

Installation Instructions

for use by heating contractor

VIESSMANN

Vitocell 300-B

EVB Series

Dual-coil, indirect-fired domestic hot water storage tank

79 USG and 119 USG (300 L and 450 L) capacity



VITOCCELL® 300-B



CAUTION

The heat transfer medium must be water or other non-toxic fluid having a toxicity rating or class of 1, as listed in clinical toxicology of commercial products, 5th edition.

This tank version is not suitable for steam heating applications.

The pressure of the heat transfer medium must be limited to a max. of 30 psig by an approved safety or relief valve.



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

► *Please see section entitled "Important Regulatory and Installation Requirements".*



■ Product documentation

Read all applicable documentation before commencing installation. Store documentation near product 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 Installation 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, shutdown procedure, and the need for professional service annually before the heating season begins.

■ Warranty

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



In solar applications



CAUTION

The heat transfer medium must be either potable water or contain only substances which are recognized as safe by the U.S. Food and Drug Administration.

The Pressure of the heat transfer medium must be maintained less than the normal minimum operating pressure of the potable water system.

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Important Regulatory and Installation Requirements

Codes

The installation of indirect-fired hot water storage tanks in boilers and solar system application might be governed by individual local rules and regulations for this type of product, which must be observed. Always use latest editions of codes.

In the Commonwealth of Massachusetts, all plumbing work must be done by a licensed plumber or gas-fitter and for gas installations, all gas piping must be done by a licensed gas-fitter.

Mechanical room

Ensure the mechanical room complies with the requirements of the system design guideline and/or Technical Data Manual (available from your Viessmann sales representative).

The tank must be installed in a mechanical room which is never subject to freezing temperatures.

Ensure water in tank is drained if not in use and danger of freezing exists in the mechanical room.



WARNING

If the heating system itself is to be filled with Glycol or any other antifreeze, the system fill must be of non-toxic or food grade antifreeze. In any circumstance, a non-toxic fluid must be used. Ensure a copy of the Material Safety Data Sheet (MSDS) is supplied to the operator/ultimate owner of the system. The use of Viessmann supplied "Tyfocor-HTL" solar fill is recommended for the solar heating circuit.

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.

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 to avoid accidental activation of power during service work.

Technical literature

Literature applicable to all aspects of the Vitocell:

- Technical Data Manual
- Installation Instructions
- Start-up/Service Instructions
- Operating Instructions and User's Information Manual

- Please carefully read this manual prior to attempting installation. Any warranty is null and void if these instructions are not followed.

This product must be installed observing not only the information and instruction provided in the pertinent product literature (see list on following page), but also all local, provincial/state plumbing and building codes, as they apply to this product and all periphery equipment.

For information regarding other Viessmann System Technology componentry, please reference documentation of the respective product (available from your Viessmann sales representative).

We offer frequent installation and service seminars to familiarize our partners with our products. Please inquire.

- 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, temperature controls, etc.

- 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 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 minor injury or product/property damage.

- 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.

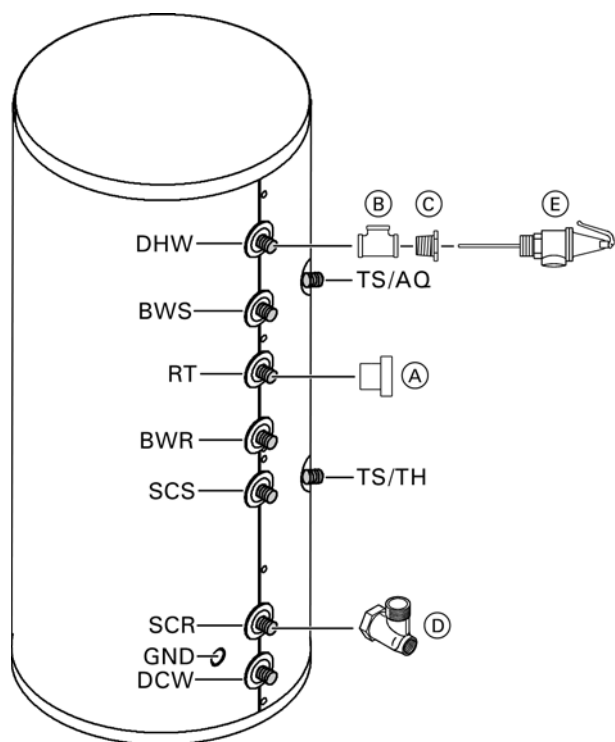
Product Information

79 USG and 119 USG (300 L and 450 L) capacity

Indirect-fired domestic hot water storage tank with dual heat exchanger coil for use with hot water heating boilers, solar heating systems, residential/commercial heating plants, and low-temperature heating systems.

This tank version is not suitable for steam heating applications.

Tank Connections



Legend

DHW	Domestic hot water supply
TS/AQ	DHW temperature sensor or aquastat of boiler control (upper indirect coil)
BWS	Boiler water supply ^{*1}
RT	Recirculation tapping
BWR	Boiler water return ^{*1}
TS/TH	DHW temperature sensor and thermometer probe (lower indirect coil)
SCS	Solar collector supply ^{*2}
SCR	Solar collector return and temperature sensor for solar operation ^{*2, 3}
DCW	Domestic cold water supply
GND	Grounding connection (casing), 79 USG (300 L) model only

^{*1} The upper indirect coil is provided for connection to a boiler or a heat pump.

^{*2} The lower indirect coil is provided for connection to solar collectors or heat pumps.

^{*3} Recommended arrangement of temperature sensor for solar operation:
Use brass elbow with sensor well (accessory) in the solar collector return (see page 9 and 11).

Supplied adaptor sizes		Vitocell 300-B	
Part	Size	53/79 USG (200/300 L)	119 USG (450 L)
Ⓐ Brass cap	1 in.	1	--
	1 1/4 in.	--	1
Ⓑ Brass tee	1 in.	1	--
	1 1/4 in.	--	1
Ⓒ Reducer hex bushing	1 in. x 3/4 in.	1	--
	1 1/4 in. x 3/4 in.	--	1
Ⓓ Solar brass elbow with sensor well	1 in.	1	--
	1 1/4 in.	--	1
Ⓔ Temperature and pressure relief valve	3/4 in.	1	1

Tank Set-up

- For narrow passageways, remove upper and lower portion of crating and carry DHW tank to its installation location by means of crating boards mounted on the tank.
- Position tank carefully and remove wood crating.
- Leave adequate clearance to the wall or other objects enabling easy access to the aquastat (where applicable).
- Install tank(s) on flooring or foundation capable of supporting the weight of the tank(s) filled with water.



CAUTION

Install the DHW tank in a frost-protected and draft-free room. Otherwise it must be drained when not in use, in order to reduce the risk of damages caused by freezing.

IMPORTANT

Provide sufficient clearances towards the wall to allow the aquastat to be operated (if installed).

Recommended installation clearances for service access

Rear		in. (mm)	18 (460)
Sides	May be reduced if rear pipe connections can be reached with less clearance	in. (mm)	12 (300)
Top		in. (mm)	12 (300)
Front		in. (mm)	26 (650)

Minimum clearance to combustibles

All sides		in. (mm)	0 (0)
Floor		combustible	

IMPORTANT

When using the Vitocell 300-B tank for solar applications always use a brass elbow complete with sensor well on the solar collector return connection.



Refer to the "Installation of DHW temperature sensor for solar operation" in the respective tank Installation Instructions.

79 USG (300 L) Tank Installation

Thermal insulation and thermometer installation

1. Level the DHW tank with its leveling bolts.

IMPORTANT

Do not extend the leveling bolts beyond an overall length of 1 ½ in. (35 mm).

Note: the 79 USG (300 L) tank comes with the insulation jacket installed.

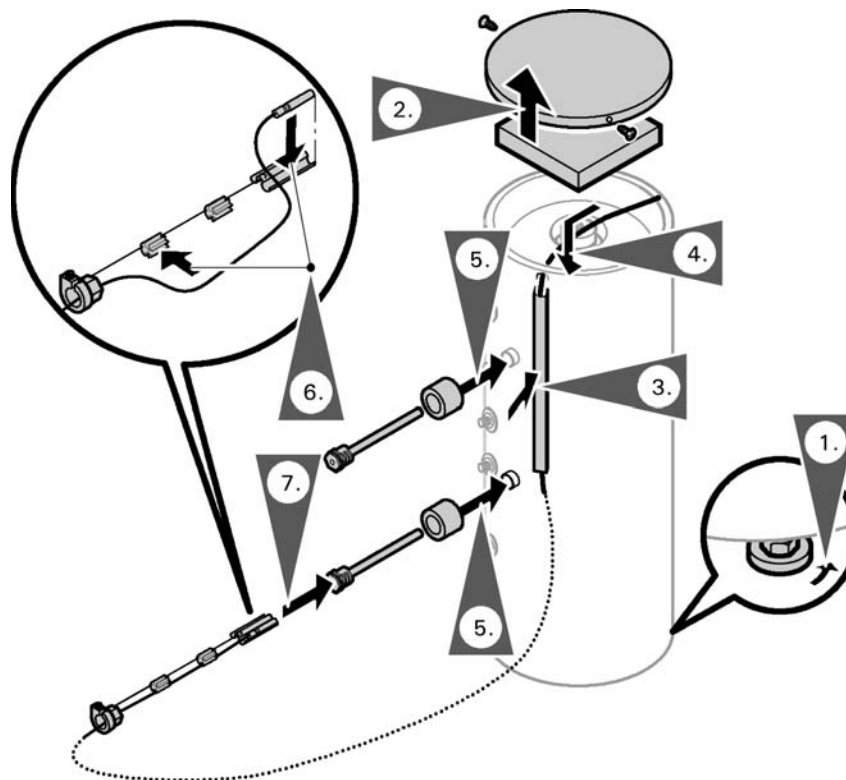
2. Remove the top cover and the thermal insulation blanket.
3. Attach the cable channel.

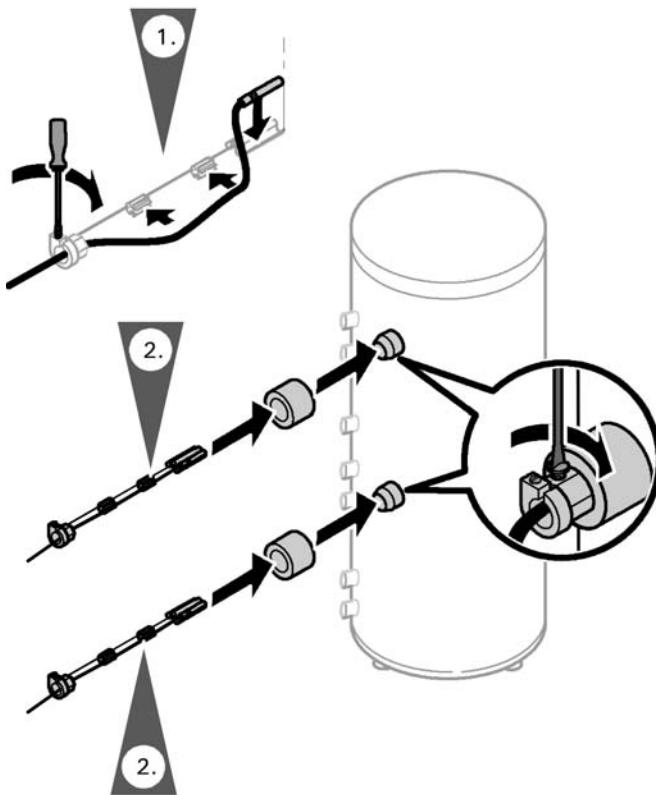
4. Guide the lower thermometer cable through the insulation blanket and the cable channel.
5. Connect the reducing couplings and sensor wells to the tank.
6. Position the thermometer probe on the outside of the location spring (not in the groove), so that it is flush with the front of the spring.

IMPORTANT

Never wrap insulating tape around the thermometer probe.

7. Insert the sensor mounting hardware with the thermometer probe until it bottoms out inside the lower sensor well.



79 USG (300 L) Tank Installation *(continued)***Temperature sensor installation (when using a Vitotronic 200 / 300 or Vitodens 200)**

The primary DHW tank temperature sensor is included in the boiler control unit package.

1. Position the temperature sensor on the outside of the location spring (not in the groove), so that it is flush with the front of the spring.
2. Insert the sensor mounting hardware with the sensor until it bottoms out inside the lower sensor well.

IMPORTANT

Never wrap insulating tape around the sensor.

! WARNING

To ensure maximum operational reliability, use the sensor well supplied for the control device sensor or probe. Use a different stainless steel (1.4571 or 1.4435) sensor well, if the sensor or probe does not fit into the supplied sensor well.

IMPORTANT

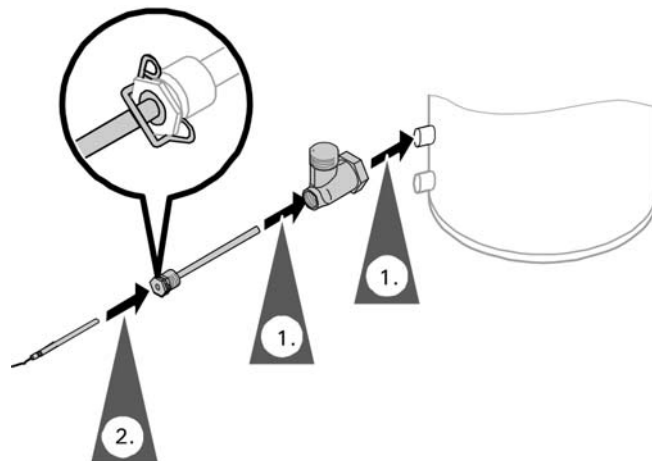
Due to the length of the stainless steel well 15 in. (380 mm), care must be taken to ensure that the sensing bulb of the limit is inserted and pushed to the end of the stainless steel well.

Note: When using a Vitotronic 100 boiler control, refer to page 14 for aquastat installation.

Temperature sensor installation for solar operation

The temperature sensor for solar operation is included in the solar control unit package.

The brass elbow with sensor well is available as an option and must be used when solar connection is required.



1. For solar operation, install the sensor well into the brass elbow and connect the assembly to the solar return line.
2. Insert the temperature sensor until it bottoms out inside the sensor well.

IMPORTANT

Never wrap insulating tape around the sensor. Do not install solar tank sensor anywhere other than the brass elbow with sensor well.

119 USG (450 L) Tank Installation

Levelling and bottom thermal insulation

All necessary parts for enclosure assembly are packaged in a separate carton.



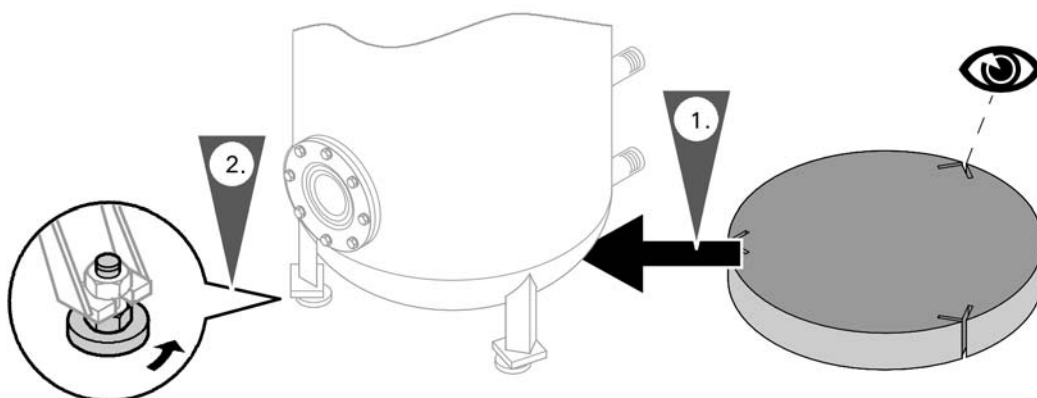
CAUTION

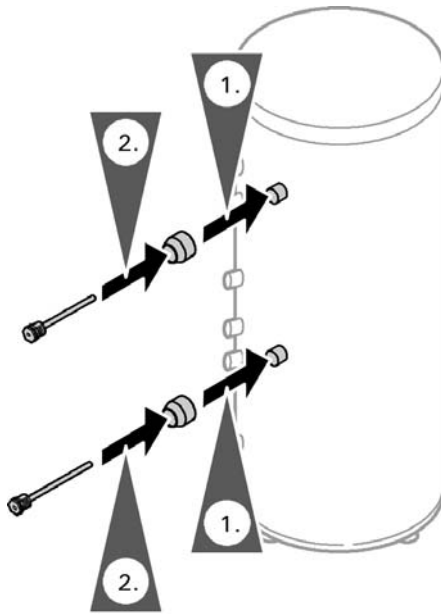
The thermal insulation must not come in contact with open flames. Exercise extreme caution when welding and soldering.

1. Fit the thermal insulation blanket below the tank prior to the installation of the tank itself.
2. Position and level the DHW tank with its leveling bolts.

IMPORTANT

Do not extend the leveling bolts beyond an overall length of 1 ½ in. (35 mm).



119 USG (450 L) Tank Installation *(continued)***Temperature sensor installation (when using a Vitotronic 200 / 300 or Vitodens 200)**

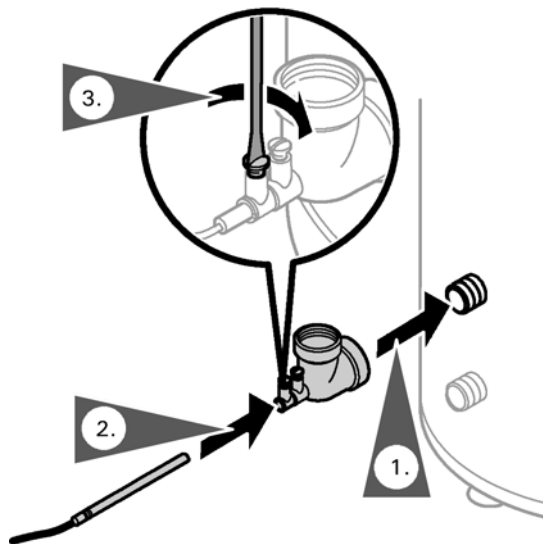
The primary DHW tank temperature control sensor is included in the control unit package.

1. Connect the reducing couplings to the tank.
2. Insert the shorter well at the top and the longer well at the bottom.
3. Install the temperature sensor.

Note: When using a Vitotronic 100 boiler control, refer to page 14 for aquastat installation.

IMPORTANT

Never wrap insulating tape around the sensor.

**Temperature sensor installation for solar operation**

The temperature sensor for solar operation is included in the solar control unit package.

The brass elbow with sensor well is available as an option and must be used when solar connection is required.

1. For solar operation, install the sensor well/brass elbow and connect the assembly to the solar return line.
2. Insert the temperature sensor until it bottoms out inside the sensor well.

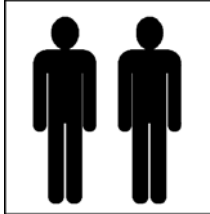
IMPORTANT

Never wrap insulating tape around the sensor. Do not install solar tank sensor anywhere other than the brass elbow with sensor well.

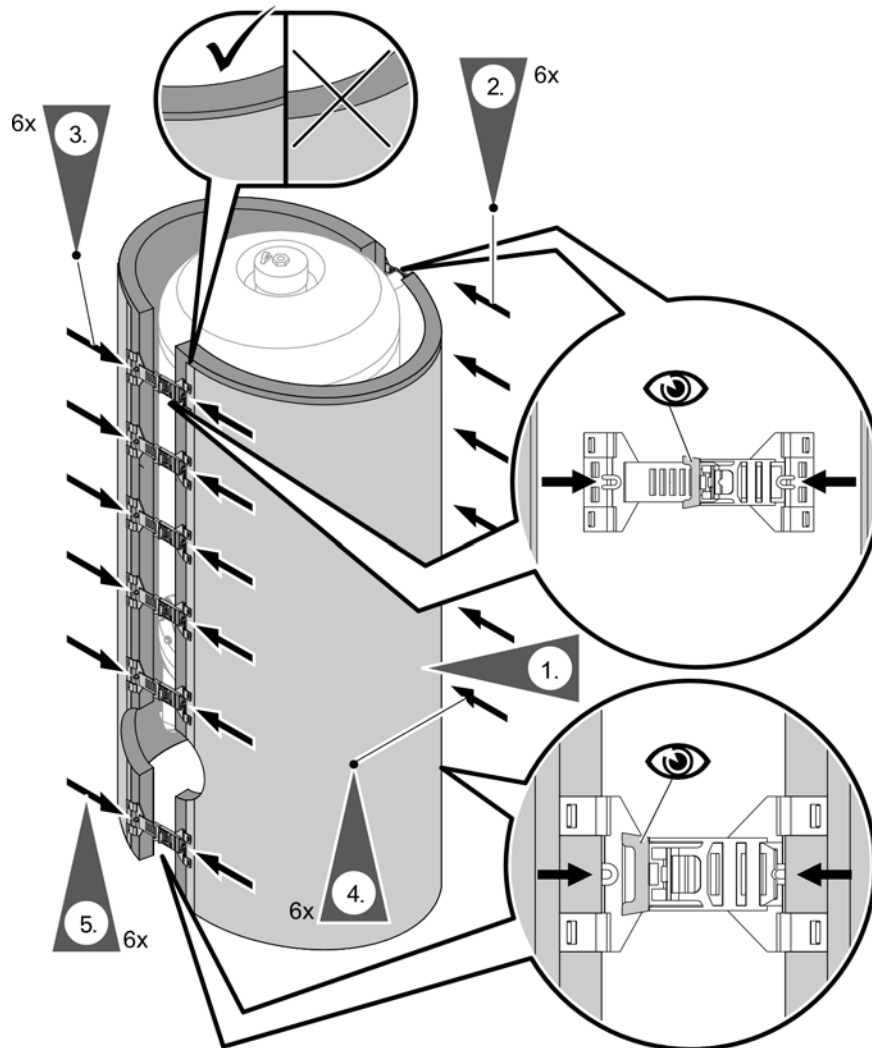
3. Tighten screws to secure sensor (do not over tighten).

119 USG (450 L) Tank Installation *(continued)***Fitting the thermal insulation jacket**

- Note:** - insulation remnants must not enter the tank through the tank connections.
 - 2 people are recommended to complete this work.



1. Fit both halves of the insulation jacket close to the tank. Orient the jacket so the profile cutouts match the tank fittings.
2. At the rear of the tank, install all 6 clip closures evenly to both halves of the insulation jacket.
3. At the front of the tank, install all 6 clip closures evenly to both halves of the insulation jacket.
4. At the rear of the tank, tighten all 6 clip closures until both halves of the insulation jacket meet.
5. At the front of the tank, tighten all 6 clip closures until both halves of the insulation jacket meet.

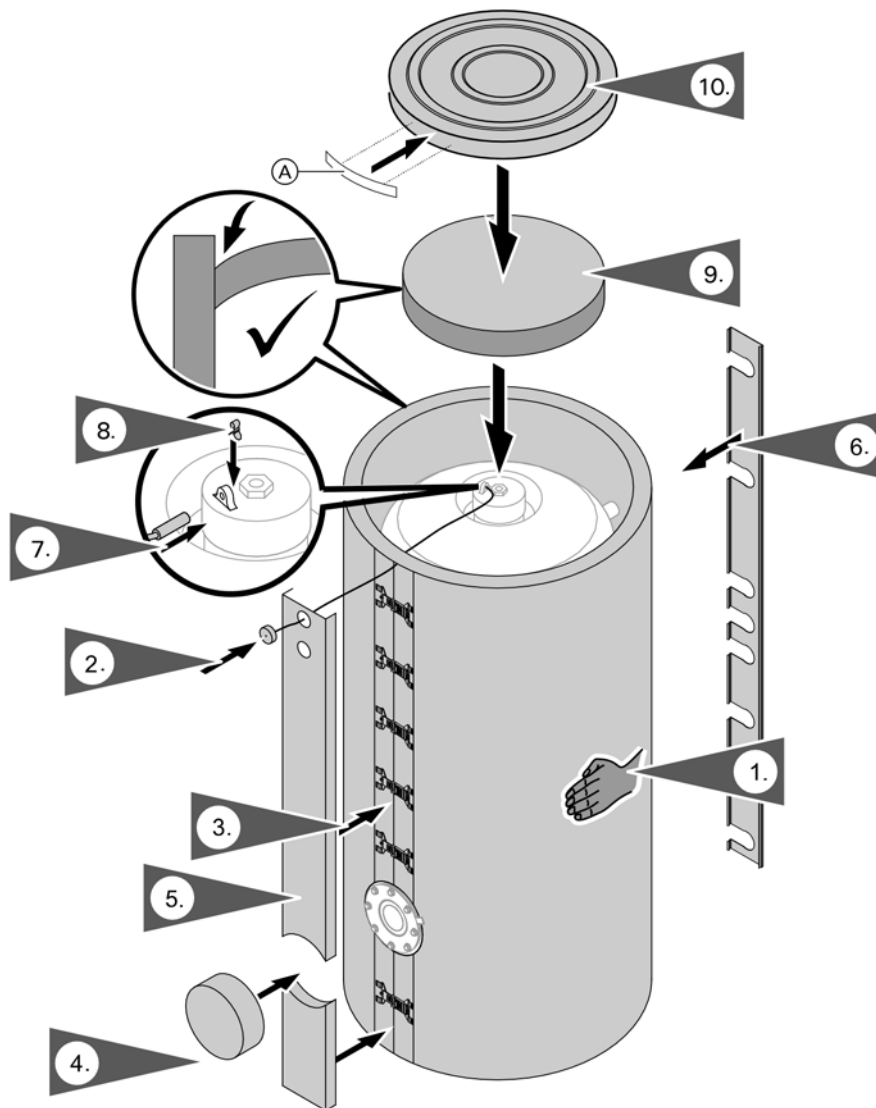


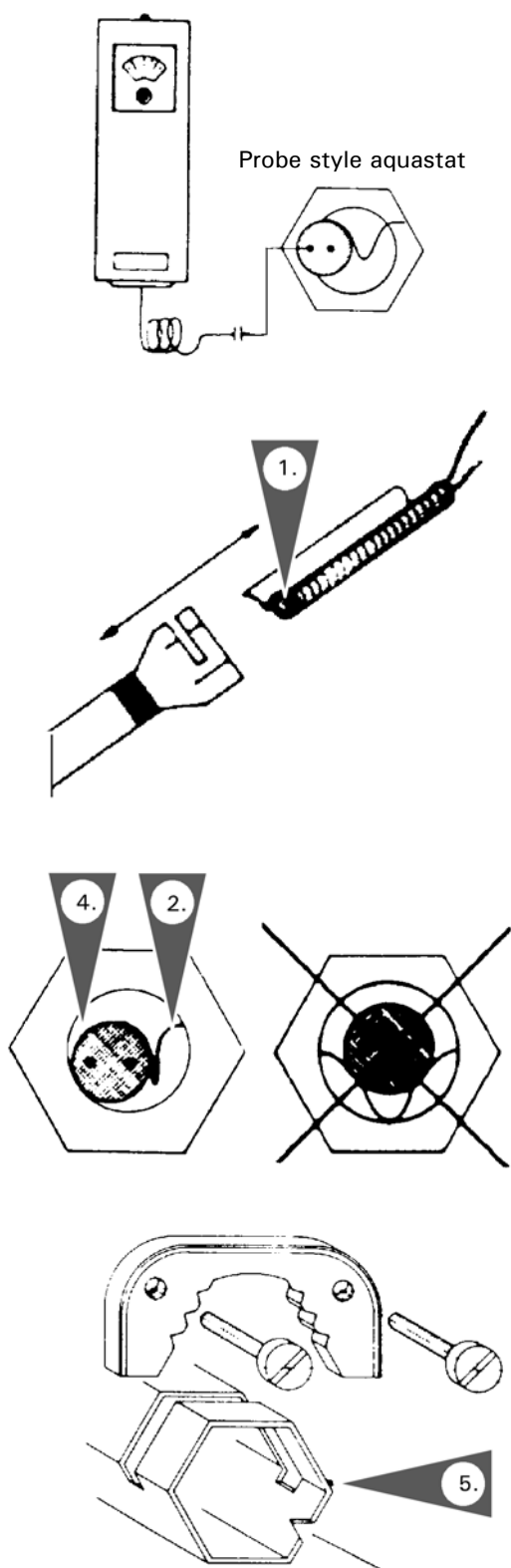
119 USG (450 L) Tank Installation *(continued)*

Fitting the thermometer and thermometer sensor (if supplied) and covers

1. Smooth out the insulation jacket by tapping the jacket evenly against the tank.
2. Route thermometer capillary tube through the front cover hole and insulation jacket, then snap the thermometer in place.
3. Route the thermometer capillary tube through the jacket seam.
4. Install the front clean out cover and the front lower seam cover.
5. Install the upper front seam cover.
6. Install the back seam cover.
7. Insert the thermometer sensor into the tank cap hole as far as it will go.
8. Secure the sensor with a spring clip.
9. Install the top insulation and press down the edges as shown.
10. Install the top lid and press the logo (A) into the lid.

Note: Seal the hole in the seam cover below the thermometer with a cover.



Aquastat Installation (when using a Vitotronic 100)

Where a Vitotronic 100 and a Viessmann Power/Pump Control Module (accessory) are utilized to control DHW production, follow these aquastat mounting instructions:

1. Insert the extended capillary of the aquastat (supplied with Viessmann Power/Pump Control Module, not illustrated) fully and completely into sensor well. Mount aquastat inconspicuously on tank paneling. Follow instructions below with regard to sensor and spring clip installation.
- ... if aquastat is to be mounted remote from the tank well,
2. Align sensor bulb with spring clip.
3. Slide assembly into well.
4. The retention spring clip must press the bulb properly to ensure surface contact with the well.
- ... if aquastat is to be mounted directly on the tank well,
5. Mount aquastat with holding clip supplied directly onto well. Bend capillary tube into groove opening to allow for mounting of aquastat.

! WARNING

To ensure optimum, safe operation, the supplied stainless steel well must be installed. The well diameter is large enough to accommodate a wide variety of sensing bulbs.

Always use spring clip to ensure proper contact of capillary bulb against the stainless steel well for proper sensing/heat transfer!

Grounding connection

Connect the grounding in accordance with the requirements stipulated by your local electricity supply company and current local regulations.

! WARNING

The operating aquastat and any secondary high limit aquastat of the tank must be set such that the DHW temperature inside the tank never exceeds 203°F (95°C).

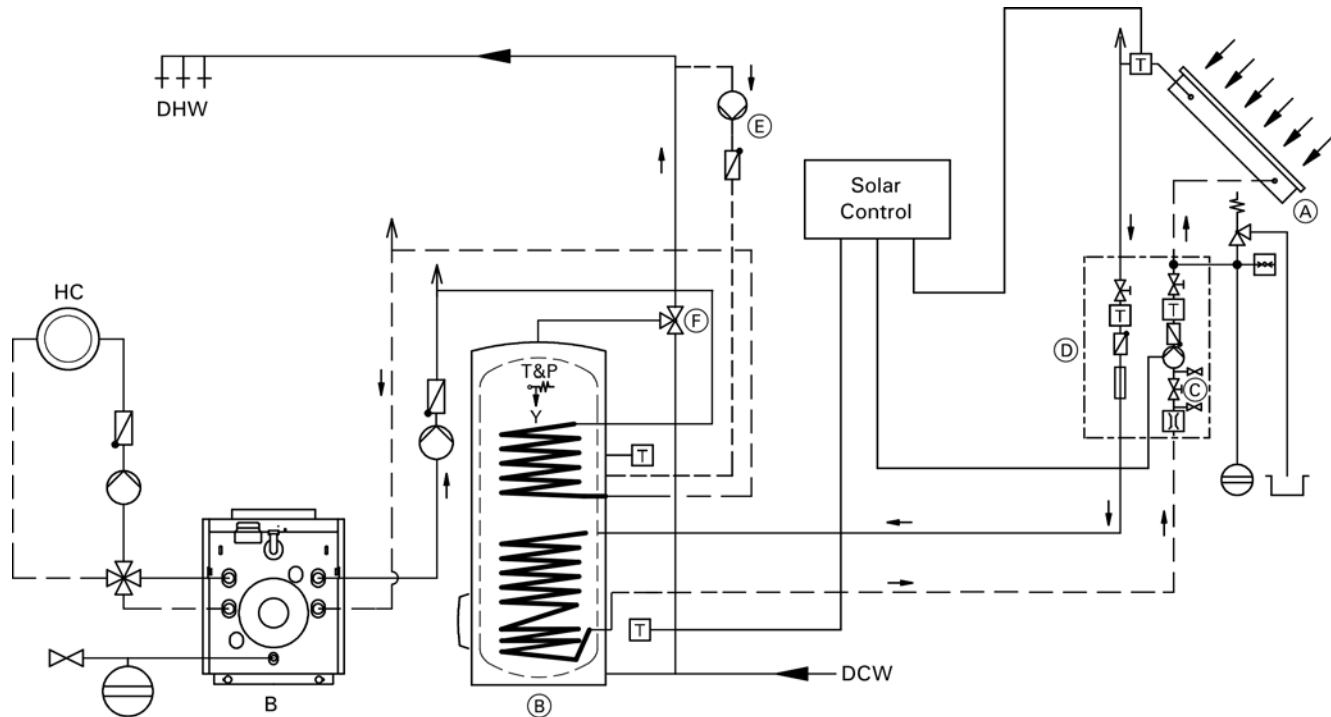
! WARNING

Domestic hot water temperatures over 125°F (52°C) can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded.

Feel water before bathing or showering. Temperature limiting valves are available and must be used where domestic hot water storage tank temperatures exceed 140°F (60°C).

Boiler Water Connections (heat exchanger connection)

Recommended piping for solar application with individual DHW tank



Legend

- (A) Solar collector
- (B) Vitocell-B 100
- (C) Filling valve
- (D) Solar-Divicon (pumping station)
- (E) Recirculating pump
- (F) Anti-scald tempering valve
- HC Heating circuit
- B Oil/Gas-fired boiler
- DCW Domestic cold water
- DHW Domestic hot water
- T&P Temperature and pressure relief valve

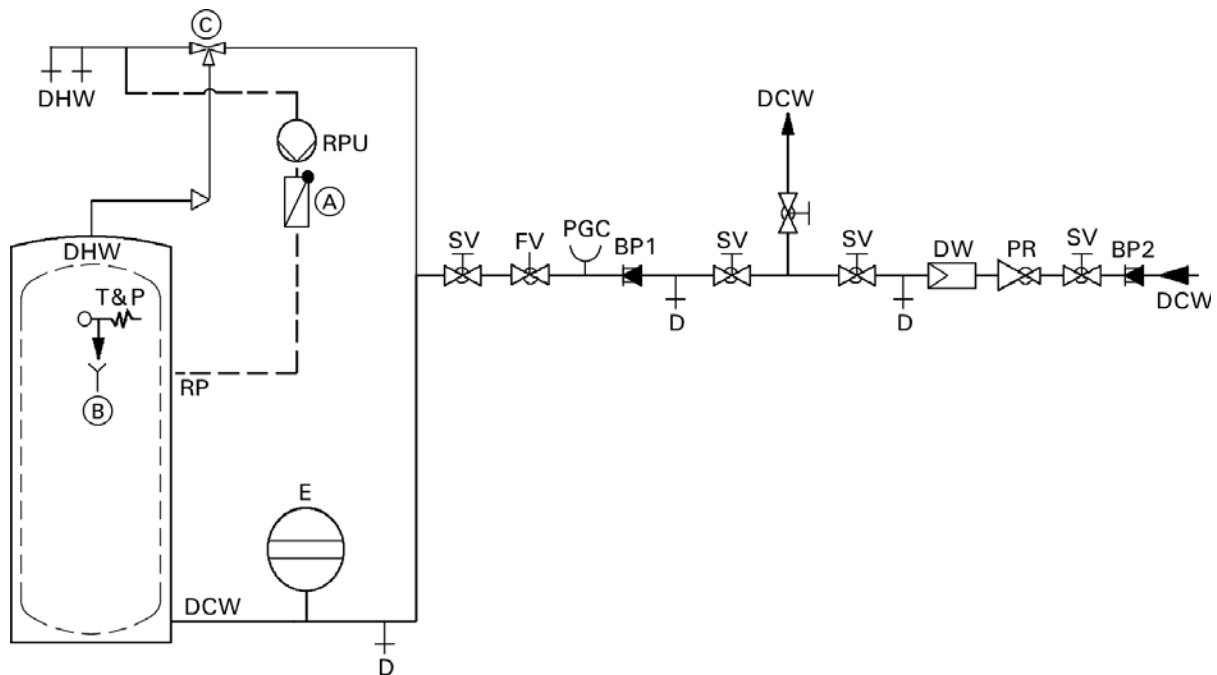
1. For boiler water supply temperatures over 203°F (95°C):
Remove plastic supply and return grommets (grommets are left-threaded).
2. Pipe supply line with an incline and install an air vent valve at the highest point.
3. For boiler water supply temperatures over 230°F (110°C):
Install a type-tested high limit safety cut-out, if no other has previously been installed in this system. For this purpose, install a dual thermostat (high limit thermostat and high limit safety cut-out).
4. Close off test nipples which are not used for the installation of a probe or sensor.



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.

Domestic Water Connections



Legend

- Ⓐ Spring-loaded flow check valve
- Ⓑ 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 Pre-charged 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
- RP Recirculation pipe
- RPU Recirculation pump

- Note:** - Connect all pipe work with detachable fittings.
- Seal connections that are not required with red brass caps.
 - Equip the DHW circulation pipe with circulation pump, check valve and time switch. Gravity operation is only feasible to a limited degree.
 - Always install DHW group of tanks with connected DHW circulation.

1. Pipe together boiler and tank as illustrated. Connections must be accessible for service (use factory supplied adaptors).
2. Insulate domestic hot water supply piping.

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.

Domestic Water Connections *(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.

IMPORTANT

In situations where a booster pump is used to maintain DHW pressure, Viessmann strongly recommends the installation of an oversized expansion tank to ensure longer, less frequent pump cycles with less severe pressure gradients. If possible, use flexible piping before and after booster pump to isolate system piping from vibration and shocks.

- 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. Maximum operating pressure is 150 psig.

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.

T&P Valve	100 psig (where CRN is required)	150 psig
ASME pressure steam rating	see ratings marked on T&P valve	
CSA temperature steam rating	205 MBH	205 MBH
Relief temperature	210°F (99°C)	210°F (99°C)
Inlet thread	¾" male	¾" male
Outlet thread	¾" female	¾" female

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. (19 mm) Ø and run to a safe place of discharge approximately 1 ft. (305 mm) 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.

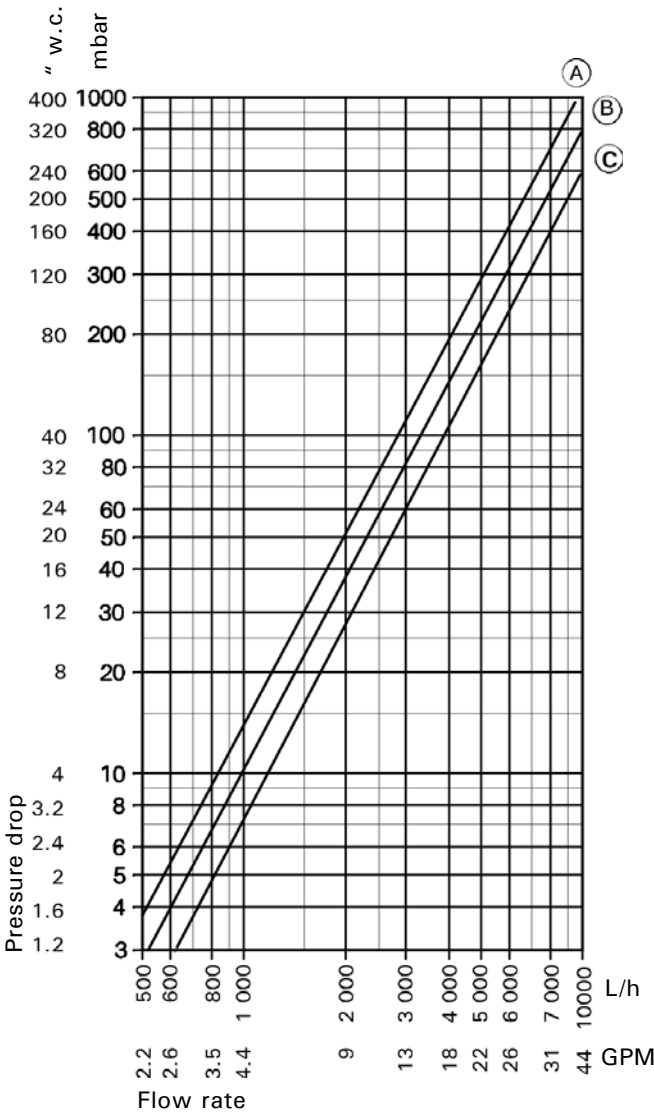


WARNING

The valve test lever must be operated at least once per year by a licensed professional heating contractor 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.

Pressure Drop Information

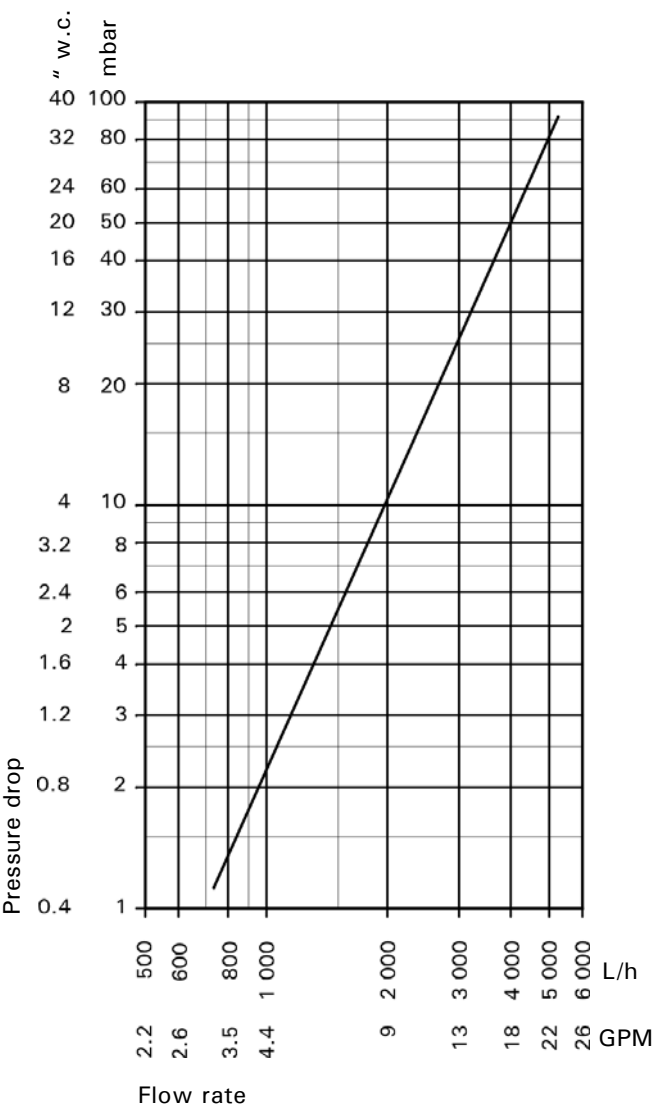
Pressure drop on heating water side
of a single coil



Legend

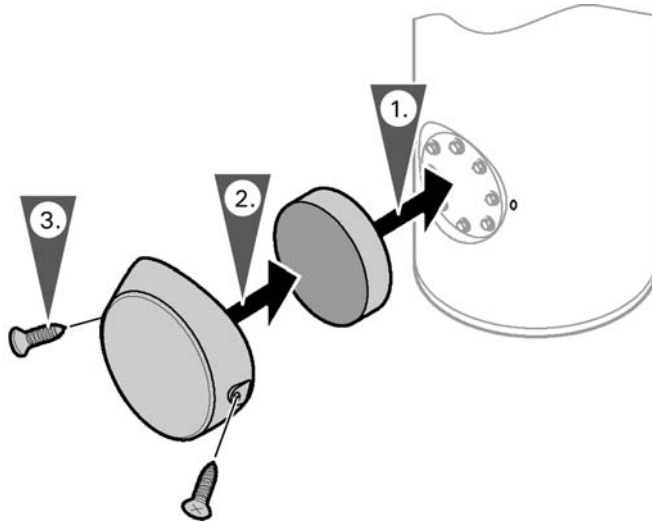
- (A) Lower indirect coil, 119 USG (450 L) capacity
- (B) Lower indirect coil, 79 USG (300 L) capacity
- (C) Upper indirect coil, 79 USG (300 L) and 119 USG (450 L) capacity

Domestic hot water pressure drop
for 79 and 119 USG (300 and 450 L) DHW tanks



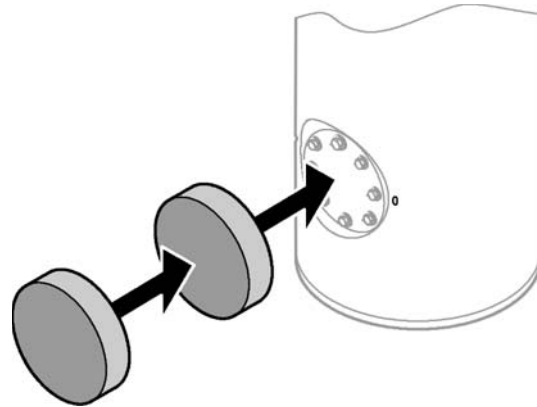
Inspection Opening

Inspection opening for 79 USG (300 L) tank



1. Install front insulation blanket.
2. Install inspection cover.
3. Tighten screws.

Inspection opening for 119 USG (450 L) tank



1. Install front insulation blanket.
2. Install inspection cover.

Post Installation

Service binder

1. File all Parts Lists, Operating and Service Instructions in the Service Binder.
2. Install a protective hanging case near the boiler and store the Service Binder in this location.

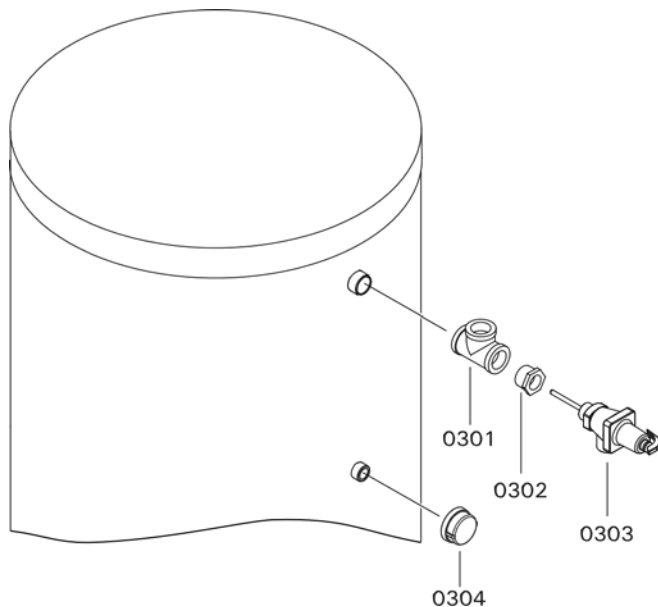
For a listing of applicable Viessmann literature, please see Important Regulatory and Installation Requirements on page 4.

Start-up information



DHW Tank Start-up/Service Instructions

Installation Set



Parts

0301 Tee

0302 Hex bushing

0303 Temperature and pressure relief valve, $\frac{3}{4}$ " 150 psi

0304 Cap

Printed on environmentally friendly
(recycled and recyclable) paper.



Technical information subject to change without notice.

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