

# Technical Data Manual

Model Nos. and pricing: see Price List

# 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



*Product may not be exactly as shown*

Vertical indirect-fired domestic hot water storage tank of high-grade stainless steel with two coils.

One heat exchanger coil facilitates heat transfer from the solar collectors to domestic hot water, a second heat exchanger coil allows reheating of the water content by the hot water heating boiler.

**CAUTION**

**This tank version is not suitable for steam heating applications.**



## Benefits

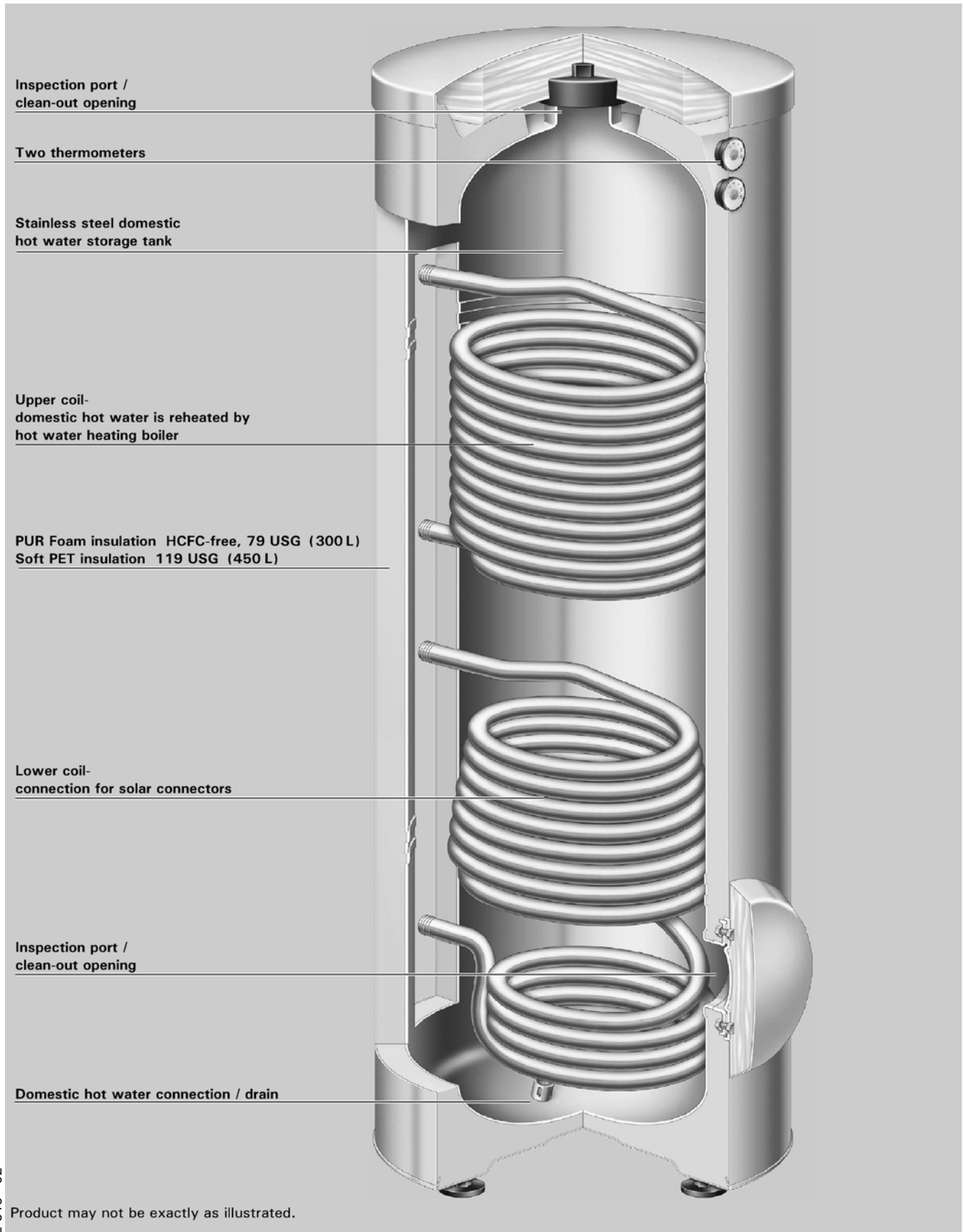
Domestic hot water storage tank of high-grade stainless steel highly effective all-around thermal insulation.

Fully hygienic, efficient and economical domestic hot water production by solar collectors and a hot water heating boiler. Heat from the solar collectors is transferred to the domestic hot water via the lower tank coil.

### Benefits at a glance:

- Corrosion-resistant tank of high-grade SA 240-316 Ti stainless steel offers a long service life.
- Fully hygienic due to high quality homogeneous stainless steel surfaces.
- The high-alloy material is immune to cracking or peeling. The tank stays hygienic and requires only minimum service.
- Does not require a consumable anode for corrosion protection.
- The entire water content is heated by a 1¼ in. (34 mm) diameter stainless steel heat exchanger surface which extends to the bottom of the tank.
- Large heat exchanger surfaces allow fast and even heating of the entire water content, guaranteeing a high level of domestic hot water comfort.
- Standby losses minimized by highly effective HCFC-free insulation.  
79 USG (300 L) version comes equipped with hard PUR foam.  
119 USG (450 L) version is supplied with removable soft PET insulation for easier handling.
- Two thermometers to show the DHW temperature at the top of the tank, and at the midpoint of the tank.
- Tank design is accepted in the State of Massachusetts as being ASME equivalent.
- Certified to CSA Low Lead Content Certification Program; including US Safe Drinking Water Act, NSF/ANSI 372 as well as other applicable US State requirements.

# Cross Section



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**Technical Data**

For DHW production in conjunction with solar systems, heating boilers and heating systems, without low limit for dual coil operation.

Suitable for heating systems with:

- max. working pressure on heat exchanger side up to 220 psig at 392°F (200°C)
- max. working pressure on DHW water side of up to 150 psig at 210°F (99°C)
- max. testing pressure on DHW side of 300 psig

Storage capacity		USG (L)	79 (300)		119 (450)	
Coil			upper* 1	lower* 2	upper* 1	lower* 2
<b>Recovery rates* 3</b> with a DHW temperature increase from 50 to 113°F (10 to 45°C) and a supply water temperature of.....	194°F (90°C)	MBH (kW)	273 (80)	318 (93)	273 (80)	328 (96)
		GPH (L/h)	519 (1965)	604 (2285)	519 (1965)	623 (2358)
	176°F (80°C)	MBH (kW)	218 (64)	246 (72)	218 (64)	249 (73)
		GPH (L/h)	415 (1572)	467 (1769)	415 (1572)	474 (1793)
	158°F (70°C)	MBH (kW)	154 (45)	178 (52)	154 (45)	191 (56)
	GPH (L/h)	292 (1106)	337 (1277)	292 (1106)	364 (1376)	
	140°F (60°C)	MBH (kW)	96 (28)	102 (30)	96 (28)	126 (37)
	GPH (L/h)	182 (688)	195 (737)	182 (688)	240 (909)	
	122°F (50°C)	MBH (kW)	51 (15)	51 (15)	51 (15)	61 (18)
	GPH (L/h)	97 (368)	97 (368)	97 (368)	117 (442)	
<b>Recovery rates* 3</b> with a DHW temperature increase from 50 to 140°F (10 to 60°C) and a supply water temperature of.....	194°F (90°C)	MBH (kW)	253 (74)	280 (82)	253 (74)	276 (81)
		GPH (L/h)	336 (1273)	372 (1410)	336 (1273)	368 (1393)
	176°F (80°C)	MBH (kW)	184 (54)	202 (59)	184 (54)	212 (62)
	GPH (L/h)	245 (929)	268 (1014)	245 (929)	282 (1066)	
	158°F (70°C)	MBH (kW)	120 (35)	140 (41)	120 (35)	147 (43)
	GPH (L/h)	159 (602)	186 (705)	159 (602)	195 (739)	
<b>Supply flow rate</b> for the recovery rates stated		GPM	22.0	22.0	22.0	22.0
		m <sup>3</sup> /h	5.0	5.0	5.0	5.0
<b>Insulation</b>			PUR Foam		Soft PET insulation	
<b>Standby losses* 4</b>	MBH/24 h		7.2		9.2	
<b>Dimensions* 5</b>						
Tank length without insulation	in. (mm)		--		28 (715)	
Overall length with insulation	in. (mm)		25 (633)		36½ (925)	
Tank width without insulation	in. (mm)		--		36 (914)	
Overall width with insulation	in. (mm)		27¾ (704)		38¾ (975)	
Tank height without insulation	in. (mm)		--		65½ (1667)	
Overall height with insulation* 6	in. (mm)		70 (1779)		68½ (1738)	
Tilt height without insulation	in. (mm)		--		66½ (1690)	
Tilt height with insulation	in. (mm)		71½ (1821)		--	
<b>Weight</b>						
Tank with insulation	lbs (kg)		251 (114)		275 (125)	
<b>Heat exchanger coil</b>	USG (L)		2.9 (11)	2.9 (11)	2.9 (11)	3.9 (15)
<b>Heat exchanger surface area</b>	ft. <sup>2</sup> (m <sup>2</sup> )		16.1 (1.5)	16.1 (1.5)	15.6 (1.45)	20.5 (1.9)
<b>Connections</b>						
Coils	∅ in. (male NPT thread)		1		1¼	
Domestic cold/hot water	∅ in. (male NPT thread)		1		1¼	
Recirculation	∅ in. (male NPT thread)		1		1¼	

\*1 The upper coil is designated for connection to a hot water heating boiler or a heat pump.

\*2 The lower coil is designated for connection to solar collector panels or heat pumps.

\*3 When planning for the recovery rate as stated or calculated, allow for the corresponding circulation pump.

The stated recovery rate is only achieved when the rated output of the boiler is equal to or greater than that stated under "Recovery rate".

\*4 Measured values are based on a room temperature of 68°F (20°C) and a domestic hot water temperature of 149°F (65°C) and can vary by ± 5%.

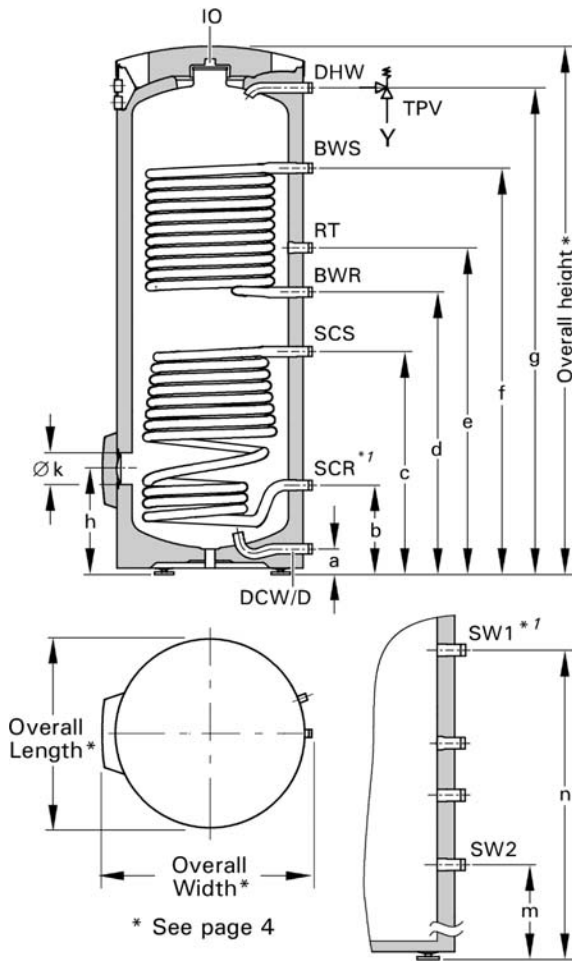
\*5 For other dimensions, see illustrations and tables on pages 5 and 6.

\*6 Adjustable feet can be adjusted up to 2 in. (50 mm).

For information regarding other Viessmann System Technology componentry, please reference documentation of the respective product.

**79 USG (300 L) Tank Dimensions**

79 USG (300 L) Tank



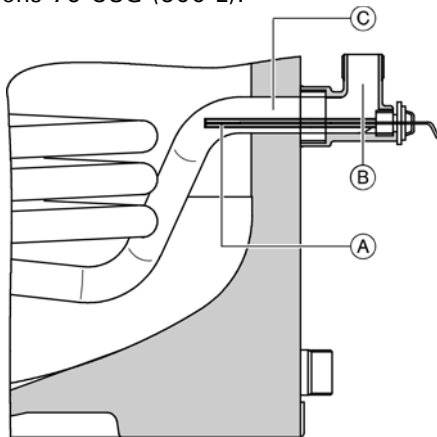
Dimensions		
Storage capacity	USG (L)	79 (300)
a	in. (mm)	3½ (87)
b	in. (mm)	12 (301)
c	in. (mm)	29½ (751)
d	in. (mm)	37½ (951)
e	in. (mm)	33⅓ (1101)
f	in. (mm)	54 (1369)
g	in. (mm)	64½ (1640)
h	in. (mm)	14 (357)
k	in. (mm)	4 (100)
m	in. (mm)	29½ (751)
n	in. (mm)	54 (1369)

**Legend**

- IO Inspection and clean-out opening
- D Drain
- BWR Boiler water return (upper coil)
- SCR Solar collector return (lower coil) or boiler return
- BWS Boiler water supply (upper coil)
- SCS Solar collector supply (lower coil) or boiler supply
- DCW Domestic cold water
- SW1 Sensor well opening for DHW tank temperature sensor or boiler controller aquastat (located at the same height as BWS [79 USG (300 L) only], rotated 20°.
- SW2 Sensor well for lower thermometer at SCS level
- DHW Domestic hot water
- RT Recirculation tapping
- TPV Temperature and pressure relief valve

\* 1 For solar heating systems Viessmann recommends placement of the DHW tank temperature sensor in the solar collector return (SCR). This requires a brass elbow with sensor well (see price list, Vitosol accessory).  
The DHW tank temperature sensor of the boiler control is placed in SW1.

DHW tank temperature sensor in solar heating applications 79 USG (300 L).



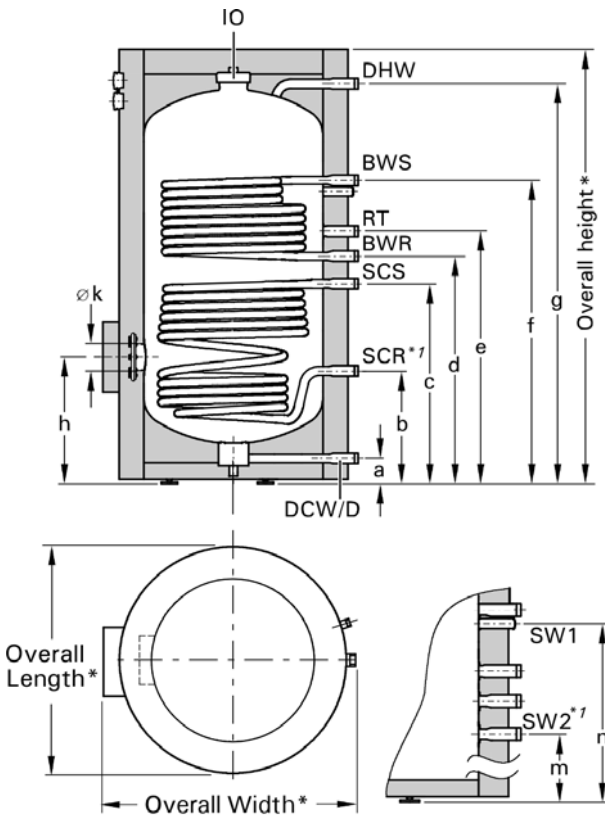
**Legend**

- (A) DHW tank temperature sensor for solar application (included with solar control unit)
- (B) Brass elbow with sensor well
- (C) Solar collector return connection.

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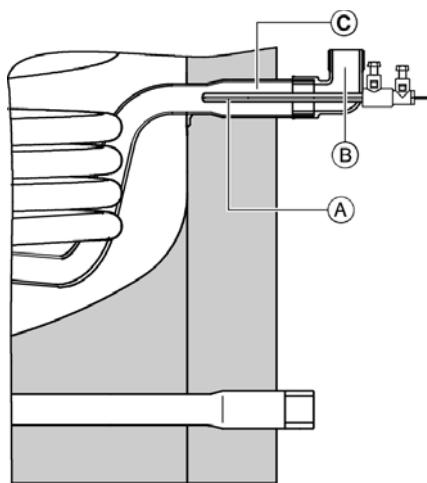
# 119 USG (450 L) Tank Dimensions

119 USG (450 L) Tank



\* See page 4

DHW tank temperature sensor in solar heating applications 119 USG (450 L).



**Legend**

- Ⓐ DHW tank temperature sensor for solar application (included with solar control unit)
- Ⓑ Brass elbow with sensor well
- Ⓒ Solar collector return connection.

Dimensions		
Storage capacity	USG (L)	119 (450)
a	in. (mm)	3½ (102.5)
b	in. (mm)	17¾ (453)
c	in. (mm)	31½ (802)
d	in. (mm)	35¾ (912)
e	in. (mm)	39¾ (1012)
f	in. (mm)	47¾ (1216)
g	in. (mm)	63 (1601)
h	in. (mm)	20 (508)
k	in. (mm)	4 (100)
m	in. (mm)	32 (802)
n	in. (mm)	46 (1170)

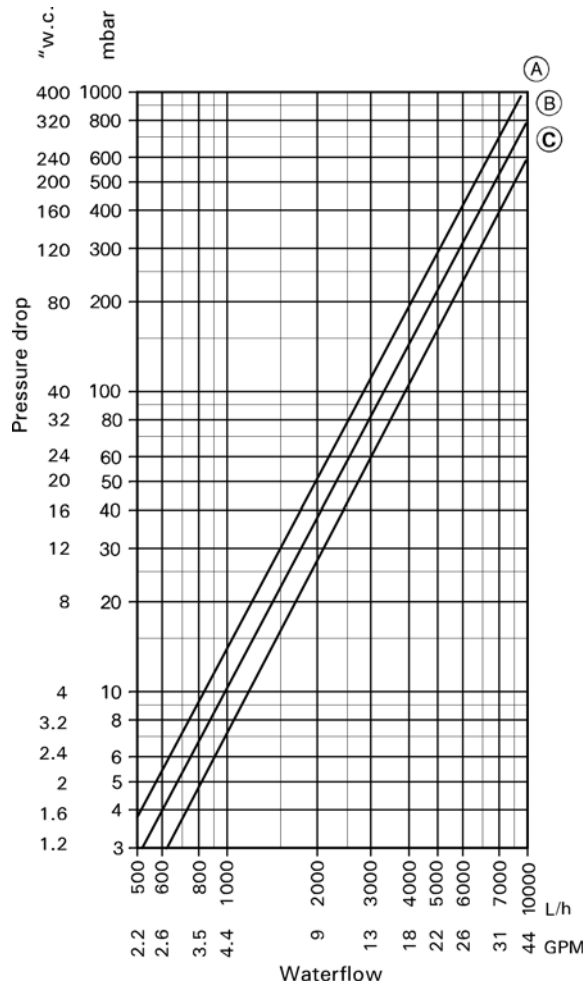
**Legend**

- IO Inspection and clean-out opening
- D Drain
- BWR Boiler water return (upper coil)
- SCR Solar collector return (lower coil) or boiler return
- BWS Boiler water supply (upper coil)
- SCS Solar collector supply (lower coil) or boiler supply
- DCW Domestic cold water
- SW1 Sensor well opening for DHW tank temperature sensor or boiler controller aquastat.
- SW2 Sensor well for lower thermometer at SCS level
- DHW Domestic hot water
- RT Recirculation tapping
- TPV Temperature and pressure relief valve

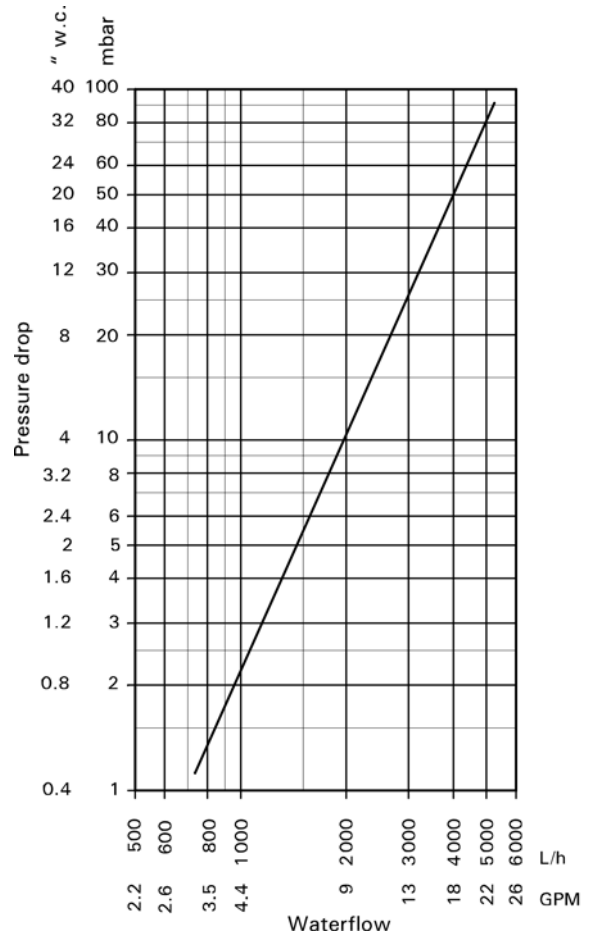
\*1 For solar heating systems Viessmann recommends placement of the DHW tank temperature sensor in the solar collector return (SCR). This requires a brass elbow with sensor well (see price list, Vitosol accessory).  
The DHW tank temperature sensor of the boiler control is placed in SW1.

# Water Flow

Pressure drop on heating water side of a single coil



Domestic hot water pressure drop



**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 draw rate**

Storage tank contents heated to 140°F (60°C), boiler not reheating

Storage capacity	USG (L)	79 (300)	119 (450)
Domestic hot water draw Water with t = 140°F (60°C) (constant)	USG (L)	34 (128)	62 (233)
Percentage tank volume	%	42	52

## Standard Equipment

### 79 USG (300 L) capacity DHW Tank

DHW tank made from high-alloy stainless steel with fitted PUR hard foam thermal insulation.

- 2 thermometers °F / °C
- adjustable levelling bolts

The following is packed separately and attached to the crate:

- installation fittings package: with the necessary brass adaptors, other necessary hardware.
- sensor well with insulation
- temperature and pressure relief valve.

Must be ordered separately:

- 1 brass elbow with sensor well for solar collector return, (see price list, Vitosol accessory).

### 119 USG (450 L) capacity DHW Tank

DHW tank made from high alloy stainless steel and separately packed soft PET thermal insulation.

- 2 thermometers °F / °C
- adjustable levelling bolts

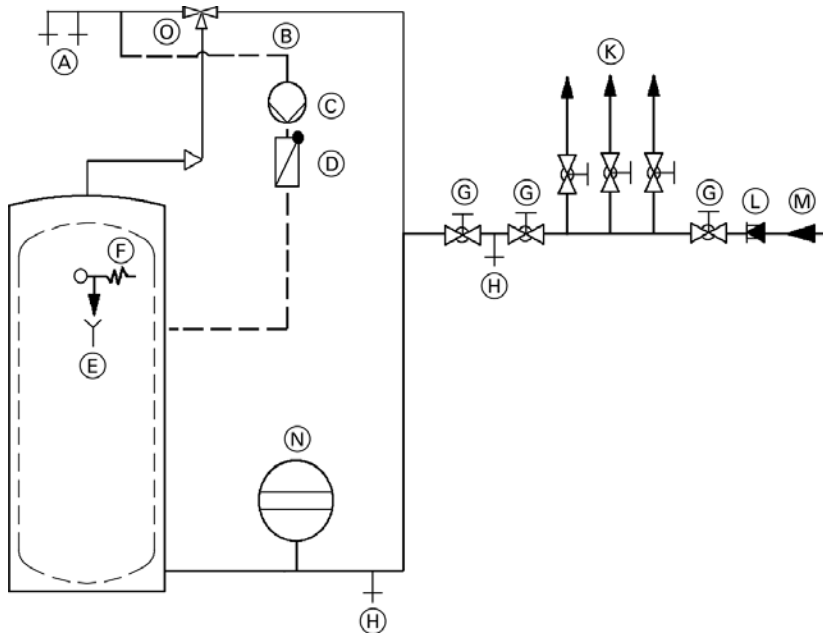
The following is packed separately and attached to the crate:

- installation fittings package: with the necessary brass adaptors, other necessary hardware.
- sensor well with insulation
- temperature and pressure relief valve.

Must be ordered separately:

- 1 brass elbow with sensor well for solar collector return, (see price list, Vitosol accessory).

### Domestic hot water connection



#### Legend

- (A) Domestic hot water supply
- (B) DHW recirculation line
- (C) DHW recirculation pump
- (D) Spring-loaded flow check valve
- (E) Discharge pipe
- (F) Pressure and temperature relief valve
- (G) Shut-off valve
- (H) Drain
- (K) Domestic cold water supply lines
- (L) Backflow preventer
- (M) Domestic cold water inlet
- (N) Precharged expansion tank (required where backflow preventer is installed; check local plumbing codes and requirements)
- (O) Thermostatic mixing valve/anti-scald valve for solar applications (field supplied)



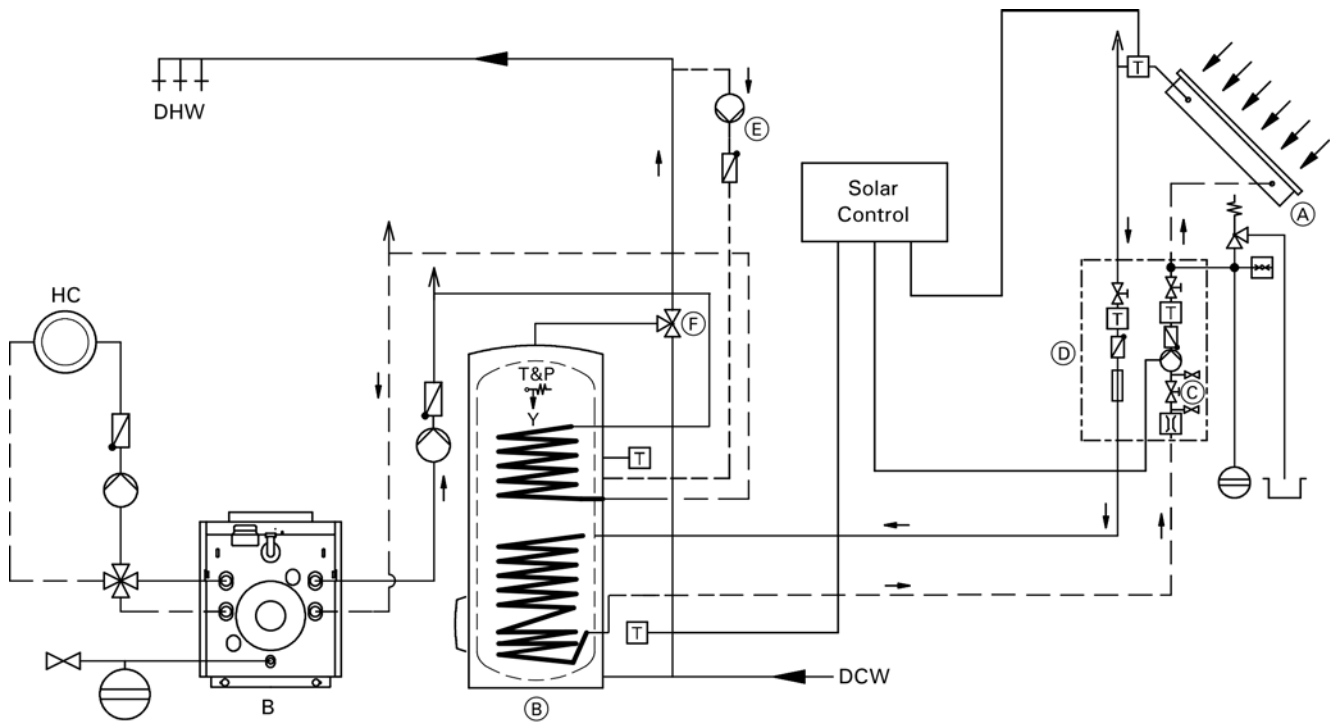
### WARNING

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 mixing device, e.g. a thermostatic mixing valve. The mixing device does not completely eliminate the risk of scalding at the tap. The installation of a mixing tap is required.



# System Design Guidelines

## Installation Example



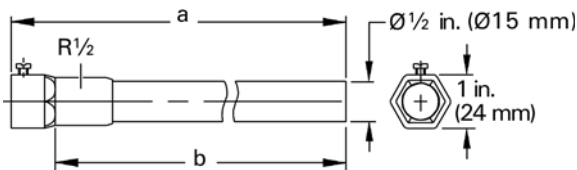
### Legend

- (A) Solar collector
- (B) Vitocell 300-B
- (C) Filling valve
- (D) Solar-Divicon (pumping station)
- (E) Recirculation 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

**System Design Guidelines** *(continued)*

**Sensor well**

The supplied stainless steel sensor wells are to be used for control sensors to ensure maximum operational safety. The top sensor well is used for the DHW sensor connected to the boiler control. Should the supplied sensors not fit into the sensor wells, other stainless steel sensor wells must be used. For solar heating systems, Viessmann recommends placement of the DHW tank temperature sensor in the solar collector return. This requires a brass elbow with sensor well included in the accessory pack (see page 8).



Storage capacity	USG (L)	79 (300)	119 (450)
a	in. (mm)	8.7 (220)	13 (330)
b	in. (mm)	7.9 (200)	12¼ (310)

**⚠ 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!

**Heating water supply temperature over 230°F (110°C)**

These operating conditions require the installation of an additional safety high limit into the DHW storage tank, preventing the temperature from rising above 203°F (95°C). A domestic hot water tempering valve must be used.

**Temperature and pressure relief valve**

A 150 psi temperature and pressure relief valve (T&P relief 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, substitute the manufacturer's supplied valve. The tank is approved for 100 psig where a Canadian Registration Number (CRN) is required. Maximum operating pressure is 150 psig.

The T&P relief 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.

**Backflow preventers**

Where backflow preventers are required, a domestic water expansion tank installation is recommended in the cold water inlet piping before the cold water enters the Vitocell. For the backflow device, observe local plumbing codes and regulations.

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

**Recirculation tapping**

The recirculation tapping is on a separate tapping (see page 5). Cap this opening if the tank is not installed with recirculation.

**Warranty consideration**

Viessmann DHW tanks require that the water to be heated must be of drinking (potable) water quality and that any water treatment equipment in use must function correctly.

Viessmann accepts no responsibility for damage howsoever caused and reserves the right to withdraw the product warranty if the product has been improperly installed or misapplied by the installer, contractor or final user. In order to qualify for product warranty, strict adherence to the installation and service manuals must be assured.

In the event that Viessmann non-approved components are utilized, Viessmann reserves the right to withdraw all expressed or implied warranties without written notice.

The water to be heated with the Vitocell must be drinking (potable) water quality. If the tank is used to heat other media, the warranty will be null and void.

Damage resulting from excessive pressure or temperature is clearly not the responsibility of Viessmann.

The amount of chloride and sulfate acceptable to the tank is limited. In areas where high concentrations of chloride and sulfate are present in drinking water, please consult Viessmann for directions.

For full warranty details, please read the product warranty sheet.



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Technical information subject to change without notice.

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