

Technical Data Manual

Model Nos. and pricing: see Price List



Product may not be exactly as shown

Vitocell 100-B

CVB Series

Vertical indirect-fired dual coil domestic hot water storage tank
made of steel with Ceraprotect enamel coating

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.



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



Product Information

Domestic hot water storage tank of corrosion protected steel with built-in insulation made of PUR Foam.

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 with **Ceraprotect enamel coating ensures a long service life**. Additional cathode protection is provided by a magnesium anode.
- The entire water content is heated by a coiled **1"/25 mm diameter 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**.
- **Increased energy savings** thanks to highly effective, foamed-in-place HCFC-free insulation keeping standby losses at a minimum.
- **Two thermometers** to show the DHW temperature at the top of the tank and at the midpoint of the tank.
- The Vitocell-B 100 119 USG / 450 L capacity tank is supplied with removable soft PET insulation for easier handling.
- For **dual-mode DHW heating with solar panels** in conjunction with a boiler. The solar energy gathered by the solar panels is transferred to the DHW by the lower indirect coil. For mono-mode DHW heating with a boiler or heat pump - both indirect coils can be connected in series.
- **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.**

Highly effective foamed-in-place
hard PUR foam insulation (HCFC free, 79 USG / 300 ltr)
or soft PET insulation (119 USG / 450 ltr)

Domestic hot water

Two thermometers

Upper coil-
domestic hot water is reheated by boiler

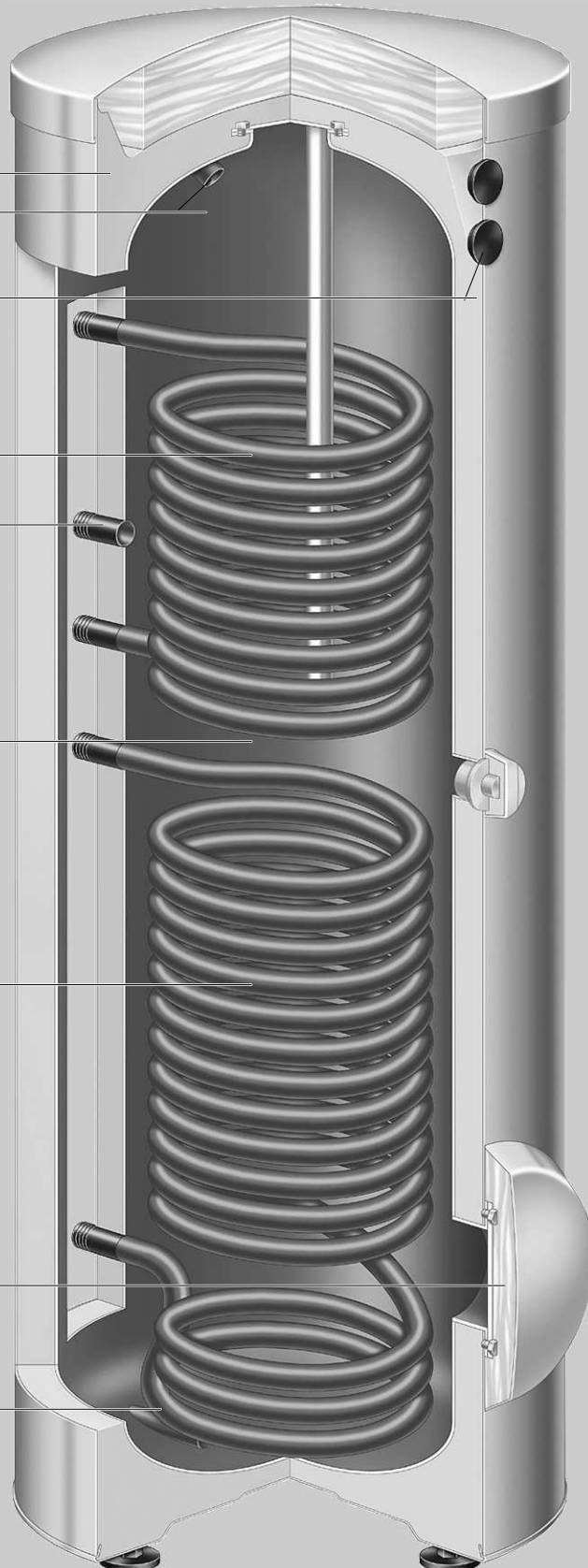
Recirculation tapping

Steel domestic hot water tank
with Ceraprotect enamel

Lower coil -
connection for solar connectors

Inspection port/
cleanout opening

Domestic cold water / drain



Technical Data

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For DHW production in conjunction with 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 **150 psig** at 320°F/160°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 / ltr		79 / 300		119 / 450	
Coil					upper *1	lower *2	upper *1	lower *2
Recovery rate *3 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 GPH / ltr/h	106 / 31 201 / 761	181 / 53 344 / 1302	160 / 47 305 / 1154	239 / 70 454 / 1720		
	176°F/80°C	MBH / kW GPH / ltr/h	89 / 26 169 / 640	151 / 44 286 / 1081	136 / 40 259 / 982	198 / 58 376 / 1425		
	158°F/70°C	MBH / kW GPH / ltr/h	68 / 20 129 / 491	113 / 33 214 / 811	102 / 30 195 / 737	153 / 45 292 / 1106		
	140°F/60°C	MBH / kW GPH / ltr/h	51 / 15 97 / 368	79 / 23 150 / 566	75 / 22 143 / 540	109 / 32 208 / 786		
	122°F/50°C	MBH / kW GPH / ltr/h	38 / 11 71 / 270	62 / 18 117 / 442	55 / 16 104 / 393	82 / 24 156 / 589		
Recovery rate *3 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 GPH / ltr/h	79 / 23 104 / 395	154 / 45 205 / 774	123 / 36 164 / 619	181 / 53 241 / 911		
	176°F/80°C	MBH / kW GPH / ltr/h	68 / 20 91 / 344	116 / 34 154 / 584	102 / 30 136 / 516	151 / 44 200 / 756		
	158°F/70°C	MBH / kW GPH / ltr/h	51 / 15 68 / 258	79 / 23 104 / 395	75 / 22 100 / 378	113 / 33 150 / 567		
Insulation			Hard PUR Foam			Soft PET insulation		
Standby losses *4		MBH/24 h	7.8			9.5		
Overall dimensions with insulation *5								
Overall width (Ø)	inches	mm	25			33½		
			633			850		
Overall depth	inches	mm	28			36		
			705			918		
Overall height	inches	mm	68¾			77		
			1746			1955		
Tilt height including insulation	inches	mm	70½			-		
			1792			-		
Tilt height excluding insulation	inches	mm	-			73 ¹ / ₈		
			-			1860		
Weight		lbs	352			452		
Tank with insulation		kg	160			205		
Heat exchanger coil liquid content		USG	1.6	2.6	2.3	3.3		
		ltr	6	10	9	12.5		
Heat exchanger area		ft. ²	9.7	16.1	15	20.5		
		m ²	0.9	1.5	1.4	1.9		
Connections	Coils	Ø" (male thread)	1"	1"	1"			
	Domestic cold/hot water	Ø" (male thread)	1"	1"	1¼"			
	Recirculation	Ø" (male thread)	1"	1"	1"			

*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.

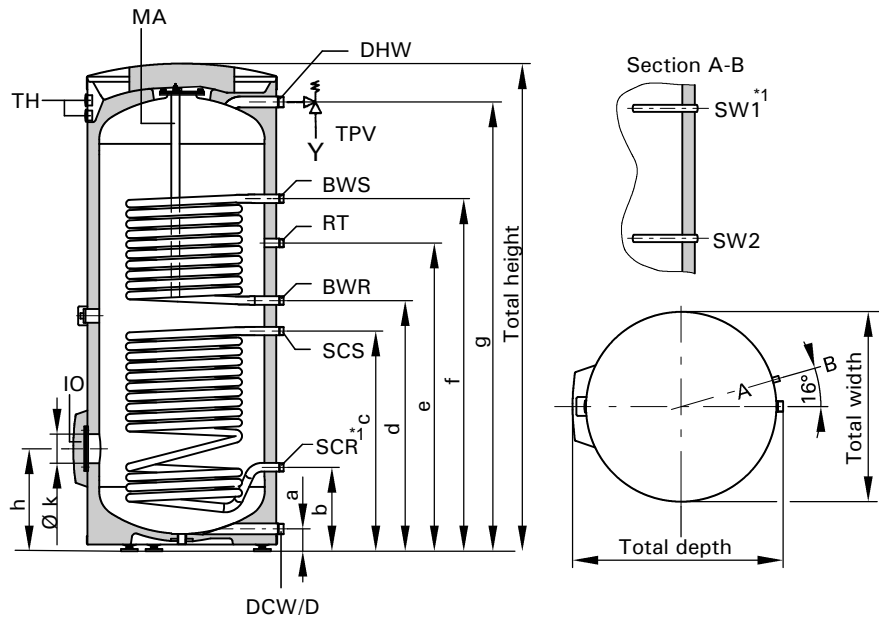
The stated recovery rate is only achieved when the rated output of the boiler is equal to or greater than that stated under "Recovery rate".

*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 illustration and table on page 5.

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

79 USG / 300 ltr Tank

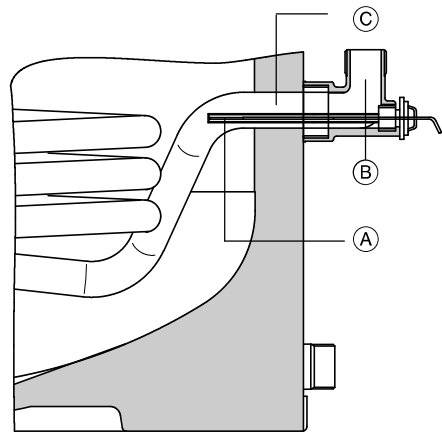


Legend

- IO Inspection and cleanout 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^{*1} Sensor well for tank temperature sensor of boiler control at BWS level
- SW2 Sensor well for the lower thermometer at SCS level
- DHW Domestic hot water
- RT Recirculation tapping
- TPV Temperature and pressure relief valve
- MA Protective magnesium anode

^{*1}For solar heating systems Viessmann recommends placement of the DHW tank temperature sensor of the solar control in the solar collector return (SCR). This requires a brass elbow with sensor well included in the accessory pack. The DHW tank temperature sensor of the boiler control is placed in the SW1 sensor well (see installation example on page 8).

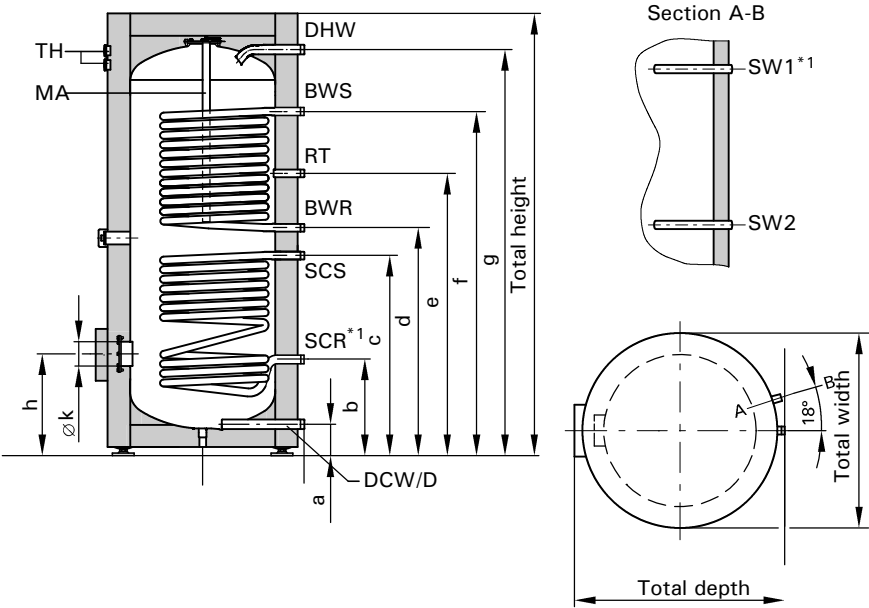
DHW tank temperature sensor
in solar heating applications
79 USG / 300 ltr



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

Storage capacity	USG / ltr	79 / 300
a	inches	3
	mm	76
b	inches	10 1/4
	mm	260
c	inches	34 1/2
	mm	875
d	inches	39
	mm	995
e	inches	43 3/4
	mm	1115
f	inches	53 3/4
	mm	1355
g	inches	63
	mm	1600
h	inches	13
	mm	333
k	inches	4
	mm	101

119 USG / 450 ltr Tank

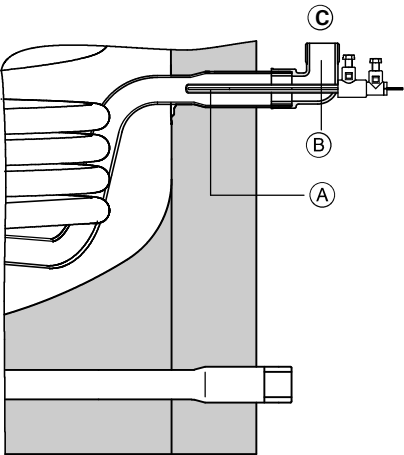


Legend

- IO Inspection and cleanout opening
- D Drain
- BWR Boiler water return (upper coil)
- SCR Solar collector return (lower coil) or boiler return
- BWS Boiler water supply (upper coil)
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DHW tank temperature sensor
in solar heating applications
119 USG / 450 ltr

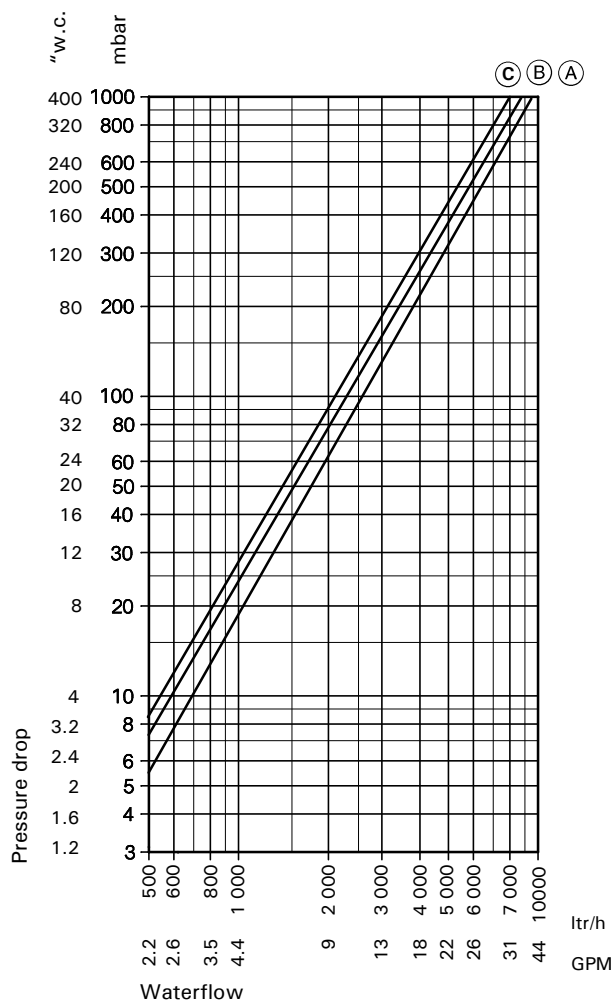


- Ⓐ DHW tank temperature sensor for solar application (included with solar control unit)
- Ⓑ Brass elbow with sensor well (accessory pack)
- Ⓒ Solar collector return connection

Storage capacity	USG / ltr	119 / 450
a	inches	4 ¼
	mm	107
b	inches	13 ¾
	mm	349
c	inches	36 ¾
	mm	924
d	inches	41
	mm	1044
e	inches	48 ¾
	mm	1230
f	inches	56 7/8
	mm	1444
g	inches	70 ¼
	mm	1784
h	inches	16 5/8
	mm	422
k	inches	4
	mm	100

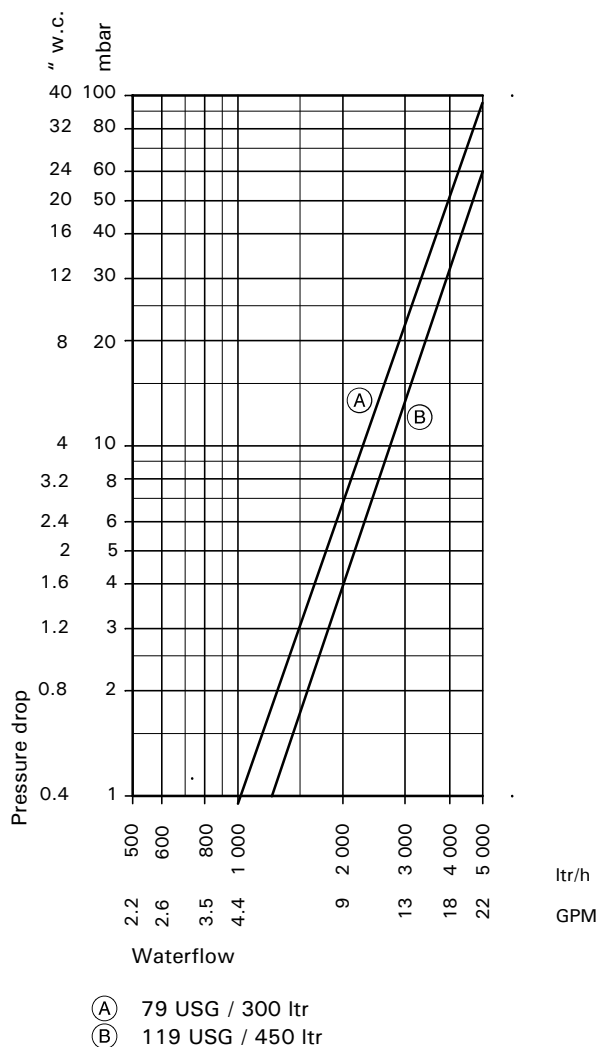
Pressure drop on heating water side

of a single coil



- (A) Upper indirect coil, 300 ltr capacity
- (B) Lower indirect coil, 300 ltr and upper indirect coil, 450 ltr capacity
- (C) Lower indirect coil, 450 ltr capacity

Domestic hot water pressure drop



- (A) 79 USG / 300 ltr
- (B) 119 USG / 450 ltr

Domestic hot water draw rate

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

Storage capacity	USG	79	119
	ltr	300	450
Domestic hot water draw	USG	32	53
Water with t = 140°F / 60°C (constant)	ltr	110	220
Percentage tank volume		37%	50%

Standard Equipment

Vitocell 100-B (79 USG / 300 ltr capacity) DHW Tank

DHW tank made from steel with Ceraprotect enamel coating.

- 2 welded sensor wells for DHW tank temperature sensor, i.e. aquastat, and the thermometer
- adjustable leveling bolts
- protective magnesium anode
- fitted thermal insulation made from hard PUR foam
- threaded elbow with sensor well

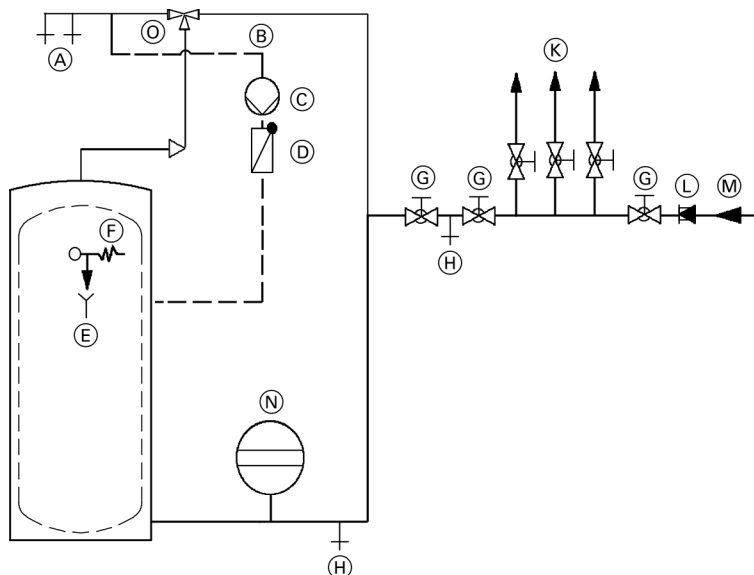
The color of the epoxy-coated sheet metal casing is Vitosilver.

The following are packed separately and attached to the crate:

- 1 brass elbow with sensor well
- 1 Loctite package
- 1 temperature and pressure relief valve
- 2 thermometers °F / °C
- 7 brass adaptors (1")
- 1 brass tee (1")
- 1 brass hex bushing (1"x¾")
- 1 brass cap (1")

Product Installation

Domestic hot water connection



Vitocell 100-B (119 USG / 450 ltr capacity) DHW Tank

DHW tank made from steel with Ceraprotect enamel coating.

- 2 welded sensor wells for DHW tank temperature sensor, i.e. aquastat, and the thermometer
- protective magnesium anode
- fitted thermal insulation made from soft PET insulation, packed separately
- threaded elbow with sensor well
- adjustable leveling bolts
- protective magnesium anode

The color of the plastic-coated thermal insulation is Vitosilver.

The following are packed separately and attached to the crate:

- 5 brass adaptors (1")
- 2 brass adaptors (1 ¼")
- 1 Loctite package
- 1 temperature and pressure relief valve
- 1 brass tee (1 ¼")
- 1 brass elbow with sensor well
- 1 brass cap
- 2 thermometers °F / °C
- 1 plug (R1 ½")

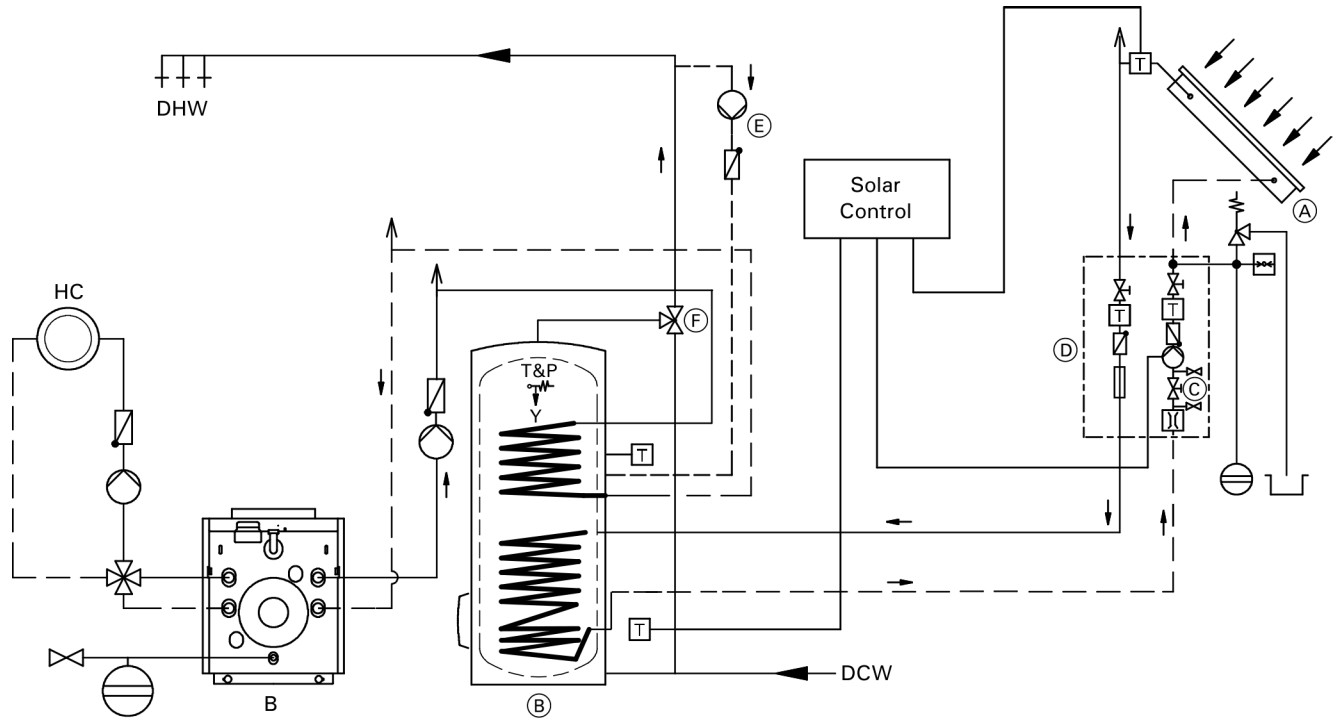
- (A) Domestic hot water supply
- (B) DHW recirculation line
- (C) DHW recirculation pump
- (D) Spring-loaded flow check valve
- (E) Discharge pipe
- (F) Pressure and temperature relief valve
- (G) Shut-off valve
- (H) Drain
- (K) Domestic cold water supply lines
- (L) Backflow preventer
- (M) Domestic 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.

Installation example

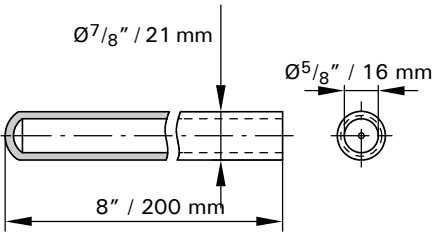


- (A) Solar collector
- (B) Vitocell 100-B
- (C) Filling valve
- (D) Solar-Divicon (pumping station)
- (E) Recirculation pump
- (F) Anti-scald tempering valve

- HC Heating circuit
- B Oil/Gas-fired boiler
- DCW Domestic cold water
- DHW Domestic hot water
- T&P Temperature and pressure relief valve

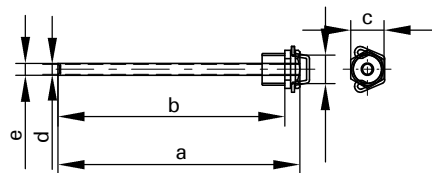
Sensor wells

The sensor wells are welded into the DHW tank.



Sensor wells for solar operation

For solar heating systems, Viessmann recommends placement of the DHW tank temperature sensor in the solar collector return. This requires installation of a brass elbow with sensor well included in the accessory pack.



Dimension		79/300	119/450
a	inches	6 1/4	8.7
	mm	160	220
b	inches	5.9	7.9
	mm	150	210
c	inches	7/8"	7/8"
	mm	22	22
d	inches	1/4	1/4
	mm	6.5	6.5
e	inches	1/3	1/3
	mm	8	8

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 domestic hot water temperature from rising above 203 °F/ 95 °C. A domestic hot water tempering valve must be used.

Temperature and pressure relief valve

A 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 150 psig. 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.

Watts Model 40XL-8	150 psig (US and Canada)
ASME pressure steam rating	1438 MBH
CSA temperature steam rating	205 MBH
Relief temperature	210°F (99°C)
Inlet thread	3/4" male
Outlet thread	3/4" female

Warranty excerpt

Our warranty for domestic hot water tanks states 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 end 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 card.

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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