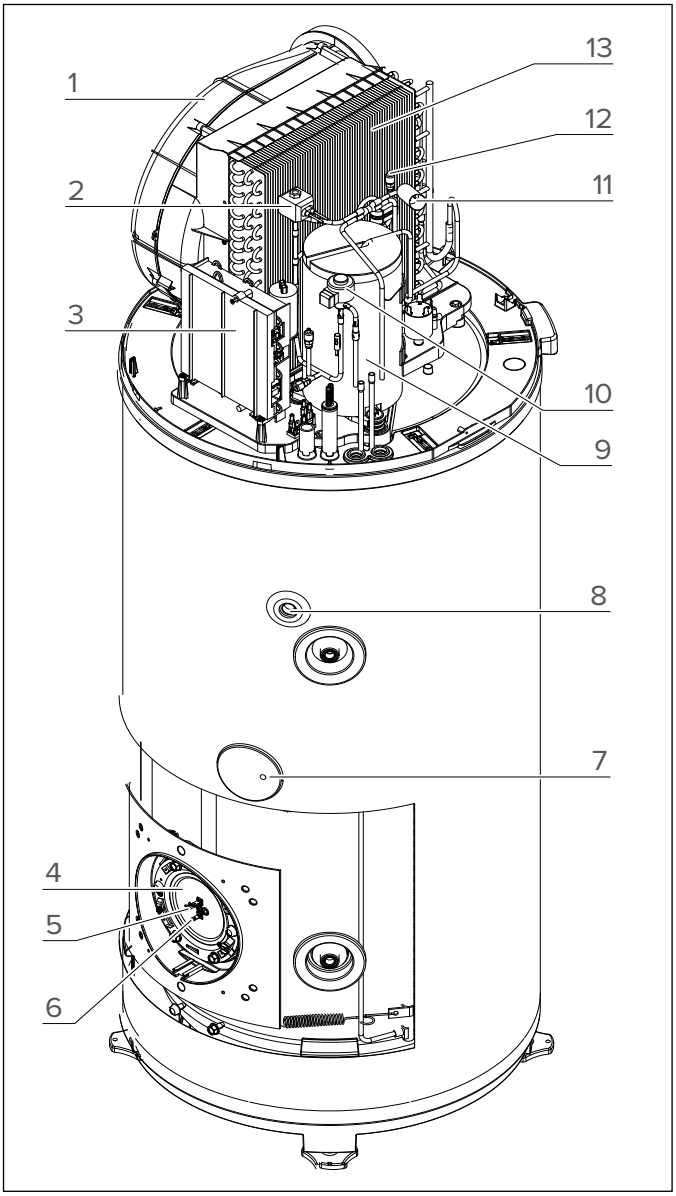
The floor-standing water heating heat pump consists of a top block containing the heat pump unit and the bottom part of the with the storage tank. There is a control panel with a display on the front part.

Dimensions



A	Inlet cold water ¾" connection
B	Outlet hot water ¾" connection
C	Condensate drain connection with 14mm diameter
D	Auxiliary circuit ¾" inlet pipe (only on 250l)
E	Auxiliary circuit ¾" outlet pipe (only on 250l)
F	Overheat stat and sheath for upper probe (S3) (only on 250l)
G	Temperature and Pressure Relief Valve
H	Sheath for upper probe (S2) (only on 250l)
I	Display
L	Touch buttons.

Main components



1	Fan
2	Hot gas valve
3	Electronic box
4	Bottom NTC temperature probe (heating element zone)
5	Electric heating element
6	Impressed current anode
7	Top NTC temperature probe (hot water)
8	Temperature and Pressure Relief Valve
9	Hermetic rotary compressor
10	Electronic expansion valve
11	Safety pressure switch
12	Pressure port
13	Evaporator

TECHNICAL DATA TABLE

DESCRIPTION	Unit	200 D	250 l
Rated tank capacity	l	200	245
Insulation thickness	mm	≃ 50	
Type of internal tank protection		Enamelling	
Type of corrosion protection		Disposable magnesium anode	
Maximum operating pressure	MPa	0,6	
Diameter of hydraulic connections	ll	G 3/4 M	
Diameter of condensate drainage connection	mm	14	
Diameter of air exhaust/intake pipes	mm	150-160-200 (with adapters)	
Minimum water hardness	°F	12	
Minimum conductivity of the water	µS/cm	150	
Weight when empty	kg	90	123
Weight when filled with water	kg	290	365
CYLINDER (EN 12897:2016+A1:2020)			
Normal operating pressure	bar	3,5	3,5
Maximum water supply pressure	bar	10	10
Cold connection (feed)		¾" G	¾" G
Hot connection (draw off)		¾" G	¾" G
Pressure Reducing Valve Set Pressure	bar	3,5	3,5
Cylinder TPRV	°C/bar	90-95/ 7	90-95/ 7
Combination valve PRV	bar	6	6
Expansion vessel pre-charge pressure	bar	3,5	3,5
Operating temperature of not-resetting thermostat	°C	--	30-70
CYLINDER INDIRECT COIL (EN 12897:2016+A1:2020)			
Connections		--	¾" G
Surface area	m^2	--	0,65
Volume coil	m^3	--	0,0041
Maximum supply pressure	bar	--	6
Rating @60°C	l	--	185,3
Primary flow rate	l/min	--	15
Primary heating power input	kW	--	13,6
Heating time from 15°C to 60°C	min	--	47:57
Max water temperature with external integration	°C	--	65
HEAT PUMP			
Average electrical power consumption	W	440	
Max. electrical power consumption	W	600	
Quantity of refrigerant fluid (R290)	kg	0.15	
Quantity of fluorinated greenhauses gases (R290)	Tonn. CO_2 eq.	0,00045	
Global warning potential (R290)	GWP	3	
Max. pressure of refrigerating circuit (low-pressure side)	MPa	1,5	
Max. pressure of refrigerating circuit (high-pressure side)	MPa	3,2	
Max. water temperature with heat pump	°C	62	
EN 16147 ([A])			
COP ([A])		3,16	3,51
Heating time ([A])	h:min	08:08	08:43
Heating energy consumption ([A])	kWh	3,067	3,589
Max. amount of hot water in a single intake Vmax ([A]), delivered at 55°C	l	278	339
Pes ([A])	W	24	26
Tapping ([A])		L	XL
812/2013 – 814/2013 ([B])			
Qelec ([B])	kWh	3,69	5,43
ηwh ([B])	%	131,2	144,2
Mixed water at 40°C V40 ([B])	l	278	339
Temperature setting ([B])	°C	55	55
Annual electricity consuption (average climatic condition) ([B])	kWh/year	781	1162
Load prifile ([B])		L	XL
Indoor sound power level ([C])	dB(A)	48	48

DESCRIPTION	Unit	200 D	250 I
HEATING ELEMENT			
Heating element power	V / W	Check product specification label	
Max. water temperature with heating element	°C	65	
Max. current consumption	A	10,5	
POWER SUPPLY			
Voltage / max. power consumption	V / W	Check product specification label	
Frequency	Hz	50	
Protection rating		IPX4	
AIR SIDE			
Standard air flow rate (automatic modulating control)	m^3/h	380	
Available static pressure	Pa	189	
Minimum volume of room of installation ([D])	m^3	20	
Minimum ceiling height of room of installation ([D])	m	1,74	2,00
Min. temperature of room of installation	°C	1	
Max. temperature of room of installation	°C	42	
Minimum air temperature (w.b. a 90% u.r.) ([E])	°C	-10	
Maximum air temperature (w.b. a 90% u.r.) ([E])	°C	42	

Further energy data is shown in the Product Data Sheet (Annex A) which is an integral part of this booklet. Products that are not provided with a label and corresponding product fiche for a combination of water heater and solar devices, as specified by Regulation 812/2013, are not intended to be used for these kind of combinations.

(A) Values obtained with outdoor air temperature of 7°C and relative humidity of 87%, inlet water temperature of 10°C and temperature set at 55°C (as per the provisions in EN 16147). Ducted product Ø200 mm,

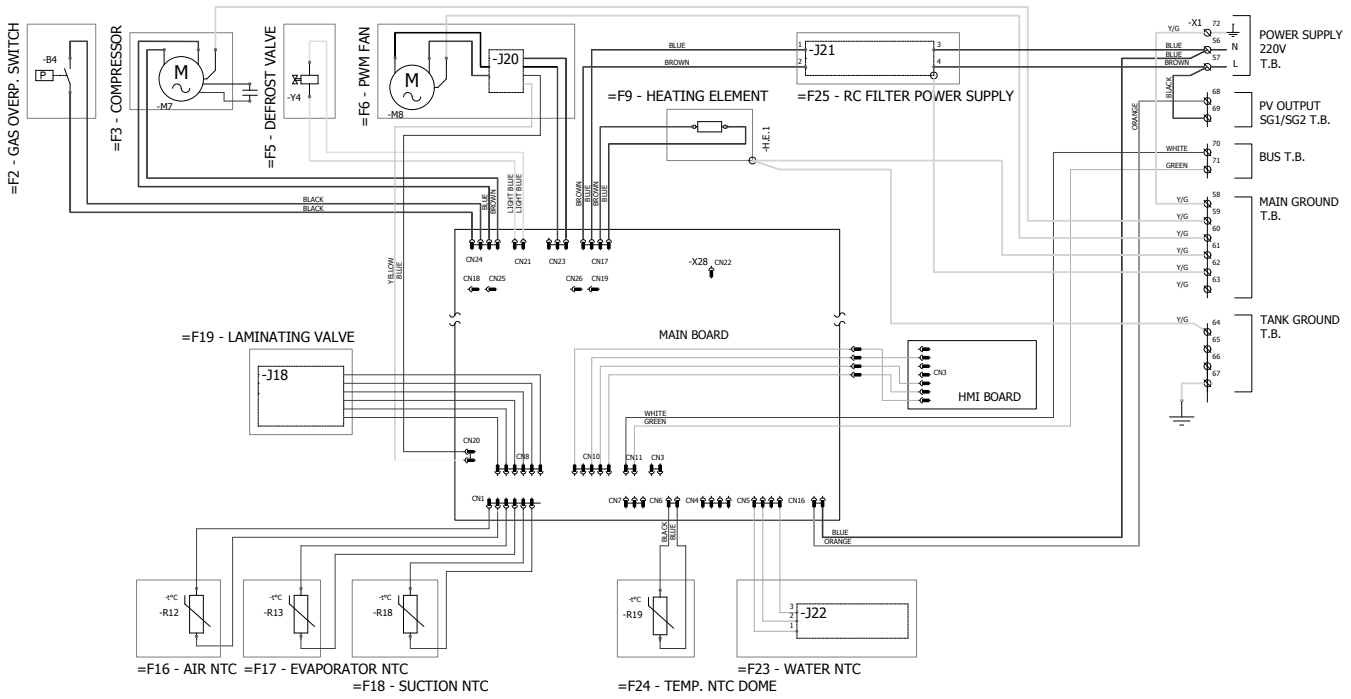
(B) Values obtained with outdoor air temperature of 7°C and relative humidity of 87%, inlet water temperature of 10°C and temperature set at 55°C (as per the provisions of 2014/C 207/03 - transitional methods of measurement and calculation). Ducted product Ø200 mm.

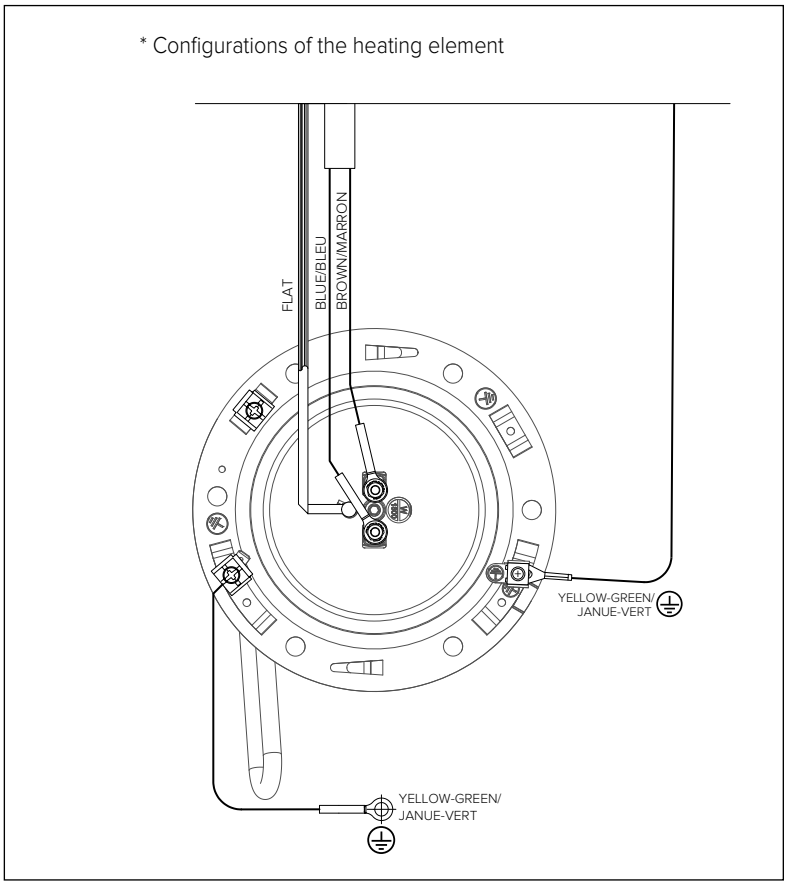
(C) Values obtained from the average of the results as per the provisions in EN 12102-2. Ducted product Ø200 mm.

(D) Value that guarantees the correct operation and easy maintenance with non-ducted products. The correct operation of the product is nevertheless guaranteed up to a minimum height of 2.090 m.

(E) Beyond the heat pump temperature range of operation, heating of the water is ensured by integration (as per provisions of EN 16147).

ELECTRICAL WIRING





INSTALLING THE APPLIANCE

⚠ WARNING!

The installation and initial start-up of the appliance must be performed by qualified personnel in compliance with the national regulations in force regarding installation, and in conformity with any regulations issued by local authorities and public health bodies. The installer is required to observe the instructions outlined in this manual. Once installation is complete, it is the installer's duty to inform and instruct the user on how to operate the water heater and carry out the main operations correctly.

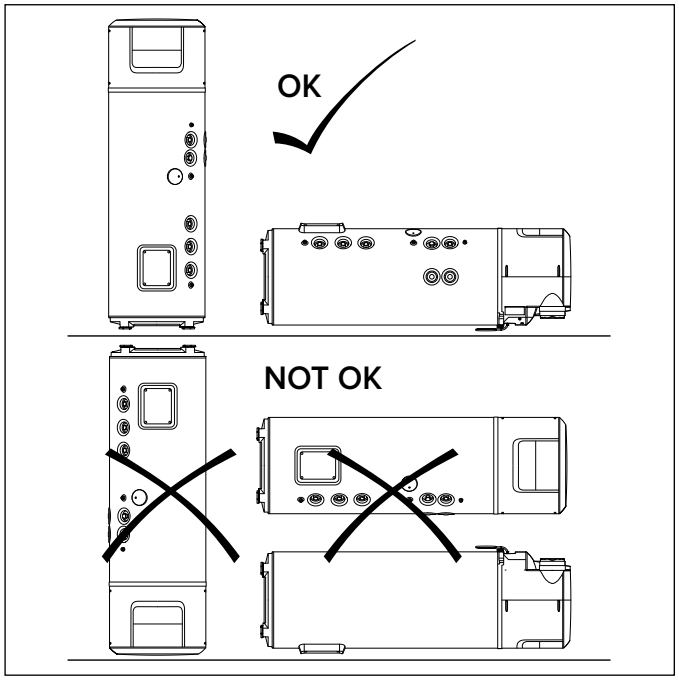
Transport and handling

Upon delivery of the product, check that the latter has not been damaged during transport and that no signs of damage appear on the packaging. In the event of damages, immediately notify any claims to the forwarder.

⚠ WARNING!

THE APPLIANCE SHOULD BE HANDLED AND STORED IN A VERTICAL POSITION.

The product may be handled in a horizontal position only for short distances, while resting on the rear end indicated; in this case, wait at least 3 hours before starting the appliance once it has been correctly repositioned in a vertical position and/or installed; this is to ensure that the lubricating oil inside the refrigeration circuit is suitably distributed and to avoid damages to the compressor



The packaged appliance may be handled either manually or with the aid of a forklift truck, while ensuring that the above indications are observed. It is advisable to keep the appliance in its original packaging until installing it in its chosen location, particularly when construction work is under way on-site.

When transporting or handling the appliance after the initial installation, observe the aforementioned indication concerning the allowed tilt angle and ensure that all water has been drained from the tank. Should the original packaging be missing, provide an adequate protection for the appliance to prevent any damages, for which the manufacturer shall not be held liable.

ATTENTION! The packaging elements must not be left within the reach of children, as they are sources of danger.

⚠ WARNING!

The water heater is supplied with a sufficient amount of R290 refrigerant (propane) for its operation.

It is a flammable and odourless refrigerant with excellent thermodynamic properties that produce a high level of energy efficiency. Owing to its flammability, we recommend strictly complying with the safety instructions given in this manual.

Never use equipment other than that recommended to speed up defrosting or for cleaning purposes.

For repairs, strictly observe the manufacturer's instructions only and always contact an authorised Technical Assistance Centre. Any repairs carried out by unqualified personnel could be dangerous.

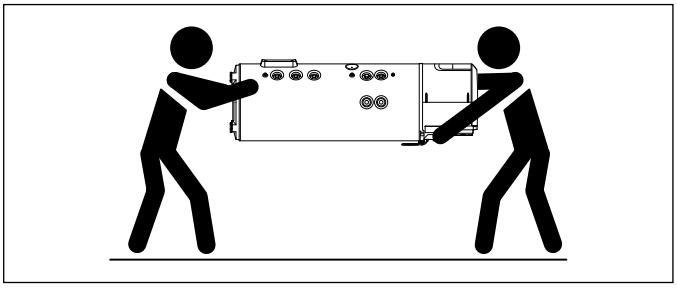
The appliance must be installed in a place without ignition sources operating continuously (for example: open flames, an operating gas-fired device or an operating electric heater). Do not perforate or burn the unit.

The appliance contains flammable R290 refrigerant. Warning: refrigerants are odourless.

GROUND POSITIONING

ATTENTION! Avoid installation on floors subject to strong vibrations or pulsations.

a) Once a suitable position for installation has been found, remove the packaging and remove the fasteners visible on the pallet on the two strips where the product rests.
b) The use of handles is only permitted when the product is empty, in order to facilitate the descent from the pallet and final positioning on the installation site.
   The use of handles for dragging and lifting the product vertically is prohibited. For transporting the product, tilt and lift it by 2 persons as shown in the figure:



c) Fasten the supplied feet to the floor (with suitable holes) using suitable screws and plugs.
d) Make the air ducting connections (see the "AIR CONNECTION" and "APPENDIX" paragraphs).
e) Make the electrical connections (refer to the paragraph ELECTRICAL CONNECTIONS).
f) Screw the dielectric joints onto the water inlet and outlet pipes.
g) Install a hydraulic safety device on the cold water inlet pipe.
h) Connect the siphon of the safety unit to the outlet and place the condensate discharge pipe inside the siphon.
i) Make the hydraulic connections (refer to the paragraph HYDRAULIC CONNECTIONS).

REQUIREMENTS FOR THE INSTALLATION SITE

WARNING! Prior to starting any installation activities, ensure that the location where the water heater is to be installed satisfies the following requirements:

DO NOT INSTALL THE WATER HEATER NEAR APPLIANCES THAT GENERATE HEAT OR NEAR DANGEROUS AND/OR FLAMMABLE MATERIALS.

a) In the event of water heaters without an air exhaust duct, the room of installation should have a volume of no less than 20 m^3 and must be adequately ventilated. Avoid installing the appliance in rooms which may favour frost build-up.
Do not install the product in a room containing an appliance that requires air to function (e.g. an open chamber gas boiler, open-chamber gas water heater, etc.) unless otherwise indicated by local law..

b) In the case of outlet air ducting, check that it is possible to reach the outside with the air ducting duct (located at the rear of the product) from the chosen point
IMPORTANT: The ducting connected to the appliance must be free of potential ignition sources, keep any ventilation openings free of obstructions;

c) Identify a suitable position on the wall, leaving enough space for easily performing any maintenance interventions;

d) Check that the available space is suitable to accommodate the product and any air connection, also considering hydraulic safety devices, electrical and hydraulic connections;

e) Ensure that the place chosen for installation has adequate space for connecting the safety unit siphon, to which the condensate outlet will also be connected;

f) The product is designed and manufactured to be installed indoors.

g) Ensure that the installation environment and the electrical and water system to which the appliance is to be connected comply with current regulations;

h) Check that a single-phase 220-240V ~ 50Hz power supply source is available in the place chosen for installation , or that it can be arranged there;

i) Ensure that the base is perfectly horizontal and can withstand the weight of the water heater filled with water;

j) Check that the chosen location complies with the IP (protection against fluid penetration) rating of the device in accordance with current regulations;

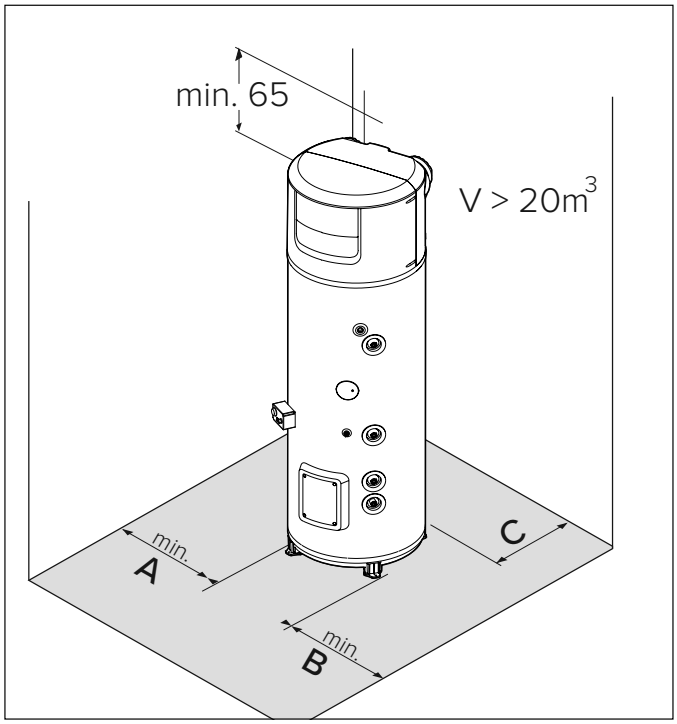
k) Check that the appliance is not exposed to direct sunlight, even where there are windows;

l) Ensure that the appliance is not exposed to, or the extracted air does not come from, particularly aggressive environments containing acidic fumes, particulates, gases or solvents;

m) In order to guarantee the performance and safety of the product,installation of the same in an outdoor location is only permitted, provided that the appliance is protected from atmospheric agents(in particular ice) and subject to replacement of the PVC power cable (supplied with the product) with a H07RN-F 3x1.5 mm^2 polychloroprene cable, available as an original accessory supplied by Ariston Group.

n) In addition, in the case of outdoor installation, although the product must be protected from atmospheric agents, its appearance is subject to possible damage caused by the indirect action of atmospheric agents (e.g. rust, yellowing of plastics, discolouration,etc.), about which the manufacturer's conventional warranty does not apply.;;

n) Check that the appliance is installed as close as possible to where it will be used in order to limit heat dispersion along the piping;



Model	A (mm)	B (mm)	C* (mm)
Not Ducted	120	350	100
Ducted ø 150 (PCV)	120	350	150
Ducted 160 ø (PEHD)	120	350	210

* *distance takes in consideration the installation of ducts with 90° curve.*

AIR SUPPLY CONNECTIONS

WARNING!
A type of canalization not suitable affects product performance and significantly increases the heating time!
Please bear in mind that using air from heated environments may hamper the building's thermal performance.
On the back of the appliance there is a connection for air intake and one for air exhaust. **IMPORTANT:** do not remove, break, or tamper with the air intake and exhaust grilles in any way. **Only in the case of ducted installation must the grilles be removed before connecting the corresponding inlet and/or outlet ducting. (Fig. A)**
The outlet air may reach temperatures that are 5-10°C lower compared to that of the inlet air and, if not ducted, the temperature of the room of installation may drop sensibly.
If operation by exhaust or intake to the outside (or another room) of the treated air by the heat pump is foreseen, suitable ducting must be used for air passage.
IMPORTANT: we recommend using insulated pipes to avoid the formation of condensation.
Make sure the ducting is connected and securely fastened to the product to prevent accidental disconnections and annoying noises.
Install the ducting as shown in (**Fig. B)** and respecting all the distances indicated in the "TYPICAL CONFIGURATIONS" table.
WARNING: Do not use outdoor grills resulting in high losses, such as anti-insect grilles.
The grids used should allow good air flow, the distance between the inlet and outlet air should not be less than 370 mm. Protect pipes from the external wind. The expulsion of air in the chimney is allowed only if the draft is appropriate, is also required periodic maintenance of the barrel, and chimney accessories.
For the maximum length of air ducts, including the terminal, please refer to the "Typical Configurations" table.
The total static pressure loss due to installation is calculated by adding the loss of the single installed components; this sum must be lower than the static pressure of the fan (Appendix)

TYPICAL CONFIGURATIONS

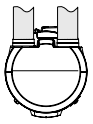
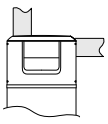
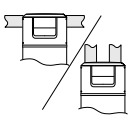
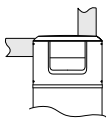
Type					
Maximum piping length **L1** exhaust + **L2** intake	ø150 (PVC)	61 [m]	54 [m]	48 [m]	54 [m]
	ø160 (PEHD)	70 [m]	65 [m]	59 [m]	65 [m]

FIG. A

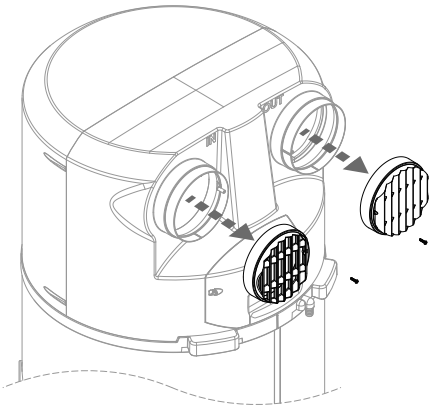
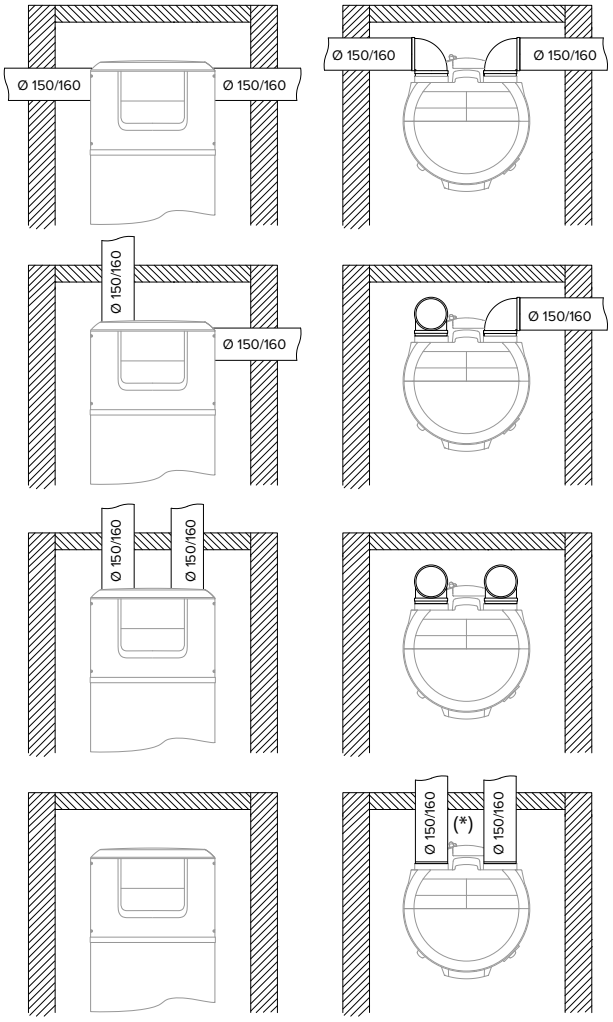


FIG. B

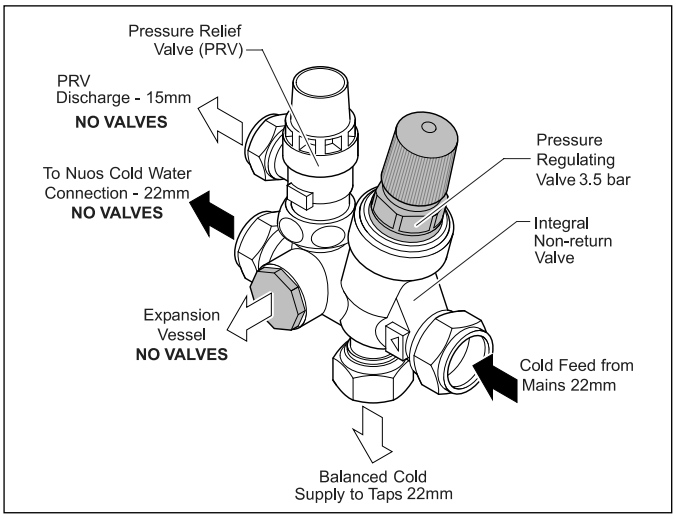


** PVC straight ducts connection with the products requires female/female adaptor. Accessory code 3208066*

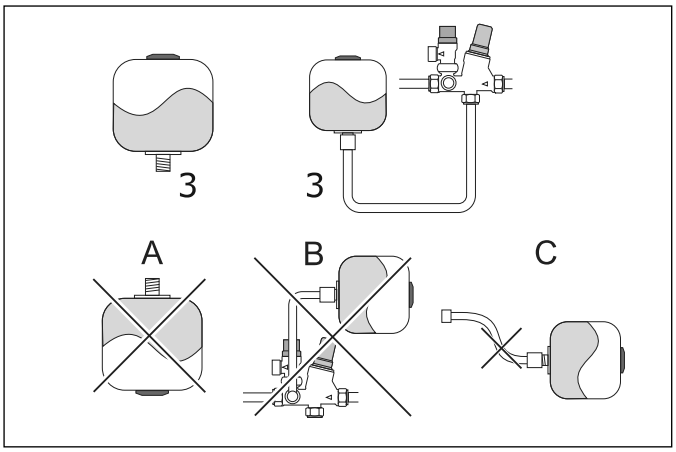
HYDRAULIC CONNECTIONS

WARNING: No valves must be fitted between the combination valve and the product.
WARNING: No valves must be fitted from the combination valve to expansion vessel or PRV discharge.
The combination valve can be installed in any orientation. The pipework must be flushed prior to fitting the valve to avoid damage to the valve.

COMBINATION VALVE



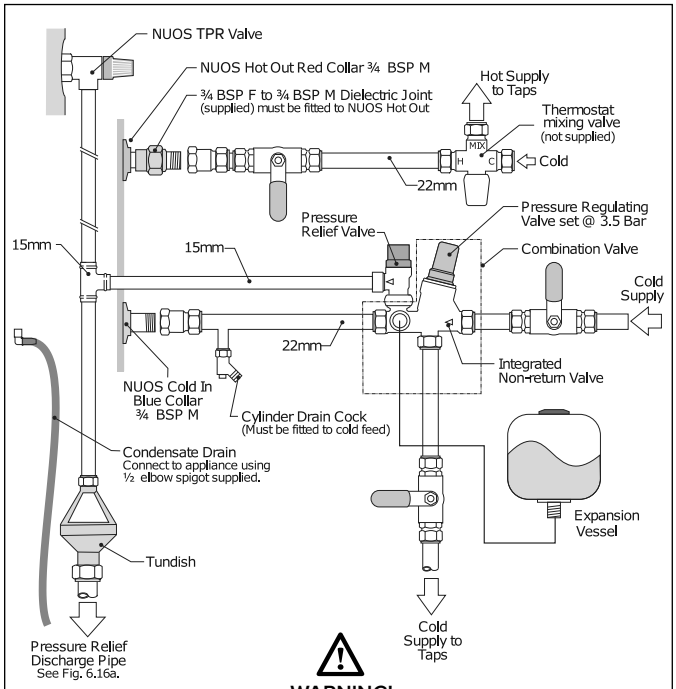
EXPANSION VESSEL INSTALLATION



To address contamination risk associated with stagnation and particulate accumulation, it is recommended that expansion vessels be securely installed in the vertical orientation to avoid localised low turnover (stagnation)

DO NOT install expansion vessel vertically with connection at the top (A). It is strongly recommended to not put the expansion vessel at hot water outlet. **DO NOT** connect via a vertical pipe above the combination valve (B). **DO NOT** use flexible hoses (C). Installing expansion vessel incorrectly can cause air to get trapped in the vessel itself, resulting in potential nuisance vibration through the Nuos and pipework.

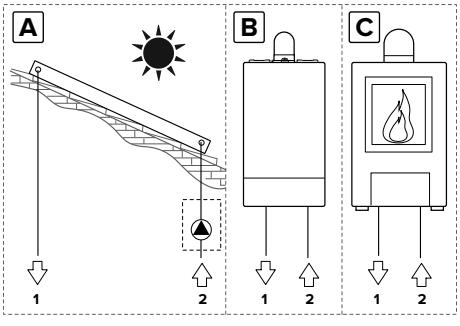
WATER CONNECTIONS

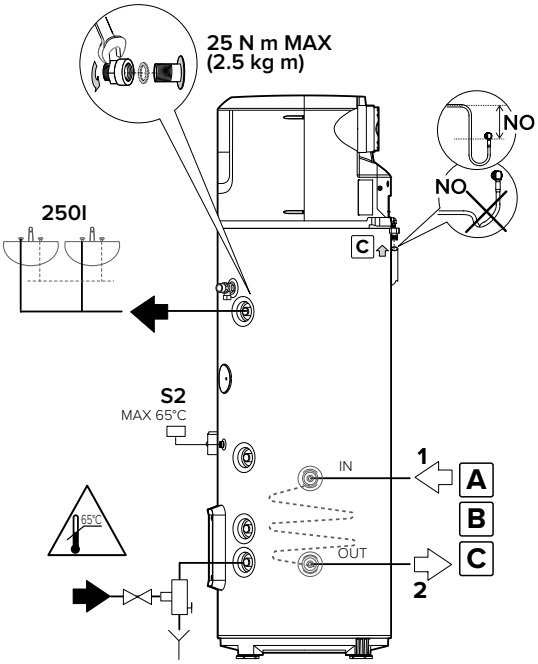


WARNING!
Hot water at temperature above 50°C running from the taps may immediately cause serious burns. Children, the disabled and the elderly run a greater risk in this regard. Therefore it is advisable to use a thermostatic mixing valve connected to the water outlet or where preferred at the point of use.

The appliance must not operate with water hardness levels below 12°F; on the other hand (>25°F), it is advisable to use a suitably calibrated and monitored water softener in the event of particularly hard water; in this event, the residual hardness must not fall below 15°F.

The 250l version has an indirect coil that is intended for connection to a water heating system, such as a solar system as show below.
A manual reset overheat stat is supplied fitted to the product.
For solar installations this stat should be wired so that in the event of over heating from the solar system the thermostat switches the solar pump of, thus preventing flow to the product. The overheat setting for the stat should be set at a maximum temperature 70°C
The 250l version coil has two ¾"G couplings, upper (inlet) and lower (outlet), on which to connect an auxiliary source.
WARNING! It is advisable to carefully wash the system's pipes in order to remove any residues of screw thread, welding or dirt which may hamper the correct operation of the appliance.



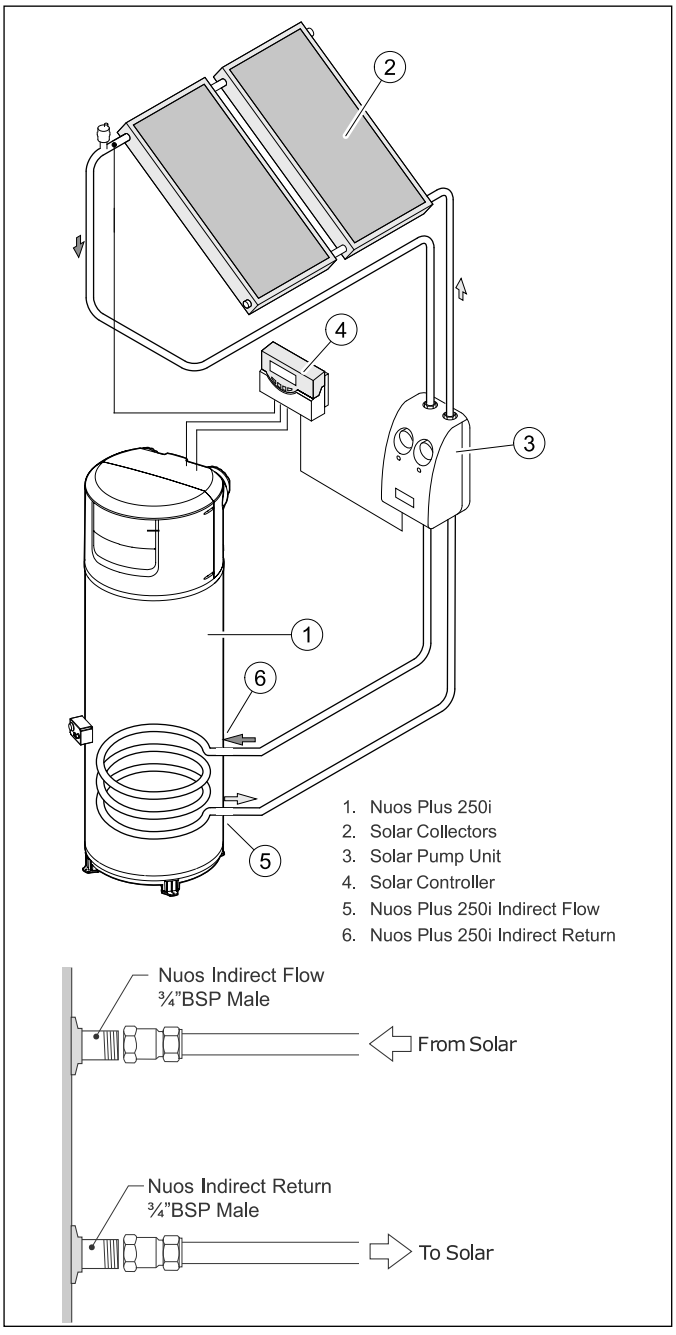


In the event of connection of 250l version to the boiler/stove, it is advisable to use sensor slot S2.

GENERAL GUIDANCE

Current guidance notes do not cover the connection of a solar thermal circuit to an unvented storage vessel (cylinder). However, if guidance is sought for compliance with current regulations the fundamental principle is to provide a failsafe means of shutting off the solar input to the heat exchanger if the cylinder temperature should rise above the set temperature
of the cylinder's energy cut out. (see Note 1). As with all unvented hot water systems, notification of intention to install should be given to your local building control.

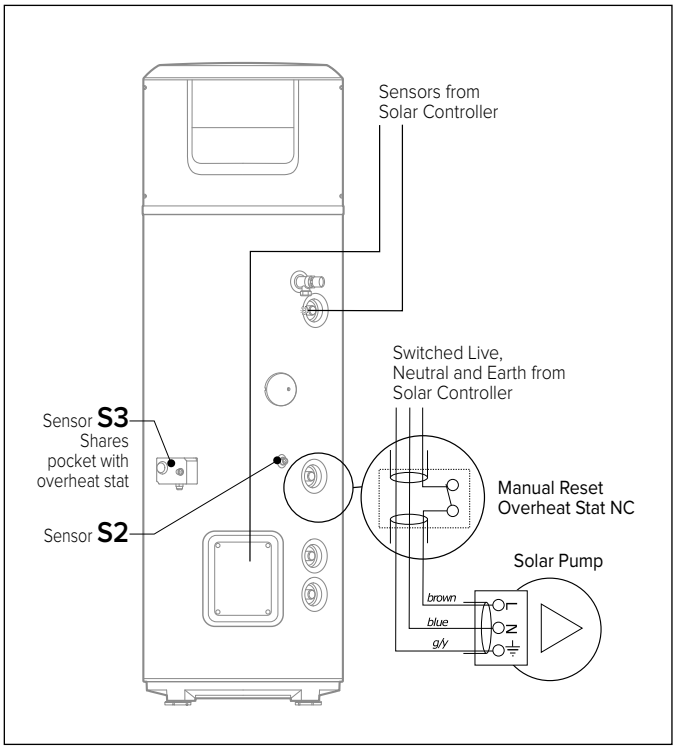
250l WITH TYPICAL SOLAR CONNECTION



- **OPTION A:** A non self resetting mechanical shut-off should be installed on the solar primary flow to the cylinder. The mechanical shut-off should be suitable for use with a solar primary circuit (i.e. high temperature and glycol resistant). The mechanical shut-off should be integrated electrically with the cylinder energy cut out/s and if necessary the solar circuit temperature control, please refer to the solar controller manufacturer for further information.
- **OPTION B:** Where the solar controller and hydraulic system demonstrate that by no lesser means the requirement in Option A is satisfied by other means; certification by an approvals body is required to demonstrate that in the event of the stored water going over temperature, the heat input to the cylinder is isolated by physical means and is non self resetting. These systems should be clearly identified with reference to the approvals body. (See Note 2).

- Note 1: Whilst most solar cylinders use a coil type heat exchanger other options such as external plate to plate devices , external annulars or 'tank in tank' systems may be used but the same control options always apply.
- Note 2: Current approved bodies include the British Board of Agreement (BBA) , WRc-NSF Limited, or KIWA.

250l OVERHEAT STA WIRING (TYPICAL)



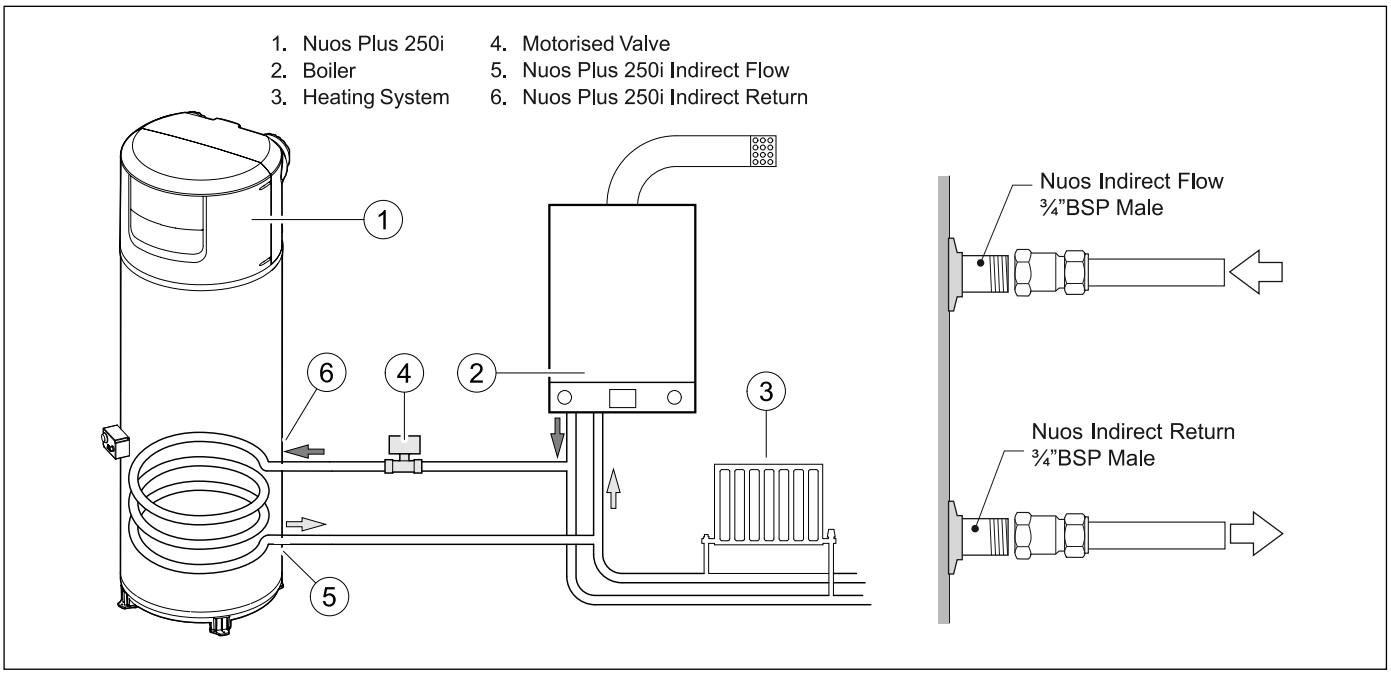
The 250l version has an indirect coil that is intended for connection to a water heating system, such as a boiler as show below.
A manual reset overheat stat is supplied fitted to the product.
This stat should be wired so that in the event of over temperature in the product's hot water system the thermostat breaks the electrical supply to the motorized valve which in turn mechanically closes preventing primary water entering the coil.
The overheat setting fro the stat should be set at a maximum temperature 70°C

LEGIONELLA BACTERIA FUNCTION

Legionella are small rod shaped bacteria which are a natural constituent of all fresh waters. Legionaries' disease is a serious pneumonia infection caused by inhaling the bacteria Legionella pneumophilia or other Legionella species. This bacterium is frequently found in domestic, hotel and other water systems and in water used for air conditioning or air cooling system. Hence the main intervention against the condition is prevention, through control of the organism in water systems. The European standard CEN/TR 16355 gives recommendations for good practice concerning the prevention of Legionella growth in drinking water installations but existing national regulations remain in force. This storage water heater is supplied with the thermal disinfection cycle deactivated by default. If the Legionella bacteria function is activated by the installer parameter, each time the product is turned on and every 30 days, the system carries out a thermal disinfection cycle raising the temperature of the boiler to 60°C.

Warning: when this software has been carrying out the thermal disinfection treatment, water temperature can cause severe burns instantly. Children, disabled and elderly are at highest risk of being scalded. Feel water before bathing or showering.

250I WITH TYPICAL BOILER CONNCETION



TPRV & PRV DISCHARGE

The discharge from the cylinder TPRV and combination PRV must be plumbed to the tundish and should not be used for any other purpose. The tundish must be vertical and fitted within 750mm of the pressure relief valve and must be located with the Nuos. The tundish must be in a position visible to the occupants, and positioned away from any electrical devices. The discharge pipe from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge, and be made of a suitable material in line with Building Regulation G3 (preferably metal). The tundish must not be located near or above electrical components, switches or junction boxes.

TPRV & PRV DISCHARGE PIPES – TO GULLY

The discharge pipes from safety devices (tundish) must be installed to fully comply with Part G3 of the Building Regulations (latest edition). The following text, and diagram 1 are reproduced from G3 Building Regulations 2010 (as amended) Draft.

BUILDING REGULATIONS G3

(The following text is reproduced from the Building Regulations. It is included here for reference only).

These are a statutory document and take priority over all other regulations and recommendations. The installation of an unvented hot water system of over 15 litres is classified as a "Controlled Service" and Regulation G3 applies. To meet the requirements of the regulation, installation of an unvented system should be undertaken by a "competent installer". All installations of unvented hot water storage systems having a capacity of more than 15 litres should be notified to the relevant Local Authority by means of building notice 10 or by the submission of full plans. It is important to note that it is a criminal offence to install an unvented hot water storage system over 15 litres without notifying the Local Authority

DISCHARGE PIPES FROM SAFETY DEVICES

Discharge pipe D1

1. Safety devices such as temperature relief valves or combined temperature and pressure relief valves should discharge either directly or by way of a manifold via a short length of metal pipe (D1) to a tundish.
2. The diameter of discharge pipe (D1) should be not less than the nominal outlet size of the safety device, e.g. temperature relief valve.
3. Where a manifold is used it should be sized to accept and discharge the total discharge from the discharge pipes connected to it.
4. Where valves other than a temperature and pressure relief valve from a single unvented hot water system discharge by way of the same manifold that is used by the safety devices, the manifold should be factory fitted as part of the hot water storage system unit or package.
5. The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible to, and lower than, the safety device,with no more than 600mm of pipe between the valve outlet and the tundish (see Diagram 1).
   Note: To comply with the Water Supply (Water Fittings) Regulations, the tundish should incorporate a suitable air gap.
6. Any discharge should be visible at the tundish. In addition, where discharges from safety devices may not be apparent, e.g. in dwellings occupied by people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place,e.g. electronically operated.

Discharge pipe D2

7. The discharge pipe (D2) from the tundish should: a. have a vertical section of pipe at least 300mm long below the tundish before any elbows or bends in the pipework (see Diagram 1); and b. be installed with a continuous fall of at least 1 in 200 thereafter.
8. The discharge pipe (D2) should bemade of: a. metal; orb. other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged and is clearly and permanently marked to identify the product and performance standard (e.g. as specified in the relevant part of BS 7291-1:2006 Thermostatic pipes and fittings for hot and cold water for domestic purposes and heating installations in buildings General requirements).
9. The discharge pipe D2 should be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. for discharge pipes between 9m and 18m the equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device; between 18 and 27m at least 3 sizes larger, and so on; bends must be taken into account in calculating the flow resistance. See Diagram 1, Table 3.1 and the worked example.
   Note: An alternative approach for sizing discharge pipes would be to follow Annex D, section D.2 of BS 6700:2006 + A1:2009 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

DIAGRAM 1 Typical discharge pipe arrangement

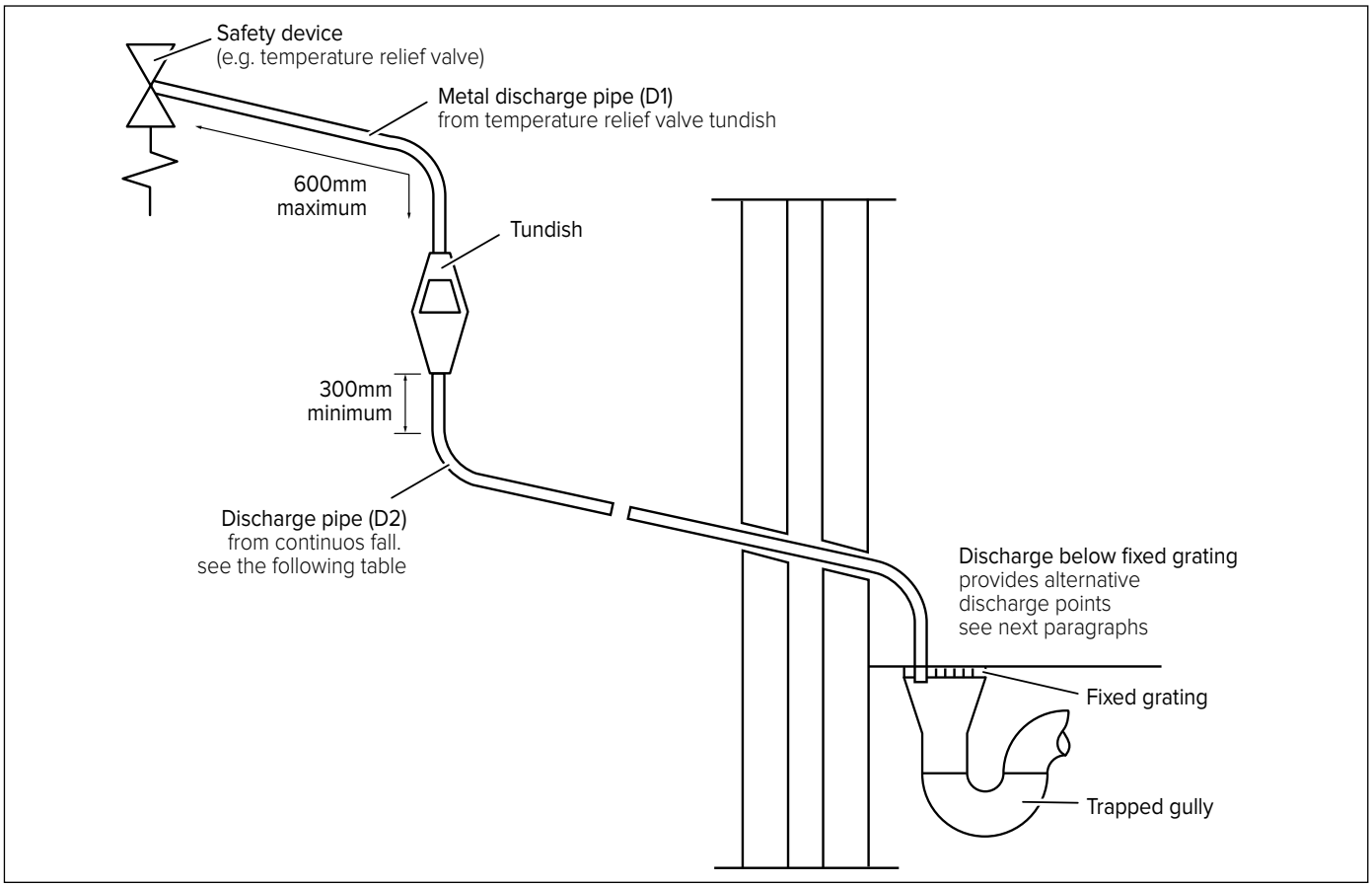


TABLE SIZING OF COPPER DISCHARGE PIPE 'D2' FOR COMMON TEMPERATURE RELIEF VALVE OUTLET SIZES

Valve outlet size	Minimum size of discharge pipe D1*	Minimum size of discharge pipe D2* from tundish	Maximum resistance allowed, expressed as a length of straight pipe (i.e. no elbows or bends)	Resistance created by each elbow or bend
G ½"	15 mm	22 mm	Up to 9 m	0.3 m
		28 mm	Up to 10 m	1.0 m
		35 mm	Up to 27 m	1.4 m
G ¾"	22 mm	28 mm	Up to 9 m	1.0 m
		35 mm	Up to 13 m	1.4 m
		42 mm	Up to 27 m	1.7 m
G 1	28 mm	35 mm	Up to 9 m	1.4 m
		42 mm	Up to 13 m	i.7 m
		54 mm	Up to 27 m	2.3 m

*see point 2 and 9 and Diagram 1
Note: The above table is based Dn copper pipe. Plastic pipes nay be cf different bore and res stance.
Sizes and maximum lengths of plastic should be calculated using cata prepared for the type of pipe ceing used.

Worked example:
The example below is fora G ½" **temperature relief valve** with a discharge pipe (D2) having 4 No. 22 mm elbows and length of 7 m from the **tundish** to the point of discharge.

From Table:
Maximum resistance allowed for a straight length of 22 mm copper discharge pipe (D2) from a G ½" **temperature relief valve** is: 9.0 m
Subtract the resistance for 4 No. 22 mm elbows at 0.8 m each = 3.2 m

Therefore the maximum permitted length equates to 5.8 m which, is less than the actual length of 7 m therefore calculate the next largest size.

Maximum resistance allowed for a straight length of 28 mm copper discharge pipe (D2) from a G ½" **temperature relief valve** is: 18 m

Subtract the resistance for 4 No. 28 mm elbows at 1.0 m each = 4m

Therefore the maximum permitted length equates to: 14 m

As the actual length is 7 m, a 28 mm (D2) copper pipe will be satisfactory.

10. Where a single common discharge pipe serves more than one system, it should beat least one pipe size larger than the largest individual discharge pipe (D2) to be connected.
11. The discharge pipe should not be connected to a soil discharge stack unless it can be demonstrated that the soil discharge stack is capable of safely withstanding temperatures of the water discharged, in which case, it should: a. contain a mechanical seal, not incorporating a water trap, which allows water into the branch pipe without allowing foul air from the drain to be ventilated through the tundish; b. be a separate branch pipe with no sanitary appliances connected to it; c. if plastic pipes are used as branch pipes carrying discharge from a safety device, they should be either polybutylene (PB) or crosslinked polyethylene (PE-X) complying with national standards such as Class S of BS7291-2:2006 or Class S of BS 7291-3:2006 respectively; and d. be continuously marked with a warning that no sanitary appliances should be connected to the pipe.

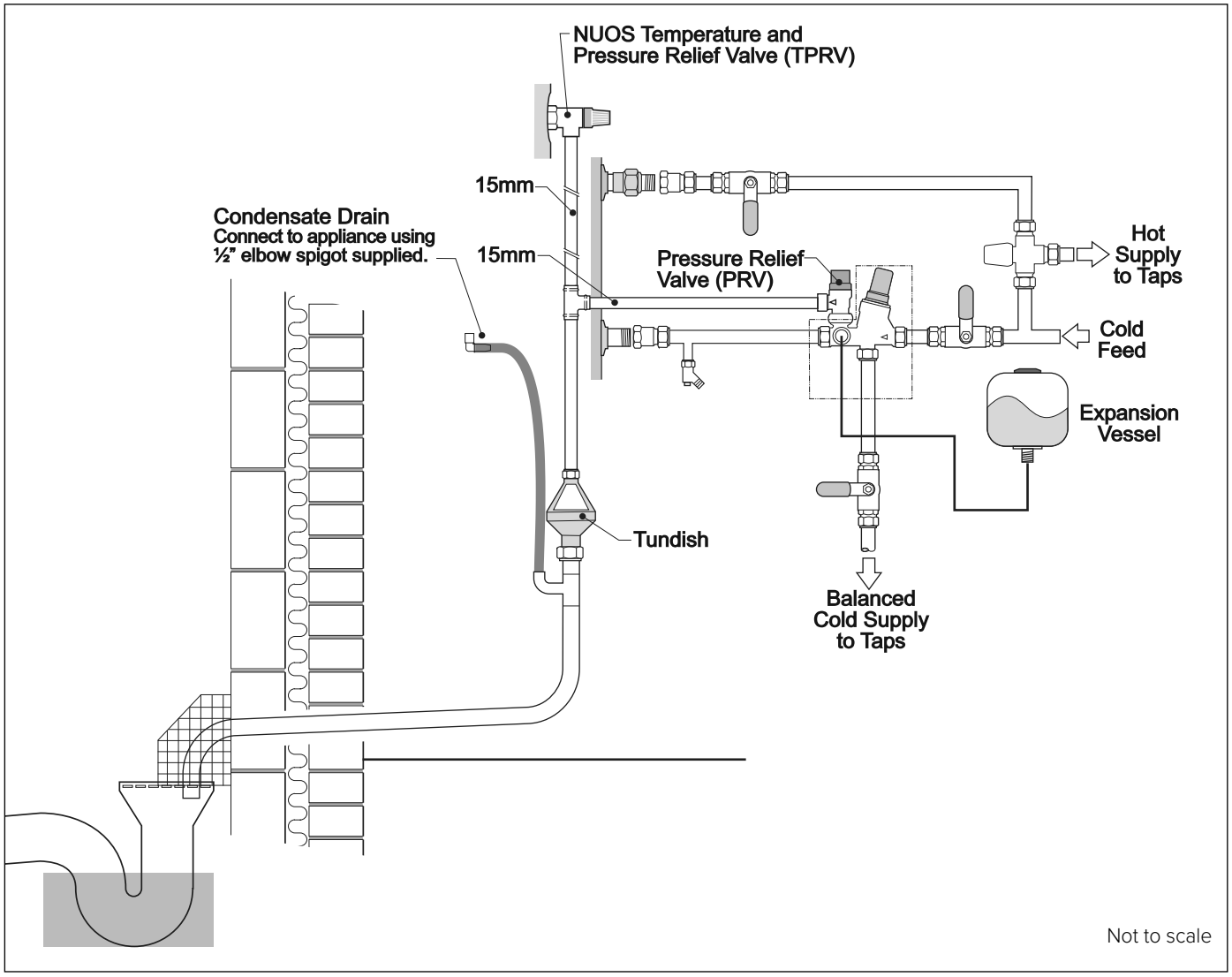
Notes:

- Plastic pipes should be joined and assembled with fittings appropriate to the circumstance in which they are used as set out in BS EN ISO 1043-1:2002 Plastics. Symbols and abbreviated terms. Basic polymers and their special characteristics.
- Where pipes cannot be connected to the stack it may be possible to route a dedicated pipe alongside or in close proximity to the discharge stack

Termination of discharge pipe

12. The discharge pipe (D2) from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge.
13. Examples of acceptable discharge arrangements are: a. to a trapped gully with the end of the pipe below a fixed grating and above the water seal; b. downward discharges at low level; i.e. up to 100mm above external surfaces such as carparks, hard standings, grassed areas etc. are acceptable providing that a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility; and, c. discharges at high level: e.g. into a metal hopper and metal downpipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering system that would collect such discharges.
14. The discharge would consist of high temperature water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges. In some buildings, e.g. care homes, in-line blending valves would need to meet the additional performance standards set out in NHS Estates Model specification D 08.

TYPICAL EXPANSION DISCHARGE ARRANGEMENT



ELECTRICAL CONNECTIONS

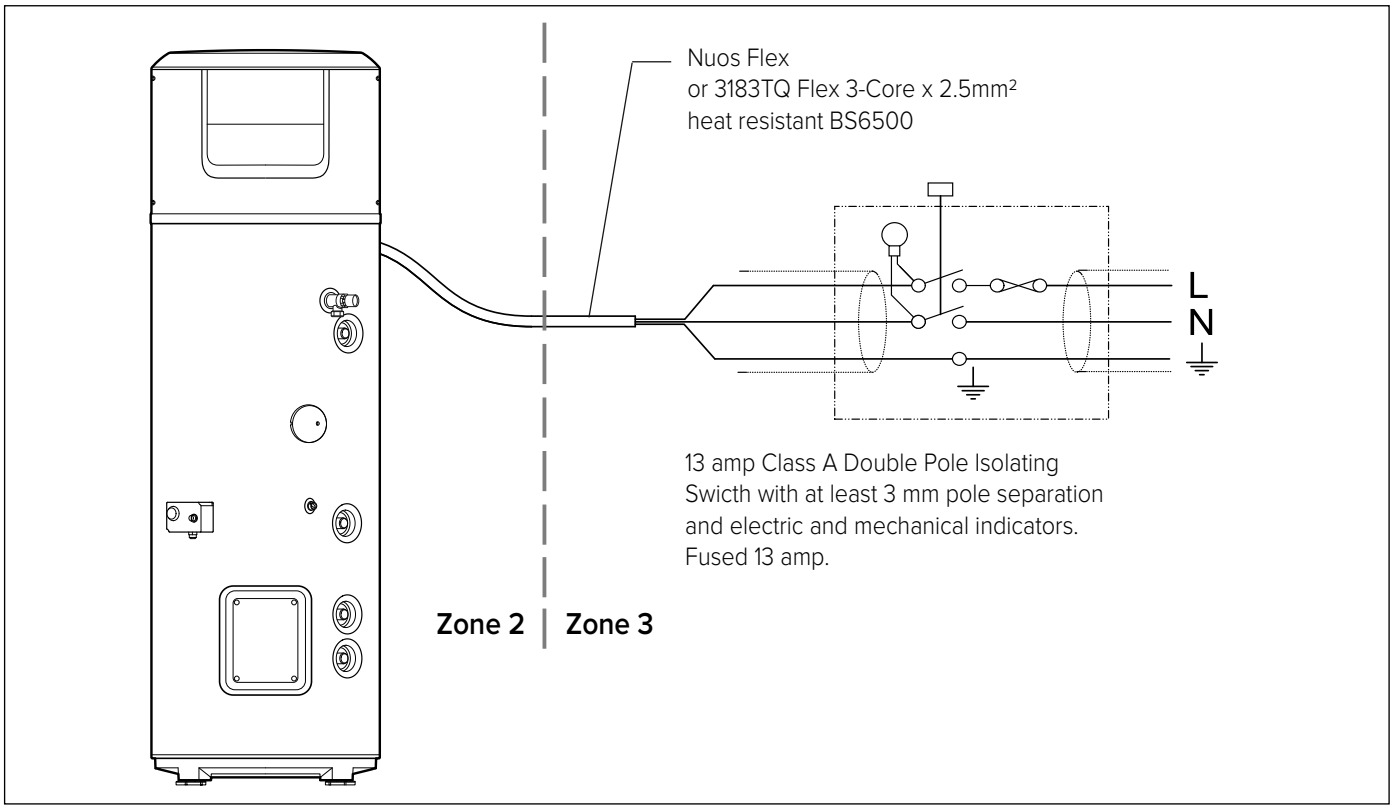
⚠ WARNING!
Before you get access to terminals, all supply circuits must be disconnected.

IMPORTANT
Where an appliance is installed in a room containing a bath or shower, the appliance and any electrical switch or any appliance control, utilitising mains electricity should be situated specifically in accordance with current IEE wiring regulations, Health & Safety document no. 635 (Electricity at Work Regulations). For unusual locations special procedures may be necessary. BS 6798 gives detailed guidance on this aspect.

The appliance is supplied with a power supply cable (should the latter need to be replaced, use only original spare parts supplied by the manufacturer).
It is advisable to carry out a check on the electrical system to verify conformity to the regulations in force. Verify that the electrical system can suitably withstand the water heater's maximum power consumption values (refer to the data plate), in terms of the size of the cables and their conformity to the regulations in force.

It is forbidden to use multiple outlet sockets, extension cables or adaptors. It is forbidden to use piping from the water, heating and gas systems for earthing the appliance.
Prior to operating the machine, make sure that the electricity mains voltage conforms to the value indicated on the appliance's data plate. The manufacturer of the appliance shall not be held liable for any damage caused by failure to earth the system or due to anomalies in the electric power supply. To disconnect the appliance from the mains, use a bipolar switch complying with all applicable CEI-EN regulations in force (minimum distance between contacts 3 mm, switch preferably equipped with fuses). The insertion of the above-mentioned protections must be carried out for all auxiliary 230V loads on the product.
The appliance must comply with the European and national standards, and must be protected by a 30mA RCD.
The main circuit board on the appliance is fitted with an earth contact for operating purposes only, not for safety purposes.

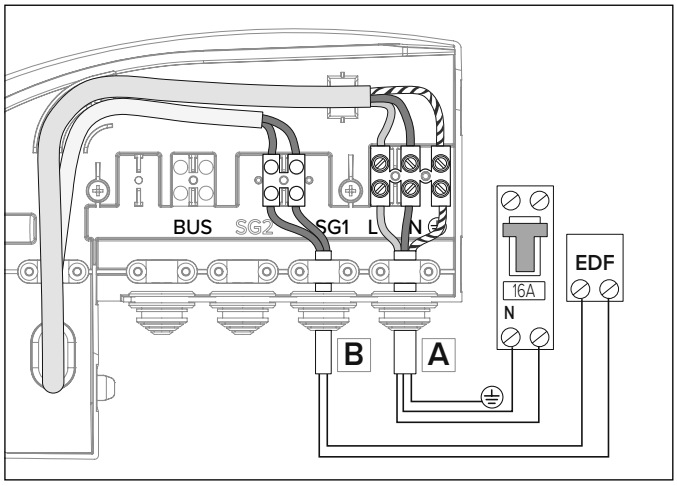
ELECTRICAL CONNECTION



Description		Cable	Type	Maximum current	Classe
Permanent power supply (cable supplied with the appliance)	220-240V ~ 50Hz	3G ø min. 1.5 mm²	H05VV-F	10,5 A	I
Signal HC-HP/PV (cable not supplied with the appliance)	220-240V ~ 50Hz	2 x 1,5 mm² (ext. ø MIN. 8 mm)	H05VV-F	5 mA	--
Signal BUS* (cable not supplied with the appliance)	24V dc	max. 50 m - 2 x 1,5 mm² (ext. ø MIN. 8 mm)	LiYY-W	130 mA	III

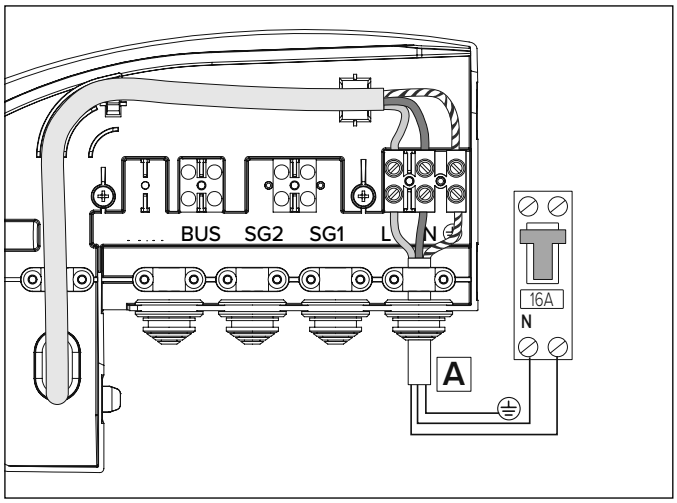
*** IMPORTANT: in the bus connection, to avoid interference problems, use a shielded cable or twisted pair cable.**

PERMANENT ELECTRICAL CONNECTION (24h/24h)
Use this configuration whenever users do not have a two-tier electricity rate. The water heater will always be connected to the power supply network to ensure 24h operation.

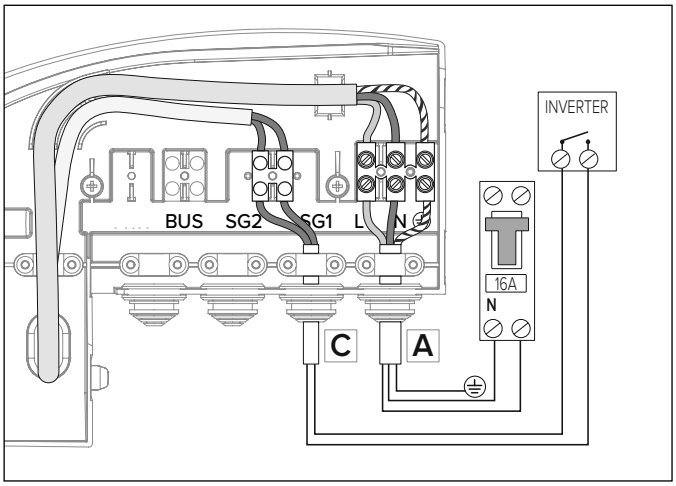


ELECTRICAL CONNECTION WITH DUAL POWER SUPPLY AND HC-HP SIGNAL (power supply 24h/24h)
It offers the same cost advantages as the two-tier rate configuration but, additionally, it provides rapid heating thanks to the BOOST mode that activates the heating even with the HP rate.

1) Connect a bipolar cable to the appropriate signal contacts on the meter.
2) Connect the signal bipolar cable (**B**) to the appropriate EDF connector "**SG1/SG2**" which is inside the connection box (make a hole in the rubber plugs to create a suitable passage section).
   WARNING: The EDF signal has a 230V voltage.
3) Activate the HC-HP function through the P1 parameter in the installer menu.



PHOTOVOLTAIC CONNECTION
If you have a PV system to be connected, you can connect a bipolar cable from the inverter to the connection box (secure the cable into the dedicated cabling sheath).
Connect this cable (**C**) to the connector called "**SG1/SG2**" and activate the PV (P11) function via the installer menu.
WARNING: signal 230 V.



Only for SYS or TWIN SYS models, if you have an auxiliary heat generator (e.g. boiler) and you would like to use it instead of the integration carried out by the heating element: If you connect the SYS version to the boiler/stove, it is advisable to use upper sensor slot S3. If you connect the TWIN SYS version to the boiler/stove, it is advisable to use sensor slot S4 for the lower heat exchanger and S3 for the upper one); if you connect the SYS or TWIN SYS versions to the solar control unit (lower heat exchanger), you can use the lower sensor slot on its own (S2) or both sensor slots (S2) and (S3/S4).

Bus BridgeNet®

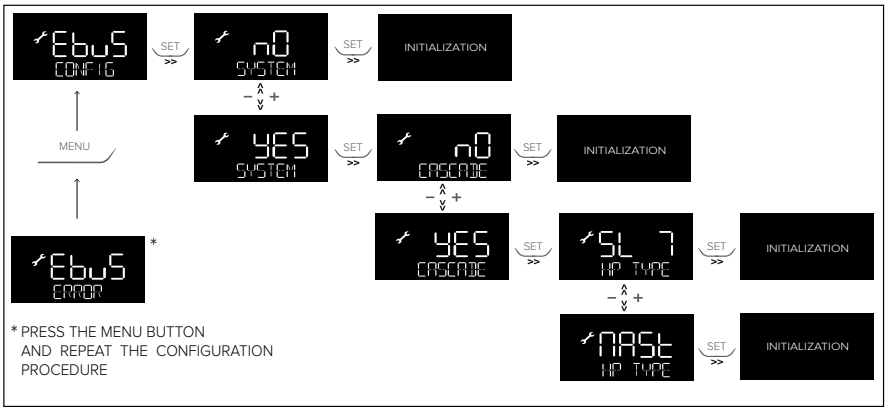
START WIZARD

This product is compatible with Bus BridgeNet®.
Set the SYSTEM and CASCADE parameters as indicated below for correct installation on BUS during the start phase:

- **SYSTEM = NO**
  The product is not connected on BUS or is only connected to a remote control.
- **SYSTEM = YES Cascade = NO**
  The product is installed on a system on bus with other compatible heat generators (solar heating, boiler, hybrid system or heat pump), at least one of which is powering the BUS. In presence of a Wi-Fi gateway on BUS (installed on remote control or on heat generator), the heating and domestic hot water services can be managed via a single app for smartphones.
- **SYSTEM = YES Cascade = YES**
  The product is installed on a cascade system (max 8) for commercial or collective use. After setting the CASCADE option, confirm whether the product is the MASTER or one of the cascade SLAVES. The BUS allows you to align all the user operating parameters on the MASTER product with those on the SLAVE products.

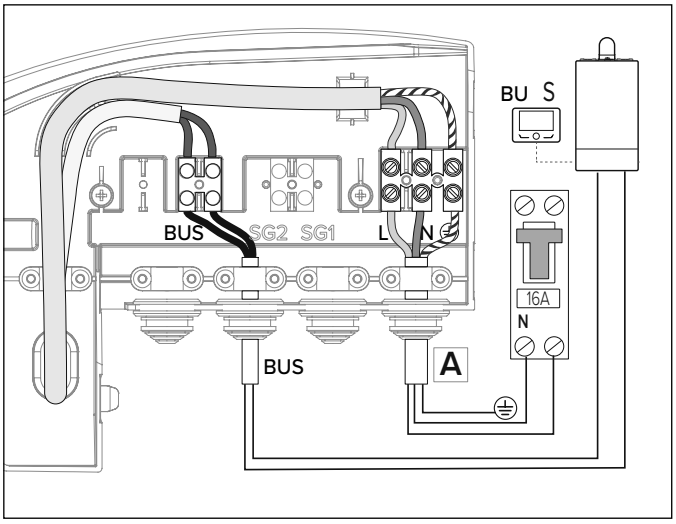
The SYSTEM and CASCADE parameters affect the P33 and P34 parameters of the installer menu.

If the product is enabled to work on BUS in order to avoid risks of a power overload, the product will not power the BUS (P33 parameter of the installer menu set to OFF), except for when the product is a cascade MASTER. It is therefore necessary to have at least another generator which powers the BUS to complete the start phase.
When the product is installed on BUS, all the parameters for the management of domestic hot water, its special parameters and the system parameters are shared with all other products, allowing you to use just one remote control.



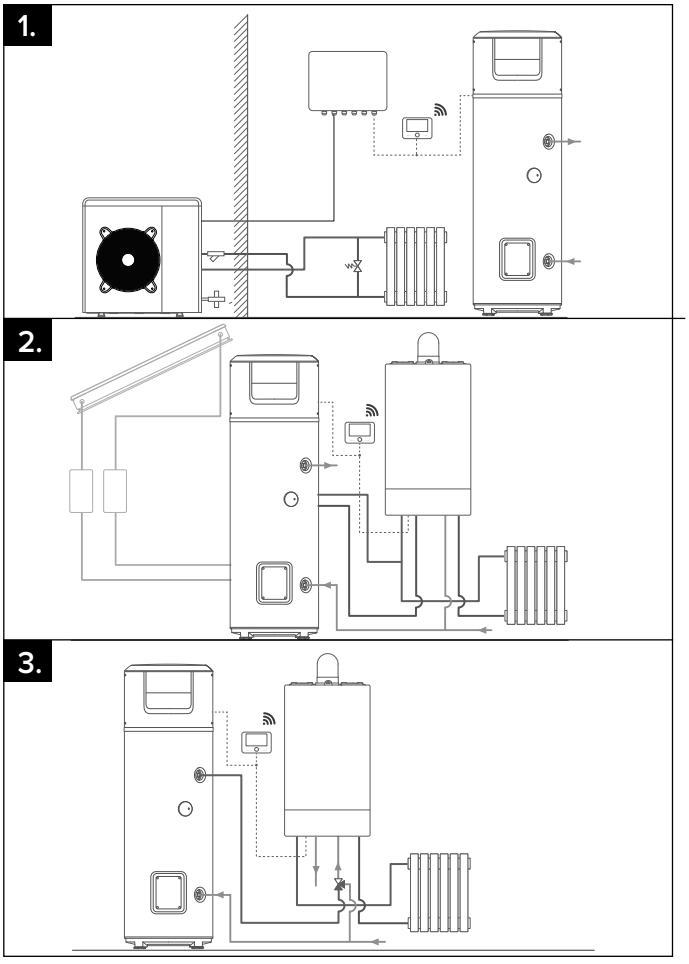
BUS CONNECTION

Connect a cable to the “BUS” connector to manage the heat pump water heater with a single remote control on BUS together with other compatible heat generators**.**



INSTALLATION TYPES WITH OTHER HEAT GENERATORS

1. **Heat pump water heater and separate heat generator (boiler, heat pump or hybrid system).**
   The products have no integration but can be managed via a single remote control.
2. **Heat pump water heater with auxiliary generator (boiler and/or solar system) with coil.**
   If the system is installed with a boiler acting as a support generator, in order for the heat pump water heater to call the boiler as opposed to the heating element via the BUS, you must set the P14 parameter to value 3 (consult INSTALLER MENU section).
   Unless otherwise specified in the auxiliary generator manual, the auxiliary generator does not read the water heater sensors; therefore additional sensors are required depending on the hydraulic circuit diagram.
3. **Heat pump water heater in pre-heating of combined heating generator (boiler or combi hybrid).**
   In order to enable the pre-heating management on the domestic hot water service, set the P14 parameter to 2. In this installation, the water heater and the combi generator share the same DHW temperature setting. The water heater temperature can be reduced in pre-set time slots using the T MIN parameter or increased using the PV SET parameter if there is a photovoltaic system.
   The combi generator does not read the sensors of the water heater. Additional sensors are required, depending on the hydraulic circuit diagram.



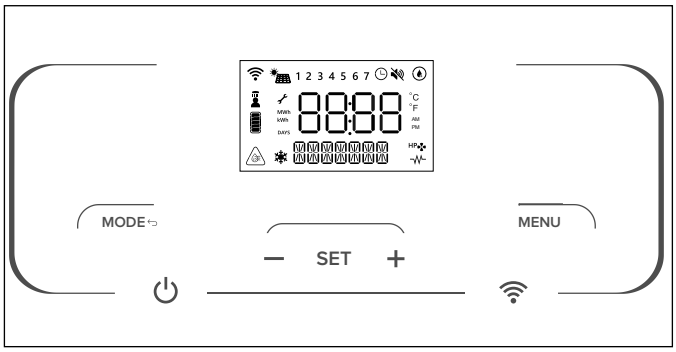
START-UP

WARNING!

The installation and initial start-up of the appliance must be performed by qualified personnel in compliance with the national regulations in force regarding installation.

CONTROL PANEL

The user interface has LCD display and 7 touch buttons. There are 2 blue leds: ON/OFF (when the product is power supplied) and Wi-Fi.



List of the icons shown on the display:

	Changeable parameter
	Wi-Fi enabled
	Schedule programming enabled
1....7	Day of the week (1 = Sunday)
HP	Heat pump active
	Heating element integration enabled
	ANTIBACTERIAL function is enabled
	PV enabled (only if present) When the corresponding mode is active, the secondary string indicates it
	SILENT function is enabled
	ANTIFREEZE function is enabled
	Top temperature sensor > T SETPOINT + 6°C
	Hot water shower available
	Estimated Energy Content (based on the set temperature)

Once the appliance is connected to the hydraulic and electric systems, the water heater must be filled with water from the domestic water supply network. In order to fill the water heater, it is necessary to open the central tap of the domestic network supply and the nearest hot water tap, while making sure that all the air in the tank is gradually expelled. Visually inspect for possible water leaks from the flange and pipe fittings and gently tighten them, if necessary. The heat pump requires 5 minutes to become fully operational when starting it for the first time.

WARNING! Hot water at temperatures above 50°C running from taps may immediately cause serious burns. Children, the disabled and the elderly run a greater risk in this regard. Therefore, it is advisable to use a thermostatic mixing valve connected to the appliance's water outlet pipe, which is identified by a red collar.

WARNING!

If the water temperature is higher than the set temperature by 6°C, the display shows the icon

INSTRUCTIONS FOR USE

Press the " ⏻ " button to turn the water heater on.
The display shows the set temperature and operation mode, while the " HP " symbol and/or " ⏦ " symbol indicate the operation of the heat pump and/or heating element respectivel.
Press the " ⏻ " button for 1 second to switch off the water heater.
The protection against corrosion is ensured. The product ensures that water temperature inside the tank does not fall below 5°C.

SETTING THE TEMPERATURE

Press the " **+** " and " **-** " to set the desired hot water temperature (T SET POINT, the display will temporarily flash).
Press " **SET** " button to display the temperature of the water in the tank; it will be shown for 3 seconds.
In heat pump mode the min/max temperatures achievable are 40°C/62°C, by default settings. The maximum achievable temperature with the heating element is 65 °C. Changing the settings on the installer menu this valure can vary.

SHOWERS AVAILABLE "

When the display shows the icon, it means that at least one shower is available. The available showers depend on the availability of hot water. One shower is calculated as: 40 l at 40°C.

MODE OF OPERATION

With the "**MODE** ⮌ " button you can modify the operating mode used by the water heater to reach the set temperature. The selected mode will be displayed on the line below the temperature.
If the heat pump is active, this symbol appears " HP "
If the electric heating element or integration is enabled, this symbol will appear " ⏦ ".

- **GREEN**
  only the heat pump works, the priority is given to energy saving. The maximum achievable temperature is 62°C. Only for back-up or safety mode (errors, air temperature out of operating range, defrosting process in progress, antilegionnaire's disease), the heating element may turn on and work.
- **GREEN +**
  the water heater reaches set temperature with the rational use of the heat pump and, only if necessary, of the heating element. The priority is given to comfort.
- **FAST**
  permanent boost mode, the water heater uses both heat pump and heating element to reach set temperature. The priority is given to heating time.
- **I-MEMORY**
  mode designed to optimize energy consumption and maximize comfort by monitoring the hot water needs of the user and the optimized use of the heat pump/heating element. The algorithm guarantees each daily need proposing the average of the profiles detected over the previous 4 weeks. In the first week of acquisition, the set point temperature entered by the user remain constant; from the second week onwards, the algorithm will automatically adjust the set point temperature to ensure daily needs. To reset the I-Memory profile use U9. (IMemory mode is visible when U1: PROGRAM is "OFF")
- **HC-HP**
  mode heating is performed within HC-HP signal detection in order to heat when low-tariff energy is available. The target temperature depend on the particular HC-HP mode selected:
  - **HC-HP:** when signal EDF is detected, HP and HE can work (priority is given to HP). Antifreeze protection is guaranteed all day long.
  - **HC-HP_40:** when signal EDF is detected it works as HC-HP, otherwise temperature is maintened at 40°C (HP only)
  - **HC-HP24h:** when signal EDF is detected it works as HC-HP, otherwise set temperature is achieved with HP only (min/max 40/62°C) The mode can be activated via the installer menu with the P1 parameter.

- **BOOST**
  in this mode both heat pump and heating element are used to reach the settemperature in the shortest possible time. Once set temperatureis reached, previous working mode is reactivated.
- **HOLIDAY**
  o be used during a period of absence. After the period chosen Holyday mode is deactivated and the product will automatically start to work according to previous setting. Holiday mode is set by User Menu. In this mode no heating is performed, antifreeze protection and antibacterial cycle are guaranteeded.

USER MENU

To access the user menu, press " **MENU** ".
The word INFO will appear on the display. Press the " **+** " and " **-** " buttons to scroll the parameters U1, U2, U3 ... U10, the description of the parameter is shown in the line below. Once you have chosen the parameter press the " **SET** " button to select it. To go back to the parameter selection, press the " **MODE** ⮌ " button.

PARAMETER	NAME	PARAMETER DESCRIPTION
U1	**PROGRAM**	It selects different operating modes PROGRAM ON - TIME BASED: GREEN, GREEN+, FAST PROGRAM OFF - ALWAYS ACTIVE: GREEN, GREEN+, FAST, i-Memory, HC-HP
U2	**PRGTIME**	User can select the desired time slots.
U3	**PRG SET**	User can customize the time programming
U4	**HOLIDAY**	To activate/deactivate the HOLIDAY mode When On is confirmed the user has to enter the number of days of absence as "Holiday Days" [1, 99]
U5	**ANTBACT**	Activated/deactivated status of the antibacterial function disease function (on/off).
U6	**DATE**	To set the date (Year, Month, Day) and time (hours and minutes). User can enable/disable the auto switch among solar/legal hour.
U7	**REPORTS**	It displays energy consumption (total).
U8	**SILENT**	To enable/disable the SILENT mode (On/Off) Recommended for unducted installation.
U9	**I-MRESET**	To reset the delivery profiles select On and press the SET button. The data saved in the memory is deleted and the learning starts from the current week.
U10	**WIFI RS**	WHERE AVAILABLE To reset the Wi-Fi data, select On and press the SET button.
U15	**PLUG**	Command to connect with PLUG
U16	**NIGHT**	Night function ON-OFF
U17	**NT-TIME**	Night function start/end time

- **TIME SCHEDULING**
  U2 PRGTIME parameter.
  the user can set 4 different time slots for each day of the week in the operating modes GREEN, GREEN+ e FAST.
  [START] and [STOP] define the beginning and the end of a time slot. After the fourth time slot, to reset the time slot selected and the ones after, press " " **-** " until "OFF"is displayed and then press "SET". If a time slot is not set it remains as not defined.
  Example: the water heating system is active from 8 am to 12 pm and from 4 pm to 8 pm.
  [START1] = 8:00; [STOP1] = 12:00;
  [START2] = 16:00; [STOP2] = 20:00;
  [START3] = 00:00; [STOP3] = 00:00;
  [START4] = 00:00; [STOP4] = 00:00;
  If ALL_DAYS is selected the same time slots are assigned from Monday to Sunday. Then each day of the week can be customized one by one, selecting the corresponding parameter.
  Therefore, each day of the week can be customised one by one by selecting the corresponding parameter.
  Warning: if the selected time period is too short, the desired temperature may not be reached.

- **PROGRAM SETTINGS**
  U3 PRG SET parameter. Program Setting allows to customize the different working modes when U1 is ON.

PARAMETER	NAME	PARAMETER DESCRIPTION
U3.1	**T MIN**	Beyond the time slot, a minimum water temperature is guaranteed. Heat pump to pre-heat water: the set temperature is reached at the beginning of the selected time slots.
U3.2	**PREHEAT**	Heat Pump pre-heat the water: set temperature is already achieved at the beginning of the selected time slots

INSTALLER MENU

⚠ **CAUTION! THE FOLLOWING PARAMETERS MUST BE ADJUSTED BY QUALIFIED PERSONNEL**

The main product settings can be modified via the installer menu. The changeable parameters are shown on the display together with the key symbol " 🔧 ".
To enter the installer menu press the "MENU" button for 3 seconds, press the " **+** " and " **-** " buttons and enter the access code 234.

PARAMETER	NAME	PARAMETER DESCRIPTION
P0	CODE	Entering the code to access the installer menu. The display will show the number 222, press the " **+** " and " **-** " and enter the code 234, press the "SET" button to confirm. It will then be possible to access the installer menu.
P1	HC-HP	Operation with two-tier power supply: 0. HC-HP_OFF (disabled default) 1. HC-HP 2. HC-HP_40 3. HC-HP24h
P2	ANTIBACT	To disable/enable the antibacterial function ON (function enabled) OFF (function disabled)
P3	T ANTB	Gives the temperature to be achieved [60/65 ° C] with the antibacterial cycle and to be maintained for 1 hour at least.
P4	T MAX	Adjustment of the maximum obtainable temperature [65 / 65 °C]. A higher temperature value allows for using a greater amount of hot water.
P5	T MIN	Adjustment of the minimum obtainable temperature [40 /50 °C]. A lower temperature setting allows for more energy-efficient operation in the event of limited hot water consumption.
P6	I-M TMIN	Minimum temperature to be guaranteed in I-Memory mode when no withdrawns have been detected by the algorithm
P9	HYST HP	Hysteresis value that allows the heat pump to restart after having achieved the target temperature. It can be set by the installer in the [3 / 12°C] range.

P10	TANKVOL	This parameter gives the capacity of the tank; it is useful in case of spare part customization.
P11	PV MODE	Operation with PV: 0. OFF (PV disabled - default) 1. PV_HP (PV with HP only) 2. PV_HE (PV with HP and HE1) 3. PV_HEHP (PV with HP and HE1) 4. AUTO (only with PLUG))
P12	PV TSET	This parameter gives the temperature to be achieved in PV mode. It can be set by the installer in the [55 / 65°C] range.
P14	SYSMODE	System Operation: 0. STD (standard installation) 1. OUT not applicable, it cannot be used 2. PRHE (The product is configured as a generator in pre-heating to operate with an auxiliary load and share the domestic hot water parameters) 3. SYS (The product is configured to operate with a coil auxiliary load controlled via Bus)
P16	SILENT	Enable/disable the SILENT mode ON (function enabled) OFF (function disabled) ATTENTION! The silent function shall be activated only for installations without ducting.
P18	FACT RS	Restoring the factory settings All the user settings will be reset to default values with the only exception of energy statistics, tank volume and Wi-Fi (if present)
P19	MB SW	HP-TOP-MB software version as MM.mm.bb.
P20	HMI S	HP-MED-HMI software version as MM.mm.bb.
P21	T LOW	Gives the water temperature in °C read by the NTC placed at low position in the water tank. If the NTC is in error "-" is shown
P22	T HIGH	Gives the water temperature in °C read by the NTC placed at high position in the water tank. If the NTC is in error "-" is shown
P23	T DOME	Gives the water temperature in °C read by the NTC placed at dome position in the water tank. If the NTC is in error "-" is shown
P24	T AIR	Gives the air temperature in °C read by the NTC placed on the outside unit. If the NTC is in error "-" is shown
P25	T EVAP	Gives the gas temperature in °C read by the NTC placed before the evaporator on the outside unit. If the NTC is in error "-" is shown
P26	T SUCT	Gives the gas temperature in °C read by the NTC placed before the compressor on the outside unit. If the NTC is in error "-" is shown
P29	T SH	Gives the superheating temperature in °C. If the NTC evap or suction are in error "-" is shown
P30	ERRORS	Allows navigation among last 10 errors that occurred
P31	WI-FISET	The Wi-Fi function (if available) can be set to: ON (function enabled) OFF (function disabled)
P32	F ANTB	Repetition every [1-30] days for the antibacterial cycle if active
P33	EBUS POWER	ON (function enabled) - OFF (function disabled)
P34	HP-TYPE	Cascade setting [Master-Slave1,.....Slave7]
P44	PEAK	Peak management (only with PLUG)
P45	METER	House meter power (only with PLUG)
P46	T HIGH ON	Heating Restart value temperature of NTC High

- **P11 PARAMETER - PHOTOVOLTAIC MODE "**  **"**

  If you have a photovoltaic system, you can set the product to optimise use of the electricity produced. After having done the electrical connections as described in paragraph 4.11 fig. 14 and set the P11 parameter to other than "0".

  The signal should be received at least for 5 minutes to enable the photovoltaic function (once the product starts a cycle, it will operate for at least 30 minutes).

  When the signal is detected, the operating mode works as follow::

  - **OFF (value 0 – default)**
    PV mode disabled
  - **PV_HP (value 1)**
    When the signal from the inverter is present, the product will reach the set temperature (the highest between T SET POINT and PV TSET) with only the heat pump (max 62°C).
  - **PV HE (value 2)**
    The product will reach the set temperature (the highest between T SET POINT and PV TSET) operating with only the heat pump up to 62°C and for higher temperatures with the heating element (1800 W).
  - **PV_HEHP (value 3)**
    set temperature (the highest between T SET POINT and T W PV) is achieved with the heat pump and the heating element (2400 W) up to 62°C. For higher temeratures than 62°C only the heating element (1800 W) is activated.

- **P16 PARAMETER - SILENT**

  This function reduces the sound level (performance can vary from those declared). It can be enabled via the P16 parameter on the installer's menu. **The silent function shall be activated only for installations without ducting.**

  Once activated, the symbol appears on the display "".

ANTI-FROST FUNCTION

If the temperature of the water in the tank falls below 5 °C while the appliance is powered, the heating element (1800 W) will be automatically activated to heat the water up to 16 °C.

DEFROST "  **"**

The defrost function is activated when the heat pump has been working for at least 20 minutes, the detected air temperature is below 15°C and the evaporator temperature is decreasing rapidly. When the defrost cycle is running, the icon to the side is displayed.

WI-FI FUNCTION (only if available)

Operating frequency 2.4 GHz (5 GHz not supported)
Maximum power of the transmitted signal is < 20 dBm

For more information on Wi-Fi configuration and the product registration procedure, please refer to the attached Connectivity Quick Start Guide.

DESCRIPTION OF THE CONNECTION STATUS

BUTTON PARAMETER	Wi-FI symbol	ACTION
Press the button for 5 seconds	AP	The Wi-Fi module is switched on and in Access Point mode
	Slow blinking	The Wi-Fi module is connecting to the home network
	Double blinking	The Wi-Fi module connects to the home network and the Internet
	ON	The Wi-Fi module is switched on and connected to the home network
	OFF	The Wi-Fi module is switched OFF
Parameter selection U3	Fast blinking	Wi-Fi RESET command sent
Press the button for 15 seconds	Fast blinking	RESET of consumption recorded in the App sent
	Slow blinking	Verify your local internet connection. If it sill doesn't work, try to power off the product and restart after some minutes. If the problem persists configure again the product following the Connectivity Quick Start Guide

NOTE

If you are making a replacement, you must first RESET the previous PCB or Gateway by following the instructions in the relevant manual. If the instructions are not available, proceed with the replacement and then follow the instructions within the App to connect the product.

DEFAULT SETTINGS

The appliance is manufactured with a series of default modes, functions or values, as indicated in the table below:

PARAMETER	FACTORY DEFAULT SETTING
WORKING MODE	GREEN
DEFAULT SET TEMPERATURE	55 °C
MAX. TEMPERATURE SETTABLE WITH THE HEATING ELEMENT	65 °C
MINIMUM SETTABLE TEMPERATURE	40 °C
MAX. TEMPERATURE SETTABLE WITH THE HEAT PUMP	62 °C
ANTIBACTERIAL PROTECTION	DEACTIVATED
HOLIDAY MODE	DEACTIVATED
DEFROST (active defrost activation)	ACTIVATED
HC-HP (two-tier rate operation mode)	DEACTIVATED
HYSTERESIS	12°C

FAULTS

As soon as a fault occurs, the appliance enters into the fault mode while the display emits flashing signals and visualises the error code. The water heater will continue supplying hot water if the fault affects only one of two the heating units, by activating the heat pump or heating element. If the fault involves the heat pump, the symbol "HP" will flash on the screen, while the heating element symbol will flash if the fault involves it. If both components are affected, both symbols will flash.

⚠ CAUTION!

Before intervening on the product by following the indications below, check the correct electrical connection of the components to the mainboard and the correct position of the NTC sensors in their seats.

Error code	Cause	Heating element operation	Heat pump operation	What to do
009	NTC Air: Open or Short Circuit	ON	OFF	Verify NTC Air proper functioning
010	NTC Evap: Open or Short Circuit	ON	OFF	Verify NTC Evap proper functioning
012	NTC Suction (Compressor Inlet): Open or Short Circuit	ON	OFF	Verify NTC Suction proper functioning
021	Gas Leak	ON	OFF	Verify compressor inlet sensor proper functioning. If the error persists, recover residual gas; find the leak in the cooling circuit; repair it; make vacuum and recharge circuit with quantity of gas indicated in the technical label
032	Compressor Issue	ON	OFF	Check power voltage on compressor connector.
042	Evaporator Obstructed	ON	OFF	Turn off the appliance. Check that the evaporator and the external unit casing is not obstructed.
044	Fan Issue	ON	OFF	Check power voltage on fan connector. Control the proper functioning of sensor at compressor inlet.
051	High Pressure	ON	OFF	Check pressure switch wiring. Verify gas quantity.
053	Compressor Thermal Protector: KO	ON	OFF	Check compressor connector.
081	Electronic Expansion Valve Issue	ON	OFF	Verify expansion valve cables. Verify NTC suction and NTC Evap correct functioning.
218	Dome NTC sensor (hot water): Open or Short Circuit	ON	OFF	Verify NTC sensor (hot water) proper functioning
230	Water Temperature Sensor (Heating Element Zone): Open or Short Circuit	OFF	OFF	Check the correct assembly of sensor wiring on related mainboard connector. Verify sensor proper functioning.
231	Water Temperature sensor (Heating Element Zone): safety intervention (1st level).	OFF	OFF	Verify sensor proper functioning.
232	Water Temperature sensor (Heating Element Zone): safety intervention (2nd level).	OFF	OFF	Verify sensor proper functioning.
233	Relay blocked	OFF	OFF	Reset the appliance by pressing the ON/OFF button twice. If the error persists, replace the motherboard.
241	Impressed Current Anode: Open Circuit	OFF	OFF	Check the presence of water inside the product. If the error persists, verify the anode proper functioning. Check the correct assembly of anode wiring on related mainboard connector. If the error persists, replace mainboard.
314	ON / OFF repeated	OFF	OFF	Wait 15 minutes before unlocking the product with ON/OFF button
321	Corrupted data	OFF	OFF	Reset the product by pressing the ON / OFF button twice. If the error persists, replace the motherboard.
331 332	Missing communication between Main Board and HMI	OFF	OFF	Reset the product by pushing the ON/OFF button twice. If the error persists, replace the mainboard-display communication wiring.
333	Wi-Fi communication problem	ON	ON	Power off/on the product. if the error persists, replace the mainboard
335	Safety board communication failure	OFF	OFF	Reset the product by pressing the ON / OFF button twice. If the error persists, replace the motherboard.
336	Touch screen not working	ON	ON	Reset the product by pressing the ON / OFF button twice. If the error persists, replace the HMI.
337	Cascade master missing	OFF	OFF	Check that at least one of the products in the cascade is set as Master, otherwise set one.
340	HEM Missing Com	ON	ON	Power OFF and ON the product, repeat the pairing process with the PLUG.

MAINTENANCE REGULATIONS (for authorised personnel)

WARNING!
Carefully follow the general warnings and safety rules listed in the preceding sections, in strict adherence to the provisions contained therein.

WARNING!
MAINTENANCE OPERATIONS OR REPAIRS MAY ONLY BE CARRIED OUT BY QUALIFIED PERSONNEL WITH ADEQUATE EQUIPMENT.

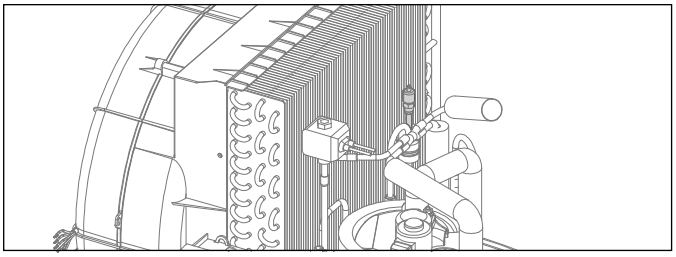
WARNING!
To avoid the risk of fire and/or explosion, do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

WARNING!
THE WATER HEATER IS SUPPLIED WITH 0.15 KG OF R290 REFRIGERANT. DO NOT EXCEED THE ALLOWED CHARGE QUANTITY.
THE R290 REFRIGERANT (PROPANE) IS A FLAMMABLE AND ODOURLESS REFRIGERANT.
THE REFRIGERANT CHARGING OPERATIONS MAY ONLY BE CARRIED OUT BY QUALIFIED PERSONNEL WITH ADEQUATE EQUIPMENT AND THE APPROPRIATE PERSONNEL CERTIFICATION CERTIFYING THEIR KNOWLEDGE OF AND ABILITY TO MANAGE PLANTS CONTAINING HC-TYPE GASES SUCH AS R290 (PROPANE). Annex HH IEC 60335-2-40.

WARNING!
It is forbidden to perform repair work on the cooling circuit and on the components belonging entirely to it at the installation site. These interventions may be carried out only at a workshop that is suitably equipped for servicing units with flammable refrigerants and by qualified personnel. Annex HH IEC 60335-2-40.

In the event of routine or extraordinary maintenance, it is necessary to perform the safety checks to ensure that the risk of ignition in a potentially explosive atmosphere is reduced to a minimum while work is being carried out.
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
Any intervention should be performed by avoiding the use of ignition sources that may cause fire or explosion risks.
No person carrying out work in relation to a **refrigerating system** which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.
Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.
Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants.
If any hot work is to be conducted on the refrigerating equipment or any associated parts,appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

CHARGING PROCEDURE (Annex DD.10 IEC 60335-2-40)
The product must be charged exclusively through the charging socket specified in the figure.



The operation may be carried out only by qualified personnel who have completed training in accordance with the specifications of Annex HH to the IEC 60335-2-40 standard shown in "Information and personal training" paragph.
The following requirements must be fulfilled during the charging procedure:
- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the **refrigerating system** is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigerating system.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Expertise of service personnel - ANNEX HH IEC 60335-2-40.
Information on the additional procedures with respect to those normally used for installation, repair, maintenance and decommissioning of a cooling appliance are necessary whenever an appliance with flammable refrigerants is involved.
Training on these procedures is entrusted to national training organisations or to manufacturers accredited for training on the applicable national standards defined by the law. The level of expertise reached must be documented by a certificate.

CHECKS ON AND MAINTENANCE OF ELECTRICAL DEVICES
Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
Initial safety checks shall include:
- that capacitors are discharged: this shall be done in a safe manner to avoid possibility ofsparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.
- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised. Whenever electrical components must be replaced, the replacements must be suitable for their intended use and comply with the manufacturer’s specifications. Only original spare parts supplied by the manufacturer are tested and certified for operation with flammable gases in safe conditions. Observe the maintenance and assistance guidelines in all circumstances.
It is necessary to always observe the manufacturer's maintenance

and assistance guidelines. In case of doubts, ask the manufacturer's technical department for assistance.

REPAIRING SEALED COMPONENTS

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc. Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

REPAIRING INTRINSICALLY SAFE COMPONENTS

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

DETECTING REFRIGERANT GAS LEAKS

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of **flammable refrigerants**, the sensitivity may not be adequate, or may need re-calibration.

The methods for detecting leaks specified below are deemed acceptable for plants containing **flammable refrigerants**:

- Electronic detectors can be used only if they are suitable for operating in potentially explosive atmospheres and are able to detect the R290 gas (propane).
- Make sure that the detector is properly calibrated.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

No welding or brazing operation is allowed on the cooling circuit, in the place of installation.

NOTE

Following scheduled or unscheduled maintenance, it is advisable to fill the appliance tank with water and empty it completely, to remove any remaining impurities. Only use original spare parts purchased from technical assistance centres authorised by the manufacturer to ensure compliance with (Italian) Ministerial Decree no. 174.

EMPTYING THE APPLIANCE

The appliance must be drained if it will be left inactive for an extended period of time and/or in a room subject to frost.

When necessary, empty the appliance as follows:

- disconnect the appliance from the power supply in a permanent manner;
- close the shut-off valve (if installed) or, alternatively, the main tap of the domestic circuit;
- open the hot water tap (washbasin or bathtub);
- open the tap located on the safety unit (for countries that have transposed the EN 1487 standard) or the appropriate tap mounted on the tee fitting, as described in the chapter "Hydraulic connections".

PERIODIC MAINTENANCE

The evaporator should be cleaned on an annual basis in order to remove any dust or obstructions. To access the evaporator located on the outdoor unit, it is necessary to remove the screws fastening the protective grille. Clean it using a flexible brush, being careful not to damage the device. If a fin has been bent, straighten it using a fin comb (1.6 mm pitch). Check that the condensate drainage pipe (on the outdoor unit) is not obstructed. Only use original spare parts. Following scheduled or unscheduled maintenance, it is advisable to fill the appliance tank with water and empty it completely, to remove any remaining impurities.

Regulation for water intended for human consumption:

(Italian) Ministerial Decree no. 174 (and subsequent updates) is a regulation concerning the materials and objects that can be used in fixed water harnessing, treatment, supply and distribution systems for water intended for human consumption. The provisions of this regulation define the conditions which materials and objects used in fixed water harnessing, treatment, supply and distribution systems for water intended for human consumption must fulfil. This product conforms to (Italian) Ministerial Decree no. 174 (and subsequent updates) concerning the implementation of Directive no. 98/83/EC on the quality of water intended for human consumption.

ROUTINE MAINTENANCE PERFORMED BY THE USER

It is advisable to rinse out the appliance after every routine or extraordinary maintenance intervention.

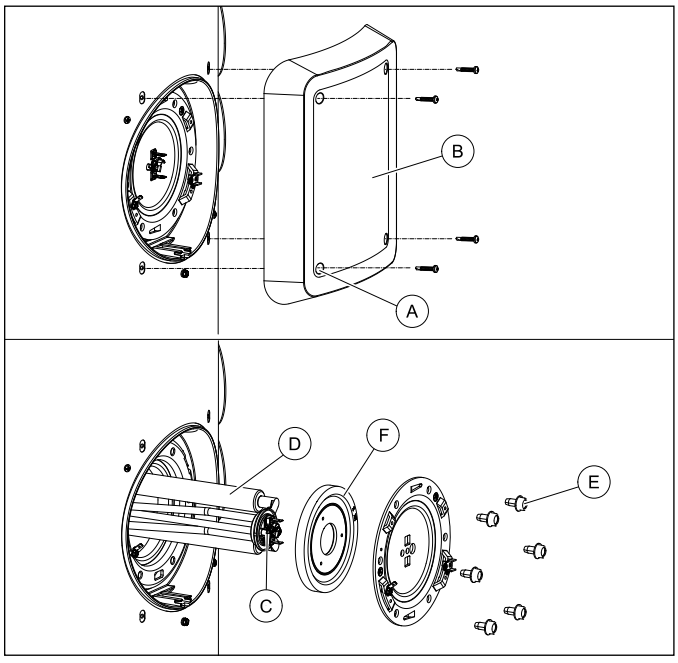
The overpressure protection device must be operated regularly to verify that it is not clogged and to remove any limescale deposits.

REMOVAL PROCEDURE FOR INSPECTION

Refer to picture below

1. Isolate mains electrical supply to the product by switching off and removing fuse.
2. Unscrew 4 screws (A) and remove cover (B).
3. Disconnect wires and withdraw heating element (C).
4. Replace element and refit, ensure wires are connected correctly.

To descale flange (F) or to replace the magnesium anode the flange (F) has to be removed by removing 6 bolts E, this requires draining the cylinder (see paragraph Draining the appliance).



Internal Cylinder Inspection

To inspect the inside of the cylinder remove flange (F) by undoing 6 bolts (E), this requires draining the cylinder (see paragraph Draining the appliance).

Water heater disposal

The appliance contains R134a-type refrigerant gas which must not be released into the atmosphere. In case of permanent decommissioning of the water heater, ensure that disposal procedures are carried out by qualified personnel only.

DISPOSAL (for authorised personnel)

WARNING!
THE WATER HEATER IS SUPPLIED WITH 0.15 KG OF R290 REFRIGERANT.
THE R290 REFRIGERANT (PROPANE) IS A FLAMMABLE AND ODOURLESS REFRIGERANT.
THE REFRIGERANT RECOVERY OPERATIONS MAY ONLY BE CARRIED OUT BY QUALIFIED PERSONNEL WITH THE APPROPRIATE PERSONNEL CERTIFICATION CERTIFYING THEIR KNOWLEDGE OF AND ABILITY TO MANAGE PLANTS CONTAINING HC-TYPE GASES SUCH AS R290 (PROPANE), AND WITH ADEQUATE EQUIPMENT.

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.
The following procedure should be performed:
- Become familiar with the equipment and its operation.
- Isolate system electrically.
- Before attempting the procedure, ensure that:
- Mechanical handling equipment is available, if required, for handling refrigerant cylinders.
- All personal protective equipment is available and being used correctly.
- The recovery process is supervised at all times by a competent person.
- Recovery equipment and cylinders conform to the appropriate standards.
- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do not overfill cylinders (no more than 80 % volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.

DISPOSAL LABEL
Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing **flammable refrigerants**, ensure that there are labels on the equipment stating the equipment contains **flammable refrigerant**.

RECOVERING THE REFRIGERANT GAS
When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, **flammable refrigerants**. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.
Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that
any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

INFORMATION AND PERSONNEL TRAINING

The training should include the substance of the following:
- Information about the explosion potential of flammable refrigerants to show that flammables may be dangerous when handled without care.
- Information about potential ignition sources, especially those that are not obvious, such as lighters, light switches, vacuum cleaners, electric heaters.

Information about the different safety concepts:
- Safety of the appliance does not depend on ventilation of the housing. Switching off the appliance or opening of the housing has no significant effect on the safety. Nevertheless, it is possible that leaking refrigerant may accumulate inside the enclosure and flammable atmosphere will be released when the enclosure is opened.

Information about refrigerant detectors:
- Principle of function, including influences on the operation.
- Procedures, how to repair, check or replace a refrigerant detector or parts of it in a safe way.
- Procedures, how to disable a refrigerant detector in case of repair work on the refrigerant carrying parts.

Information about the concept of sealed components and sealed enclosures according to IEC 60079-15:2010.

Information about the correct working procedures:
a) Commissioning
- Ensure that the floor area is sufficient for the refrigerant charge or that the ventilation duct is assembled in a correct manner.
- Connect the pipes and carry out a leak test before charging with refrigerant.
- Check safety equipment before putting into service.

b) Maintenance
- Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with **flammable refrigerants**.
- Ensure sufficient ventilation at the repair place.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Discharge capacitors in a way that won't cause any spark. The standard procedure to short circuit the capacitor terminals usually creates sparks.
- Reassemble sealed enclosures accurately. If seals are worn, replace them.
- Check safety equipment before putting into service.

c) Repair
- Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with **flammable refrigerants**.
- Ensure sufficient ventilation at the repair place.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Discharge capacitors in a way that won't cause any spark.

When brazing is required, the following procedures shall be carried out in the right order:

- Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
- Evacuate the refrigerant circuit.
- Purge the refrigerant circuit with nitrogen for 5 min (not required for **A2L refrigerants**).
- Evacuate again (not required for **A2L refrigerants**).
- Remove parts to be replaced by cutting, not by flame.
- Purge the braze point with nitrogen during the brazing procedure.
- Carry out a leak test before charging with refrigerant.
- Reassemble sealed enclosures accurately. If seals are worn, replace them.
- Check safety equipment before putting into service.

d) Decommissioning

- If the safety is affected when the equipment is putted out of service, the refrigerant charge shall be removed before decommissioning.
- Ensure sufficient ventilation at the equipment location.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Discharge capacitors in a way that won't cause any spark.
- Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
- When **flammable refrigerants** are used,
  – Evacuate the refrigerant circuit.
  – Purge the refrigerant circuit with nitrogen for 5 min.
  – Evacuate again.
  – Fill with nitrogen up to atmospheric pressure.
  – Put a label on the equipment that the refrigerant is removed.

e) Disposal

Ensure sufficient ventilation at the working place.

- Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
- When **flammable refrigerants** except **A2L refrigerants** are used,
  – Evacuate the refrigerant circuit.
  – Purge the refrigerant circuit with nitrogen for 5 min.
  – Evacuate again.
  – Cut out the compressor and drain the oil.
- Evacuate the refrigerant circuit.
- Purge the refrigerant circuit with nitrogen for 5 min.
- Evacuate again.
- Cut out the compressor and drain the oil.

This product conforms to Directive WEEE 2012/19/EU

The barred wheeled bin symbol appearing on the appliance or on its packaging indicates that the product must be collected separately from other waste at the end of its useful life. The user must therefore deliver the decommissioned product to an appropriate local facility for separate collection of electrotechnical and electronic waste. Alternatively, the appliance to be scrapped can be delivered to the dealer when purchasing a new equivalent appliance. Proper separated collection of the decommissioned appliance for its subsequent recycling, treatment and eco-compatible disposal helps to prevent negative effects on the environment and human health, besides encouraging reuse and/or recycling of its constituent materials.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	WHAT TO DO
The water delivered is cold or insufficiently hot	Temperature setting is low	Raise the water temperature setting
	Machine malfunctioning	Check for errors on the display and follow the instructions on the "Errors" table
	No electrical connection, wires disconnected or damaged	Check the voltage on the power terminals, check the condition of the wires and connections
	HC/HP signal missing (if the product is installed with EDF signal cable)	To check the operation of the product start the "Boost" mode; if the outcome is positive check the presence of the HC/HP signal from the meter and check that the EDF cabling is intact
	Malfunctioning of the timer for the two-tier rate (if the product is installed with this configuration)	Check the operation of the day/night meter and that the set time is sufficient to heat the water
	Insufficient air flow to the evaporator	Clean the grilles and ducts regularly
	Product is switched OFF	Check the mains power supply. Switch the product ON
	Use of a significant amount of	hot water when the product is in heating phase
	Sensor error	Check for NTC errors, even occasional ones.
The water is boiling (with possible steam on the taps)	High level of limescale build-up in the boiler and components	Unplug the power supply, empty the appliance, remove the heating element sheath and clean the limescale from the inside of the boiler, taking care not to damage the enamel on the boiler and the heating element sheath. Reassemble the product in its original configuration. We recommend replacing the flange gasket.
	Sensor error	Check for NTC errors, even occasional ones.
Reduced operation of the heat pump, electrical heating element is in almost continuous operation	"Time W" value too low	Set a lower temperature parameter or a higher "Time W" parameter
	Installation performed with non-compliant electricity power supply (voltage too low)	Power the product with the correct voltage
	Evaporator obstructed or frozen	Make sure that the evaporator is clean
	Problems with the heat pump circuit	Check the display for error messages
	8 days have not passed yet since: - Initial start-up - Time W parameter change. - Power failure.	wait 8 days
Insufficient hot water flow	Leaks or obstructions in the hydraulic circuit	Check the circuit for leaks, check the condition of the deflector on the inlet cold water pipe and the integrity of the delivery hot water pipe
Water leaking from the pressure safety device	It is normal for some water to drip from the device during the heating phase	To prevent water from dripping, an expansion vessel must be installed on the delivery system. If the leak continues even after the heating phase, check the calibration of the device and the mains water pressure. Warning: Never obstruct the device's discharge outlet!
Increased noise level	Presence of an internal obstruction	Check the moving components of the unit, clean the fan and other moving parts which could cause noise
	Some components are vibrating	Check the components connected using mobile clamps, ensuring the screws are well tightened
Problems with viewing the display or the display turning off	Failure or electrical connection problems between the motherboard and the interface PCB	Check the connection status and the correct operation of the PCBs.
	Power failure	Check the power supply
A bad odour is coming from the product	No siphon or siphon is empty	Install a siphon. Ensure it contains the necessary amount of water
Abnormal or excessive consumption than expected	Leaks or partial obstruction in the refrigerant gas circuit	Switch the product ON in heat pump mode, use a leak detector for the specific type of gas to ensure there are no leaks
	Unfavourable environmental or installation conditions	
	Evaporator is partially obstructed	Check the condition of the evaporator, grille and conduits to ensure they are clean
	Non-compliant installation	
Other		Contact technical assistance

		Ø 150		Ø 200		Ø 160		
		Pa	$m_{equivalent}$	Pa	$m_{equivalent}$	Pa	$m_{equivalent}$	
1 m PVC		3,1	1	0,8	1	-	-	**Pa MAX 189**
Curve PVC 90°		20,3	6,5	6,5	8,1	-	-	
1 m PHED		-	-	-	-	2,6	1	
Curve PHED 90°		-	-	-	-	14,5	5,6	
External Grid		9	2,9	3	3,8	9	3,5	

MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler 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 may invalidate the warranty but does not affect statutory rights.

Customer Name _____ Telephone Number _____

Address _____

Boiler Make and Model _____

Boiler Serial Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Commissioned by *(print name)* _____ CORGI ID Number _____

Company Name _____ Telephone Number _____

Company Address _____

_____ Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:

Building Regulations Notification Number *(if applicable)* _____

ALL SYSTEMS PRIMARY SETTINGS (indirect heating only)

Is the primary circuit a sealed or open vented system?	Sealed ☐	Open ☐	
What is the maximum primary flow temperature?			°C

ALL SYSTEMS

What is the incoming static cold water pressure at the inlet to the system?				bar
Has a strainer been cleaned of installation debris (if fitted)?	Yes ☐	No ☐		
Is the installation in a hard water area (above 200ppm)?	Yes ☐	No ☐		
If yes, has a water scale reducer been fitted?	Yes ☐	No ☐		
What type of scale reducer has been fitted?				
What is the hot water thermostat set temperature?				°C
What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)?				l/min
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations?			Yes ☐	
Type of control system (if applicable)	Y Plan ☐	S Plan ☐	Other ☐	
Is the cylinder solar (or other renewable) compatible?	Yes ☐	No ☐		
What is the hot water temperature at the nearest outlet?				°C
All appropriate pipes have been insulated up to 1 metre or the point where they become concealed			Yes ☐	

UNVENTED SYSTEMS ONLY

Where is the pressure reducing valve situated (if fitted)?				
What is the pressure reducing valve setting?				bar
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested?	Yes ☐	No ☐		
The tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations			Yes ☐	
Are all energy sources fitted with a cut out device?	Yes ☐	No ☐		
Has the expansion vessel or internal air space been checked?	Yes ☐	No ☐		

THERMAL STORES ONLY

What store temperature is achievable?		°C
What is the maximum hot water temperature?		°C

ALL INSTALLATIONS

The hot water system complies with the appropriate Building Regulations	Yes ☐
The system has been installed and commissioned in accordance with the manufacturer's instructions	Yes ☐
The system controls have been demonstrated to and understood by 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 satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

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 hot water system is serviced regularly and that the appropriate Service Record is completed.

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

SERVICE 1 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 2 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 3 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 4 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 5 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 6 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 7 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 8 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 9 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

SERVICE 10 Date
Engineer Name
Company Name
Telephone Number
Comments
Signature

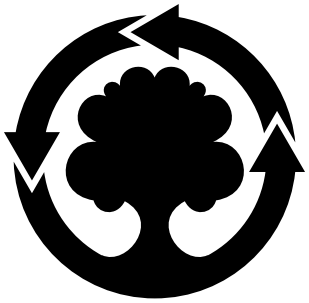
OBJECT: EC Declaration of Conformity (only for Wi-Fi products)
Hereby, Ariston S.p.A. (viale A.Merloni 45, 60044-Fabriano (AN), ITALY) declares that this product is in compliance with the essential requirements and other relevant provisions of Directive RED 2014/53 /EU.
The complete Declaration of Conformity is available at the address:
https://www.aristongroup.com/en/download-area

SCAN HERE FOR THE DECLARATION OF CONFORMITY

NOTE

PSTI

SCAN HERE FOR THE DECLARATION OF CONFORMITY



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RECYCLED PAPER

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