INSTRUCTIONS

STHERM by sinclair +

COMBINED BUFFER TANKS

ST-500MCS, ST-500MC

sinclair
HEAT PUMPS

COMBINED WATER STORAGE TANKS ST-500MC, ST-500MCS

1. Product description

Storage tanks ST-500MC and ST-500MCS are designed for accumulation and subsequent distribution of thermal energy of heating water. They are equipped with a stainless steel heat exchanger for domestic hot water (DHW). In addition, the ST-500MCS is fitted with other stainless steel heat exchanger (e.g. for connecting the solar heating system). It is possible to directly install auxiliary electric heaters in the tanks or connect other heat sources to the tanks. The storage tank is always connected to a closed heating circuit.

For proper operation of the tank, it is necessary to optimally design the entire hydraulics of the heating system, i.e. location of circulation pumps of heating sources and heating circuits, valves, check valves, etc. When combining multiple heat sources, it is recommended to use a smart control system to control the source and consuming parts of the heating system (charging and discharging the storage tank).

1.1. Tank volume
500 litres

1.2. Thermal insulation
The tanks are insulated with unremovable CFC-free hardened PUR foam with thickness of 50 mm The outer surface of the insulation consists of PVC cover including the top cover made of a hardened plastic.

Caution! The heater must not be operated at a higher temperature than 90°C. Operation at a higher temperature can cause permanent damage to the insulation due to loss of its shape and consistency.

1.3. General information
This document is an integral part of the product. Please read the instructions in this document carefully, as they contain important information about safety, installation, use and maintenance of the tank. Keep this document in a safe place for future reference.

This device is designed to store heating water and its subsequent distribution. The device must be connected to the heating system and heat sources. This device is suitable for preparation of domestic hot water using a flow heating.

Using the storage tank for purposes other than stated in the documentation is prohibited and the manufacturer accepts no responsibility for any damage caused by improper or incorrect use.

The installation must be done by a qualified person in accordance with applicable regulations and standards and according to the manufacturer's instructions; otherwise the warranty will be void.

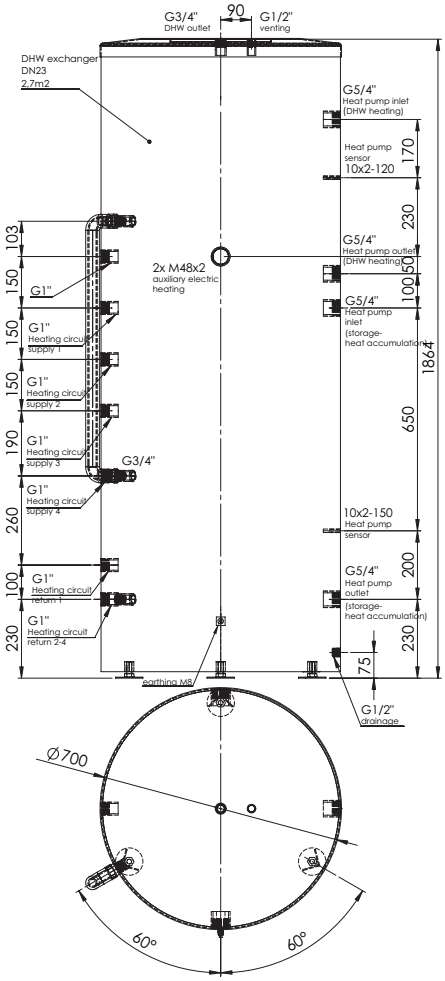
2. Specifications

2.1. ST-500MCS
Tank material: steel ČSN 11 321 / ČSN 11 375
Tank inside surface coating: no modification
Tank outside surface coating: hardened PUR foam
Tank max. pressure: 0,6MPa (6bar)
Tank max. temperature: 110°C

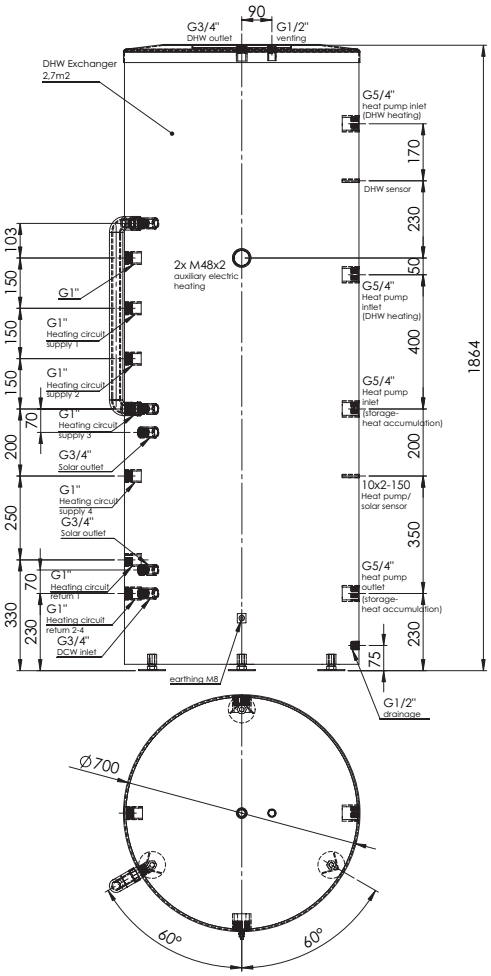
Exchangers material: stainless steel 1.4404 (AISI 316L)
DHW exchanger heating surface: 4.05m^2
Solar exchanger heating surface: 1.35m^2
Exchangers max. pressure: 1.0MPa (10bar)
Exchangers max. temperature: 110°C

2.2. ST-500MC
Tank material: steel ČSN 11 321 / ČSN 11 375
Tank inside surface coating: no modification
Tank outside surface coating: hardened PUR foam
Tank max. pressure: 0,6MPa (6bar)
Tank max. temperature: 110°C

Exchangers material: stainless steel 1.4404 (AISI 316L)
DHW exchanger heating surface: TUV 4,05 m^2
Exchangers max. pressure: 1.0MPa (10bar)
Exchangers max. temperature: 110°C



ST-500MC



ST-500MCS

3. Operation

This tank is designed for heating and storage of water, which is used for heating in domestic or industrial applications, but always in closed pressure circuit with forced circulation. Water in the storage tank is heated using several possible heat sources, such as different types of hot water boilers or renewable energy sources (e.g. heat pumps, solar collectors), or electric heaters. Stainless steel heat exchanger for flow heating of DHW is in the top part of the tank. Domestic hot water is heated when it flows through this heat exchanger – the cold water enters the stainless steel flow exchanger and is heated by heating water (HeW) stored in the tank.

In the bottom part of the tank ST-500MCS is also placed stainless steel heat exchanger, which is used for heating the HeW in the storage tank by an alternative heat source (e.g. solar heating system).

The storage tank is connected to a heat source using fittings. Individual connection points are assigned according to the connected circuits.

4. Installation and commissioning

Tank installation must comply with the appropriate regulations and standards according to ČSN 06 0310, ČSN 06 0320 and ČSN 06 0830 and must be done only by a qualified and competent person.

Defects caused by an improper installation, use and handling are not covered by warranty.

Once the tank is installed and connected to an existing heating system, it is recommended to clean the entire heat system by cleaning fluid for heating systems. In addition, it is recommended to apply a protective liquid with corrosion inhibitor.

4.1. Connection to the heat sources
Place the tank on the floor as close as possible to the heating source. Connect the heating circuits to the inputs and outputs according to the tank design. Install the drain valve at the lowest point of the tank. Install the bleed valve at the highest point of the tank. Insulate all the interconnecting piping.

4.2. Connection to the solar heating system
The storage tank ST-500MCS can also use the advantage of connection to the solar heating system. In such case, the supply of heated medium from the solar heating system is connected to the upper inlet of the heat exchanger coil and the lower outlet of the heat exchanger coil is connected to the return pipe of the solar heating system. All interconnecting piping between the tank and the solar heating system must be thoroughly insulated.

The tank ST-500MC is not primarily designed to be connected to the solar heating system, but if necessary, this can be done using a heat exchanger between the solar heating system and the storage tank. In such case, insulate all of the piping between the storage tank and the heat exchanger carefully.

4.3. Installation of the auxiliary electric heater
This storage tank can be fitted with auxiliary electric heaters with power up to 6kW. Connection of the auxiliary heaters to the mains can be implemented directly (heaters with built-in thermostat) or through the controller of the entire heating system.

Caution! All electrical heaters must be protected by a safety thermostat.

The electric heater must be connected only by a qualified person with certification according to the regulation 50/1978 Sb.

4.4. Connecting to the domestic water distribution system
The sanitary water piping must be made in accordance with the applicable standards. It is recommended to install the pressure reducing valve on the stainless steel heat exchanger inlet. If the pressure in the water distribution system is over 6bar, pressure reducing valve is necessary. If the water is too hard, install the water softener before the stainless steel heat exchanger. If the water contains mechanical impurities, install the filter.

Warning: The quality of water entering the stainless steel heat exchanger must not exceed the following parameters:
calcium 30 mg / litre, chloride 100 mg / litre, magnesium 15 mg / litre, sodium 200 mg / litre, iron 0.2 mg / litre, pH 6.5 to 9.5

4.5. Commissioning
The tank is filled up together with the heating system in compliance with applicable standards and regulations. To reduce corrosion, it is recommended to use appropriate products for the heating system. Quality of heating water depends on quality of water that is used to fill up the system during commissioning, quality of water that is used to refill the system, and frequency of refilling. This has a great impact on the life of heating systems. Poor quality of heating water may cause problems such as corrosion of the equipment and incrustation, especially on the heat transfer surfaces.

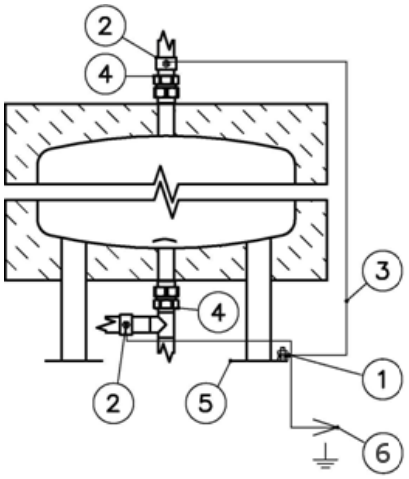
Quality of the supplied and heating water is specified by ČSN 07 7401/1992 Sb. Quality of the sanitary water must meet the conditions specified in section 4.4. Connecting to the Domestic Water Distribution System

Fill the heating circuits with appropriate fluids and bleed the system. Make sure that all connections are tight and check the pressure in the system. Set the parameters of the heating controller according to the documentation and manufacturer's recommendations. Periodically check that all control and adjustment elements are working properly.

5. Maintenance
If the tank is equipped with the auxiliary electric heater, it is necessary to disconnect the auxiliary electric heater from the power supply before starting the tank maintenance. To clean the exterior of the tank, use a damp cloth and an appropriate cleaner. Never use abrasive cleaners, solvents, petroleum-based products, etc.

Check all connections for leaks.

6. Recommended protective connection
Standing design with earth screw on the foot.



1. earth screw
2. Bernard earth terminal
3. copper earth wire (6 mm^2)
4. brass fittings
5. support
6. earth bus in switchboard

7. Disposal
Packaging materials must be disposed according to the applicable regulations. At the end of its service life, the product must not be treated as a household waste. It is necessary to ensure its recycling. Recycle the insulation as a plastic and the steel tank as a scrap metal.

8. Warranty
This product is warranted in accordance with the terms and conditions, which are stated in this manual and in the warranty card. Warranty card is an integral part of product delivery.

MAINTENANCE AND SERVICE INTERVENTIONS

date	type of service intervention	name of service engineer	signature

Manufacturer:

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