

# TBV-CM

Terminal balancing valve for modulating control



Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

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

> **Presetting tool**

For accurate and easy balancing.

> **Shut-off function**

Ensures straightforward maintenance procedures.

> **Self-sealing measuring points**

For quick and easy measurement.



## > Technical description

---

**Application:**

Heating and cooling systems.

**Functions:**

Control  
Balancing  
Pre-setting  
Measuring  
Shut-off

**Dimensions:**

DN 15-25

**Pressure class:**

PN 16

**Temperature:**

Max. working temperature: 120°C  
Min. working temperature: -20°C

**Lift:**

4 mm

**Material:**

Valve body: AMETAL®  
Valve plug: PPS (polyphenylsulphide)  
Seat seal: EPDM/Stainless steel (DN 15-20). EPDM/AMETAL® (DN 25).  
Spindle seal: EPDM O-ring  
Valve insert: AMETAL®, PPS (polyphenylsulphide)  
Return spring: Stainless steel  
Spindle: Teflonized AMETAL®

AMETAL® is the dezincification resistant alloy of TA.

**Marking:**

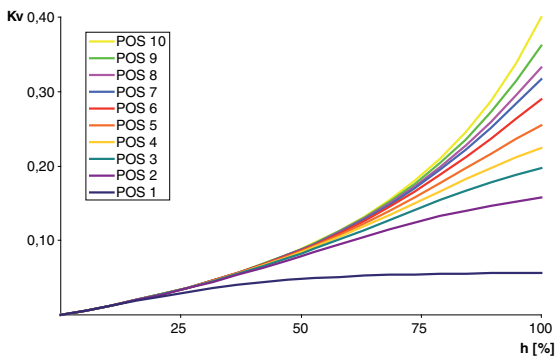
Body: TA, PN 16 / 150, DN, inch size and flow direction arrow.  
Identification ring on measuring point:  
White = Low flow (LF)  
Black = Normal flow (NF)

**Actuators:**

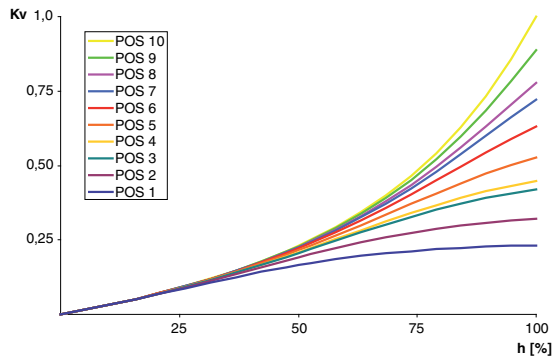
See separate information on TSE-M

## Valve characteristics

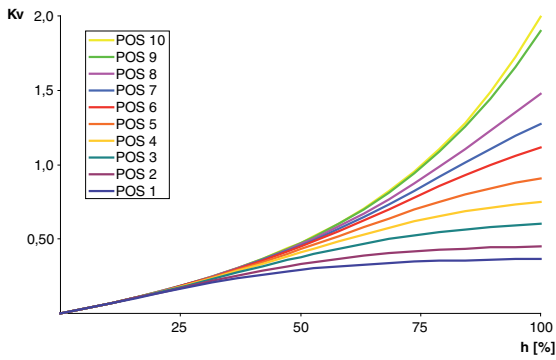
TBV-CM LF, DN 15, Kvs 0,40



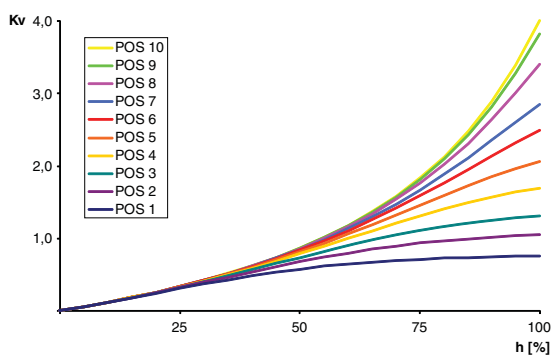
TBV-CM NF, DN 15, Kvs 1,0



TBV-CM NF, DN 20, Kvs 2,0

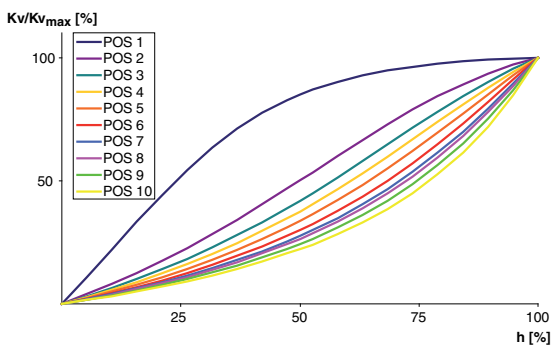


TBV-CM NF, DN 25, Kvs 4,0

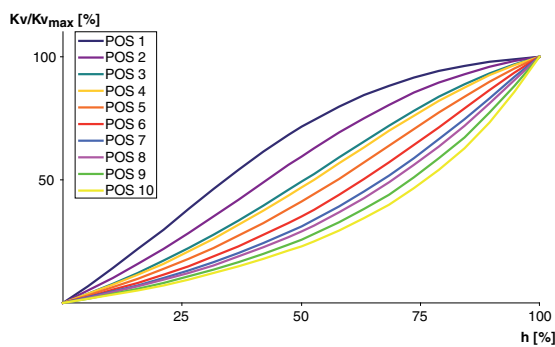


### Standardised valve characteristic

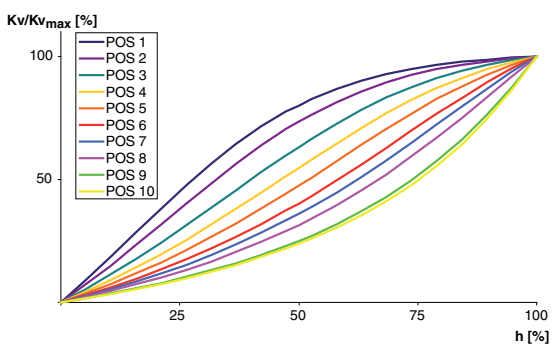
TBV-CM LF, DN 15, Kvs 0,40



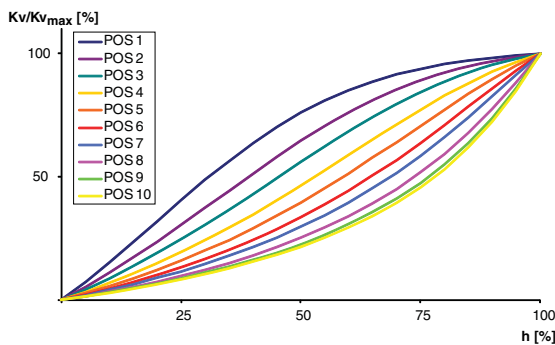
TBV-CM NF, DN 15, Kvs 1,0



TBV-CM NF, DN 20, Kvs 2,0



TBV-CM NF, DN 25, Kvs 4,0



$Kv_{max} = m^3/h$  at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

$Kvs = m^3/h$  at a pressure drop of 1 bar and fully open valve.

$h$  = lift

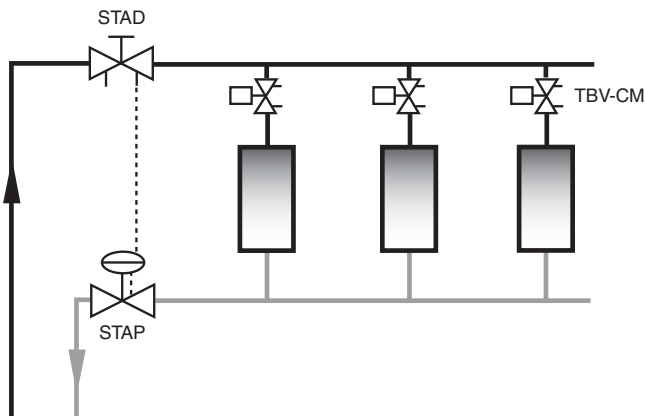
## Sizing

When  $\Delta p$  and the design flow are known, use the following formulas to calculate the Kv-value.

$$K_v = 0,01 \frac{q}{\sqrt{\Delta p}} \quad q \text{ l/h, } \Delta p \text{ kPa}$$

$$K_v = 36 \frac{q}{\sqrt{\Delta p}} \quad q \text{ l/s, } \Delta p \text{ kPa}$$

## Application example



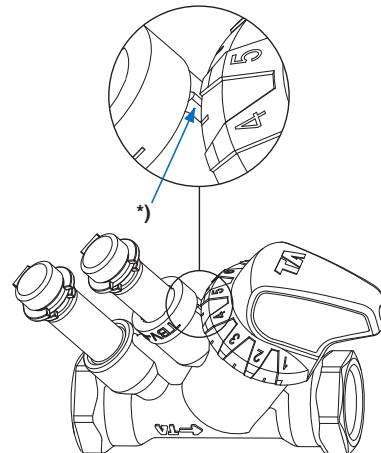
## Setting

TBV-CM is delivered with a red protective cap, Article No 52 143-100, which must be used when isolating the valve.

TBV-CM is delivered with the pre-setting fully open. Pre-setting of a valve for a given  $K_{v_{max}}$  value, e.g. corresponding to position 5, is done as follows:

1. Place the presetting tool, TA 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 adjustment tool. The valve is now pre-set.

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



## Noise

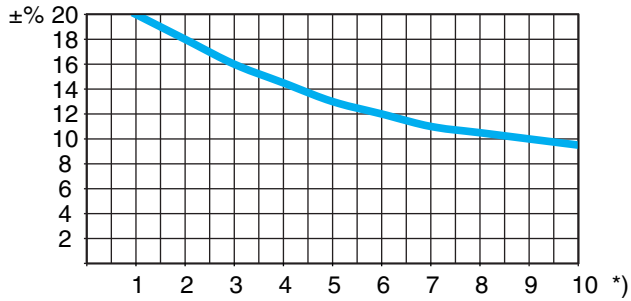
In order to avoid noise in the installation the flows must be correctly balanced and the water de-aerated. Excessive differential pressures can cause noise in the installations, and in that case, differential pressure controllers should be used.

The maximum recommended pressure drop in order to avoid noise is 30 kPa = 0,3 bar.

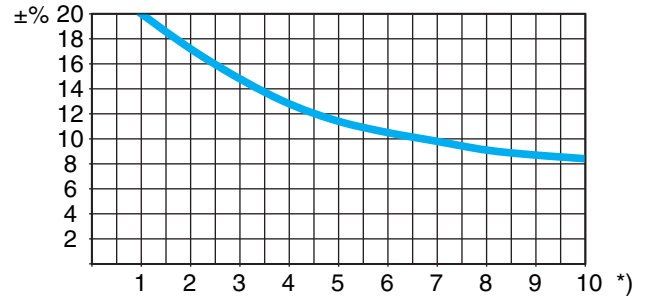
## Measuring accuracy

Maximum flow deviation at different settings

**TBV-CM LF**

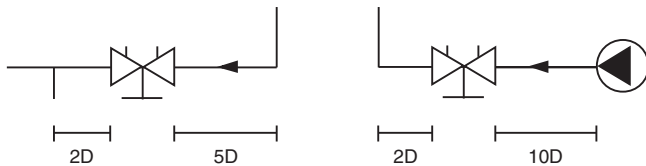


**TBV-CM NF**



\*) Position

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



## Closing force

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

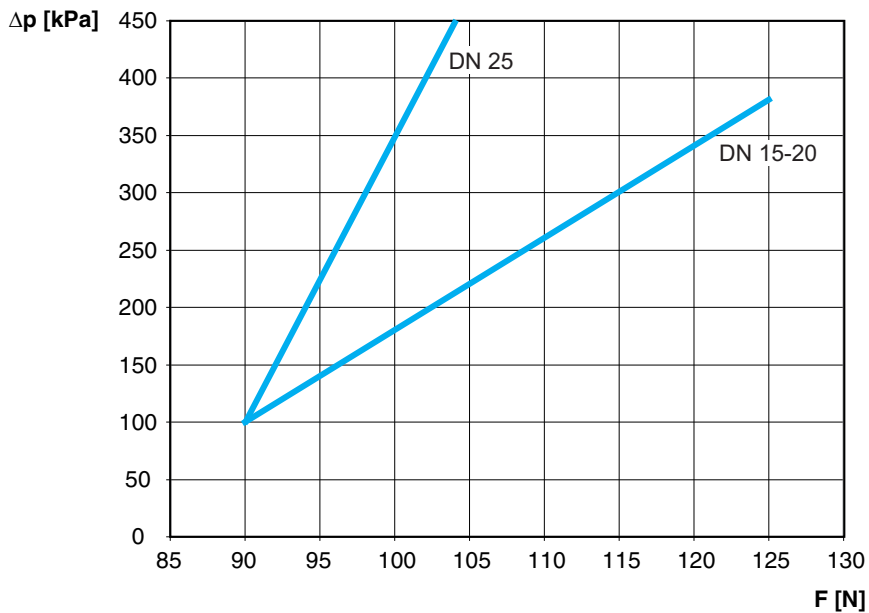
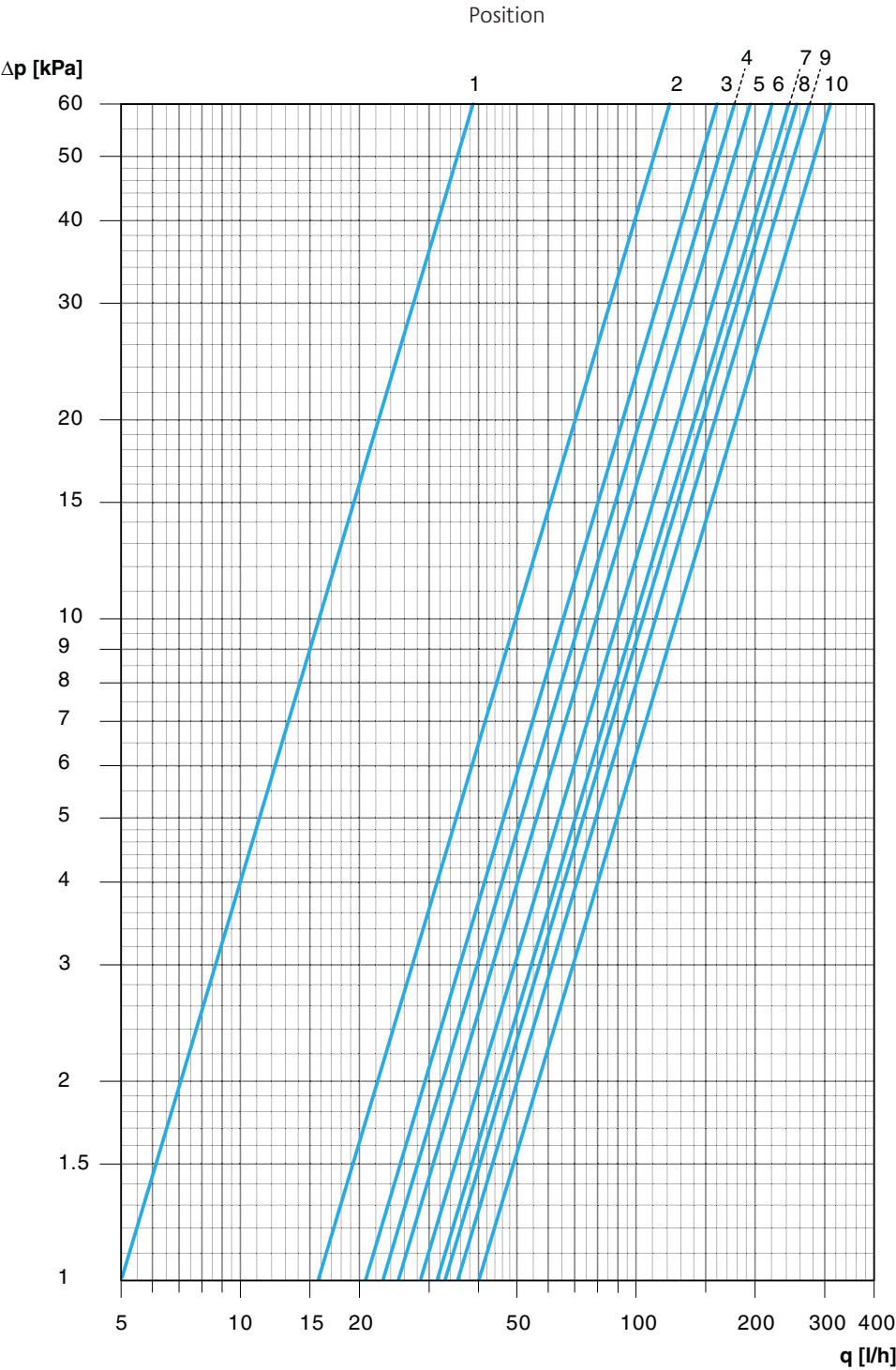


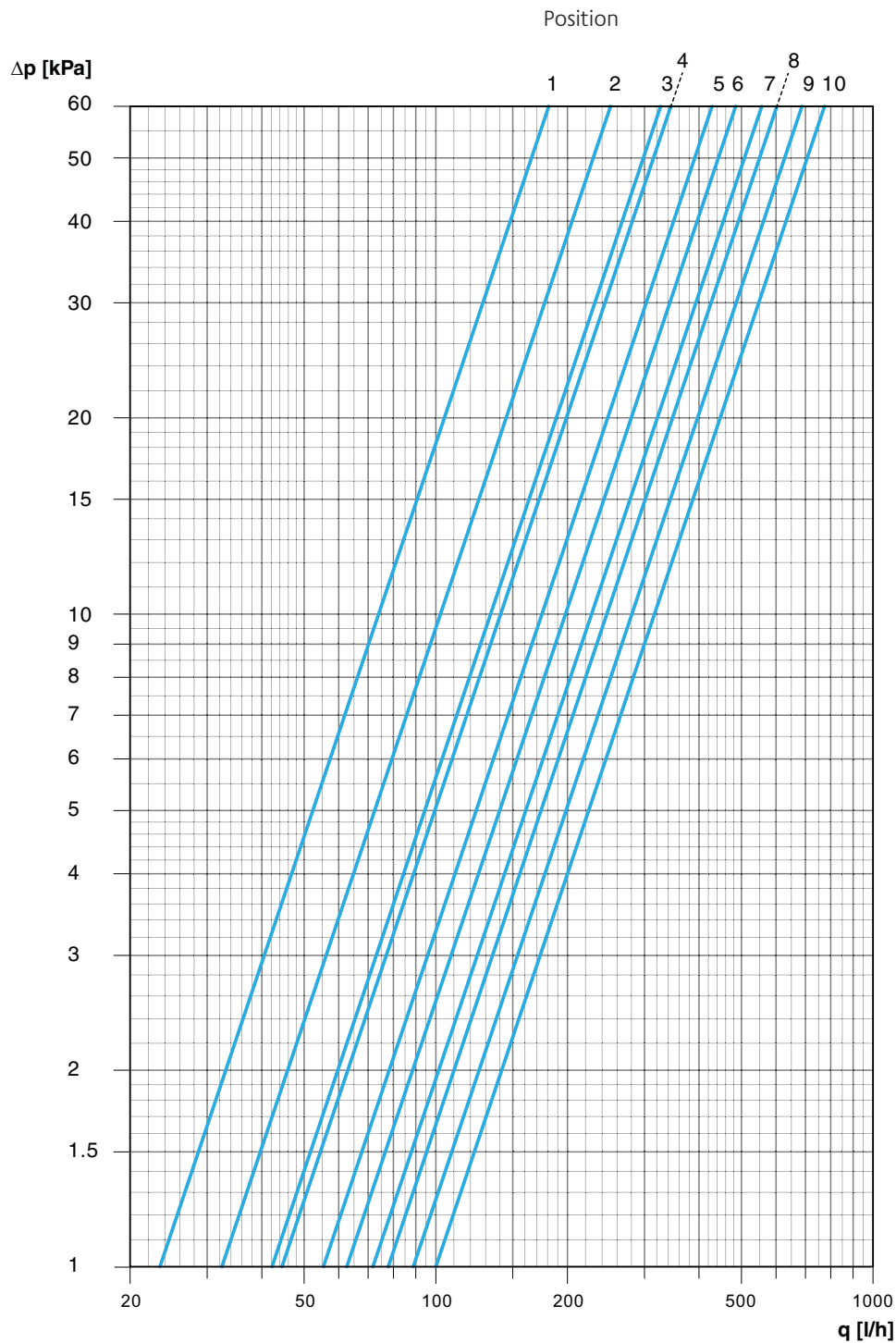
Diagram TBV-CM LF, DN 15



Position	1	2	3	4	5	6	7	8	9	10
$Kv_{max}$	0,05	0,16	0,21	0,23	0,25	0,29	0,31	0,33	0,35	0,40

$Kv_{max}$  = m<sup>3</sup>/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

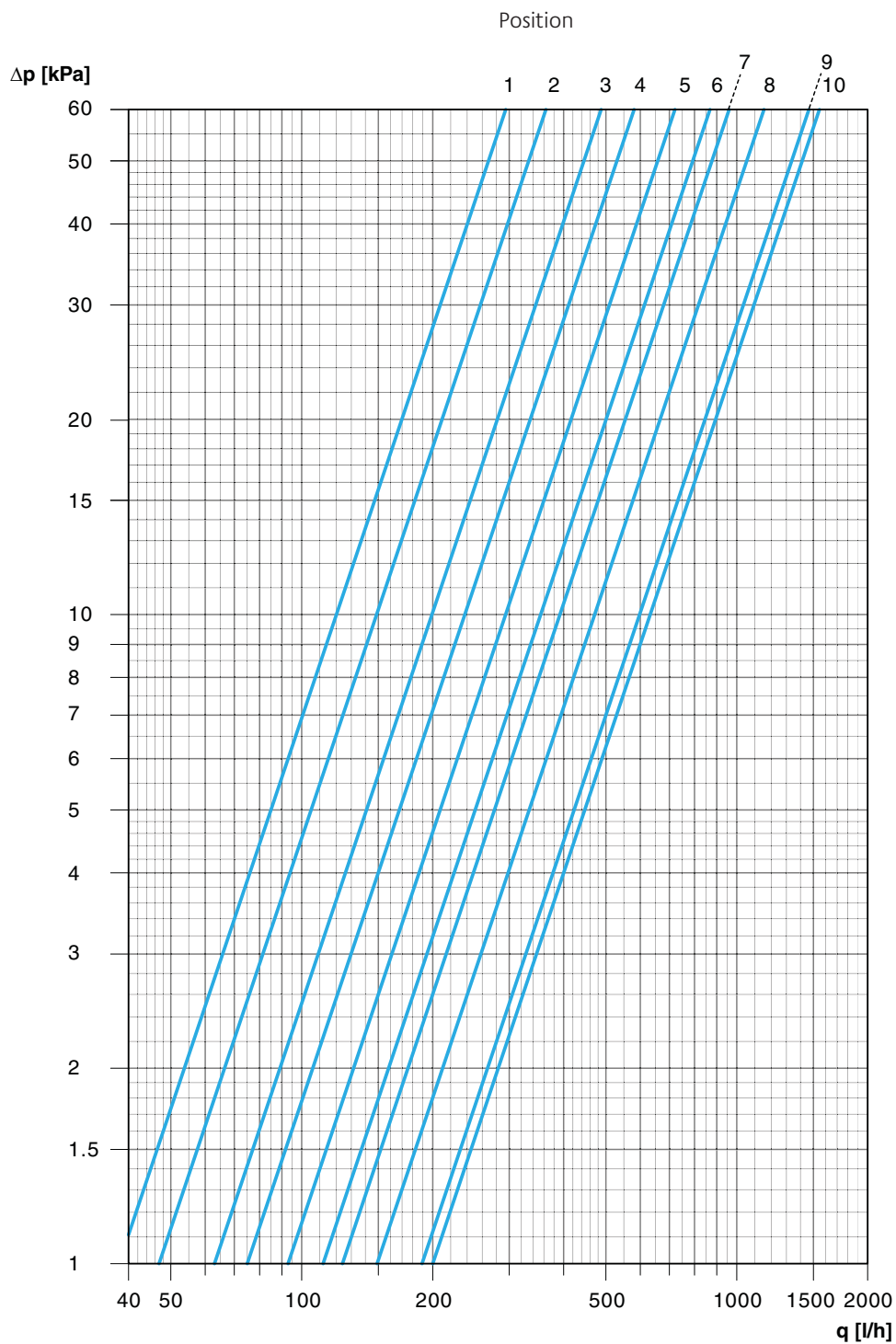
## Diagram TBV-CM NF, DN 15



Position	1	2	3	4	5	6	7	8	9	10
$Kv_{max}$	0,23	0,32	0,42	0,45	0,55	0,63	0,72	0,78	0,89	1,0

$Kv_{max}$  = m<sup>3</sup>/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

## Diagram TBV-CM NF, DN 20

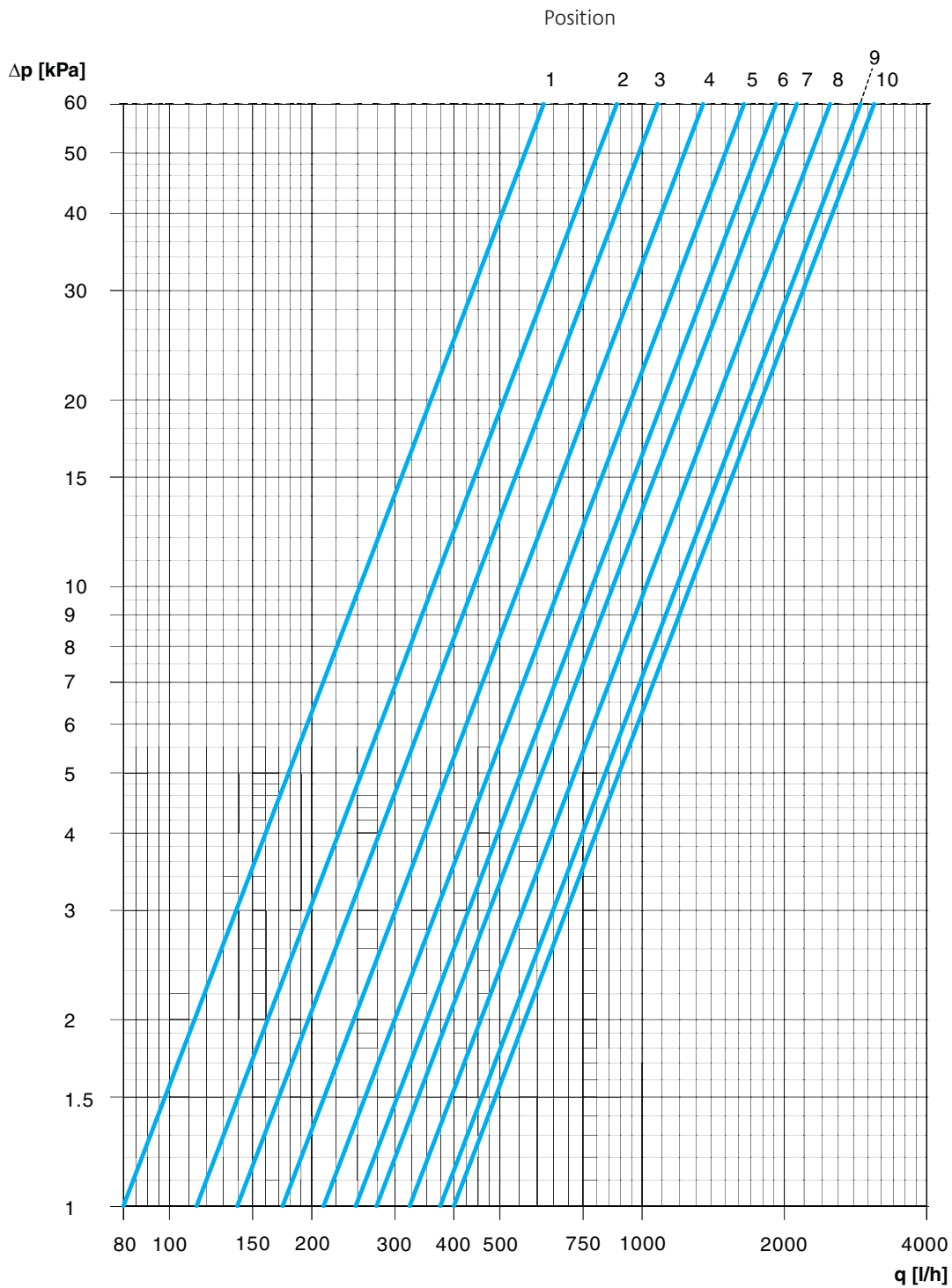


Position	1	2	3	4	5	6	7	8	9	10
$Kv_{max}$	0,38	0,47	0,63	0,75	0,93	1,1	1,2	1,5	1,9	2,0

$Kv_{max}$  = m<sup>3</sup>/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.



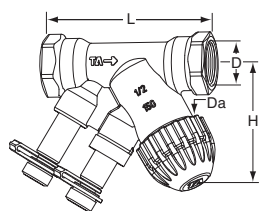
## Diagram TBV-CM NF, DN 25



Position	1	2	3	4	5	6	7	8	9	10
$Kv_{max}$	0,80	1,1	1,4	1,7	2,1	2,5	2,8	3,2	3,7	4,0

$Kv_{max}$  = m<sup>3</sup>/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

## Articles



### Female thread

Article No	EAN	DN	D	Da*	L	H	Kvs	Kg
<b>TBV-CM LF, low flow</b>								
52 143-115	7318793950703	15	G1/2	M30x1,5	81	58	0,40	0,34
<b>TBV-CM NF, normal flow</b>								
52 144-115	7318793950505	15	G1/2	M30x1,5	81	58	1,0	0,34
52 144-120	7318793951403	20	G3/4	M30x1,5	91	57	2,0	0,40
52 144-125	7318793977502	25	G1	M30x1,5	111	64	4,0	0,73

\*) Connection to actuator.

Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

**TBV-CM (DN 15-20) can be connected to smooth pipes by KOMBI compression coupling.**  
(See catalogue leaflet KOMBI)

## Accessories



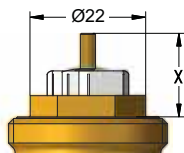
### Presetting tool

For TBV-C, TBV-CM, TBV-CMP, KTCM 512

Article No	EAN
52 133-100	7318793886002

### Actuator TSE-M

For more details of TSE-M, see separate catalogue leaflet.



TBV-CM is developed to work together with the TSE-M actuator. Actuators of other brands require a working range of:

X = 11,50 - 15,80 (closed - fully open)

Tour & Andersson (TA) will not be held responsible for the control function if actuators other than TSE-M are used.

*The products, texts, photographs, graphics and diagrams in this document may be subject to alteration by TA Hydronics without prior notice or reasons being given.*

*For the most up to date information about our products and specifications, please visit [www.tahydronics.com](http://www.tahydronics.com).*

5-5-27 TBV-CM 03.2011

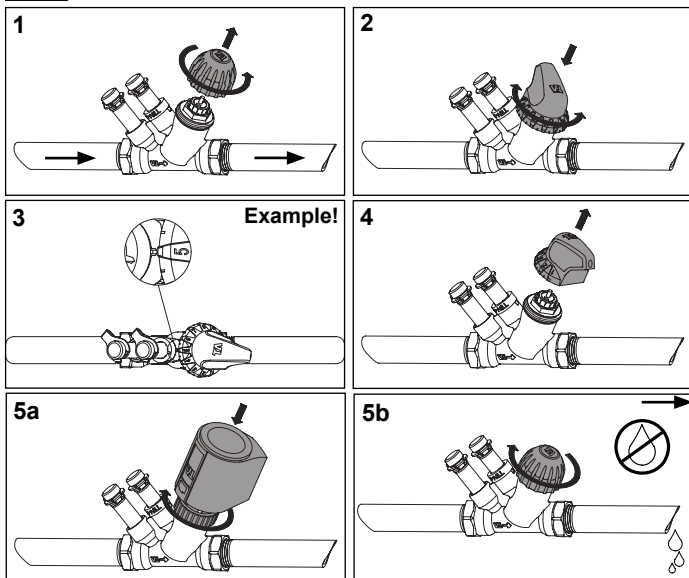
---



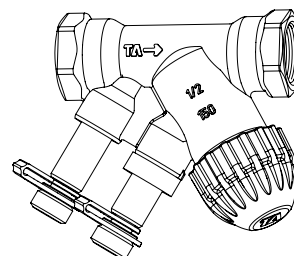
No. 52 133-100

309 485-06  
09.2014

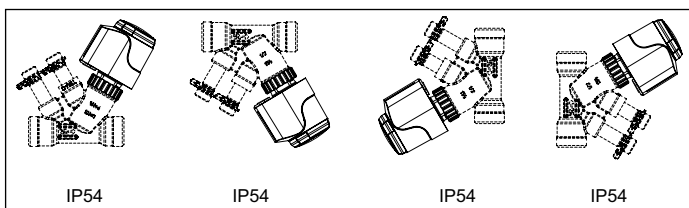
IMI TA



## TBV-CM



## TBV-CM + EMO TM:



IMI

Hydronic Engineering

We reserve the right to introduce technical alterations  
without previous notice.

www.imi-hydronic.com

IMI Hydronic  
Engineering

Pos	TBV-CM LF DN 15	TBV-CM NF DN 15	TBV-CM NF DN 20	TBV-CM NF DN 25
1	0,05	0,23	0,38	0,80
2	0,16	0,32	0,47	1,1
3	0,21	0,42	0,63	1,4
4	0,23	0,45	0,75	1,7
5	0,25	0,55	0,93	2,1
6	0,29	0,63	1,1	2,5
7	0,31	0,72	1,2	2,8
8	0,33	0,78	1,5	3,2
9	0,35	0,89	1,9	3,7
10	0,40	1,0	2,0	4,0

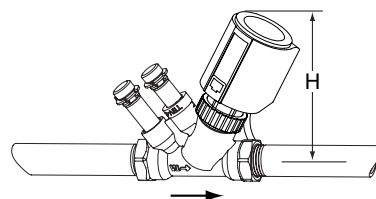
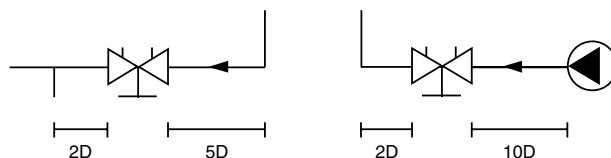
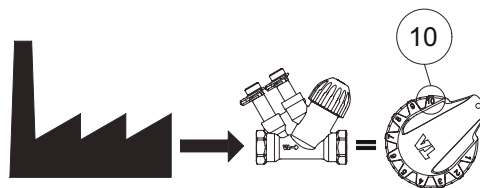
Kv<sub>max</sub> =

- m³/h vid ett tryckfall av 1 bar vid respektive förinställning och fullt öppen ventilkägla.
- m³/h ved trykfall på 1 bar ved repektive forinnstilling og full åpen ventilkjegle.
- Virtaus m³/h täysin auki olevan venttiilikaran ja kulloisenkin esisääätöarvon muodostaman vastuksen läpi kun niiden yli vallitseva painehäviö on 1 bar (100 kPa).
- m³/h ved tryktab på 1 bar ved respektiv forindstilling og fuldt åben ventil.
- m³/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.
- m³/h bei einem Druckverlust von 1 bar bei der jeweiligen Voreinstellung und voll geöffnetem Regelkegel.
- m³/h pour une pression différentielle de 1 bar, pour chaque pré-réglage, la vanne étant complètement ouverte.
- m³/h bij een drukverschil van 1 bar, elke voorinstelstand en volledig geopende klep.
- m³/h con una pérdida de carga de 1 bar, para cada preajuste, estando el obturador en la posición totalmente abierta.
- m³/h com uma perda de carga de 1 bar em cada posição de pré-ajuste e o disco da válvula totalmente aberto.
- m³/h alla perdita di carico di 1 bar e con valvola totalmente aperta per ciascuna posizione di presettaggio.
- Η παροχή σε m³/h σε κάθε θέση ρύθμισης όταν η πτώση πίεσης είναι 1 bar και το στέλεχος του σερβομηχανισμού σε θέση πλήρως ανοιχτό.
- m³/h при перепаде давления в 1 бар для каждой настройки и полностью открытым клапане.
- A szelepen átáramló térfogatáram (m³/h), 1 bar nyomásesésnél, az egyes előbeállításoknál és teljesen nyitott szeleltányémál.
- przepływ w m³/h przy spadku ciśnienia 1bar na zaworze dla każdej nastawy i w pełni podniesionym/otwartym trzpieniu.
- m³/h při tlakové ztrátě 1 bar pro každý stupeň přednastavení při zcela otevřeném kuželce ventilu.
- m³/hod pri tlakovej strate 1 bar, pri každom prednastavení a plnom zdvihu regulačnej kuželky.
- m³/h pri tlačnem padcu 1 bar pri vsaki nastavitvi in polno odprtem vretenu.
- m³/h pentru o cadere de presiune de 1 bar pentru fiecare presetare si vana complet deschisa.
- m³/h pri padu tlaka od 1 bar i potpuno otvorenom ventilu.
- m³/h при падү притиска од 1 бар за сваку позицију и потпуно отвореном вентилу.
- m³/h 1 bar-i rõhulang juures reguleerosa täiesti avatud asendis vastavalt eelseadearvule.
- m³/h pie spiediena zudumiem 1 bar katram iepriekšiestatījumam, un pie pilnībā atvērtā vārsta.
- m³/h prie slėgio skirtumo 1 bar per pilnai atidarytą vožtuvą kiekvienam išankstiniam nustatymui.

-20°C – +120°C

PN 16

Max. Δp = 30 kPa = 0,3 bar

TBV-CM + EMO TM  
DN 15 = 108 mm  
DN 20 = 106 mm  
DN 25 = 115 mm