VIESMANN

VITOCELL-H 100

Indirect-fired domestic hot water storage tank
42 and 53 USG / 160 and 200 ltr

Technical Data Manual

Model Nos. and pricing: see Price List

Vitocell-H 100

CHA Series

Enameled indirect-fired domestic hot water storage tank steel construction, with Ceraprotect two-coat enamel finish

CERTIFIED

DESIGN CERTIFIED

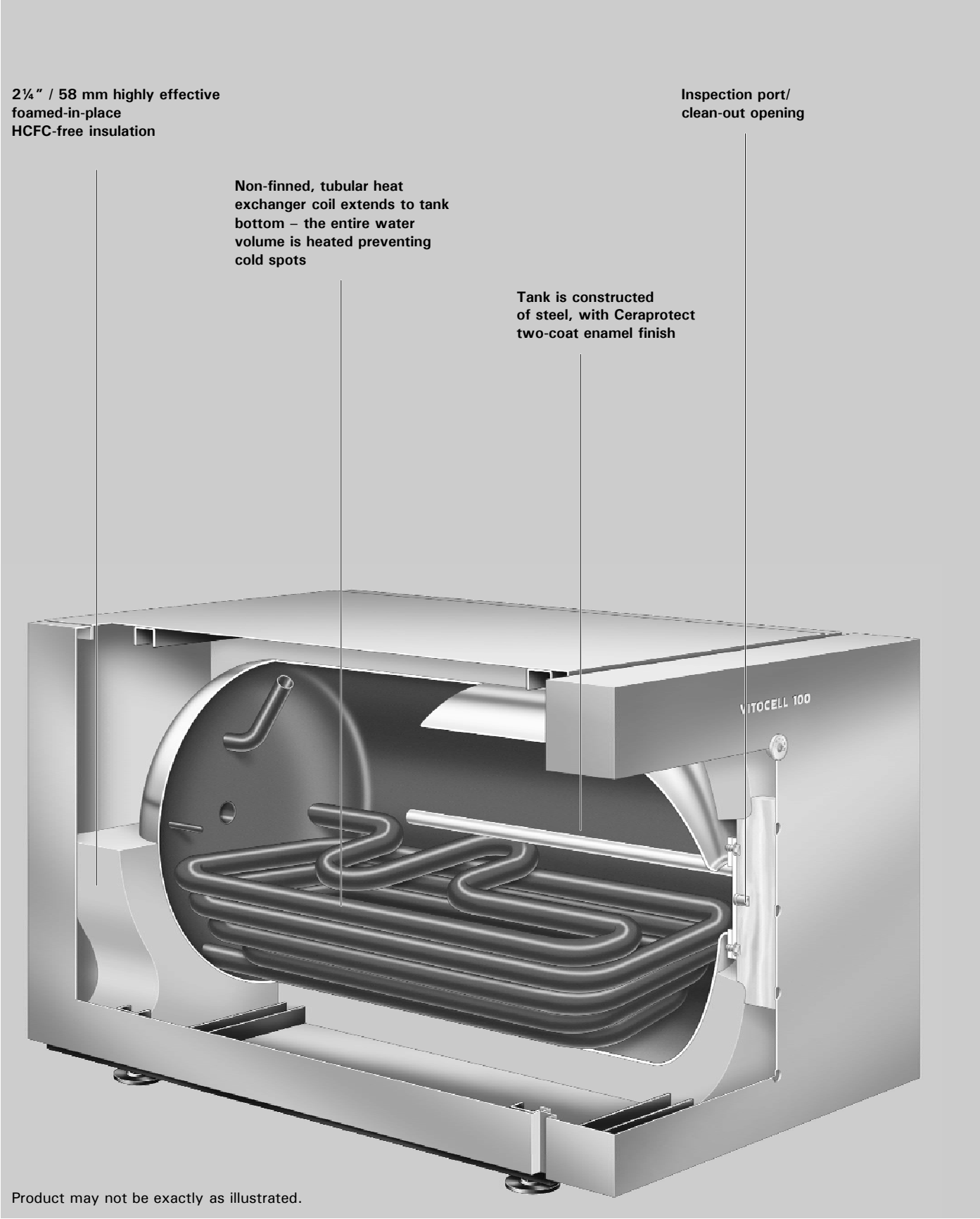
5167 513 v1.2 06/2003

Vitocell-H 100

The horizontal tank solution for cost-efficient domestic hot water supply. The Vitocell 100 is available in both horizontal and vertical designs, the vertical version offering storage capacities of up to 120 USG / 450 ltrs.

The benefits at a glance:

- Corrosion-protected steel tank shell with **Ceraprotect two-coat enamel finish**, produced in-house. Magnesium anode provides additional cathodic tank protection.
- **Heat exchanger coil extends to the bottom of the tank**, thereby heating the entire water content.
- **Extremely convenient domestic hot water supply** assured by fast, uniform heating via generously sized heat exchanger surfaces.
- **Standby losses minimized** by 2¼" / 58 mm highly effective foamed-in-place HCFC-free insulation.



Product may not be exactly as illustrated.

5167 513 v1.2

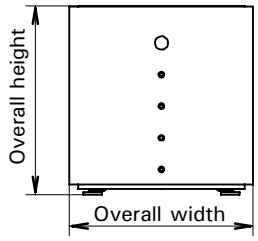
Technical data

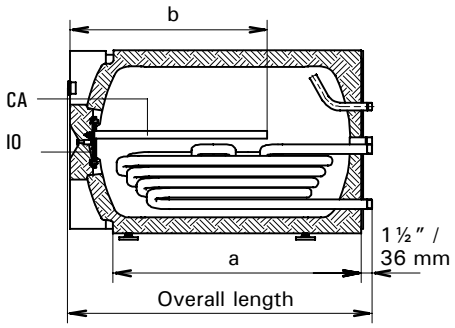
For domestic hot water heating applications in conjunction with hot water heating boilers			Suitable for heating systems with ■ max. DHW supply of up to 150 °F / 65.6 °C ■ max. working pressure on the heat exchanger side of up to 150 psig / 10 bar ■ max. working pressure on DHW side of up to 150 psig / 10 bar ■ max. supply temperature on the heat exchanger side of up to 230 °F / 110 °C	
Storage capacity		USG ltr	42 160	53 200
Recovery *1 with a temperature increase of the domestic hot water from **50 to 113°F** / **10 to 45°C** and **heating water** supply temperature of ..... at the supply flow rate stated below	194°F 90°C	MBH GPM ltr/h	113 3.6 810	143 4.5 1032
	176°F 80 °C	MBH GPM ltr/h	96 3.0 688	109 3.5 786
	158°F 70 °C	MBH GPM ltr/h	75 2.4 540	89 2.8 638
Recovery *1 with a temperature increase of the domestic hot water from **50 to 140°F** / **10 to 60°C** and **heating water** supply temperature of ..... at the supply flow rate stated below	194°F 90°C	MBH GPM ltr/h	109 2.4 550	130 2.9 653
	176°F 80 °C	MBH GPM ltr/h	82 1.8 412	99 2.2 498
	158°F 70 °C	MBH GPM ltr/h	58 1.3 292	65 1.4 326
Supply flow rate for the recovery rates stated		GPM m^3/h	13.2 3.0	13.2 3.0
Standby losses *2		MBH/24 h	4.8	5.1
Overall dimensions				
Overall length		inches mm	41 ½ 1052	47 ¾ 1216
Overall width		inches mm	25 ¼ 640	25 ¼ 640
Overall height		inches mm	25 ¾ 654	25 ¾ 654
Weight Tank with insulation		lbs kg	227 103	256 116
Heating water content (heat exchanger coil)		USG ltr	1.8 7.0	2.1 8.0
Heat exchanger surface area		$ft.^2$ m^2	10.8 1.0	12.9 1.2
Connections				
Heating water supply/return		∴'' (male thread)	1	1
Domestic hot water/ temperature and pressure relief valve		**∴'' (male thread)**	¾	¾
Domestic cold water		∴'' (male thread)	¾	¾

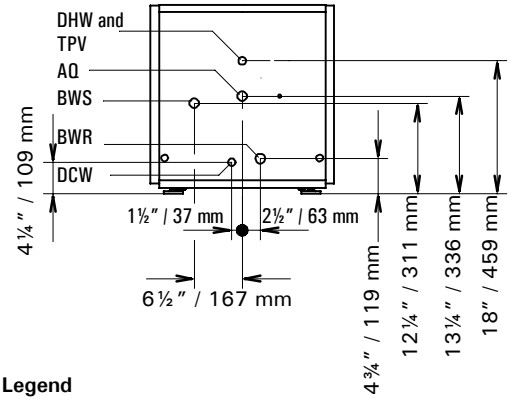
*1 *When planning for the recovery rate as stated or calculated, allow for the corresponding circulation pump. The stated recovery rate is only achieved when the rated output of the boiler is equal to or greater than that stated under "Recovery". Please also refer to the corresponding sizing chart at the end of this manual.*

*2 *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 %.*

5167 513 v1.2







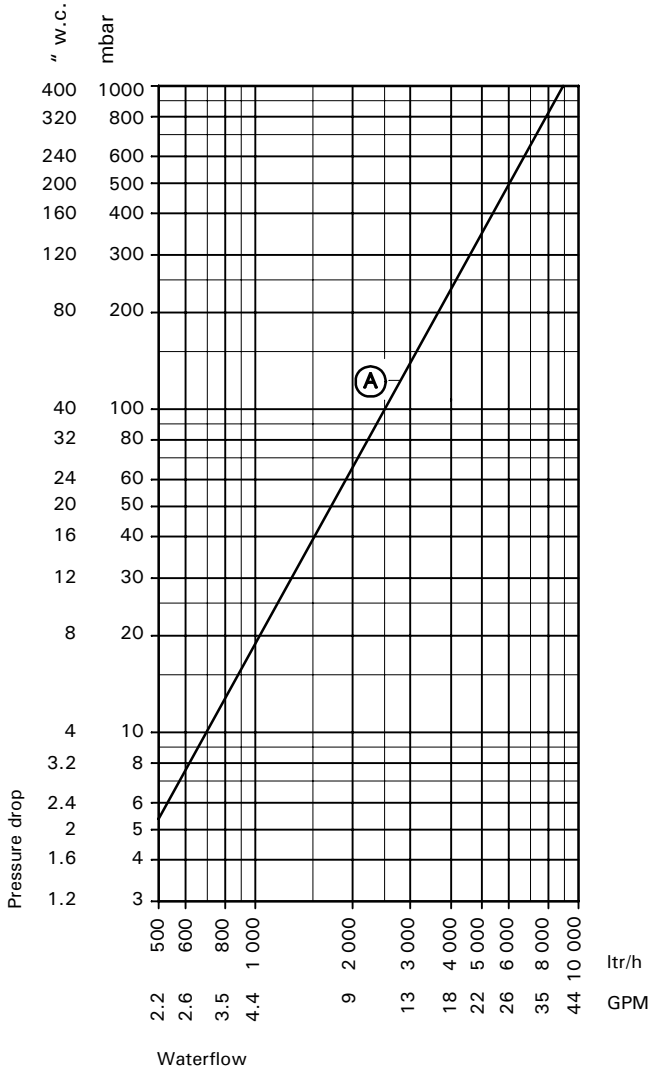
Dimensions

Storage capacity	USG	42	53
	ltr	160	200
a	inches	34	40½
	mm	866	1030
b	inches	9¾	11¾
	mm	250	300

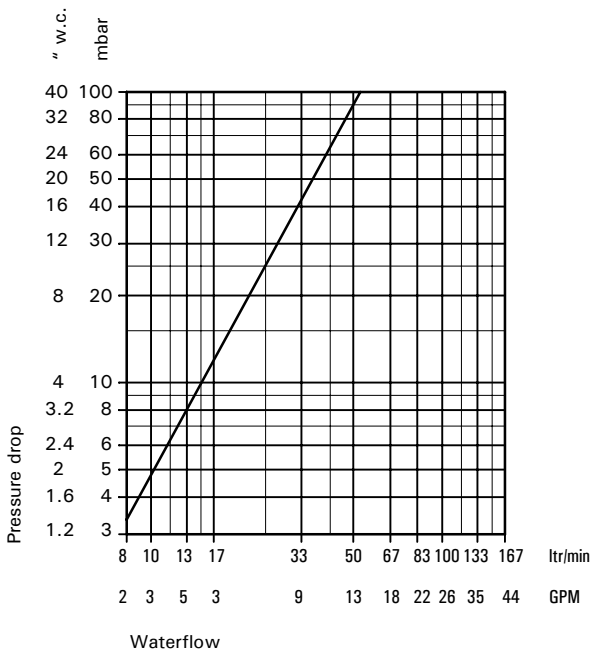
Legend

AQ Aquastat Well
BWR Boiler Water Return
BWS Boiler Water Supply
CA Consumable Anode
DCW Domestic Cold Water
DHW Domestic Hot Water
IO Inspection and Clean-out Opening
TPV Temperature and Pressure Relief Valve

Pressure drop on heating water side (primary circuit)



Pressure drop on domestic hot water side (secondary circuit)



Ⓐ 42 and 53 USG / 160 and 200 ltr storage capacity

Standard Equipment

Steel domestic hot water storage tank with two-coat enamel finish, mounted polyurethane foam insulation and electrostatically powder coated sheet metal enclosure panel in a vitosilver finish with...
– preinstalled consumable anode
– integrated thermometer and
– adjustable leveling feet.

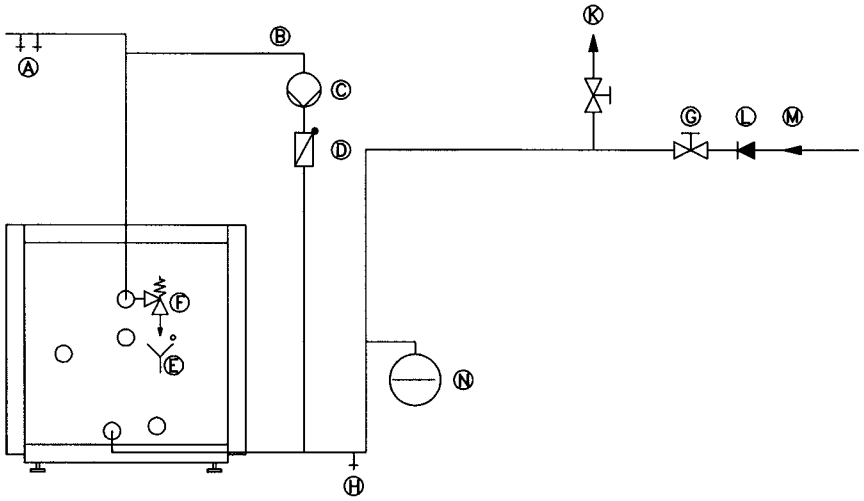
The following are packed separately and attached to the crate:
– installation fittings package: with the necessary brass couplings, adaptors, other necessary hardware, and hemp
– temperature and pressure relief valve
– sensor well with insulation
– thermometer
– Installation, Operating, Start-up and Service Instructions

Product Installation

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 hot water connections



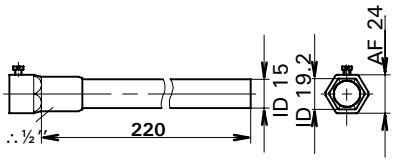
Ⓐ Domestic hot water
Ⓑ DHW recirculation line
Ⓒ DHW recirculation pump
Ⓓ Spring-loaded flow check valve
Ⓔ Discharge pipe
Ⓕ Temperature and pressure relief valve
Ⓖ Shutoff valve
Ⓗ Drain
Ⓚ Domestic cold water supply lines
Ⓛ Backflow preventer
Ⓜ Domestic cold water inlet
Ⓝ Precharged expansion tank (required where backflow preventer is installed; check local plumbing codes and requirements)

IMPORTANT

The Vitocell-H 100 tank is approved for heating systems with a maximum DHW supply of up to 150 °F / 65.6 °C only.

Sensor Well

Vitocell-H 100,
with 42 and 53 USG / 160 and 200 ltr capacity



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!

Vitocell-H 100 domestic hot water tank positioned under the boiler

Please note that only the boiler/tank combinations stated in the Price List are possible.

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.

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 valve supplied by the manufacturer. The tank is approved for 150 psig. Maximum operating pressure is 150 psig.

The T&P relief valve supplied with the tank is manufactured by Watts Industries (Model 40XL-8), set to 150 psig for US and Canadian installations. The valve is ASME pressure steam rated for 998 MBH and CSA temperature steam rated for 200 MBH. It is tested under ANSI Z21.22 code for Relief Valves and Automatic Gas Shut-off Devices for Hot Water Supply Systems. The relief temperature is set at 210°F / 99°C. The valve has a male threaded inlet and female threaded outlet, both ¾" size.

IMPORTANT

Since the heat exchanger coil allows for high MBH input (see Vitocell flow charts), confirmation that the appropriate and correct size pressure and temperature relief valve is used and installed, is necessary.

WARNING

The heating contractor must ensure the T&P relief valve is sized correctly. If the factory supplied T&P relief valve is too small, it must be upgraded in the field by installing an adequately sized valve.

Warranty

Our warranty for domestic hot water tanks states that the water heated must be of drinking 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.

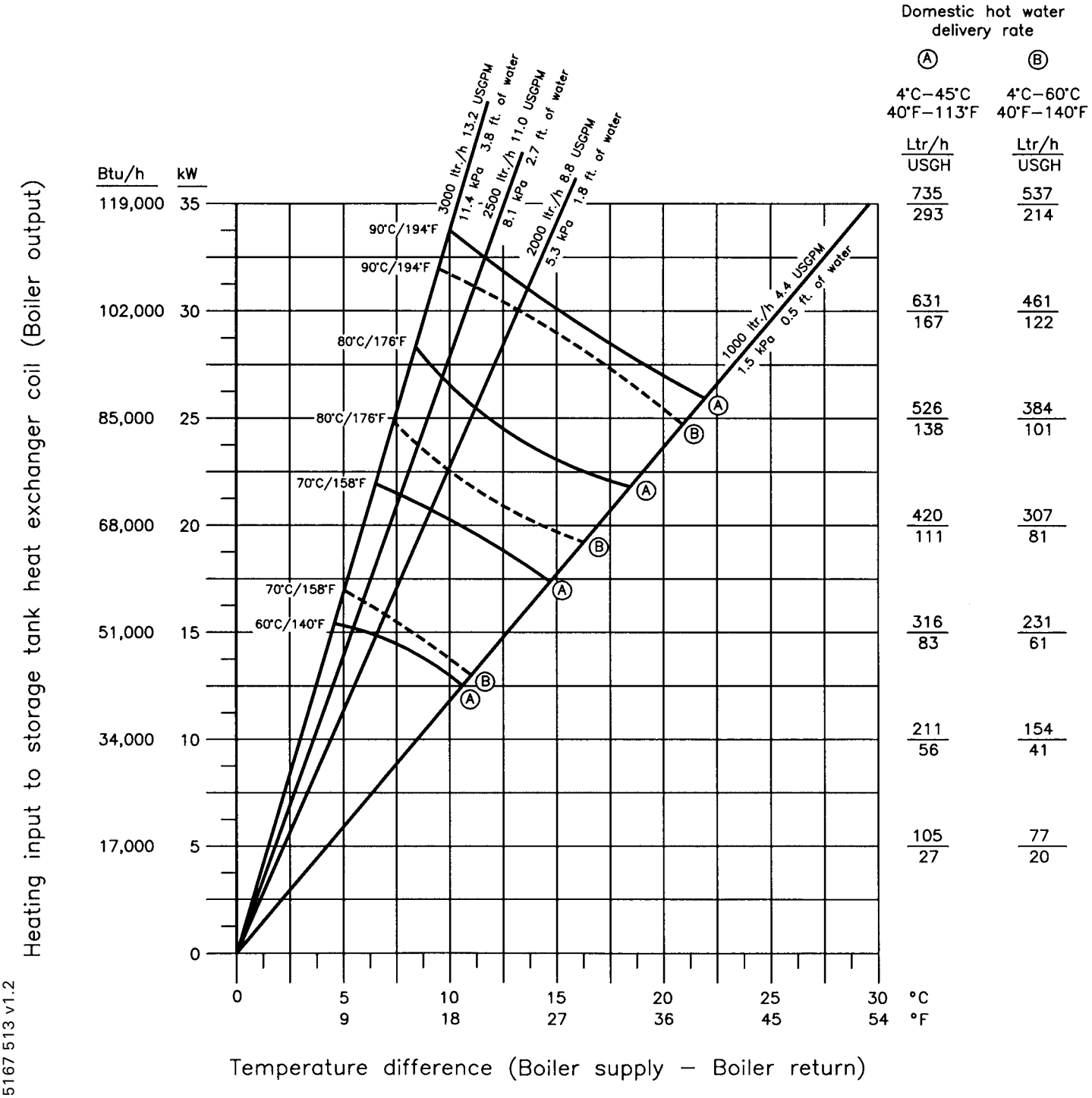
The water to be heated with the Vitocell must be drinking (potable) water quality. If the tank is used to heat other media, the warranty will be null and void. Damage resulting from excessive pressure or temperature is clearly not the responsibility of Viessmann.

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.

Vitocell-H 100,
42 USG / 160 ltr capacity

Curve Ⓐ
Domestic hot water 40 to 113°F / 4 to 45°C

Curve Ⓑ
Domestic hot water 40 to 140°F / 4 to 60°C



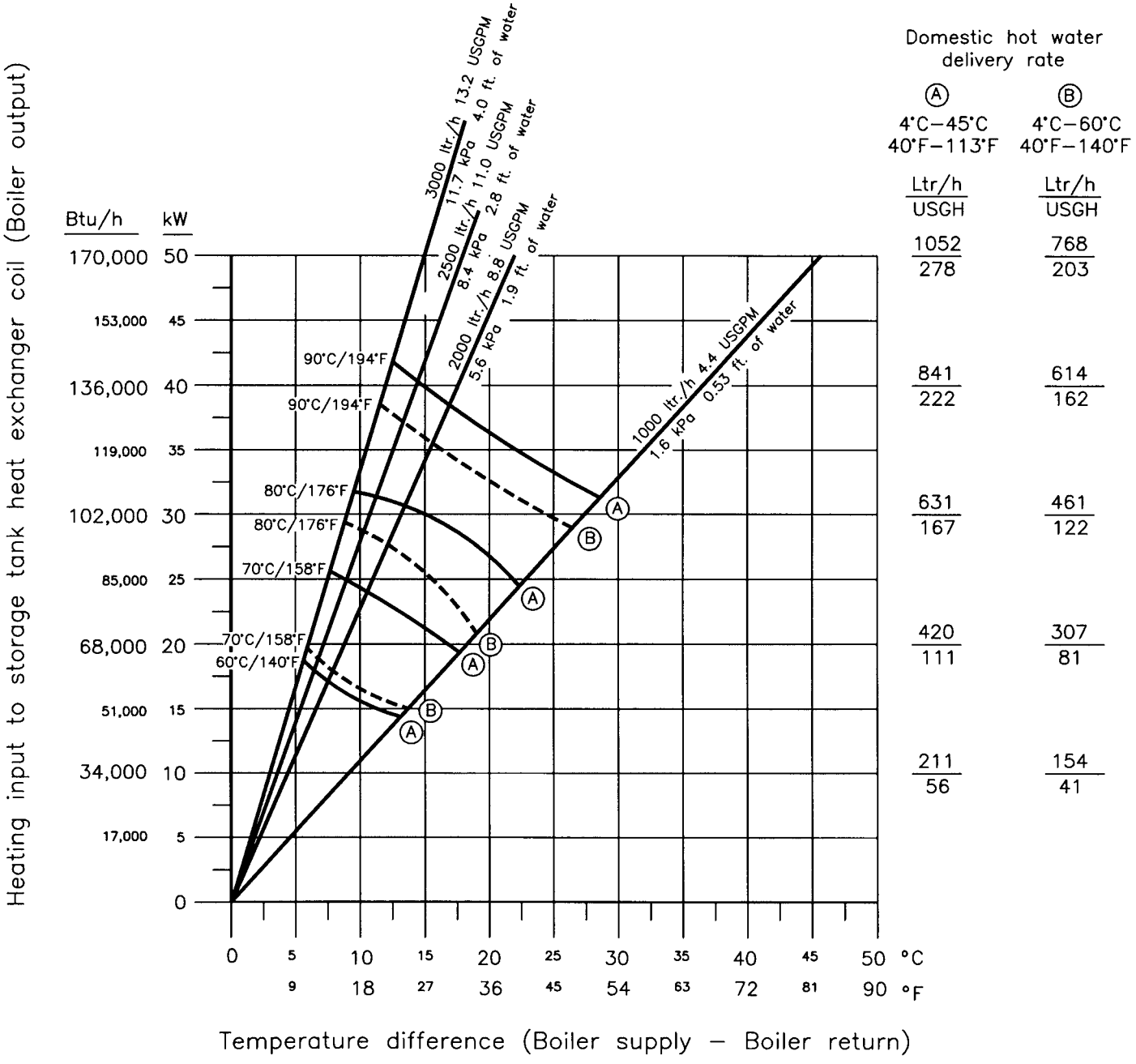
5167 513 v1.2

Vitocell-H 100 Sizing
Continuous Flow Capacity Chart

Vitocell-H 100,
53 USG / 200 ltr capacity

Curve Ⓐ
Domestic hot water 40 to 113°F / 4 to 45°C

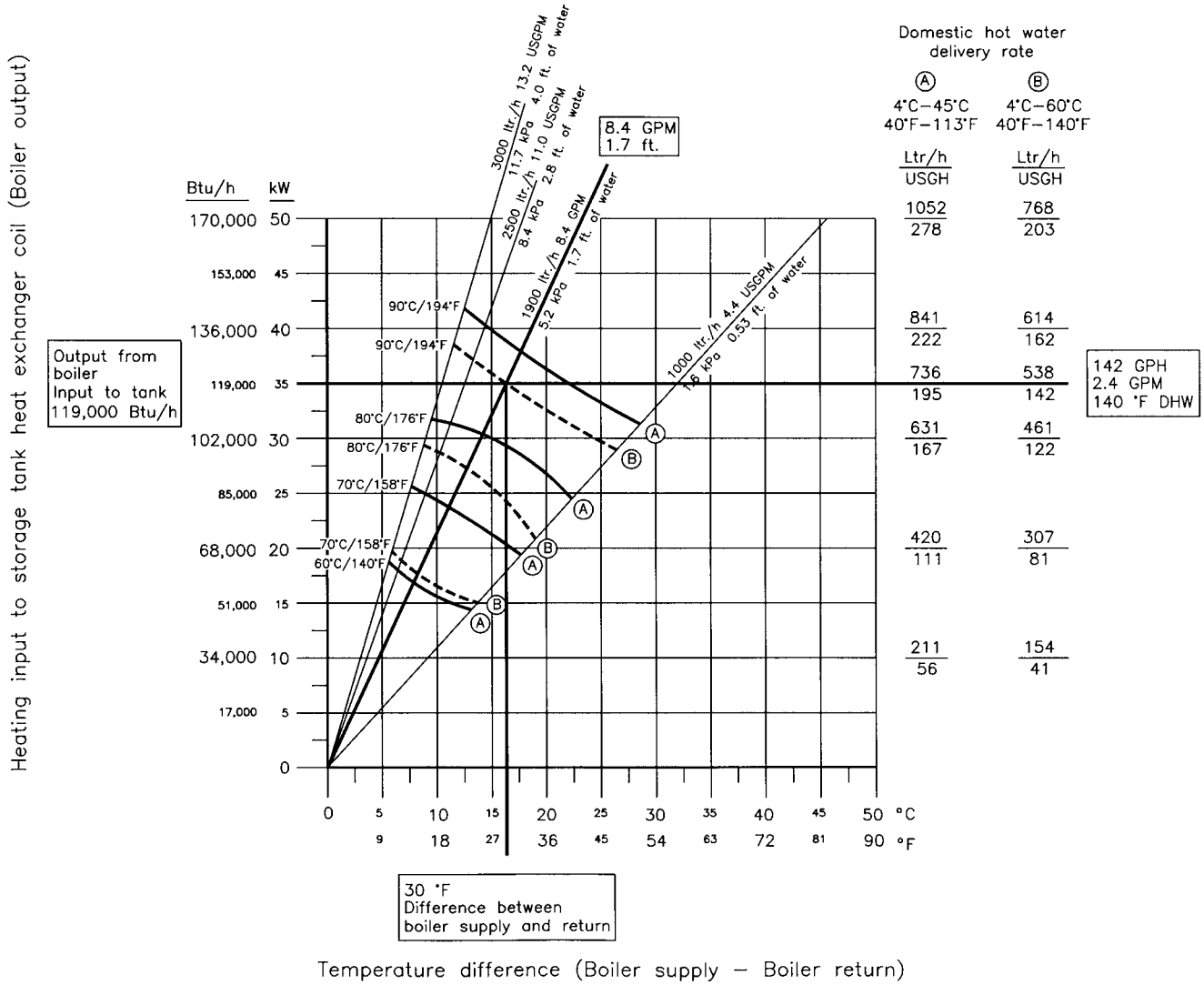
Curve Ⓑ
Domestic hot water 40 to 140°F / 4 to 60°C



5167 513 v1.2

Example: Vitocell-H 100, 53 USG / 200 ltr capacity

Assume boiler output to tank is 119 MBH. Enter chart at left and draw horizontal line across to recovery rate of 142 GPH / 2.4 GPM for 140°F / 60°C domestic hot water under column B. Where the horizontal line intersects the 194°F / 90°C curve is the point of intersection for the diagonal line used to size the pump. The diagonal line begins at the origin and goes through the point of intersection extending up to the top of the chart. Read between the reference diagonal lines to get a pump specification of 8.4 GPM at 1.7 ft. To summarize: For a Vitocell-H 100 with 53 USG / 200 ltr capacity and 119 MBH input, the boiler water temperature is 194°F / 90°C, difference between boiler return and supply water temperature is 30°F / 16.5°C, recovery rate is 2.4 GPM of 140°F / 60°C DHW, and the pump required is 8.4 GPM, 1.7 ft. plus pressure drop in piping and boiler.



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