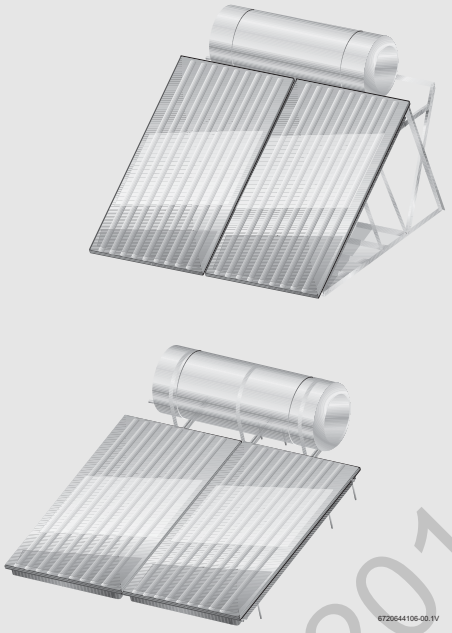

Thermosiphon for flat roofs and rooftops

TSS300

300 l system - TSS SERIES SOLAR HOT WATER SYSTEM

BOSCH

Installation instructions

6 720 803 537 (2012/03) AU

Contents

1 Key to symbols and safety instructions

1.1 Key to symbols

Warning information

Warnings in this document are identified by a warning triangle and printed against a grey background.

If there is a risk of electrocution, the exclamation mark in the warning triangle is replaced by a lightning symbol.

Signal words at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

- **NOTE** indicates that material losses may occur.
- **CAUTION** indicates that minor to medium injury may occur.
- **WARNING** indicates that severe injury may occur.
- **DANGER** indicates that fatal injury may occur.

Important information

Important information where there is no risk to people or property is indicated with the adjacent symbol. It is bordered by horizontal lines above and below the text.

Additional symbols

Symbol	Explanation
▶	Action step
→	Cross-reference to other parts of this document or to other documents
•	List/list entry
–	List/list entry (second level)

Table 1

1.2 Safety instructions

This chapter explains how the information in these installation instructions is laid out, and gives general safety instructions for safe and trouble-free operation. Safety instructions and user notes relating specifically to installation are found in the installation instructions alongside the specific installation steps. Please read the safety instructions carefully before starting the installation. If safety instructions are ignored, severe or even fatal injuries may result, as well as material losses and environmental damage.

Danger when working on roofs

- ▶ Take appropriate action to prevent accidents during all work on roofs.
- ▶ Take precautions against a possible fall while working on roofs.
- ▶ Always wear your own protective clothing and safety equipment.
- ▶ After completing the installation, check the installation set, the collectors and the cylinder are securely positioned.

Installation and maintenance

- ▶ Only have the appliance installed or modified by licensed contractors.
- ▶ Only use the cylinder for heating domestic hot water.

Risk of scalding!

Always monitor operation if temperatures are above 60 °C.

- ▶ We recommend installing a solar tempering valve on the outlet connection.

Risk of burns!

If the collector and installation material have been exposed to the sun's rays for a prolonged period, touching certain components may cause burns.

- ▶ Always wear your own protective clothing and safety equipment.
- ▶ Before and during installation, cover the collector (for example with a blanket) and installation material to protect against high temperatures caused by the sun's rays. It is worth leaving the equipment covered until the system is commissioned.

Maintenance

- ▶ **Customer recommendation:** Bosch recommend that this appliance is serviced by a suitably qualified person at periods not exceeding 2 years.
- ▶ The user is responsible for the safety and environmental compatibility of the appliance.
- ▶ Only use genuine Bosch spare parts.

Instructing the customer

- ▶ Instruct the customer in the functions and operation of the appliance.
- ▶ Inform the customer that they must not carry out any modifications or repairs.

Risk of damage due to operator error

Operator errors can result in injury and damage to property.

- ▶ Ensure that children never operate this appliance unsupervised or play with it.
- ▶ Ensure that only personnel who can operate this appliance correctly have access to it.

2 Information about the installation set

2.1 Intended use

The rooftop installation set is designed to hold solar thermal collectors and their associated cylinder, which are installed on pitched roofs at an angle of 25° to 45°.
Use specific roof fixing accesories for the installation.
The flat roof installation set can be used with a roof slope of up to 15° towards the collector. Never damage the structure of the building while installing the solar thermal system.

Conditions of use

Only fit the installation set on roofs with sufficient load-bearing capacity; if necessary, ask a structural engineer or professional roofer for guidance.

The installation set is suitable for a maximum standard snow load of 1.0 kN/m^2 and wind speeds up to 129 km/h.

Never use the rooftop and flat roof installation sets to fix any other objects to the roof. It is designed only to enable the solar collectors and cylinder to be securely fixed.

Observe all standards and directives applicable to the installation and operation of this heating appliance.

All installations must be carried out in accordance with AS/NZS3500.4, NZS5261, AS/NZS3000 and all local building, plumbing and electrical regulations.

CAUTION:
For sanitary fixtures used primarily for the purpose of personal hygiene that a temperature control device be fitted (such as a tempering valve) as per AS3498 must be used.

Lightning protection

The components of the thermosiphon solar thermal system which conduct electricity must be connected by an electrician to an earth cable of at least 16 mm^2 and to the bonding.

If a lightning protection system is installed, an electrician must check the connection of the thermosiphon solar thermal system to this system.

3 Specification

Thermosiphon system TSS300		
Certificates		**AS/NZS 2712:2007**
Further details		**TSS 300**
Approximate operating weight	kg	510
Clearance between supports	mm	920 + 920
Dimensions of the system installed[1]: L x W x H	mm	2320x2365x1705

Table 2 System specification

1) flat roof

Collectors FCC-TSS		
Length	mm	2026
Width	mm	1032
Height	mm	67
Clearance between collectors	mm	69
Absorber capacity, vertical version	l	0.8
External surface area (gross)	m^2	2.09
Absorber surface area (net)	m^2	1.95
Net weight, vertical version	*kg*	30
Permissible collector operating pressure	kPa	600

Table 3 Collector specification

Cylinder TSS300		
Version		**300 l**
Weight (dry)	kg	95
Volume, primary circuit	l	20
Volume, secondary circuit	l	280
Max. operating pressure, primary circuit	kPa	250
Max. operating pressure, secondary circuit	kPa	1000
Diameter	mm	580
Width	mm	1850

Table 4 Collector specification

4 Before installation

4.1 General notes

DANGER: Risk to life through falls and falling parts!
- ▶ Take precautions against a possible fall while working on roofs.
- ▶ Always wear your own protective clothing and safety equipment.
- ▶ After completing the installation, check the installation set, the collectors and the cylinder are securely positioned.

Before installation, familiarise yourself with the on-site conditions and local regulations.

Check
- That the delivered material is complete and undamaged.
- The structure of the roof for sufficient load-bearing capacity and damage (e.g. leaks).
- The optimum orientation of the solar collectors. Take solar radiation into account (northerly orientation). Avoid shade from high trees or similar.
- The stability of the installation surface. Remove gravel or similar material.

Only use original spare parts from the manufacturer and replace faulty parts immediately.

Minor diviations from optimal orientation do not result in noticeable differences in output. For further information on the output curve of the system in cases where the orientation/slope deviates, see the technical documentation.

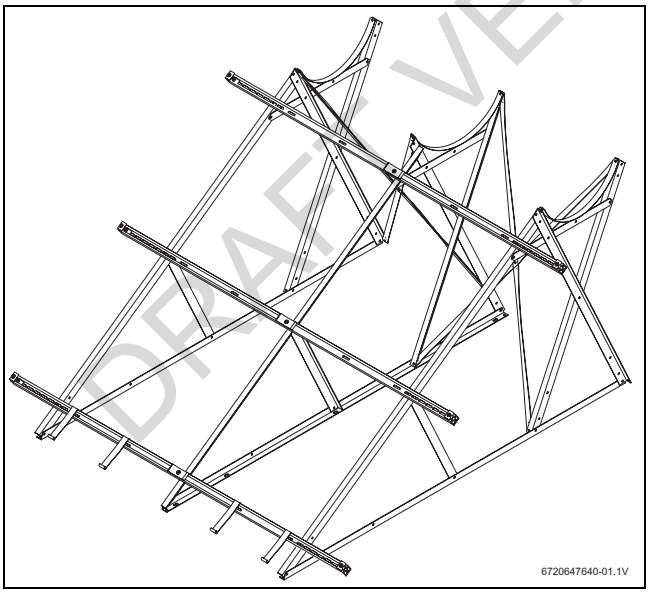

Fig. 1 Full view of flat roof frame

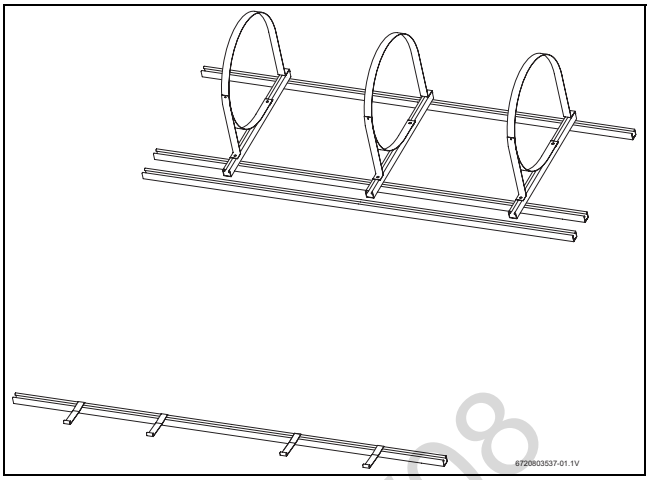

Fig. 2 Full view of rooftop installation

4.2 Component description

4.2.1 Installation set for flat roofs

The installation sets are designed to hold and secure the cylinder and collectors.

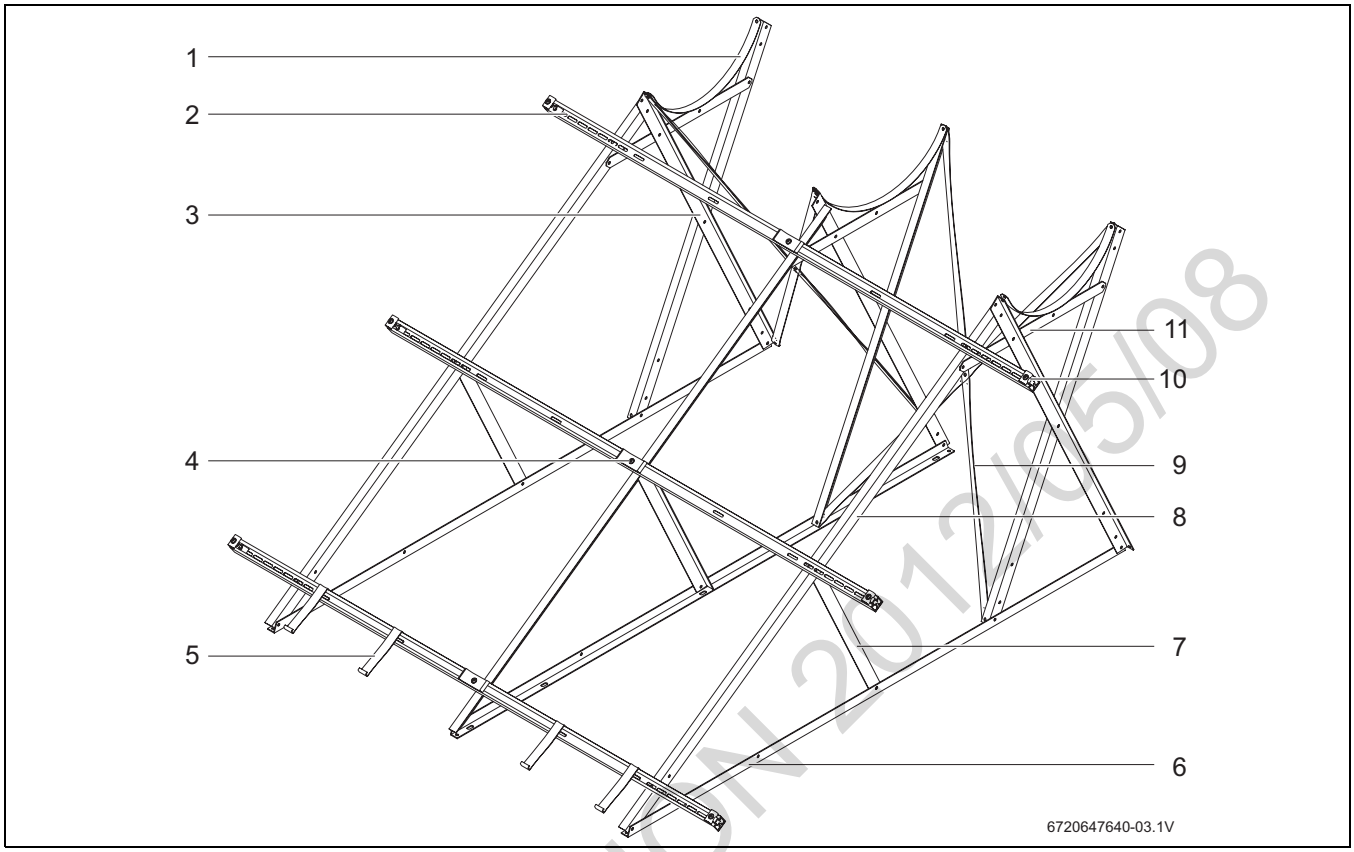

Fig. 3 Installation sets for 2 collectors: 1 standard installation set, 1 extension installation set

Flat roof, standard installation set:			**Flat roof, extension installation set for 300 l system:**		
Pos.	Qty.	**Description**	**Pos.**	Qty.	**Description**
1	2x	Cylinder strap	**1**	1x	Cylinder strap
2	2x	Flat roof/rooftop profile rail	**2**	1x	Flat roof/rooftop profile rail
3	4x	Cylinder support rail (1380 mm - 45/30)	**3**	2x	Cylinder support rail (1380 mm - 45/30)
5	2x	Anti-slip bracket	**4**	2x	Double sided collector tensioner
6	2x	Lower support rail (2215 mm - 35/30)	**5**	2x	Anti-slip bracket
8	2x	Collector support rail (2050 mm - 45/30)	**6**	1x	Lower support rail (2215 mm - 35/30)
9	2x	Wind brace	**8**	1x	Collector support rail (2050 mm - 45/30)
10	4x	Single sided collector tensioner	**9**	2x	Wind brace
11	2x	Cross brace	**11**	1x	Cross brace
	27x	Round head screw M8x20		16x	Round head screw M8x20
	27x	M8 nut		16x	M8 nut
	2x	Self-adhesive foam pad		1x	Self-adhesive foam pad
Flat roof, additional support, standard installation set			**Flat roof, additional support, extension:**		
Pos.	Qty.	**Description**	**Pos.**	Qty.	**Description**
2	1x	Flat roof/rooftop profile rail	**2**	1x	Flat roof/rooftop profile rail
7	2x	Additional support (750 mm - 45/30)	**4**	1x	Double sided collector tensioner
10	2x	Single sided collector tensioner	**7**	1x	Additional support (750 mm - 45/30)
	6x	Round head screw M8x20		3x	Round head screw M8x20
	6x	M8 nut		3x	M8 nut

Table 5

4.2.2 Rooftop installation set

The installation sets are designed to hold and secure the cylinder and collectors.

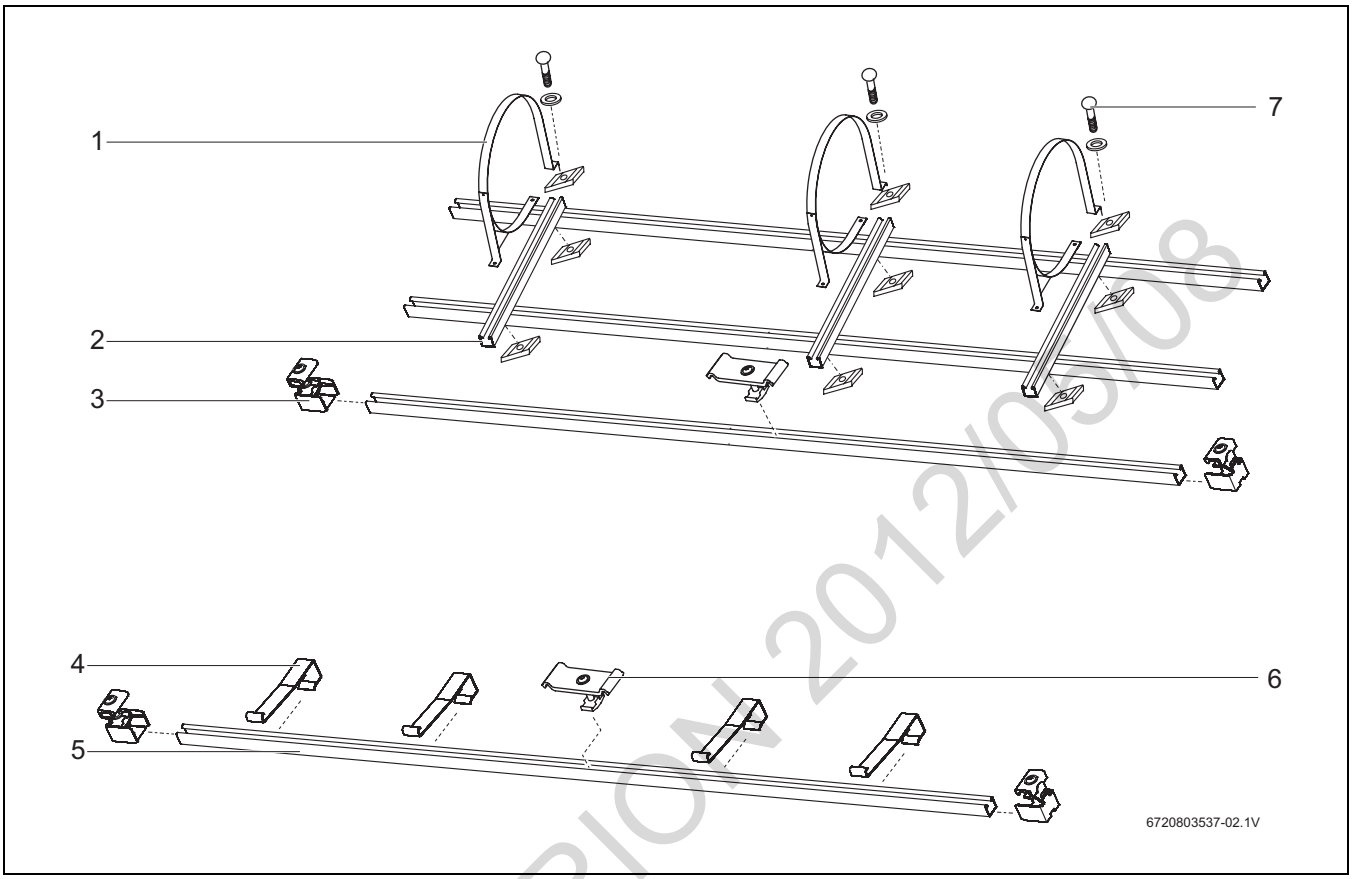

Fig. 4 Installation sets for 2 collectors: 1 standard installation set, 1 extension installation tank set

Standard installation set:				Extension installation tank set:		
Pos.	**Quantity**	**Description**		**Pos.**	**Quantity**	**Description**
1	3x	Cylinder strap		**5**	2x	Flat roof/rooftop profile rail
2	3x	Cylinder profile rail		**7**	1x	Hexagon bolt M8x50
3	4x	Single sided collector tensioner			6x	M8 nut
4	4x	Anti-slip bracket			6x	Round head screw M8x20
5	2x	Flat roof/rooftop profile rail				
6	2x	Double sided collector tensioner				
7	3x	Screw M8x50				
	3x	Washer				
	9x	M8 nut				
	6x	Round head screw M8x20				

Table 6

4.2.3 Hydraulic connection for installation on flat roofs and rooftops

For the hydraulic connection, you will need a connection set and a joining set for the connections between collectors.

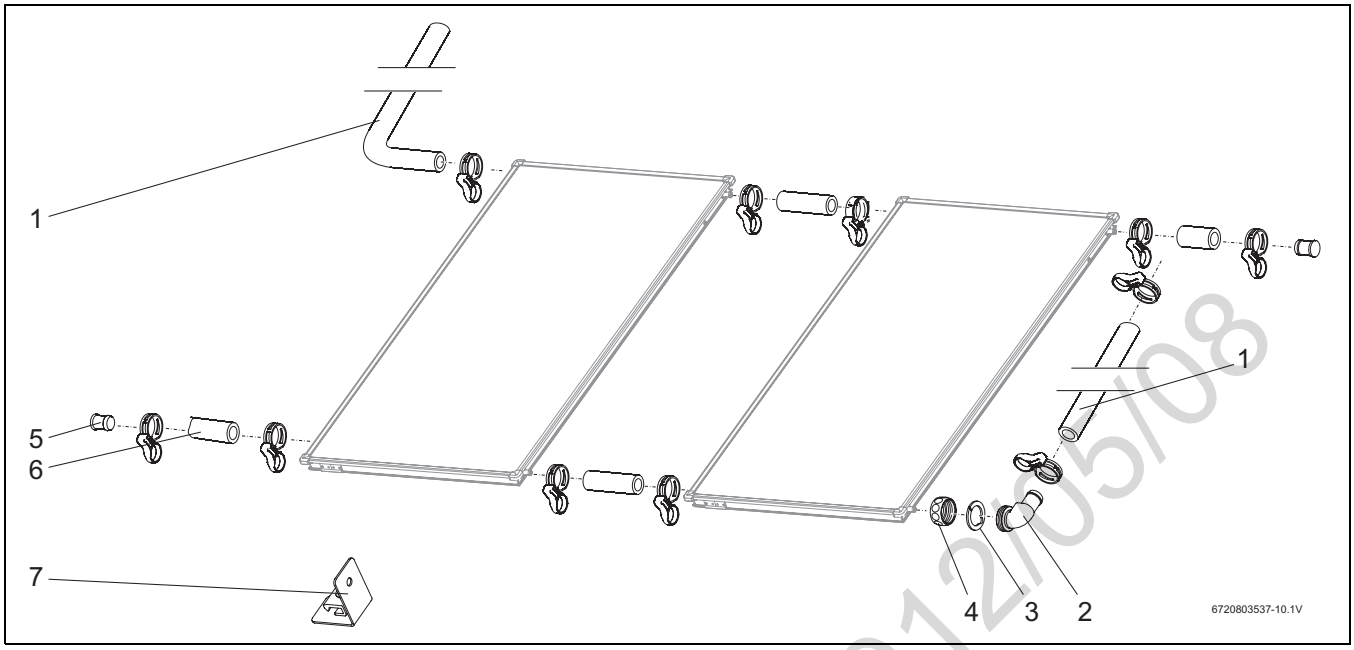

Fig. 5 Connection set and joining set (shown with 2 vertical collectors)

(Connection set TSS → Fig. 5):

Pos.	Quantity	Description	Pos.	Quantity	Description
1	1x	Solar hose 3300 mm		1x	Safety valve ½ " 250 kPa
2	1x	Angled terminal G1xD21		1x	Cap ½ "
3	1x	Clamping disc		2x	Hose terminals 18 x ¾ "
4	1x	Union nut G1		1x	Sealing disc
5	2x	Dummy plug		2x	Solar endform
6	2x	Solar hose 95 mm		1x	Arrestor valve
7	1x	Retainer for flow line		1x	Brass elbow ¾ " F
				2x	Brass adapter ¾ " F
				1x	PTR valve
				1x	PTR Adapter ½ " F

Table 7

Joining set for each collector (in four transport corners, → Fig. 6)

Pos.	Quantity	Description
1	4x	Hose clip
2	2x	Solar hose 95 mm long (only for FCB-TSS)

Table 8

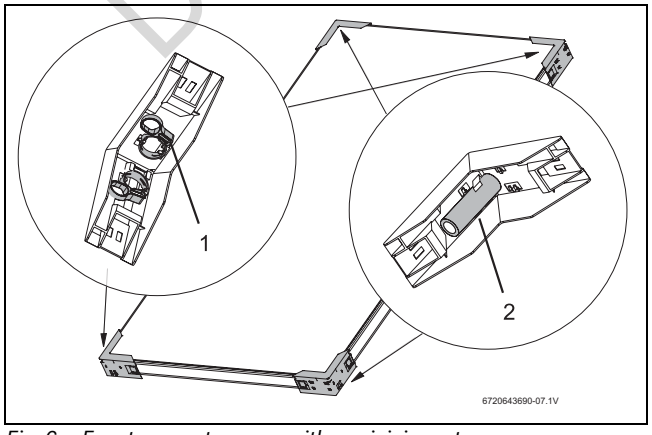

Fig. 6 Four transport corners with one joining set

4.3 Other equipment required

- Brace/cordless screwdriver
- Tape measure
- Wood drill, Ø 6 mm
- Metal drill bit, Ø 13 mm
- Spanner sizes 13, 15, 19 and 30
- Spirit level
- Plumb line
- Vacuum pump
- Safety harness with safety line
- Material for pipe insulation
- Scaffolding
- Crane or mobile hoist
- For flat roofs: spanner for roof connection
- Pipe cutter
- Drain line for PTR
- Plumbing valves (if required)

4.4 Transport and storage

All components are protected by transport packaging.

Transport protection for collector and cylinder connections

The collector connections are protected against damage with plastic caps.

NOTICE:

▶ Do not remove the plastic caps [1] until immediately prior to installation.

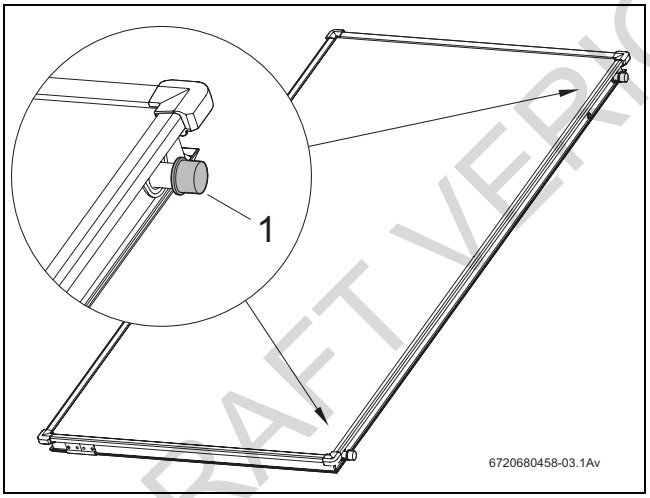

Fig. 7 Plastic caps on collector connections

Storage

Store the collectors in a dry location.

4.5 Estimating your space requirements

NOTICE: System damage through wind gusts and pressure peaks at the flat roof perimeter.

▶ Before commencing installation, ensure that a clearance of at least one metre is allowed between the flat roof frame and the roof perimeter (→ Fig. 8).

▶ Allow sufficient installation surface.

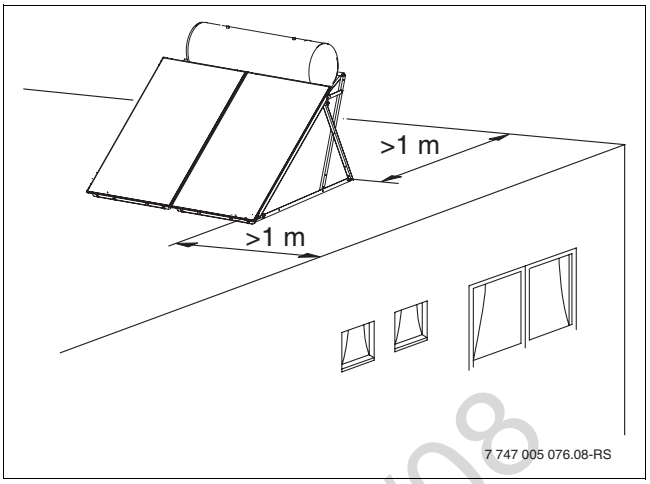

Fig. 8 Distance from roof perimeter

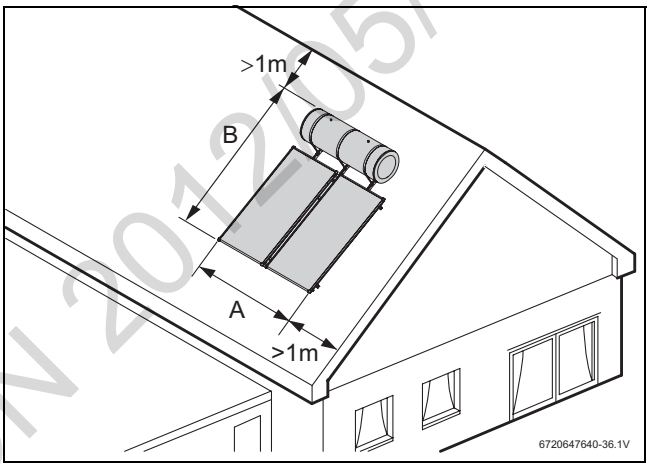

Fig. 9 Distance from roof perimeter

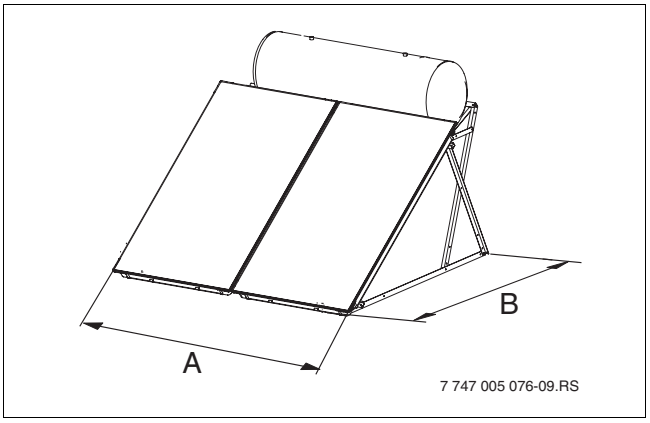

Fig. 10 Space requirement, collector array

The dimensions (Tab. 9 and Tab. 10) relate to the required roof surface.

Number of collectors	Dimension A	Dimension B
2 (300 l)	2120 mm	2770 mm

Table 9 Space requirement for rooftop installation

Number of collectors	Dimension A	Dimension B
2 (300 l)	2120 mm	2365 mm

Table 10 Space requirement for flat roofs

Take the pipework into consideration when calculating in the space requirement. For the pipes on the right and left of the collector array, allow at least an extra 0.5 m on either side.

5 Installing the flat roof frame and the rooftop support

DANGER: Risk to life through falls and falling parts!
- ▶ Take appropriate action to prevent accidents during all work on roofs.

5.1 Flat roof

5.1.1 Installing flat roof frame 300 l system - wind speeds up to 129 km/h

To facilitate installation, first tighten all screws by hand.

- ▶ Join two cylinder support rails together in the centre to form a cross (→ Fig. 11, [1]), and fit to the lower support rail [2] in such a way that the surface lying on the ground comes to face inwards.

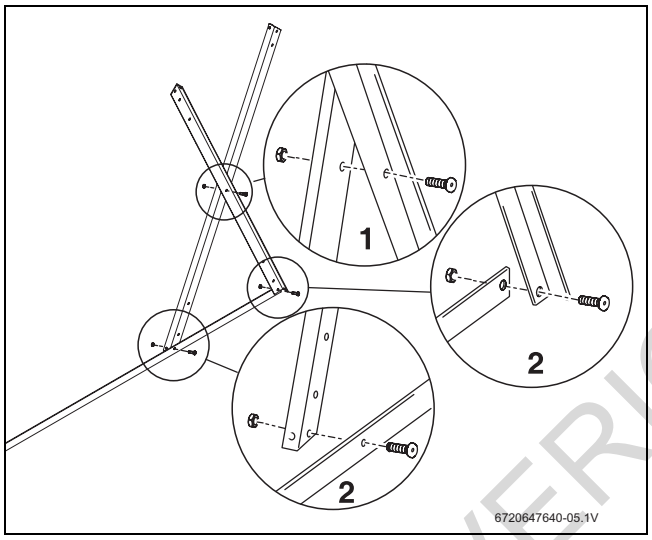

Fig. 11 Securing the support rails

- ▶ Secure the collector support rail at the top to the cylinder support rail (→ Fig. 12, [1]), and at the bottom to the support [2].

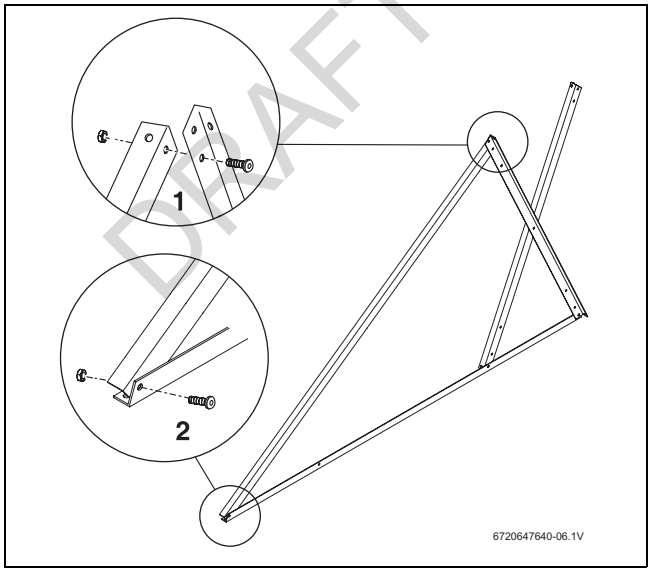

Fig. 12 Fitting the collector support rail

- ▶ Secure the cross brace (→ Fig. 13, [1]) to both cylinder support rails and the collector support rail.

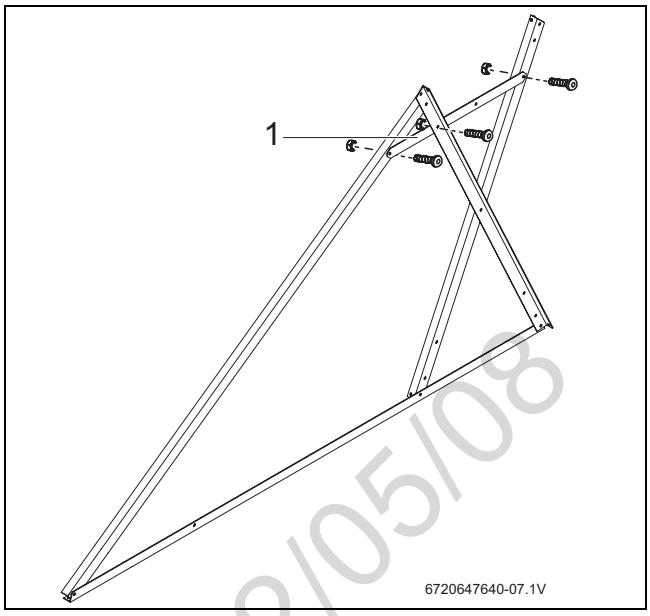

Fig. 13 Inserting the cross brace

- ▶ Fit two further side triangles:
  - – the centre triangle (→ Fig. 14, [2]) as a mirror image of the first [1],
  - – the left triangle (→ Fig. 14, [3]) the same as the first side triangle [1].

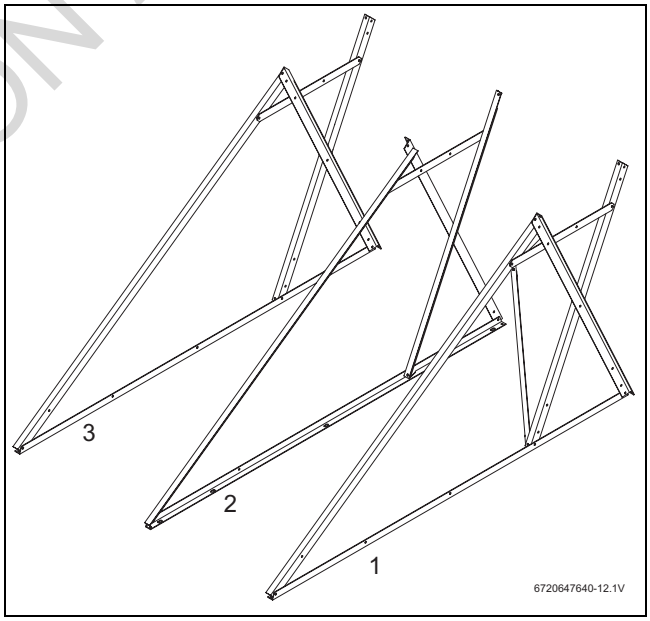

Fig. 14 Fitting further side triangles

- ▶ Make 2 crosses from 4 wind braces (→ Fig. 15, [1]).
- ▶ Connect the three side triangles to the wind brace crosses. Ensure that the planes of both wind brace crosses are in opposite directions. Initially only secure the wind brace cross at the bottom.
- ▶ With the right wind brace cross, ensure that
  - – the first wind brace is installed from the top back right down to the bottom front left.
  - – the second wind brace is installed from the top back left down to the bottom front right.

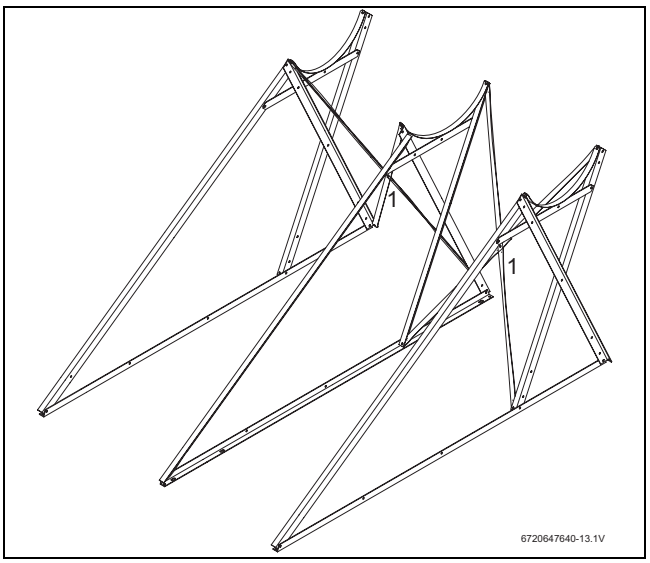

Fig. 15 Fitting the wind braces

- ▶ Attach cylinder straps (→ Fig. 16, [1]) between the two cylinder support brackets. Ensure that the flattened screw head points in the direction of the DHW cylinder (which is fitted later).

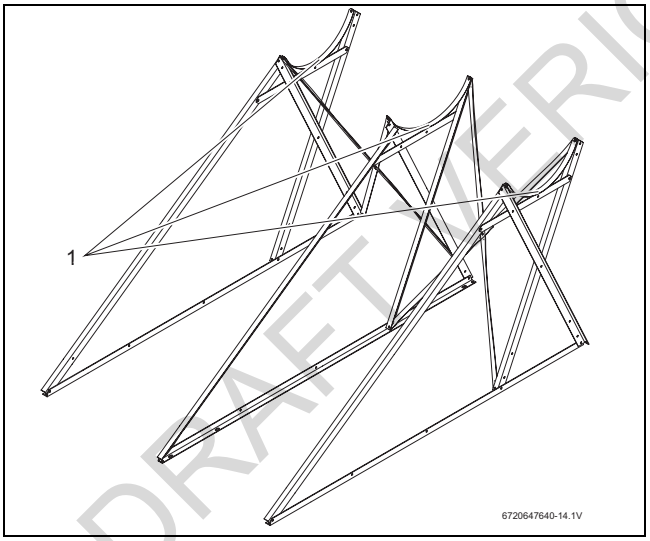

Fig. 16 Attaching the cylinder straps

- ▶ Join the top and bottom U-profile rails (→ Fig. 17, [1]) in the centre to the collector support rails.

Secure using the sixth (left triangle) and seventh hole (right triangle) from the end of the U-profile rail and in the centre.

- ▶ Align the lower support rails (→ Fig. 17, [2]) so they are parallel to each other.
- ▶ Tighten all screws.

- ▶ Affix the self-adhesive foam pads supplied to the cylinder straps.

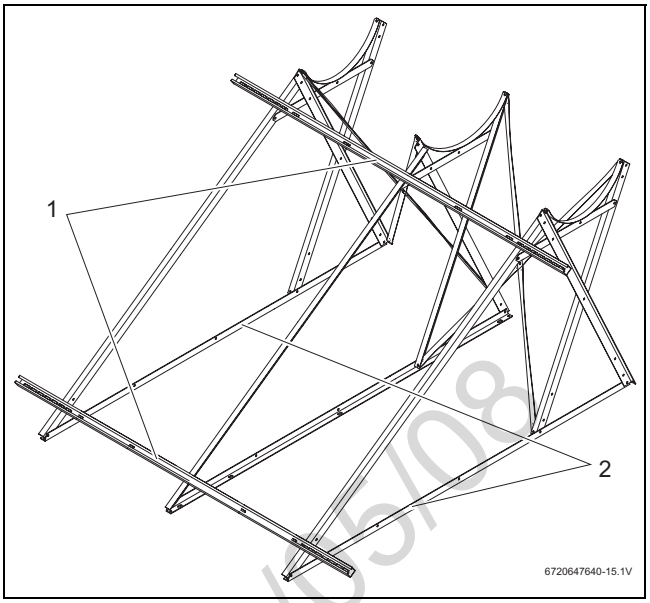

Fig. 17 Fitting the U-profile rails

Fitting anti-slip brackets

To prevent the collectors from slipping, fasten two anti-slip brackets to the lower U-profile rails for each collector.

- ▶ Push each anti-slip bracket (→ Fig. 18, [3]) in the inner slots [1] from the outside over the profile rails until it clicks into place [2].

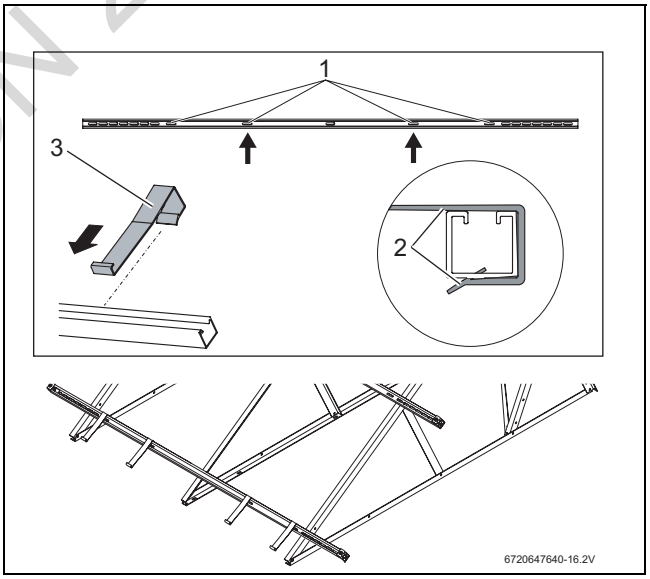

Fig. 18 Hooking in the anti-slip brackets

5.1.2 Roof connection

NOTICE: System damage through inadequately secured lower support rails!

- ▶ Ensure the support rails are adequately secured given the surface on which they are mounted; consult a structural engineer if necessary.
- ▶ Consider the effects of wind force.

Secure the lower support rails to the surface using three screws (core diameter 10 mm) per rail (→ Fig. 19).

- ▶ Secure the lower support rail at the back near the cylinder with two screws.
- ▶ Secure the lower support rail at the front near the collector with one screw.

Observe country-specific standards and guidelines regarding wind loads.

In order to prevent the structure slipping or being damaged by wind forces, secure the structure so that the roof membrane will not be damaged:

- Fix profile rails directly to the roof (→ Fig. 19).

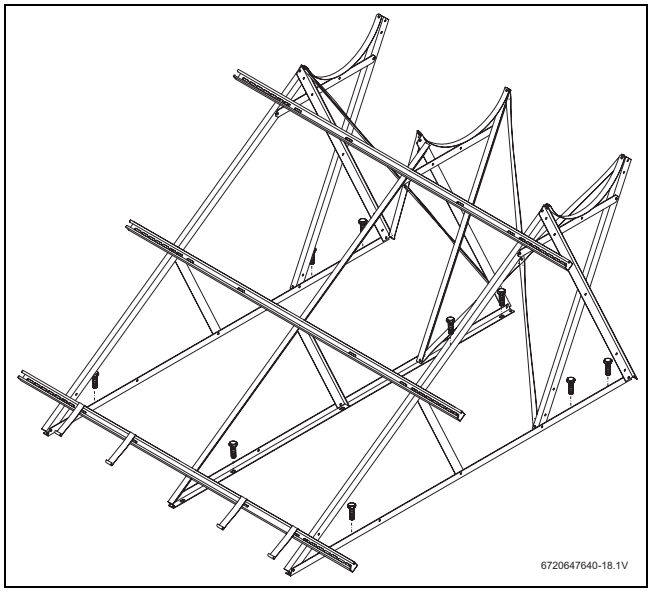

Fig. 19 Roof connection for flat roof system on concrete slabs with additional supports

- Fix profile rails to steel beams (→ Fig. 20).

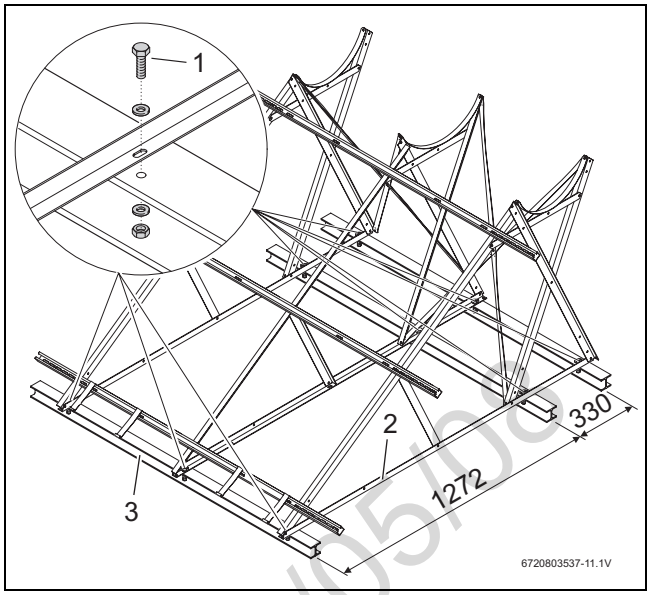

Fig. 20 Roof connection for flat roof system on I-beams

Whichever method is used, take account of the structural integrity of the roof.

Roof connection for flat roof installation			Concrete slabs (Minimum weight)
Pressure speed q	**Wind speed**	**Securing the lower profile rails**	**TSS 300**
0,5 kN/m^2	102 km/h	3 x M10/8.8 (per lower support rail	300 kg
0,8 kN/m^2	129 km/h		400 kg
1,1 kN/m^2 1)	151 km/h		-----

Table 11 Values for required fixing for thermosiphon systems

1) Only with additional supports

Fixing the lower profile rails

The flat roof frame can be secured with the fixings for the lower profile rails.

Design the subframe in such a way that the thermosiphon system can withstand wind and snow loads that act on it.

In addition, provide a means of fixing on site that stabilises the structure and prevents damage to the roof.

5.2 Rooftop installation

5.2.1 Roof connection for rooftop installation

DANGER: Risk to life through falls and falling parts!
- ▶ Take precautions against a possible fall while working on roofs.
- ▶ Take appropriate action to prevent accidents during all work on roofs.
- ▶ Always wear your own protective clothing and safety equipment.

Use a roofing ladder to provide a better footing on roofs or slide the roof tiles up at the edge of the collector array.

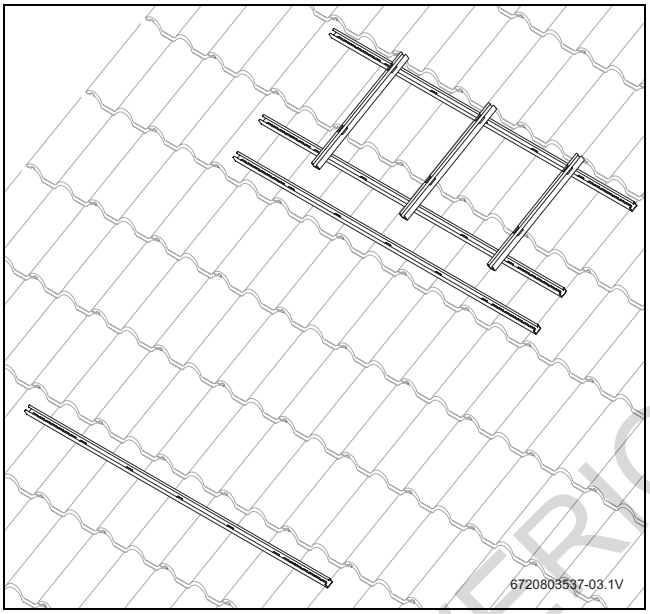

Fig. 21 Pre-assembled profile rails for two collectors

Determining clearances

The dimensions given in the tables are guide values that should be approximately maintained.

On tiled roofs, the corrugations determine the distance between the roof connections.

Distance between the fixing points

Every profile rail must be firmly secured to the roof (→ Fig. 22). See table 12 for the distance between the roof connections.

Distance	Distance A
A	1840 ± 150 mm
B	1500 ± 180 mm
C	1930 +70/-0 mm
D	590 +0/-70 mm
E	1440 ± 180 mm

Table 12 Distance between fixations points

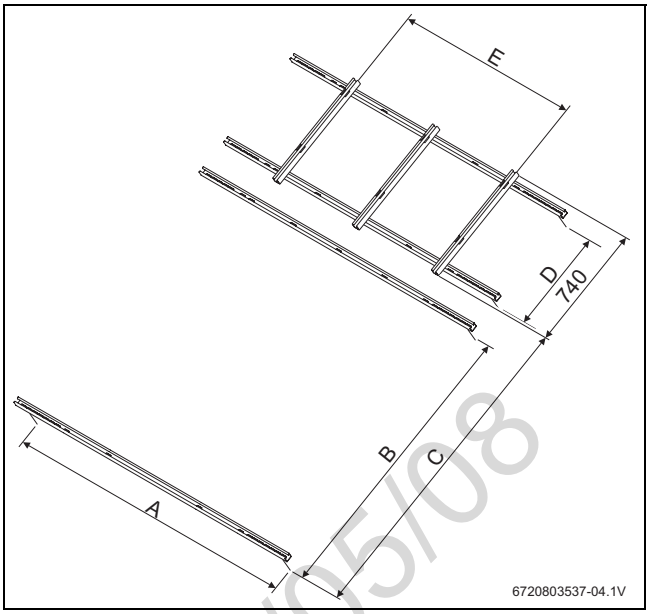

Fig. 22 Distance between the fixation points

5.2.2 Preparing tank set profiles

- ▶ Position locking bolt (Fig. 23, [2]) in the flat roof/rooftop profile rail [4].
- ▶ Insert screw (Fig. 23, [1]) into the slots of the cylinder profile rail (Fig. 23, [3]) and loosely attach the locking bolt until a little resistance can be felt.
- ▶ Position cylinder profile rails in the flat roof/rooftop profile rail and distribute them respecting dimension E from Fig. 22.
- ▶ Tighten all screws.

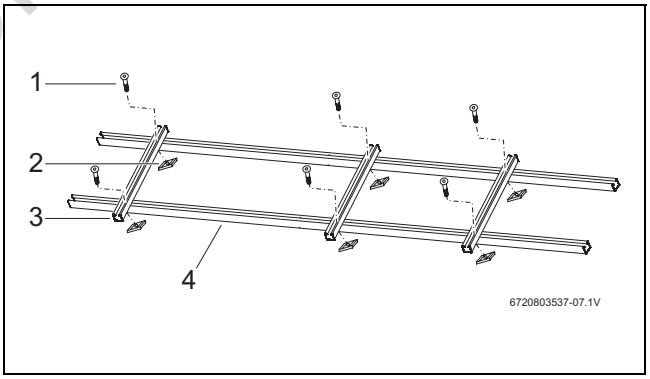

Fig. 23 Securing flat roof/rooftop profile rail to collector profile rail

[1] Screw
[2] Locking bolt
[3] Cylinder profile rail
[4] Flat roof/rooftop profile rail

5.2.3 Roof connection of the collectors and tank

The accessories for roof connection of the collectors and the tank are supplied separately.
The installation instructions are included inside the roof fixation packaging and must be used for the fixation to the roof of collector and tank profile rails.

DANGER: Risk of injury through falling thermosiphon system.
- ▶ Use only original accessories.
- ▶ Ensure that the roof connection of the tank is made with suitable fixing accessories.

Never make the roof connection with third party accessories.

5.2.4 Tank strap and anti-slip brackets

Tank strap

- ▶ Insert screw into the front end of tank strap (→ Fig. 24, [3]) and loosely attach locking bolt [4] until a little resistance can be felt.
- ▶ Insert screw into tank strap support bracket (→ Fig. 24, [5]) and loosely attach locking bolt until a little resistance can be felt.
- ▶ Position front end of tank strap in notch (→ Fig. 24, [6]) and tighten screw.
- ▶ Position tank strap support bracket (→ Fig. 24, [5]) in the second notch and tighten screw.
- ▶ Fit screw, washer and locking bolt to rear end of tank strap (→ Fig. 24, [1]). Do not fasten this end yet.
- ▶ Tighten all screws.

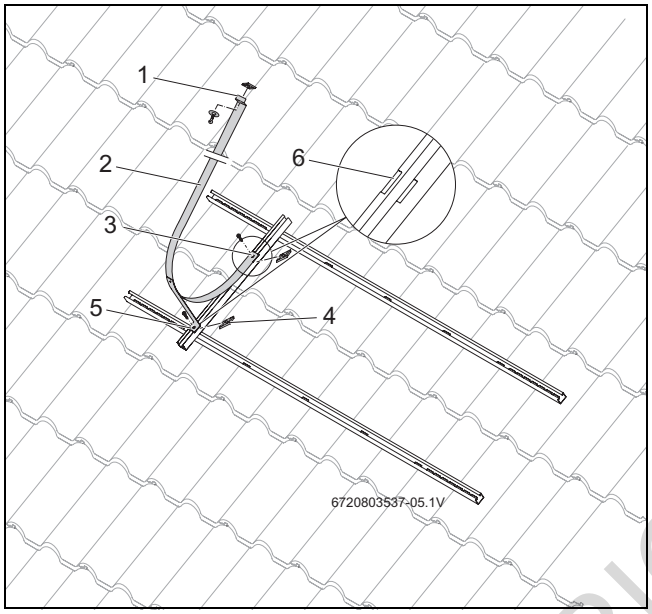

Fig. 24 Securing tank strap

[1] Rear end of tank strap
[2] Tank strap
[3] Front end of tank strap
[4] Locking bolt
[5] Tank strap support bracket
[6] Notch

We recommend fitting the screws to the tank strap on the ground in advance. Subsequently fit the tank strap to the tank profile rail.

Fitting anti-slip brackets

To prevent the collectors from slipping, fasten two anti-slip brackets to the lower roof profile rails for each collector.

- ▶ Push each anti-slip bracket [3] in the inner slots [1] from the outside over the profile rails until it clicks into place [2].

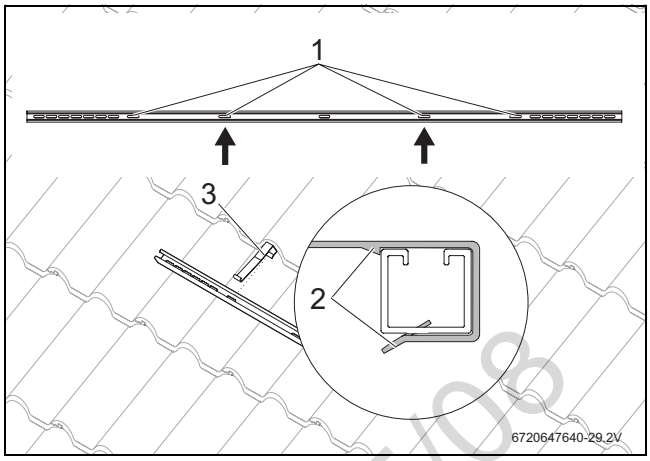

Fig. 25 Attaching an anti-slip bracket

[1] Fixing holes for the anti-slip brackets
[2] Clicking the anti-slip bracket into place
[3] Anti-slip bracket

6 Collector installation

Observe the following safety instructions and user information.

DANGER: Risk to life through falls and falling parts!
- ▶ Take appropriate action to prevent accidents during all work on roofs.
- ▶ Take precautions against a possible fall while working on roofs.
- ▶ Always wear your own protective clothing and safety equipment. After completing installation, check the installation set and collectors are securely positioned.

DANGER: Risk of injury due to falling collectors.
- ▶ During transport and installation, secure the collectors to prevent them falling.

NOTICE: System damage due to damaged sealing faces.
- ▶ Do not remove the plastic caps on the collector connections until immediately prior to installation.

NOTICE: System damage due to leaking solar hoses.
- ▶ It is very important to ensure the hose clip (Fig. 28, [4]) is positioned correctly before removing the locking ring (Fig. 28, [1]). Subsequent loosening using pliers can impair resilience.

Use lifting equipment as used by professional roofers or 3-point suction handles with adequate load bearing capacity for the installation.

NOTICE: Risk of burns!
- ▶ Always cover collectors prior to comissioning of system.

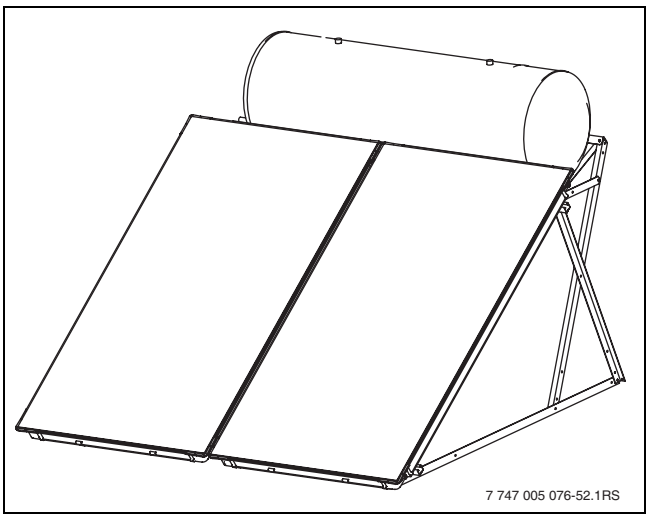

Fig. 26 View of flat roof installation

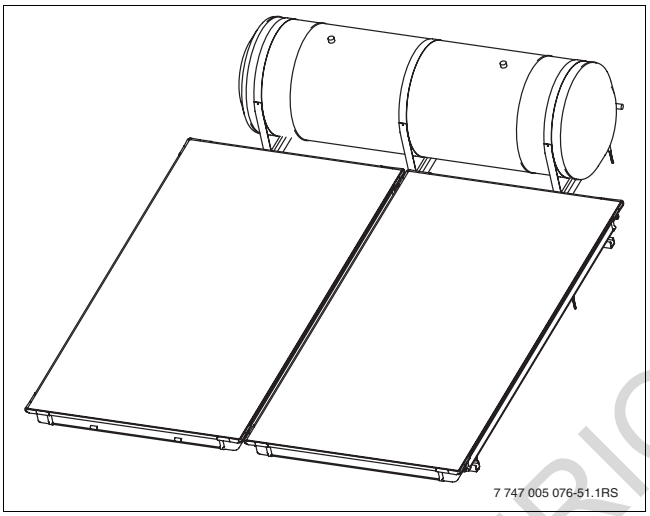

Fig. 27 View of rooftop installation

6.1 Preparing to install the collectors

NOTICE: System damage due to leaking solar hoses.
- ▶ It is very important to ensure the hose clip (Fig. 28, [4]) is positioned correctly before removing the locking ring (Fig. 28, [1]). Subsequent loosening using pliers can impair resilience.

DANGER: Risk of injury.
Only tighten the locking ring once the hose clip is positioned over the solar hose.

The locking ring must be removed from the hose clip to close or secure the solar hose.

To make installation easier, we recommend placing the solar hoses in hot water, especially when the ambient temperature is low.

6.1.1 Pre-assembling dummy plugs

Before beginning actual installation on the roof, pre-assemble the short solar hoses and dummy plugs on the ground to make work on the roof easier.

- ▶ Push dummy plug (→ Fig. 28, [3]) as far as it will go onto 55 mm solar hose [2].
- ▶ Bring hose clip (→ Fig. 28, [4]) into position and pull locking ring [1] to secure the plug.
- ▶ Remove plastic caps (transport protection) from the unused collector connections.

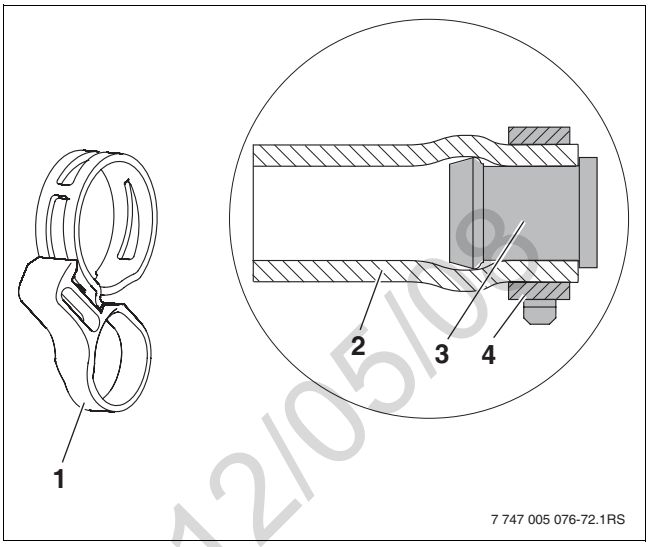

Fig. 28 Hose clip with locking ring and pre-assembled dummy plug

[1] Locking ring
[2] Solar hose 55 mm
[3] Dummy plug
[4] Hose clip

- ▶ Push pre-assembled dummy plugs (Fig. 29, [1]) with hose clips [2] onto the two free connections on the collector array.
- ▶ Once the hose clips are seated correctly, pull the locking rings to secure the connection.

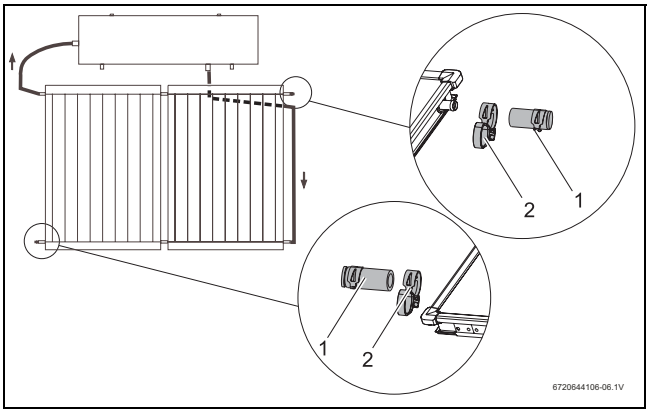

Fig. 29 Hose clip with locking ring and pre-assembled dummy plug

[1] Pre-assembled dummy plug
[2] Hose clip with locking ring

6.1.2 Pre-mount the joining set

The hydraulic connection between two collectors is made using the joining set (95 mm solar hoses and hose clips from the transport corners).

The diagrams show the joining set with the first collector being installed on the right.

- ▶ Remove plastic caps (transport protection) from the relevant collector connections.
- ▶ Push 95 mm solar hoses (Fig. 30, [2]) onto the r.h. connections of the second collector.

- ▶ Push hose clips (Fig. 30, [1]) over the solar hose (the second clip later secures the connection of the other collector).
- ▶ Once the hose clip is seated correctly, pull the locking ring to secure the connection (Fig. 30, [3]).

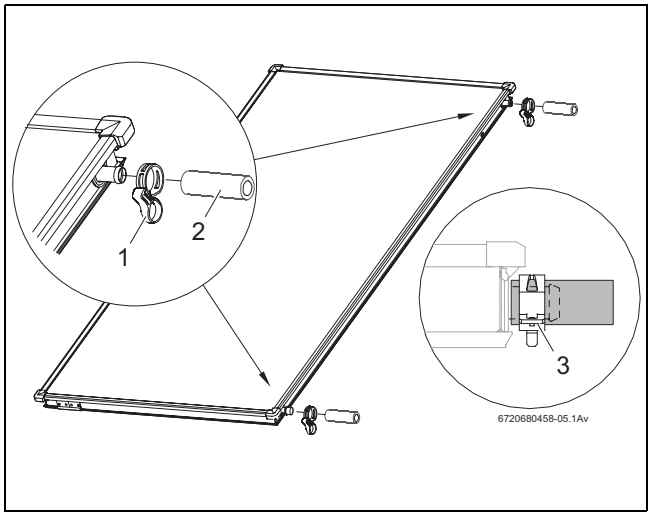

Fig. 30 Fitting the joining set

6.2 Hydraulic connection

As a general principle, connect the collectors as shown below (→ Fig. 31).

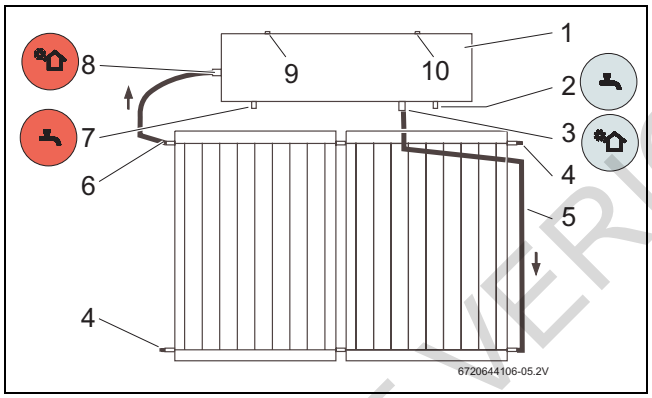

Fig. 31 Hydraulic connection

[1] Cylinder
[2] Cold water connection
[3] Solar flow connection
[4] Dummy plug
[5] Slow flow line
[6] Solar return line
[7] DHW connection
[8] Solar return connection
[9] Safety valve connection, solar
[10] Heat transfer medium filler

6.3 Securing the collectors

The collectors are secured to the profile rails by the single sided collector tensioners (Fig. 32, [2]) at the ends of each flat roof/rooftop profile rail, and the double sided collector tensioners [1] between the collectors.

In addition, the anti-slip brackets (Fig. 32, [3]) prevent the collector slipping.

The plastic parts on the collector tensioners do not have any support function. They are simply intended to make installation easier.

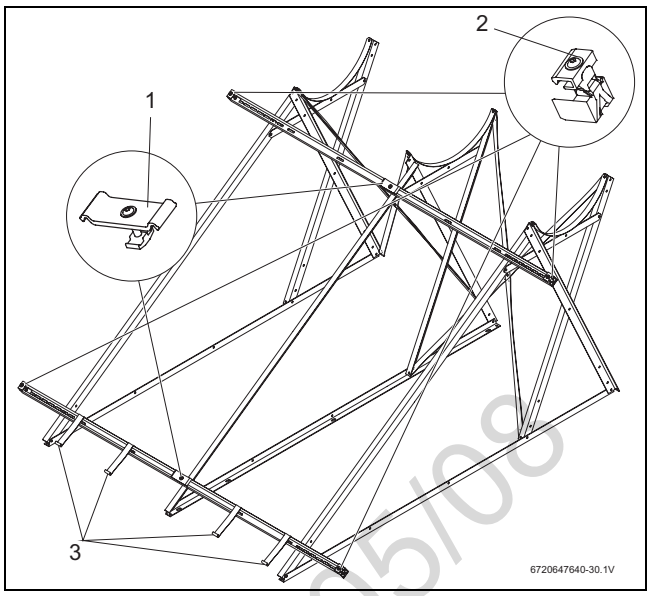

Fig. 32 Collector fixing elements

6.3.1 Inserting the single sided collector tensioner on the right

- ▶ Push the single sided collector tensioner (Fig. 33, [1]) on the right into the flat roof/rooftop profile rails until it clicks into place in the first slot on the profile rail.

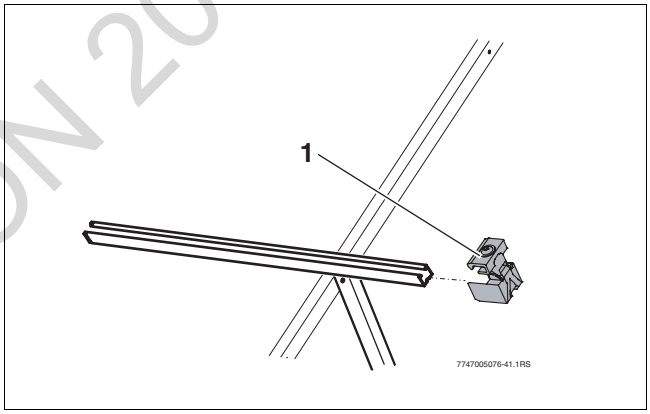

Fig. 33 Inserting the single sided collector tensioner

6.3.2 Positioning the first collector

Begin placing the collectors on r.h. side of the profile rails.

DANGER: Risk of injury.
- ▶ The collectors should always be installed by two people.

▶ Place the first collector on the profile rails and let it slide into the anti-slip brackets (Fig. 34, [2]).
Position the lower collector edge (Fig. 34, [1]) in the aperture of the anti-slip bracket.

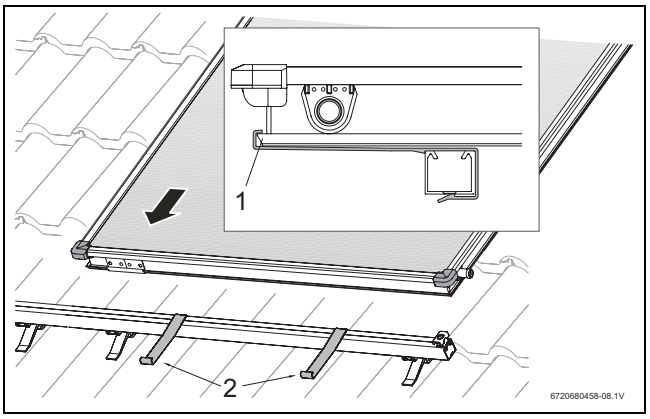

Fig. 34 Laying the first collector on the profile rails

▶ Carefully push the collector (Fig. 35, [1]) up against the single sided collector tensioner and level horizontally.
▶ Secure single sided collector tensioner with size 5 spanner.
The hold-down retainer (Fig. 35, [2]) on the collector tensioner now grips the lower collector edge.

When the screw is tightened, the plastic guide at the pre-determined cut-off points breaks away.

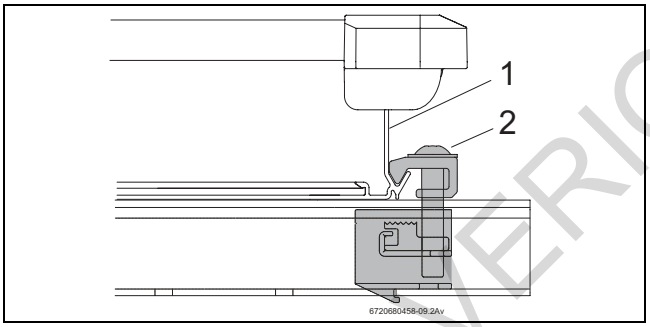

Fig. 35 Threaded single sided collector tensioner

6.3.3 Inserting the double sided collector tensioner

▶ Place the double sided collector tensioner, with attached nut, into the aperture of the profile rail and joiner in such a way that the plastic spacer (Fig. 36, [1]) surrounds the profile rail.
▶ Push double sided collector tensioner up against the collector frame.

Do not tighten the screw until the second collector has been pushed up against the double sided collector tensioner.

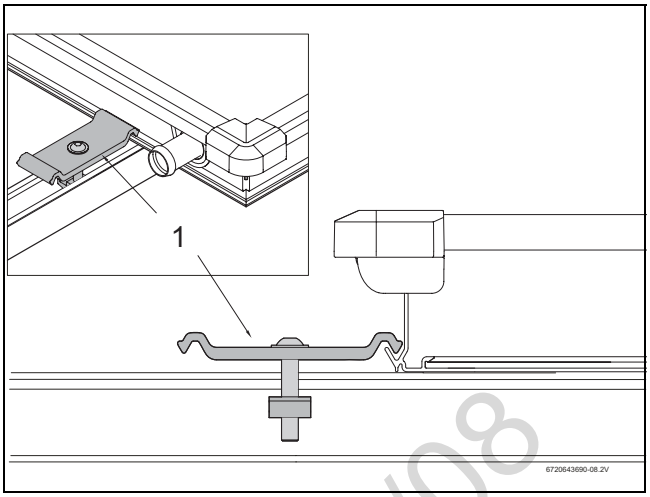

Fig. 36 Fitting the double sided collector tensioner

6.3.4 Positioning second collector

▶ Place the second collector with the pre-assembled solar hoses (Fig. 37, [1]) at the top of the profile rails and let it slide into the anti-slip brackets.
▶ With both connections, push the second hose clip (Fig. 37, [2]) onto the solar hose [1].
▶ Push the second collector up against the first (Fig. 37, [4]) in such a way that the pre-assembled solar hoses are pushed onto the l.h. connections [3] on the first collector.

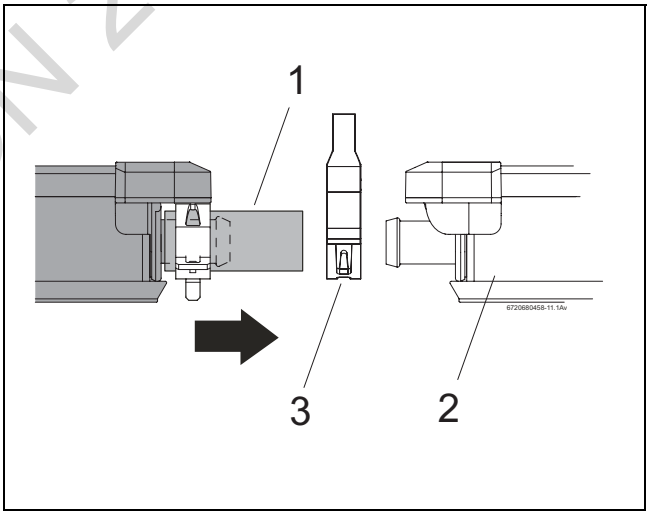

Fig. 37 Pushing second collector towards the first

[1] Solar hose
[2] Hose clip
[3] Connections on the collector side
[4] First collector

▶ Push the hose clip over the bead on the collector connection and pull the locking ring.

NOTICE: System damage due to leaking hose connections or dummy plugs.
▶ Secure solar hoses and dummy plugs to collector connection with a hose clip (→ Fig. 38).

▶ Tighten the screw on the double sided collector tensioner with the size 5 spanner.
The hold-down retainer (Fig. 39, [1]) on the collector tensioner now grips the lower collector edge.

When the screw is tightened, the plastic lugs at the predetermined cut-off points break away.

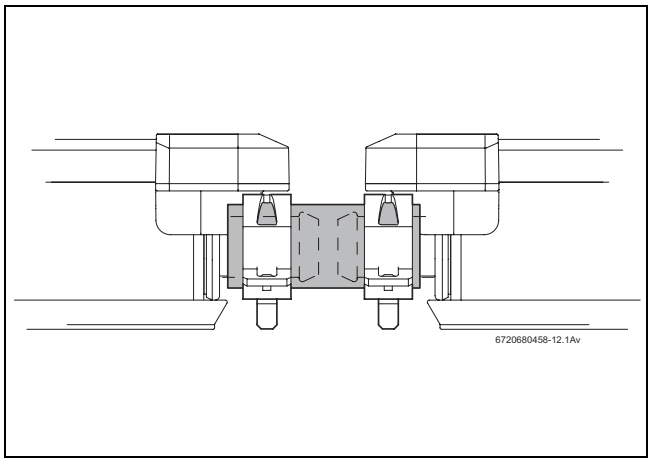

Fig. 38 Solar hose with secured hose clips

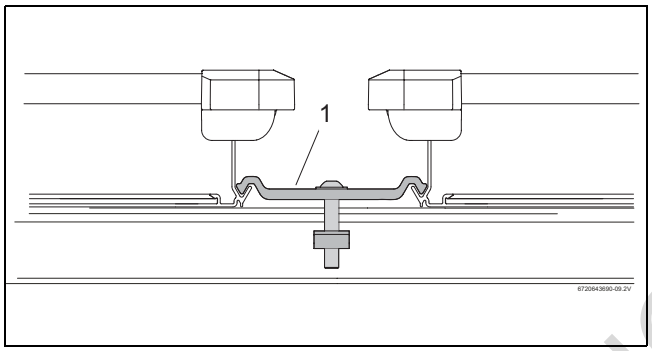

Fig. 39 Double sided collector tensioner between 2 collectors

6.3.5 Installing the single sided collector tensioner on the left

- ▶ Push the single sided collector tensioner (Fig. 40, [1]) into the ends of the profile rail.
- ▶ Push collector tensioner up against the collector frame and secure in place with size 5 spanner.
  The hold-down retainer (Fig. 40, [2]) on the collector tensioner now grips the lower collector edge.

When the screw is tightened, the plastic guide at the predetermined cut-off points breaks away.

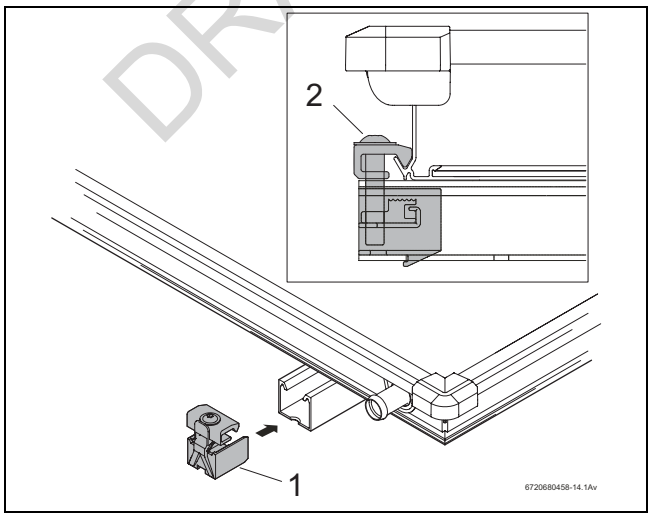

Fig. 40 Single sided collector tensioner on the left

Once all the collectors have been fitted, the remaining single sided collector tensioners can be secured.

7 Installing the cylinder

Observe the following safety instructions and user information.

DANGER: Risk to life through falls and falling parts!
- ▶ Take appropriate action to prevent accidents during all work on roofs.
- ▶ Take precautions against a possible fall while working on roofs.
- ▶ Always wear your own protective clothing and safety equipment.
- ▶ After completing installation, check the retaining straps and the cylinder are securely positioned.

DANGER: Risk of injury due to falling cylinder!
- ▶ During handling and installation, secure the cylinder to prevent it falling or rolling.
- ▶ Fill the cylinder with water immediately after installation.

Use lifting equipment as used by professional roofers for the installation. Never carry the cylinder by yourself.

Before mounting the cylinder on the installation system, equip the cylinder connections with connectors on the ground.
- Solar return
- Cold water
- DHW

Position the cylinder in such a way that the connections are aligned vertically.

7.1 Installing the cylinder in flat roof systems

- ▶ Insert the cylinder [1] into the cylinder straps. Ensure that the solar flow comes to lie on the left and the connections for solar return, cold water and DHW are pointing downwards.
- ▶ Align the cylinder centrally.

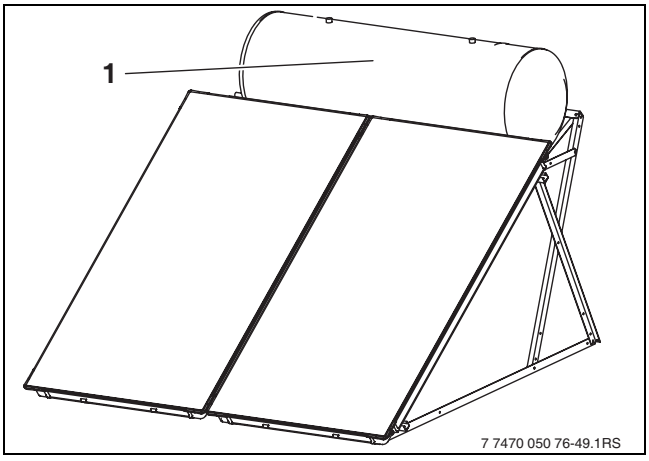

Fig. 41 View of flat roof installation

7.2 Installing the cylinder in rooftop systems

- ▶ Insert the cylinder [1] into the cylinder straps. Ensure that the solar flow comes to lie on the left and the connections for solar return, cold water and DHW are pointing downwards.
- ▶ Align the cylinder centrally.

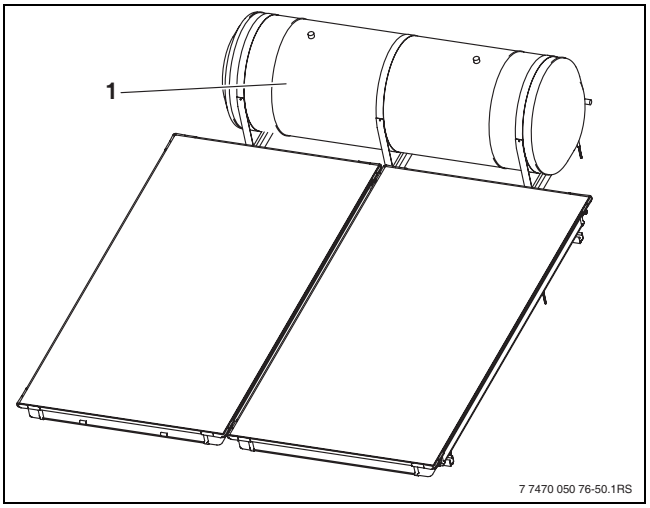

Fig. 42 View of rooftop installation

7.2.1 Securing the cylinder with cylinder straps

- ▶ Position locking bolt [2] at the end of the cylinder strap [1] in the cylinder profile rail [3] and tighten screw.

After being tightened, the screw protrudes from the slot, which provides the cylinder strap with additional protection against slipping out of the profile rail.

NOTICE: System damage due to loose screw connections.
- ▶ Tighten all screw connections after inserting the cylinder.

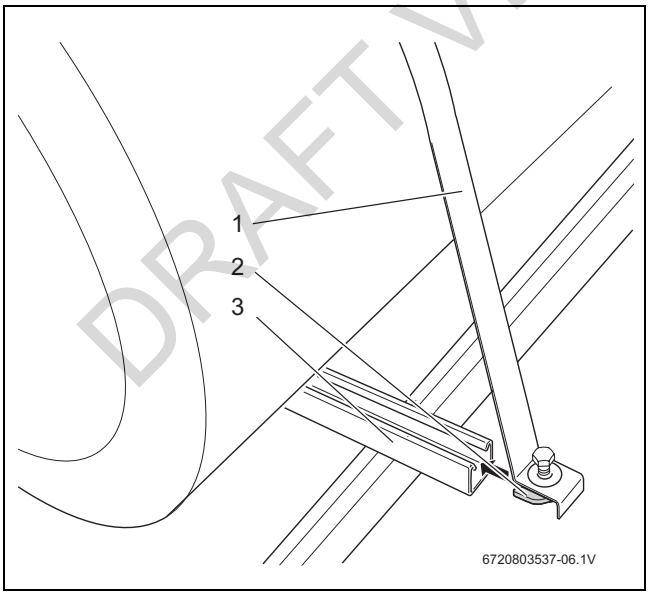

Fig. 43 View of rooftop installation

[1] Cylinder strap
[2] Locking bolt
[3] Cylinder profile rail

8 Installing connection lines

Always use pipe sealing compound that can withstand temperatures up to 150 °C.

NOTICE: System damage due to leaking solar hoses.
- ▶ It is important to ensure the hose clip is positioned correctly before removing the locking ring. Subsequent loosening using pliers can impair resilience.

Remove the locking ring from the hose clip prior to closing or sealing the solar hose.

DANGER: Risk of injury.
Only tighten the locking ring once the hose clip is positioned over the solar hose.

8.1 Connecting the solar return line in a 300 l system

- ▶ Remove plastic caps (transport protection) from the relevant collector connections.
- ▶ Push solar hose [4] directly onto collector connection [9] and secure with hose clip [3].
- ▶ Thread brass adapter [2] onto solar return connection [8] on the cylinder.
- ▶ Thread solar endform [1] onto the brass adapter [2].

NOTICE: Water may escape from loose and/or damaged sealing discs.
- ▶ The maximum torque for this connection is 35 Nm. A higher torque may damage the sealing disc.
- ▶ Do not over tighten.

- ▶ Trim the collector solar hose [4] to the right length and connect to the solar endform [1].
- ▶ Push hose clip onto the solar hose.

► Push the solar hose as far as it will go onto the solar endform [1] and secure with a hose clip.

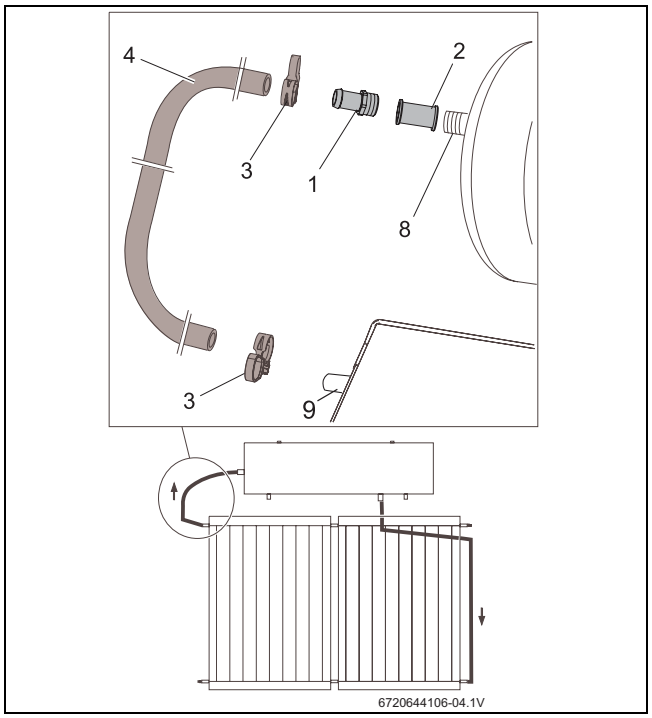

Fig. 44 Installing the flow line

[1] Solar endform
[2] Brass adapter
[3] Hose clip
[4] Solar return line (has to be cut from the solar hose supplied)
[8] Solar return connection
[9] Collector connection

8.2 Connection of the solar flow pipe

► Push union nut [6] over the collector connection.
► Place clamping disc [7] behind the bead on the collector connection and press together.
► Press collector bracket with O-ring [8] onto connection, align and secure with a union nut.
► Push solar hose [5] onto the cylinder bracket and secure with hose clip [3].
► Thread brass elbow [1] onto solar flow connection [4] on the cylinder.

NOTICE: Water may escape from loose and/or damaged sealing discs.
► The maximum torque for this connection is 35 Nm. A higher torque may damage the sealing disc.
► Do not over tighten.

► Thread arrestor valve [2] onto the brass elbow [1].
► Thread brass adapter [10] onto the arrestor valve [2].
► Thread solar endform [11] onto the brass adapter [10].
► Route solar hose [5] from the collector to the solar flow connection [4] and trim to the required length.
► Push a hose clip [3] over the solar hose.

► Push solar hose as far as it will go onto the solar endform [11] and secure with a hose clip.

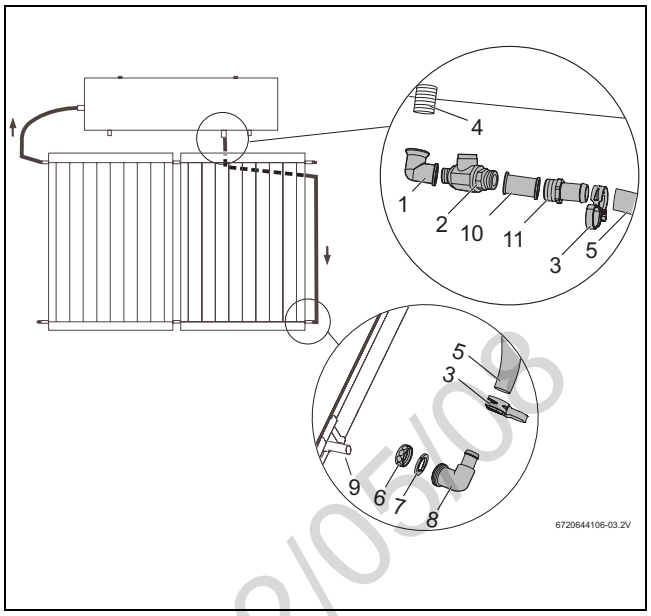

Fig. 45 Installing the return line

[1] Brass elbow
[2] Arrestor valve
[3] Hose clip
[4] Solar flow connection
[5] Solar flow line (has to be cut from the solar hose supplied)
[6] Nut
[7] Clamping disc
[8] Collector bracket
[9] Collector connection
[10] Brass adapter
[11] Solar endform

8.3 Installing the retainer for the return line

The solar hoses must never be kinked as this would restrict the flow.

► The solar hose can be attached to the collector with the retainer.
► Place retainer [1] on collector frame and tighten the screw with a size 5 spanner.
► Secure the solar hose to the retainer.

WARNING: System damage due to damaged solar hoses.
► Route the solar hose in such a way that it does not come into contact with any sharp edges.

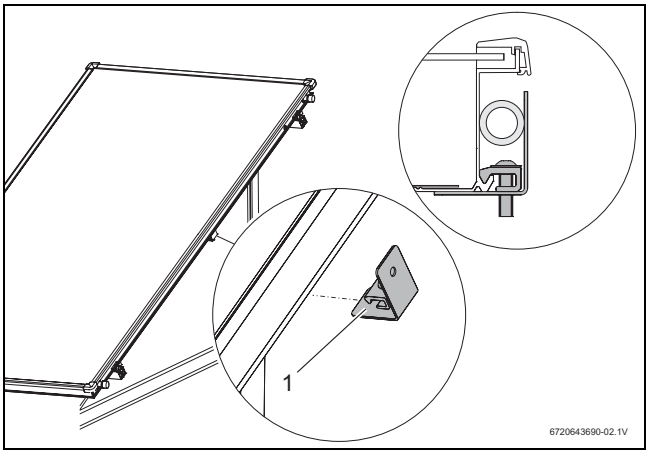

Fig. 46 Securing retainer to the collector frame

[1] Tensioning device

8.4 Connecting DHW lines

NOTICE: System damage due to high pressures.
- The maximum water pressure for this appliance is 500 kPa. If the pressure is in excess of this pressure, a pressure reducing valve must be fitted.

To safeguard the DHW circuit, the PTR valve provided as part of the connection set must first be installed.

Due to differences in temperature and pressure throughout the day, water may escape from the PTR valve (Fig. 47, [1]). Install a drain pipe to ensure the water that escapes is routed away appropriately.

All installations must be carried out in accordance with AS/NZS3500.4, NZS5261, AS/NZS3000 and all local building, plumbing and electrical regulations.
If local regulations or circusnstances require install ECV (Expansion Control Valve), PLV (Pressure Limiting Valve), and FRV (Flow Return Valve).

With rooftop installation, there may not be enough room to install plumbing valves. If this is the case, the valves can be fitted in a more accessible place up to 1 m from the cylinder. It is connected to the cylinder via an extended line.

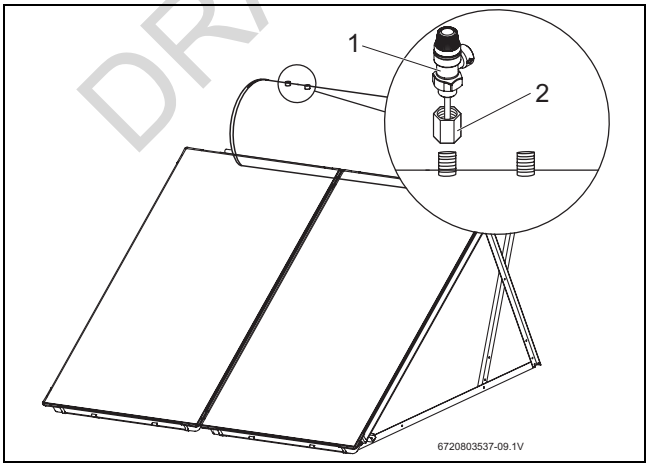

Fig. 47 Installing the PTR valve

[1] PTR valve
[2] PTR Adapter

To install the PTR valve use ½ inch adapter from the delivery package.

WARNING: Ensure correct operation!
- Operate the PTR valve easing gear at least once every six months to ensure correct operation.

Continuous leakage of water from the valve may indicate a problem with the water heater.

Install and connect the DHW lines on site.

- Connect the cold water line [2] and DHW line [1] in accordance with local regulations.

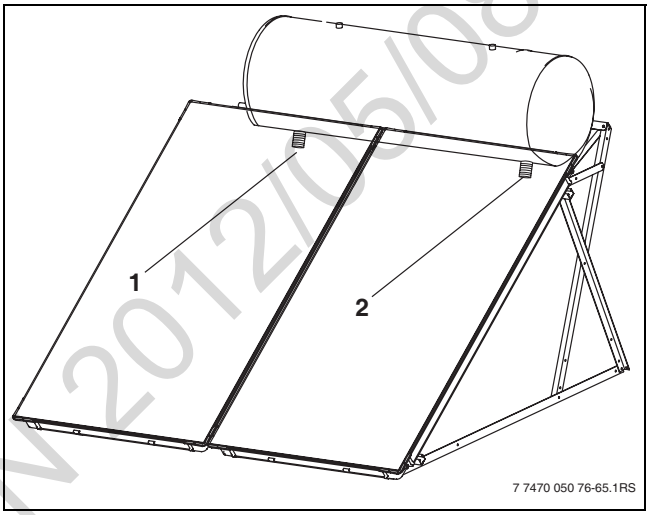

Fig. 48 Connecting DHW lines

[1] DHW connection
[2] Cold water connection

System example

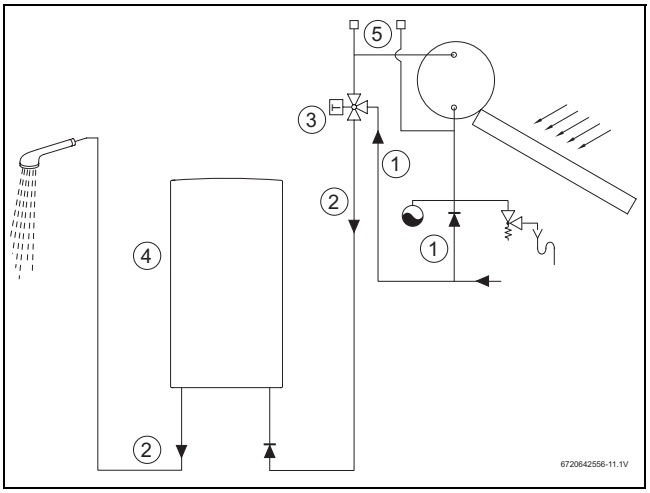

Fig. 49 System example without solar module

[1] Cold water
[2] DHW
[3] Thermostatic valve
[4] Backup appliance
[5] Vacuum breaker

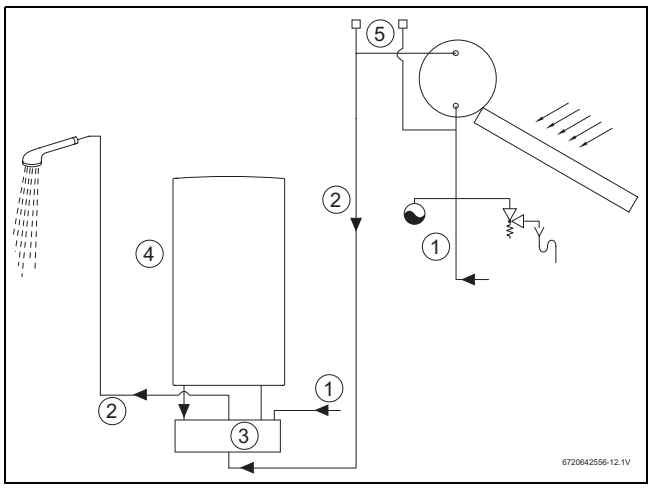

Fig. 50 System example with solar module

[1] Cold water
[2] DHW
[3] Solar module
[4] Backup appliance
[5] Vacuum breaker

8.5 Insulating connection lines

Carry out the insulating work only when all connections are tight.

- ▶ Check the installation set, collector and cylinder are securely positioned.

Insulation of the manifolds in internal or external installations

- When insulating external pipework, use materials that are resistant to UV and high temperatures (150 °C).
- When insulating internal pipework, use materials that are resistant to high temperatures (150 °C).

9 Commissioning

Prior to commissioning, ensure that all connections are tight.

9.1 Filling the DHW circuit

If the water contains particles of dirt or other suspended matter, we recommend installing a filter.

- ▶ Open the non-return valve built into the safety valve.
- ▶ Open a hot water tap until the circuit has been filled.

DANGER: Risk of injury due to falling cylinder.
- ▶ During handling and installation, secure the cylinder to prevent it falling or rolling.

9.2 Filling the solar circuit

Failure to fill the system may cause damage and void your system warranty.

WARNING: Risk of injury through contact with heat transfer medium
- ▶ When handling heat transfer medium, always wear protective gloves and goggles.
- ▶ If heat transfer medium comes into contact with the skin, it can be washed off with water and soap.
- ▶ If, despite protective goggles, heat transfer medium comes into contact with the eyes, rinse eyes thoroughly under running water while holding eyelids wide open. The medium is non-corrosive and biodegradable. A safety datasheet with further information regarding the heat transfer medium is available from the manufacturer on request.

NOTICE:
The heat transfer medium will expand and evaporate while the solar thermal system is being commissioned.
- ▶ Only fill the solar thermal system with heat transfer medium when the sun is not shining on the collector, i.e. when it is very cloudy, early in the morning, in the evening or with the collector covered.

9.2.1 Filling with glycol mixture

The solar thermal system must only be operated with heat transfer medium. The heat transfer medium is premixed and ready to use. It guarantees safe operation down to −14 °C, protects the system from frost damage and ensures high steam safety.

- ▶ Fill the cylinder with heat transfer medium from the top (Fig. 51, [1]) until it begins escaping from the filler.
- ▶ When the system has been filled, seal the filler with the plug provided.

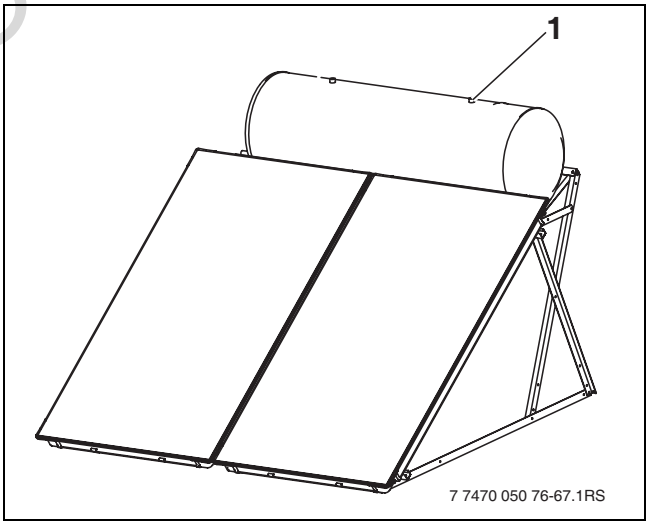

Fig. 51 Filling the system

Only use Bosch heat transfer medium (glycol mixture).

9.2.2 Filling with water

NOTICE: System damage due to low temperatures!
Water can only be used as heat transfer medium, in regions where temperatures are not susceptible to be lower than 5 °C. Damage due to frost will not be covered by warranty.

The solar thermal system must only be operated with heat transfer medium. It guarantees safe operation down to 5 °C.

- ▶ Fill the cylinder with heat transfer medium from the top (Fig. 51, [1]) until it begins escaping from the filler.

▶ When the system has been filled, seal the filler with the plug provided.

Conditions for using water

- In a 2-circuit solar systems the heat transfer medium is in a closed circuit separated from the DHW without contact to the ambient air. Water should not be exchanged.
- The continues refill of the system should be avoided! In cases of pressure losses in the system, the reason have to be detected and resolved. Using of automatic refill systems is forbidden.

If water is used as a heat transfer medium the water that is supplied must conform with Table 13. Water that meets this requirement is normally distilled or deionised and must be purchased. The use of potable water from the towns water supply is not recommended to be used as the heat transfer medium unless it meets the below requirements.

Characteristic	Value
pH	7.5 - 9.0
Saturation Index (LSI)	-1.0 to +0.4 at 65 °C
Total hardness	200 mg/l
Electric conductivity	100 - 1500 µS/m
Chloride	max. 30 mg/l
Sodium	180 mg/l
Sulphate ionic concentration	< 1.5
Iron	1 mg/l

Table 13

Installing the safety valve for the solar circuit

To safeguard the solar circuit, install the safety valve provided as part of the connection set.

▶ Install the 250 kPa solar safety valve (Fig. 52, [1]) at the top of the cylinder.

DANGER: Risk of scalding at the safety valve!
The safety valve opens if the pressure on the solar side exceeds 250 kPa. However, it is not possible to actually route the steam.

▶ Avoid spending too much time near the system while it is operational.

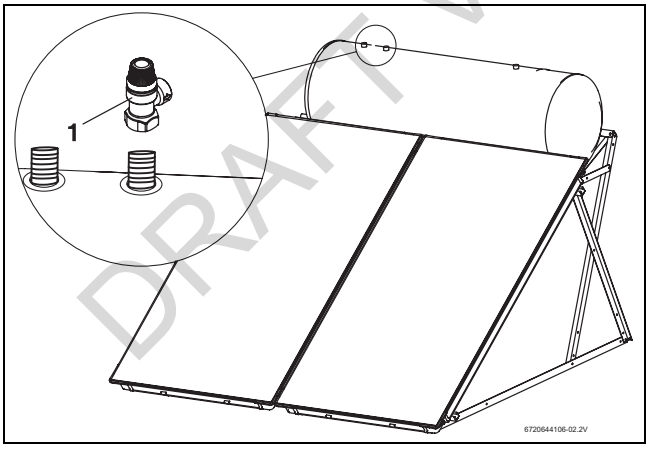

Fig. 52 Installing the solar safety valve

10 Checks following commissioning and maintenance

Only carry out the final insulation work when the points in the checklist have been ticked off.

Checklist

Solar hoses secured with hose clips (locking rings pulled)?	☐
Screws on the single sided and double sided collector tensioners tightened?	☐
Fixation accesories to attach the profile rails to the roof tightened?	☐
Anti-slip brackets installed and clicked into place in the profile rail?	☐
Pressure test carried out and all connections tight? (→ Complete station instructions)	☐

Table 14

11 Maintenance

Installation set and collector

▶ Check all threaded connections and tighten if necessary.

Heat transfer medium

▶ Check and analyse the frost protection level.

As result from the use of the arrestor valve, higher temperatures in the collector can cause the reduction of the heat transfer medium lifetime as well as more frequency in the solar safety valve opening.

We recommend checking the frost protection level annually.

Cylinder

Unless agreed otherwise in writing, the cylinder may only be filled with potable water.

Generally, we recommend having the cylinder checked and cleaned by a authorised contractor at least every two years.

Cleaning intervals should be shorter where unfavourable water quality (hard or very hard water) and/or high temperature stresses prevail.

▶ Remove the handhole cover with the magnesium anode.
▶ Check the magnesium anode and replace if necessary.

The anode should be replaced at least if less than 1/3 of magnesium volume is left. The diameter is not reduced equally / constantly over the length of the anode.

▶ Seal the magnesium anode back into place.
▶ Inspect and clean the cylinder.

NOTICE: Damages to the cylinder!
▶ Do not use hard materials.
▶ Do not use cleansing agents.
▶ Use a high pressure cleaner with clean water.

Tighten all hexagon screws first by hand, then with a spanner by a three quarter turn (equal to the recommended torque of 40 Nm with a torque wrench).

Safety valve

▶ The safety valve (solar circuit and DHW circuit) function must be checked regularly.

12 Environmental protection/Recycling

Environmental protection is one of the fundamental company policies of the Bosch Group.
Quality of performance, efficiency and environmental protection are goals of equal importance to us. We comply with all environmental laws and regulations.
In order to protect the environment, we use economically advanced technologies and the best materials.

Packaging
Where packaging is concerned, we participate in country-specific recycling processes that ensure optimum recycling.
All packaging materials are environmentally compatible and can be reused.

Used appliances
Used appliances contain materials that should be recycled.
The components are easy to separate and the types of plastic are identified. This allows the various assemblies to be appropriately sorted for recycling or disposal.

13 Potable water quality

All Bosch water heating appliances are constructed from high quality materials and components and all are certified for compliance with relevant parts of Australian and New Zealand gas, electrical and water standards.

Whilst Bosch water heaters are warranted against defects, the warranty is conditional upon correct installation and use, in accordance with detailed instructions provided with the heater. In the case of the water supplied to the heater, it is important that the water quality be of acceptable standard.

The water quality limits/parameters listed in water quality table are considered acceptable and generally, Australian and New Zealand suburban water supplies fall within these limits/parameters.

In areas of Australia and New Zealand where water may be supplied, either fully or partly, from bores, artesian wells or similar, one or more of the important limits may well be exceeded and the heater could, therefore, be at risk of failure.

Where uncertainty exists concerning water quality, intending appliance users should seek a water analysis from the water supplying authority and in cases where it is established that the water supply does not meet the quality requirements of the water quality table, the Bosch warranty would not apply.

Water quality table
Maximum levels

Characteristic	Value
pH	6.5 - 9.0
Saturation Index (LSI)	+0.4 to -1.0 at 65 °C
Total hardness	200 mg/l
Chloride	250 mg/l
Sodium	180 mg/l
Iron	1 mg/l

Table 15

14 Warranty details

Robert Bosch (Australia) Pty Ltd (Bosch)
Manufacturer's Warranty
(Applicable for purchases from 1 January 2012)
TSS and indirect solar

All Bosch hot water units are carefully checked, tested and subject to stringent quality controls.

The warranty is valid for the stated period subject to the maintenance plan here below during this period, as long as the following service procedures take place each two years (after 2, 4, 6 years):

- Clean the glass of the collector
- Visual check of the unit
- Replacement of anode
- Electrical resistance check
- Clean the internal cylinder from scales
- Clean the closed circuit and replace the solar liquid with released fluid in correct concentration
- Replace gasket flange

1. Warranty

Bosch offers, at its option, to repair or exchange this Bosch hot water unit or the relevant part listed in clause 2 below at no charge, if it becomes faulty or defective in manufacture or materials during the warranty period also stated in clause 2. This warranty is offered in addition to any other rights or remedies held by a consumer at law.

2. Warranty periods & coverage

- Cylinder; 6 (six) years part, 1 (one) year labour
- Solar Collectors;8 (eight) years part, 1(one) year labour
- All other components;2 (two) years part, 1 (one) year labour
- Solar products installed in commercial applications; 12 months part and labour

All warranty periods commence on the date of purchase of the hot water unit by the end-user. However, where the date of purchase by the end-user is more than 24 months after the date of manufacture, all warranty periods will automatically commence 24 months after the date of manufacture.

3. Warranty exclusions

This warranty is VOID if any damage to or failure of the hot water unit is caused wholly or partly by:

- (a) faulty installation.
- (b) neglect, misuse, accidental or non-accidental damage, failure to follow instructions.
- (c) use of the unit for purposes other than which it was designed or approved.
- (d) unauthorised repairs or alterations to the unit without Bosch's consent.
- (e) use of unauthorised parts and accessories without Bosch's consent.
- (f) use of non-potable water or bore water in the hot water unit (see product instructions for further details).
- (g) continued use after a fault becomes known or apparent.

This warranty DOES NOT include:

- (a) costs of consumables or accessories.
- (b) wear and tear, normal or scheduled maintenance.
- (c) to the extent permitted by law, any damage to property, personal injury, direct or indirect loss, consequential losses or other expenses.
- (d) changes in the condition or operational qualities of the hot water unit due to incorrect storage or mounting or due to climatic, environmental or other influences.
- (e) in respect of surface coating and glass damage.

NOTE: Any service call costs incurred by the owner or user of the hot water unit for any matter not covered by the terms of this warranty will not be reimbursed by Bosch, even if those costs are incurred during the warranty period. If the hot water unit is located outside the usual operating area of a Bosch service agent, the agent's travel, freight or similar costs are not covered by this warranty and must be paid by the owner or user of the hot water unit.

4. Warranty conditions

- (a) Proof of purchase may be required.
- (b) The hot water unit must be installed by an authorised and licensed installer.
- (c) Proof may be required of the date of installation and correct commissioning of the hot water unit has been carried out to Bosch's satisfaction (such as a certificate of compliance).
- (d) Repair or replacement of the hot water unit or any parts under this warranty does not lengthen or renew the warranty period.
- (e) This warranty is not transferable and is only offered to the original purchaser of the hot water unit.
- (f) No employee or agent of Bosch is authorised to amend the terms of this warranty.
- (g) This warranty only applies to Bosch hot water units purchased from an authorised reseller and installed in Australia or New Zealand.
- (g) To the extent that any condition or warranty implied by law is excludable, such condition or warranty is excluded.

5. How to lodge a warranty claim and warranty procedure

- (a) Warranty claims must be made with the Bosch Customer Contact Centre (Australia: ph 1300 307 037; New Zealand: ph 0800 543 352). Please be ready to provide the model and serial numbers, date of installation, purchase details and a full description of the problem. Warranty claims must be made before the end of the warranty period.
- (b) All warranty service calls must conducted by an authorised Bosch service agent.
- (c) Invoices for attendance and repair of a hot water unit by third parties not authorised by Bosch will not be accepted for payment by Bosch.

6. Privacy Act 1988 (Cth)

A customer's personal information collected during warranty claims may be used for the provision of customer support, for the provision of information about products and services and for other marketing activities undertaken by Bosch and its Bosch Service Agents who are authorised to carry out warranty repairs on behalf of Bosch (Purpose). Bosch is committed to protecting the privacy of its customers' personal information. It will act in compliance with the National Privacy Principles and Privacy Act 1988 (Cth). Bosch will not forward customers' personal information to third parties other than for the Purpose. A customer can object at any time to the use of their personal information for the Purpose. Bosch will cease to use a customer's personal information accordingly if an objection is made.

7. Bosch contact details

If you have any questions about this warranty or to lodge a warranty claim, please contact:

Robert Bosch (Australia) Pty Ltd
1555 Centre Road, Clayton, Victoria 3168
Tel: Australia: 1300 307 037
Tel: New Zealand: 0800 543 352

IMPORTANT NOTE FOR AUSTRALIAN CONSUMERS

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Notes

Australia
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