

LOAD VALVE SERIES VTC300

The thermic valve series ESBE VTC300 is used to protect boilers up to 30 kW from too low return temperatures. ESBE series VTC300 also efficiently loads accumulation tanks.

OPERATION

The ESBE series VTC300 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 VTC300 valve is used in heating applications up to 30 kW where solid fuel boilers are used to feed storage tanks. The valve is installed either in the return pipe to the boiler (45°C, 55°C, 60°C, 70°C or 80°C) or in the accumulation tank feeding pipe (70°C or 80°C). The first option 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 45°C, 55°C, 60°C, 70°C or 80°C. Connection B is fully closed when the temperature in connection A exceeds the nominal opening temperature with 10°C.

MEDIA

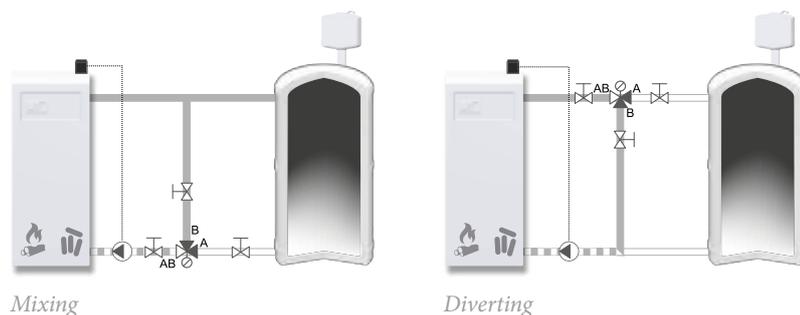
Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the valve. When 30 - 50 % glycol is added, the maximum 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 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.

INSTALLATION EXAMPLES



LOAD VALVE VTC300 DESIGNED FOR

- Heating
- Solar heating

OPTIONS

Thermostat 45°C _____	Art. No. 57000100
Thermostat 55°C _____	Art. No. 57000200
Thermostat 60°C _____	Art. No. 57000300
Thermostat 70°C _____	Art. No. 57000400
Thermostat 80°C _____	Art. No. 57000500

TECHNICAL DATA

Pressure class: _____ PN 10
 Temperature of medium: _____ max 100°C
 _____ min 0°C
 Max. differential pressure: _____ Mixing, 100 kPa (1.0 bar)
 Max. differential pressure: _____ Diverting, 30 kPa (0.3 bar)
 Leakrate A - AB: _____ Tight sealing
 Leakrate B - AB: _____ max 3% of Kvs
 Rangeability Kv/Kv^{min}: _____ 100
 Connections: _____ Internal thread (G), EN 10226-1
 _____ External thread (G), ISO 228/1

Material

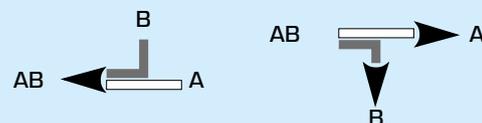
Valve housing and other metal parts with fluid contact:
 _____ Brass DZR, CW 625N, resistant to dezincification

PED 2014/68/EU, article 4.3

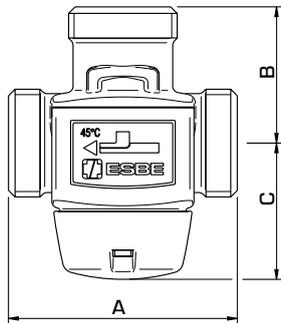
Pressure Equipment in conformity with PED 2014/68/EU, article 4.3 (sound engineering practice).

According to the directive the equipment shall not carry any CE-mark.

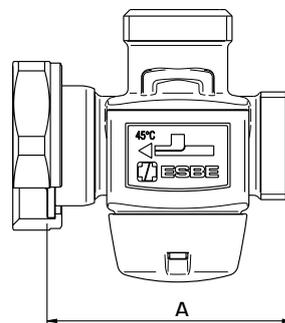
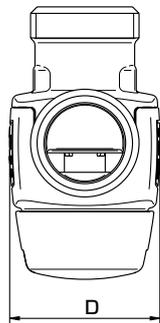
FLOW PATTERN



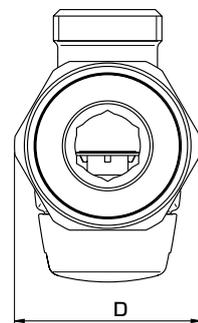
LOAD VALVE SERIES VTC300



VTC311, VTC312



VTC317, VTC318



SERIES VTC311, INTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51000100	VTC311	20	3.2	Rp 3/4"	45°C ± 2°C	70	42	42	46	0.53	
51000200					55°C ± 2°C						
51000300					60°C ± 2°C						
51000400					70°C ± 2°C						
51000500					80°C ± 2°C						

SERIES VTC312, EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51000800	VTC312	15	2.8	G 3/4"	45°C ± 2°C	70	42	42	46	0.48	
51000900					55°C ± 2°C						
51001000					60°C ± 2°C						
51001100					70°C ± 2°C						
51001200					80°C ± 2°C						
51001500	VTC312	20	3.2	G 1"	45°C ± 2°C	70	42	42	46	0.51	
51001600					55°C ± 2°C						
51001700					60°C ± 2°C						
51001800					70°C ± 2°C						
51001900					80°C ± 2°C						

SERIES VTC317, PUMP FLANGE AND EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51002200	VTC317	20	3.2	PF 1 1/2", G 1"	45°C ± 2°C	75	42	42	57	0.57	
51002300					55°C ± 2°C						
51002400					60°C ± 2°C						
51002500					70°C ± 2°C						
51002600					80°C ± 2°C						

SERIES VTC318, ROTATING NUT AND EXTERNAL THREAD

Art. No.	Reference	DN	Kvs*	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51002900	VTC318	20	3.2	RN 1", G 1"	45°C ± 2°C	70	42	42	46	0.49	
51003000					55°C ± 2°C						
51003100					60°C ± 2°C						
51003200					70°C ± 2°C						
51003300					80°C ± 2°C						

* Kvs-value in m³/h at a pressure drop of 1 bar. PF = Pump Flange RN = Rotating Nut

LOAD VALVE SERIES VTC300

DIMENSIONING OF VALVE AND PUMP

Example: Start with the heat output of the boiler (e.g. 20 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. $90^{\circ}\text{C} - 80^{\circ}\text{C} = 10^{\circ}\text{C}$).

Move vertically up to the curves representing the different valve sizes (e.g. Kvs 2.8) and then move horizontally to the left to find the pressure drop over the valve (e.g. 38kPa) 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.

VTC300 – pressure losses

ΔP
[kPa] [m]

