

# 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.

## 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, 55°C, 60°C, 65°C or 70°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). Temperature stability conditions are applicable when hot water is >10°C warmer than mixed temperature and cold water is >20°C colder than mixed temperature.

## 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.



VTC412  
External thread



VTC422  
External thread

## 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<sup>min</sup>: \_\_\_\_\_ 100  
 Connections: \_\_\_\_\_ External thread, ISO 228/1

### Material

Valve housing and other metal parts with fluid contact:  
 \_\_\_\_\_ dezincification resistant brass, DZR

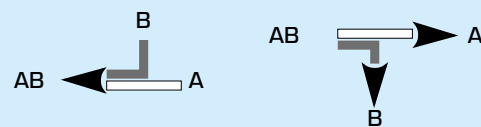
\*\* Temperature stability conditions are applicable when hot water is >10°C warmer than mixed temperature and cold water is >20°C colder than mixed temperature.

PED 2014/68/EU, article 4.3

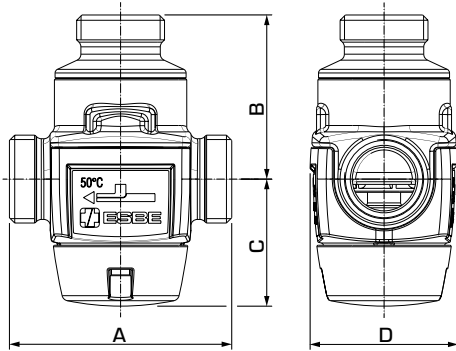
Pressure Equipment in conformity with PED 2014/68/EU, article 4.3 (sound engineering practice).

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

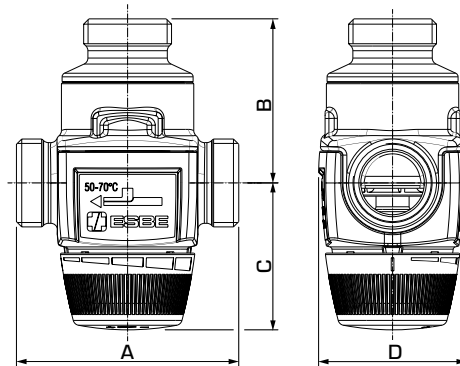
### FLOW PATTERN



# LOAD VALVE SERIES VTC400



VTC412



VTC422

## SERIES VTC412, FIXED TEMPERATURE

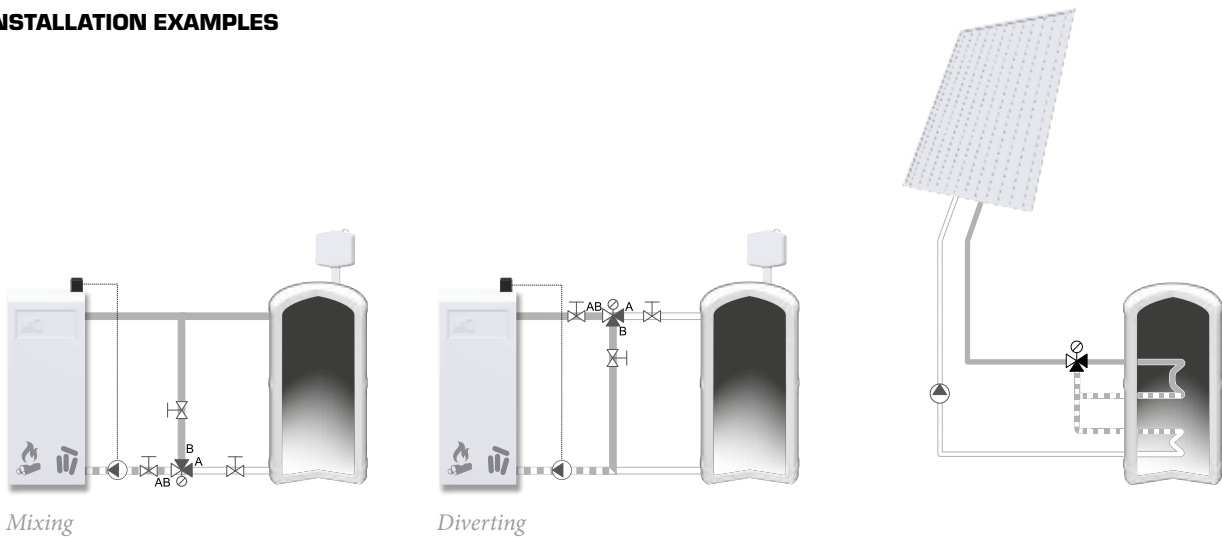
Art. No.	Reference	DN	Kvs *	Connection	Opening temperature	A	B	C	D	Weight [kg]	Note
51060100	VTC412	25	5.5	G 1"	50°C ± 4°C**	84	62	48	56	0.69	
51060200					55°C ± 4°C**						
51060300					60°C ± 4°C**						
51060400					65°C ± 4°C**						
51060500					70°C ± 4°C**						

## 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<sup>3</sup>/h at a pressure drop of 1 bar. \*\* Temperature stability conditions are applicable when hot water is >10°C warmer than mixed temperature and cold water is >20°C colder than mixed temperature.

## INSTALLATION EXAMPLES



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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  $\Delta t$ , 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.  $Kvs\ 4.5$ ) 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

