ORIGINAL MANUAL

Frigicoll

INSTALLATION, OPERATION & MAINTENANCE MANUAL

“BSX” Series Water Heater Tanks

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Introduction

- In order to guarantee a safe and efficient operation of your device, we recommend you to follow the instructions provided in this guide.
- Your device installation, operation and maintenance should be performed as described in this guide otherwise device will not be covered by the guarantee.
- Please keep this manual for future reference
- Features mentioned in this document may be updated without prior notice for improvements on products and service.

Proper installation of a safety valve is mandatory according to the given diagram.

Important notice: The safety valve that will be used on the product varies according to the system pressure. (Max. 8 bar - Min. 6 bar)

Technical Features

- Water heater tanks are manufactured in accordance with TS EN 12897:2015 and TS 736:2015 standards.
- Tank's inner surface is enameled in accordance with DIN4753 standards. Protection against corrosion is provided by a sacrificial magnesium anode bar positioned inside the tank.
- In order to check water temperature inside the device, there is a thermostat sensor housing that can be connected through the thermal sensor.
- Water heaters have connection sleeves for electric heaters and thermostat.

Symbols

 2 way valve	 Pressure relief valve	 One-way valve	 Twin pump	 Space heating system
 3 way modulating valve	 Pressure gauge	 Safety thermostat	 Ball valve	 Thermometer
 Anti scald 3 way valve	 Drain valve	 Solar collector	 Expansion vessel	 Dirt seperator
 3 way valve	 Buffer tank	 Air seperator	 Filter	 Ball valve
 Pressure release valve	 By-pass valve	 Air vent	 Pump	 Underfloor heating system

Accessories

Important notice: please note that below given accessories or fittings are not supplied with the tank package. Necessary accessories and fittings must be supplied seperately to continue guarantee coverage.

Safety accessories:

Safety and control equipments should be installed and operated according to parts mentioned below in order to limit the domestic water temperature maximum 95°C

- Thermostatic control device
- Energy cut-off device (safety cut-off functioned thermostat)
- Temperature reducing valve, pressure reducing valve or safety relief valve

All equipments which are necessary to limit the water temperature under 95°C, must compliant with the local regulations.

Safety Valve : In case of high pressure in the tank, discharges the overpressure.

Expansion Vessel : Absorbs pressure fluctuations that may occur in the system.

One-way Valve : Allows fluid moving inside the system on desired direction and avoids the flow back to the opposite direction.

Filter : Used to block dirts from the water.

Valve : Used to allow or stop the flow of domestic water into the system

Pump : Enables the circulation of fluid used in the system.

Manometer : Used to measure the pressure of the system.

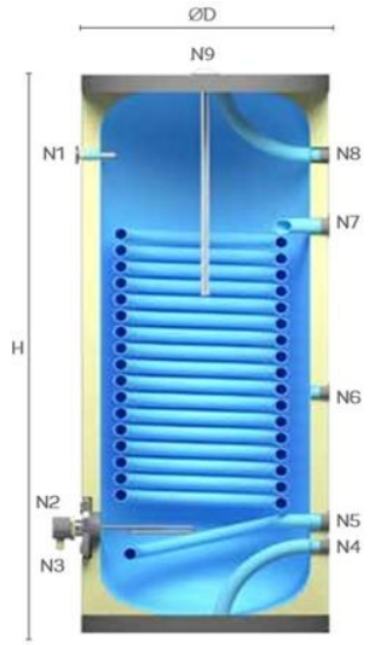
Thermometer : Used to measure the temperature of the liquid in the system.

Pressure Reducer : In case the water pressure in the system exceeds the allowed pressure of the device, an appropriate pressure reducer must be installed to decrease the pressure of water.

Installation Guidelines

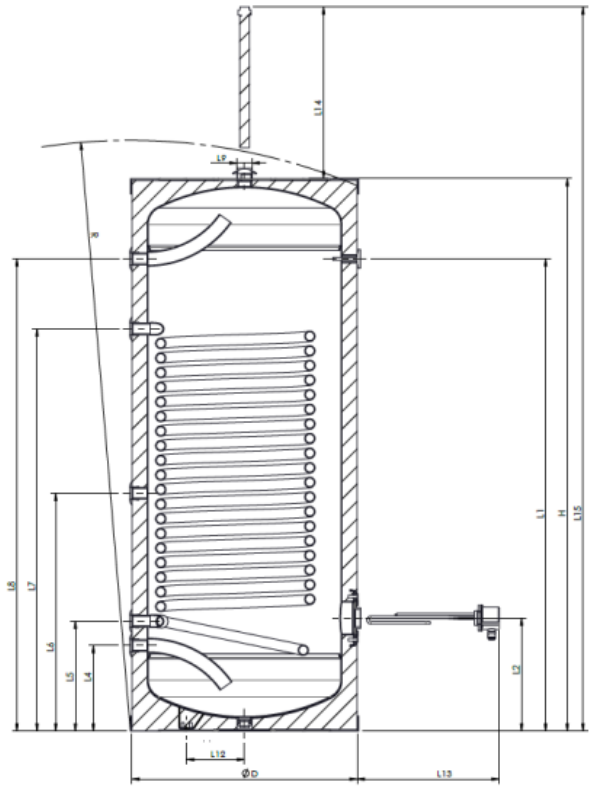
- Products are delivering on wooden pallets. Please remove the pallet before installation to avoid any move after installation.
- Installation must be performed by a qualified installer in accordance with local regulations and laws.
- Installation should be done according to the diagrams given in this manual.
- The device must be placed on a proper, non-inclined, smooth grounding strong enough to carry the load of the tank plus water content weight. The area of installation should be chosen according to the maintenance and service requirements.
- The device must be placed in a room or covered area as it is an indoor unit, must be protected against direct sunrays, wet and windy weather conditions and freezing risk.
- In order to ensure an efficient operation of the device, it is impotant to make connections according to the installation schemes. Heating device should be chosen according to hot water supply needs.
- If the installation guidelines are not followed and damages occur during the installation process, product will be out of any warranty.
- If a proper safety valve is not assembled or incorrectly installed, the product will be out of any warranty.
- The place of installation should be protected against fire and flood risk. The warranty does not cover any product failure caused by external effects.

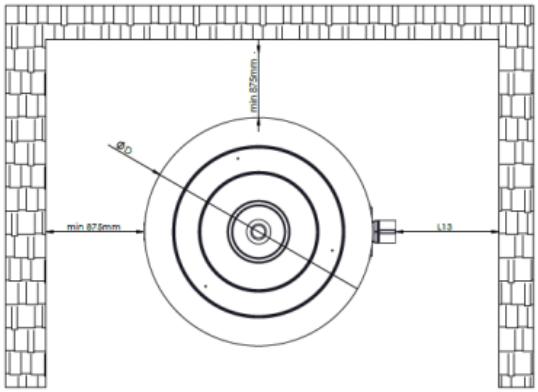
Specifications



N1	Thermometer connection
N2	Flange
N3	Electrical heating element connection
N4	Domestic cold water inlet
N5	Coil outlet
N6	Circulation
N7	Coil inlet
N8	Domestic hot water outlet
N9	Sacrificial anode connection

Description (dimensions in mm)	**Letter**	**BSX190**	**BSX270**	**BSX475**
Diameter	øD	590	700	750
Height	H	1320	1209	1800
Thermometer connection	L1	1080	940	1520
Flange	L2	280	290	340
Domestic cold water inlet	L4	160	150	250
Coil inlet	L5	240	230	330
Circulation	L6	590	500	750
Coil outlet	L7	940	940	1290
Domestic hot water outlet	L8	1080	1020	1520
Sacrificial anode connection	L9	11/4”	11/4”	11/4”
Stand distance from the center	L12	102	102	154
Minimum free dimension for electrical heater service	L13	1125	1125	1125
Minimum free dimension for sacrificial anode service	L14	350	600	1050
Minimum ceiling height	L15	1920	1810	2850
Insulation type / thickness	t	PU/50	PU/50	PU/50
Tipping measure	R	1466	1418	1970



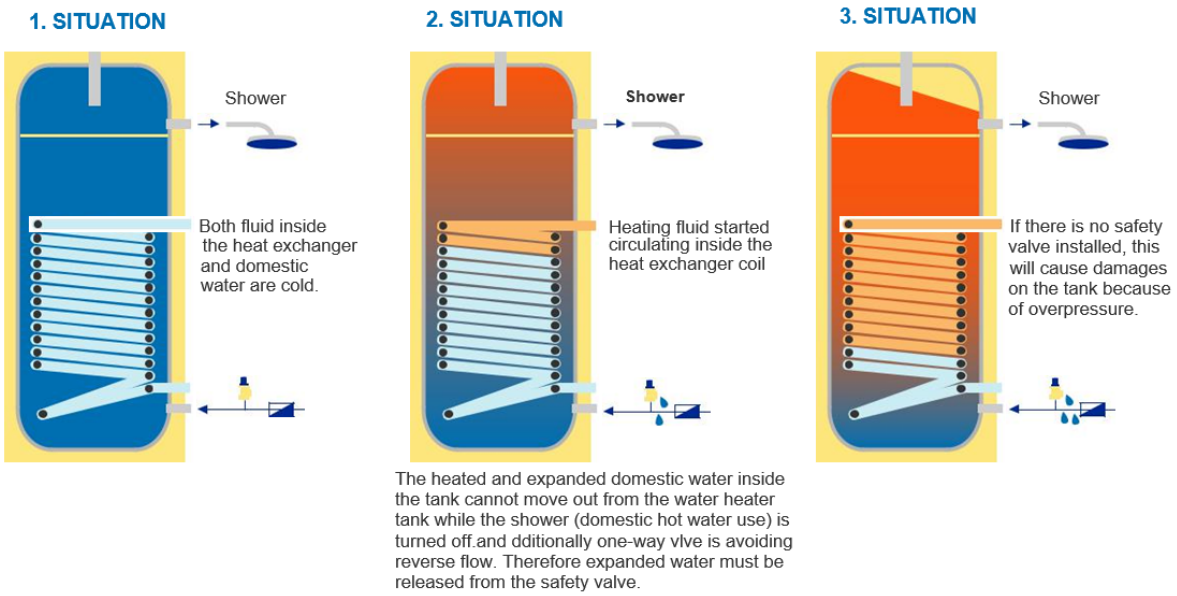


Recommendations

Warning: THE MOST IMPORTANT POINT IS INSTALLING THE SAFETY VALVE, DURING INSTALLATION OF A WATER HEATER TANK.

Domestic water inside the tank expands when it is heated. The expansion rate of water according to the temperature is given at the chart below. E.g. water expands 2,88% at 80˚C. This extra volume of water should be removed from the water heater tank as water is incompressible. If the expanded water is not removed from the tank, this will increase pressure inside the tank which can cause damages on the weakest point of the tank.

T (°C)	d (kg/lt)	V (kg/lt)	%	e
0	0.9998	1.0002	0	0.0002
10	0.9996	1.0004	0.02	0.0004
20	0.9982	1.0018	0.16	0.0018
30	0.9956	1.0044	0.42	0.0044
40	0.9922	1.0079	0.77	0.079
50	0.9880	1.021	1.19	0.0121
60	0.9832	1.071	1.67	0.0171
70	0.9777	1.0228	2.26	0.0228
80	0.9718	1.0290	2.88	0.0290
90	0.9635	1.0359	3.57	0.0390
100	0.9583	1.0435	4.33	0.0435
110	0.9519	1.0515	5.13	0.0515
120	0.9431	1.0603	6.01	0.0608



Expansion Tank Installation

There must be a closed membrane type proper expansion tank installed in the system together with wter heater tank. It should be selected as minimum 10% volume of the water heater tank volume. E.g. together with a 1000 lt water heater tank, a 100 lt expansion tank must be installed in the system. Expansion tank can be used under 8 bar pressure and initial pressure should be set to %10 lower then the operation pressure. The most important protection precaution is to install a proper safety valve and expansion tank in the system. Always install the expansion tank and the safety valve between the water heater tank domestic cold water inlet and the valve of the main water line.

Before Commissioning

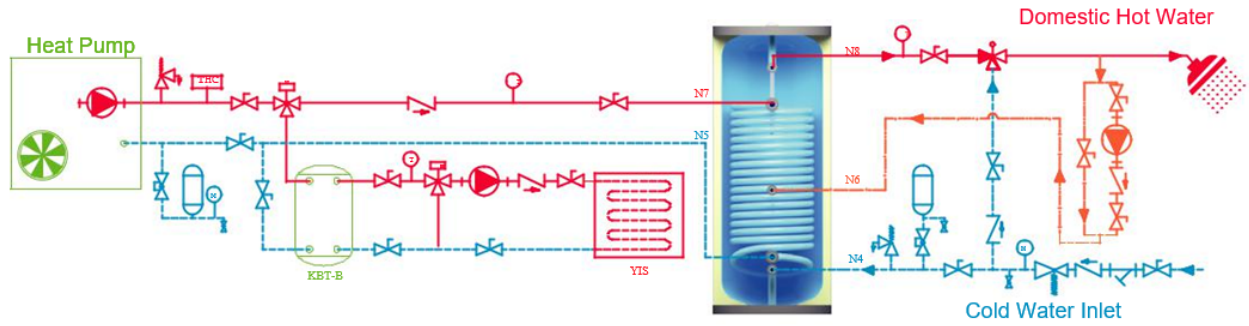
- Tank must be installed by a qualified staff by taking all safety measures and precautions according to the local and general regulations.
- The domestic water used in the system must conform standards defined in the last page of this manual. The warranty does not cover cases where the domestic water does not conform these standards.
- Make sure that all hydraulic and electrical connections are done properly.
- Check all hydraulic connections against leakage.
- Make sure to take precautions against leak, electric shock, damages because of the movement of tank, etc.
- If an electric heater installed, it must be grounded. While working on electric connections take all measures and cut the electric current to avoid injuries or risk of death because of electric shock.

Commissioning

- Make sure that water heater is completely filled with water before start operation of your water heater and cold water inlet must be connected to main water supply continuously.
- After completely filling the tank with water, in order to release remaining air inside the tank, open the domestic hot water tap.
- Electric connections of the device must be done by a qualified electrician.

- Check the cable cutaway, voltage value and grounding and then set the regulation thermostat if available.
- Do not turn on the electric heater before completely filling the water heater tank, otherwise electrical heater will blow and damage as produced just inside the water.
- It is important to install a residual current device to the power supply when you use electrical products on the tank.

BSX Heat Pump Single Coil Tanks Installation



Important notice: maximum 8 bar safety valve must be installed.

Maintenance

- It is suggested to clean inside the water heater through the cleaning flange in order to remove dirts that may exist in the water.
- If the product have electrical heater or instruments, please disconnect all electric connections and turn-off completely before any maintenance or cleaning operation.
- Gaskets on the product will be damaged after removing them. In case they are removed for any reason, they should be replaced with a new one.
- Cleaning the device by chemicals is not recommended. Hazardous chemicals will damage the enamel coating and also harmful to human health if not well cleaned.
- Please be sure that the accessories e.g. valves, one-way valve, strainer, safety valves, expansion tank and thermometer are in always in operation, to avoid any damage on tank and system.
- Please remove and clean the filter of the strainer periodically.
- The magnesium anode bar should be checked annually. The substitution frequency can be determined after the first check. The quality and contaminents of water is important for the life of the anode.
- If the magnesium anode bar diameter is less than 12 mm it should be replaced with a new one with a minimum diameter of 26 mm.
- The magnesium anode bar is a sacrificial part therefore it is out of warranty.
- Tanks operated without magnesium anode bar or operated with magnesium anode bar less than 12 mm are out of warranty.
- When the water heater tank is out of operation, please be sure that the water discharged completely and tank is empty to protect the tank against freezing.

- While cleaning the interior of the tank, please be sure about not damaging the enamel coating inside.
- After cleaning the interior of the tank, please be sure that flange, sensor(s) and thermostat connections are not leaking.

Checklist For Troubleshooting

Problem: electrical heater (optional) is not working;

Possible reasons:

- Electric connection might be not connected,
- The switch might be off,
- The building's main fuse might be switched off.

Problem: no domestic hot water at the tap;

Possible reasons:

- The hot-cold water valve might be turned-off.
- Main water supply might be off
- The strainer might be blocked and out of order.

Problem: domestic water at the hot side of the tap is not hot;

Possible reasons:

- Heating system or solar collector loop might be out of order,
- Circulation pump might be switched-off or out of order.

Problem: there is not enough hot water supply from the water heater tank;

Possible reasons:

- The tank/system capacity might not be adequately selected,
- The hot water might return back to the system if a one-way valve is not being used,
- There might be a problem with the controller.

Problem: safety valve on water heater is leaking;

Possible reasons:

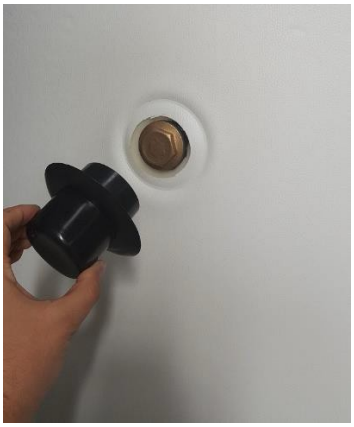
- The main water line pressure might be above 6 bar,
- Safety valve gasket might be blocked and remain open because of dirt/limescale.

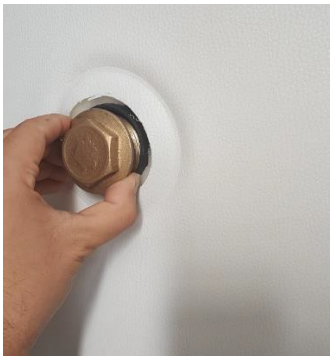
Domestic Water Standards

STANDARD	TSE 266 Turkish Standards Institute	EC European Community	WHO World Health Organization
Microbiology			
Coliform	0	0	0
Escherichia Coli(E.Coli)	0	0	0
C.perfringens	0	0	0
Enterococcus	0	0	0
Parameter mg/L			
pH(pH)	6,5-9,5	6,5-9,5	6,5-8,5
Colour(Co-Pt unit)	20	20	15
Odor(NTU unit)	5,0	4,0	5,0
Conductivity 20 (uS/cm)	2500	2500	2500
Odor	No smell		
Iron(Fe)	0,2	0,2	0,3
Manganese(Mn)	0,05	0,05	0,10
Aluminium(Al)	0,20	0,20	0,20
Amonium(NH_4)	0,5	0,5	1,5
Sodium(Na)	200	200	200
Chlorine(Cl)	250	250	250
Sulfate(SO_4)	250	250	250
Hardness (Ca_3)			500

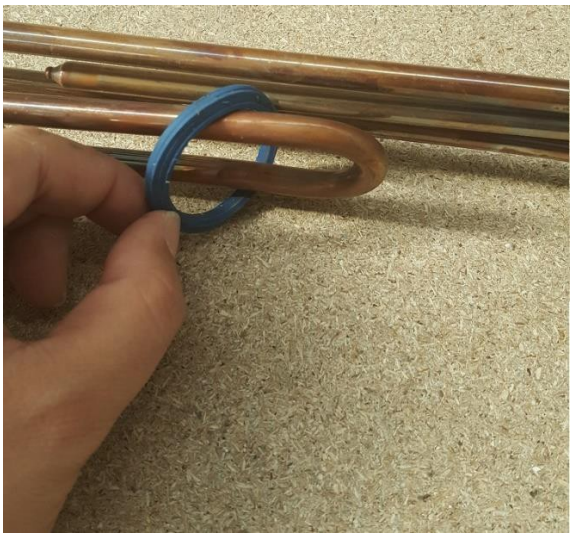
STANDARD	TSE 266 Turkish Standards Institute	EC European Community	WHO World Health Organization
Chemical mg/L			
Nitrate(NO_3)	50	50	50
Nitrite(NO_2)	0,5	0,5	0,5
Borium(B)	1	2	2
Nickel(Ni)	0,02	0,02	0,02
Arsenic(As)	0,01	0,01	0,01
Cadmium(Cd)	0,005	0,005	0,003
Chromium(Cr)	0,05	0,05	0,05
Fluorine(F)	1,5	1,5	1,5
Lead(Pb)	0,01	0,01	0,01
Cyanide(CN)	0,05	0,05	0,05
Bromium(Br)	0,01	0,01	0,025
Benzene(C_6H_6)	0,001	0,001	0,01
Selenium(Se)	0,01	0,01	0,01
Antimony(Sb)	0,005	0,005	0,005
Copper(Cu)	2,0	2,0	2,0

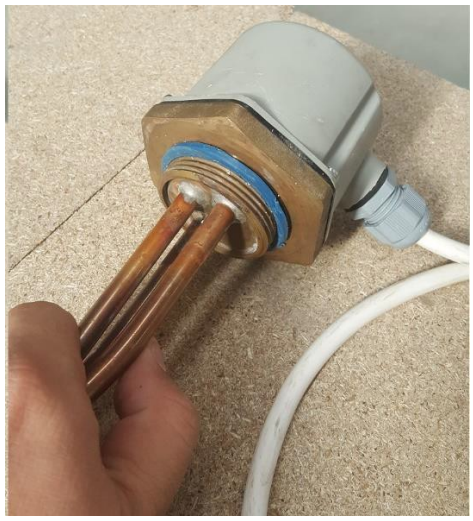
INSTALLATION OF OPTIONAL ELECTRICAL BACKUP HEATER





The backup heater connection is located on the flange at the bottom of the tank behind below plastic cover:






EAS
FORCE
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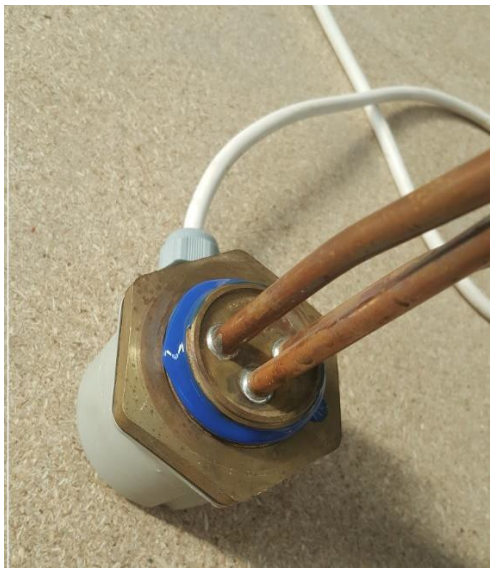
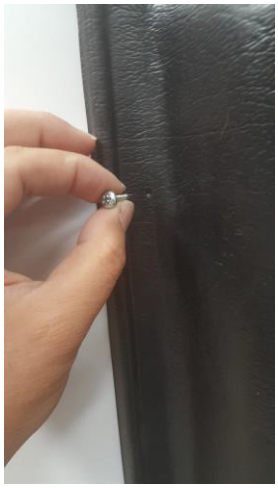
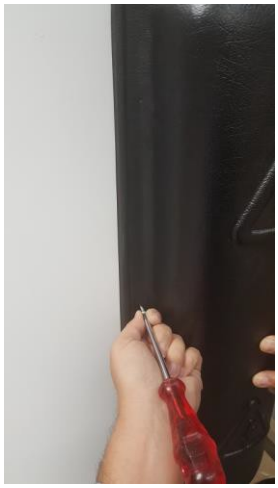
5543
PIPE SEALAN
250ml e



PLEASE, ORDER SEPARATELY THE OPTIONAL PLASTIC COVER TO PROTECT BACKUP HEATER:



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