

# TBV-C - NPT threads



**Combined control & balancing valves for small terminal units**

For ON-OFF control

# TBV-C – NPT threads

Designed for use in terminal units in heating and cooling systems, the TBV-C ensures accurate hydronic control and optimum throughput over a long lifetime. IMI Hydronic Engineering's dezincification resistant alloy, AMETAL®, minimizes the risk of leakage.

## Key features

- > **Presetting tool**  
For accurate and easy balancing.
- > **Self-sealing measuring points**  
For quick and easy measurement.
- > **Shut-off function**  
Ensures straightforward maintenance procedures.



## Technical description

### Application:

Heating (not steam) and cooling systems.

### Functions:

Control  
Balancing  
Pre-setting  
Measuring  
Shut-off (for isolation during system maintenance)

### Dimensions:

1/2" – 1"

### Pressure class:

PN 16 (230 psi)

### Temperature:

Max. working temperature: 248°F  
Min. working temperature: -4°F

### Leakage rate:

Tight sealing

### Material:

Valve body: AMETAL®  
Seat seal: Valve disc of EPDM  
Spindle seal: EPDM O-ring  
Valve insert: AMETAL®, PPS (polyphenylsulphide)  
Return spring: Stainless steel  
Spindle: AMETAL®

AMETAL® is the dezincification resistant alloy of IMI Hydronic Engineering.

### Actuators:

See separate information on EMO T.

## Sizing

When  $\Delta p$  and the design flow are known, use the formula to calculate the  $C_v$  value.

$$C_v = 1.52 \frac{q}{\sqrt{\Delta p}} \quad q \text{ in GPM, } \Delta p \text{ in ft WG}$$

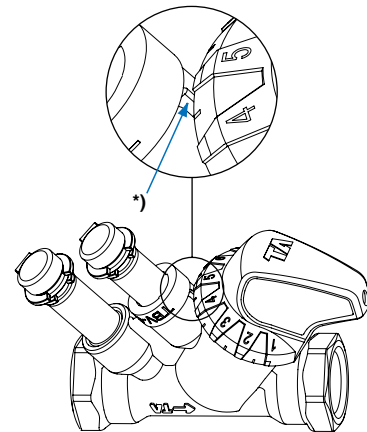
$$C_v = \frac{q}{\sqrt{\Delta p}} \quad q \text{ in GPM, } \Delta p \text{ in psi}$$

## Setting

TBV-C is delivered with a red protective cap, Article No 52 143-100, which must be used when isolating the valve. TBV-C is delivered with the pre-setting fully open. The setting of a valve for a given pressure drop, e.g. corresponding to position 5 is done as follows:

1. Place the presetting tool, Article No 52 133-100, at the valve.
2. Turn the presetting tool so that position 5 is pointing at the index\* of the valve body.
3. Remove the presetting tool. The valve is now set.

There is a diagram for every valve size that shows the flow for different pressure drops and settings.



## Noise

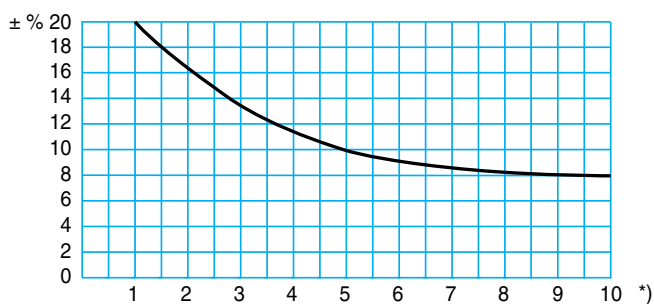
The following conditions must be fulfilled in order to avoid noise in the heating system:

- Flows correctly balanced
- The water in the system must have been de-aerated
- Circulation pumps which do not generate excessive differential pressures (alternatively use a differential pressure controller, e.g. STAP)

The maximum recommended pressure drop in order to avoid noise is 4.35 psi.

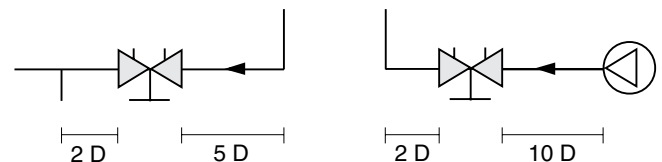
## Measuring accuracy

### Flow deviation at different settings



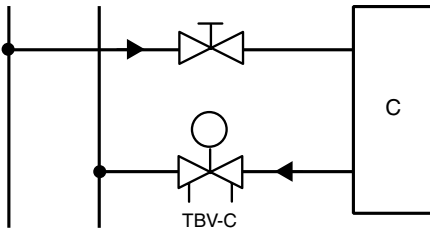
\*) Position

Try to avoid mounting taps and pumps, immediately before the valve.

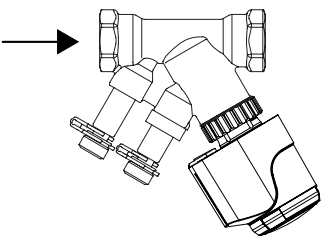


## Installation

### Application example

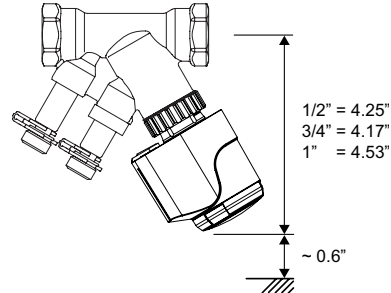


### Flow direction

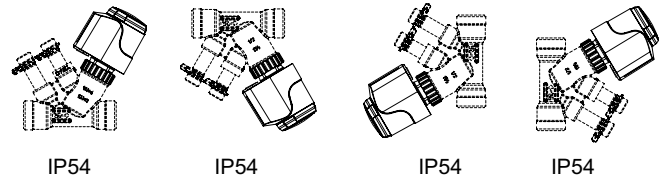


### Installation of actuator

Approx. 0.60 in of free space is required above the actuator.

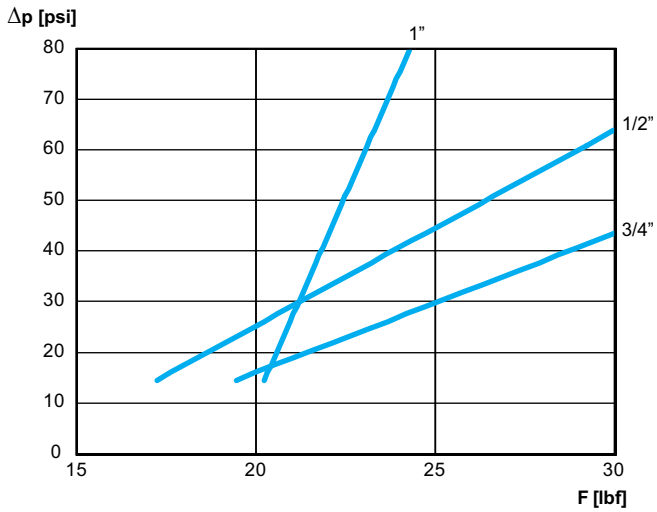


### TBV-C + EMO T

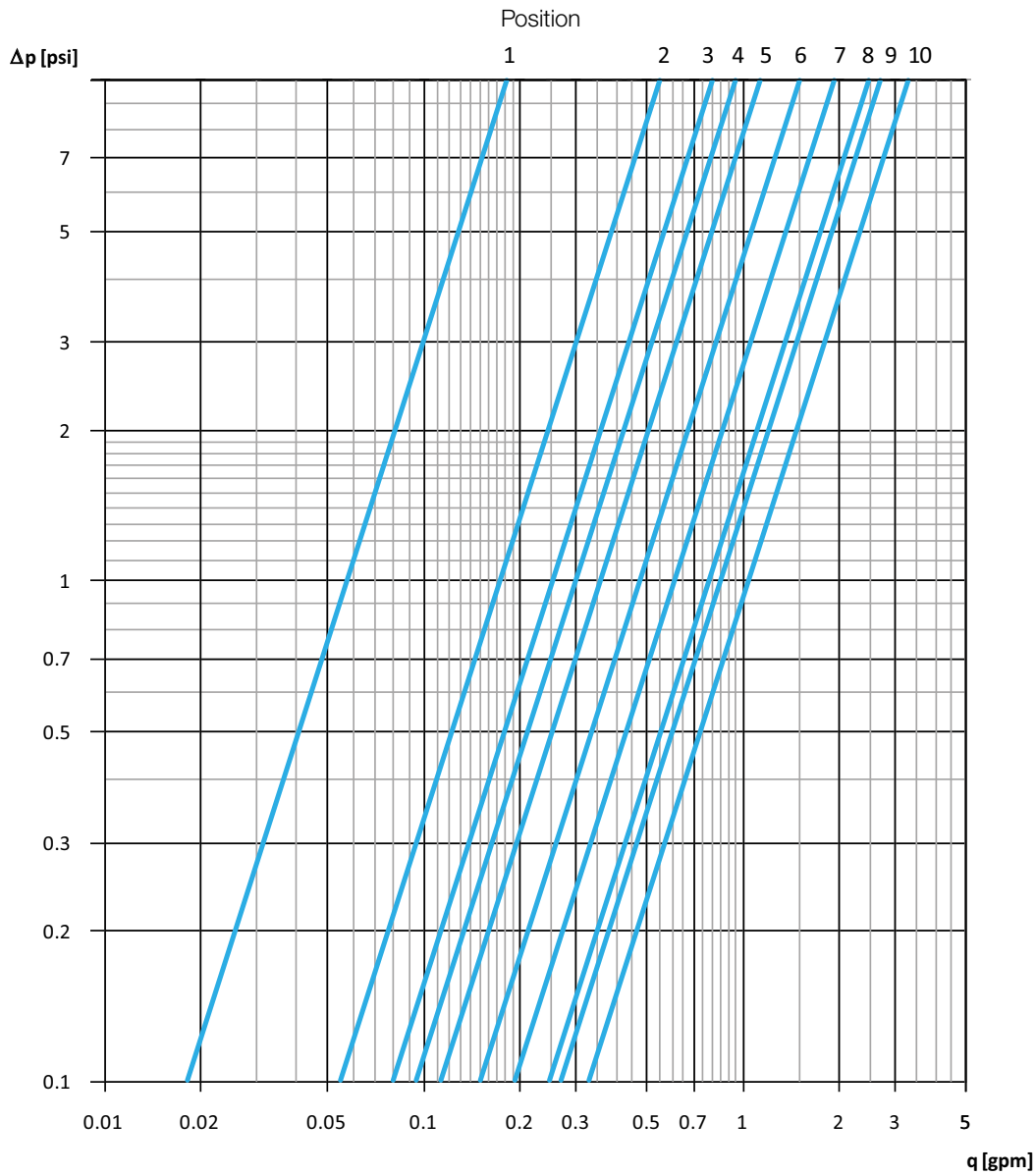


## Closing force

Necessary force (F) to close the valve versus the differential pressure ( $\Delta p$ ).



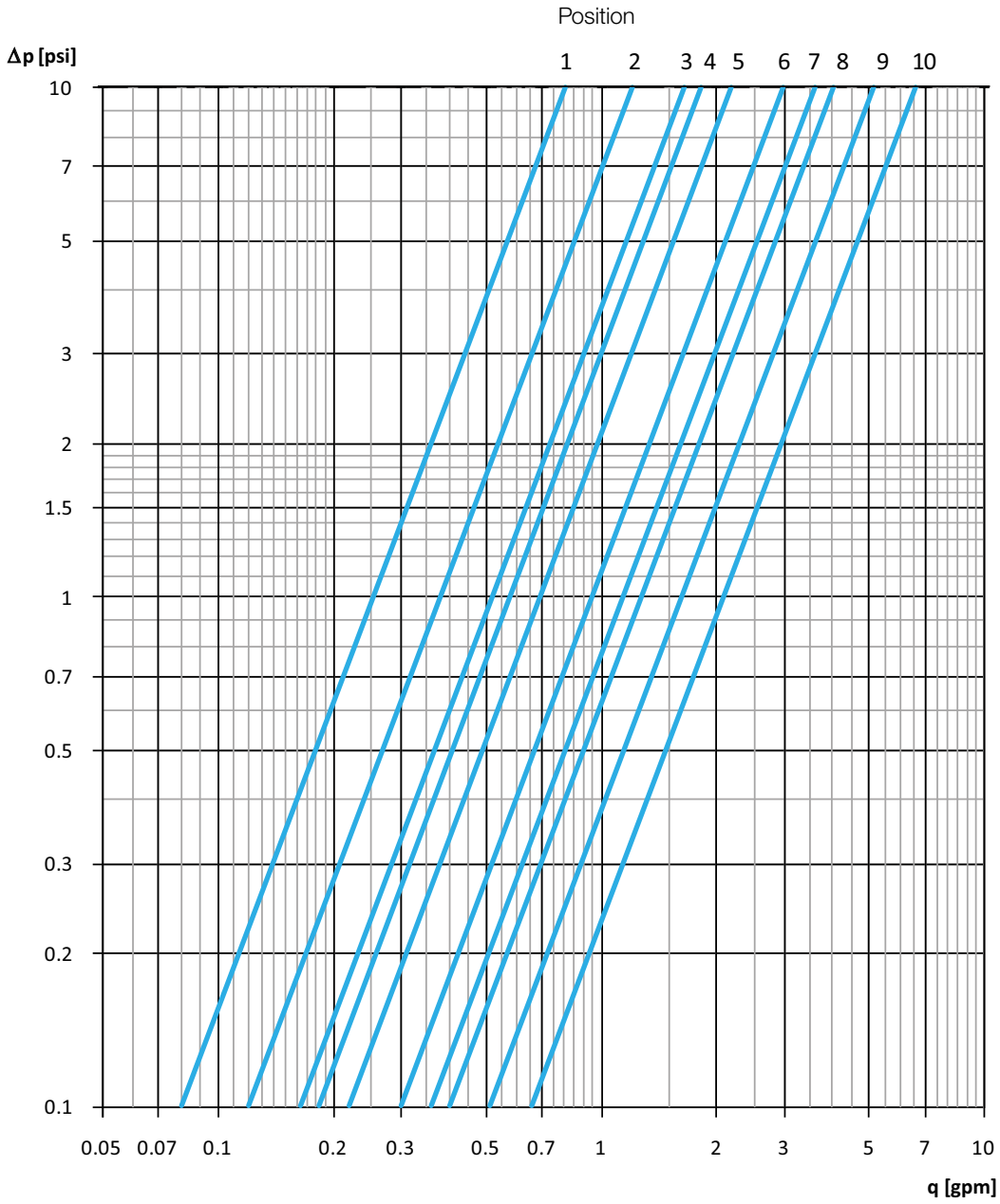
## Diagram TBV-C LF, size 1/2"



Position	1	2	3	4	5	6	7	8	9	10
<b>Cv</b>	0.06	0.17	0.26	0.30	0.36	0.48	0.61	0.79	0.86	1.04

Recommended setting: Position 3-10

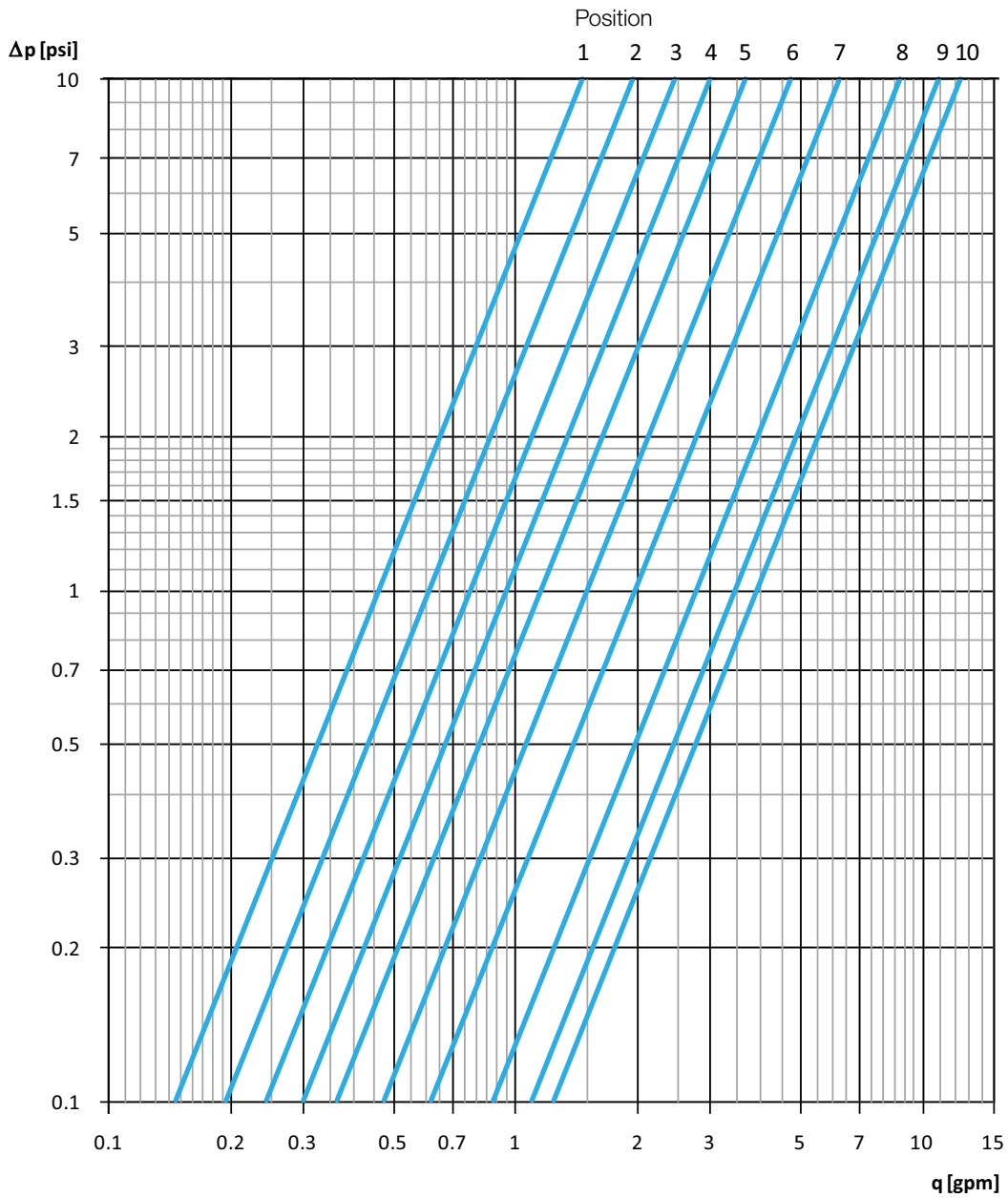
**Diagram TBV-C NF, size 1/2"**



Position	1	2	3	4	5	6	7	8	9	10
<b>Cv</b>	0.26	0.38	0.52	0.58	0.70	0.95	1.15	1.28	1.62	2.09

Recommended setting: Position 3-10

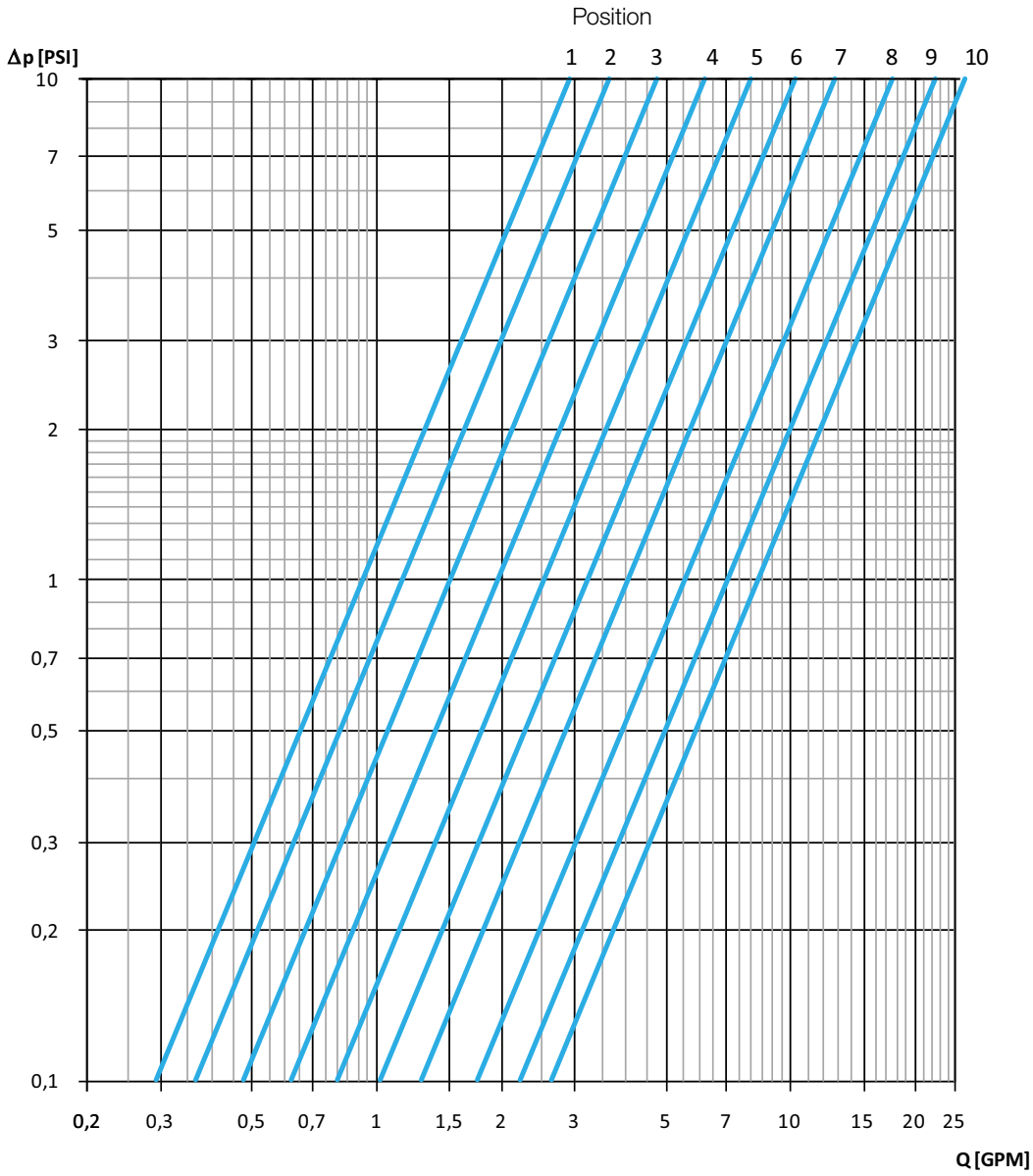
### Diagram TBV-C NF, size 3/4"



Position	1	2	3	4	5	6	7	8	9	10
<b>Cv</b>	0.46	0.61	0.78	0.95	1.16	1.51	1.97	2.78	3.48	3.94

Recommended setting: Position 3-10

### Diagram TBV-C NF, size 1"

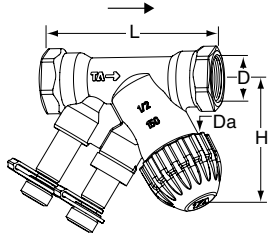


Position	1	2	3	4	5	6	7	8	9	10
Cv	0.93	1.16	1.51	1.97	2.55	3.25	4.06	5.57	7.08	8.35

Recommended setting: Position 3-10



## Articles



### Female thread

Size	(DN)	D	Da*	L [in]	H [in]	Cvs	lb	Article No ** North America	Article No International
<b>TBV-C LF, low flow</b>									
1/2"	15	1/2 NPT	M30x1,5	5.04	2.28	1.04	1.10	52 133-715	52 133-515
<b>TBV-C NF, normal flow</b>									
1/2"	15	1/2 NPT	M30x1,5	5.04	2.28	2.08	1.10	52 134-715	52 134-515
3/4"	20	3/4 NPT	M30x1,5	3.58	2.24	3.94	0.88	52 134-720	52 134-520
1"	25	1 NPT	M30x1,5	4.37	2.52	8.35	1.61	52 134-725	52 134-525

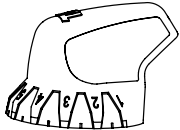
\*) Connection to actuator.

\*\*) Distributed by Victaulic.

Cvs = gpm at a pressure drop of 1 psi and fully open valve.

→ = Flow direction

## Accessories



### Presetting tool

For TBV-C, TBV-CM, KTCM 512

**Article No**

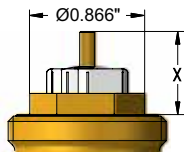
52 133-100

### Actuator EMO T

For more details of EMO T, see separate catalogue leaflet.

TBV-C is developed to work together with the EMO T actuator. Actuators of other brands require a working range of:

X (closed - fully open) = 0.448" - 0.594" (1/2"-3/4") / 0.448" - 0.622" (1")



IMI Hydronic Engineering will not be held responsible for the control function if other brands of actuator are used.





