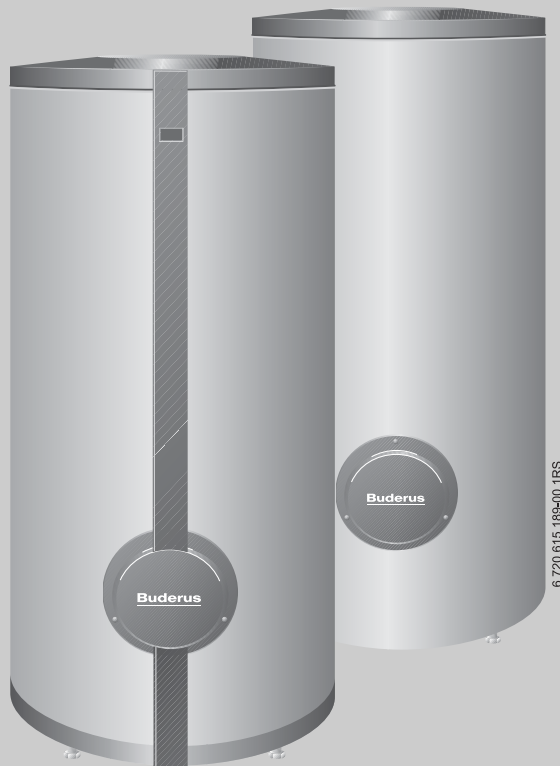


Installation and Maintenance Manual

Solar and High Capacity -
Domestic Hot Water



Logalux SM300/1 Logalux SM400/1

Documentation for the con-
tractor

Please read carefully prior
to installation and mainte-
nance

When the anode rod is not profes-
sionally and annually maintained, the
tank will lose its warranty. Annual
service records must be maintained
and shown in case of a warranty
claim along with an original proof of
purchase. Refer to page 23 to 27 for
annual maintenance instructions to
maintain tank warranty.

6 720 615 190 - 02/2008 US

Buderus

Index

Index	2	6	Maintenance	23	
1	Safety Precautions and symbol clarification	3	6.1	Preparation of cleaning of solar water tank	23
1.1	Placement, remodeling	3	6.2	Cleaning of solar hot water tank	24
1.2	Symbol Clarification	3	6.3	Checking of magnesium anode rod	25
			6.4	Placing solar tank back in operation after cleaning	27
2	Product Description	4	7	Replacement Parts	28
2.1	Applications	4	7.1	Replacement parts for SM300/1 - 300/1W	28
2.2	Situation Applications	4	7.2	Access cover and anode rod assembly for SM300/1 - 300/1W	30
2.3	Guidelines for Installations	4	7.3	Replacement parts for SM400/1	31
2.4	Product Disposal	4	7.4	Tank access cover and anode rod assembly for SM400/1	33
2.5	Product Packaging	5	7.5	Tank Jacket System for SM400/1 Tank	35
2.6	Dimensions and Connections	7			
2.7	Technical Specifications	9			
3	Transportation	10			
3.1	Transportation Means	10			
3.1.1	Transportation with dolly	10			
3.1.2	Transportation with overhead crane	11			
3.2	Product Placement	11			
4	Tank Assembly	12			
4.1	SM300/1 Placement and Installation	12			
4.1.1	Installation of tank feet	12			
4.1.2	Installation of tank aquastat or temperature sensor	12			
4.2	SM400/1 Placement and Installation	15			
4.2.1	Installation of M2 - M5 temperature sensors	15			
4.2.2	Installation of Tank Insulation for SM400/1 Tank	16			
4.3	Water side Piping Connections for both Tank Models	17			
4.4	Connections for Solar station KS	19			
4.5	Connections for High Output Indirect Fired Tank Piping	20			
4.5.1	Serial Connections of the bottom and top coils	20			
4.5.2	Parallel Connections of bottom and top coils	20			
5	Start-up and Shut-down of Tank	21			
5.1	Start-up Operations	21			
5.1.1	Operational information from contractor	21			
5.1.2	System start-up	22			
5.2	Decommissioning of the system	22			
5.2.1	Shutdown of solar hot water tank	22			
5.2.2	Shutdown of heating system in cold weather conditions	22			
5.2.3	Environmental protection	22			

1 Safety Precautions and symbol clarification

1.1 Placement, remodeling

Placement, remodeling

- Fire danger!
Solder and welding operations can result in fire, as the insulation is combustible.
- The solar tank can only be installed or renovated by technical specialists.

Installation and Start-up Procedure

- Carefully follow these installation instructions, to ensure long and trouble-free operation.
- Do not assemble the equipment in a damp environment.

Function

- Follow these directions for trouble free operation for installation and maintenance.
- **Scolding danger!**
(> 140 °F) during operation of the tank as part of a solar system. Please install tempering valve on domestic hot outlet connection of tank, which is supplied with solar pumping station

Maintenance

- **Recommendation for end customer:** Please sign up for an annual service and maintenance contract with your installer. Make sure to have annual maintenance performed on your boiler and solar system.
- Use only original replacement parts.

1.2 Symbol Clarification



Safety warnings are designated in the text with a triangular warning label and grey coloring.

Signal words are describing the gravity of each danger when safety precautions are not followed.

- **Careful** indicates possibility of light property damage.
- **Warning** indicates light personal injury or severe property damage.
- **Danger** indicates possible severe personal injury with potential loss of life.



Guidelines in the text are designated with shown symbol. The text is bracketed between two horizontal lines.

Guidelines contain important information in these cases to avoid or reduce danger to people and equipment.

In case the solar storage tank will be installed in Massachusetts, it must be installed by an installer or dealer who is registered in that state.

We reserve the right to change and improve technical information without notice.

It is expected that the installer is a licensed heating contractor with the knowledge of accepted industry practices for the installation and maintenance of the equipment and various applications of the equipment involved.

2 Product Description

2.1 Applications

The solar tanks SM300/1 and SM400/1 are designed for the heating and storage of domestic hot water. Applicable guidelines for domestic hot water must be followed.

2.2 Situation Applications

The domestic hot water can be heating by a solar system with a boiler as a back-up system, or by a boiler in general for high output hot water heating. (Operate the 2 coils either in series or in parallel). In case of solar heating, the solar system must be filled with a solar fluid to prevent accidental freezing. The tank can only be used in a closed system.

Any other application voids the warranty of the tank.

2.3 Guidelines for Installations



Follow all specific state and local codes regarding the installation and operation of the equipment.



All electrical components must be approved for the US.

2.4 Product Disposal

- Dispose of packaging of the solar tank in an environmental friendly fashion.
- A solar hot water heater that is being replaced must be disposed of in a suitable fashion.

2.5 Product Packaging

Solar hot water tank consists of:

- Tank shell with corrosion protection
- The cathodic corrosion protection consists of hygienic Buderus Thermoglaze Duo-Clean and a magnesium anode protection system.
 - Tank insulation made from non FCKW insulation material.
 - SM300/1: direct attached to tank shell.
 - SM400/1: Insulation must separately be installed.
- 2 Smooth high output heat transfer coils [11]
 - The smooth surface coil transfers the energy from the solar and/or heating system to the domestic water inside the tank shell. The water volume is evenly heated with the coil areas.
- Dry well for installation of DHW tank temperature sensor.
- The DHW temperature control of the boiler system controls the DHW temperature.
- Dry well for installation of tank temperature sensor.
 - The solar control is controlled by the tank temperature sensor (lower port) which operates the solar system based on collector sensor.
- Hand hole cover for service and maintenance access
- Dual magnesium anodes [5; 10]
- Jacket cover [8]
- B-Kit (US) (→ Fig. 2, page 6)

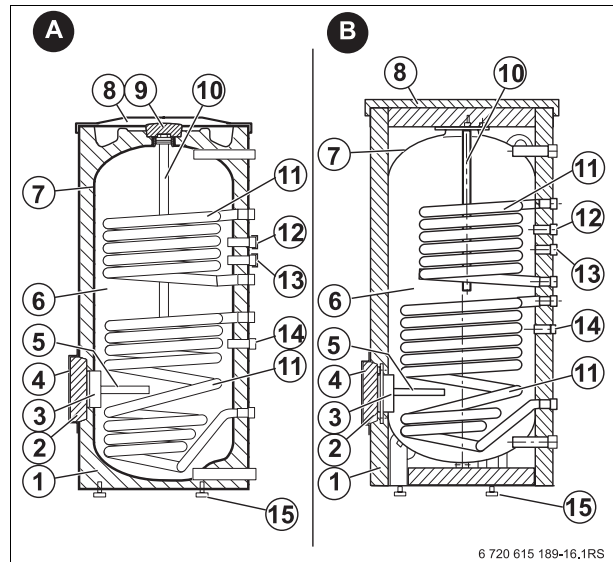


Fig. 1 A: SM300/1
B: SM400/1

- | | |
|----|--|
| 1 | Insulation |
| 2 | Clean-out cover insulation |
| 3 | Inspection opening |
| 4 | Inspection opening cover |
| 5 | Magnesium anode rod |
| 6 | Tank shell |
| 7 | Thermoglaze Duo Clean |
| 8 | Top tank cover |
| 9 | Insulation disc for SM300/1 tank |
| 10 | Magnesium anode rod |
| 11 | Smooth coil heat exchangers |
| 12 | Dry well sensing port for heating system control |
| 13 | Dry well sensing port for solar |
| 14 | DHW Recirculation connection |
| 15 | Tank feet |

B-Kit Komponenten

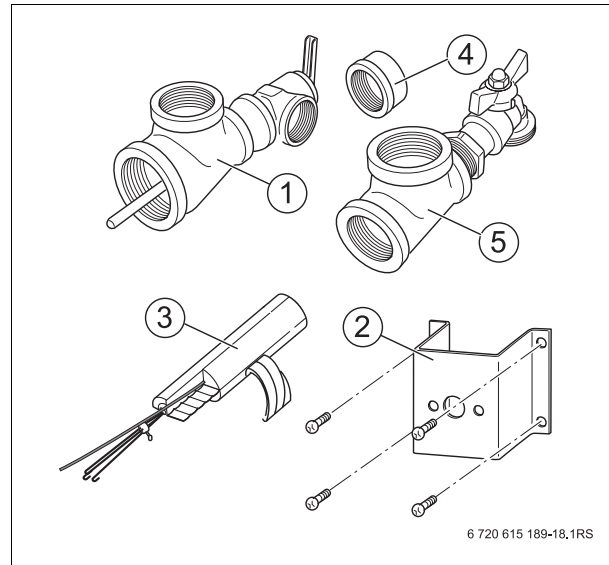


Fig. 2 Tank kit fittings

- 1** Tee piece with P & T relief valve
- 2** Bracket for mounting of aquastat
- 3** Spacer set for securing DHW tank sensor
- 4** Cover cap for DHW recirc connection (EZ)
- 5** Tee piece with tank drain valve

2.6 Dimensions and Connections

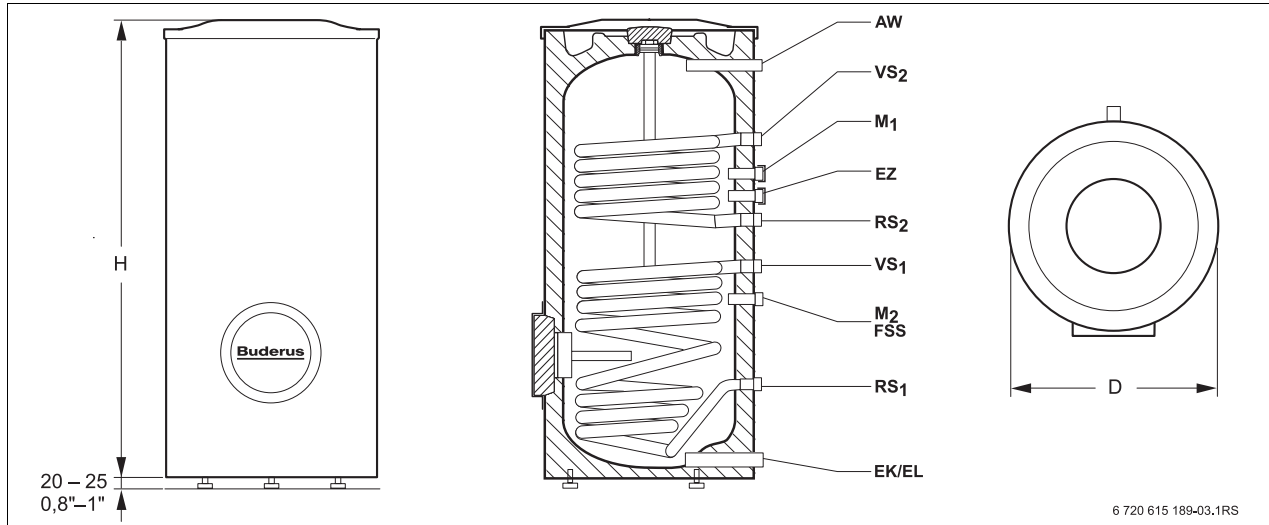


Fig. 3 SM300/1 Dimensions and connections

- AW** DHW outlet
- VS1** Solar coil supply
- VS2** Boiler coil supply
- RS1** Solar coil return
- RS2** Boiler coil return
- M1** Temperature measuring point for DHW temperature sensor (FB) or aquastat
- M2** Temperature measuring point for solar DHW sensor (FSS)
- EK** Cold water feed
- EL** Tank drain
- EZ** DHW recirc tapping

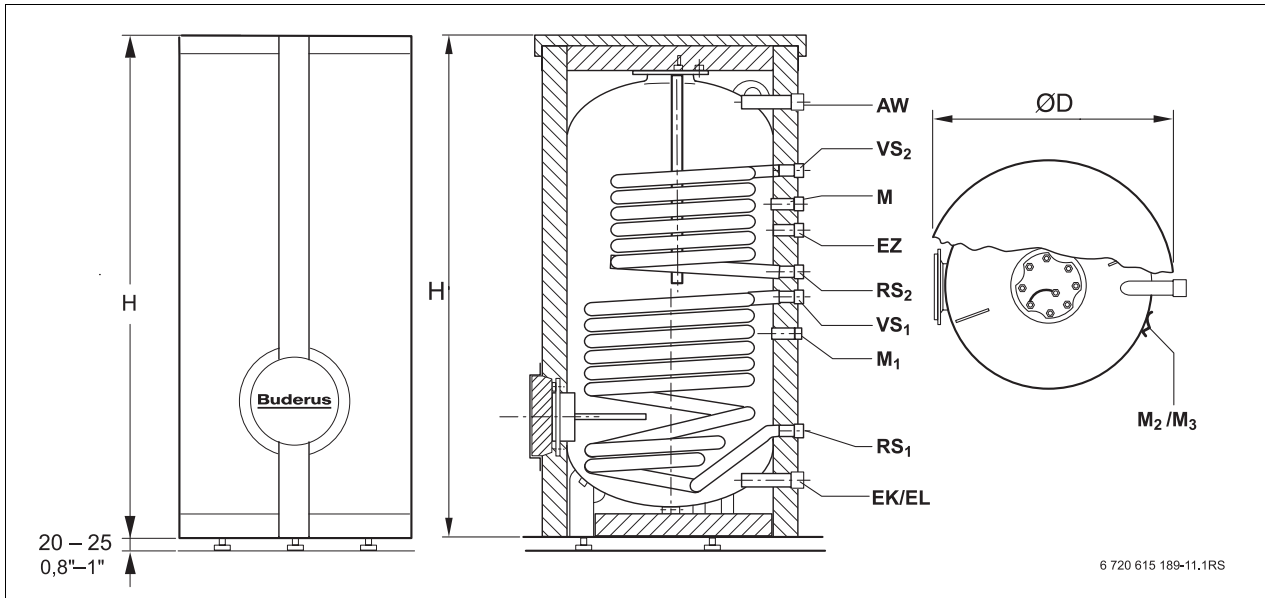


Fig. 4 SM400/1 Dimensions and connections

- AW** DHW outlet
- VS1** Solar coil supply
- VS2** Boiler coil supply
- RS1** Solar coil return
- RS2** Boiler coil return
- M** Temperature measuring point for DHW temperature sensor (FB) or aquastat
- M1** Temperature measuring point #1 for solar DHW sensor (FSS) or temperature sensor solid fuel boiler (FPM)
- M2** Alternative location for DHW temperature sensor (FB) or shut-off sensor for loading by solid fuel boiler (FPU)
- M4** Temperature measuring point #2 for solar DHW sensor (FSS)
- EK** Cold water feed
- EL** Tank drain
- EZ** DHW recirc tapping

2.7 Technical Specifications

Tank Model		SM300/1	SM400/1
Tank volume	gal	77	103
	Liter	290	390
Volume of solar heat exchanger	gal	2	2.5
	Liter	8	9.5
Diameter	inch	27	34
	mm	670	850
Height H ¹⁾	inch	59	62
	mm	1465	1550
Height H (Installation site) ²⁾	inch	86	74
	mm	2150	1880
AW - Domestic outlet connection		NPT 1	NPT 1
VS - Coil supply connection		NPT 1	NPT 1
RS - Coil return connection		NPT 1	NPT 1
EK/EL - tank drain/cold feed		NPT 1 ¼	NPT 1 ¼
EZ - DHW recirculation connection		NPT ¾	NPT ¾
Dry weight ³⁾	lb.	342	445
	kg	155	202
Maximum Operating Values			
Solar system fluid temperature	°F	320	320
	°C	160	160
DHW temperature	°F	203	203
	°C	95	95
Operating pressure solar fluid system	psi	232	232
	bar	16 ⁴⁾	16
Operating pressure DHW	psi	145	145
	bar	10	10
Test pressure solar fluid system	psi	36	36
	bar	2.5	2.5
Test pressure DHW system	psi	145	145
	bar	10	10

Tab. 1 Technical Specifications

- 1) Included top cover, without tank feet.
- 2) Minimum height required for removal of anode rod.
- 3) Without water, includes packaging.
- 4) Every installation requires the use of a thermal expansion tank and pressure/temperature relief valve in the heating system and solar system.

3 Transportation

3.1 Transportation Means

One can move the solar water heater tank SM300/1 with a hand dolly and the SM400/1 also with a lifting crane or device.



Danger: Potential danger due to falling over of tank.

- Use only transport devices that are in safe operating condition
- Place the lifting hook only in the designated location.



Danger: Potential for injury due to carrying of heavy loads.

- Also move and lift the tank with at least two people.



Caution: Potential damage due to improper securing of tank for transport.

- Use suitable tools and strapping materials when securing and moving the tank with a transport aid.



Bring in the entire tank in its original packaging to the final installation location. This will protect the tank better during transport.



A Buderus kuli cart can be purchased through your local wholesaler.

3.1.1 Transportation with dolly

- Place the hand dolly at the backside of the packaged tank.
- Strap the tank to the hand dolly.
- Move the tank to its final location.
- Remove only the tank packaging at the final installation site.

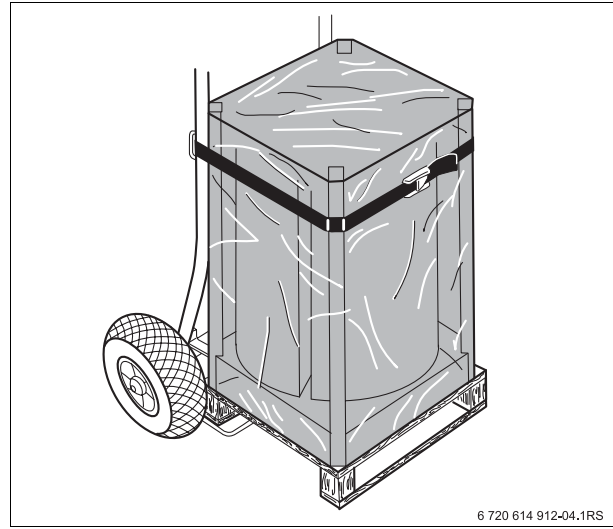


Fig. 5 Transportation with kuli cart

3.1.2 Transportation with overhead crane

- Place the two lifting hooks of the chain into the designated lifting rings on top of the tank [1].
- Hook the crane chain into the lifting chain.
- Protect the tank from falling and lift the tank to its final installation location.
- Lower the tank carefully to the floor; do not drop down onto the floor!

One can move the tank inside the building also in a horizontal manner due to possible height restrictions.

- Remove only the tank packaging at the final installation site.

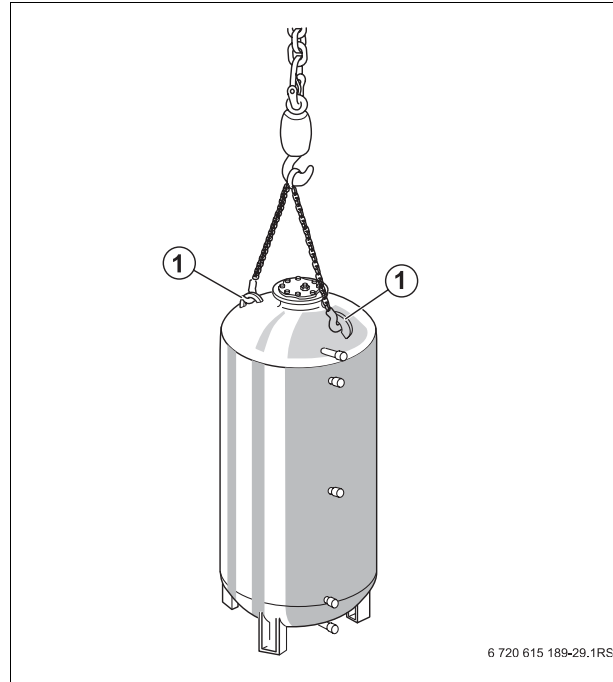


Fig. 6 Transportation with lifting crane (SM400/1)

- 1 Lifting eyes

3.2 Product Placement



Caution: Damage due to internal stresses!

- Place the tank in a frost free room.
- Use the solar water heater **ONLY** in closed loop applications.
- Open expansion tanks can **NOT** be used with these solar water heater tanks.



Minimum 12" overhead space is required for the removal of the magnesium anode rod as well as some side clearance.

- Verify for suitable clearance dimensions by referencing (→ Tab. 1, page 9 und Fig. 7).

- Maintain suggested service access dimensions (→ Fig. 7).
- Maintain 2" clearance from heated pipes to combustible surfaces.
- Place tank on a level and sufficiently strong floor.
- Remove plastic and packaging materials.

Wandabstandsmaße

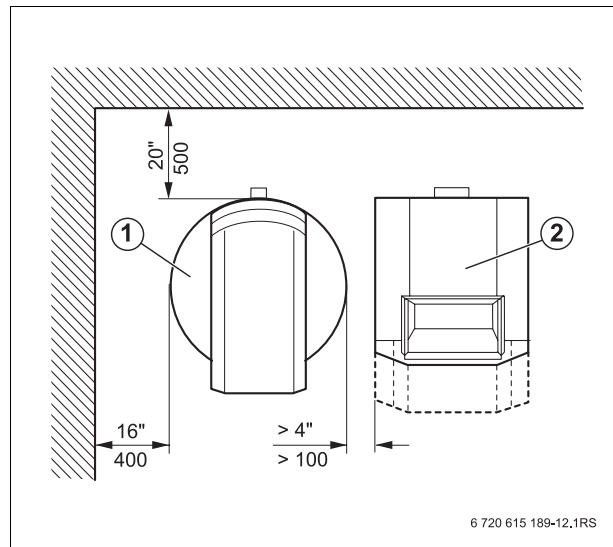


Fig. 7 Recommended minimum clearances (in inch/mm)

- 1 Solar hot water heater
2 Boiler

4 Tank Assembly

4.1 SM300/1 Placement and Installation

4.1.1 Installation of tank feet

- Place top foam material on the floor [1].
- Carefully place the solar tank on its side on top of the foam material.
- Remove the tank support bolts M10x30 from the Styrofoam packaging and screw into the bottom of the tank [2].
- Put solar tank straight-up and level by adjusting the tank bolts [2].

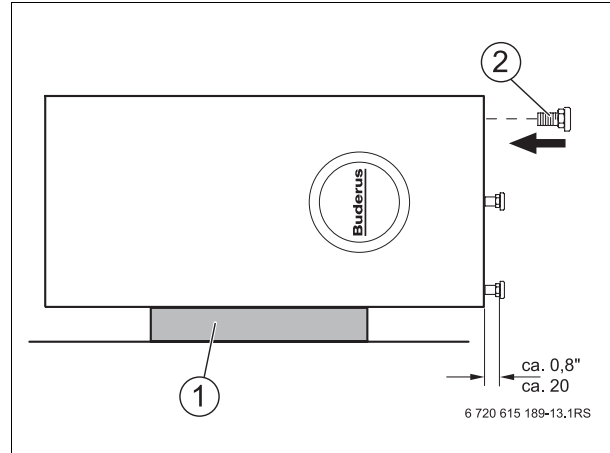


Fig. 8 Installation of tank bolts

- 1 Foam packaging material
- 2 Tank bolts

4.1.2 Installation of tank aquastat or temperature sensor



Danger: Due to electricity.

- Electrically disconnect the system.
For DHW temperature control, one can use an aquastat or tank sensor depending on the selected control strategy.



Follow the directions supplied by the manufacturer of the aquastat or tank sensor regarding electrical wiring connections.

- To measure and secure the DHW water temperature an installed temperature sensor or aquastat on the DHW tank is required.

Installation of tank temperature sensor

(Supplied with R2107, 4000 series control or Stecca control)



Make sure to have the entire sensor surface come in good contact with the dry tank well.

- Identify and remove the DHW tank sensor from the control package.
- Slide the sensor assembly (R2107 or 4000 controls) into the dry well [5] along with quarter pie pieces and tension spring. The plastic wrap [3] will automatically slide from the assembly.

The tension spring [4] ensures good contact between the dry well and sensor surface for excellent temperature sensing.

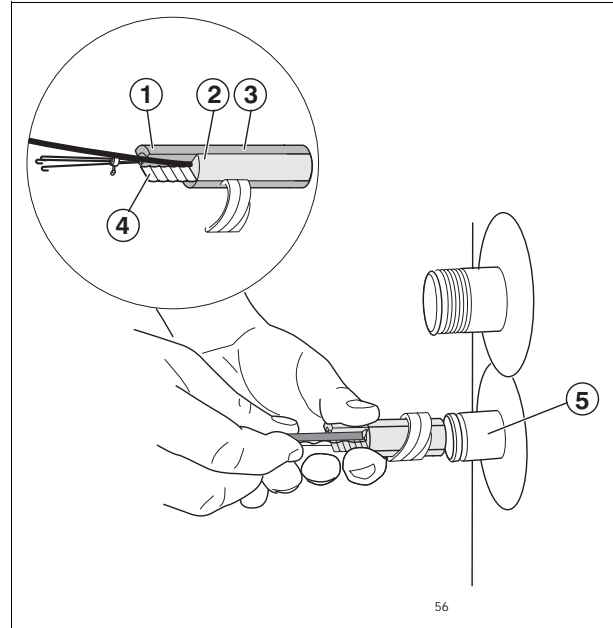


Fig. 9 Installation of DHW tank sensor

- 1 Quarter pie piece
- 2 Quarter pie sensor
- 3 Plastic wrap
- 4 Tension spring
- 5 Dry well

- Once fully inserted, slide locking tab [1] over dry well [2].
- Guide sensor wire to suitable control panel and use strain relief. The wiring cannot be in contact with hot boiler parts.

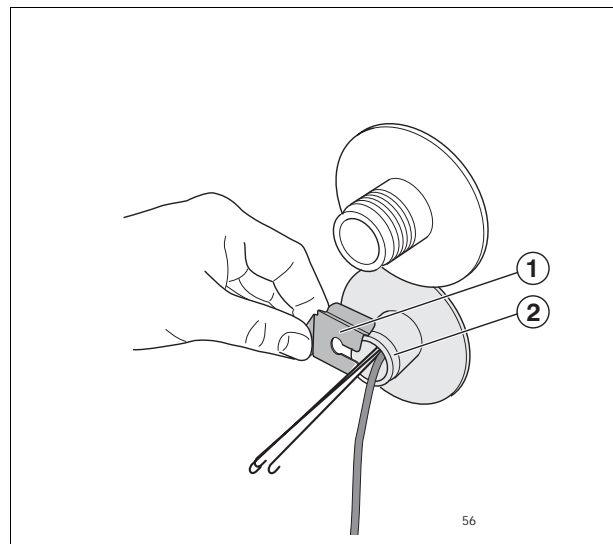


Fig. 10 Installation of locking tab.

- 1 Locking tab
- 2 Dry well

Installation of aquastat

- Remove cover from aquastat [2]). Loosen hex head screw from cover.
- Secure mounting bracket [3] with 2 sheet metal screws [1] to tank jacket.

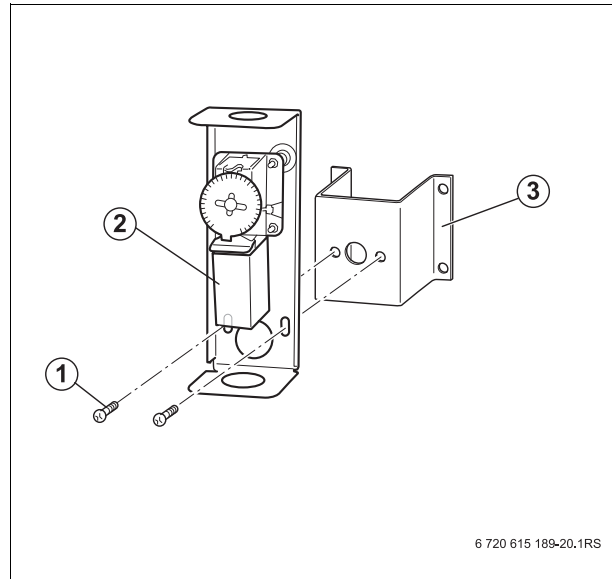


Fig. 11 Installation of aquastat bracket

- 1 Sheet metal screws
- 2 Aquastat
- 3 Mounting bracket

- Slide capillary and tension spring together into the dry well.
- Secure aquastat [2] with 2 screws [1] to the mounting bracket.
- Install aquastat cover in its place.

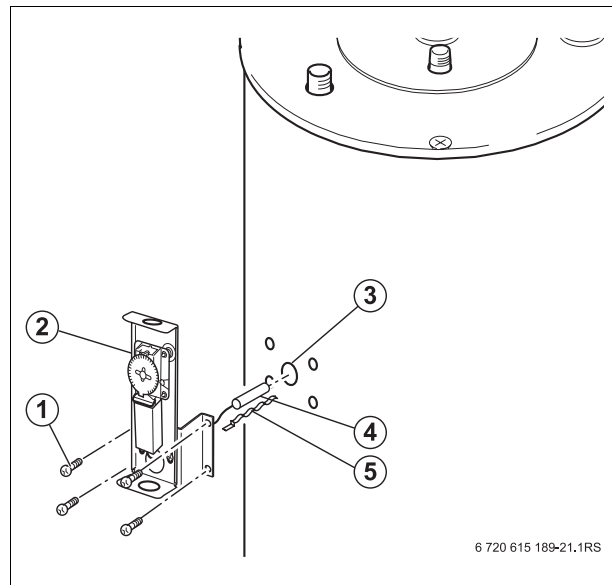


Fig. 12 Installation of aquastat

- 1 Sheet metal screws
- 2 Aquastat
- 3 Dry well
- 4 Capillary
- 5 Tension spring

4.2 SM400/1 Placement and Installation

- Place tank shell in desired location.
- Slide insulation disc under tank between the tank supports.

4.2.1 Installation of M2 - M5 temperature sensors

Alternatively to the sensor dry wells the M2 - M5 sensor tension brackets can be used to install temperature sensor on the outside of the DHK tank shell.



Make sure to sensing elements are fully inserted into the wells and that they make good surface contact.

- Use heat conducting paste to improve contact.
- Slide sensor surface behind tension bracket to ensure that the entire sensor surface is in contact with the tank shell.
- Carefully route the sensor wiring.
- In order to install a well, remove the 1/2" cap (M) and install a 1/2" dry well.

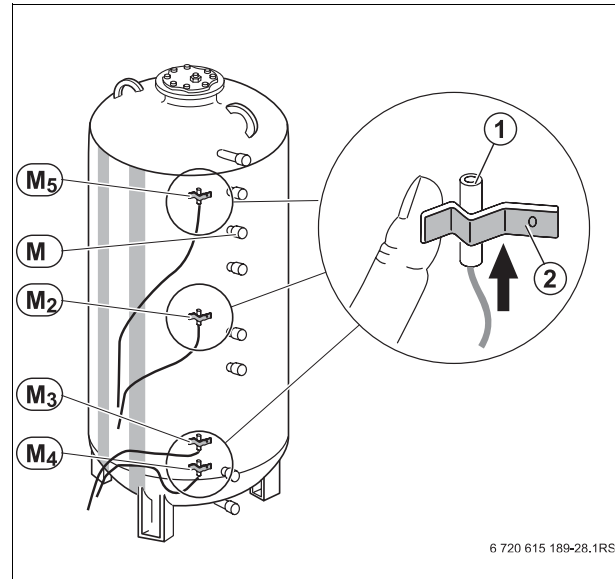


Fig. 13 Installation of temperature sensor

- 1** Temperature sensor
- 2** Tension bracket
- M** Dry well, for temperature sensor (FB) or Aquastat
- M2** Alternative location for DHW temperature sensor (FB) or shut-off sensor for loading by solid fuel boiler (FPU)
- M3** Solid fuel boiler on temperature
- M4** Temperature measuring point #2 for solar DHW sensor (FSS)
- M5** Temperature sensor location, to switch operation between a solid fuel boiler and gas/oil boiler

4.2.2 Installation of Tank Insulation for SM400/1 Tank



We recommend to only installing the insulation after all piping and a water test has been successfully completed.



The insulation is best installed at a room temperature of 59 °F/15 °C. Slight tapping on the insulation in the direction of the connection eases the installation of the insulation.

- Route sensor wiring carefully along tank shell.
- Connect both pieces of insulation [6] on the front of the tank shell.
- Slide front cover pieces [4] in place.
- Connect both insulation pieces at the back side of the tank.
- Slide small locking pieces [5] in place.
- Fully engage the front cover pieces.
- Further tighten the insulation in the back of the tank.
- Put top foam piece [2] and top cover [1] in place. Review entire insulation for proper fit.

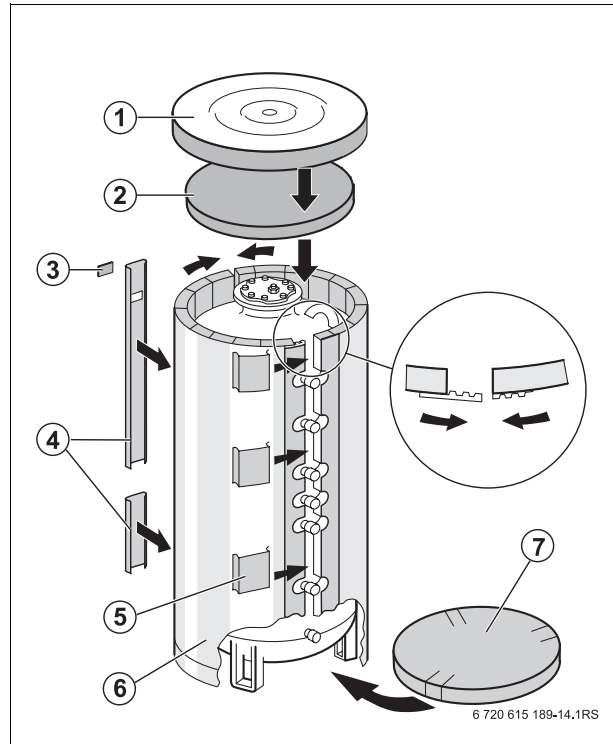


Fig. 14 Insulation installation for SM400/1 tank

- 1 Tank top cover
- 2 Top insulation piece
- 3 Cover of top of locking piece
- 4 Front locking piece
- 5 Short locking piece
- 6 Insulation
- 7 Bottom insulation disc

4.3 Water side Piping Connections for both Tank Models



Danger: Fire danger due to soldering and welding!

- Take proper precautionary measures during soldering and welding, as the insulation material is combustible.
- Check the insulation following work for irregularities.



Warning:

Scalding due to excessively hot water! During solar operation, the domestic hot water can reach 194 °F/90 °C temperature. A thermostatic mixing valve must be placed on the DHW tank outlet to avoid scalding through proper adjustment.

- **Install a thermostatic mixing valve between the hot water outlet and cold water inlet connections when using the SM300/1 or SM400/1 tank for solar applications. Buderus supplies a thermostatic mixing valve as part of the solar pump station. It is not a part of the solar hot water heater.**



Caution: Water damage

- Install tank drain and other accessories prior to filling the tank.
- Close off all non using tank tappings.



Caution: Be careful not to damage non heat resistant surfaces (e.g. PEX tubing).

- Use installation materials that can handle temperatures in excess of 176 °F/80 °C.

- Consider the tank volume when sizing the thermal expansion tank.
- Install piping connections directly to the tank connections to avoid internal heat circulation.
- Connect tank piping in such a manner that internal recirculation is not possible.
- Install piping connections without undue stress.
- Install furnished tank fittings to their proper connections.
- Check all connections for leaks.

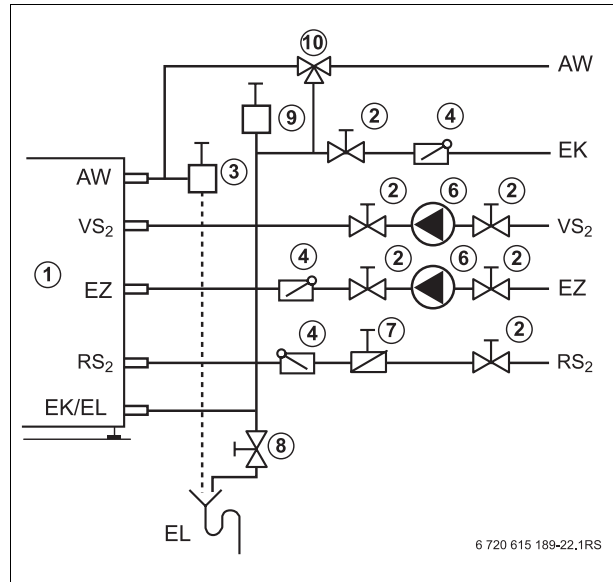


Fig. 15 Piping Connections (Basic diagram)

- 1 DHW tank
- 2 Isolation valve
- 3 P & T valve (combined with DHW outlet connection)
- 4 Flow check valve
- 5 Tank coil charging pump
- 6 Bronze DHW recirculation pump (optional)
- 7 Vacuum breaker
- 8 Tank drain valve
- 9 Thermal expansion tank
- 10 Thermostatic mixing valve
- AW DHW outlet
- EZ DHW recirculation connection
- VS2 Tank coil supply connection
- RS2 Tank coil return connection
- EK Cold feed connection
- EL Tank drain connection (combined with EK connection)

Installation of tank kit components



Danger: Personal and system damage due to incorrectly installed relief valve discharge line!

- Pipe relief valve discharge piping full port to nearest floor drain. (Maximum length: 6 ft and maximum 290° elbows).

- Attach a note to discharge piping saying: "Do not close off discharge. Water can discharge from piping during operation".
- Size discharge piping to conform with relief valve discharge dimension (Tab. 2).
- Periodically verify proper relief valve operation.

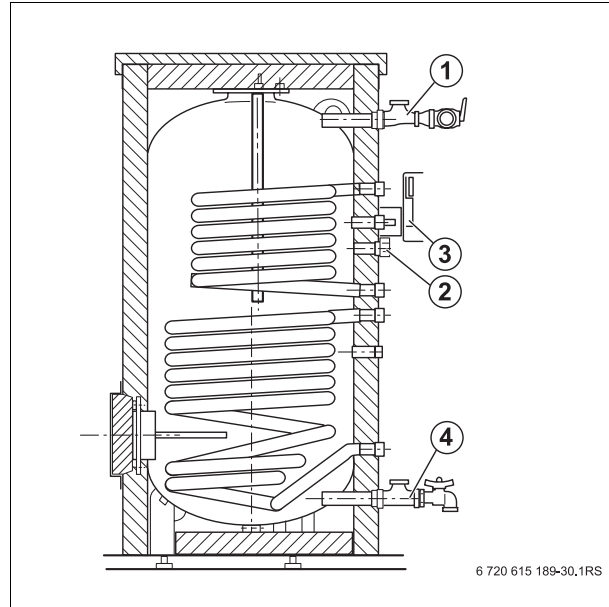


Fig. 16 Tank kit connections on solar water heater

- 1 T piece with P & T valve
- 2 Cap for DHW recirc connection
- 3 Bracket for aquastat
- 4 Tee piece with drain valve

Minimum pipe size	Water volume		Max. coil input	
	liter	Gal	kW	BTU/hr
3/4"	200-400	53-103	58	198,000

Tab. 2 Sizing of the P & T valve discharge line

4.4 Connections for Solar station KS



Warning: Potential system damage due to very high temperatures and pressures!

- Use pressure and temperature resistant piping connections.
- Use not any galvanized piping, connections and graphite or plastic gasket materials or PEX or plastic piping or connections of any such type.
- When soldering piping connections, make sure to use high temperature rated lead free solder. (Melt temperature > 455 °F/ 235 °C).



For proper, trouble free and efficient operation of the entire system make sure to properly vent the system. Directions for proper system venting can be found in the Installation Instructions of the KS solar station.

- Connect solar pump station KS [4] to the lower coil connections of the solar tanks SM300/SM400 to the connections VS1 (supply solar) and RS1 (return solar).
- Connect the alternative back-up heat source to the upper tank coil connections at the VS2 (supply boiler) and RS2 (return boiler).
- Use piping connections made from copper, cast iron pipe or non-galvanized steel material for connections between solar pump station KS [4] and solar hot water heater [5].

Grounding of water piping



Make sure to have all piping connections done by a licensed contractor.

- Place a grounding strap on both the supply and return piping to the tank. (Suitable location).
- Connect both grounding lines (AWG9) with a suitably heavy line to the main ground of the electrical system.

Piping will receive an automatic air vent during roof installation (accessory)

- Route the piping with a steady slope down from the air vent. Install an air vent where necessary at every air high point in the piping system. (Temperature range up to 302 °F/ 150 °C).

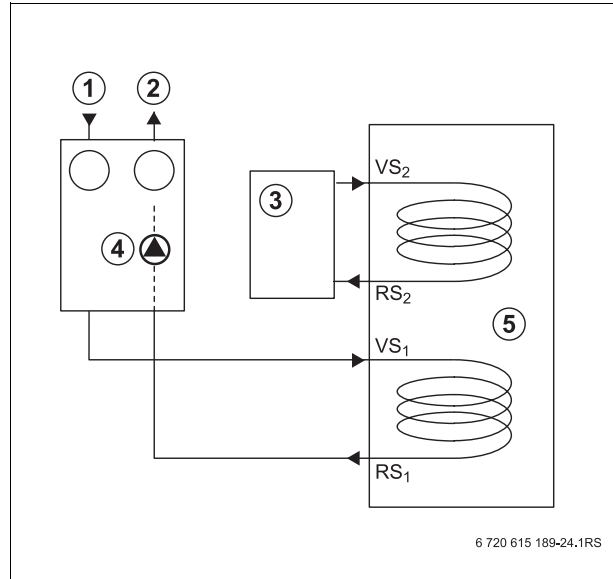


Fig. 17 Connections for solar pump station KS

- 1 Supply piping to solar panels
- 2 Return piping from solar panels
- 3 Boiler or alternate heat source for back-up heating of DHW
- 4 Solar pump station KS
- 5 Solar hot water heater

4.5 Connections for High Output Indirect Fired Tank Piping

The SM300/1 and SM400/1 tanks can also be used for high capacity indirect fired hot water tanks. Two scenarios exist.

4.5.1 Serial Connections of the bottom and top coils

- Connect SM300/1 or SM400/1 coils in series by connecting the upper connection of the lower coil to the lower connection of the upper coil.
- Connect tank charging pump to the upper connection of the top coil.
- Connect lower connection of the lower coil to the boiler return piping.
- Install aquastat or temperature sensor into M1 dry well for the SM300/1 tank (Fig. 3, page 7) or use the M dry well connection for the SM400/1 tank. (Fig. 4, page 8).

4.5.2 Parallel Connections of bottom and top coils

The SM300/1 and SM400/1 internal coils can also individually connected to dedicated tank charging pumps.

- Connect one tank charging pump to pump into the top connection of the top coil.
- Install its aquastat or temperature sensor into dry well M1 for the SM300/1 (Fig. 3, page 7) or dry well M for the SM400/1 tank (Fig. 4, page 8).
- Connect the second pump to pump into the top connection of the lower coil.
- Install its aquastat into dry well M2 for the SM300/1 (Fig. 3, page 7) or dry well M1 for the SM400/1 (Fig. 4, page 8).

In case of using a 2000 or 4000 series control, the individual tank charging pumps must be electrically combined as the controls do not have 2 separate wiring terminals available. Please note that the maximum combined amp draw can NOT exceed 5 Amp. When using pumps with high amp draws, use isolation relays.

5 Start-up and Shut-down of Tank

5.1 Start-up Operations



The pressure testing of the domestic hot water system should only be conducted with fresh water. The maximum test pressure shall not exceed 145 psi (10bar).

- Open the air vent at the highest point of the solar system.
- To fill the hot water heater, open the shut-off valve location in the tank fill connection.
- Prior to heating the tank from the secondary source, make sure to fill boiler and piping network with water. Open vacuum breaker and purge valves as required.
- Verify that the entire system, including all connections, water lines and inspection port are water tight.

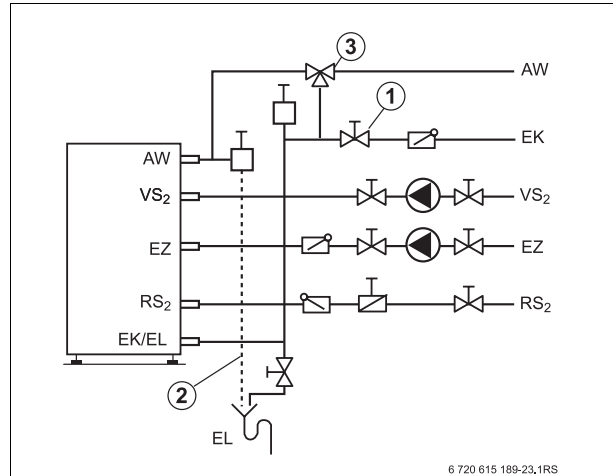


Fig. 18 Installation diagram

- 1** Shut-off valve for cold water feed
- 2** Discharge piping for P & T valve
- 3** Thermostatic mixing valve (3 way)
- AW** Hot water outlet connection
- EZ** DHW recirculation connection
- EK** Cold water inlet connection

5.1.1 Operational information from contractor

The contractor shall inform the end user the proper operation maintenance of the boiler and solar system.



Caution: Potential tank damage due to high operating pressures.

- Make sure that the P & T valve piping remain free of obstructions at all times.
- Inform the system owner of the following:
 - Make sure that the P & T valve piping remain free of obstructions at all times.
 - Periodically check the operation of the boiler relief valve by opening it manually.
 - Contact a heating or service contractor when the manual reset high limit trips frequently on the boiler.
- In case of freezing or discontinued operation: drain the solar tank completely, including the lower portions of the tank.
- Inform the end user regarding annual maintenance procedures to ensure a lifetime of trouble free operation.
- Hand all installation documentation to the end user.

5.1.2 System start-up

The initial start-up must be performed by the installing contractor or service technician.

- Install and follow operating instructions of controls and accessories furnished by other manufacturers.

5.2 Decommissioning of the system



Danger: Danger of scalding!

Hot water can cause serious injury.

- Allow the solar hot water tank to cool down sufficiently.



Caution: Tank damage.

Corrosion formation due to residual moisture.

- Dry off interior of the tank (e.g. with hot air) and keep tank cover open.

5.2.1 Shutdown of solar hot water tank

- Turn the DHW temperature setting on the control or aquastat to 50 °F/10 °C.

5.2.2 Shutdown of heating system in cold weather conditions

- Shut down the heating system according to the instructions supplied with the product.



In case of freezing danger and system decommissioning:

Completely drain the solar hot water heater, also in the lower areas of the tank.

5.2.3 Environmental protection

Environmental protection is a key company commitment of the Bosch Group.

Quality of performance, efficiency and environmental protection are our long term objectives. Legal and corporate guidelines are strictly adhered to. To protect the environment, we utilize the most efficient processes, technology and materials.

Packaging

We are dedicated to adhere to country specific disposal standards as it relates to packaging to ensure optimum recycling. All packaging materials are environmental friendly and can be recycled.

Obsolete Equipment

Obsolete products contain raw materials that can be recycled. The components are easily separated and are clearly marked. In this manner the individual components are easily sorted and added into the recycling and disposal stream.

6 Maintenance

We recommend an annual service and maintenance program for the solar hot water heater through a mechanical contractor and service company. Please inform the end user.

- Use shorter service intervals in case of hard or extremely hard water conditions and high temperature operation.



Caution: Possible tank damage due to incorrect cleaning and maintenance!

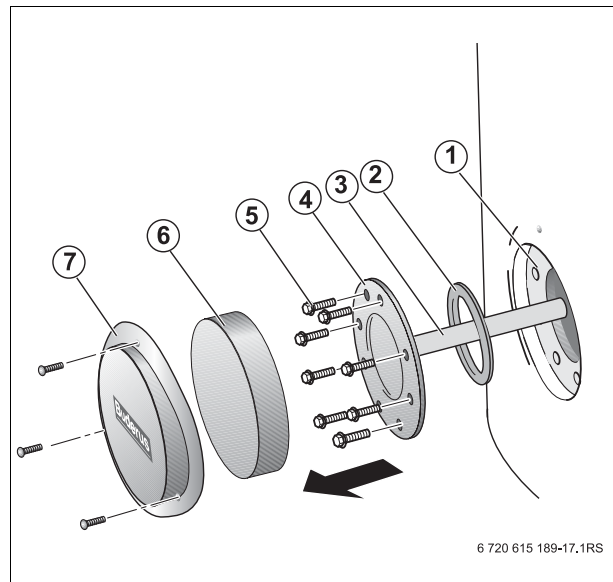
- Clean and perform a maintenance program on an annual basis.
- Correct any possible deficiencies.

6.1 Preparation of cleaning of solar water tank



Danger: Scalding danger!
Hot water can cause serious injury.

- Allow the solar hot water tank to cool down following cleaning.
- Electrically disconnect the system.
- Drain the solar tank. Close the cold feed shut-off and open the tank drain. To vent the system, open the vacuum breaker or a faucet high in the house.
- Remove the front cover and insulation disc of the inspection opening of the solar water heater.
- Remove bolts of the clean-out cover.
- Remove hand-hole cover, magnesium anode rod and hand hole gasket.



6 720 615 189-17,1RS

Fig. 19 Removal of inspection opening

- 1 Inspection opening
- 2 Clean-out cover gasket
- 3 Magnesium anode rod
- 4 Clean-out cover
- 5 Hex head bolts
- 6 Insulation piece
- 7 Clean-out cover with screws

6.2 Cleaning of solar hot water tank

- Inspect tank interior for lime deposits.



Caution: Tank damage due to damaging of the tank surface.

- Do not use any hard or sharp objects to clean the tank interior.

When solid lime deposits are observed in the tank, proceed as follows:

- Rinse out inner surface with a strong cold water stream (58 - 72.5 psi / 4 to 5 bar) (→ Fig. 20).

When you heat up a drained solar hot water tank prior to the water spraying, you can increase its effectiveness drastically. The lime deposits will break off the heat exchanger coils due the thermal shock.

- Remove any solid debris with a wet vac from the tank interior.

In case of extreme hard and solid deposits, you can remove these through a chemical cleaning. We recommend to have a professional perform the chemical cleaning.

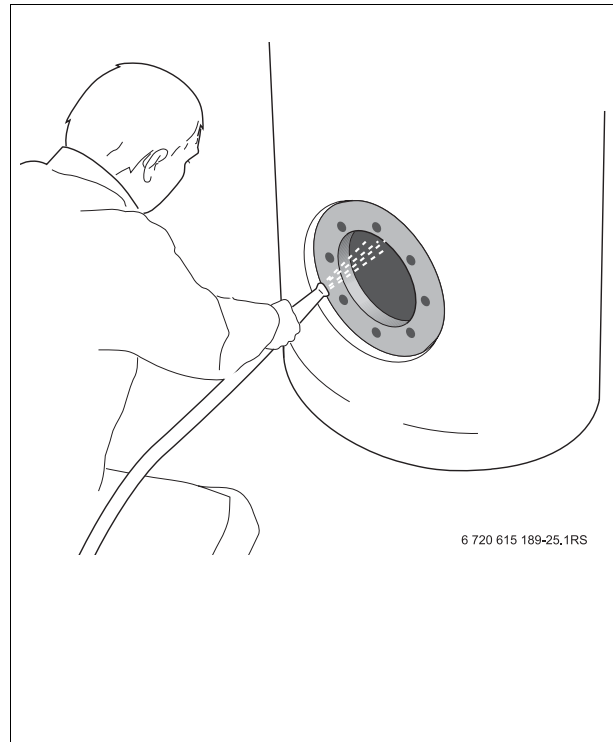


Fig. 20 Spraying for cleaning of the solar hot water tank

6.3 Checking of magnesium anode rod

The magnesium anode rod is sacrificial anode rod which will be consumed during its operation.

- Check the diameter and surface of the anode rod **annually**.



When the anode rod is not professionally and annually maintained, the tank will lose its warranty. Annual service records must be maintained and shown in case of a warranty claim along with an original proof of purchase.



Avoid contact between the anode rod and oil or grease.

- Keep the anode rod clean.



When the anode rod must be replaced, use a high quality Teflon sealing material.

Visual inspection of the anode rod

- If not yet done, remove the cover and insulation material.
- Remove anode rod.
- Check anode rod for surface irregularities and diameter.
- When the diameter is reduced to 1/2" (15 mm), replace the anode rod.
- Install the new anode rod back into the tank.

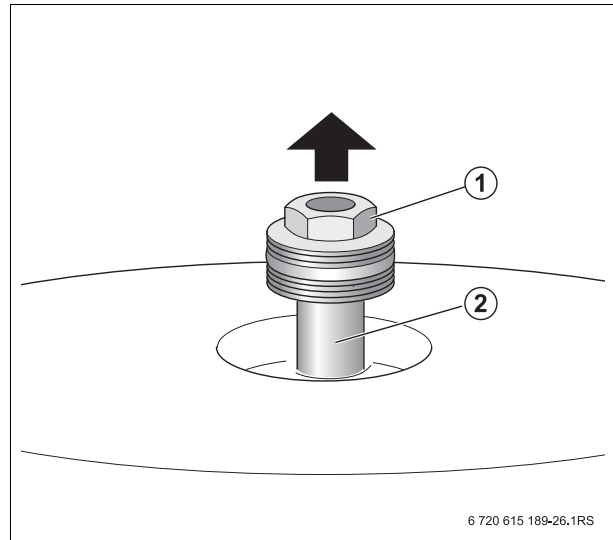


Fig. 21 Replacement of the anode rod

- 1 Hex head
- 2 Magnesium anode

Replacing of bottom magnesium anode rod and SM400/1 top anode rod

- Disassemble clean out cover (→ Fig. 19, page 23) if not done already.
- Remove M8 nut [8] to release the ground wire eyelet [10].
- Remove M8 nut [7].
- Remove the clean out cover [3] from the magnesium anode [1].
- Replace the magnesium anode.
- Fit the new magnesium anode together with all small parts supplied with it, as shown in Fig. 22.

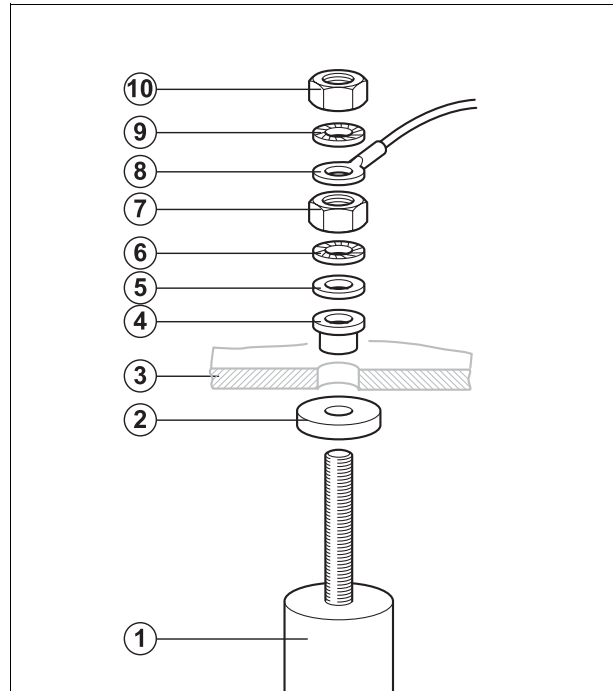


Fig. 22 Replacement magnesium anode rod.

- | | |
|----|--------------------|
| 1 | Magnesium anode |
| 2 | Gasket |
| 3 | Clean out cover |
| 4 | Insulating sleeve |
| 5 | Flat washer |
| 6 | Lock washer |
| 7 | Hex head nut M8 |
| 8 | Ground wire eyelet |
| 9 | Lock washer |
| 10 | M8 nut |

6.4 Placing solar tank back in operation after cleaning



Caution: Tank damage due to a defective gasket!

- To avoid leak sites, replace the clean-out gasket following removal of the clean-out cover.

- Install new gasket with clean-out cover.
- Tighten 6 bolts by hand.
- Further tighten the bolts with a wrench. Tighten evenly. Torque bolts evenly to about 25 - 30 Nm (18 - 22 lb-ft).
- Fill the solar water heater and start up the system.
- Check all connections and clean-out cover for leaks.
- Install insulation piece and clean-out cover.
- Put insulation piece and top cover back on the top of the tank. (→ Fig. 1, page 5).

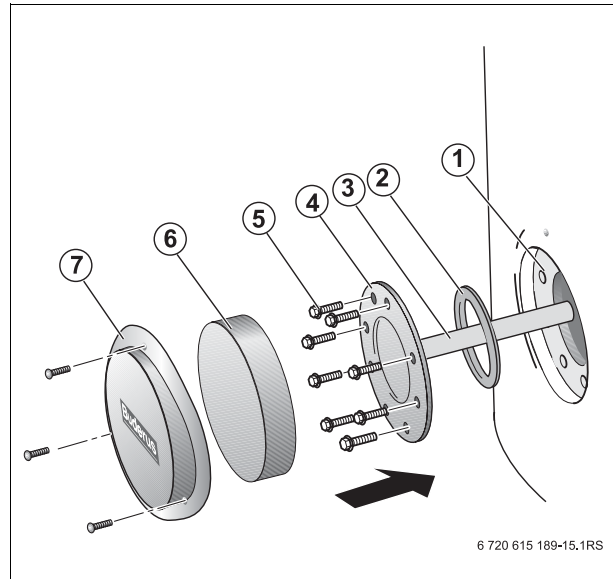


Fig. 23 Installation of inspection cover.

- 1 Inspection opening
- 2 Clean-out cover gasket
- 3 Magnesium anode rod
- 4 Clean-out cover
- 5 Hex head bolts
- 6 Insulation piece
- 7 Clean-out cover and screws

7 Replacement Parts

7.1 Replacement parts for SM300/1 - 300/1W

Position	Part-Nr.	Description	Number
10	7747021398	Buderus Logalux SM300/1 blue	1
11	7747021398	Buderus Logalux SM300/1W white	1
Available components			
20	63043454	120 x 152 x 10 gasket	1
30	63014368	Clean-out cover	1
40	x	Washer	8
50	x	M10 x 30 8.8	11
60	5222852	Insulation piece	2
70	5222151	Front cover	1
80	x	Sheet metal screw	3
90	63000267	Scored insulation	1
100	x	Magnesium anode rode	1
110	x	Mounting bracket for aquastat	1
120	5592176	Front magnesium anode rod	1

Tab. 3 Available spare parts for solar hot water heater SM300/1 - SM300/1W

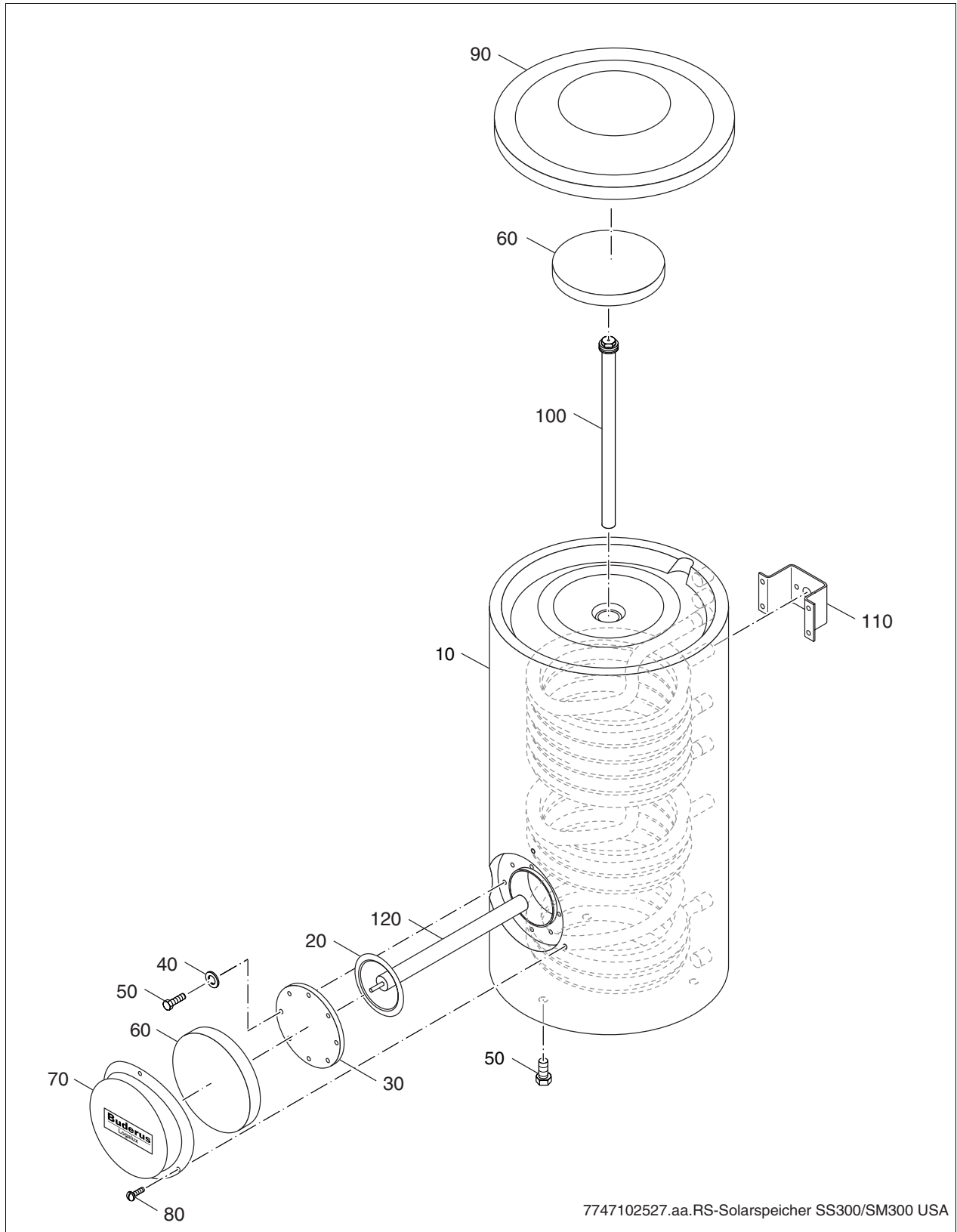


Fig. 24 Solar Hot Water Heater SM300/1 - SM300/1 W

7.2 Access cover and anode rod assembly for SM300/1 - 300/1W

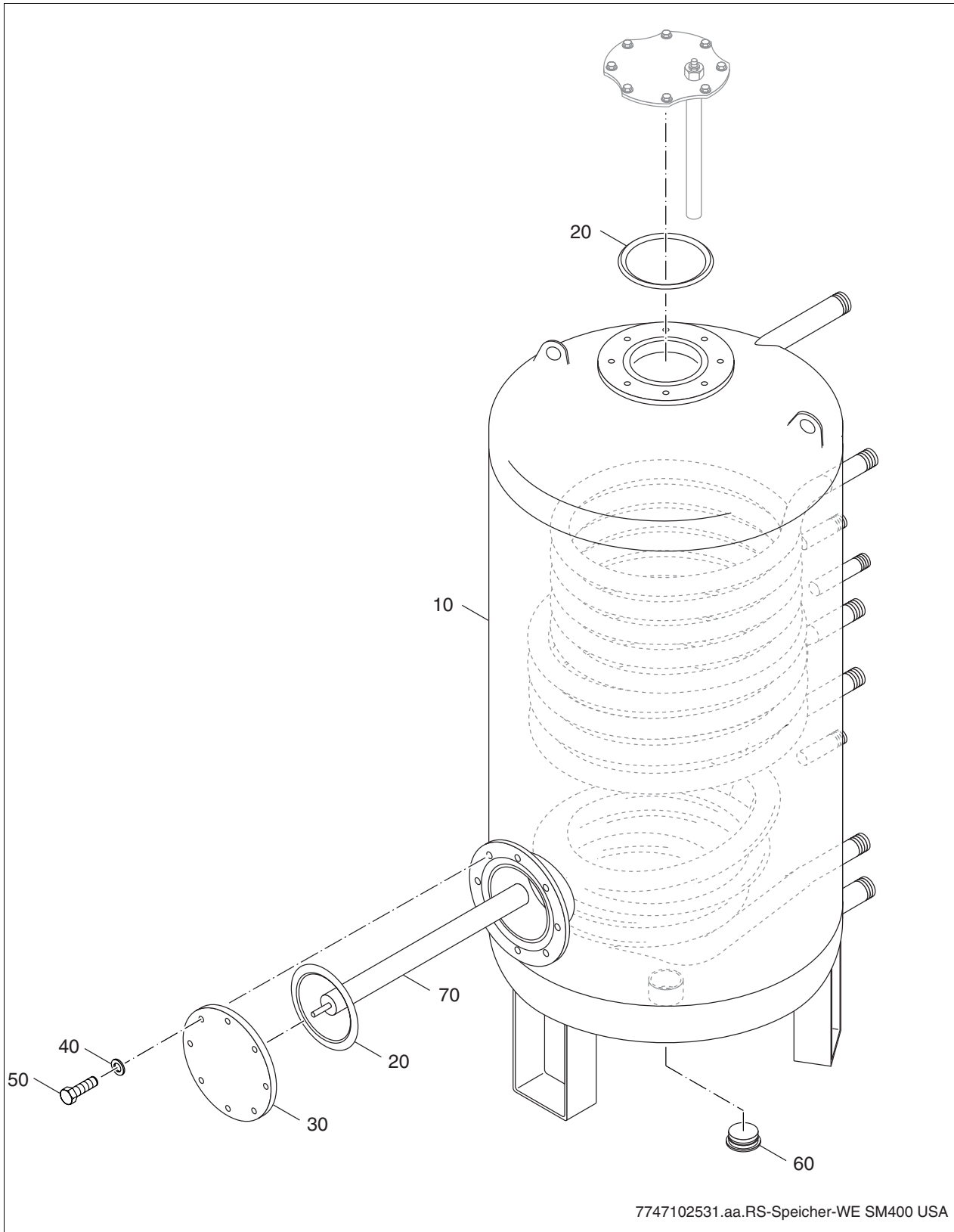
Position	Part Nr.	Description	Number
10	5592181	Magnesium anode rod 33 x 800 mm	1
20	63020949	Sectional links anode rod 4 section 723/693 mm complete	1
Available components			
30	x	Solid or sectional links magnesium anode rod	1
40	5264278	Mounting assembly set (10 pieces)	
Consisting of:			
50	x	Flat washer	1
60	x	Insulation sleeve for anode	1
70	x	Flat washer	1
80	x	Lock washer	2
90	x	Hex head nut	2

Tab. 4 Available spare parts for tank access cover and anode for SM300/1 - SM300/1W tanks

7.3 Replacement parts for SM400/1

Position	Part-Nr.	Description	Number
10	7747022557	Buderus Logalux SM400/1	
Available components			
20	63043454	120 x 152 x 10 gasket	2
30	63014368	Tank access and clean-out cover	1
40	x	Washer	8
50	x	Access cover mounting bolts M10 x 30 8.8	8
60	63004276	1-1/2" Tank drain plug with gasket	1
70	5592176	Magnesium anode rode 33x400	1

Tab. 5 Available spare parts for solar hot water heater SM400/1



7747102531.aa.RS-Speicher-WE SM400 USA

Fig. 25 SM400/1 Solar Hot Water Heater

7.4 Tank access cover and anode rod assembly for SM400/1

Position	Part Nr.	Description	Number
10	5592180	Magnesium anode rod 33 x 700 mm	1
20	63020949	Sectional links anode rod 4 section 723/693 mm complete	1
Available components			
30	x	Solid or sectional links magnesium anode rod	1
40	5264278	Mounting assembly set (10 pieces)	
Consisting of:			
50	x	Flat washer	1
60	x	Insulation sleeve for anode	1
70	x	Flat washer	1
80	x	Lock washer	2
90	x	Hex head nut	2
100	x	Hex head nut	1
110	x	Flat washer	1
120	7079410	Grounding strap of anode rod	1
130	x	Washer	1
140	63014368	Tank access cover	1

Tab. 6 Available spare parts for access cover and anode rod for SM400/1 tank

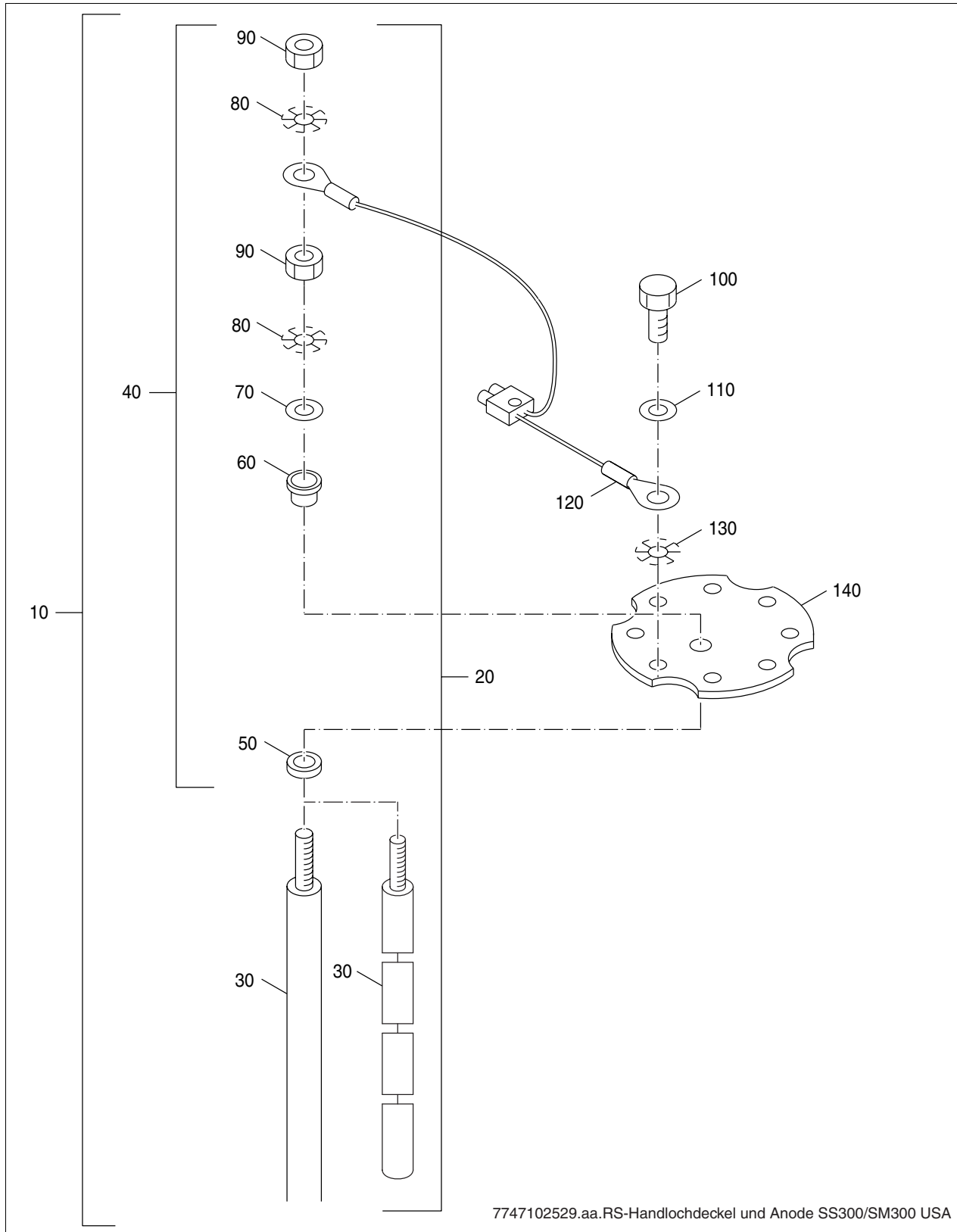


Fig. 26 Tank access cover and anode rod assembly for SM400/1 tank

7.5 Tank Jacket System for SM400/1 Tank

Position	Part Nr.	Description	Number
10	5069166	Complete tank insulation package (Blue) SM/SF/SU400	1
10	5069168	Complete tank insulation package (White) SM/SF/SU400	1
Available components			
20	63004232	Left side insulation piece (100 mm, 4") blue for SM400	1
20	63004233	Left side insulation piece (100 mm, 4") white for SM400	1
30	63004253	Top insulation piece	1
40	63004267	Top tank cover	1
50	63004234	Right side insulation piece (100 mm, 4") blue for SM400	1
50	63004235	Right side insulation piece (100 mm, 4") white for SM400	1
60	63004262	Complete rear cover set	
Consisting of:			
70	x	3x cover strips 100 mm (4") long	3
80	63004258	Complete front cover set	1
Consisting of:			
90	63004269	Insert cover	1
100	x	Top front cover strip	1
110	x	Bottom front cover strip	1
120	63004252	Bottom foam insulation piece	
130	63004268	Front access cover insulation piece	
140	63004265	Front cover	
150	x	Mounting screws	3
160		Additional small insulation pieces	
Consisting of:			
	x	4 soft foam pieces D50 x 80	4
	x	1 Soft foam piece 75x75x75	1

Tab. 7 Available spare parts for solar hot water heater SM400/1

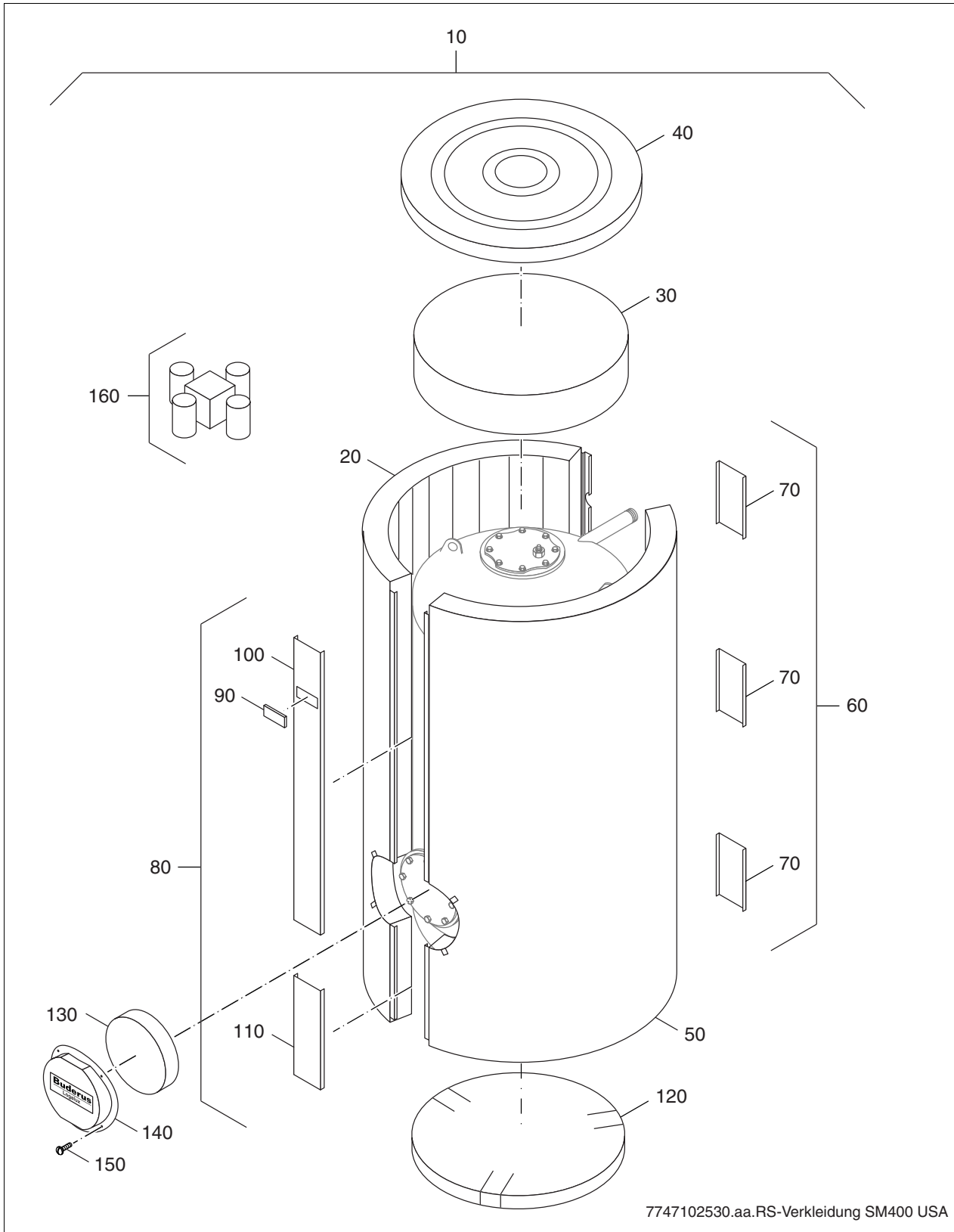


Fig. 27 Complete tank jacket panel and insulation set for SM400/1

Notes

Notes

Notes

Bosch Thermotechnology Corp.
50 Wentworth Avenue
Londonderry, NH 03053
Tel. 603-552-1100
Fax 603-584-1681
www.buderus.net

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

Bosch Thermotechnology Corp. reserves the right
to make changes without notice due to continuing
engineering and technological advances.

Buderus