

# Installation, Start-Up and Service Instructions



## Solar-Divicon, Part No. 7134 799, 7419 992

Please file in Service Binder

### 1 Safety and Installation Requirements

Please ensure that these instructions are read and understood before commencing installation. Failure to comply with the instructions listed below can cause product/property damage, severe personal injury, and or loss of life.

**Working on the equipment:**

The installation, adjustment, service, and maintenance of this product must be done by a **licensed professional heating contractor** who is qualified and experienced in the installation, service and maintenance of solar systems. There are no user serviceable parts on the pump station, or control.

Ensure **main power supply** to equipment, the heating system, and all external controls has been **deactivated**. Close main oil or gas supply valve. Take precautions in both instances to avoid accidental activation of power during service work.

It is not permitted to carry out repairs on parts that fulfil a safety function. For replacements, use only original spare parts from Viessmann or those which are approved by Viessmann.



*Ensure that the installation literature of other components is referenced.*

**! WARNING**

**Check system pressure frequently. Excessive system pressure may result in damage to the equipment, personal injuries or loss of life.**

### 2 Technical data

Solar-Divicon		Model DN 20	Model DN 25
Circulation pump (Model: Wilo)		STAR S 16 U 15	STAR S 30 U 25
Rated voltage	V	AC 115	AC 115
Maximum flow rate	GPM	13	27
Maximum head	ft.	20	29
Flow meter (setting range)	USG/min	0.5 to 5	1 to 10
	ltr/min	1 to 20	5 to 40
Safety relief valve	psig	87	87
	bar	6	6
Max. operating temperature	°F	248	248
	°C	120	120
Max. operating pressure	psig	87	87
	bar	6	6
Connections (Compression fittings Ø)			
Solar circuit	inches	½	¾
Solar expansion tank	inches	¾	¾
Safety relief valve	inches	¾	¾

Brass flow check valves: Located in each supply and return lines. Open manually by turning thermometer handles.

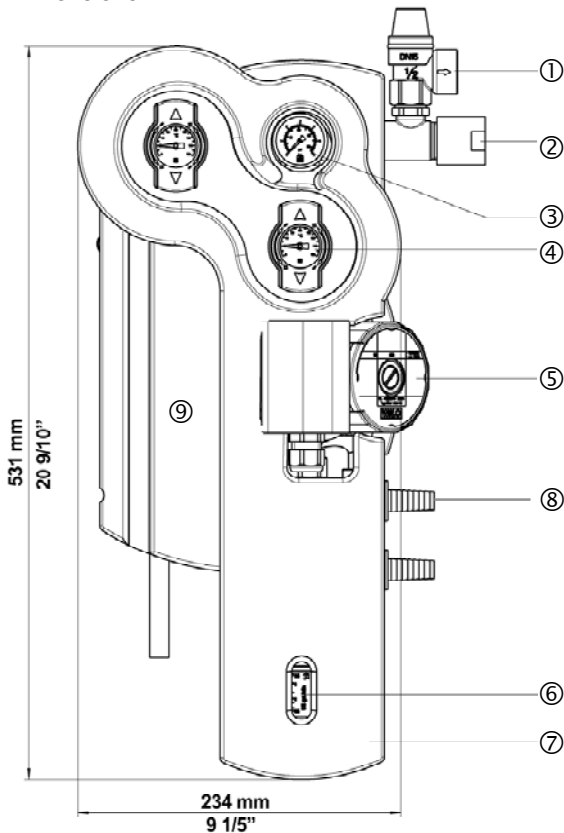
Material construction:

- Flat gaskets: Klingerit – Max 392°F, 200°C
- O-rings: VITON ./ EPDM - Max 356°F, 180°C
- Flow check valves: Brass - Max 356°F, 180°C
- Insulation: EPP, Max 248°F, 120°C, 356°F, 180°C for short period

## 2 Technical Data

### 3 Notes on Installation

#### Dimensions



- ① Pressure relief valve, 87 psi/6 bar
- ② Expansion tank connection (NPT adaptor supplied)
- ③ Pressure gage, 0-87 psi / 0-6 bar
- ④ Temperature gage c/w integrated shut-off valves and flow check valves
- ⑤ 3 speed pump
- ⑥ Flow meter
- ⑦ Removable insulation cover
- ⑧ System flush and fill manifold
- ⑨ Air separator (located under insulation)

### 3 Notes on Installation

- The distance between the Solar Divicon and the collectors must be sufficient because of the possible high temperatures near the collectors. If necessary install a precooling tank to ensure fittings do not overheat.

#### IMPORTANT

Always install Solar-Divicon lower than collector panels to avoid penetration of steam into the expansion tank.

- If the expansion tank is installed as high, or higher than the Solar-Divicon, a thermal insulation loop (p-trap) is required. This loop should be installed between the Solar-Divicon and the expansion tank.

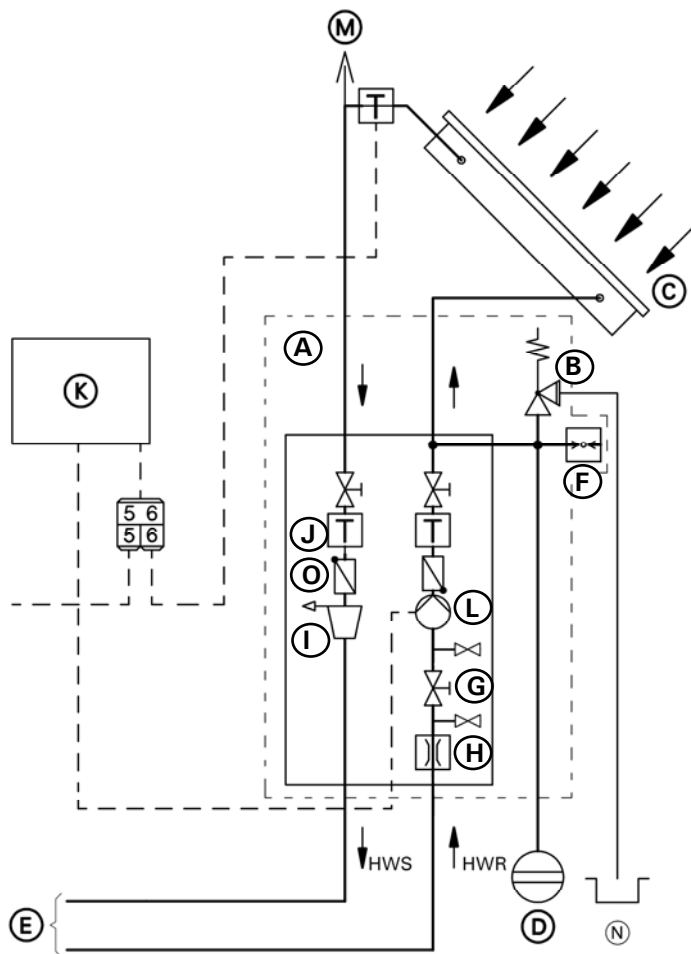
- During initial system fill, turn temperature dial gages 45°. This will bypass the integrated flow check valves. After filling and purging is complete return the valve to the original position.
- Temperature dial gages can be turned 90° to shut off flow completely.
- Only use bronze-metal, brass and/or copper fittings for the installation. Do not use galvanized pipes or fittings and graphitized gaskets. **Do not use any plastic pipes.** Components that are in contact with the heat transfer medium (Composition: propylene glycol/water mix (50 %)) must be resistant to it.

- Prior to installation: Ensure that pipe seals are clean and undamaged.
- Solar Divicon must be grounded to protect against lightning.
- The expansion tank must be checked regularly to ensure the correct air cushion pressure is being maintained.

#### IMPORTANT

The Solar-Divicon is not suited for direct contact with swimming pool water.

### 3 Notes on Installation



- A Solar-Divicon
- B Safety relief valve 87psi / 6bar
- C Solar panels
- D Solar expansion tank
- E Connection to solar DHW storage tank
- F Pressure gage
- G Flush and fill manifold
- H Flowmeter
- I Air Separator
- J Integrated thermometer / shut-off valve
- K Solar control unit
- L 3 speed pump
- M Fast air vent c/w shut-off valve
- N Overflow container
- O Flow check valves (integrated into shut-off valve)

HWR Heating water return to collectors  
HWS Heating water supply to storage



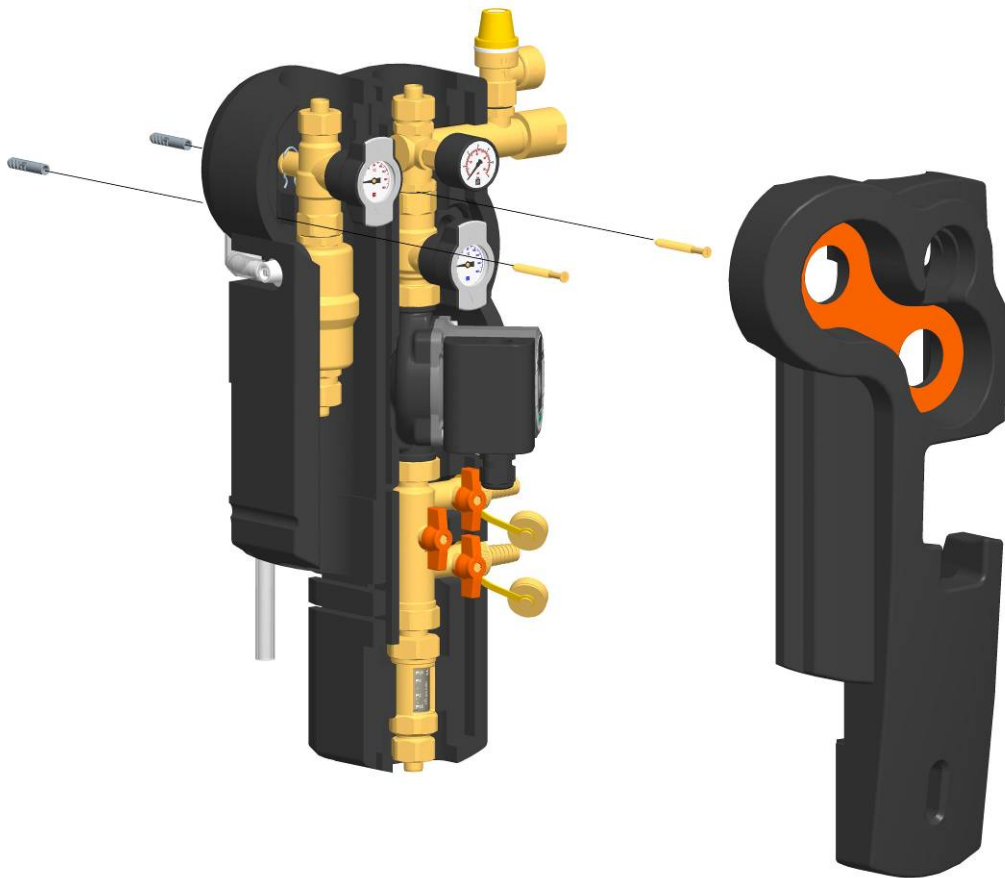
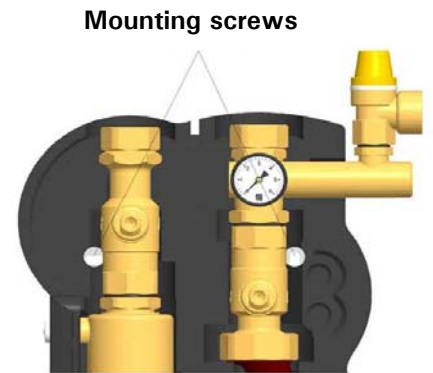
*For additional information on installation examples and installation illustrations of solar heating systems see Vitosol System Design Guidelines*

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## 4 Installation of the Solar-Divicon

### Installation Steps:

1. Unpack accessories and the Solar-Divicon.
2. Determine the position of the Solar Divicon. Consider the space for the expansion tank.
3. Remove the thermometers from the Solar Divicon by pulling forward. Pull off the front insulation of the Solar Divicon. Hold the Solar Divicon in position on the wall and mark the position of the wall holder.
4. Drill 5/16" or 8mm holes for the wall bracket and insert the supplied plugs into the holes. Secure the back panel of the Solar Divicon to the wall using the supplied screws.
5. Place, assemble and connect the expansion tank. A field supplied isolation valve is recommended between the expansion tank and the Solar Divicon.



6. Connect piping of the solar circuit to top and bottom connections using the supplied compression fittings and hex nuts.
7. Firmly tighten all union nuts and screw connections. The pressure gage does not need to be sealed with any sealants before inserting it into the valve. Hand-tighten the pressure gage and loosen it until you can read the indication properly.

### IMPORTANT

*The overflow pipe from the safety relief valve must be connected to an open container to collect glycol/water in the event of the pressure relief valve releasing*

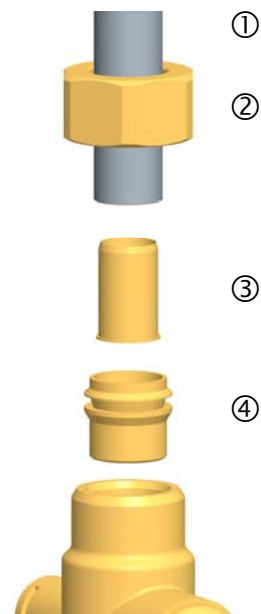
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## 4 Installation of the Solar-Divicon

8. Fill and flush the Solar Divicon, check the system for leaks and commission the system. (see 7 Initial Start-up).
9. Attach the front insulation of the Solar Divicon after commissioning the system. Then insert the thermometers (red thermometer in the supply - left, blue thermometer in the return - right).
10. Slide connecting wire of circulation pump downwards through wiring channel of insulation panel and connect to Vitosolic or SCU control unit in accordance with the control Installation Instructions.
11. Slide insulating cover over piping and wiring and snap into place.
12. Push the thermal insulation of the pipe work into the recesses of the thermal insulation of the Solar-Divicon.

### Installation of compression fittings:

1. All pipe ends must be square and deburred.
2. Copper piping in the vicinity of the compression fittings may not be soldered while connected to Solar-Divicon.
3. Put union nut (2) on copper pipe (1). Then slide support sleeve (3) into copper pipe (1). Support sleeve insert (3) is not required for Type L copper.
4. Slide olive (4) as far as it will go on the copper pipe.
5. Copper pipe and its components (2, 3, and 4) must be inserted as far as possible into the ball valve.
6. Tighten union nut manually; then tighten it with open-end wrench by a full turn. Make sure that the copper pipe does not slide out of the compression fitting when tightening the union nut.



### Uninstall the Solar Divicon

In order to detach the Solar Divicon from the wall mount bracket, remove the safety clips by means of a screwdriver.



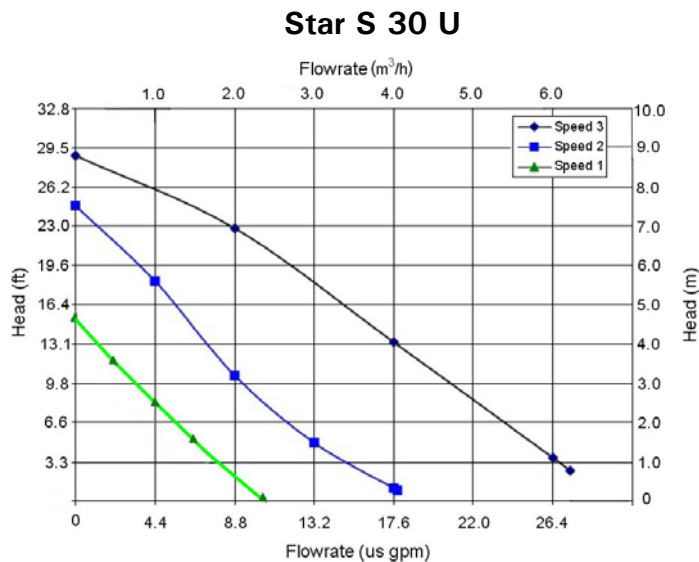
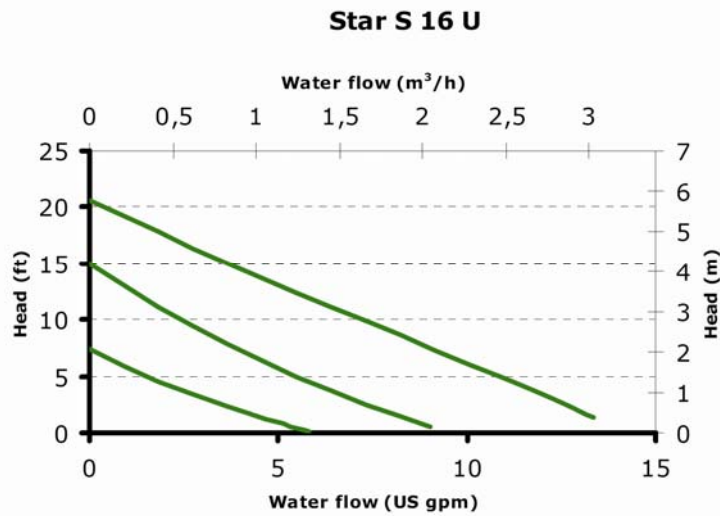
5 Notes on the Expansion Tank  
 6 Notes on the Circulation Pump

### 5 Notes on the Expansion Tank

- The heating system must be equipped with a membrane pressure expansion tank.
- Should the expansion tank be installed at the same level or higher than the Solar-Divicon, a heat insulating loop (p-trap) is required to prevent steam from entering the expansion tank.
- The membrane and gaskets of the expansion tank must be suitable for the heat transfer medium, and for the high temperature in a solar system.
- Adjust air cushion pressure of the expansion tank to cold fill pressure calculated for the system; for information regarding the calculation of the cold fill pressure value refer to the Vitosol Start-up, Service and Operating Instructions for information on setting the system and expansion tank pressures.

### 6 Notes on the circulation pump

- Connect solar control unit to power supply **after** flushing and filling the system (see Start-up, Service and Operating Instructions for Viessmann solar panels). Do not run pump prior to filling system.
- **Circulation pump settings**  
 The flow rate through the collectors and the pump speed required depends on the number and type of collectors. Refer to Vitosol Start-up, Service and Operating Instructions, or Vitosol System Design Guidelines for suggested flow rates.

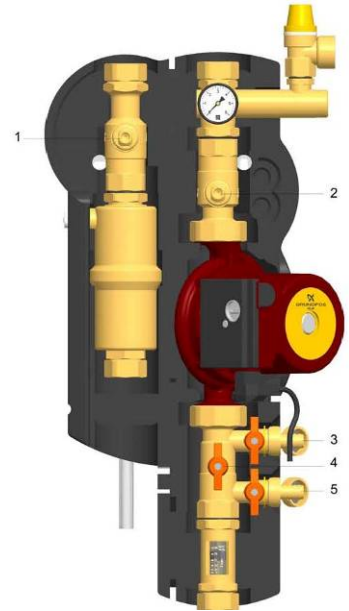



## 7 Initial Start-up and commissioning

- Connect pressure hose to fill valve (3) of filling and flushing unit on the Solar Divicon, and open valve.
- Connect flush hose to flush valve ((5) and open valve.
- Close ball valve (4) in the middle of the filling and flushing unit so that handle is in horizontal position.
- Open both flow check valves (1 and 2) by turning the thermometers 45°.
- Pour sufficient solar fluid into container of a filling and flushing station and fill solar system using charging pump or hand pump.
- Flush solar system for at least 15 minutes to remove all debris.

**Flushing or pressure testing with water only is not recommended. As it is generally not possible to drain the system completely, there is a risk of frost damage.**

- Purge all air from system by briefly opening ball valve (4) in the middle of the filling and flushing unit.
- Close flush valve (5) when filling pump is running and increase system pressure to approximately 70 psi / 5 bar.
- Close fill valve (3) and switch off filling pump. Open ball valve (4) in the middle of the filling and flushing unit.
- Deaerate system until solar fluid exits without bubbles. Again increase system pressure to 70 psi / 5 bar and check system for leaks.
- Set operating pressure to between 35 and 40 psi (2.5-2.8 bar).
- Switch on circulation pump and select highest speed. Allow it to circulate for at least 15 minutes.
- Set system flow rate by selecting the required speed of circulation pump. See Vitosol Start-up, Service and Operating Instruction manual for required flowrates for Vitosol 100-F/200-F and 300-T collectors.
- Remove hoses of filling and flushing station and screw caps on fill and flush valves.
- Again check system for leaks.
- Set valves to operating position.
- Slide insulating cover over piping and snap into place.



 <b>WARNING</b>
Prior to start-up ensure the system is completely sealed. Under cold fill conditions an overpressure of at least $22 \text{ psig} + 0.45 \text{ psig} \times \_ \text{ft.} / 1.5 \text{ bar} + 0.1 \times \_ \text{m}$ of installed height (static pressure head) must exist.



Turn thermometers 45° to open flow check valves during initial flush and fill.

### Informing the System Operator

*The installer of the solar system is required to properly acquaint the system operator to functions of the heating system.*

For initial start-up please reference the corresponding Installation or Operating Instructions of all componentry (solar panels, hot water heating boiler, Solar control, DHW storage tank, Solar Divicon, etc.).

### Technical Literature

Please file this manual in your Viessmann Service Binder.

## 8 Parts List

### Solar-Divicon

Model No.	Order No.
DN20	7134 799
DN25	7418 992

#### Ordering Replacement Parts:

Order replacement components from your Viessmann distributor.

#### Parts

- 001 Insulation case
- 002 Wall-mount bracket
- 003 Cover plate "Viessmann"
- 004 Spring clip
- 005 System fill manifold
- 006 Hose nib
- 007 Gasket set
- 008 Safety tee
- 009 Ball valve with integrated flow-check valve (return)
- 010 Ball valve with integrated flow-check valve (supply)
- 011 Half union \*1
- 012 Flow meter
- 013 Auto air vent with air separator
- 014 Circulation pump 120/1/60
- 015 Flare fittings (set of 2)
- 016 Brass coupling, 3/4 BSP x 3/4" NPT
- 017 Adaptor for pressure gage
- 018 Handle for ball valve
- 019 Thermometer (blue) \*2
- 020 Thermometer (red) \*2
- 021 Handle cover for ball valve
- 022 Pressure gage, 86psi/6bar
- 023 Pressure relief valve, 87psi

#### Other Parts (not illustrated)

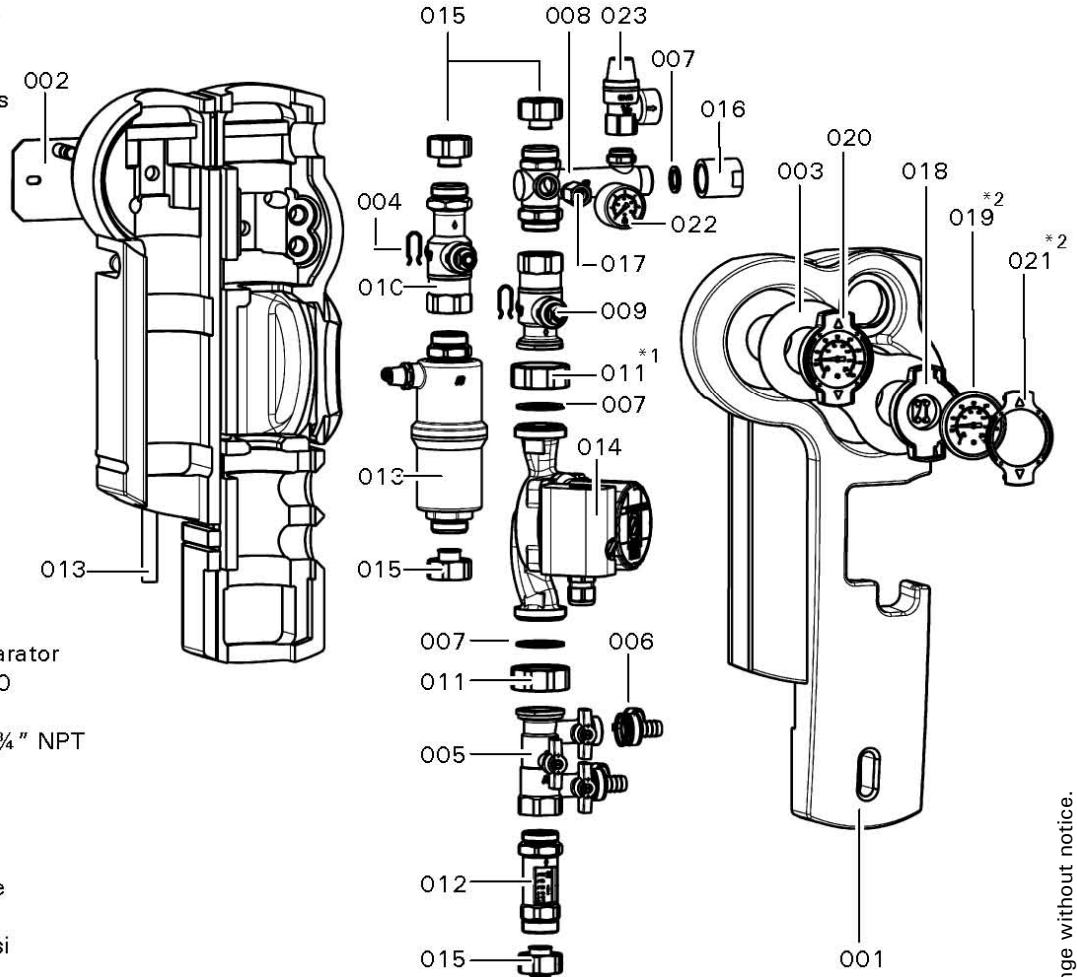
- 100 Installation and Service Instructions
- 101 Parts List

\*1 Applies only to DN25 model.

\*2 DN20 models are shipped with °F thermometers. Contact Viessmann for °C thermometers.

DN25 models are shipped with dual scale °F/°C thermometers.

Product may not be exactly as illustrated.



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