SOLID FUEL PRODUCTS

LOAD VALVE
SERIES VTC400

The ESBE thermic valve series VTC400 are designed for return temperature control applications, where easy adjustments of temperature are required. The ESBE VTC400 ensure also efficiently load of accumulation tanks.



VTC412
External thread



VTC422
External thread

OPERATION

The ESBE thermic valves series VTC400 are designed for applications with boilers, which require return temperature control. Maintaining a high and stable return temperature means a higher level of boiler efficiency, reduced tarring and increased life span of boiler.

VERSIONS

The VTC400 is available in two versions: with fixed and adjustable temperature. VTC412 with Kvs 5,5 has fixed opening temperature, which can be chosen from: 50°C or 55°C. VTC422 with Kvs 4,5 has adjustable opening temperature in a range of 50-70°C. The valves are designed for applications with storage tank.

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 thermic valve begins to open connection A at outgoing mixed water temperature in connection AB of 50-70°C (depending of used thermostat or settings on the adjustable version VTC422).

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 shutdown 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.

LOAD VALVE VTC400 DESIGNED FOR

- Heating

TECHNICAL DATA

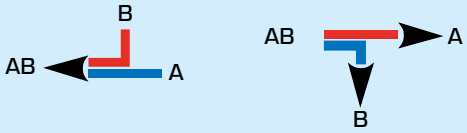
Pressure class: PN 10
Temperature of medium: max 100°C
min 0°C
Temperature stability: ±4°C**
Max. differential pressure, - Mixing: 100 kPa (1,0 bar)
- Diverting: 30 kPa (0,3 bar)
Leakrate, A - AB: Tight sealing
B - AB: Tight sealing
Rangeability Kv/Kv^{min}: 100
Connections: External thread, ISO 228/1
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:
dezincification resistant brass, DZR

** Temperature stability conditions are applicable when hot water from primary circuit is >10°C warmer than mixed temperature and return water from secondary circuit is >20°C colder than mixed temperature.

PED 2014/68/EU, article 4.3

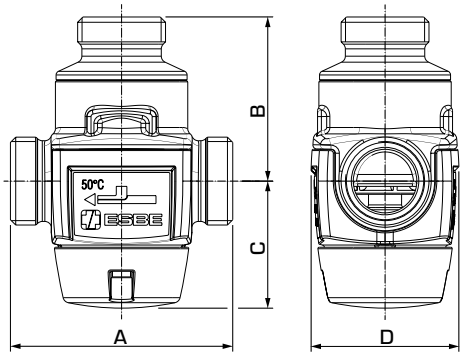
Pressure Equipment in conformity with PED 2014/68/EU, article 4.3 (sound engineering practice). According to the directive the equipment shall not carry any CE mark.

FLOW PATTERN

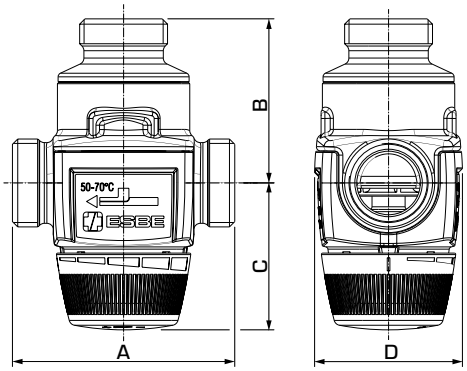


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LOAD VALVE
SERIES VTC400



VTC412



VTC422

SERIES VTC412, FIXED TEMPERATURE

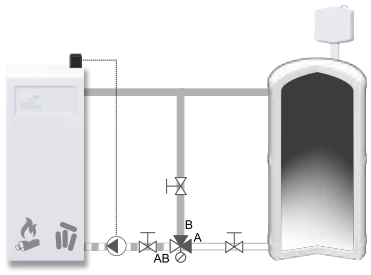
Art. No.	Reference	DN	Kvs*	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51060100	VTC412	25	5,5	G 1"	50°C ± 4°C**	84	62	48	56	0,69	
51060200					55°C ± 4°C**						

SERIES VTC422, ADJUSTABLE TEMPERATURE

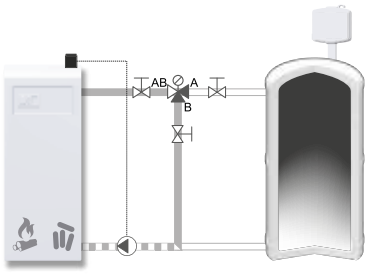
Art. No.	Reference	DN	Kvs*	Connection	Opening temperature range	A	B	C	D	Weight [kg]	Note
51060600	VTC422	25	4,5	G 1"	50 – 70°C ± 4°C**	84	62	60	56	0,77	

* Kvs-value in m^3/h at a pressure drop of 1 bar. ** Temperature stability conditions are applicable when hot water from primary circuit is >10°C warmer than mixed temperature and return water from secondary circuit is >20°C colder than mixed temperature.

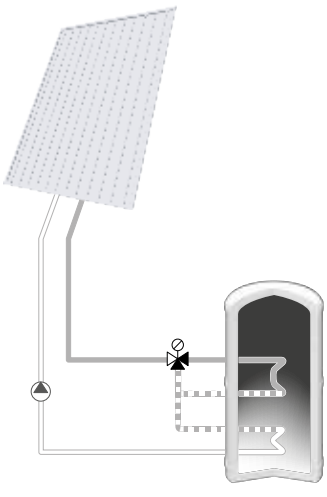
INSTALLATION EXAMPLES



Mixing



Diverting



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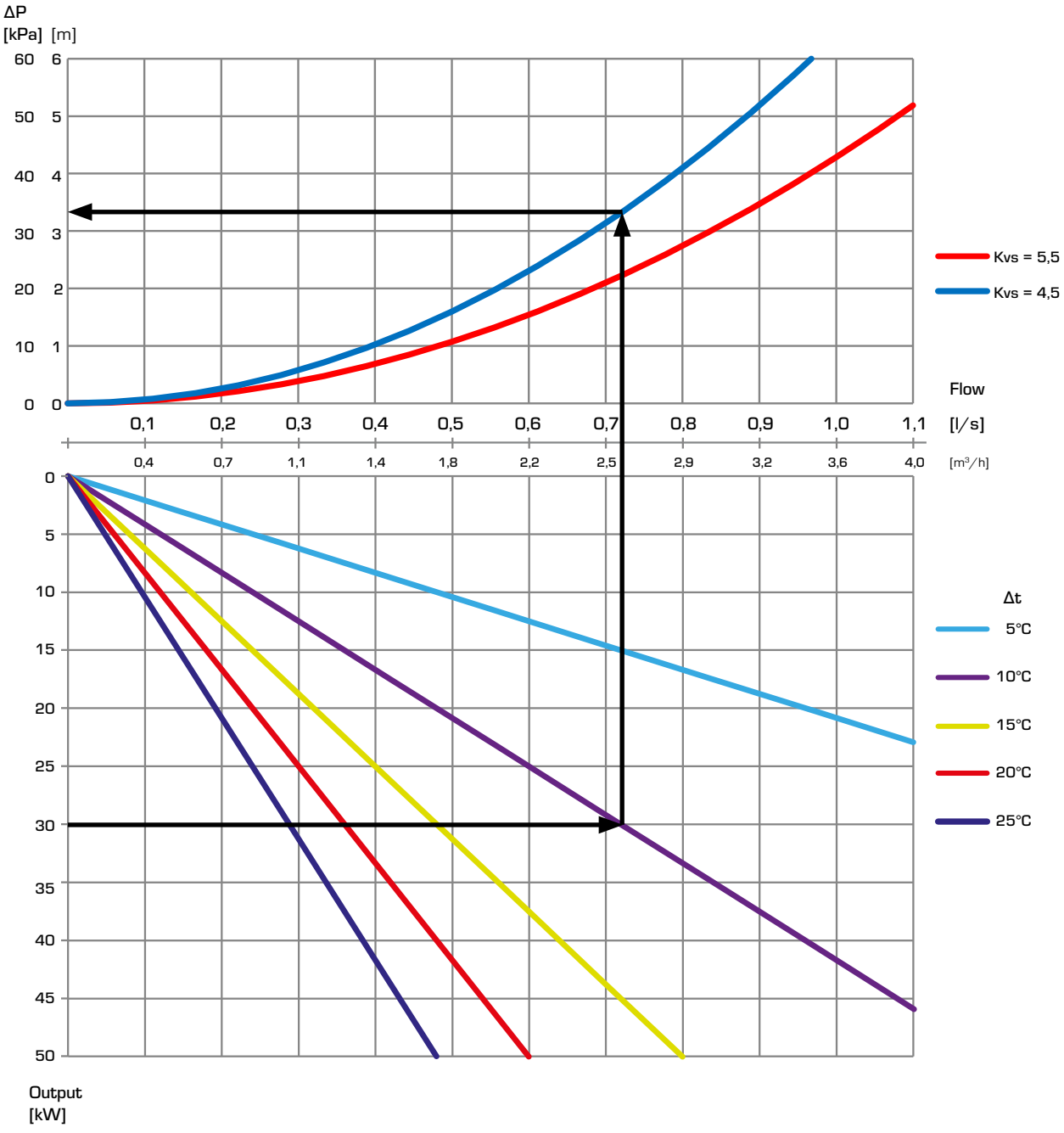
DIMENSIONING OF VALVE AND PUMP

Example: Start with the heat output of the boiler (e.g. 30 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 4.5) and then move horizontally to the left to find the pressure drop over the valve (e.g. 33kPa) 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.

VTC400 – pressure losses



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