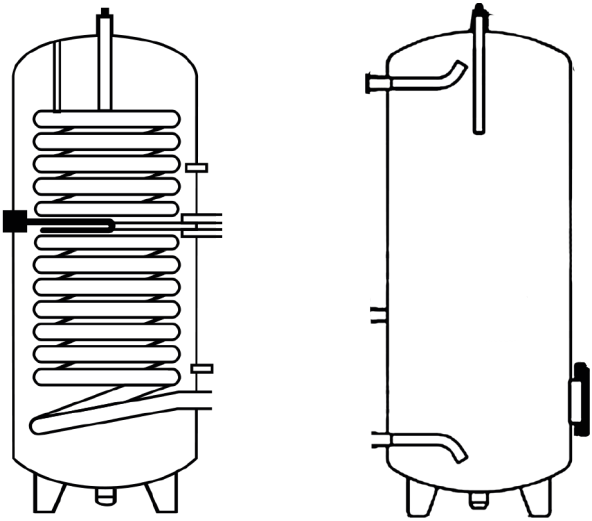
STORAGE WATER HEATER

TSB and TDB Series

DOMESTIC HOT WATER STORAGE TANK

PRO Series

INSTALLATION, OPERATION AND MAINTENANCE MANUEL



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1. FOREWORD

This manuel is a guide for installation, commissioning and maintenance of TSB, TDB series storage water heaters and PRO series hot water storage tanks produced and supplied by TANPERA.

It is meant for those who are responsible for the installation, the use and maintenance of the heaters the storage tanks. We recomment that you read this manuel carefully before commensing any work.

2. INTRODUCTION

This manuel is applicable for the TSB, TDB series storage water heaters and PRO series hot water storage tanks produced and supplied by TANPERA.

TANPERA cannot be held responsible or liable for damage as a result of incorrect installation, use and/or maintenance of TANPERA storage water heater and hot water storage tank as well as not complying with the instructions in this manual.

Please note that our storage water heaters and hot water storage tanks are specially designed and built for the operating conditions (pressures, temperatures, capacities and type of fluids) indicated on the name plate. Sudden pressure peaks beyond the normal operating pressure (or pressure surges) which can occur during the operation can severely damage the product and should be prevented. TANPERA can not be held responsible for any damages as a result of any operation deviating from the original design conditions.

3. SAFETY ALERT NOTICES

Safety Alert Notice

Following must be respected by installing/running/servicing storage water heaters and hot water storage tanks:
Keeping current local safety regulations.
Before any work begins ensure that the tanks are pressureless and cooled till under 40°C.
In all cases ensure that all laws and regulations are strictly kept concerning human/environment protection.

YELLOW TRIANGLE
Refer to applicable SAFETY ALERT notices within the manuel!
All SAFETY ALERT notices are applicable to personal injury and identified by the following symbol.

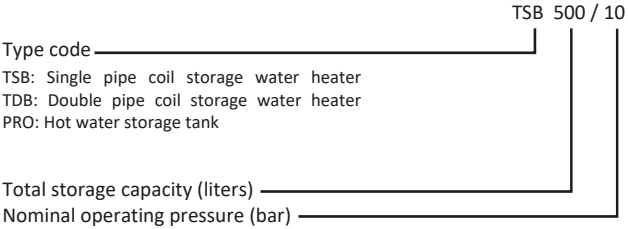
4. GENERAL

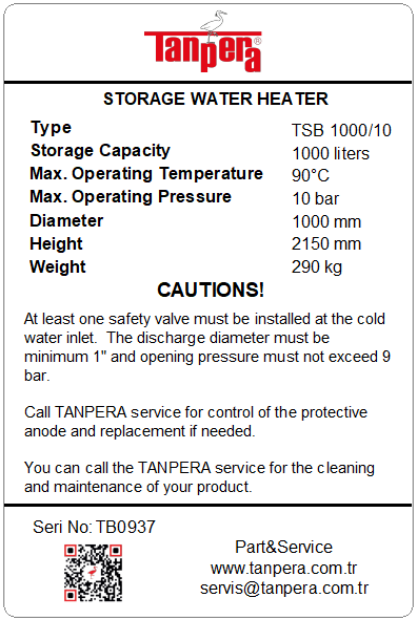
4.1 Identification of the product

All storage water heaters and hot water storage tanks supplied by TANPERA are provided with a name plate. On this plate the following details are specified:

- type of product
- serial number
- nominal capacity in liters
- maximum working pressure in bar
- maximum working temperature in °C

Type key:





4.2. Correct operation

This user manual provides information and instructions for correct and safe operation of the unit. Many accidents are caused by incorrect use!

It is essential that you study the instructions carefully, and above all, ensure the availibility to those who install, maintain and operate the product on a daily basis.

This manual is of no value if it is not available at the time when your staff needs it.

If a problem occurs with your TANPERA water heater and storage tank which is beyond the scope of this manual, do not hasitate to contact us. The installation should not be put into operation before all indistinctnesses have been solved!

To avoid injuries and damages, follow the instructions and local applicable safety regulations. Also take the necessary protective measures, depending on the nature of your process or circumstances related to it, at your plant.

Please note that our products are especially designed and built for the operating conditions (pressures, temperatures, capacities and type of fluids) indicated on the name plate. Sudden pressure peaks beyond the normal operating pressure (or pressure surges) which can occur during the operation can severely damage the product and should be prevented.

TSB and TDB series storage water heaters are for heating and storing domestic water, PRO series hot water storage tanks are for storing domestic hot water. The products should not be used for any other purpose.

TANPERA can not be held responsible for any damage as a result of any operation deviating from the original desing conditions.

A long period of trouble-free use of your product depends on proper maintenance and cleaning. To do so, carefully follow the instructions in Chapter 8 of this manual.

4.3. Precautions

All potential personal injury hazards are identified by safety alert sysmbol.
Bodily harm can be caused by:

- burning as a result of touching the tank or other parts of the installation;
- the uncontrolled release of pressurized media with which the danger of burning and other injuries is present;
- contact with chemicals;
- touching the sharp edges of the installation.

Damage to equipment can be caused by:

- external forces;
- corrosion;
- chemical action;
- erosion;
- material exhaustion;
- water hammer;
- thermal and/or mechanical shock;
- freezing;
- wrong transport/lifting.

The chemical and physical nature of the water to be heated and stored in the tank must comply with the limit values specified in the Council directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.

Potable water with a hardness of 20 Fr and above should not be used in a storage water heater without reducing its hardness. Otherwise, lime deposits formed on hot coil surfaces both reduce the equipment's heating capacity by preventing heat transfer and may cause perforation on the overheated coil surfaces due to corrosion.

The water heater coils are only suitable for hot water or water-glycol mixtures in the liquid phase. In the coils, steam and superheated water cannot be used as heating medium.

When a tank (filled with water or water mixture) which is not in operation is exposed to temperatures below zero, the tank can be damaged.

If a danger of frost occurs, the tank and the coil(s) should be drained completely.

Sudden pressure and temperature changes should be prevented.

Even after stopping the installation some parts of it can still be hot! Therefore, it must be allowed to cool down to intervene.

If welding activities have to be carried out near the equipment, never use the tank for earthing. Electric currents can cause severe damage to product.

If you have to weld, dismantle the connections and isolate the equipment from the system.

5. CONSTRUCTION

Information on the physical structures and dimensions of the storage water heater and hot water storage tank covered by this manual is below.

5.1. TSB, TDB series storage water heater

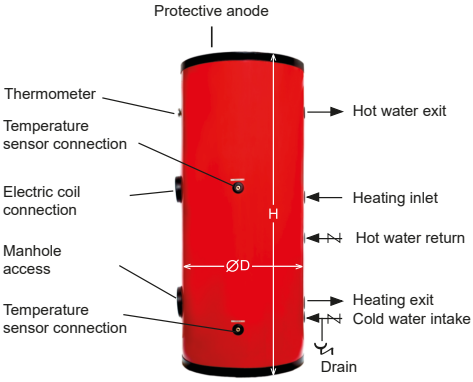
- **Capacity:** 100 – 3000 liters
- **Designated use:** Hot water not exceeding 90°C
- **Operation pressure:** 10 bar
- **Mounting position:** Vertical
- **Coating of water-contact surfaces:** Enamel
- **Insulation:** 100-500 liters 50 mm thick hard polyurethane, 800-3000 liters 80 mm thick open cell soft polyurethane
- **Protective sleeve:** 100-500 liters electrostatic powder coated steel sheet, 800-3000 liters vinyl sheath
- **Standard accesories:** Protective anode, thermometer

Note: Upon request, products can also be delivered in non-standard capacities; electrical heater and panel can be added.

The heating capacity of the TSB and TCB series storage water heaters depends on the flow rate and temperature of the hot water circulated in the coil. The domestic hot water supply values given in the catalog are valid if the heating water inlet temperature, and the flow rate corresponding to the capacity specified herein, are realized. For this reason, check whether the capacity of the heat sources in the heating system (boiler, solar panel, electric heater etc.) and the characteristics of the heating water circulating pump provide these values!

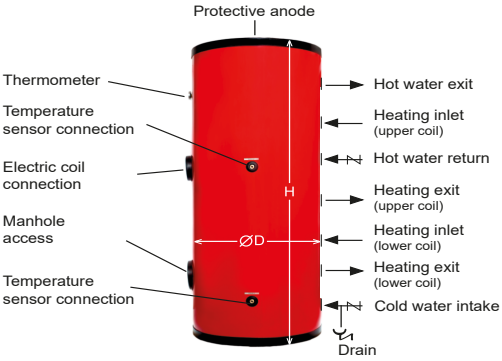
Single Coil (TSB)

Type	Dimentions		Empty Weight (kg)
	ØD (mm)	H (mm)	
TSB 100	500	1100	67
TSB 160	600	1130	88
TSB 200	600	1330	110
TSB 300	700	1250	130
TSB 500	750	1830	200
TSB 800	900	2100	265
TSB 1000	1000	2100	290
TSB 1500	1200	2300	400
TSB 2000	1300	2350	600
TSB 2500	1500	2250	730
TSB 3000	1500	2600	860



Double Coil (TDB)

Type	Dimentions		Empty Weight (kg)
	ØD (mm)	H (mm)	
TDB 160	600	1130	94
TDB 200	600	1330	115
TDB 300	700	1250	140
TDB 500	750	1830	222
TDB 800	900	2100	302
TDB 1000	1000	2100	340
TDB 1500	1200	2300	430
TDB 2000	1300	2350	660
TDB 2500	1500	2250	810
TDB 3000	1500	2600	950

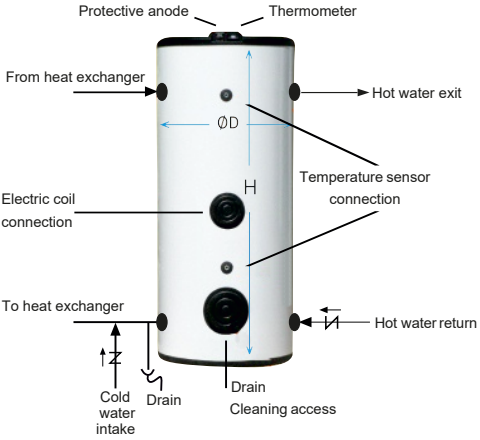


5.2. PRO series hot water storage tank

- **Capacity:** 100 – 5000 liters
- **Designated use:** Hot water not exceeding 90°C
- **Operation pressure:** 10 bar
- **Mounting position:** Vertical
- **Material:** Two layers of enamel coated carbon steel
- **Insulation:** 100-500 liters 50 mm thick hard polyurethane, 800-5000 liters 80 mm thick open cell soft polyurethane
- **Protective sleeve:** 100-500 liters electrostatic powder coated steel sheet, 800-5000 liters vinyl sheath
- **Standard accesories:** Protective anode, thermometer

Note: On special request; tanks made of stainless steel or galvanized carbon steel, horizontally positioned and at operating pressure of 16 bar can be delivered.

Type	Dimentions		Empty Weight (kg)
	øD (mm)	H (mm)	
PRO- 100/10-EV	500	1100	60
PRO- 160/10-EV	600	1130	75
PRO- 200/10-EV	600	1330	85
PRO- 300/10-EV	700	1250	105
PRO- 500/10-EV	750	1830	155
PRO- 800/10-EV	900	2100	225
PRO- 1000/10-EV	1000	2100	250
PRO- 1500/10-EV	1200	2300	335
PRO- 2000/10-EV	1300	2350	480
PRO- 2500/10-EV	1500	2250	570
PRO- 3000/10-EV	1500	2600	630
PRO- 4000/10-EV	1600	2700	800
PRO- 5000/10-EV	1600	3200	900



6. INSTALLATION

6.1. Siting

The place where the unit is to be installed must be closed and free from risk of freezing. Damage to products, located in places with temperatures below +5°C or above +50°C, in extremely humid environments and in external spaces is not covered by the warranty. If there is a risk of temporary freezing (<0°C outdoor temperatures), the tank and the coil (for TSB and TSB) must be completely drained.

The floor on which the unit will be placed must be strong enough to carry the filled weight and must be leveled. If the location is leveled and protected against flooding, the unit can be installed without any pedestal. However, it is recommended to place the unit on a suitable pedestal at a height of at least 10 cm to protect it from environmental influences. This pedestal can be of concrete or steel construction.

At the place where the unit is installed, precautions must be taken against flooding. For this purpose, a suitable drainage system (floor drain, sump pit and pump etc.) capable of discharging water should be provided on the floor. TANPERA shall not be liable for water leak damages that may be caused by the product or the piping, in places where such a measure is not taken.

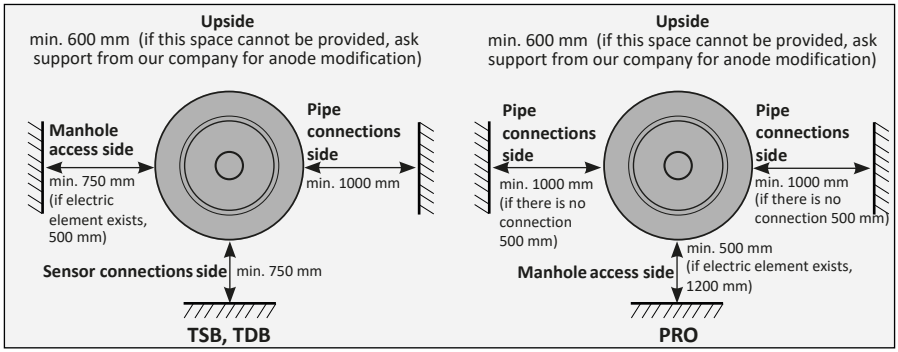
The TSB and TDB series water heaters supplied with electric heating elements must be provided with electricity at the installation site (220 V for powers up to 2 kW, 380 V for higher powers).

For the necessity of replacing (or repairing/modifying) the product, suitable passage and exit spaces and transportation facilities should be provided in order to be able to remove the unit and to install the new one in the same place.

6.2. Space requirements for the installation location

When locating, it is very important that there is sufficient space around the unit for connections and servicing. During installation, there must be sufficient working space left to intervene in the product for troubleshooting or to remove/install any connection/accessory. Otherwise, the proper servicing will not be provided.

The following dimensions must be observed when locating:



6.3. Transport, lifting, storage

WARNING: To prevent personal injury always use appropriate hoisting equipment. If you are to lift the unit itself or lay it on the ground to remove the pallet, straps should be used.

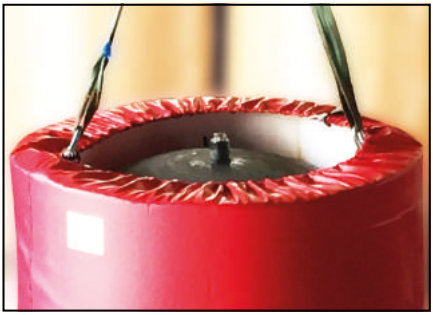
Transporting:
The products will be supplied vertically on a pallet. This allows you to transport the equipment by means of a fork lift truck.

Always carry the unit in a vertical position.

To lift the unit itself, first remove the thermoplastic cap on top and expose the transport eyebolts. Particularly for the tanks with steel sheet sleeve, care must be taken not to break the cap or deform the sheet when removing the cap.

Fasten the straps to the eyebolts as shown on the picture.

Place the thermoplastic cap in the same way after transport has finished and the straps have been removed.



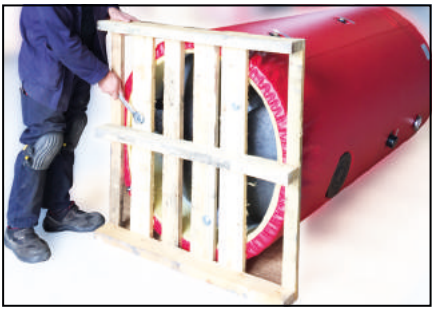
Never lift the unit by using the connection ports!

Rising of the unit:
The pallet should be removed before mounting. To remove the pallet, lay down the unit on the ground, holding the eyebolts with the straps.

When doing this, take maximum care to ensure that the vinyl sheath does not tear (or the steel sheet sleeve does not deform).

Remove all tightening elements from the pallet.

Place the unit in its position on the floor, by holding from the eyebolts with the straps and bringing it back to the vertical position and lowering it on the legs.



Remove the straps, refit the thermoplastic cap and tighten the unit to the floor/pedestal using the mounting holes on the feet.

Never fix the unit to its place by welding!

Storage:
Should it be necessary to store the product for a longer period without installing, it should be stored in upright position on the pallet with original packaging, in a closed place, which is absolutely free of external weather conditions.

If the product is to be out of operation for a long time, drain the water and take precautions against freezing.

6.4. Installing the pipe connections

TANPERA storage water heaters and hot water storage tanks will be provided with internal thread connection ports.

When connecting the pipe system to the product make sure that no stress or strain is imposed, by the pipe system, on the unit!

Risk of fire! The unit should not be approached with fire and any necessary precautions should be taken in the event of welding. The insulation material and the sheath on the tank may burn.

We advise you of the following:
Pipe connections must be made according to an approved installation project.

At least one safety valve must be used having the appropriate diameter and opening pressure, in the system. According to the storage capacity, the minimum safety valve diameter to be used should be ¾" for 800 liters and below, 1" for 800-3000 liters and 1 ¼" (or 2 pcs 1") for over 3000 liters. The opening pressure of the safety valve must not exceed 90% of the product operating pressure.

There should be no shut-off valve between the safety valve and the tank, drain port of the valve should not be blocked in any way and the drain piping should be downward inclined and as short as possible.

TANPERA cannot be held responsible for the damages that occur in the products which do not have a properly sized safety valve having the above mentioned qualifications.

In order to eliminate the risk of scalding with hot water during use, safety precautions must be taken in the system to prevent the domestic water temperature from exceeding 60°C.

An appropriately sized expansion tank should be installed in the potable water line in accordance with the operating pressure of the system and the tank volume of the product.

The pipes must be thoroughly flushed and cleaned before the product is connected.

Pipe connections (heating water and domestic water) should be made as shown in the diagrams in Chapter 5 of this manual.

To ensure the safety and maintenance of the product and to monitor and control the system, necessary fittings and accessories (cut-off valve, check valve, drain tap, pressure reducer, strainer, manometer, thermometer, temperature sensor, thermostat etc.) should be placed on the unit and at the appropriate places in the system.

In order to be able to isolate the unit from the system when needed, cut-off valve must be installed at all connections. It is recommended that the connections are made with unions to be able to easily disconnect the unit from the system when needed.

Before filling the tank with water, unused connection ports should be blocked with a blind plug.

The accessories such as sensor, thermostat etc. required to control the temperature of the water in the tank can be mounted at the special connection ports on the tank.

6.5. Electric connection

If your product is delivered with an electric heater, the electrical connections must be made properly.

WARNING: Electrical connections must be made by a qualified technician.

At least 16 A fuse must be used in the supply line of the electrical control panel.

Electrical control panel must be grounded. To do so, use a grounding cable with a cross-sectional area of at least 6 mm^2 and connect it with a separate copper or galvanized steel sheet ground rod from the existing circuit, in accordance with the relevant local regulations.

Halogen-free CE approved cable must be used for the power supply line. If the line length is less than 25 meters, the cable cross-sections given in the table below can be used. Please consult our company for longer lines.

Number of Electric Heaters	Maximum Power	Maximum Current	Cable Type
1x7,5 kW	7,5 kW	12 A	4x4 NYY
1X10 kW	10 kW	16 A	4x4 NYY
1x15 kW	15 kW	24 A	4x6 NYY
2x7,5 kW	15 kW	24 A	4x6 NYY
2x10 kW	20 kW	32 A	4x6 NYY
2x15 kW	30 kW	48 A	4x10 NYY

7. COMMISSIONING

7.1. Pre-checks

Commissioning of products containing electric heater must be carried out by an authorized TANPERA service organisation. This process is free of charge and the products that are not commissioned by an authorised TANPERA service are not covered by the warranty.

Commissioning of the products not containing electric heater may only be done by staff specially trained for the job. If you wish, these products also can be commissioned by TANPERA service free of charge.

Check if all connections are fitted correctly (see also 6.4).

Check the pressures and temperatures of the media and make sure that these are within the limit values specified on the name plate.

7.2. Operation

When commissioning the product, follow these steps:

- Open the hot water tap located farthest in the system.
- Open the valves of all domestic water connections on the tank, except for the cold water inlet.
- Open the cold water inlet valve and start filling the tank and system with water.
- Close the tap when the water flowing from the hot water tap begins to flow airless.
- After ensuring that the tank is completely filled with water, check all connections and piping for leaks. This control can be made by visual inspection or by monitoring the pressure drop from the manometer in the installation.
- For TSB and TDB, open the inlet/outlet valves of the heating coils and fill them with heating water. Start the circulation by starting the pump and bleed the system.

Never operate the heating system when the tank is not completely filled with water.

8. MAINTENANCE

If you wish, TANPERA service can perform cleaning and periodic maintenance of your product.

Maintenance and cleaning of the product must only be carried out by authorized, trained and qualified personnel.

Before starting maintenance and cleaning operations, the product must be switched off and the water inside must be cooled down below 40°C.

General maintenance should be performed at least once a year to ensure that the product continues to operate effectively and to prevent deterioration of the domestic hot water quality.

In the scope of maintenance;

- The protective anode should be checked.
- Scaling, sedimentation and other deposits that may accumulate on the heating coil (for TSB and TDB) and at the tank should be removed.
- The safety valve must be checked. This can be done by raising the water pressure in the tank up to the safety valve opening pressure by a testing pump.
- Devices and accessories such as valves, check valves, expansion tanks, thermometers etc. on the unit and at the connected installation, should be checked to be in good working condition. Defective ones must be repaired or replaced. The filters of the strainers must be cleaned.

During cleaning and maintenance, tools and chemicals that may cause physical and chemical damage to the enamel should not be used.

CAUTION:
Cleaning agents may cause injury to exposed skin, eyes, and mucous membranes. Use of protective eyewear and gloves is strictly recommended.

For cleaning, follow these steps:

- Deactivate the heating system and remove electrical power (if present) before draining the tank for cleaning.
- Check the temperature of the water in the tank from the thermometer. After cooling down sufficiently, close the cold water inlet valve and open the farthest hot water tap.
- Open the drain valve and empty the tank completely.
- Carefully remove the thermoplastic cover of the manhole access on the tank (see illustrations in Chapter 5) and the insulating material underneath.
- Remove the flange on manhole access.
- Visually check for contamination and damage by illuminating the inside of the tank with a strong flashlight.
- Remove residues and fouling not adhered to the inner wall of the tank and heating coil, with pressurized water.
- Clean the lime etc. adhered to the inner wall of the tank and the surface of the heating coil by using with non-hard tools such as plastic brushes etc.
- For cleaning, agents suitable for domestic use such as detergent, may be used. In this case, before use, disconnect all domestic water connections to prevent detergent from escaping into the installation; after use, make the system connections after thoroughly rinsing the inside of the tank with pressurized water.

- It is not recommended to use other chemicals when cleaning the tank.
- After the cleaning is finished, reconnect the disconnected pipes and reinstall the manhole access flange. The flange gasket is a disposable gasket. Therefore, use a new gasket each time the flange is removed. You can provide the suitable gasket from our company.
- Carefully remount the thermoplastic cover and the insulation material underneath.
- Follow the steps in 7.2 to fill the tank and start operation.

When the tank is drained for cleaning, check the wear of the protective anode and replace it if it is depleted.

The magnesium anode installed on your product protects the inner surface of the tank from corrosion caused by water. During cathodic protection, the anode material undergoes abrasion, depending on the corrosive nature of the water.

For this reason, in order to ensure a long life time of the product, the anode should be checked periodically and it should be replaced with a new one if the diameter of the anode has decreased to 10-15 mm.

In order to detect the corrosive nature of the water before it is too late, it is useful to carry out the first control within maximum 6 months from the date of commissioning. The period of subsequent checks may be determined based on observations at the first control, but not more than once a year.

Products that have been damaged by corrosion in the warranty period are excluded from the warranty if it is detected that the magnesium anode is fully depleted.

If no signs of wear are observed on the anode during the control, the anode may not be functioning. In this case, call TANPERA service.

Follow the steps below for anode control:

Close the cold water inlet valve.

Decrease the water pressure inside the tank by opening the nearest hot water tap.

Never interfere with the tank under pressure.

Remove the thermoplastic cap at the top of the tank.

Remove the anode in the top center of the tank with suitable tools.

Check the anode. Replace if necessary.

You can obtain the anode that is suitable for your product from our company.

Install the anode in place and tighten it.

Open the cold water valve and continue to use the product.

The protective anode is a consumable item and is not covered by the warranty.

9. PROBLEM SOLVING

Please find below a summary of possible problems as well as possible causes and solutions regarding your TANPERA product.

PRO Series Hot Water Storage Tank

Problem	Possible cause	Possible solution
Insufficient water temperature	Heating system capacity is insufficient	• Increase heat exchanger capacity • Increase primary heat source (boiler etc.) capacity
	Hot water storage tank capacity is insufficient	• Replace with a larger tank • Add new tank(s)
	Temperature control does not function well	• Check the sensors, panels, automatic valves etc. in the system.
	Insufficient flow in the heating circuit	• Check charging pump operation, repair if faulty • Increase the capacity of charging pump • Clean the heat exchanger • Check that valves are open, replace if defective
Insufficient domestic hot water flow	Inadequate cold water supply	• Add booster to the system • Increase the booster capacity
	Blockage in the system	• Increase the pipe sizes • Clean the strainer filter at the cold water inlet
Turbid water flowing from taps	Anode is depleted or not functioning	• Check the anode. Replace if finished • Call TANPERA service if the problem is not resolved
	Tank dirty	• Clean the tank
Water leakage from the unit	Hole on the tank	• Call TANPERA service
	Flange or anode seal defective	• Replace the seal
Safety valve opening	Unable to compensate water expansion	• If there is no expansion tank, install one • If the expansion tank is faulty, have it repaired
	Safety valve defective	• Replace the safety valve
	Safety valve opening pressure is low	• Replace the safety valve

TSB, TDB Series Storage Water Heater

Problem	Possible cause	Possible solution
Insufficient water temperature	Heating system capacity is insufficient	• Increase primary heat source (boiler etc.) capacity
	Storage water heater capacity is insufficient	• Replace with a larger heater • Add new heater(s) • Clean the heating coil
	Temperature control does not function well	• Check the sensors, panels, automatic valves etc. in the system.
	Insufficient flow in the heating circuit	• Check circulation pump operation, repair if faulty • Increase the capacity of circulation pump • Check that valves are open, replace if defective • Clean the strainer filter in the line
Insufficient domestic hot water flow	Inadequate cold water supply	• Add booster to the system • Increase the booster capacity
	Blockage in the system	• Increase the pipe sizes • Clean the strainer filter at the cold water inlet
Turbid water flowing from taps	Anode is depleted or not functioning	• Check the anode. Replace if finished • Call TANPERA service if the problem is not resolved
	Tank dirty	• Clean the tank
Water leakage from the unit	Hole on the tank	• Call TANPERA service
	Flange or anode seal defective	• Replace the seal
Safety valve opening	Unable to compensate water expansion	• If there is no expansion tank,install one • If the expansion tank is faulty, have it repaired
	Safety valve defective	• Replace the safety valve
	Safety valve opening pressure is low	• Replace the safety valve
Pressure increase in the heating circuit	Domestic water leakage into the heating circuit	• Call TANPERA service

Call TANPERA service for electrical faults of products with electric heater.

10. AFTER SALES SERVICE

In order to avoid the cost of repair and product replacement, we recommend that assembly and maintenance work be carried out by appropriately trained personnel.

You can contact TANPERA After Sales Services Department (www.tanpera.com) for the cleaning and maintenance of your products, supply of spare parts (anode, gasket etc.) and for the addition of electric heater.

All products that TANPERA has sold are under the guarantee of TANPERA A.Ş. for a period of 24 months, within the "Terms of Warranty" stated herein, from the invoice date.

1. The warranty covers material, workmanship and manufacturing defects of the products.
2. The decision of whether a defect in a product within the warranty period, is covered by the warranty is provided by the After-Sales Services Department of our company after the necessary technical examination is performed.
3. For any kind of operation within the scope of the warranty, no charge is claimed for spare parts, workmanship, transportation, travel or any other reason.
4. All kinds of authorization and responsibility regarding the method to be applied to solve the defect and the parts to be replaced, within the scope of warranty belong to our After-Sales Services Department.
5. Elimination of the defect can be carried out at the location of the product, at our company's technical service or at the authorized service. After-Sales Services Department is authorized to make such decision.
6. During the warranty period, the customer has the right to request replacement of the product if the same fault repeats or the repair period exceeds 30 calendar days.
7. Within the warranty period, if it is determined that the product failure is due to user error or misuse, the repair is out of warranty. In that case the spare part price and other service fees shall be charged from the customer.

The warranty does not cover;

a. Mechanical damages resulting from transportation, storage etc.
b. The products that has been tampered with by the warranty beneficiary or any other person that hasn't been authorised by TANPERA.
c. Products that commissioning is required but are not commissioned by our After-Sales Services Department or by a service organization authorized by us.
d. Defects resulting from the usage of improper or non genuine spare parts.
e. Products used in places other than its purpose.
f. Damages resulting from chemical agents and other unsuitable environmental conditions.
g. Damages caused by floods, fires, freezing or other external factors.
h. Products that has been subjected to extreme pressure or temperature conditions outside the limits specified on the nameplate.
i. Due to incorrect fluid usage inconsistent with the operation manual, damages resulting from physical and chemical properties of the fluid.
j. Damaged products due to fluid impurity (solid particles such as rust, welding burrs, organic matters etc.) or hardness (calcification).
k. Damages resulting from water-hammer.
l. The tanks with a completely eroded protective anode.
m. Products not protected against pressure shocks by a pressure safety valve as specified in the operation manual.
n. Products without proper mains and earth connection as specified in the operation manual.

Tanpera®

- PLATE HEAT EXCHANGERS
- STORAGE WATER HEATERS WITH INDIRECT PIPE COIL
- ELECTRIC STORAGE WATER HEATERS
- DOMESTIC HOT WATER STORAGE TANKS
- PACKAGE TYPE DOMESTIC HOT WATER SYSTEMS
- BUFFER TANKS
- EXPANSION TANKS
- DEAERATORS – DIRT SEPERATORS
- HYDROLIC SEPERATORS

The great white heron can stand for a long time in the cold water as it can perform an effective heat exchange between the blood coming from the heart at 40°C and the blood returning from the feet at 1°C.

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