SOLID FUEL PRODUCTS

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.


Internal thread


External thread


Pump flange/
External thread


Rotating nut/
External thread

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 in the return pipe to the boiler. The 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 or 60°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
Media:	Heating water (in accordance with VDI2035)
	Water / Glycol mixtures, max. 50%
	Water / Ethanol mixtures, max. 28%

Material

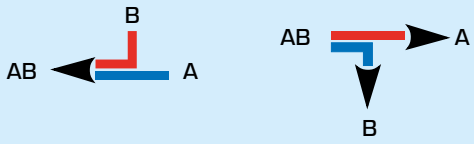
Valve housing and other metal parts with fluid contact:

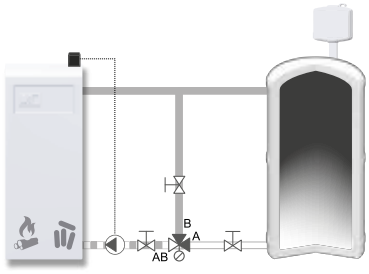
Brass DZR, CW 625N, resistant to dezincification

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

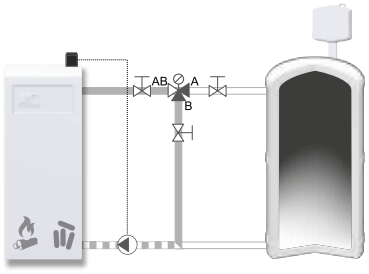
Pressure Equipment in conformity with PED 2014/68/EU, article 4.3 and Pressure Equipment (Safety) Regulations 2016, (sound engineering practice). According to the directive/regulation the equipment shall not carry any CE or UKCA mark.

FLOW PATTERN



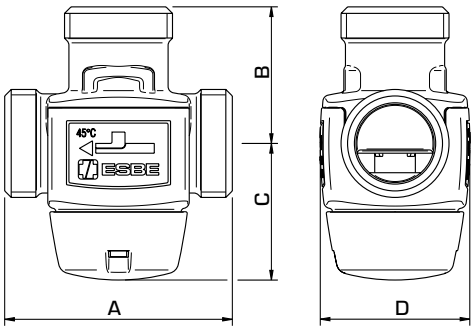


Mixing

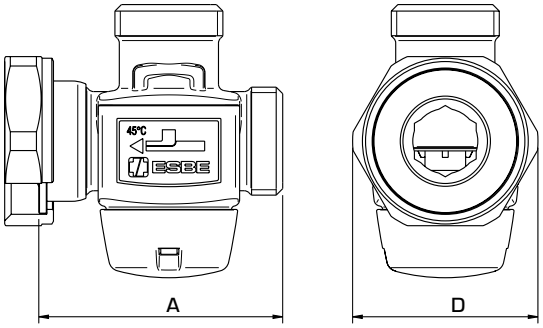


Diverting

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 ¾“	45°C ± 2°C	70	42	42	46	0,53	
51000200					55°C ± 2°C						
51000300					60°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 ¾“	45°C ± 2°C	70	42	42	46	0,48	
51000900					55°C ± 2°C						
51001000					60°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						

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 1½“, G 1“	45°C ± 2°C	75	42	42	57	0,57	
51002300					55°C ± 2°C						
51002400					60°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						

* Kvs-value in m^3/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°C -80°C = 10°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