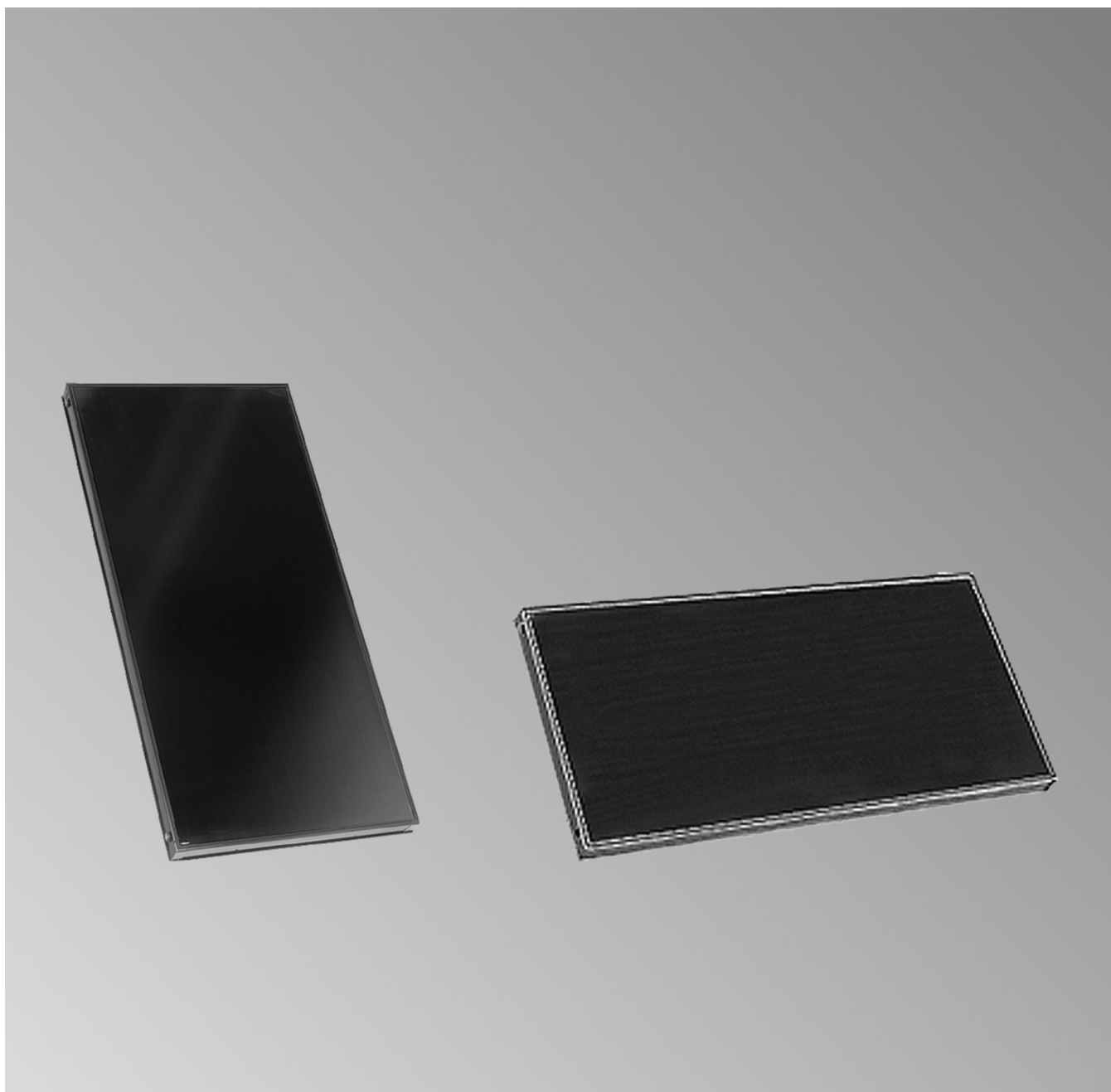


Vitosol-F/-FM

For applicability, see the last page



VITOSOL-F/-FM



Safety instructions

Safety instructions



Please follow these safety instructions closely to prevent accidents and material losses.

Safety instructions explained



Please note

This symbol warns against the risk of material losses and environmental pollution.

Note

Details identified by the word "Note" contain additional information.

Target group

These instructions are exclusively intended for authorised contractors.

- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations to be observed

- National installation regulations
- Statutory regulations for the prevention of accidents
- Statutory regulations for the protection of the environment
- Codes of Practice of the relevant trade associations
- All relevant safety regulations as defined by DIN, EN, DVGW, VDE and locally applicable standards
 - Ⓐ ÖNORM, EN and ÖVE
 - ⒸH SEV, SUVA, SVTI, SWKI and SVGW

Working on the system

- Isolate the system from the power supply (e.g. by removing the separate fuse or by means of a mains isolator) and check that it is no longer 'live'.
- Safeguard the system against reconnection.



Please note

Electronic assemblies can be damaged by electrostatic discharge. Prior to commencing work, touch earthed objects such as heating or water pipes to discharge static loads.

Repair work



Please note

Repairing components that fulfil a safety function can compromise the safe operation of your system. Replace faulty components with genuine Viessmann spare parts.

Auxiliary components, spare and wearing parts



Please note










Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty.

For replacements, use only original spare parts supplied or approved by Viessmann.







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Symbols

Symbol	Meaning
	Reference to other document containing further information
	Step in a diagram: The numbers correspond to the order in which the steps are carried out.
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	<ul style="list-style-type: none"> Component must audibly click into place. or Acoustic signal
	<ul style="list-style-type: none"> Fit new component. or In conjunction with a tool: Clean the surface.
	Dispose of component correctly.
	Dispose of component at a suitable collection point. Do not dispose of component in domestic waste.

The steps in connection with commissioning, inspection and maintenance are found in the "Commissioning, inspection and maintenance" section and identified as follows:

Symbol	Meaning
	Steps required during commissioning
	Not required during commissioning
	Steps required during inspection
	Not required during inspection
	Steps required during maintenance
	Not required during maintenance

Intended use

The collectors provide central heating backup and solar backup for DHW heating. They are only intended to be installed and operated in sealed systems that comply with EN 12976 and EN 12977, with due attention paid to the associated installation, service and operating instructions. Only operate the collectors with heat transfer medium approved by the manufacturer.

Intended use presupposes that a fixed installation in conjunction with permissible, system-specific components has been carried out.

Commercial or industrial usage for a purpose other than heating a building or DHW shall be deemed inappropriate.

Any usage beyond this must be approved by the manufacturer in each individual case.

Incorrect usage of the collectors or the installation system or incorrect operation is prohibited (e.g. the collectors being opened by the system user, failure to observe the installation instructions). Failure to observe these instructions can change functions, endanger life and limb of the user or third parties and will result in an exclusion of liability. Incorrect usage also applies if components in the system are modified from their intended use (e.g. through direct DHW heating in the collector).

Adhere to statutory regulations, especially concerning the hygiene of potable water.

Product information

Vitosol-F/-FM are high performance flat-plate collectors.

Universal application, for flat and pitched roofs, or free-standing.

For heating DHW, heating water and swimming pool water via a heat exchanger.



Checking pressure conditions, adjusting the expansion vessel pre-charge pressure if necessary

This process **cannot** be carried out while the solar thermal system is in operation.

1. Cover the collectors with tarpaulins.
2. Determine the charge pressure:
 - Solar thermal system pressure = system pressure
 - System pressure + 0.1 bar pressure reserve for venting
3. Determine the pre-charge pressure of the expansion vessel:
 - Value for system pressure minus 0.3 bar for hydraulic seal
4. Check the pre-charge pressure and adjust if required.
 - The **solar service case** (accessories) contains a pressure gauge.
5. Enter the values in the table below (for subsequent inspection and maintenance work).

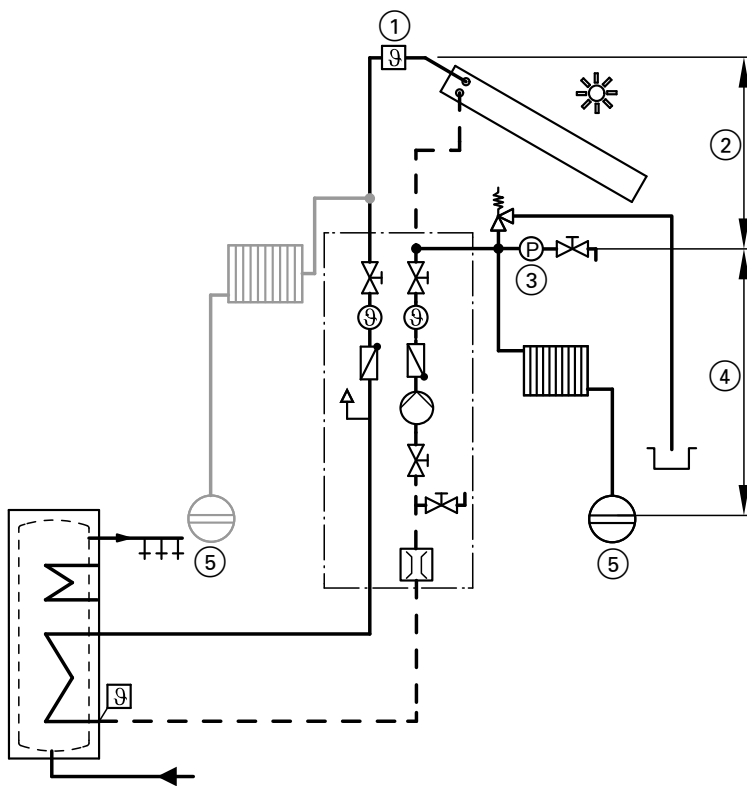


Fig. 1



Checking pressure conditions, adjusting the... (cont.)

The following values result at 10 m static head (example)

		Vitosol-FM	Vitosol-F
①	Solar thermal system pressure	3.0 bar	1.0 bar
②	Supplement, static head 0.1 bar/m	1.0 bar	1.0 bar
③	System pressure (pressure gauge)	4.0 bar	2.0 bar
	Pressure reserve for venting	+ 0.1 bar	+ 0.1 bar
	Charge pressure	4.1 bar	2.1 bar
	System pressure (pressure gauge) after venting	4.0 bar	2.0 bar
	Deduction for hydraulic seal	- 0.3 bar	- 0.3 bar
④	Supplement per m of height difference between pressure gauge and expansion vessel	0.1 bar x 1 m = 0.1 bar	0.1 bar x 1 m = 0.1 bar
⑤	Pre-charge pressure, expansion vessel	3.8 bar	1.8 bar
	Note <i>Record the "pre-charge pressure" on the expansion vessel.</i>		



Checking the function of the safety equipment

Check the safety valve:

- Response pressure
- Correct installation, with discharge pipe



Checking the electrical connections

Check the tightness of the electrical plug-in connectors and cable grommets; check cables for damage.



Filling, flushing and checking the solar thermal system for leaks

! Please note
Filling and commissioning the solar thermal system without first safeguarding the heat transfer results in thermal stress.
Cover the collectors and keep them covered until the heat transfer has been regulated.

- Accessories for flushing and filling the solar thermal system:
 - **Flushing and filling facility** (filling trolley and charging station)
These contain a high speed pump with a high pump rate, a filter and a container for heat transfer medium.
 - **Fill valve set**, consisting of shut-off valve, drain valve and fill valve.
- Flush the solar thermal system with heat transfer medium. Otherwise there is a risk that residual water from flushing may become mixed with the heat transfer medium. This would alter the properties of the heat transfer medium.
- Flush brazed copper pipes very thoroughly. Any residual scale may compromise the operation of the solar thermal system.



Filling, flushing and checking the solar... (cont.)

The following description is in conjunction with Solar-Divicon (see separate installation and service instructions)

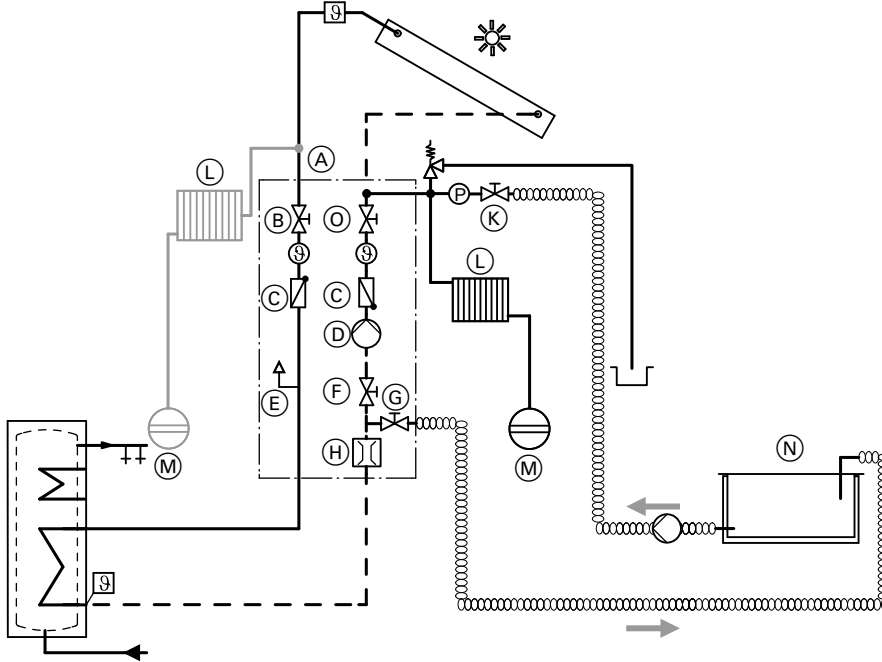


Fig. 2

- | | |
|---|-----------------------------------|
| (A) Solar-Divicon | (G) Drain valve |
| (B) Shut-off valve (flow) | (H) Flow indicator |
| (C) Non-return valves | (K) Fill valve |
| (D) Solar circuit pump | (L) Stagnation heat sink |
| (E) Air separator | (M) Expansion vessel |
| (F) Shut-off valve (adjusting screw above flow indicator (H)) | (N) Flushing and filling facility |
| | (O) Shut-off valve (return) |

1. Open shut-off valve (flow) (B): Turn the ball valve (thermometer) clockwise through 45°.
2. Close shut-off valve (return) (O): Turn the ball valve (thermometer) clockwise through 90°.
3. Close shut-off valve (F): Using a screwdriver, turn the slot on the adjusting screw to position "S".
4. Connect hoses of flushing and filling facility (N) to drain valve (G) and fill valve (K).
5. Fill the container of flushing and filling facility (N) with heat transfer medium.
6. Open drain valve (G) and fill valve (K).
7. Start the fill pump of flushing and filling facility (N).
8. Observe the fluid level in the container and top up with heat transfer medium if necessary to prevent any air entering the solar circuit. Leave the fill pump of flushing and filling facility (N) running until no more air bubbles rise to the top of the container (at least 20 to 30 min).

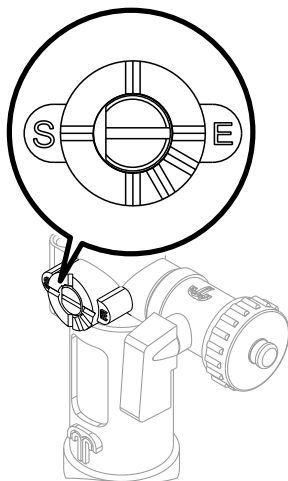


Fig. 3

Note
Briefly open shut-off valve (F) towards the end of the flushing process: Using a screwdriver, turn the slot on the adjusting screw above the flow indicator to the vertical position. Any air that remains in the return is eliminated.

4. Connect hoses of flushing and filling facility (N) to drain valve (G) and fill valve (K).





Filling, flushing and checking the solar... (cont.)

9. Close drain valve (G). Leave the fill pump of flushing and filling facility (N) running until the required charge pressure is reached.

Notes on residual ventilation

Even after thorough ventilation, some dissolved air will still remain in the heat transfer medium. This will be released as the temperature rises, and will be discharged via air separator (E).

10. Close fill valve (K); stop the fill pump of flushing and filling facility (N).
The pressure must not drop for at least 30 minutes.

11. Open shut-off valve (F): Using a screwdriver, turn the slot on the adjusting screw above the flow indicator to the vertical position.

12. Turn shut-off valves (B) and (C) to their operating positions (0°).

13. Set the circulation pump to manual mode. Open the air vent valve on air separator (E). Leave the circulation pump running **until the float in the flow indicator** holds a constant position while the pump is running.

Note

If there is air in the system, the float will oscillate.



Determining the flow rate and adjusting it if required

Check the flow rate at the top edge of the float. If no flow rate is indicated, the non-return valve in the return does not open automatically; the flow path is blocked.

Open shut-off valve (return) (C) (see diagram on page 9): turn ball valve (thermometer) 45° clockwise. This opens a bypass around the non-return valve. If a flow rate is now indicated, the flow path is blocked. Perform a test flush to cause the non-return valve to open (see page 11).

Note

With a Solar-Divicon, make the adjustment via shut-off valve (F) (adjusting screw above the flow rate indicator).

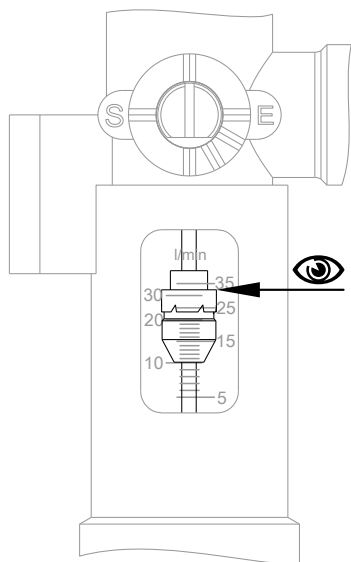


Fig. 4

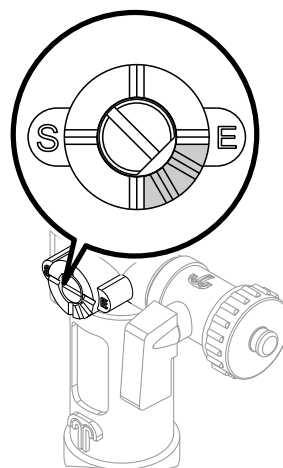


Fig. 5

In conjunction with multi stage circulation pumps, set the required flow rate via the output stage (see the following tables for approximate set values).



Determining the flow rate and adjusting it if... (cont.)

High-flow operation, specific flow rate 40 l/(h·m ²)		Low-flow operation, specific flow rate 25 l/(h·m ²)	
Number of collectors	Flow rate in l/min	Number of collectors	Flow rate in l/min
2	3	6	5.5
3	4.5	7	6.5
4	6	8	7.5
5	7.5	9	8.5
6	9.5	10	9.5
7	10.5	11	10.5
8	12.5	12	11.5
9	14	13	12.5
10	15.5	14	13.5
11	17	15	14
12	18.5	16	15
13	20	18	17
14	21.5	20	19
15	23.5		



Performing a test flush

For components, see diagram on page 9

1. Connect the pressure hose (return hose) of flushing and filling facility (N) to drain valve (G).
2. Connect the fill hose of flushing and filling facility (N) to fill valve (K).
3. Close shut-off valve (flow) (B): Turn the ball valve (thermometer) clockwise through 90°.
4. Open shut-off valve (return) (C): Turn the ball valve (thermometer) to the 0° vertical position.
5. Open drain valve (G) and fill valve (K).
6. Start the fill pump of flushing and filling facility (N). A pressure greater than 1 bar will open the non-return valve.



Commissioning the system

Close the air vent valve.



Observe operating instructions of installed components.

Note

With a Solar-Divicon, do this at air separator (E).



Checking the switching function of the solar control unit



Solar control unit installation and service instructions




Checking and replacing the heat transfer medium if required

- The heat transfer medium provided is a liquid based on 1,2-propylene glycol with a pH value of 9.0 to 10.5 and frost protection down to:
 - -28 °C, Tyfocor LS
 - -12 °C, Mediterráneo
 - -47 °C, Arctic

- Monitor the operating condition of the medium as part of the annual service of the solar thermal system by the heating contractor.

- The pH value and frost protection temperature can be checked with the **solar service case** (accessories).

 Solar service case operating instructions

In some cases the manufacturer of the heat transfer medium can carry out a laboratory test of the medium, subject to arrangement.

- Manufacturer:
TYFOROP CHEMIE GmbH
Anton-Rée-Weg 7
D - 20537 Hamburg
Email: info@tyfo.de
Internet: www.tyfo.de

1. Check the pH value of the heat transfer medium using the pH strip in the solar service case. The colour of the pH strip indicates the approximate value. If the value is below 7.5, replace the heat transfer medium.

Information on replacing the heat transfer medium

The heat transfer medium can be mixed with Tyfocor G-LS.

Never mix with water or third party media.

2. Check the frost protection temperature of the heat transfer medium with an antifreeze tester or the manual refractometer in the solar service case.

Ordering parts

The following details are required when ordering parts:

- Serial no. (see type plate on the collector)
- Position number of the part



Parts list

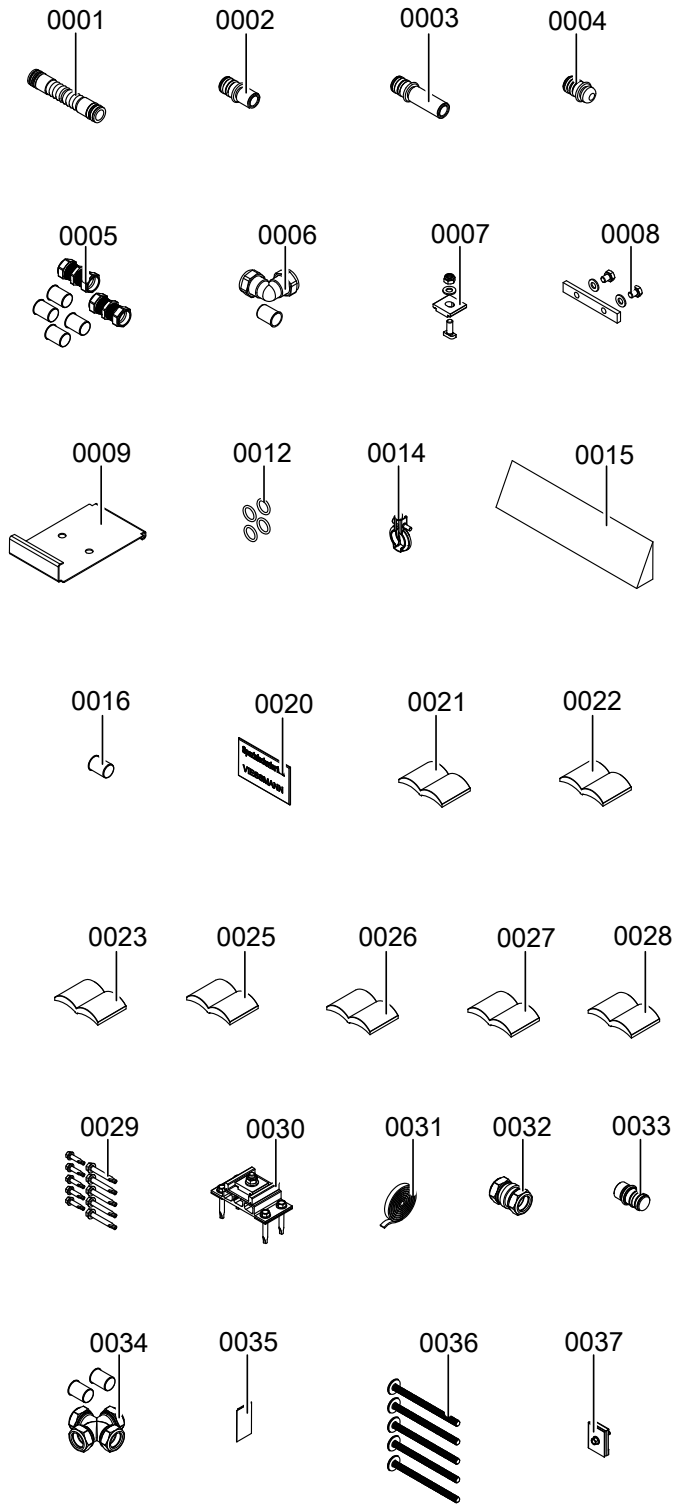


Fig. 6

Parts list (cont.)

Pos.	Part
0001	Connection pipe
0002	Connection pipe (short)
0003	Connection pipe (long)
0004	Plug
0005	Locking ring fitting with support sleeves
0006	Elbow fitting with support sleeves
0007	Clamping bracket, complete
0008	Connecting part
0009	Mounting plate
0012	O-rings
0014	Profile clip
0015	Diagonal sealing strip
0016	Support sleeve
0020	Special valve grease
0021	Dismantling instructions
0022	Operating instructions
0023	Service instructions
0025	Installation instructions, above roof installation with roof hooks
0026	Installation instructions, above roof installation with rafter anchors
0027	Installation instructions for flat roofs or freestanding installation, variable angle of inclination
0028	Installation instructions for flat roofs or freestanding installation, fixed angle of inclination
0029	Sealing screws (5.5 x 25/6.3 x 45)
0030	Collector retainer with screws
0031	Sealing material
0032	Bit holder
0033	Air vent plug
0034	Cross union with support sleeves
0035	Repair panel
0036	Wood screws, 8 x 120 (5 pce)
0037	Fixing clamp

Parts lists

Parts list (cont.)

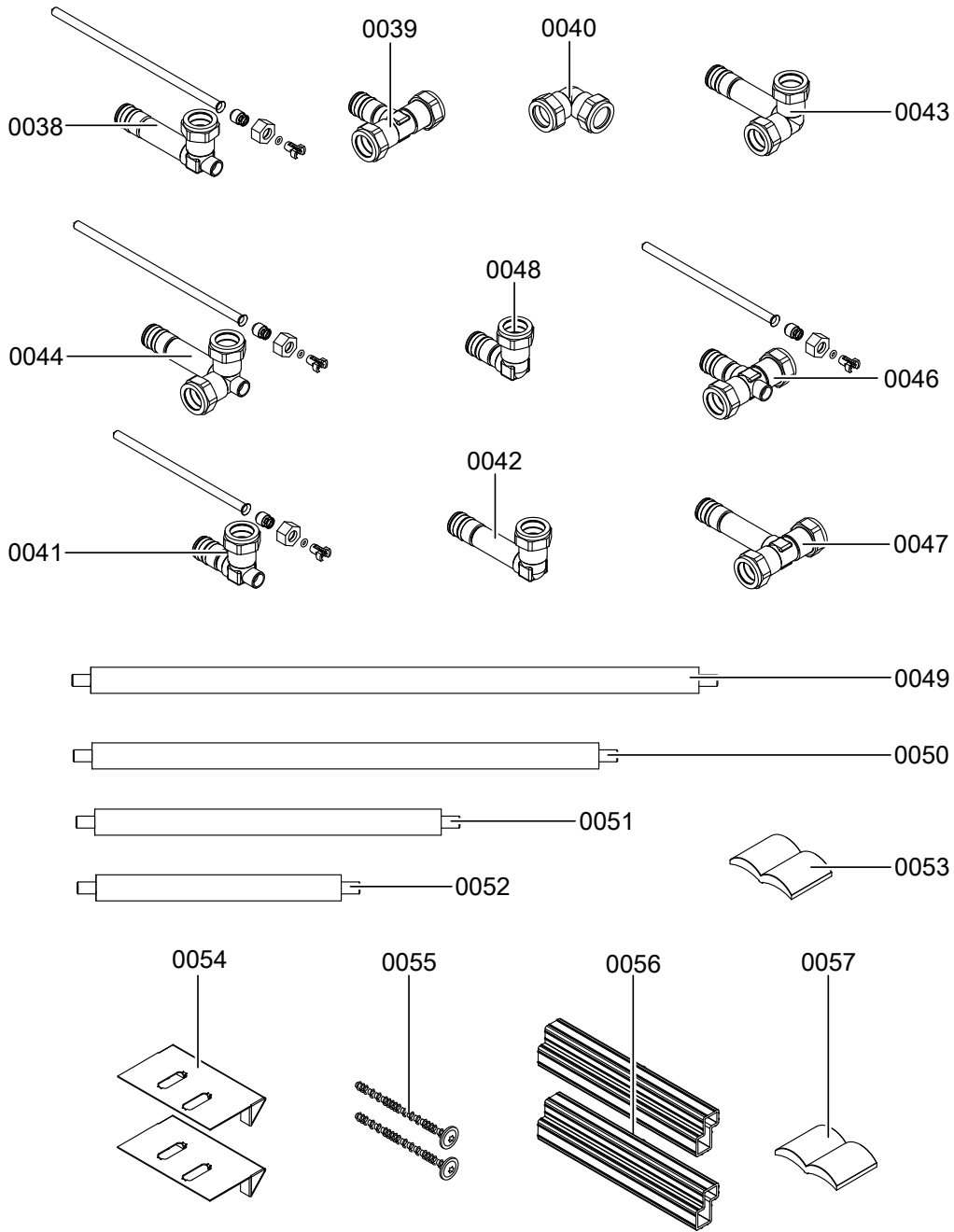


Fig. 7

Parts list (cont.)

Pos.	Part
0038	90° elbow and sensor well (long)
0039	Tee (short connection pipe)
0040	Elbow fitting, 2 x 22 mm
0041	90° elbow and sensor well (short)
0042	90° elbow (long connection pipe)
0043	Corner tee
0044	Corner tee and sensor well (long)
0046	Tee and sensor well (short)
0047	Tee (long connection pipe)
0048	90° elbow (short connection pipe)
0049	Corrugated pipe with thermal insulation (type SV)
0050	Corrugated pipe with thermal insulation (type SV)
0051	Corrugated pipe with thermal insulation (type SH)
0052	Corrugated pipe with thermal insulation (type SH)
0053	Installation instructions for pitched roofs, roof integration
0054	Support brackets for rafter hooks
0055	Wood screws, 8 x 120 (2 pce)
0056	Rail connectors
0057	Installation instructions, above roof installation with rafter hooks



Scope of inspection

Scope of inspection

The solar thermal system should be inspected once a year to ensure operational reliability.

In addition to this, a visual inspection of all essential components (e.g. collectors and pipework) is recommended every 3 to 5 years.

- Vent the solar thermal system.
- Compare system operating pressure with the set value. If the values are different, check the expansion vessel.
- Check the heat transfer medium.
- Start circulation pumps manually if necessary (listen for noises).
- Compare flow rate with set value.
- Check thermostatic mixing valve (if installed).
- Check plausibility of the solar parameters subject to the current insolation level (e.g. flow and return temperatures at the thermometers; collector and cylinder temperatures at the solar control unit).

Only check the safety valve if there are visible signs of it being open (e.g. deposits, drips).

Vitosol 100-F

Type		SV1A/SH1A	SV1B/SH1B
Absorber area	m ²	2.32	2.32
Aperture area	m ²	2.33	2.33
Thermal capacity c	kJ/(m ² ·K)	4.7	4.5
Collector efficiency η_{col} at a temperature differential of 40 K		57.6	57
Max. stagnation temperature	°C	200	196
Permiss. operating pressure	bar	6	6
Heat transfer medium content	l	1.48/2.33	1.48/2.33

Vitosol 100-FM

Type		SV1F	SH1F
Absorber area	m ²	2.32	2.32
Aperture area	m ²	2.33	2.33
Thermal capacity c	kJ/(m ² ·K)	6	6
Collector efficiency η_{col} at a temperature differential of 40 K		64.7	62.9
Max. stagnation temperature	°C	145	145
Permiss. operating pressure	bar	6	6
Heat transfer medium content	l	1.83	2.67

Vitosol 200-F/-FM

Type		Vitosol 200-F		Vitosol 200-FM
		SV2C/SH2C	SV2D	SV2F/SH2F
Absorber area	m ²	2.32	2.32	2.32
Aperture area	m ²	2.33	2.33	2.33
Thermal capacity c	kJ/(m ² ·K)	5.0	4.6	5
Collector efficiency η_{col} at a temperature differential of 40 K		62.4/63.4	62.5	63.4/61.8
Max. stagnation temperature	°C	186	185	145
Permiss. operating pressure	bar	6	6	6
Heat transfer medium content	l	1.83/2.48	1.83	1.83/2.48

Vitosol 300-F

Type		SV3C/SH3C
Absorber area	m ²	2.32
Aperture area	m ²	2.33
Thermal capacity c	kJ/(m ² ·K)	5.0
Collector efficiency η_{col} at a temperature differential of 40 K		69.9/70.7
Max. stagnation temperature	°C	206

Specification

Vitosol 300-F (cont.)

Type	SV3C/SH3C	
Permiss. operating pressure	bar	6
Heat transfer medium content	l	2.04/2.65

Final decommissioning and disposal

Viessmann products can be recycled. Components and substances from the system are not part of ordinary household waste.

For decommissioning the system, isolate the system from the power supply and allow components to cool down where appropriate.

All components must be disposed of correctly.

Declaration of conformity


Vitosol-F/-FM

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, declare as sole responsible body that the named product complies with the provisions of the following directives and regulations:

2014/35/EU	Low Voltage Directive
2014/30/EU	EMC Directive
2014/68/EU	Pressure Equipment Directive
2009/125/EC	Ecodesign Directive
813/2013	EU Regulation "Energy Efficiency Requirements"

Applied standards:

EN 1991-1-1: 2002 + AC: 2009
EN 1991-1-3: 2003
EN 04/01/1991: 2005
EN 12975-1: 2006 + A1: 2010 or ISO 9806: 2013 to Solar-KEYMARK

In accordance with the listed directives, this product is designated with .

Details according to the Pressure Equipment Directive:

- Heated pressure vessel
 - Class I according to appendix II, diagram 5
 - Module A according to appendix III
- The pressure vessel was tested without fitted equipment (safety equipment).

The pressure vessel must be equipped in accordance with current national regulations prior to installation and commissioning.

For the energy assessment of heating and ventilation equipment to DIN V 4701-10 as required by the EnEV, when determining system values for the product **Vitosol**, the product characteristics calculated as part of output testing can be used (see specification table).

Allendorf, 1 August 2016

Viessmann Werke GmbH & Co. KG



Authorised signatory Manfred Sommer

Applicability

Serial No.:

7374163	7374164	7417763	7417764
7417765	7417766	7514374	7537738
7537739	7537740	7537741	7538888
7561684	7571217	7571556	7571557
7637796	7637797	7637798	7637799
7637804	7637900		

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