PUSE-X series
Small capacity buffer storage

STAINLESS STEEL TANK

INSTALLATION GUIDE
WARRANTY CARD

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STAINLESS STEEL WALL MOUNTED HOT & COLD STORAGE TANK

The PUSE-X small capacity containers are made of stainless steel (AISI 304) and consist of wall-mounted tanks for „hot-cold" systems. Stainless steel preserves the purity of the system and guarantees minimum heat loss.
They can also be used with heat pumps, acting as a hydraulic separator (to decouple the flow rates of the two circuits) and as a thermal flywheel (to minimise heat pump start-up).
The tank is available in 45 and 75 litre versions and has two additional connections for additional sources.
The outer covering of the tank is powder-coated galvanised sheet metal. The insulation is high-density rigid polyurethane foam, which is not removable (R). Due to its excellent thermal insulation, it has an ErP energy class „A". The tank has an operating temperature from -10°C to +90°C and a maximum working pressure of 8 bar.
The warranty is subject to installation and maintenance as set out in the warranty conditions.

PUSE-X tank (left)

PUSE-X tank (right)

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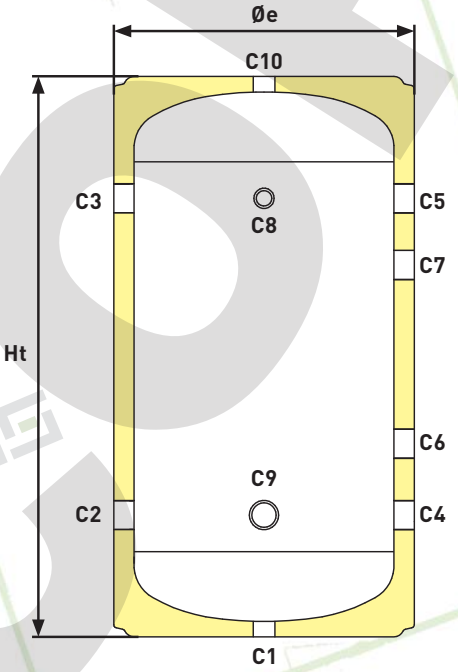
Technical specifications

Type	Unit	PUSE-X-45 R	PUSE-X-75 R
Nominal storage volume	l	45	75
ErP energy class	–	A	A
Insulation type and thickness	mm	PU/32	PU/42
Diameter with insulation (Øe)	mm	380	470
Height (Ht)	mm	700	780
Tilt height	mm	910	800
Min. / max. Operating Temperature	°C	-10 / +90	
Max. working pressure	bar	8	
CONNECTIONS / HEIGHTS			
C1 - Drain		1"1/4	1"1/4
C2 - From plant		1"1/4 / 150 mm	1"1/4 / 185 mm
C3 - To plant		1"1/4 / 550 mm	1"1/4 / 595 mm
C4 - To energy source		1"1/4 / 150 mm	1"1/4 / 185 mm
C5 - From energy source		1"1/4 / 550 mm	1"1/4 / 595 mm
C6 - Free connection		1"1/4 / 250 mm	1"1/4 / 295 mm
C7 - Free connection		1"1/4 / 450 mm	1"1/4 / 485 mm
C8 - Probe/thermometer		1/2" / 550 mm	1/2" / 595 mm
C9 - Heating element connection		1"1/2 / 150 mm	1"1/2 / 185 mm
C10 - Air vent		1/2"	1/2"



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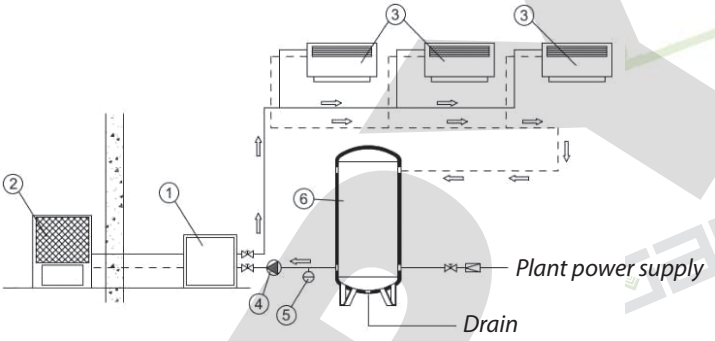
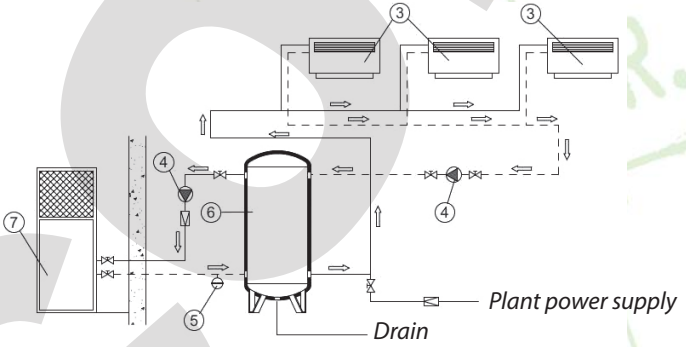
Installation example: Scheme with storage on return

The installaion diagram shown above is just an example. The installion must be done according to updated standards and instructions.



Installation example: Double-circuit plant scheme

The installaion diagram shown above is just an example. The installion must be done according to updated standards and instructions.



1	Heat pump (internal unit)	5	Expansion vessel
2	Heat pump (outdoor unit)	6	Storage tank
3	Fan-coil	7	Heat pump (monoblock)
4	Circulation pump		

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IMPORTANT - DISINFECTION, WATER HYGIENE RULES

1) For public health reasons, the temperature of water intended for human consumption in contact with the product must not exceed 65°C.
2) Product application: domestic hot water supply.
3) The manufacturer or distributor must clearly inform the customer of the product's cleaning and disinfection instructions (including the name of the suitable disinfectant). Regarding the chemicals used during the cleaning/disinfection of the products, in Government Decree 5/2023. (I.12), Government Decree 316/2013. (VIII. 28) and ESzCsM-FVM-KvVM joint decree 38/2003. (VII.7) as described.
4) The water network section containing the product must be filled with hot water for at least 1 day. The rinse water must be discharged into the sewer and must not be used for domestic purposes. Only then should the water system section containing the product be used for its intended purpose.
5) In the first weeks after application, metal and organic leaching can be expected, which can cause taste and odour problems, bacterial overgrowth and increased chlorine demand. This phenomenon is temporary and can be reduced by frequent water changes and rinsing.

WE RECOMMEND IT TO YOUR ATTENTION!

In case of water quality problems (e.g. unpleasant odour) in hot water for domestic use, in addition to the above requirements and disinfection, the manufacturer's advice is: please disinfect the tank (or the pipe network if required) by raising the temperature of the water in the tank above 70°C for a long period (min. 2h), most modern heating appliances have a corresponding weekly Legionella bacteria elimination programme (which heats the tank), please always activate it. The increasing use of activated carbon filters binds chlorine from tap water, so thermal disinfection as described above is essential when using these.
If the problem recurs, we recommend using an electronic anode instead of a magnesium anode.

Electrochemical corrosion phenomena

Tips for installing storage tanks and avoiding electrochemical corrosion

1. *Thoroughly wash* the heat exchangers before putting them into operation (fill the unused heat exchanger with propylene glycol in the operating hot water tank, because it corrodes quickly due to condensation in the pipe).
2. *A magnetic sludge separation unit* for the appliance return (if there are 2, for both) (optimal is the type with a magnet of 12,000 Gauss or higher, with a glass and equipped with a filter).
3. *Grounding of the tank* (due to electrochemical corrosion), 'bonding' of the stubs to equal potential, EPH protocol, it is not enough to ground only the connections of the heating/cooling device!
4. *Use of plastic or surface-treated copper common screw* (due to electrochemical corrosion), if the heating system is connected to the heat exchanger with copper or other metal piping, it must be disconnected with a dielectric connector and brought to equal potential!
5. *Inhibitor additive use:* One reason is that low-temperature systems release gases more slowly through the air separator after start-up. We recommend materials containing molybdenum, which do not need to be reviewed as often (250 mg/l old radiator system, 140 mg/l standard systems with steel elements, 80 mg/l+biocide underfloor heating, five-layer, etc.), checked with a molybdenum tester! Polyphosphate can also be suitable for initial aqueous „passivation" of buffers.
6. *If possible, do not fill the system with tap water,* only if it meets the manufacturer's specifications of the heating/cooling device. If possible, use partially desalinated water, do not use water softened with column water softeners, because in this case the conductivity of the water (high Na content) is even worse than that of tap water.

Optimal water parameters:
chemistry pH: 7–9, water hardness 5–7 nk,
conductivity: 150–350 µS/cm^2

(other data: dry material in suspension: <2 g/l,
metric grains: <0.4 mm, chloride: max. 50 mg/l,
other contamination: no fibres)

Of course, the regulations of the manufacturer of the heating/cooling device in the mechanical system are the primary ones to be observed!

Among the above reasons, one must look for the fact that carbon steel tanks and their heat exchangers (internal carbon steel tube coil) often corrode, which destroy the heat exchanger or pump of the sensitive condensing boiler, heat pump, liquid cooler, or simply get punctured.

The cause of all errors reviewed so far is corrosion, the failure of the heating equipment is not to be found in the fault of the hot water tank, but in the improper construction.

Hot water tank connected with a copper pipe, missing: tank grounding and dielectric common screw (plus expansion tank).

ELECTROCHEMICAL CORROSION

A certificate of manufacture for the raw material used by our manufacturer (heat exchanger, tank body) is available.

Our installation manual also includes the following information in the warranty conditions, but this is obviously not the point, but to ensure trouble-free operation and customer satisfaction:

– *Due to electrochemical corrosion,* the metal pipe sections connected to the tank must be connected to the tank body with a suitable common screw or sleeve, and then they must be connected to equal potential with a suitable cable (EPH). The material of this public screw can be plastic, surface-treated (nickel-plated, chrome-plated) brass fitting or ball pin, red cast iron (bronze).

– *The storage tank must be provided with an EPH certificate* upon commissioning. The storage tank must be earthed and its connectors must be brought to equal potential, for contact protection and mainly for correct corrosion protection.

– *Chemistry of the heating system medium:* the chemistry of the heating water can be neutral or slightly alkaline (max. 9 pH). The manufacturer does not accept responsibility for corrosion from the heating system, for damage caused by corrosion, the acidification of the heating system medium may cause larger pieces of steel to detach from the inner surface of the heat exchanger, which may damage the elements of the heating system.

– *The expansion tank is a warranty condition* (min. 5% of the tank volume), since its absence can result in continuous dripping of the safety valve, its contamination, and abnormal operation. Diaphragm pre-pressure should be checked every 3 months.

Electrochemical corrosion of steel tank connections „connected" with copper pipes can cause leakage after 16 months of operation, in the welding seams of the connections already within the first year of operation.

One of the consequences of electrochemical corrosion is rapid anode loss, which is why the first anode replacement is justified at 12 months, so in case of significant loss, the problem can be identified in time without damaging the storage body (18 months after that).

Rust sludge, this is the result of electrochemical and oxidative corrosion.

COMMISSIONING PROTOCOL (CHECKLIST)

DURING INSTALLATION, PLEASE CHECK:	☐ SAFETY VALVE (NO SHUT-OFF FITTING) ☐ EPH PROTOCOL ☐ EXPANSION TANK ☐ EXPANSION TANK MEMBRANE PRESSURE: ..... BAR ☐ NETWORK PRESSURE MEASUREMENT: ..... BAR, POSSIBLY PRESSURE REDUCER ☐ HEAT EXCHANGER HAS BEEN FLUSHED ☐ SHUT-OFF FITTINGS FOR EASY DISASSEMBLY ☐ WATER FILTER ☐ SIGNATURE OF A SPECIALIST
MAINTENANCE 1 YEAR LATER*	☐ MAGNESIUM ANODE REPLACEMENT, KEEP AN INVOICE ☐ STORAGE CLEANING
WARRANTY REVIEW 2 YEARS LATER**	☐ REVIEW OF OPERATING CONDITIONS, ANODE REPLACEMENT, CLEANING

Do not install a damaged product, if you have such a complaint, please keep the packaging!

Details of the seller	■ Name / Company name: ■ Date of sale: ..... ■ Product type: .....
Manufacturer's details	■ Name / Company name ..... ■ Address: ..... ■ Date: .....

WARRANTY CARD

INFORMATION ON THE CORRECT DISPOSAL OF THE PRODUCT 2012/19 / EU NO. ACCORDING TO A EUROPEAN DIRECTIVE

At the end of its lifetime, this equipment should not be treated as household waste and should not be disposed of in municipal landfills.
It must be taken to the local selective collection centre or returned to the trader who provided the service. The selective disposal of electronic equipment avoids the negative environmental and human health impacts that may result from inappropriate disposal and allows the recycling and processing of components, with significant energy and resource savings. In order to emphasise the obligation to dispose of the appliance in a selective way, the product is marked with a crossed-out waste container.

Installation date	
Installer's stamp and signature	

GUARANTEE VOUCHER 1.	GUARANTEE VOUCHER 2.	GUARANTEE VOUCHER 3.	GUARANTEE VOUCHER 4.	GUARANTEE VOUCHER 5.
Type of water heater:	Type of water heater:	Type of water heater:	Type of water heater:	Type of water heater:
Serial Number:	Serial Number:	Serial Number:	Serial Number:	Serial Number:
Date of sale:	Date of sale:	Date of sale:	Date of sale:	Date of sale:
Seller's stamp and signature	Seller's stamp and signature	Seller's stamp and signature	Seller's stamp and signature	Seller's stamp and signature

WARRANTY CONDITIONS - BUFFER AND COMBI TANKS

IN THE EVENT OF A WARRANTY FAULT, PLEASE CONTACT OUR SERVICE DEPARTMENT OR OUR COMPANY!

Heizer Hungary Kft. (hereinafter referred to as the Hungarian Distributor) provides a mandatory warranty for ERGAS buffer tanks from the date of handover to the consumer (from the date of commissioning, only if the commissioning protocol is valid). This period is extended by a maximum of 6 months of storage time, if the consumer does not buy the product directly from the Hungarian Distributor. The Civil Code based on the relevant paragraphs, the Hungarian Distributor undertakes a mandatory warranty in the case of installation in Hungary and for the products distributed by it as follows: a defective device will be repaired by our specialist services free of charge within the warranty period, the warranty period will restart if the storage is replaced, the warranty period will be extended by that time if the product is repaired, during which the operator could not use the device as intended due to the error.
Therefore, our buffer storages are not required to be put into operation, but can only be put into operation by a specialist, by filling out and signing (and possibly stamping) the commissioning protocol, which proves that he has undertaken to put the product into operation professionally.

From the point of view of warranty, it cannot be considered a defect, so the warranty obligation is void:

- *unpacking, transporting, changing operating conditions of the pre-warranty inspection storage; arbitrarily unpacking and returning the product before the warranty review; installation of a damaged product*
- in the event of a damaged product complaint, keeping the product packaging
- rough, careless handling, in case of injuries, external mechanical damage traces
- if the device was operated at higher than permissible values (buffer maximum operating pressure: 3 bar), damage caused by hydraulic impact (hammer effect)
- Invalidity of the commissioning protocol or irregular corrections to the commissioning protocol, subsequent entry of data. The warranty is invalid if the commissioning protocol does not contain the data on purchase and commissioning.
- EPH protocol or lack of grounding of the storage
- in case of damage from freezing, external weather, environmental factors, elemental damage
- if the failure was caused by adverse effects from building systems connected to the device or from the electrical network (scale formation, heating water contamination, oxygen diffusion, voltage fluctuations, overpressure, contaminated gas, etc.).
- lack of a safety fitting, improper use of a safety fitting, lack of an expansion tank (minimum 5% of the storage volume), as its absence may result in continuous dripping of the safety valve, its contamination, and abnormal operation

The Hungarian Distributor only guarantees the products it distributes if:
Regulations for internal storage (storage in the storage refers to the DHW storage system)

- in the case of domestic use: the annual maintenance has been demonstrably carried out by a specialist (based on the "Maintenance Protocol" entry) as follows: in the case of hard water (above 17°nk), annual chemical (non-hydrochloric) cleaning, removal of any accumulated sediment and limescale, replacement of the magnesium anode and other maintenance operations.
- in the case of internal, public utility (industrial category) use, where hot water is not supplied to a household, the previous maintenance period is reduced from one year to half a year (6 months)
- Combi tanks (storage in the tank): FILLING SEQUENCE IS IMPORTANT - FIRST INNER DHW TANK, THEN fill the BUFFER tank with water and pressurize it, observing the maximum operating pressure. It is advisable to connect the cold and hot water connections with a T-piece and two ball valves for easy cleaning of the internal storage tank (acidification, but not with hydrochloric acid).

General specifications:

- the storage is not required to be commissioned, but a specialist must carry out the commissioning and certify this with a signature (and possibly a stamp) by filling out a commissioning report
- the device was operated as intended as follows:
  - After filling the tank with water, it can be connected to the heating system and heated (with an electric heating pad or via a heat exchanger)
  - The safety valve must be installed directly to the cold water connection of the storage tank, a suitable type in terms of capacity and pressure
  - No fitting should be installed between the safety valve and the storage tank (shutoff fitting, non-return valve), its condition must be checked every 14 days, be careful, hot water may escape from the safety valve, which involves the risk of scalding. A large amount of water can escape from the safety valve, install it with the outlet opening downwards, with a non-closed drainage system (drainage funnel).
  - In a closed heating system, the use of the appropriate expansion tank is mandatory! The long-term correct operation of the safety valve, damage to the storage tank due to the hammer effect (hydraulic shock) and also from the point of view of water conservation (DHW) the use of the appropriate expansion tank is a condition of the guarantee, its membrane pre-pressure must be checked every six months. It must be installed directly on the tank stub, without the installation of a shut-off assembly, possibly with a double non-return valve (min. 5% of the tank volume, air pressure in the tank is 90% of the hydraulic system pressure). The storage must be directly earthed (EPH protocol)
  - The tank must be taken out of service immediately if steam is coming from the system

– For cold water connections, use dirt-catching filters in the heating system
– Please wash the heat exchangers before connecting them to the heating system, boiler or solar collector system
– The tank must be installed with the possibility of free access, with locking fittings for easy disassembly, the manufacturer does not assume responsibility for any damage caused during unpacking, nor does it assume any additional costs
– The pipeline connected to the storage tank has a min. They must meet operating conditions of 7 bar and 100°C (DHW)
– The storage hose must be washed before connecting it to the heating system, an unused heat exchanger not connected to the system must be filled with propylene glycol, as the heat exchanger is not corrosion-protected from the inside, it is designed for continuous use.
– Due to electrochemical corrosion, the non-steel metal pipe sections connected to the tank must be connected to the tank body with a plastic common screw.
– Chemistry of the heating system medium: the chemistry of the heating water can be neutral or slightly alkaline (max. 9pH). The manufacturer does not accept responsibility for corrosion from the heating system or for damage caused by corrosion, the acidification of the heating system medium may cause large pieces of steel to detach from the inner surface of the heat exchanger and storage, which may damage the elements of the heating system.

DHW (domestic hot water): The manufacturer is not responsible for water quality, discoloration, chemical compounds, or water calcification, the internal surface protection meets the requirements for the production of domestic hot water. If you experience discolored water with a sulfur smell (hydrogen sulfide) when cleaning the tank, after replacing the magnesium anode, raise the water in the tank permanently above 60°C. In case of a recurring problem, we recommend the use of a foreign-current anode (Correx anode).

On-site repairs are carried out in accordance with the relevant legal regulations, but in the event of non-compliance with the warranty conditions, all costs incurred will be borne by the customer. Maintenance cannot be carried out only by a specialist service, repairs covered by the mandatory warranty can only be carried out by an authorized service. Any repairs affecting the mandatory warranty that are carried out by non-authorized service centers will result in the termination of the warranty. In any case, the determination of a warranty defect falls within the competence of the service department. The Hungarian Distributor decides on the legality of the exchange, if the Buyer does not accept the opinion of the brand service, he can contact the Hungarian Distributor. In case of unsuccessful agreement, by communicating the opinions of both parties, the opinion of the competent quality inspection institute will be requested based on legal obligation. In case of non-fulfillment of the warranty obligations, the Buyer has the right to go to court.

Warranty and repair work can only be carried out based on the inclusion of one of the attached repair forms and its careful completion. The Buyer must make sure that this has been done and confirm the completed work with his signature. For the repair of the devices, the Hungarian Distributor provides spare parts for a period of time in accordance with the applicable regulations.

Product information sheets

(based on the provision of EU 812/2013, EU 814/2013)

Type	PUSE-X-45 R	PUSE-X-75 R
Tank material	AISI 304 stainless steel	
ErP energy efficiency class	A	A
Tank nominal capacity	45 liters	75 liters
Tank max. operating pressure	8 bar	
Tank min./max. operating temperature	-10°C/+90°C	