

Installation Instructions

for use by contractors

VIESSMANN

Vitosol 200-F, SVK

Flat-plate collector for sloping roofs; above roof installation

Vitocell 100-W, CVBA

Dual coils DHW tank with Solar-Divicon

Vitocell 100-W, CVSA

Single coil and heating element DHW tank with Solar-Divicon

VITOSOL[®] DHW SOLAR PACK



Product may not be exactly as shown

IMPORTANT

**Read and save these instructions
for future reference.**

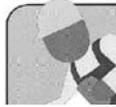
Safety, Installation and Warranty Requirements

Please ensure that these instructions are read and understood before commencing installation. Failure to comply with the instructions listed below and details printed in this manual can cause **product/property damage, severe personal injury, and/or loss of life**. Ensure all requirements below are understood and fulfilled (including detailed information found in manual subsections).

■ **Licensed professional heating contractor**

The installation, service, and maintenance of this equipment *must be* performed by a licensed professional heating contractor.

▶ Please see section entitled "Important Regulatory and Installation Requirements" in the Installation Instructions.



■ **Product documentation**

Read all applicable documentation before commencing installation. Store documentation in a readily accessible location for reference in the future by service personnel.

▶ For a listing of applicable literature, please see section entitled "Important Regulatory and Safety Requirements"



■ **Advice to owner**

Once the installation work is complete, the heating contractor must familiarize the system operator/ultimate owner with all equipment, as well as safety precautions/requirements, shut-down procedure, and the need for professional service annually.

■ **Warranty**

Information contained in this and related product documentation must be read and followed. *Failure to do so renders warranty null and void.*



■ **Grounding/Lightning protection of the solar system**

In the lower part of the building, install an electrical conductor on the piping system of the solar circuit in compliance with local regulations. Connection of the solar system to a new or existing lightning protection or the provision of local grounding should only be carried out by a licensed professional, who must take into account the prevailing conditions on site.

! CAUTION

Observe maximum load and distance from edge before installing the substructure to the roof. If necessary, consult with a structural engineer to determine if the structure is suitable for installing solar collectors. The collectors must be securely mounted so that the mountings can withstand intense wind conditions and local snow loads.

! CAUTION

Gloves and eye protection must be worn when handling solar panels.

! CAUTION

Solar panel connection pipes and solar heating fluid can become hot enough to cause severe burns. Extreme caution must be taken if panels have been in a stagnant condition (no flow of fluid).

! CAUTION

Avoid scratching or sudden shocks to glass cover of the solar panel.

! CAUTION

Never step on collectors or solder in close proximity to the glass surface of the solar panel.

■ **Applicability**

Vitosol solar collectors are designed for use in closed loop heating systems for domestic hot water heating, space heating and pool heating via a heat exchanger. The use of Viessmann heat transfer medium "Tyfocor-HTL" or equivalent is strongly recommended.

- In areas with extremely cold climate conditions, where outside temperatures may drop below -31 °F (-35 °C), the use of Tyfocor-HTL is not recommended. Use a solar propylene glycol mixture with a higher concentration of glycol that provides the level of freeze protection required for the area of the collector installation.

IMPORTANT

Pool water or potable water should not be pumped directly through the Vitosol collectors. Damage to collectors caused by corrosion, freezing or scaling will void the warranty.

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Important Regulatory and Installation Requirements

Initial start-up

Initial start-up must be performed by a qualified heating contractor. Completion of the Maintenance Record by the heating contractor is also required.



See the Maintenance Record in the Operating and Service Instructions.

Working on the equipment

The installation, adjustment, service and maintenance of this equipment must be done by a licensed professional heating contractor who is qualified and experienced in the installation, service and maintenance of hot water heating systems. There are no user serviceable parts on this equipment.

Note: Please carefully read this manual prior to attempting start-up, maintenance or service. Any warranty is null and void if these instructions are not followed. For information regarding other Viessmann System Technology componentry, please reference documentation of the respective product. Viessmann offers frequent installation and service seminars to familiarize our partners with our products. Please inquire.

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

Note: The completeness and functionality of field supplied electrical controls and components must be verified by the heating contractor. These include low water cut-offs, flow switches (if used), staging controls, pumps, motorized valves, air vents, thermostats, etc.

Repair work

IMPORTANT

Repairing components which fulfil a safety function can compromise the safe operation of your heating system. Replace faulty components only with original Viessmann replacement parts. Ancillary components, spare and wear parts.

IMPORTANT

Replacement and wear parts which have not been tested together with the solar system can compromise its function. Installing non-authorized components and non-approved modifications/conversion can compromise safety and may infringe our warranty conditions. For replacement, use only original Viessmann replacement parts or those which are approved by Viessmann.

Instructing the system user

The installer of the system is responsible to ensure the system operator/ultimate owner is made familiar with the functioning of the system, its activation, and its shut-down.

Note: The following topics must be covered:
Proper system operation sequence. Explain the equipment. Demonstrate an emergency shut-down, what to do and what not. Explain that there is no substitute for proper maintenance to help ensure safe operation.

Technical literature

Literature applicable to all aspects of the Vitosol 100-F, 200-F or Vitosol 200-T:

- Technical Data Manual
- Installation Instructions
- Start-up, Service and Operating Instructions
- System Design Guidelines

Note: Leave all literature at the installation site and advise the system operator/ultimate owner where the literature can be found. Contact Viessmann for additional copies.

About these Installation Instructions



Take note of all symbols and notations intended to draw attention to potential hazards or important product information. These include "WARNING", "CAUTION", and "IMPORTANT". See below.



WARNING

Indicates an imminently hazardous situation which, if not avoided, could result in substantial product/property damage, serious injury or loss of life.

► Warnings draw your attention to the presence of potential hazards or important product information.



CAUTION

Indicates an imminently hazardous situation which, if not avoided, may result in product/property damage or minor injury.

► Cautions draw your attention to the presence of potential hazards or important product information.

IMPORTANT

► Helpful hints for installation, operation or maintenance which pertain to the product.



► This symbol indicates that additional, pertinent information is to be found.



► This symbol indicates that other instructions must be referenced.

Notes on Installation

- The entire solar heating system should be installed in accordance with the accepted rules of technology, observing all relevant accident prevention regulations.
- Employ suitable safety measures to prevent falls, falling objects and roof damage due to insufficient load bearing capacity, e.g. by means of scaffolding, ladders, cable ties etc.
- The collectors must be securely mounted so that the mountings can withstand intense wind conditions.



CAUTION

Use only Viessmann supplied mounting clips and mounting hardware. Never drill or screw directly into collector side frames.

- Use only stainless steel screws and bolts when fastening mounting brackets or frames.
- Although the glass collectors surfaces are hail-resistant, Viessmann recommends users to include storm coverage in their building insurance. Our warranty does not cover storm related damage.



CAUTION

Pool water or potable water should not be pumped directly through the Vitosol collectors. Damage to collectors caused by corrosion, freeze damage or scaling will void warranty.

- The collectors should be mounted level so that complete venting is assured.
- Filling the solar heating system with Viessmann heat transfer fluid "Tyfocor-HTL" is highly recommended. Tyfocor-HTL is supplied pre-mixed and water must not be added.
Other heat transfer fluids may be suitable if they have the same temperature range -31°F to 338°F (-35°C to 170°C) and are non-toxic.
- In areas with extremely cold climate conditions, where outside temperatures may drop below -31°F (-35°C), the use of Tyfocor-HTL is not recommended. Use a solar propylene glycol mixture with a higher concentration of glycol that provides the level of freeze protection required for the area of the collector installation.
- The piping inside and outside the building should be insulated to avoid heat loss. Use only high temperature resistant pipe insulation.

Collector Location



Please refer to the Vitosol System Design Guidelines, for detailed information on the optimum alignment and inclination of solar collectors.

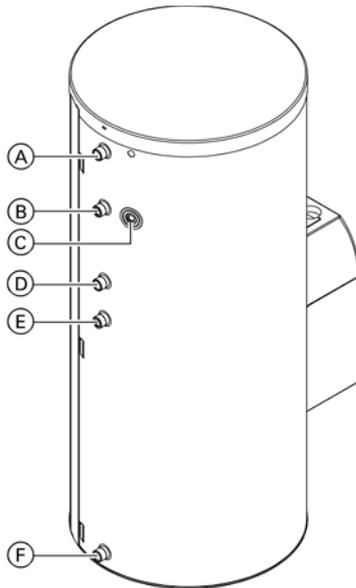
Optimum alignment and inclination

The solar collector provides the highest solar yield over an annual average when facing due south with an inclination of approximately 30° to 45° to the horizontal plane.

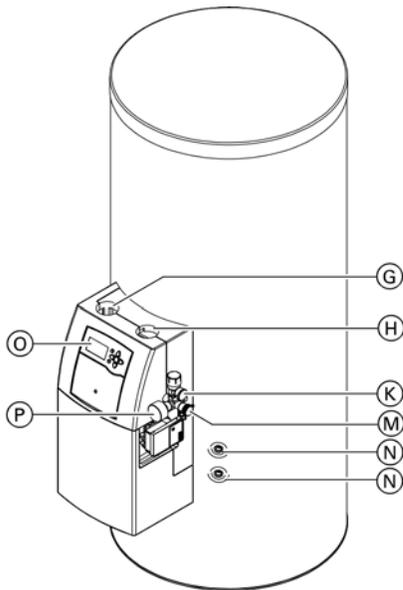
However, the installation of a solar heating system is still viable even when the installation deviates quite significantly from the above (south-westerly to south-easterly alignment with an inclination angle of approximately 25° to 55°).

The collectors should, as far as possible, be oriented towards the south. Solar system performance drops off significantly if collectors face more than 50° off of due south.

Product Information CVBA



Rear view



Front view

Vitocell 100-W, type CVBA

Enamelled DHW tank with internal indirect coils for DHW heating in conjunction with solar thermal systems, as well as floor standing and wall mounted boilers in dual mode operation.

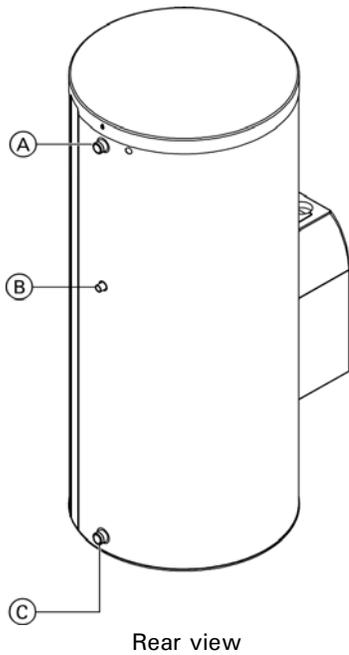
- DHW tank fully equipped with the following tank:
 - Solar-Divicon
 - DeltaSol BX solar control.
- Capacity: 66 USG (250 L)

Connections

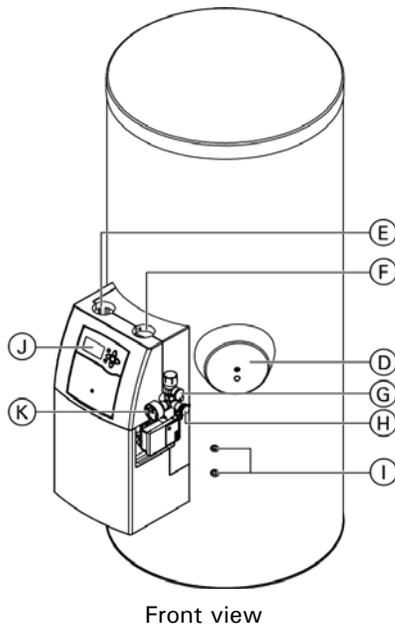
Legend

- (A) DHW outlet and TPRV
- (B) Heating water supply (boiler)
- (C) Spare dry sensor well
- (D) Dry sensor well for boiler control
- (E) Heating water return (boiler)
- (F) Cold water inlet
- (G) Heating water supply, solar
- (H) Heating water return, solar
- (K) Discharge pipe for PRV
- (M) Solar expansion tank connection
- (N) Female thread for solar expansion tank bracket
- (O) Solar controller, type DeltaSol BX
- (P) Safety assembly with
 - Safety valve (PRV)
 - Pressure gauge
 - Fill valve
 - Solar expansion tank connection (M)

Product Information CVSA



Rear view



Front view

Vitocell 100-W, type CVSA

Enamelled DHW tank with internal indirect coil for DHW heating in conjunction with solar thermal systems, as well as a 4500 Watt electric heating element for auxiliary heating.

- DHW tank fully equipped with the following tank:
 - Solar-Divicon
 - DeltaSol BX solar control.
- Capacity: 69 USG (260 L)

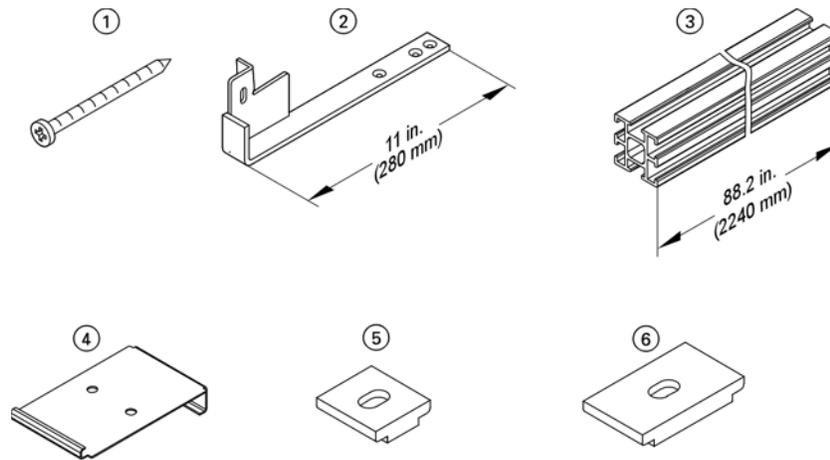
Connections

Legend

- (A) DHW outlet and TPRV
- (B) Spare dry sensor well
- (C) Cold water inlet
- (D) Immersion heating element for electric reheating
- (E) Heating water supply, solar
- (F) Heating water return, solar
- (G) Discharge pipe for PRV
- (H) Solar expansion tank connection
- (I) Female thread for solar expansion tank bracket
- (J) Solar controller, type DeltaSol BX
- (K) Safety assembly with
 - Safety valve (PRV)
 - Pressure gauge
 - Fill valve
 - Solar expansion tank connection (H)

Installing on Sloped Roofs

Components

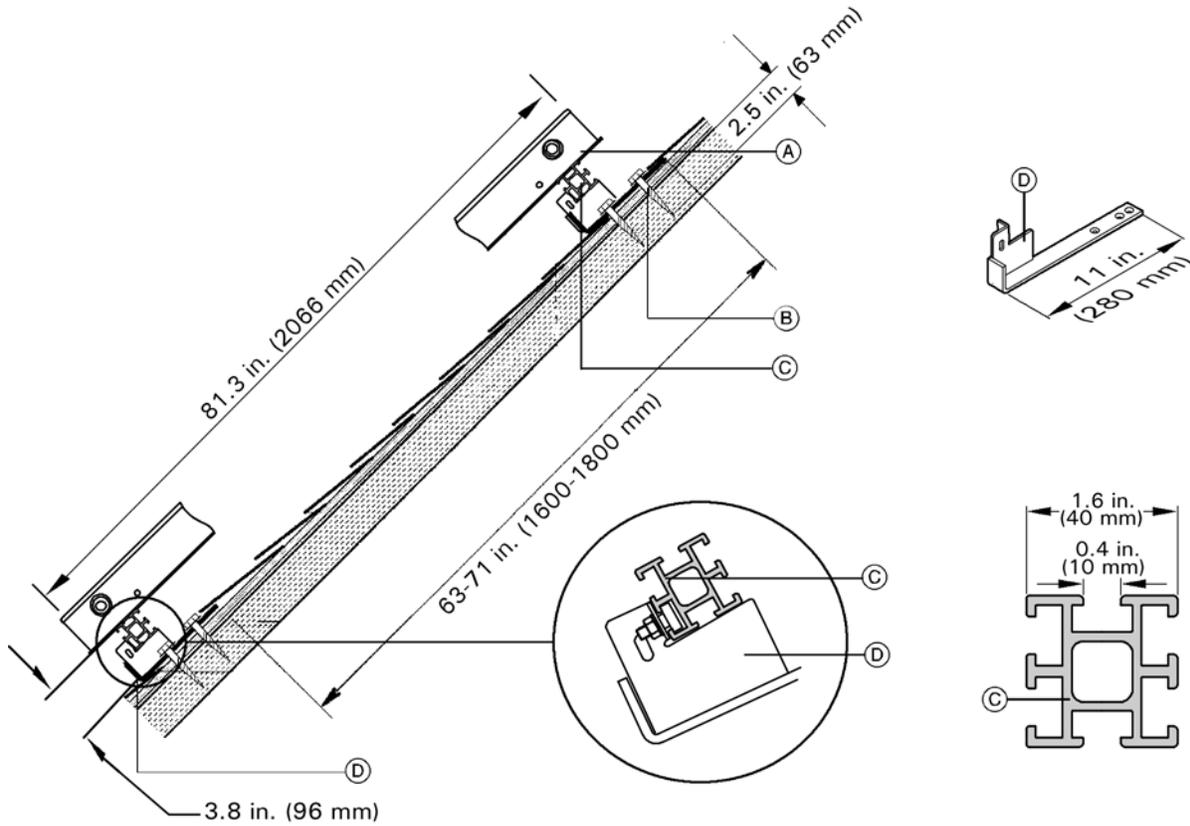


Legend

- ① Zinc-plated countersunk wood screw
0.25 x 3.1 in. (6 x 80 mm)
- ② Roof bracket for shingle roofs
- ③ Mounting rail
- ④ Mounting plate
- ⑤ Clamping bracket, external
- ⑥ Clamping bracket, internal

Installing on Sloped Roofs *(continued)*

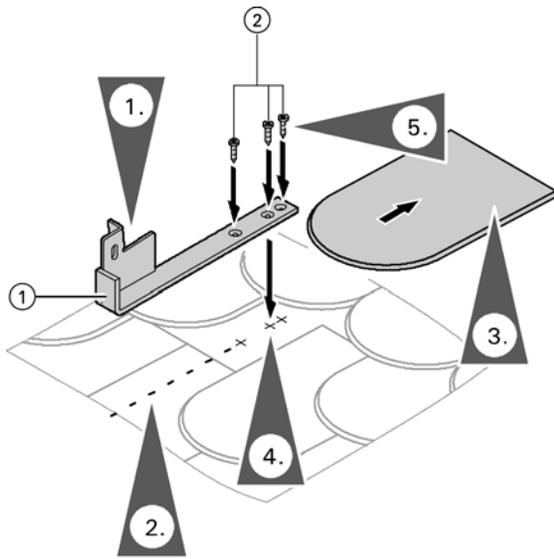
Roof brackets fitted to a shingled roof.
Example:



Legend

- Ⓐ Collector
- Ⓑ Lag screws
- Ⓒ Mounting rail
- Ⓓ Roof bracket

Installing on Sloped Roofs *(continued)*



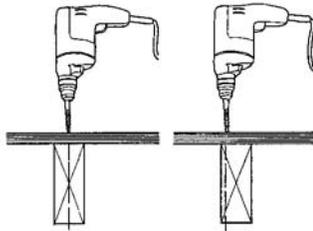
Install the panel array level to prevent air pocketing in the collectors.

Attaching roof brackets on shingled roof

1. The roof brackets ① should be laid out as close as possible to the dimensions shown in the diagram on page 12.
2. Locate the roof joist by tapping along the roof to find its general location (stud finders do not work well through shingles and roof sheathing).
3. Pry up the shingles and drill small pilot holes to locate exact location of roof joist. If necessary, check where pilot hole is coming through roof from inside of attic.
4. Drill pilot holes into center of joist as shown. Fill the pilot holes and coat the bottom of roof bracket with silicone sealant.
5. Attach bracket to roof joist using the supplied 3.1 in. (80 mm) stainless steel screws ②. Screws should penetrate the roof joist at least 2 1/2 in. (64 mm). Use longer (field supplied) screws if required to achieve necessary penetration.

Drill within
0.2 in. (5 mm)
of center

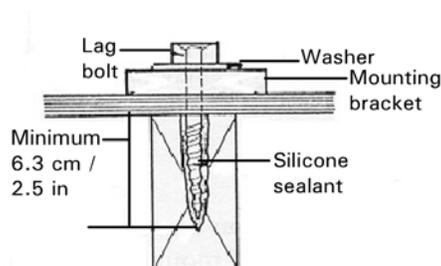
Too close
to edge



Correct

Incorrect

Source: CANSIA



Source: CANSIA

CAUTION

The roof bracket must be securely attached to the roof joist of the structure. Only use stainless steel attachment screws. Do not overtighten lag bolts as the head may weaken and shear off.

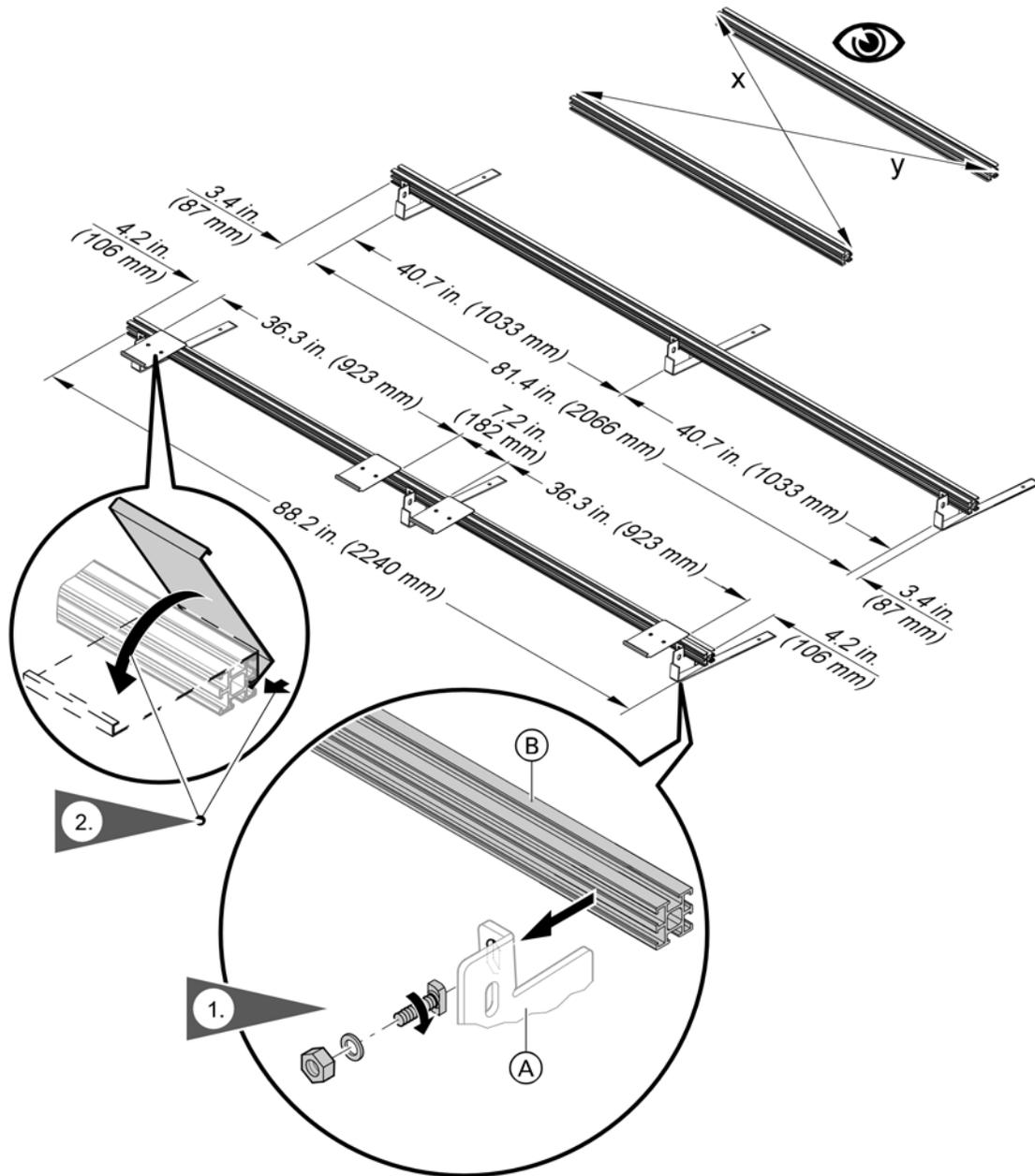
CAUTION

The 3.1 in. (80 mm) screws supplied with the mounting kit may not be sufficient length for some roof structures. The installer must ensure screws will penetrate roof joist sufficiently, and if not, must provide longer screws or lag bolts.

Installation on Sloped Roofs *(continued)*

Fitting mounting rails

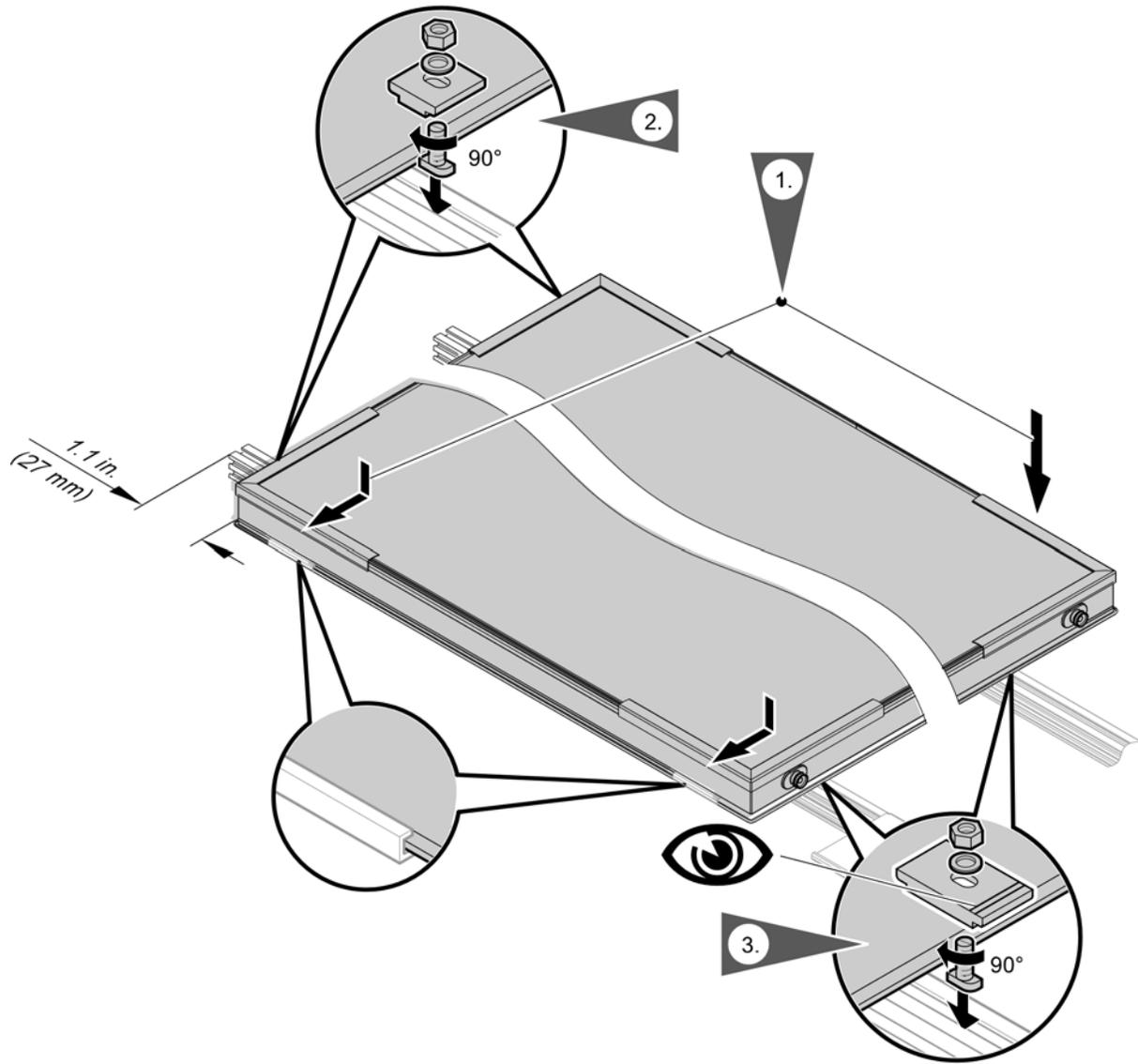
Maximum deviation from dimensions x and y is 0.4 in. (10 mm)



Legend

- (A) Roof bracket
- (B) Mounting rail

Installing and Connecting the Collectors

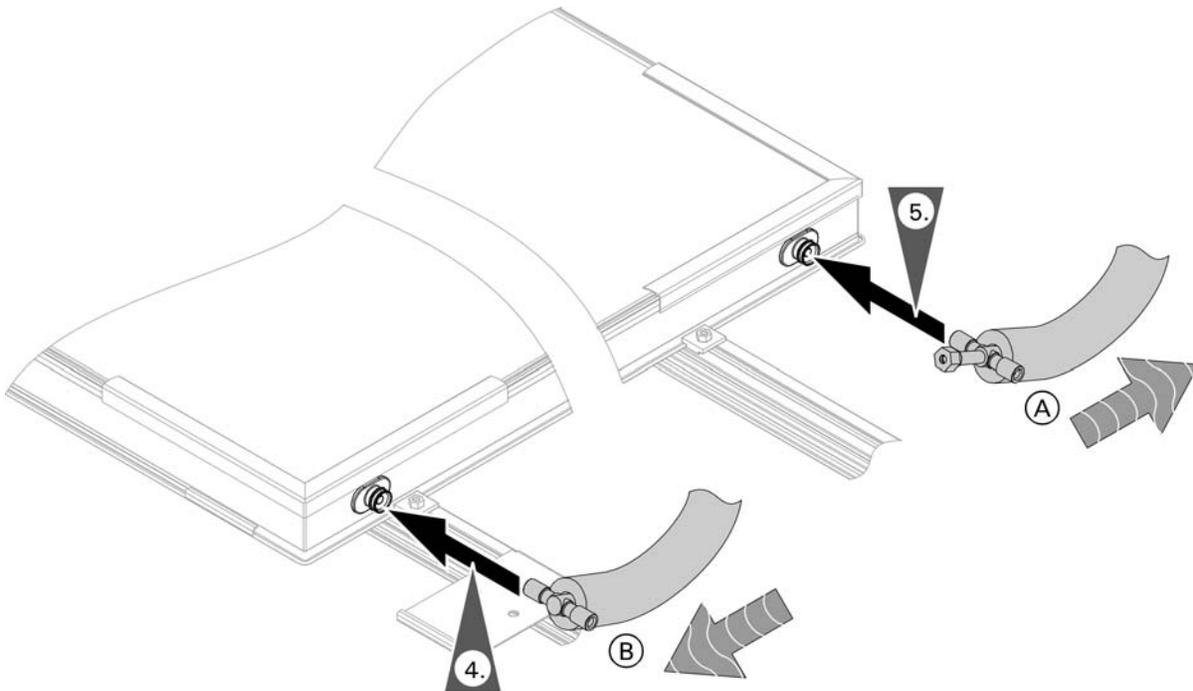


Lubricate O-ring seals only with the special valve grease provided.

IMPORTANT

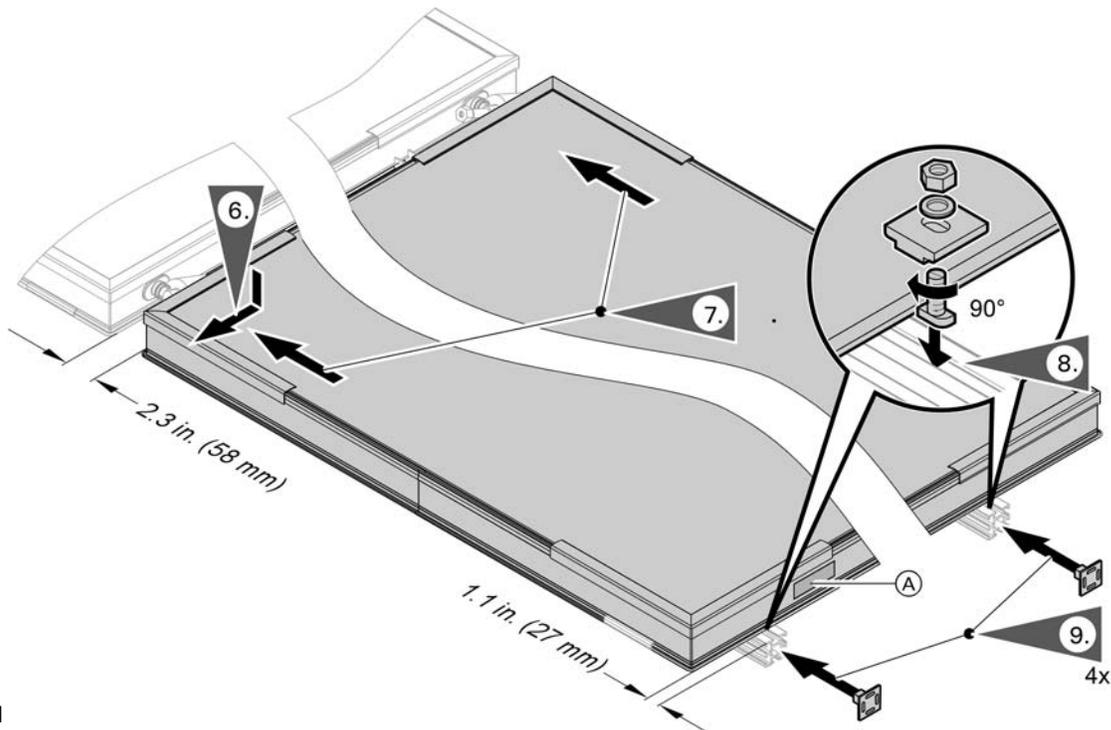
Connection pipes should not show any signs of damage.

Installing and Connecting the Collectors *(continued)*



Legend

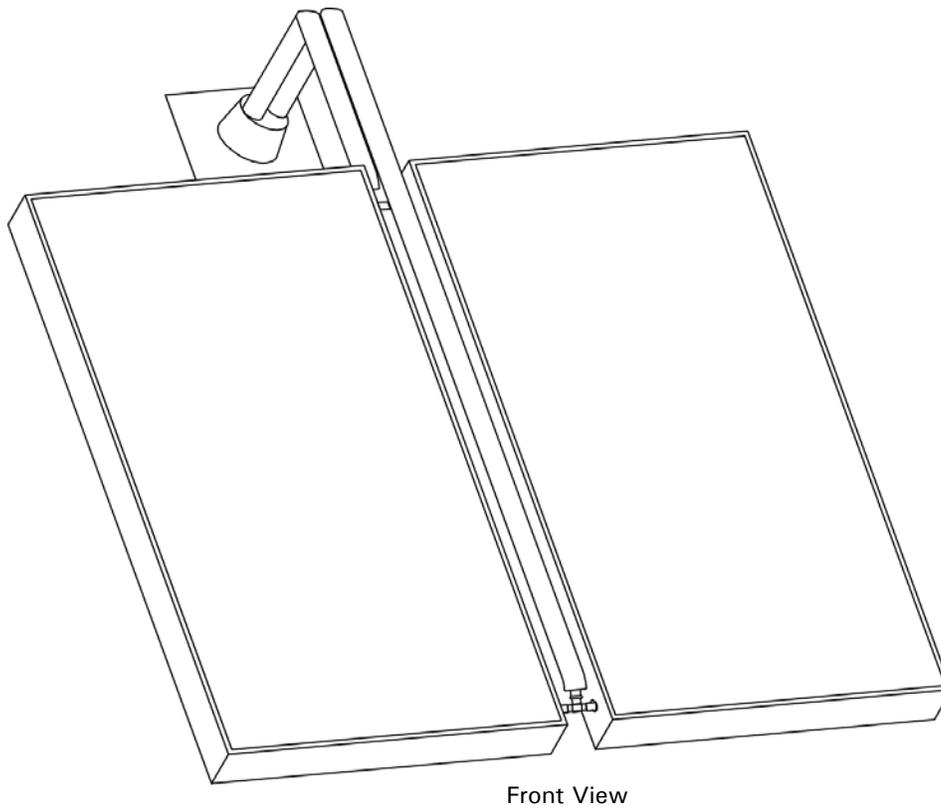
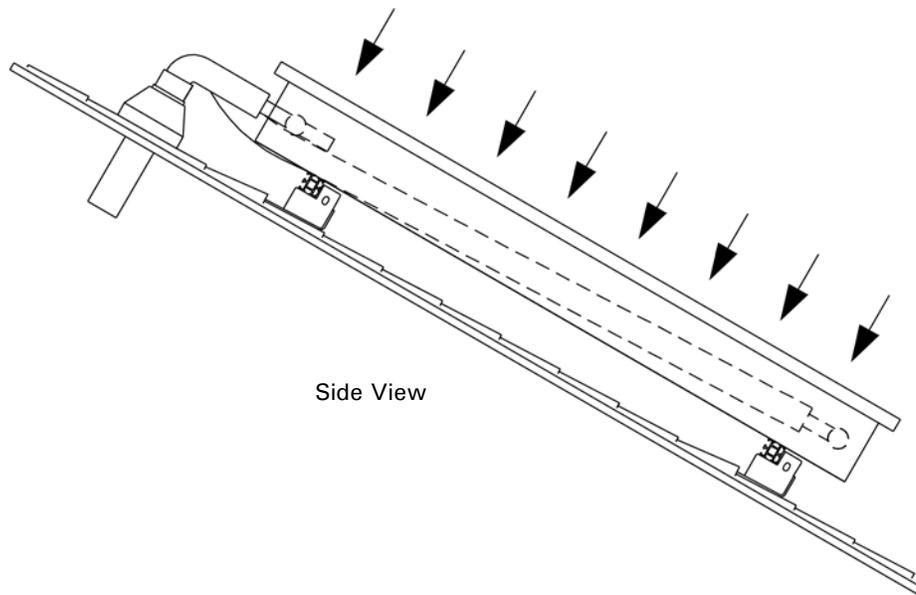
- Ⓐ Supply connection with sensor well for collector temperature sensor
- Ⓑ Return connection



Legend

- Ⓐ Rating plate

Collector Roof Layout

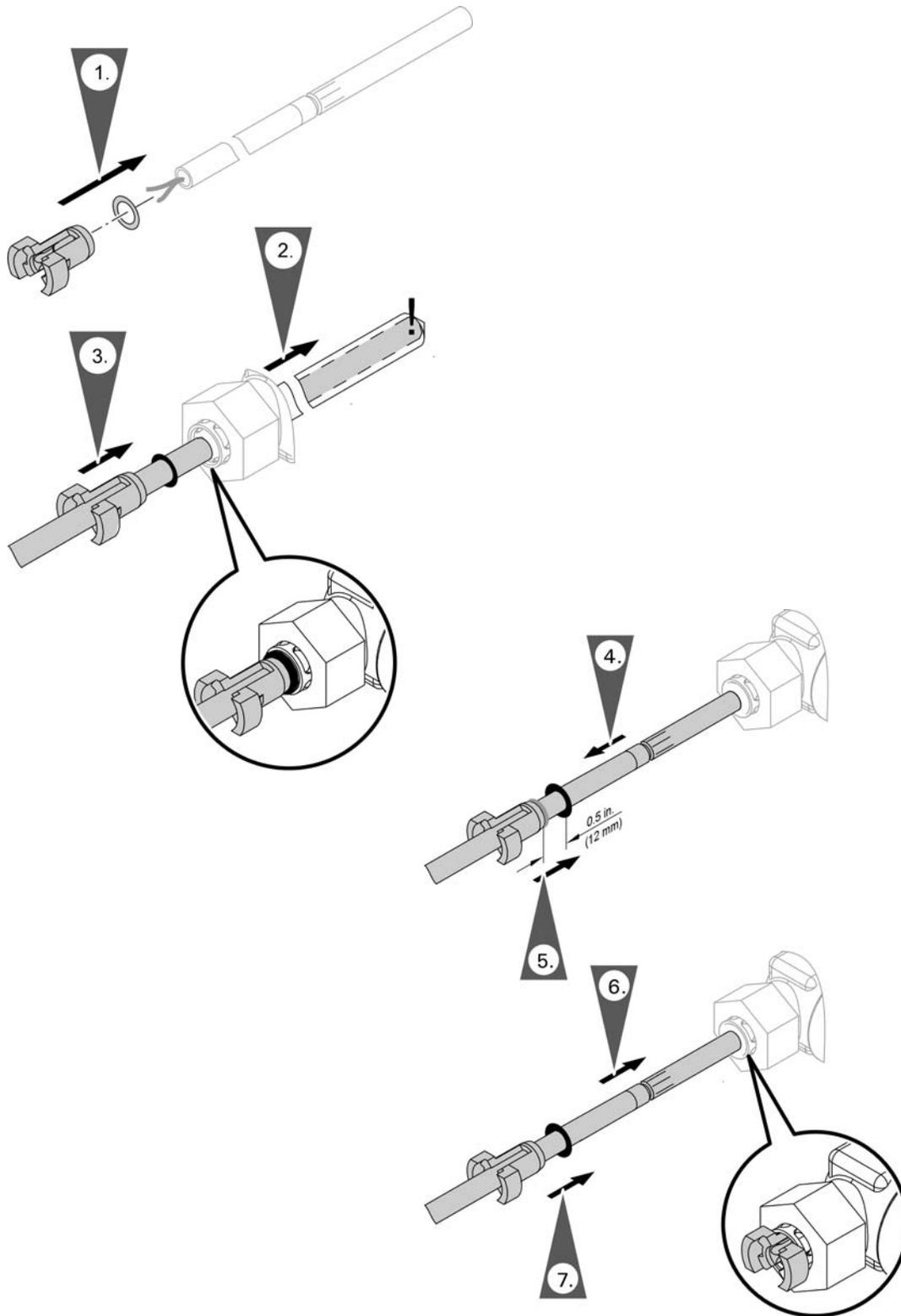


IMPORTANT

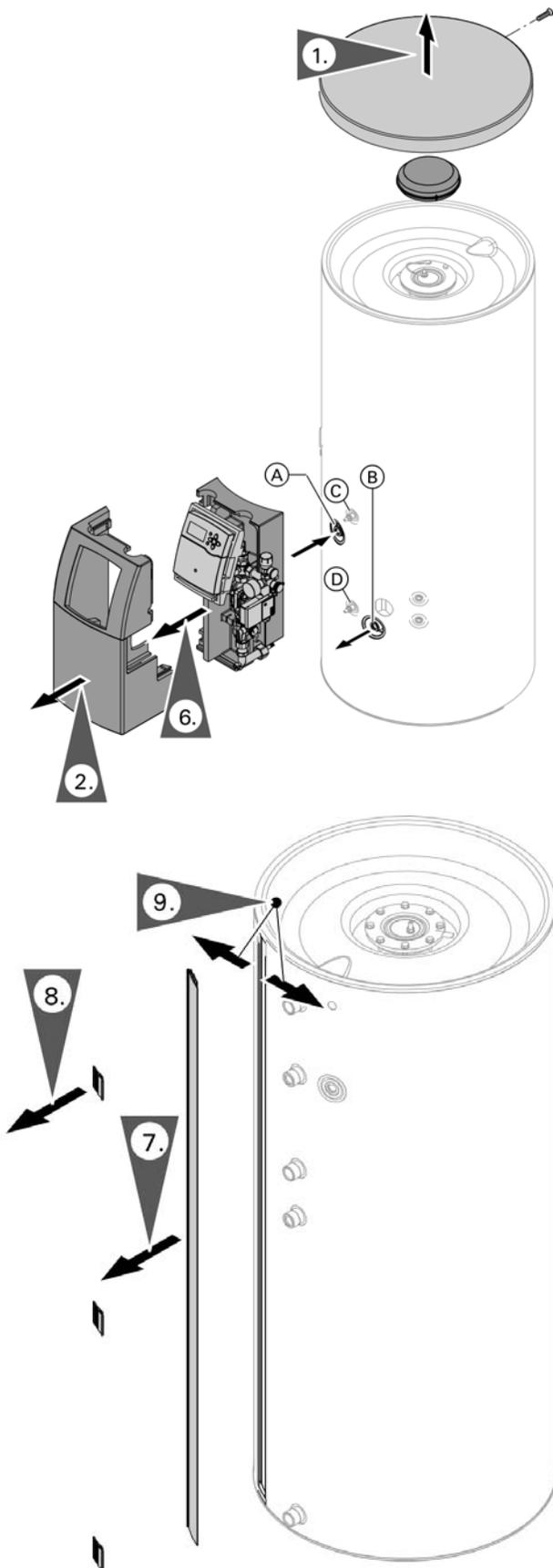
Roof boot or pipe flashing kit is not part of the Vitosol DHW Solar Package. This item must be selected and field supplied by the installer.

Fitting the Collector Temperature Sensor

The collector temperature sensor is part of the standard delivery of the collector connection set.



Disassembly Information



Before installation

To prevent damage to the Solar-Divicon, thermal insulation and the pump station, components can be removed prior to transportation to the installation site.

IMPORTANT

Only remove the Solar-Divicon if absolutely necessary to make transport easier.

Note: Ensure that no insulation remnants enter the DHW tank through the tank connections.

Step ③
Disconnect sensor wire S3 from the solar control.

Step ④
Undo connections (A) and (B)

Step ⑤
Undo connections (C) and (D)

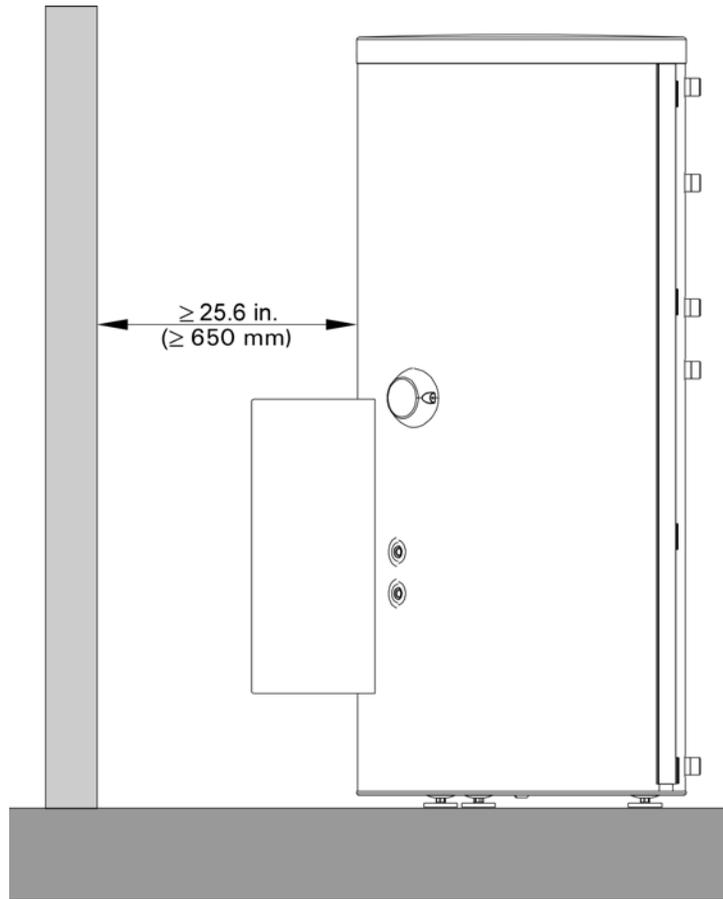
Step ⑨
Remove only the PVC tank jacket. The hard foam insulation underneath is permanent (do not remove).

Reassemble in reverse order after the installation has been completed.

Legend

- (A) Solar supply
- (B) Solar return
- (C) Pump station mounting stud top
- (D) Pump station mounting stud bottom

Siting Information



Maintain the minimum clearance.

IMPORTANT

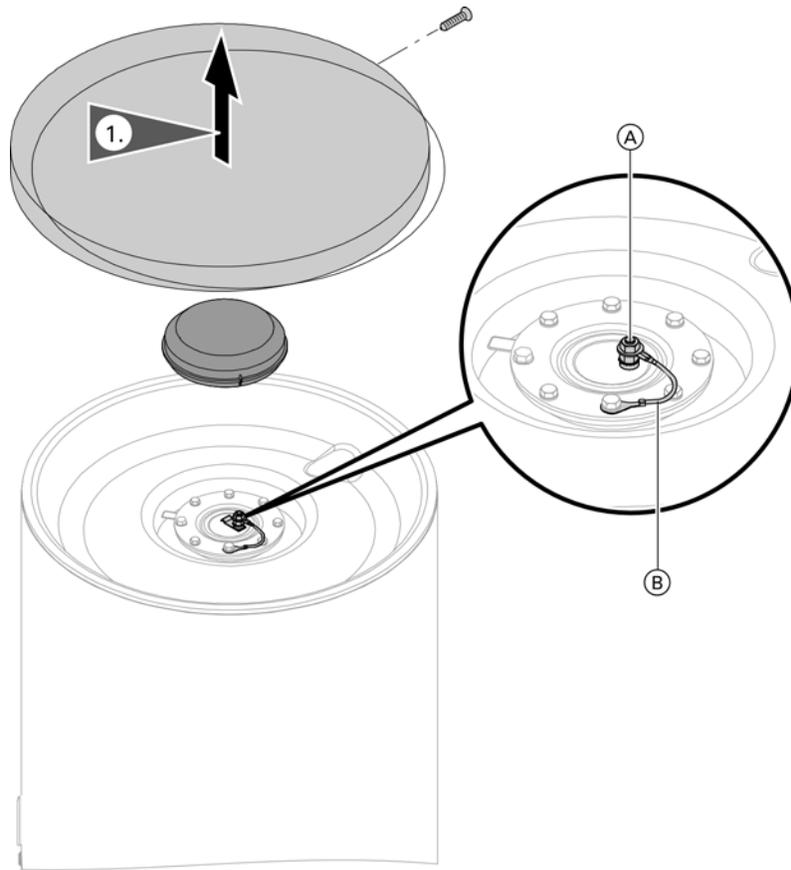
The thermal insulation must not be able to come into contact with flames. Exercise caution when welding and soldering.

IMPORTANT

To prevent material losses, place the DHW tank in a room free from the risk of frost and draughts. When not in use, the DHW tank must be drained if there is a risk of frost.

- Provide adequate clearance from the wall so that the solar control can be operated.
Note: To facilitate access to the connections on the solar side, the solar control can be moved to the right or left.
- Level the DHW tank with the adjustable feet.
Note: Never extend the adjustable feet beyond a total length of 1.4 in. (35 mm).

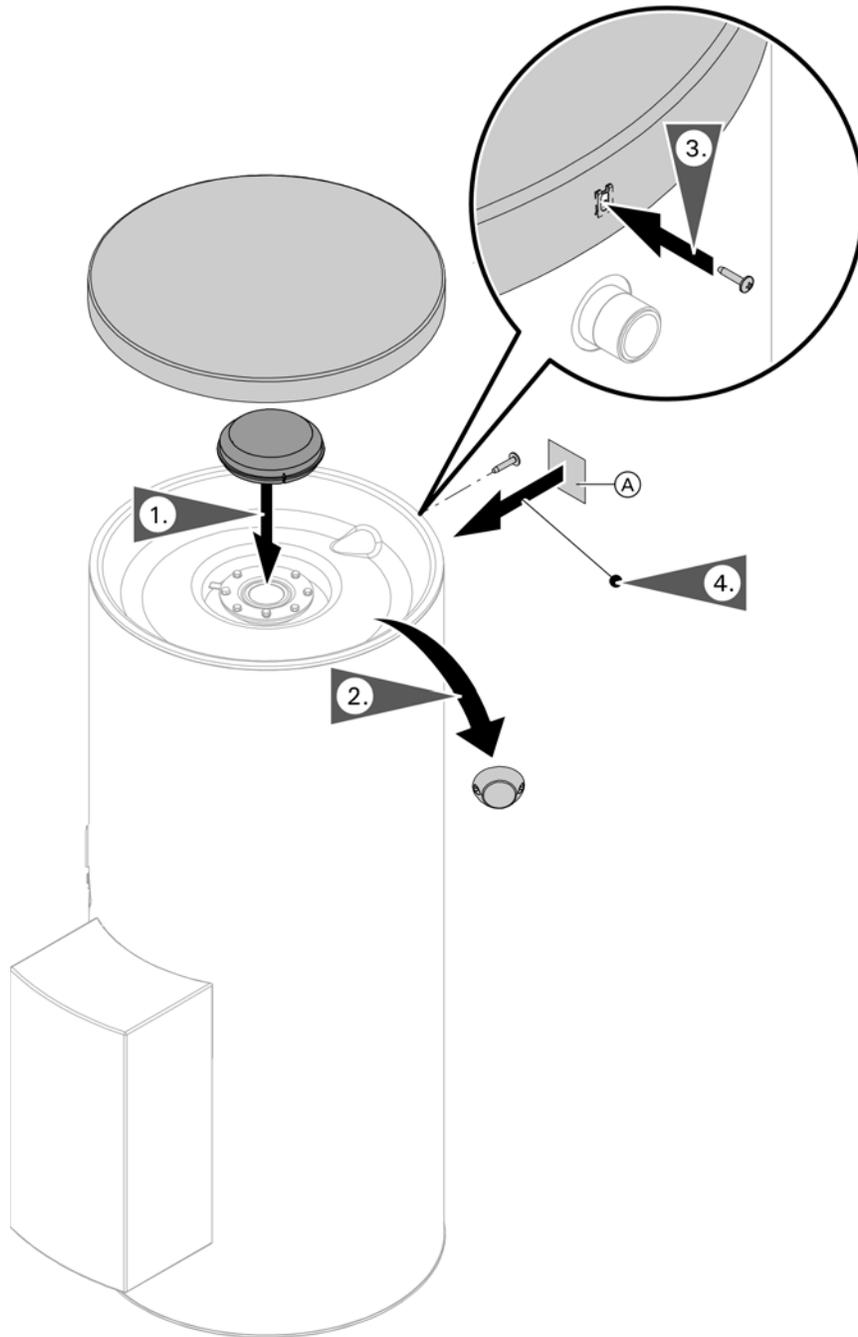
Checking the Anode Connection



Legend

- (A) Top of anode
- (B) Anode grounding wire

Fitting the Top Cover



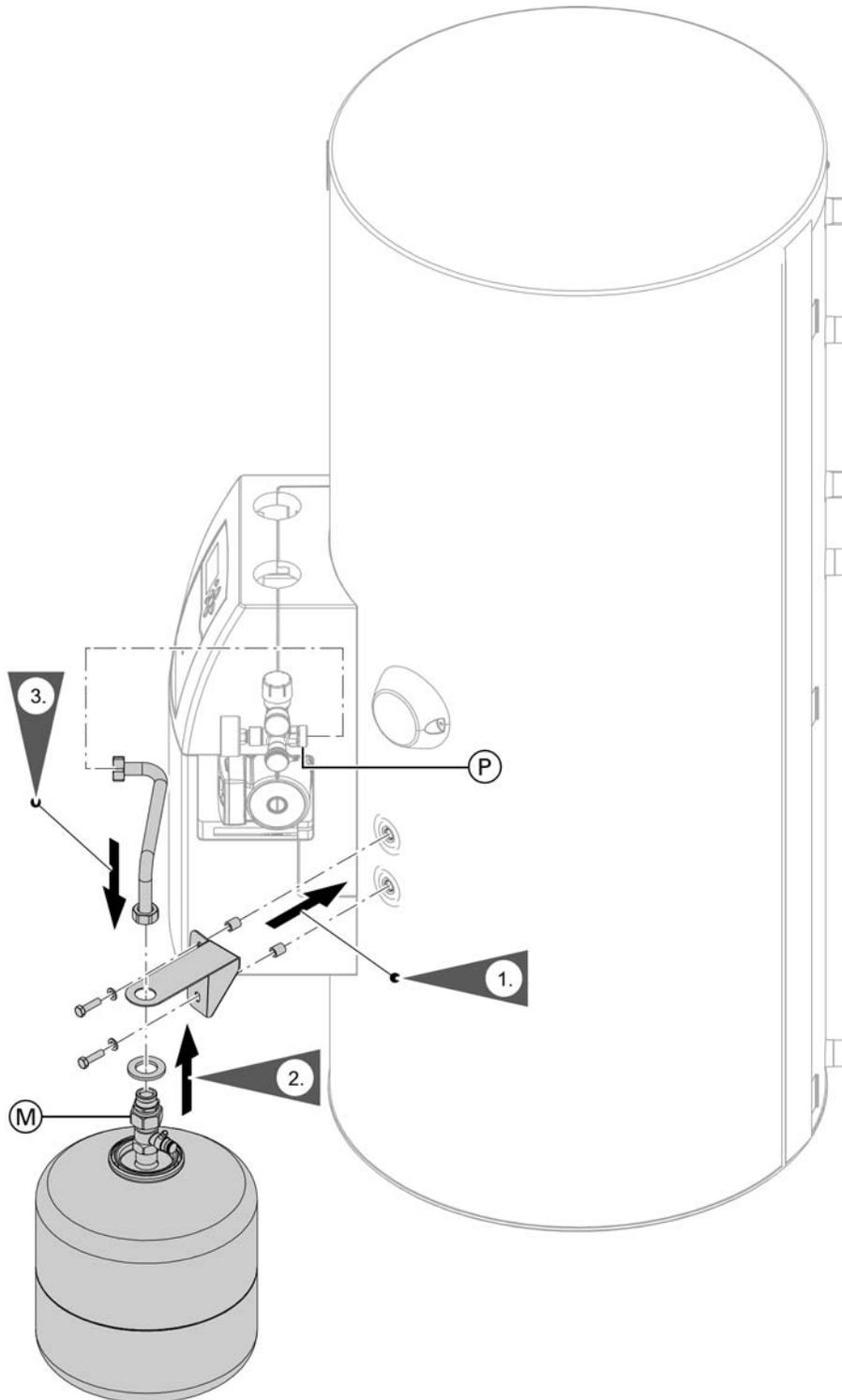
Legend

Ⓐ Rating plate

Fitting the Solar Expansion Tank

Mounting the expansion tank on the DHW tank

Using the corrugated pipe supplied, connect the solar expansion tank to connection (M) of safety assembly (P) (see page 7).



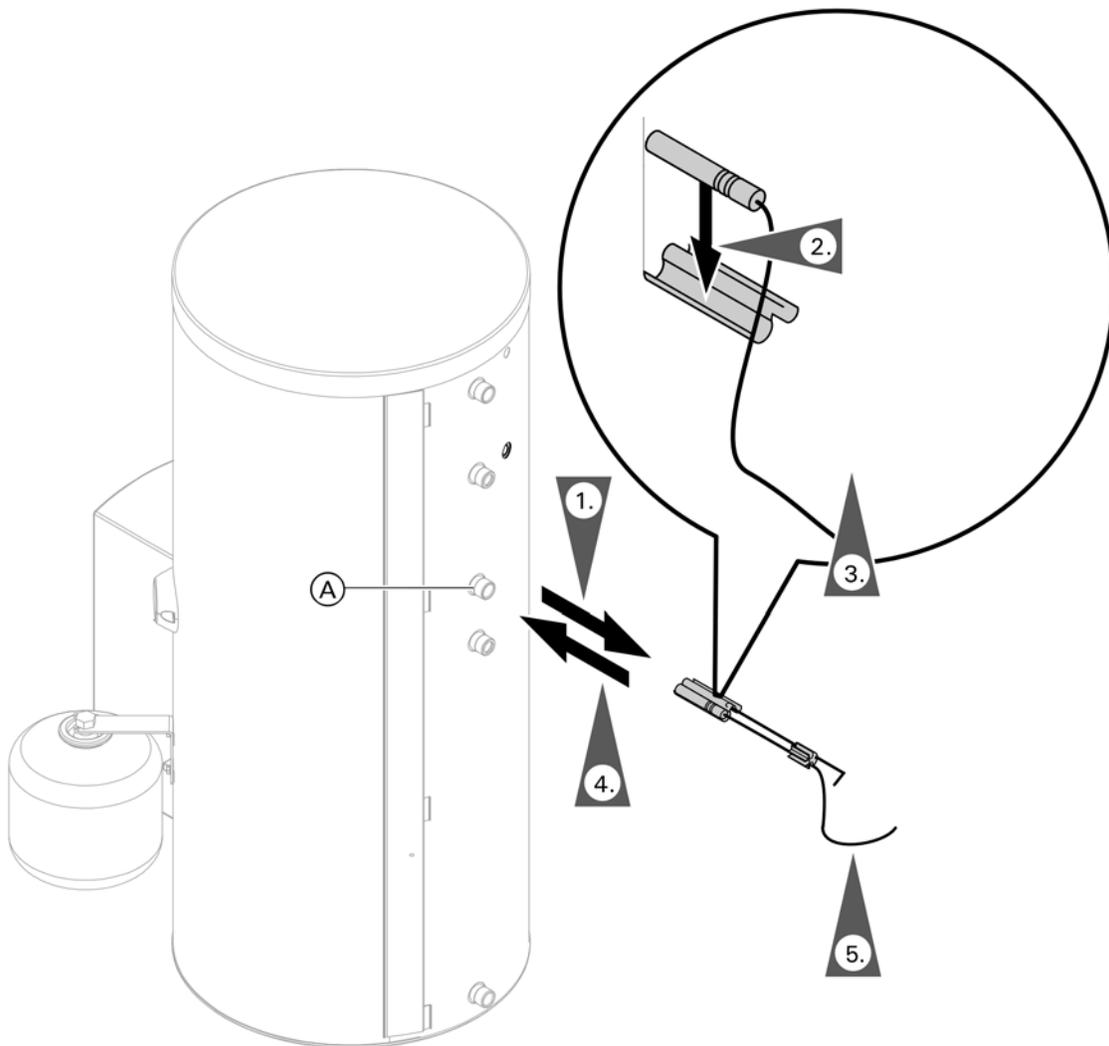
Fitting Tank Temperature Sensor (CVBA only)

IMPORTANT

To prevent equipment damage, cables must not come into contact with hot parts.

Ensure adequate thermal insulation between cables and hot pipework.

- Never wrap insulating tape around the sensor.
- Secure the tank temperature sensor on the outside of the contact spring of the sensor retainer (not in the groove) so that it is flush with the front of the spring.
- Insert the sensor retainer together with the sensor into the dry sensor well (A) as far as it will go.



Legend

(A) Dry sensor well for tank temperature controller

IMPORTANT

Temperature sensor for tank temperature control is not part of the Solar Pack and must be field supplied. The sensor is typically part of the boiler control system.

Electric Heating Element

Heating element installation

This section applies to CVSA DHW storage tanks equipped with an electric heating element.

Before any electrical connections are made, be sure that the water heater is full of water and that the valve in the cold water supply line is open. Check the rating plate and wiring diagram before proceeding. Thermostats are factory set and wired in accordance with the wiring diagram.

The dealer in your area ordered this water heater wired at the factory to comply with existing area codes, but local utility codes may require or allow other circuitry. Consult your local power company to determine the correct electrical hook-up in order to meet local utility and building codes and in order to obtain the most economical rates. Also check to find out if you are required to obtain a permit before starting the installation. The wattage and rated voltage are shown on the water heater data plate.

IMPORTANT

The water heater must be well grounded.

A green ground screw is provided at the electrical connection point for connecting a ground wire.

WARNING

Confirm that all electrical connections are unpowered before installing or servicing electrical components / connections within the water heater.

WARNING

The water heater must be electrically grounded in accordance with local codes or, in the absence of local codes, with NFPA 70. Failure to properly wire electrical connections may result in serious physical harm. Electrical power may be from more than one source. Make sure all power is off before attempting any electrical work.

Screw-in heaters are standard horizontal positioned. Only a torque wrench shall be used to mount the heating element. The torque must not exceed 59 lb.ft (80 Nm).

CAUTION

Screw-in heaters must be installed by an authorized specialist. The tank must be connected durably and reliable with the ground wire connection.

Heating element wiring

Determine voltage and wattage from the rating plate attached to the solar water heater. All external wiring, connection, and over current protective devices must be provided and installed in accordance with the latest edition of the National Electrical Code, local codes, and local utility requirements. The solar water heater must be electrically "grounded" by the installer. A green ground screw has been provided on the solar water heater's junction box.

IMPORTANT

Connect the screw head with ground wire connection.

The grounding electrode conductor shall be of copper, aluminum, or copper clad aluminum. The material shall be resistant to corrosion, and shall be of one continuous length without a splice or joint. Rigid metal conduit, intermediate metal conduit, or electrical metallic tubing may be used for the grounding means if conduit or tubing is terminated in fittings approved for grounding.

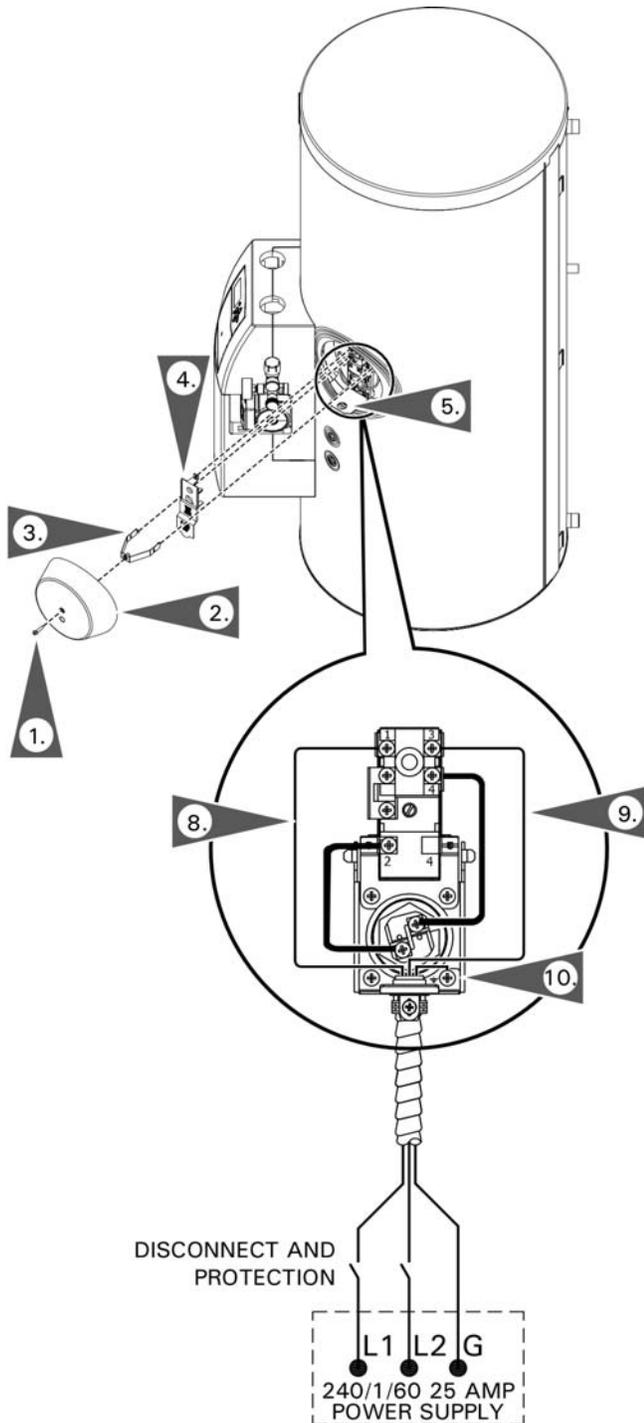
Flexible metal conduit or flexible metallic tubing shall be permitted for grounding if all the following conditions are met:

- The length in any ground return path does not exceed 6 ft. (1.8 m)
- The circuit conductors contained therein are protected by over current devices rated at 25 amperes or less.
- The conduit or tubing is terminated in fittings approved for grounding.

WARNING

Never use this water heater /storage unit unless it is completely filled with water

Connecting the Electric Heating Element



1. Remove the center screw from the white protective cover.
2. Carefully remove the protective cover from the tank jacket.
3. Spread the tangs of the tapped mounting bracket outwards and remove from the tank mounting tabs.
4. Remove the clear plastic electrical protection cover by lifting up on the arrow tab (located at the top of cover).
5. Install the line lock or cable strain relief in the bottom bracket.
6. Route the power supply line from the underside of the bottom bracket and feed it through the field supplied line lock or strain relief.
7. Tighten the line lock or strain relief such that the power supply line is secure and cannot be easily pulled out.
8. Connect L1 of the hot/live wires to terminal #1 of the thermostat.
9. Connect L2 of the hot/live wire to terminal #3 of the thermostat.
10. Connect the ground wire to the grounding screw located at the bottom right corner of the line lock or cable strain relief bracket.
11. Reinstall the clear plastic electrical protection cover, making sure that the arrow securely snaps into place.
12. Reinstall the tapped mounting bracket by spreading the tangs and placing on the tank mounting tabs.
13. Carefully slide the white protective cover onto the tank jacket and align with the tapped hole of the mounting bracket.
14. Install the center screw into the white protective cover and carefully tighten until it is snug. Be very careful to not over tighten this screw as this cover could become damaged.

! WARNING

If system components are not grounded, serious injury from electric current can result if an electrical fault occurs.

Connect the appliance and pipework to the equipotential bonding of the building in question.

! WARNING

Incorrectly executed electrical installations can lead to injuries from electrical current and result in appliance damage.

Fixed High Limit and Electric Heating Element Temperature Adjustment

Fixed High Limit

- The high limit safety feature is factory set at 180°F ± 5°F (82°C ± 3°C)

DHW Temperature Adjustment

- The factory preset DHW temperature is 120°F ± 5°F (49°C ± 3°C) at "HOT" indicator setting.
- The DHW temperature is field adjustable between 110°F to 160°F (43°C to 71°C).
- The factory temperature differential (non-adjustable) is between 7°F to 17°F (4°C to 9°C).

Heating element temperature settings

To adjust the temperature settings:

1. Turn "off" the electrical power at the junction box of the water heater.

WARNING

Failure to turn "OFF" electrical power to the solar water heater will result in the possibility of property damage, serious injury or loss of life.

2. Carefully take off the access panel (see page 25).
3. Turn the water temperature dial clockwise to increase the temperature, or counterclockwise to decrease the temperature.

Thermostat Setting	Approx. DHW Temperature
°	110°F ± 5°F (43.5°C ± 3°C)
HOT	120°F ± 5°F (49.0°C ± 3°C)
A	130°F ± 5°F (54.5°C ± 3°C)
B	140°F ± 5°F (60.0°C ± 3°C)
C	150°F ± 5°F (65.5°C ± 3°C)
VERY HOT	160°F ± 5°F (71.0°C ± 3°C)

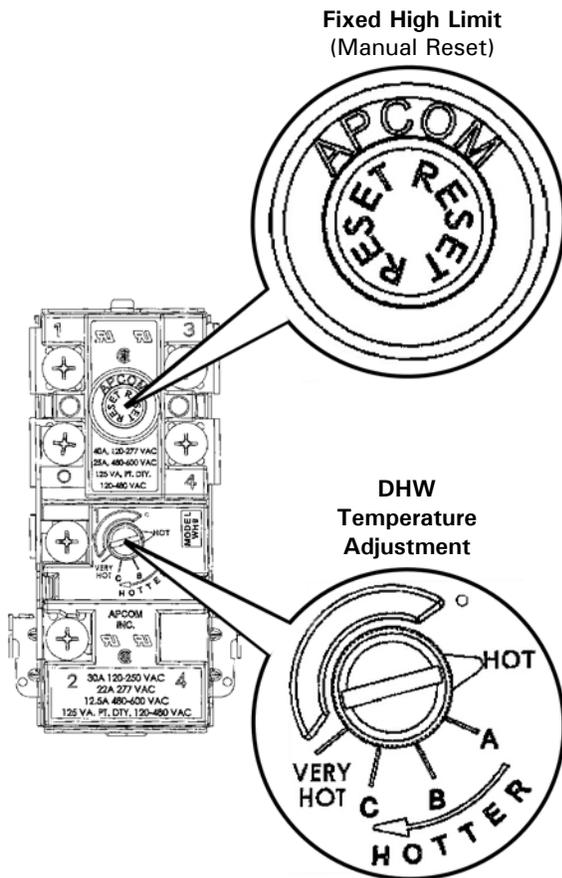
4. Carefully replace the access panel.
5. Turn "on" the power supply.

IMPORTANT

Each thermostat is factory preset at "HOT" or 120 ± 5°F (49 ± 3°C). This setting will reduce the risk of scald injury. This temperature setting has proven by experience to be the most satisfactory from the standpoint of operation costs, household needs and the ability to store solar generated heat.

Solar water heaters installed in Florida require the thermostat to be set at 125°F (52°C).

Approx. Water Temperature	Time to produce 2nd and 3rd Degree burns on adult skin
120°F (49.0°C)	more than 5 minutes
125°F (51.5°C)	1.5 to 2 minutes
130°F (54.5°C)	about 30 seconds
135°F (57.0°C)	about 10 seconds
140°F (60.0°C)	less than 5 seconds
150°F (65.5°C)	about 1.5 seconds
160°F (71.0°C)	about 0.5 seconds
170°F (76.5°C)	nearly instantaneous



CAUTION

For your safety **DO NOT** attempt to repair thermostat, heating element or electrical wiring (if applicable). Always refer such repairs to a qualified service technician.

Connecting the Solar Control Unit - DeltaSol BX

The following cables are already connected to the solar control:

- Power supply for the solar controller (14 ft, 120VAC, 3 wire with grounding plug).
- Upper and lower tank temperature sensors S2 and S3
- Glycol pump electrical connection cable

Note: If not connected, push the plug for the pump connection cable into the circulation pump.

The following cables have to be field connected to the solar control:

- Collector temperature sensor S1 (see page 16)

IMPORTANT

Do not route high voltage (120V) cables adjacent to low voltage (< 42V) cables. This may lead to communication errors. Route high voltage and low voltage cables separately.



Viessmann DeltaSol BX installation and service instructions

Making the Connections on the Heating Water and Solar Sides CVBA

- Connect all pipework to the Solar-Divicon with detachable fittings.
- Seal connections that are not required with red brass caps.
- Adjust the solar controller so that the DHW temperature in the DHW tank does not exceed 180°F (82°C).

Note: Vitosol collectors may be operated with up to 87 psig (6 bar).

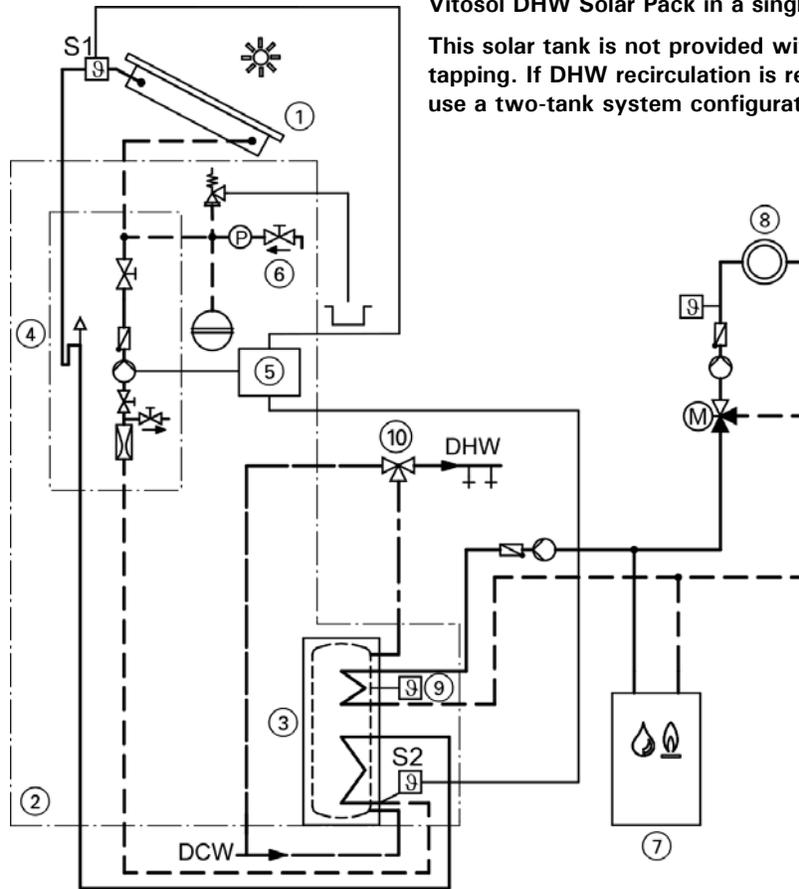
System schematic with solar collectors and boiler

- Heating of DHW by solar collectors via the lower internal indirect coil
- Heat supply for reheating or heating DHW with a boiler via the upper internal indirect coil

IMPORTANT

DHW recirculation line cannot be installed on the Vitosol DHW Solar Pack in a single tank configuration.

This solar tank is not provided with a recirculation tapping. If DHW recirculation is required, then you must use a two-tank system configuration.



Legend

- DCW Domestic cold water inlet
- DHW Domestic hot water outlet
- S1 Collector temperature sensor
- S2 Tank temperature sensor (solar side)
- ① Solar collector
- ② Vitocell 100-W comprising:
 - ③ DHW tank
 - ④ Solar-Divicon
 - ⑤ Solar control
 - ⑥ Fill valve
- ⑦ Heating boiler
- ⑧ Heating circuit
- ⑨ Boiler DHW temperature sensor
- ⑩ Anti scald tempering valve (supplied by others)

Permissible temperature

Solar side	230°F (110°C)
Heating water side	230°F (110°C)

Permissible operating pressure

Solar side	87 psig (6 bar)
Heating water side	147 psig (10 bar)

Test pressure

Solar side	235 psig (16 bar)
Heating water side	235 psig (16 bar)

Making the Connections on the Heating Water and Solar Sides CVSA

- Connect all pipework to the Solar-Divicon with detachable fittings.
- Seal connections that are not required with red brass caps.
- Adjust the solar controller so that the DHW temperature in the DHW tank does not exceed 150°F (65°C).
 - Note:** Vitosol collectors may be operated with up to 87 psig (6 bar).

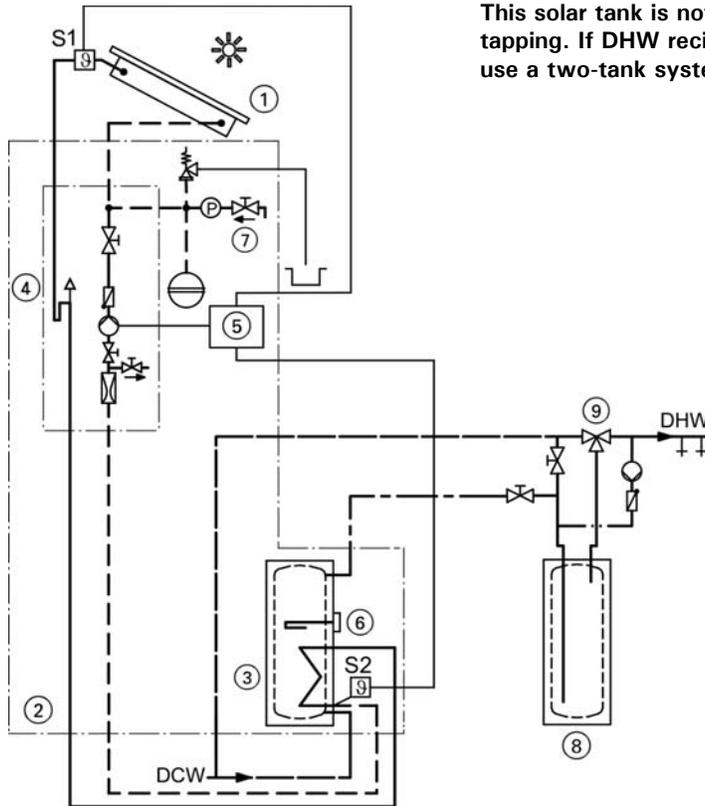
System schematic with solar collectors and standard water heater or instantaneous unit.

- Heating of DHW by solar collectors via the lower internal indirect coil
- Heat supply for reheating or heating DHW via the electric element

IMPORTANT

DHW recirculation line cannot be installed on the Vitosol DHW Solar Pack in a single tank configuration.

This solar tank is not provided with a recirculation tapping. If DHW recirculation is required, then you must use a two-tank system configuration.



Legend

- DCW Domestic cold water inlet
- DHW Domestic hot water outlet
- S1 Collector temperature sensor
- S2 Tank temperature sensor (solar side)
- ① Solar collector
- ② Vitocell 100-W comprising:
 - ③ DHW tank
 - ④ Solar-Divicon
 - ⑤ Solar control
 - ⑥ Electric heating element
 - ⑦ Fill valve
- ⑧ Standard hot water heater or instantaneous unit
- ⑨ Anti scald tempering valve (supplied by others)

Permissible temperature

Solar side	230°F (110°C)
Heating water side	230°F (110°C)

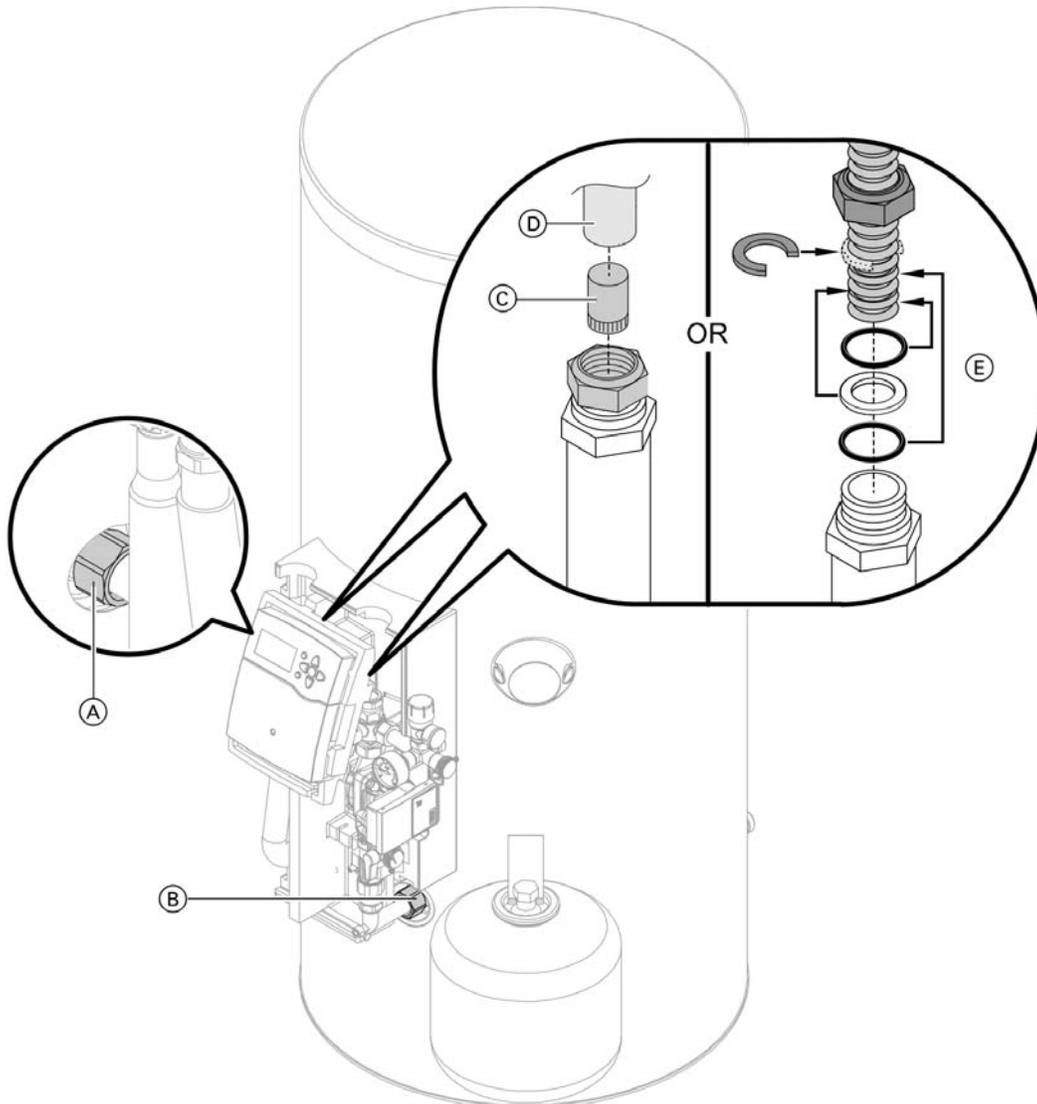
Permissible operating pressure

Solar side	87 psig (6 bar)
Heating water side	147 psig (10 bar)

Test pressure

Solar side	235 psig (16 bar)
Heating water side	235 psig (16 bar)

Making the Connections to the Solar Piping



1. Install the Solar Divicon unit (if required).
2. Check connections (A) and (B) for leaks and retighten if required. Torque: 33 to 37 lb.ft (45 to 50 Nm)
3. When using copper pipes:
Insert support sleeves (C) inside ¾ in. x 4 in. long copper adaptors (D). Torque for both union nuts: 22 lb.ft (30 Nm)
4. When using Viessmann flexible insulated ½ in. stainless steel piping:
Connect the stainless steel piping as shown (E) directly to the Solar-Divicon using the locking clip, O-rings, gasket and lubricant supplied with the piping kit.

IMPORTANT

Use 4 in. copper adaptors that are supplied with the Solar Pack (to adapt from 22 mm to ¾ in.).

5. Install the supply line with a rise and install an air vent valve at the highest point.
6. Only for heating water supply temperature in excess of 230°F (110°C):
Install a type-tested high limit safety cut-out, if none has been installed in the system. For this, use a temperature limiter and a high limit safety cut-out.

CAUTION

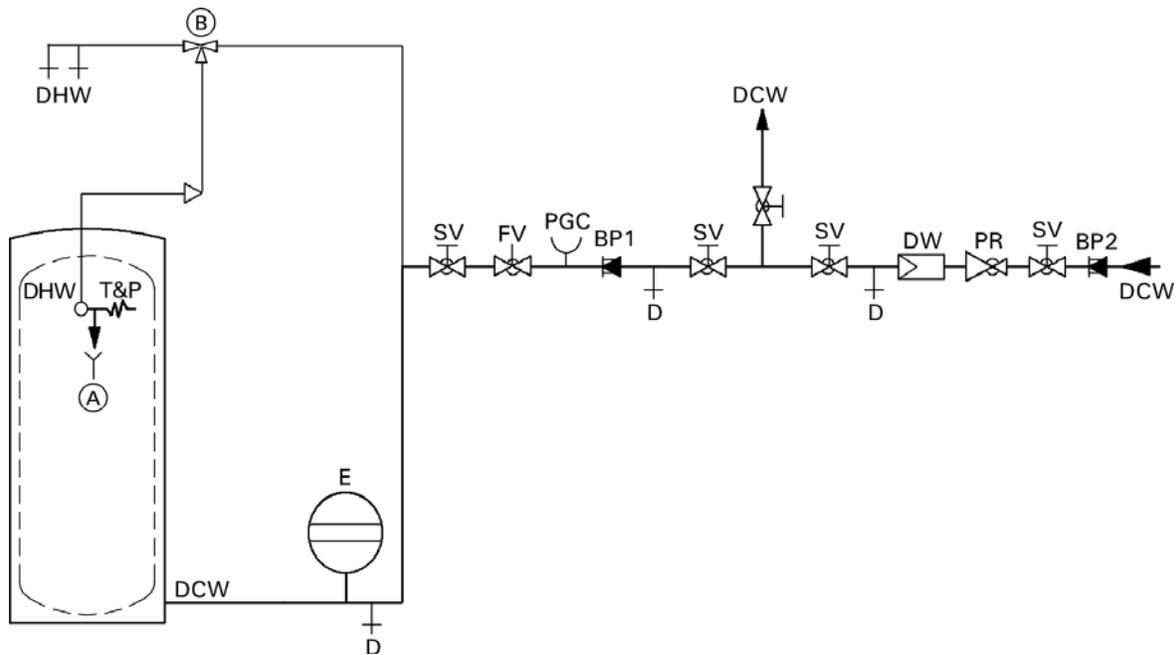
Once stainless steel piping is installed, pull lineset upwards to check for tightness. If loose, tighten.

Connections on the DHW Side

Permissible temperature	203°F (95°C)
Permissible operating pressure:	147 psig (10 bar)
Test pressure:	235.2 psig (16 bar)

- For the DHW connection, observe all local plumbing code requirements.
- Connect all pipework with detachable fittings.
- Seal connections that are not required with red brass caps.

Note: - Connect all pipe work with detachable fittings.
 - Seal connections that are not required with red brass caps.
 - Insulate domestic hot water supply piping.



Legend

- Ⓐ Discharge pipe
- Ⓑ Anti-scald tempering valve (field supplied)
- SV Shut-off valve
- FV Flow check valve
- PR Pressure reducing valve
- D Drain
- DCW Cold water supply lines
- PGC Pressure gage connection
- E Precharged expansion tank (required where backflow preventer is installed; check local plumbing codes and requirements)
- BP1 Backflow preventer
- BP2 Backflow preventer
- T&P Temperature and pressure relief valve
- DW Water filter
- DHW Domestic hot water supply

IMPORTANT

This is a simplified conceptual drawing only! Piping and necessary componentry must be field verified. Proper installation and functionality in the field are the responsibility of the heating contractor.

WARNING

Due to the potentially high DHW temperatures generated by the solar heating system, the domestic hot water temperature must be limited to a maximum of 140°F (60°C) by installing a anti-scald tempering valve. The tempering valve does not completely eliminate the risk of scalding at the tap. The installation of a mixing tap is recommended.

Connections on the DHW Side *(continued)*

Always ensure the use of type approved devices. Safety devices include the following components:

- Isolation valves
- Drain valve
- Pressure reducing valve where required by local jurisdiction
- Drinking water filter where required by local jurisdiction
- Backflow preventer
Where backflow preventers are required, a domestic water expansion tank installation is required in the cold water inlet piping before the cold water enters the tank. The backflow device must be installed according to the manufacturer’s installation instructions. Observe local codes and regulations.
- Tempering valve
A tempering valve must be field installed where storage tank (domestic hot water temperature) exceeds local restricted temperatures or 140°F (60°C). Check code requirements.
- Temperature and pressure relief valve
A temperature and pressure relief valve (T&P valve) is supplied with the tank. The heating contractor must install the valve on each tank in a method meeting code requirements.

If local codes require a different relief valve, consult Viessmann Manufacturing for a substitute valve. The tank is approved for 150 psig (10.3 bar). Maximum operating pressure is 150 psig (10.3 bar).

The T&P valve supplied with the tank is tested under ANSI Z21.22 Code for Relief Valves and Automatic Gas Shut-off Devices for Hot Water Supply Systems.

Proper installation of the T&P valve shall include all of the following:

- The T&P valve shall be installed in the pipe connection point marked TPV in the tank instruction manual.
- The discharge line from the T&P valve shall be ¾ in. (1.9 cm) Ø and run to a safe place of discharge approximately 1 ft. (30 cm) above the floor, close to a floor drain.
- The discharge line must be as short as possible and pitch downward from the T&P valve and terminate plain.

! WARNING
The discharge line for the T&P valve must be oriented to prevent scalding of attendants.

- Do not route discharge line to the outdoors.
- Do not install any type of valve or an obstruction of any kind between the tank and the T&P valve, or between the T&P valve and the discharge line outlet.

! WARNING
The valve test lever must be operated at least once per year by the owner to ensure that waterways are clear. A licensed professional heating contractor shall reinspect the T&P valve at least once every three years. Failure to inspect can result in unsafe temperature or pressure build-up, which can result in death, serious injury or substantial product/property damage.

Watts Model 40XL-8	150 psig (10.3 bar)
ASME pressure steam rating	1438 MBH
CSA temperature steam rating	205 MBH
Relief temperature	210°F (99°C)
Inlet thread	¾" male
Outlet thread	¾" female

Commissioning



Refer to Vitosol DHW Solar Pack Operating and Service Instructions.

Quick Reference

°C	°F
-40	-40
-35	-31
-25	-13
-20	-4
-18	0
-16	+3
-14	+7
-12	+10
-10	+14
-9	+16
-8	+18
-7	+19
-6	+21
-5	+23
-4	+25
-3	+27
-2	+28
-1	+30
0	+32
+1	+34
+2	+36
+3	+37
+4	+39
+5	+41
+6	+43
+7	+45
+8	+46
+9	+48
+10	+50
+12	+54
+14	+57
+16	+61
+18	+64
+20	+68
+25	+77
+30	+86
+35	+95
+40	+104
+50	+122
+60	+140
+70	+158
+80	+176
+90	+194
+100	+212
+110	+230

Viessmann Manufacturing Company Inc.
 750 McMurray Road
 Waterloo, Ontario • N2V 2G5 • Canada
TechInfo Line 1-888-484-8643
 1-800-387-7373 • Fax (519) 885-0887
 www.viessmann.ca • info@viessmann.ca

Viessmann Manufacturing Company (U.S.) Inc.
 45 Access Road
 Warwick, Rhode Island • 02886 • USA
TechInfo Line 1-888-484-8643
 1-800-288-0667 • Fax (401) 732-0590
 www.viessmann-us.com • info@viessmann-us.com

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