WST Domestic Hot Water Indirect Storage Tanks

Engineering Submittal Sheet

BOSCH

Engineering Specification

The solar storage tank is equipped with an electric heating element. Alternatively, the solar storage tank can be operated with a downstream external tankless water heater.

When operated with an external tankless water heater, the electric heating element must not be connected.

The main components of the solar storage tank are:

- **Storage tank with corrosion protection**
  The cathodic corrosion protection comprises the hygienic thermo glaze and two magnesium anodes.
- **Smooth tube heat exchanger**
  The smooth tube heat exchanger transfers the energy from the solar circuit to the DHW inside the storage tank. The potable water is heated uniformly.
- **Thermal insulation**
  The thermal insulation, made from CFC-free hard polyurethane foam, is directly applied to the storage tank and insulates against heat loss.
- **Sensor well with DHW temperature sensor**
  The optional DHW temperature sensor supplies temperature information to an optional controller.
- **Electric heating element**
  In addition to the solar thermal system, the electric heating element is a backup heat source for DHW heating.
- **Drain valve**
  The drain valve is used to drain the storage tank completely.
- **Temperature and pressure relief valve (TPR)**
  The temperature and pressure relief valve protects the storage tank against overheating and overpressure.

WST Dimensions and General Specifications

	Unit	WST 50	WST 80	WST 119
Tank capacity	Gal (L)	50 (189.3)	80 (302.8)	119 (450.5)
Diameter	in (mm)	23.6 (600)	27.6 (700)	29.5 (750)
Height without tank feet	in (mm)	45.2 (1147)	50.6 (1285)	61.9 (1572)
Minimum height of the installation room2)	in (mm)	78.7 (2000)	78.7 (2000)	78.7 (2000)
Shipping weight	lbs (kg)	234 (106)	320 (145)	428 (194)
Empty weight	lbs (kg)	187(85)	271 (123)	375 (170)
Standby capacity for electric heating element	Gal (L)	20 (76)	32 (121)	48 (180)
Electric heating element voltage	V	240	240	240
Electric heating element rating	kW	4.5	4.5	4.5
Cold water inlet (EK)	Inches	NPT m ¾"	NPT m ¾"	NPT m 1"
Hot water outlet (AW)	Inches	NPT m ¾"	NPT m ¾"	NPT m 1"
Supply to storage tank (solar thermal system)	Inches	NPT m ¾"	NPT m ¾"	NPT m ¾"
Return from storage tank (solar thermal system)	Inches	NPT m ¾"	NPT m ¾"	NPT m ¾"
Length of solar coil	in (m)	338 (8.6)	485 (12.3)	485 (12.3)
Surface area of solar coil	ft² (m²)	9.8 (0.9)	14 (1.3)	14 (1.3)
Capacity of solar coil	Gal (L)	1.6 (6)	2.2 (8.5)	2.2 (8.5)
Recirculation inlet	Inches	NPT fm ¾"	NPT fm ¾"	NPT fm ¾"
Temperature and pressure relief valve	Inches	NPT fm ¾"	NPT fm ¾"	NPT fm ¾"

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WST Performance Data				
	Unit	**WST 50**	**WST 80**	**WST 119**
Recommended number of Bosch solar collectors	–	1-2	2-3	3-4
Standby heat loss	kWh/24 h	1.4	1.8	2.3
Standby heat loss	°F/h (°C/h)	0.7 (0.39)	0.6 (0.32)	0.5 (0.27)
Standby capacity when drawing water (first hour supply)	Gal (L)	45 (170.3)	57 (215.8)	74 (280.1)
Thermal insulation (R-value, design)	°F ft²h/BTU	12.5 - 31.8	12.5 - 31.8	12.5 - 31.8
Thermal insulation (R-value, measured over entire tank surface area)	°F ft²h/BTU	12.11	12.31	12.22

WST Permissible Maximum Values				
	Unit	**WST 50**	**WST 80**	**WST 119**
Voltage	V	240	240	240
Heat transfer medium temperature	°F (°C)	275 (135)	275 (135)	275 (135)
DHW temperature	°F (°C)	203 (95)	203 (95)	203 (95)
Hot water operating pressure [1]	PSI (bar)	100 (6.89)	100 (6.89)	100 (6.89)
Hot water operating temperature	PSI (bar)	150 (10.34)	150 (10.34)	150 (10.34)
Heat transfer medium operating pressure	PSI (bar)	116 (8)	116 (8)	116 (8)
Water connection pressure	PSI (bar)	90 (6.2)	90 (6.2)	90 (6.2)
Mixing ratio: heat transfer medium/water	–	50/50	50/50	50/50

[1] With factory-installed temperature and pressure relief valve

WST Requirements for Potable Water				
	Unit	**WST 50**	**WST 80**	**WST 119**
Water hardness, min.	ppm	36	36	36
	grain/US gallon	2.1	2.1	2.1
	°dH	2	2	2
pH value, min.	–	6.5	6.5	6.5
pH value, max.	–	9.5	9.5	9.5
Conductivity, min.	µS/cm	130	130	130
Conductivity, max.	µS/cm	1500	1500	1500

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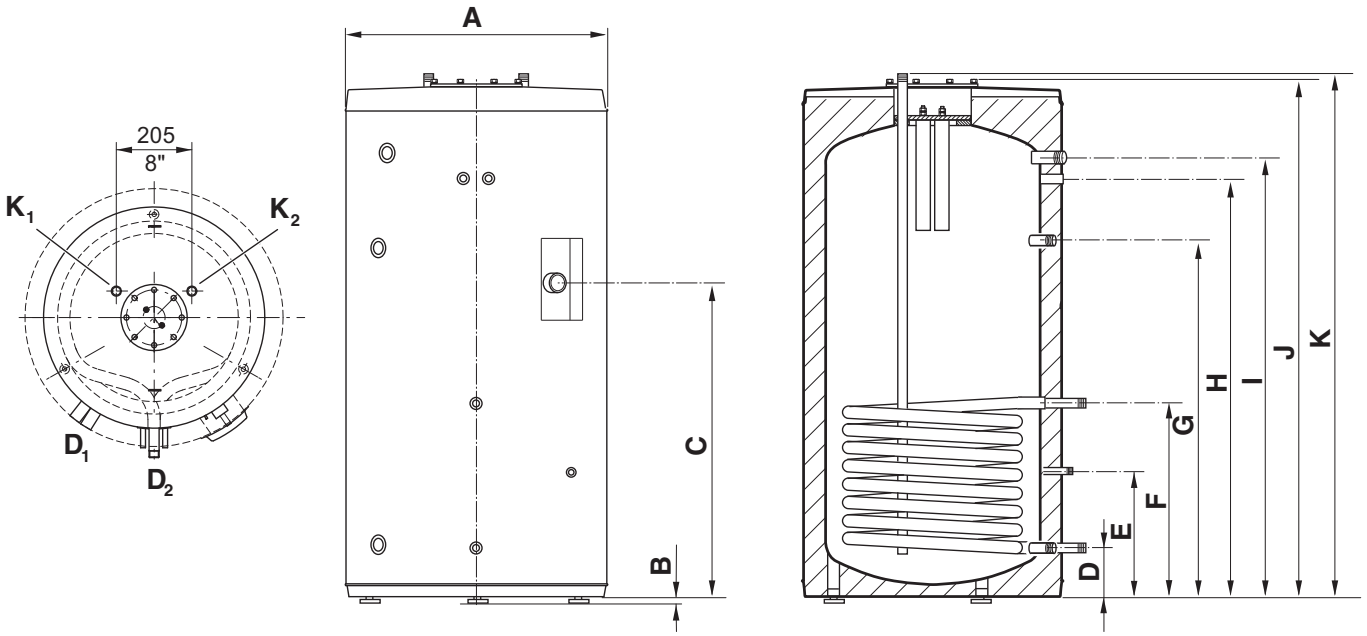
WST Connections and Dimensions



WST Connection and Dimensions

Dimension		Unit	WST 50	WST 80	WST 119
A	Diameter	in (mm)	23.6 (600)	27.6 (700)	29.5 (750)
B	Feet for the solar storage tank	in (mm)	0.6-2 (15-50)	0.6-2 (15-50)	0.6-2 (15-50)
C	Electric heating element	in (mm)	26.0 (660)	29.5 (750)	35.7 (908)
D	D1 = Drain valve, D2 = Return to solar thermal system	in (mm)	4.3 (110)	5.3 (135)	5.4 (138)
E	DHW temperature sensor	in (mm)	11.8 (300)	19.1 (485)	19.2 (488)
F	Supply from solar thermal system	in (mm)	16.1 (410)	19.1 (485)	19.2 (488)
G	DHW circulation	in (mm)	29.3 (745)	33.5 (850)	39.3 (998)
H	Attachment location for solar pump station	in (mm)	36.6 (930)	41.2 (1046)	52.3 (1328)
I	Temperature and pressure relief valve	in (mm)	39.4 (1000)	43.9 (1115)	55.0 (1398)
J	Height without storage tank feet	in (mm)	45.2 (1147)	50.6 (1285)	61.9 (1572)
K	K1 = Hot water outlet (AW), K2 = Cold water inlet (EK)	in (mm)	45.9 (1166)	51.3 (1304)	62.6 (1590)

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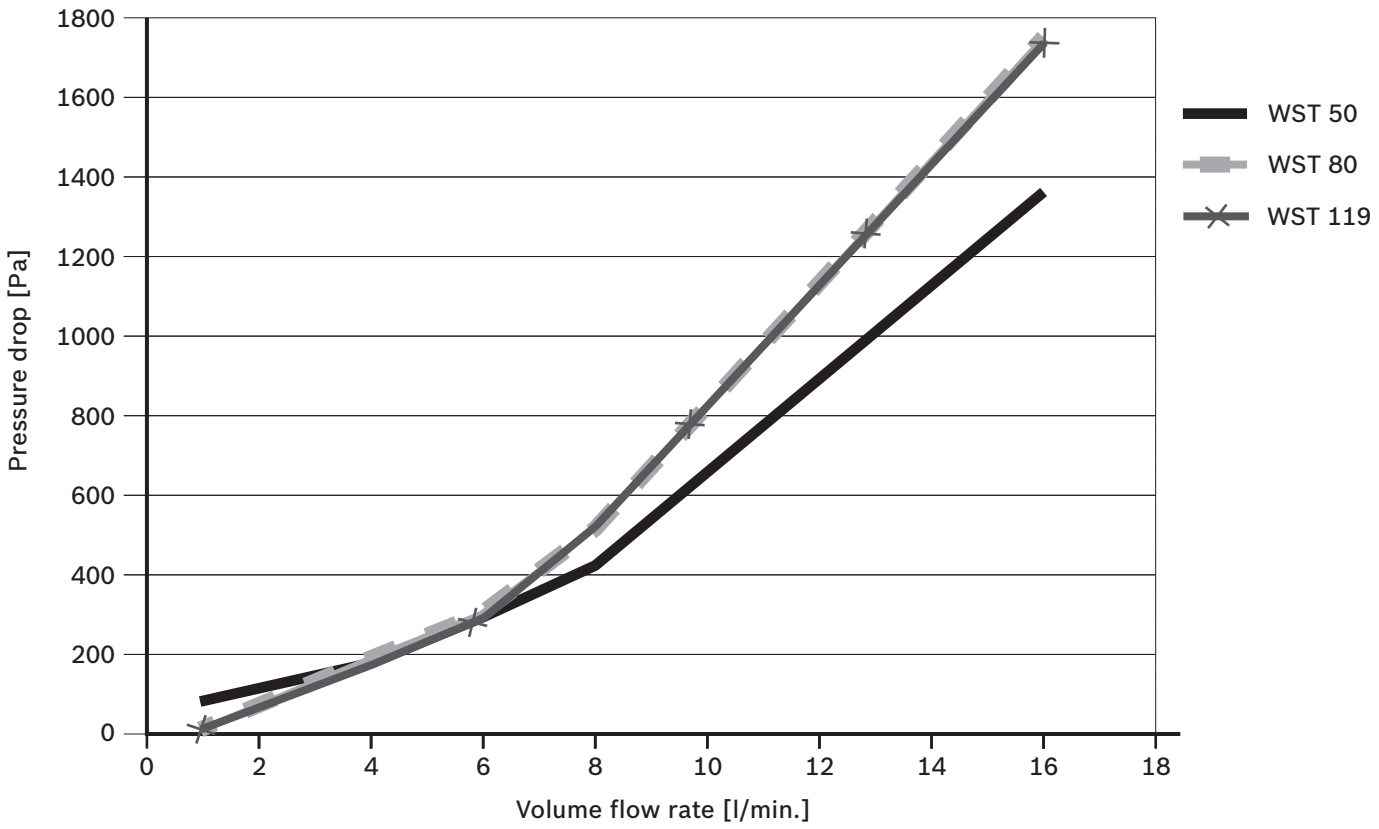
Pressure Drop of the Collector Loop Heat Exchanger



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