Installation and maintenance instructions

Indirect fired domestic hot water tank Logalux ST150/2 – ST300/2

For heating contractors

Please read carefully prior to installation and maintenance.

7 747 001 883 09/2006 US

Buderus

1 General information

1.1 About these instructions

These installation and maintenance instructions contain important information for the safe and proper installation, initial start-up and maintenance of Logalux ST150/2 – ST300/2 domestic hot water tanks.

These installation and maintenance instructions are designed for specialists, who – through their vocational training and experience – are knowledgeable in handling heating systems and DHW installations.

The Logalux ST150/2 – ST300/2 domestic hot water tank is referred to as the "DHW tank" in this document.

- Inform the user about the operation of the DHW tank, placing particular emphasis on safety aspects.
- Hand the installation and maintenance instructions to the user and recommend that they are kept in the vicinity of the heating system for reference purposes.

1.2 Standards and guidelines

USER NOTE

Observe all applicable standards, codes and guidelines!

USER NOTE

In Massachusetts, this DHW tank must be installed by a licensed plumber!

1.3 Tools, materials and accessories

For the installation and maintenance of the DHW tank, you need the standard tools used in DHW installation.

The following may also prove useful:

- Hand truck with strap
- Wet/dry vacuum cleaner

2 Safety

Logalux ST150/2 – ST300/2 DHW tanks have been developed and built employing the latest technologies and they meet all applicable safety regulations. Please observe the safety instructions and the Installation and maintenance instructions to ensure optimum safe, economical and environmentally-friendly use of your DHW tank.

2.1 Correct use

Logalux ST150/2 – ST300/2 DHW tanks are designed for heating and storing potable water. Potable water regulations apply.

Only heat these DHW tanks with heating water in closed loop systems.

2.2 Layout of the instructions

There are two different levels of danger, identified by the following terms:

WARNING!

RISK TO LIFE

Identifies possible risks emanating from a product that might lead to serious injury or death if appropriate care is not taken.

CAUTION!

RISK OF INJURY/ SYSTEM DAMAGE

Indicates a potentially dangerous situation that could lead to minor or moderately serious injuries or to damage to property.

USER NOTE

User tips for the optimum utilization and setting of the device, plus other useful information.

2.3 Please observe these instructions

WARNING!

RISK TO HEALTH

Improper installation and maintenance work can contaminate the potable water.

- Install and clean the DHW tank hygienically and thoroughly and in accordance with current standards.

CAUTION!

TANK DAMAGE

due to unsatisfactory cleaning and maintenance.

- Carry out cleaning and maintenance at least every two years.
- Immediately remedy all faults to prevent system damage.

USER NOTE

Only use original Buderus spare parts. Losses caused by the use of parts not supplied by Buderus are excluded from the Buderus warranty.

2.4 Disposal

- Dispose of the DHW tank packaging in an environmentally responsible manner.
- Dispose of old DHW tanks in an environmentally responsible manner.

3 Product description

Logalux ST150/2 – 300/2 DHW tanks are fully factory-assembled and ready for connection.

The main components of the DHW tank are:

- Storage tank (Fig. 1, **Item 5**) with corrosion protection
  The cathodic corrosion protection comprises DUO-CLEAN MKT thermo-glazing from Buderus and a magnesium anode rod mounted on the access port (Fig. 1, **Item 3**).
- Casing
  The removable parts of the casing are the casing lid (Fig. 1, **Item 1**) and the cable channel (Fig. 1, **Item 7**).
- Insulation (Fig. 1, **Item 4**)
  The insulation made from CFC-free hard polyurethane foam is directly applied to the DHW tank. A foam insulating element (Fig. 1, **Item 2**) minimizes heat loss through the access port cover.
- Access port cover with magnesium anode rod (Fig. 1, **Item 3**)
  The access port cover provides access for maintenance and cleaning purposes.
- Sensor well for installation of the DHW temperature sensor (Fig. 2, page 6, **M**)
  The boiler's DHW thermostat regulates the set DHW temperature using this DHW temperature sensor (called the tank sensor).
- Heat exchanger coil
  Heat exchanger coil (Fig. 2, page 6) transfers the energy from the heating water to the DHW inside the tank. The tank content is evenly heated throughout.

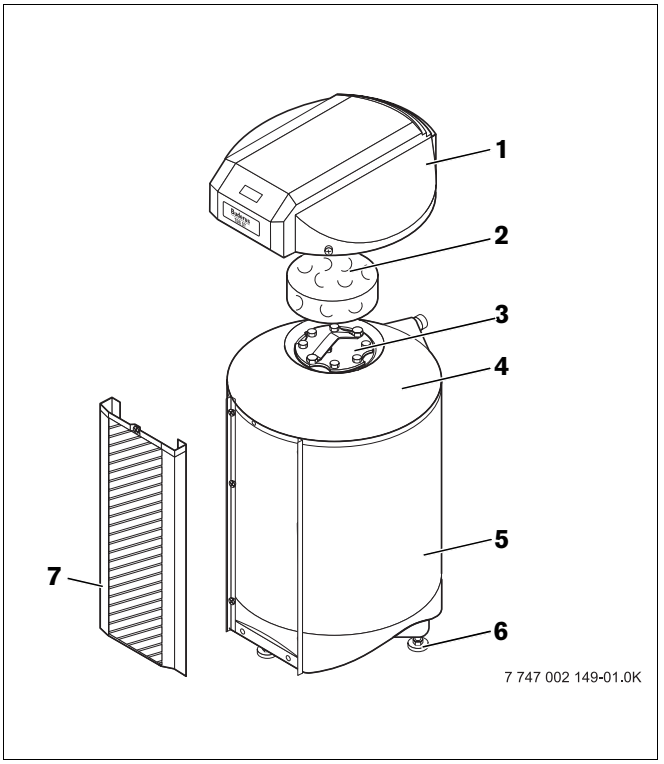

Fig. 1 Logalux ST150/2 – ST300/2 DHW tank

Item 1: *Casing lid*

Item 2: *Insulation element*

Item 3: *Access port with magnesium anode rod*

Item 4: *Insulation*

Item 5: *DHW tank*

Item 6: *Adjustable feet*

Item 7: *Cable channel*

4 Specifications

4.1 Dimensions and connections

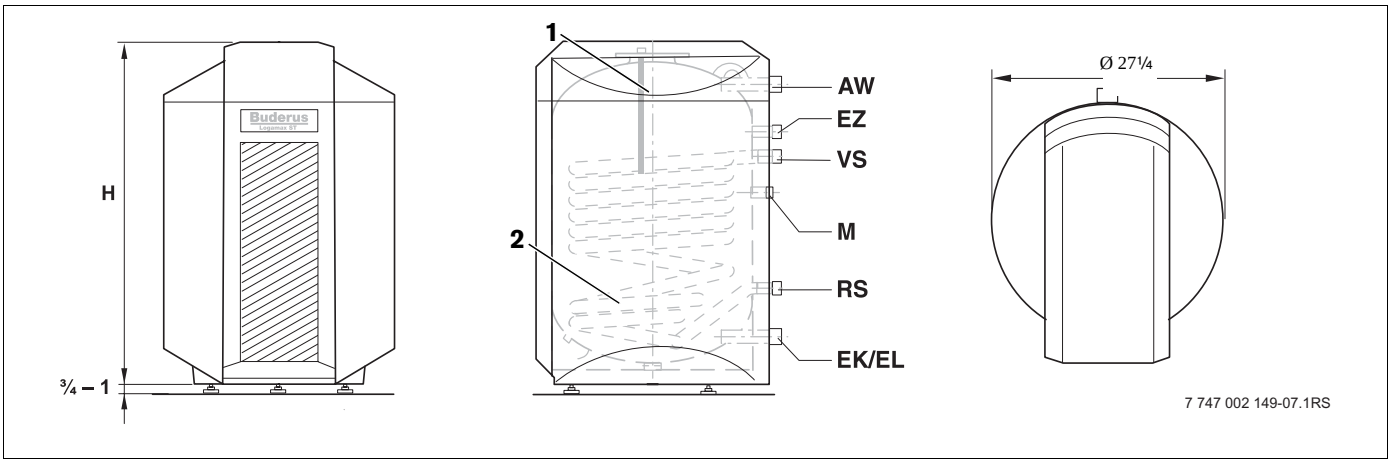

Fig. 2 Dimensions and connections (dim. in inches)

Item 1: *Magnesium anode rod*

M: DHW sensor well (DHW temperature sensor)
AW: Domestic hot water outlet
VS: DHW tank supply
RS: DHW tank return

Item 2: *Heat exchanger coil*

EZ: DHW recirculation inlet
EK: Cold water inlet
EL: Drain

Type	Capacity	AW	VS/RS	EK/EL	EZ	Height (H)	Weight[1]
	Gal.					in.	Lbs.
ST150/2	40	NPT 1"	NPT 1"	NPT 1¼"	NPT ¾"	34¾"	245
ST200/2	53					42¼"	286
ST300/2	79					57¾"	371

Tab. 1 Dimensions and connections

[1] Dry weight (empty tank, excluding packaging).

4.2 Safety limits

CAUTION!

TANK DAMAGE

by exceeding limits.

- For reasons of safety, do not exceed the listed limits.

Approved maximum values	Temperature	Operating pressure	On-site test pressure[2]
	°C (°F)	bar (psi)	bar (psi)
Boiler water	100 (212)	16 (232)[1]	N/A[1]
DHW	95 (203)	10 (145[3])	10 (145[3])

Tab. 2 DHW tank safety limits

[1] Depending on the connection to the heating system, a separate safety device may be required (relief valve, diaphragm expansion vessel).

[2] Operating pressure and test pressure are overpressure.

[3] Maximum 100 psi in Massachussetts.

5 DHW tank handling

CAUTION!

RISK OF INJURY

from carrying heavy loads.

- The transported item should always be lifted and carried by at least two people.

CAUTION!

RISK OF INJURY

by not securing the tank adequately during transport.

- Use only suitable means for transportation, e.g. a hand truck with strap.
- Secure the load against falling.

USER NOTE

- Where possible, transport the DHW tank fully packed to the installation room. This ensures protection during handling.

USER NOTE

You can order hand trucks from one of our dealers.

Moving the DHW tank on its pallet

- Position the hand truck (Fig. 3, **Item. 1**) at the back of the packed DHW tank (Fig. 3, **Item. 2**).
- Secure the DHW tank to the truck using a strap.
- Move the DHW tank to its installation location.
- Remove the wrapping plastic, wooden boards and the polystyrene lid protectors.

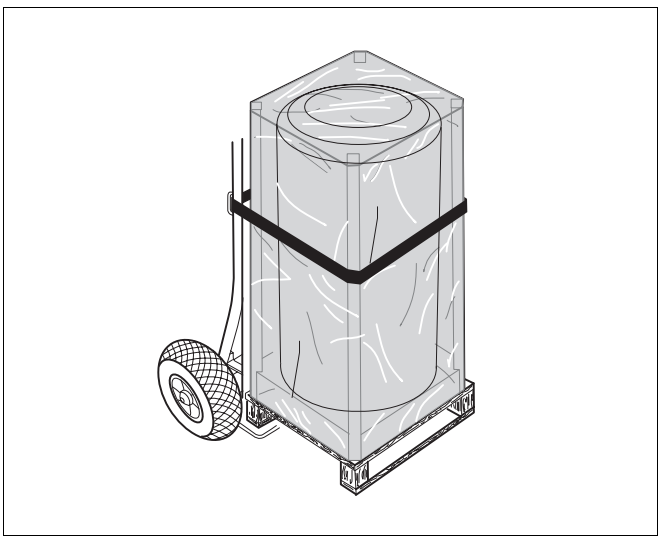

Fig. 3 Moving DHW tank with hand truck (general layout)

6 DHW tank installation

6.1 Positioning the DHW tank

The DHW tank is designed for vertical installation and can be installed beside the boiler. The clearances shown in Figure 4 are strongly recommended for cleaning purposes.

The floor has to be level and able to support a full tank.

CAUTION!

TANK DAMAGE

from frost.

- The boiler room needs to be dry and protected from freezing.

CAUTION!

TANK DAMAGE

from corrosion.

- Use the tank in closed loop systems only.
- Do not use open expansion vessels.

USER NOTE

Ensure adequate clearance above the DHW tank for the replacement of the magnesium anode (maintenance).

- Ensure that the boiler room has a minimum height in accordance with Table 2, page 6.

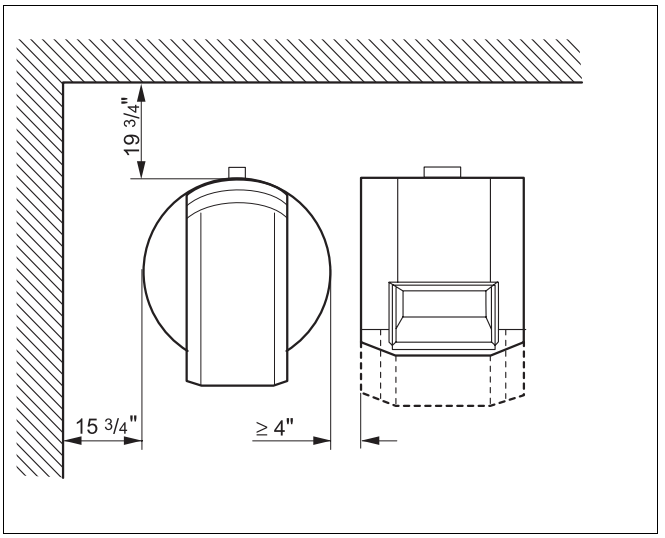

Fig. 4 Positioning the DHW tank (general layout)

Fitting adjustable feet

- Place the lid protector (Fig. 5, **Item 1**) on the floor.
- Carefully lay the DHW tank down flat onto the lid protector.
- Screw in the three adjustable feet supplied (Fig. 5, **Item 2**) up to ¾" – 1".
- Return the DHW tank to its upright position and level horizontally by turning the adjustable feet as appropriate until tank is plumb.

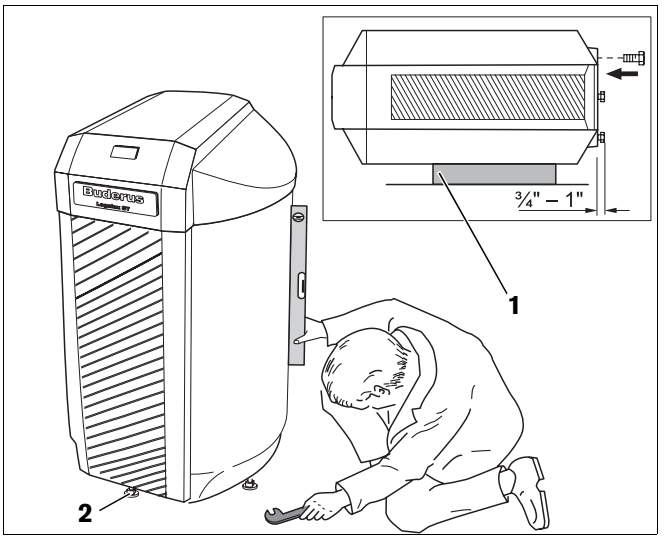

Fig. 5 Leveling the DHW tank vertically

Item 1: *Lid protector*

Item 2: *Adjustable foot*

6.2 Installing the DHW piping

Please observe the following instructions for connecting the DHW tank to the piping. These instructions are important for fault-free operation.

WARNING!

RISK TO HEALTH

Improper installation work can contaminate potable water.

- Install the DHW tank hygienically in accordance with current standards and codes.
- Rinse the DHW tank and piping thoroughly with potable water.

CAUTION!

SYSTEM DAMAGE

due to incorrect installation.

- Observe all local, state and national codes, standards and guidelines applicable to the installation and operation of this DHW tank.

USER NOTE

If the capacity of the boiler exceeds 100,000 Btu/hr, the safety mechanisms on the DHW tank need to be adjusted accordingly.

CAUTION!

SYSTEM DAMAGE

from leaking connections.

- Connect all connection pipes free from stress.

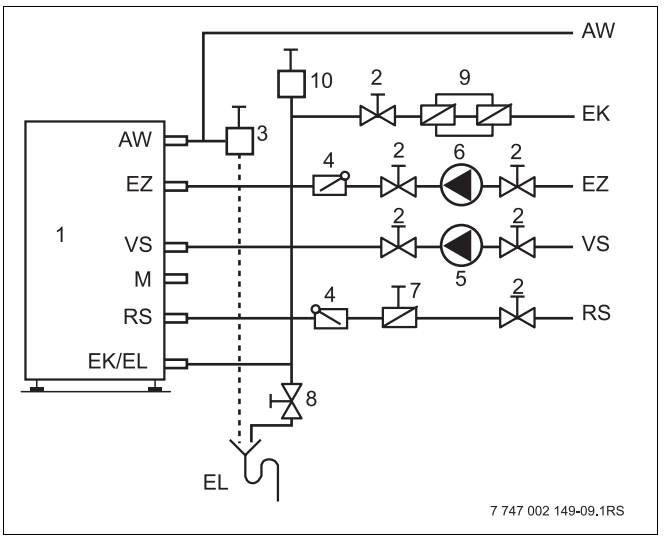

Fig. 6 Installation diagram (general layout)

Item 1: *DHW tank*

Item 2: *Shutoff valve*

Item 3: *Pressure relief valve*

Item 4: *Check valve*

Item 5: *DHW tank pump*

Item 6: *DHW recirculation pump (optional)*

Item 7: *Air eliminator*

Item 8: *Drain valve*

Item 9: *Non-return valve*

Item 10: *Diaphragm expansion vessel (MAG-W)*

AW: Domestic hot water outlet

EZ: DHW recirculation inlet

VS DHW tank supply

RS DHW tank return

EK/EL: Cold water inlet/drain

M: Test port

- Attach the included brass tees to the AW and EK/EL connections. Install the included relief valve on the NPT ¾" connection of the brass tee on the AW connection. Install the included drain valve on the NPT¾" connection of the brass tee on the EK/EL connection.
- If a Logamatic control is being used, see installation instructions in section 6.4, page 10.
- If a Honeywell Aquastat is being used for DHW control, see installation instructions in section 6.5, page 11.

6.3 Checking the magnesium anode connection

- Check that the ground wire (Fig. 7, **Item 2**) of the magnesium anode (Fig. 7, **Item 1**) is connected properly.

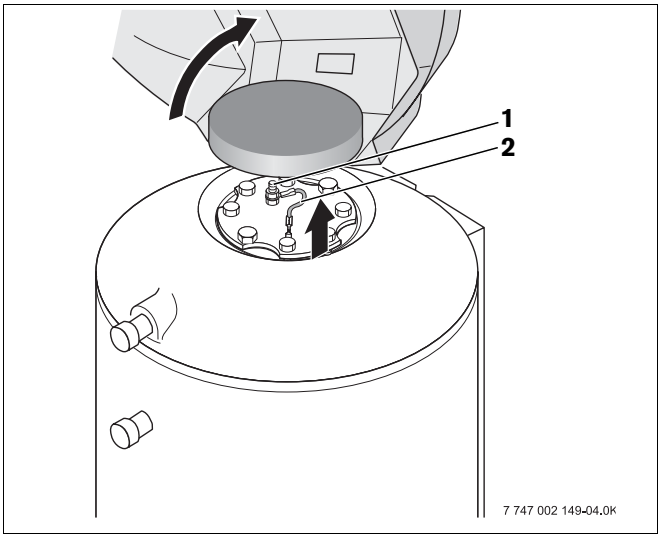

Fig. 7 Checking the magnesium anode connection

Item 1: *Magnesium anode*

Item 2: *Ground wire*

6.4 Installing the DHW temperature sensor (Logamatic Control)

If a Buderus Logamatic control or Goldline SP34D control is being used, install the DHW temperature sensor supplied in the tank connection set (accessory) as follows:

- Insert the sensor pack (Fig. 8, **Item 1** to **4**) until it bottoms out inside the sensor well (Fig. 8, **Item 5**). During insertion, the plastic spiral (Fig. 8, **Item 3**) holding the sensor pack together slides back automatically.

The compensating spring (Fig. 8, **Item 4**) ensures contact between the sensor well and the sensor surfaces, thereby ensuring a reliable temperature measurement.

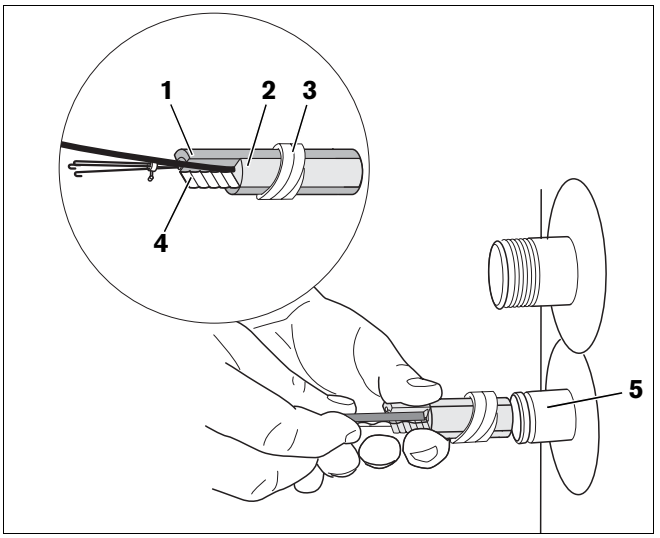

Fig. 8 Installing the DHW temperature sensor

Item 1: *Spacer*

Item 2: *Temperature sensor*

Item 3: *Plastic spiral*

Item 4: *Compensating spring*

Item 5: *Sensor well*

- Push the sensor holder clip (Fig. 9, **Item 1**) onto the sensor well (Fig. 9, **Item 2**) from the side.
- Route the sensor lead to the boiler or control panel (Logamatic control), ensuring the lead is not strained. Ensure this lead cannot come in contact with any hot boiler parts.

USER NOTE

See the wiring diagram supplied for the electrical connection of the temperature sensor.

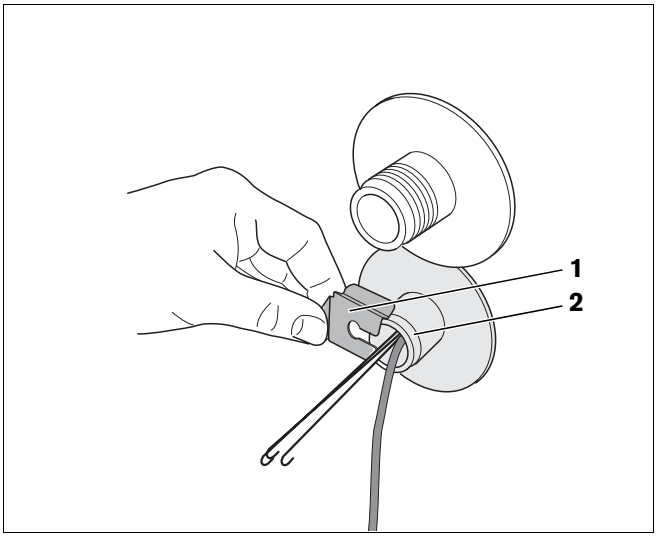

Fig. 9 Installing the sensor holder clip

Item 1: *Sensor holder clip*

Item 2: *Sensor well*

6.5 Installing Aquastat

- Remove cover from Aquastat (Fig. 10, **Item 2**). To do so, undo the hex screw on the top.
- Screw on the holder (Fig. 10, **Item 6**) onto the Aquastat with 2 self tapping screws (if there is already a holder or bracket in place, remove it).
- Insert temperature sensor and spring (Fig. 10, **Item 4** and **5**) into the sensor well (**M**) (Fig. 10, **Item 3**).
- Screw the Aquastat (Fig. 10, **Item 2**) onto the DHW tank using 2 self tapping screws (Fig. 10, **Item 1**). Predrill two holes next to the M connection in the casing with a diameter to match the self tapping screws.

RISK TO LIFE

from electric shock.

WARNING!

- Before working on the electrical system: disconnect all power to the system by shutting off the emergency shutoff switch, or disengaging the heating system circuit breaker.

USER NOTE

Connect the electrical power and set the temperature as shown in the manual supplied with the Aquastat.

- Replace the cover of the Aquastat.

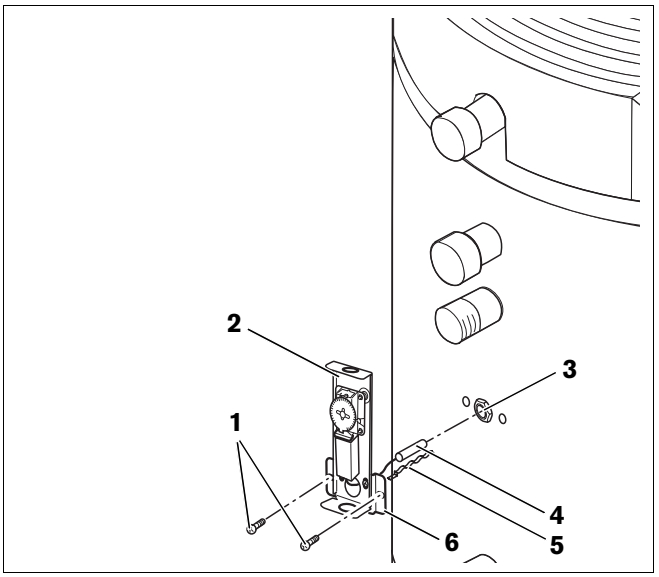

Fig. 10 Installing Aquastat

Item 1: *Self tapping screws 1/8" × 1/2"*

Item 2: *Aquastat*

Item 3: *Sensor well (**M** connection)*

Item 4: *Temperature sensor*

Item 5: *Spring*

Item 6: *Holder*

7 Start-up and shutdown

7.1 Filling the DHW tank

Before putting the DHW tank into operation, check for leaks.

USER NOTE

- Carry out the leak test with potable water only. The on-site test pressure on the secondary side must not exceed 10 bar (145 psi).

- Vent the DHW tank by opening the vent/bleed valve (Fig. 11, **Item 1**) or the highest faucet of the house.
- Open the supply valve (Fig. 11, **Item 2**) to fill the DHW tank.
- Before heating up, check that the boiler, DHW tank and piping are completely filled with water. To bleed the air, open the vent/bleed valve (Fig. 11, **Item 1**).
- Check all connections, piping and the access port for leaks.

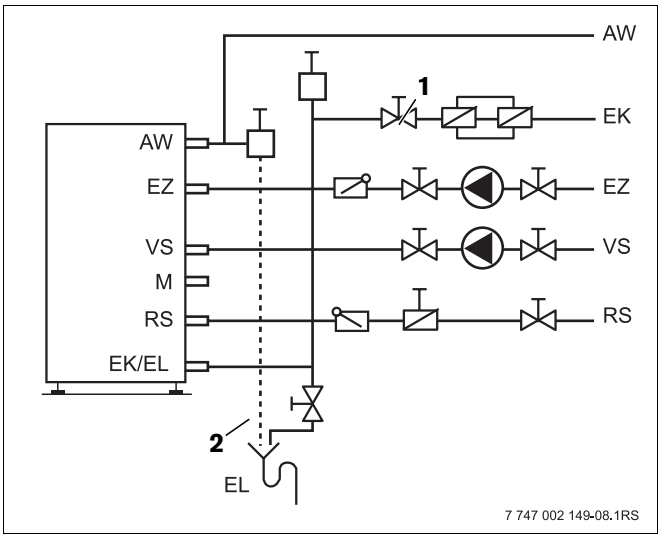

Fig. 11 Installation diagram (general layout)

Item 1: *Shutoff valve for cold water inlet*

Item 2: *Blow-off line of the relief valve*

AW: Domestic hot water outlet

EZ: DHW recirculation inlet

EK: Cold water inlet

M Sensor well

7.2 Operating tips

CAUTION!

TANK DAMAGE

The DHW tank can be permanently damaged by excessive pressure if the relief valve is malfunctioning or blocked.

- Always keep the blow-off line of the relief valve (Fig. 11, page 12) open.

Inform the user that

- the relief valve blow-off line (Fig. 11, page 12) always needs to be kept clear.
- the proper functioning of the relief valve should be checked annually by manually opening it.
- the local heating contractor should be notified if the thermal safety cut-out on the boiler is triggered frequently.

USER NOTE

For operating information (e.g. how to set the DHW temperature), see the operating instructions for the control panel.

7.3 Shutdown tips

CAUTION!

TANK DAMAGE

If the DHW tank ever has to remain empty for several days, residual moisture can cause corrosion damage.

- Thoroughly dry the inside of the DHW tank (e.g. with hot air) and keep the access port cover open.

In the case of long periods away from home (e.g. vacation) we recommend the following:

- Keep the DHW tank in operation.
- Activate the vacation function on the control panel or select the lowest possible DHW temperature.

If you ever need to shut down the DHW tank, observe the hygiene requirements for DHW systems (regarding flushing of piping) applicable in your state or jurisdiction.

8 Maintenance

Buderus recommends checking and cleaning the DHW tank by an expert contractor at least every two years. Please inform the user accordingly.

Shorter cleaning intervals should be chosen under unfavorable operating conditions, such as hard water and/or high operating temperatures.

CAUTION!

TANK DAMAGE

due to insufficient cleaning and maintenance.

- Carry out cleaning and maintenance at least every two years.
- Immediately remedy all faults to prevent possible damage.

8.1 Preparing the DHW tank for cleaning

- Disconnect all electrical power to your heating system.
- Empty the DHW tank by closing the fresh water supply valve and opening the drain valve. To vent the system, open the vent/bleed valve or the highest faucet.
- Remove the casing lid (Fig. 12, **Item 1**). To do so, remove the four screws on the side.
- Remove the thermal insulating element (Fig. 12, **Item 2**) on top of the access port cover.

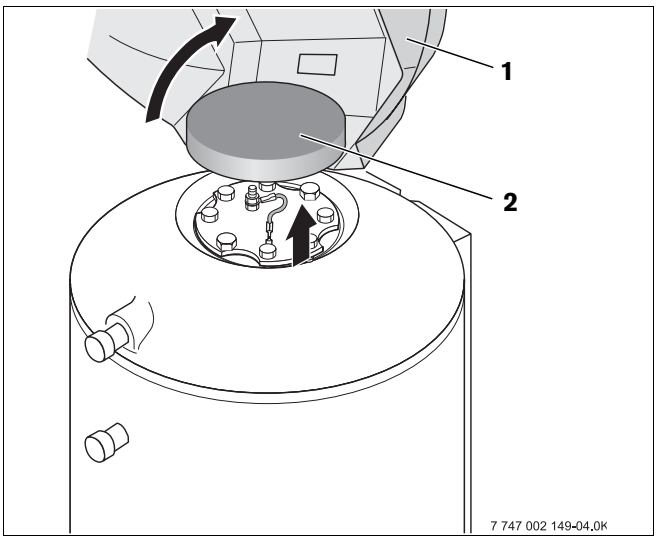

Fig. 12 Removing the casing lid

Item 1: *Casing lid*

Item 2: *Insulation element*

- Remove the hex screws (Fig. 13, **Item 1**) from the access port cover (Fig. 13, **Item 3**).
- Remove the access port cover, transport handle (Fig. 13, **Item 2**) and access port cover gasket (Fig. 13, **Item 4**) from the DHW tank.

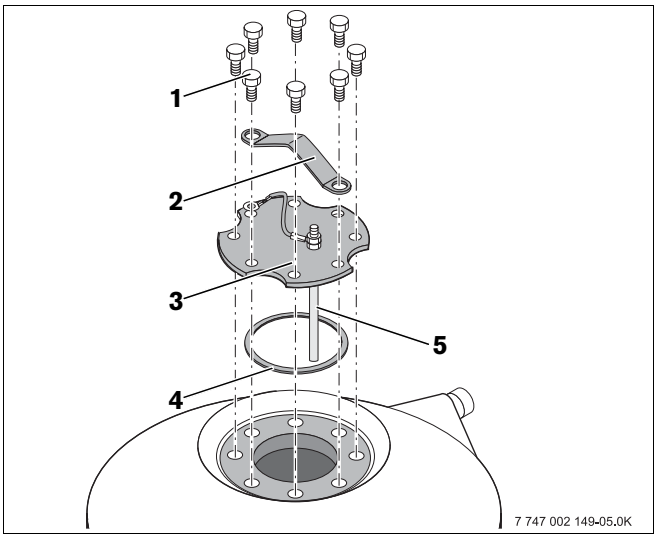

Fig. 13 Removing the access port cover

Item 1: *Hex screws*

Item 2: *Transport handle*

Item 3: *Access port cover*

Item 4: *Access port cover gasket*

Item 5: *Magnesium anode rod*

8.2 Cleaning the DHW tank

- Check the DHW tank interior for scale deposits.

CAUTION!

SYSTEM DAMAGE

from damaged surface finish.

- Never use hard objects or objects with sharp edges to clean the interior walls of the DHW tank.

If there are scale deposits inside the DHW tank, proceed as follows:

- Hose down the interior of the DHW tank with a cold water jet (approx. 58–72 psi pressure) (Fig. 14).

You can increase the cleaning effect of the jet by heating up the DHW tank before cleaning. The thermo-shock effect releases scale deposits more easily from the heat exchanger coil. Remove the residues with a wet & dry vacuum cleaner with plastic suction tube.

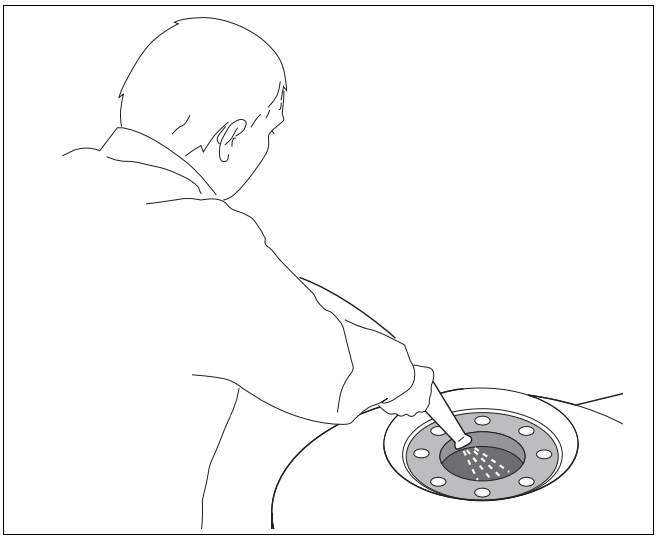

Fig. 14 Hosing down the inside of the DHW tank

8.3 Checking the magnesium anode

The magnesium anode is a sacrificial anode, which is consumed during the operation of the DHW tank. The magnesium anode should be checked annually.

The tank warranty is rendered void if the anode rod is not properly maintained.

8.3.1 Visual inspection of the anode rod

- Check magnesium anode rod (Fig. 15, **Item 1**) for decay. Replace the magnesium anode rod if its diameter has been reduced to about 1/2" to 3/4".

USER NOTE

Never bring the magnesium anode surface into contact with oil or grease.

- Keep everything clean.

8.3.2 Checking the anode rod without emptying the tank

Conduct the measurement as follows:

- Measure the protective current only when the tank is filled with water.
  Values between 0.3 mA and 30 mA are good.
- Disconnect the anode ground wire (Fig. 15, **Item 5**) at one of the two connection points.
- Set the multimeter (MM)(Fig. 15, **Item 1**) to mA DC (milliamps).
- Connect the black cable (Fig. 15, **Item 7**) on the MM to a hex screw (Fig. 15, **Item 8**) on the access port cover.
- Connect the red cable (Fig. 15, **Item 6**) on the MM to the anode.
- Connect terminals to shiny metal surfaces only.
- Enter the values measured and your signature in the table below (Tab. 3).

Date	Measured value [mA]	Contractor company/signature

Tab. 3 Values measured in anode testing

- After every test, reconnect the ground wire to its proper connection point.

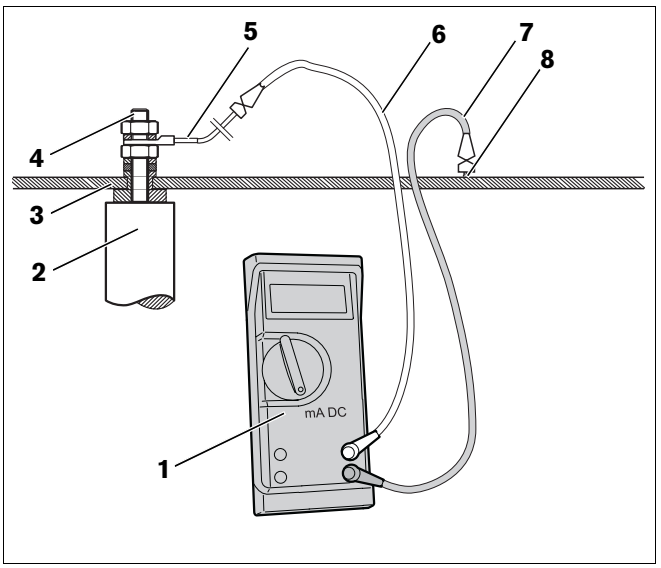

Fig. 15 Checking anode with multimeter

Item 1: *Digital multimeter*

Item 2: *Magnesium anode*

Item 3: *Access port cover*

Item 4: *M8 thread*

Item 5: *Ground wire*

Item 6: *Red multimeter cable*

Item 7: *Black multimeter cable*

Item 8: *Hex screw*

8.4 Replacing the magnesium anode

- Remove M8 nut (Fig. 16, **Item 10**) to release the ground wire eyelet (Fig. 16, **Item 8**).
- Remove M8 nut (Fig. 16, **Item 7**).
- Remove the access port cover (Fig. 16, **Item 3**) from the magnesium anode (Fig. 16, **Item 1**).
- Replace the magnesium anode.
- Fit the new magnesium anode together with all small parts supplied with it, as shown in Fig. 16.

NOTICE: An improperly installed anode rod may not protect the tank.

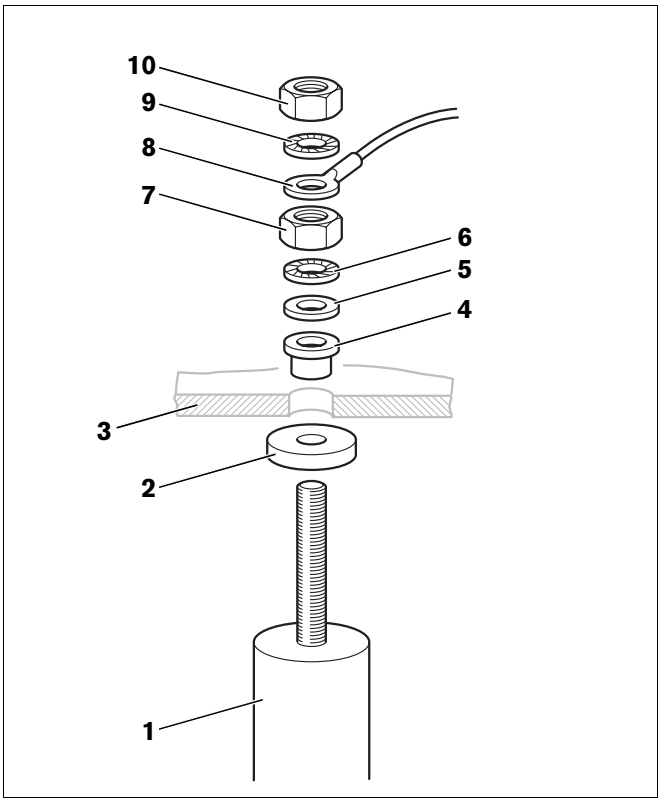

Fig. 16 Replacing the magnesium anode

Item 1: *Magnesium anode*

Item 2: *Gasket*

Item 3: *Access port cover*

Item 4: *Insulating sleeve*

Item 5: *Washer*

Item 6: *Lock washer*

Item 7: *M8 nut*

Item 8: *Ground wire eyelet*

Item 9: *Lock washer*

Item 10: *M8 nut*

8.5 Starting the DHW tank up again after cleaning

SYSTEM DAMAGE

from faulty gaskets.

CAUTION!

- After cleaning, we recommend you use a new access port cover gasket (Fig. 17, **Item 4**) to prevent the DHW tank from leaking.

- Put the access port cover (Fig. 17, **Item 3**) back in place with gasket (Fig. 17, **Item 4**).
- Screw the hex screws (Fig. 17, **Item 1**) hand tight on the access port cover, screwing on the transport handle (Fig. 17, **Item 2**) at the same time.
- Then use a torque wrench to tighten the hex screws (Fig. 17, **Item 1**) to 18-22 ft lbs.

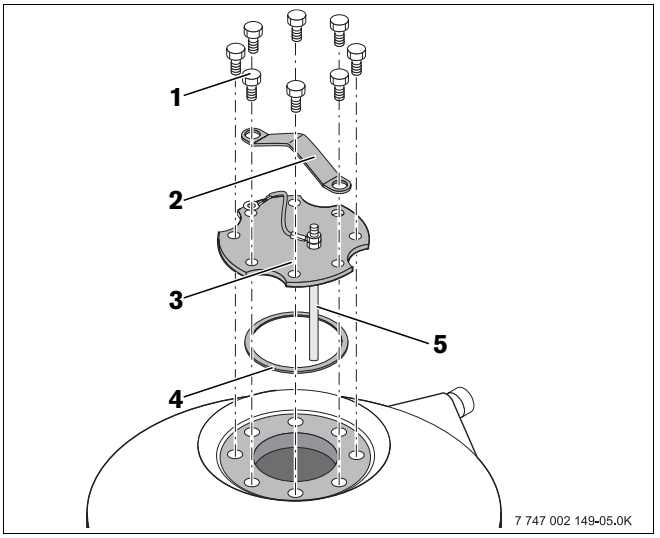

Fig. 17 Installing access port cover

Item 1: *Hex screws*

Item 2: *Transport handle*

Item 3: *Access port cover*

Item 4: *Access port cover gasket*

Item 5: *Anode rod*

- Fill the DHW tank and restart the heating system.
- Check all connections and the access port cover for leaks.
- Insert the insulating element (Fig. 18, **Item 2**) on top of the access cover.
- Place casing lid (Fig. 18, **Item 1**) onto the DHW tank and screw it down with four screws on the sides.

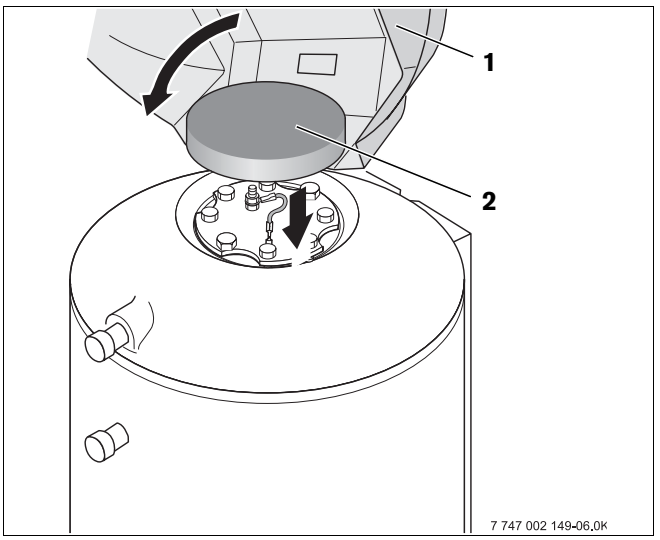

Fig. 18 Fitting the casing

Item 1: *Casing lid*

Item 2: *Insulation element*

BBT North America Corporation
50 Wentworth Avenue
Londonderry, NH 03053
Tel. 603-552-1100
Fax 603-584-1681
www.buderus.net

Products manufactured by
BBT Thermotechnik GmbH
D-35573 Wetzlar
www.buderus.de

Buderus