SOLID FUEL PRODUCTS

LOAD VALVE
SERIES VTC500

The thermic valve series ESBE VTC500 is used to efficiently load accumulation tanks and protect solid fuel boilers up to 150 kW from too low return temperatures, which otherwise could cause tarring, reduced output and shorter life span of the boiler. Patent pending.



VTC511
Internal thread



VTC512
External thread

OPERATION

The ESBE series VTC500 is a thermic 3-way valve designed to protect the boiler from return temperatures that are too low. Maintaining a high and stable return temperature means a higher level of boiler efficiency, reduced tarring and increased life span of the boiler.

The VTC500 valve is used in heating applications up to 150 kW where solid fuel boilers are used to feed storage tanks. The valve is installed either in the return pipe to the boiler (50°C, 55°C, 60°C, 65°C or 70°C) or in the accumulation tank feeding pipe (70°C). The first alternative is recommended as it offers a simpler pipe layout for expansion (see installation examples).

FUNCTION

The valve regulates on two ports, which makes it easy to install and does not require any adjustment valve in the bypass pipe.

The function of the valve is independent of its assembly position.

The valve contains a thermostat which begins to open connection A at an outgoing mixed water temperature in connection AB of 50°C, 55°C, 60°C, 65°C or 70°C. Connection B is fully closed when the temperature in connection A exceeds the nominal opening temperature with 10°C.

MEDIA

Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve. When 30 - 50 % glycol is added, the maximum output effect of the valve is decreased by 30 - 40 %. A lower concentration of glycol may be disregarded.

SERVICE AND MAINTENANCE

We recommend equipping the valve connections with shut-down devices. This to facilitate future service.

The load valve does not need any maintenance under normal conditions. However thermostats are available and are easy to replace if necessary.

LOAD VALVE VTC500 DESIGNED FOR

● Heating

OPTIONS

Art. No.	
57020100	Thermostat 50°C
57020200	Thermostat 55°C
57020300	Thermostat 60°C
57020800	Thermostat 65°C
57020400	Thermostat 70°C
57020600	Thermometer, 3pcs
57020700	Insulation, ≥ DN32

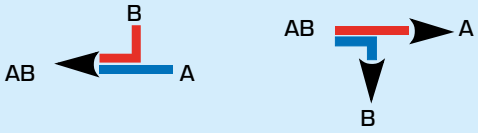
TECHNICAL DATA

Pressure class:	Series VTC510, PN 10
Temperature of medium:	max 110°C
	min 0°C
Max. differential pressure:	100 kPa (1,0 bar)
Max. differential pressure A - B:	30 kPa (0,3 bar)
Leakrate A - AB:	max 1% of Kvs
Leakrate B - AB:	max 3% of Kvs
Rangeability Kv/Kv^{min}:	100
Connections:	Internal thread (Rp), EN 10226-1
	External thread (G), ISO 228/1
Media:	Heating water (in accordance with VDI2035)
	Water / Glycol mixtures, max. 50%
	Water / Ethanol mixtures, max. 28%
Material	
Valve body and cover:	Nodular iron EN-JS 1050

PED 2014/68/EU, article 4.3 / SI 2016 No. 1105 (UK)

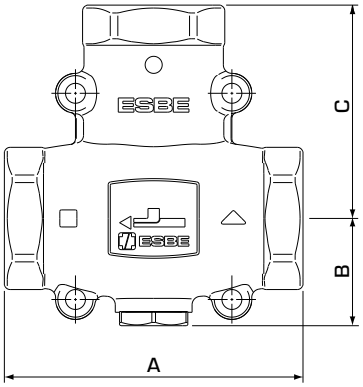
Pressure Equipment in conformity with PED 2014/68/EU, article 4.3 (sound engineering practice). According to the directive the equipment shall not carry any CE mark.

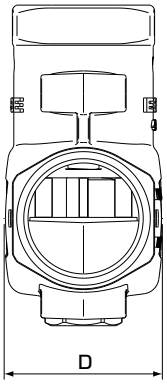
FLOW PATTERN



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LOAD VALVE
SERIES VTC500





SERIES VTC511, INTERNAL THREAD

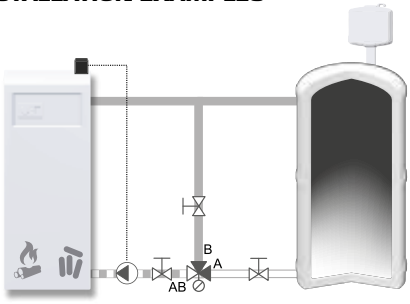
Art. No.	Reference	DN	Kvs*	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51020100	VTC511	25	9	Rp 1"	50°C ± 5°C	93	34	69	47	0,84	
51020200					55°C ± 5°C						
51020300					60°C ± 5°C						
51021100					65°C ± 5°C						
51020400					70°C ± 5°C						
51020600	VTC511	32	14	Rp 1¼"	50°C ± 4°C	105	38	75	55	1,38	
51020700					55°C ± 4°C						
51020800					60°C ± 4°C						
51021200					65°C ± 4°C						
51020900					70°C ± 4°C						

SERIES VTC512, EXTERNAL THREAD

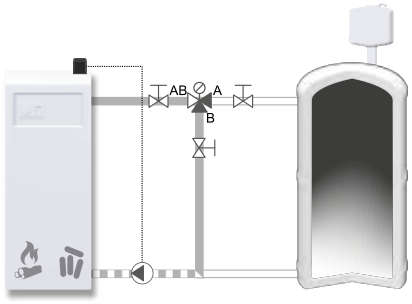
Art. No.	Reference	DN	Kvs*	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51021500	VTC512	25	9	G 1¼"	50°C ± 5°C	93	34	69	47	0,80	
51021600					55°C ± 5°C						
51021700					60°C ± 5°C						
51022500					65°C ± 5°C						
51021800					70°C ± 5°C						
51022000	VTC512	32	14	G 1½"	50°C ± 4°C	105	38	75	55	1,31	
51022100					55°C ± 4°C						
51022200					60°C ± 4°C						
51022600					65°C ± 4°C						
51022300					70°C ± 4°C						

* Kvs-value in m^3/h at a pressure drop of 1 bar.

INSTALLATION EXAMPLES



Mixing



Diverting

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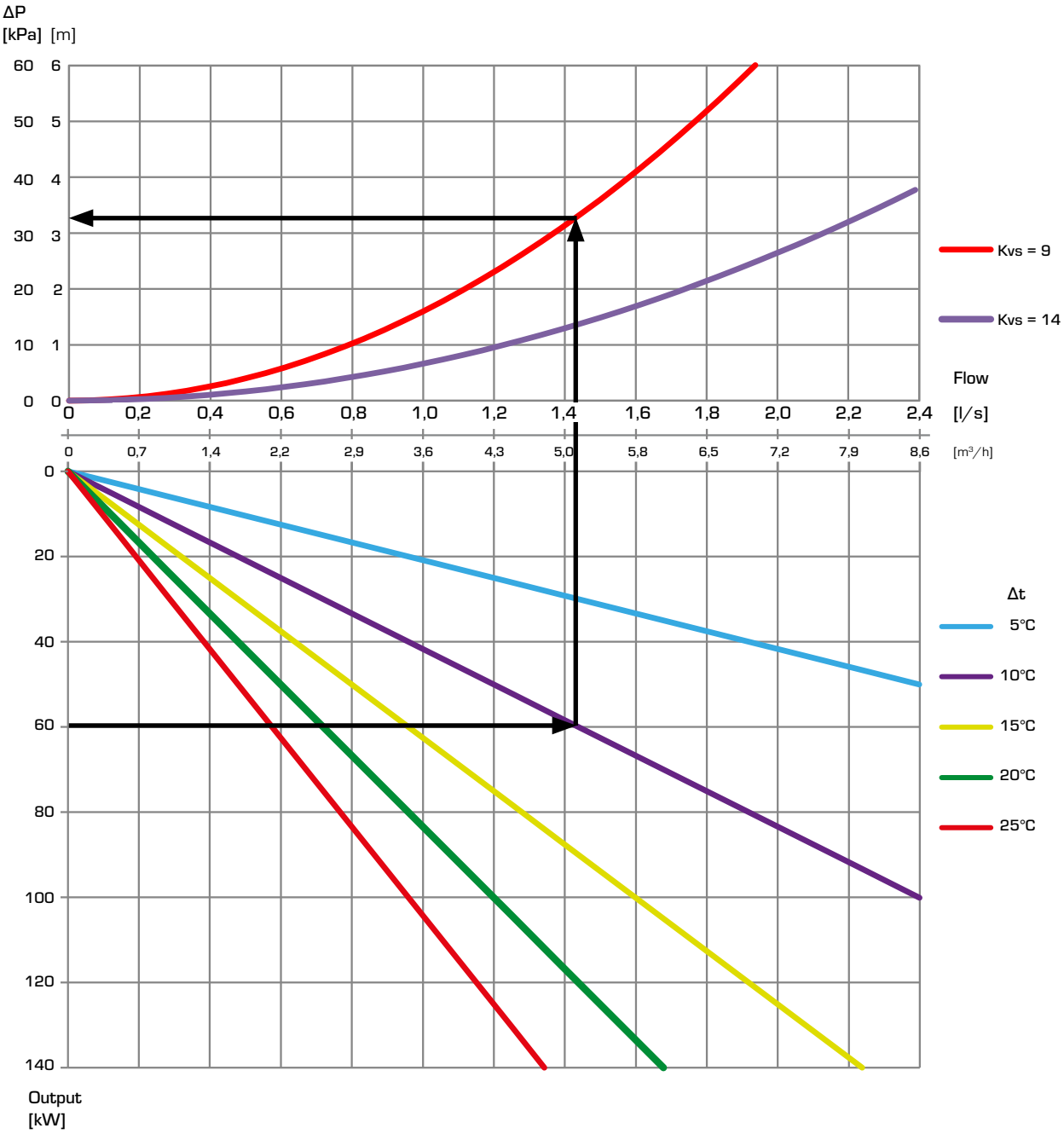
DIMENSIONING OF VALVE AND PUMP

Example: Start with the heat output of the boiler (e.g. 60 kW) and move horizontally to the right in the diagram to the chosen Δt, which is the temperature difference between the riser from the boiler and the return to the boiler (e.g. 90°C -80°C = 10°C).

Move vertically up to the curves representing the different valve sizes (e.g. Kvs 9) and then move horizontally to the left to find the pressure drop over the valve (e.g. 32kPa) which the pump will have to overcome. In addition to the pressure drop over the valve, remember that the pump will also have to be dimensioned to handle the pressure drop in the rest of the system (e.g. pipes, boiler and accumulation tank).

If the pressure drop and flow do not match the pump you have intended for the system, please try a different Kvs-value to receive a suitable pressure drop.

VTC500 – pressure losses



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