

**TV
ESBE Thermic Valve**



Application



The ESBE thermic valve is a boiler by-pass valve that prevents cool return water temperatures in a hydronic heating system. The purpose is to safeguard conventional non-condensing boilers against corrosion from condensation that would result if a minimum flue gas temperature is not maintained.

The TV valve can be installed in either the hot water feed (160F) or the return line (140F or 113F).

Typical Applications:

- Non-condensing boilers matched with high mass, low temperature systems, i.e. concrete radiant floor heating or snow melting systems
- Gravity conversion systems, which typically have large volumes of water
- Water heating systems where solid fuel boilers are used to feed storage tanks

Features:

- The thermostatic element within the valve allows flow to by-pass the system until the appropriate fluid temperature through the valve is reached.
- Avoids sustained low water temperatures which would otherwise cause the water vapour to continually condense inside the boiler
- Protection from thermal shock within non-condensing boiler
- Self contained thermostatic element with no adjustment required
- Choice of three temperature values and three connection sizes

Ordering Information

Install On	Opening Temperature	Code No.	Model	Connection (FNPT)	Cv
Supply Side	160 °F (72 °C)	065B8920	TV461A	1"	10.5
		065B8921	TV462A	1-¼"	16.5
		065B8922	TV463A	1-½"	20.0
Return Side	140 °F (60 °C)	065B8923	TV464A	1"	10.5
		065B8924	TV465A	1-¼"	16.5
		065B8925	TV466A	1-½"	20.0
	113 °F (45 °C)	065B8917	TV464AL	1"	10.5
		065B8918	TV465AL	1-¼"	16.5
		065B8919	TV466AL	1-½"	20.0

Spare Parts

Description	Part No.	
Thermostatic Element	113 °F (45 °C)	065B8930
	140 °F (60 °C)	065B8927
	160 °F (72 °C)	065B8926

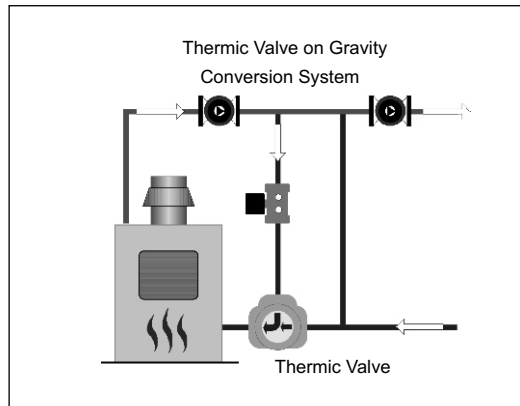
Technical Specifications

Max. operating pressure	85psi (6 bar)
Max. operating temperature	230 °F (110 °C)
Max. differential pressure	7.25psi (0.5 bar)
Allowable fluid	Glycol mixture , max. 50%

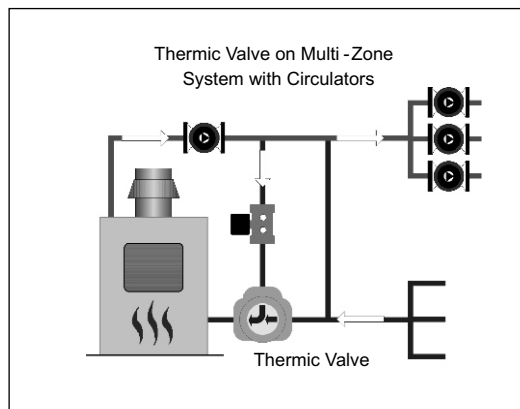
Specification

The 3-way bypass valve shall have a self-contained non-adjustable thermostatic element housed within a cast iron construction. The valve body shall have female pipe thread connections and shall be installed on a hydronic heating system. The valve shall be available with a choice of integral thermostatic elements with fixed opening temperatures : 160°F (72°C) for mounting on the boiler supply side; 140°F (60°C) or 113°F (45°C) for mounting on the boiler return side. The bypass piping between the supply and return must incorporate a balancing valve to ensure proper flow to the system.

System Layout



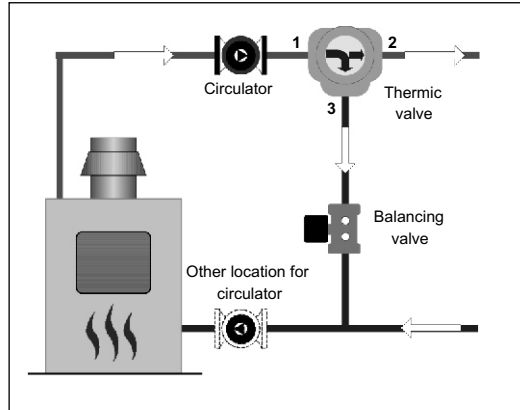
Gravity conversion systems contain an enormous volume of water, and the water returning to the heat source could be significantly cooler, leading to condensation and a shorter life for the heat source. Adding a thermic valve to the system will prevent the boiler from sustained operation at temperatures resulting in condensation.



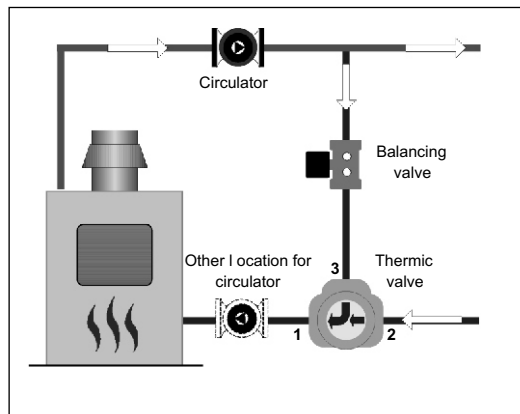
Where a high mass non-condensing heat source is matched with a large low temperature system, a situation could occur where the heat source is unable to maintain the rate of demand from the system. The use of the thermic valve provides the opportunity for the heat source to catch-up.

Installation

To ensure proper flow to the system an adjustable balancing valve such as Danfoss' MSV-U is recommended to be installed on the bypass between the supply and return piping. The piping of the balancing valve creates a similar resistance as the system to reduce the constant recirculation of heated fluid through the boiler and not out to the system.

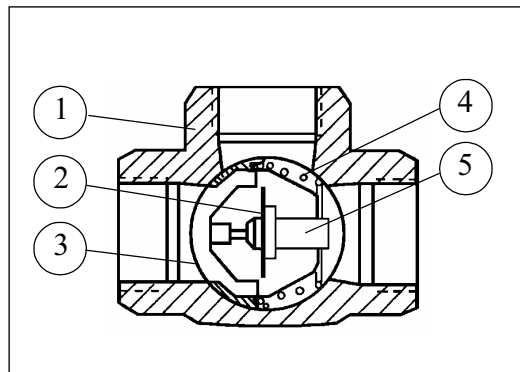


When the temperature of the fluid leaving the boiler is 160F (72C) the thermic valve will begin to allow the heated fluid to the system. Between 160F and 170F, the TV valve continues to bypass allowing supply to mix with the return water, keeping the fluid temperature levels high. At approximately 180F (82C) a majority of flow is directed to the system.



The thermic valve, when placed on the return side, port 2, will open when the minimum return temperature of 140F (60C) or 113F (45C) is reached. When the fluid temperature reaches approximately 158F (70C), a majority of the flow is directed to the system.

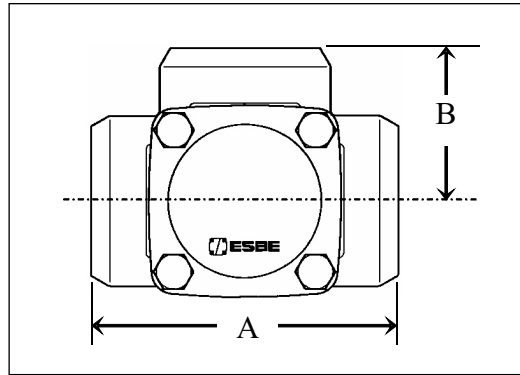
Construction:



No.	Description
1	Valve Body - Cast iron
2	Close off valve seat
3	O-ring - EPDM
4	Spring - Stainless Steel
5	Thermostat - Copper



Dimensions:



Size	A (in)	B (in)	Weight
1"	4.13	2.10	3.3 lbs
1-1/4"	4.52	2.26	4.4 lbs
1-1/2"	4.72	2.36	5.3 lbs

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