IMI TA

TBV-CM – NPT threads

Combined control & balancing valves for small terminal units

For modulating control

IMI Hydronic Engineering

Breakthrough Engineering

TBV-CM – NPT threads

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. IMI Hydronic Engineering's dezincification resistant alloy, AMETAL®, minimises the risk of leakage.

Key features

- **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 (for isolation during system maintenance)

Dimensions:
DN 15-25

Pressure class:
PN 16

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

Lift:
4 mm

Leakage rate:
Tight sealing

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: AMETAL®

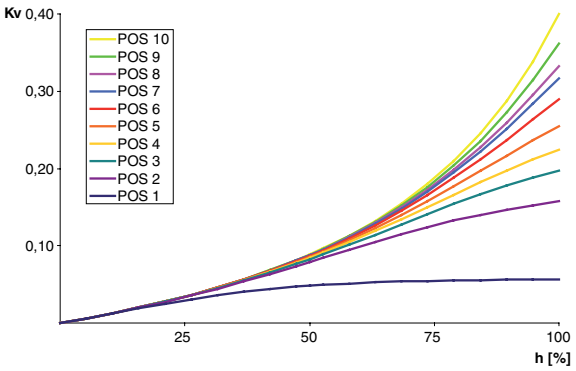
AMETAL® is the dezincification resistant alloy of IMI Hydronic Engineering.

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)

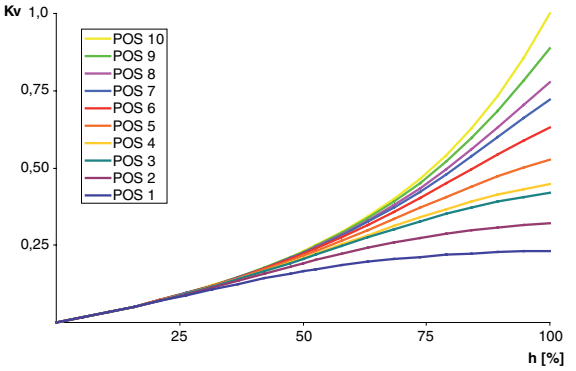
Actuators:
See separate information on EMO TM.

Valve characteristics

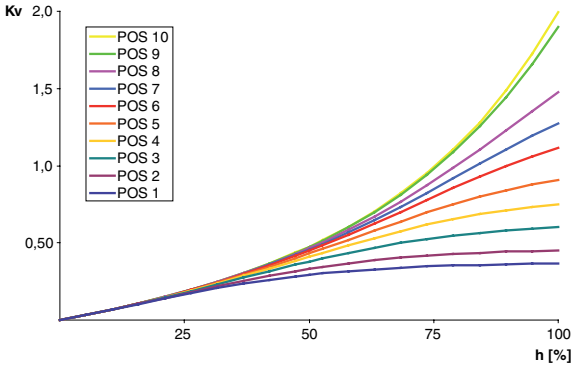
TBV-CM LF, DN 15, Kvs 0,40



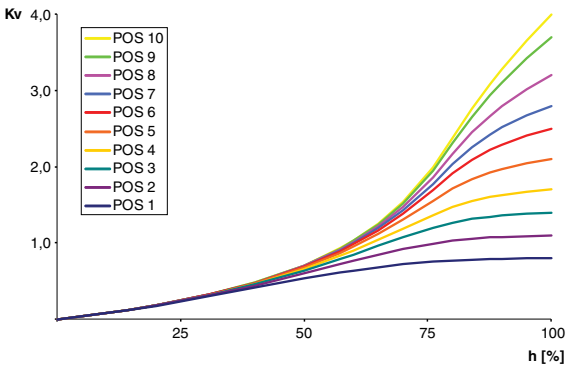
TBV-CM NF, DN 15, Kvs 1,0



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

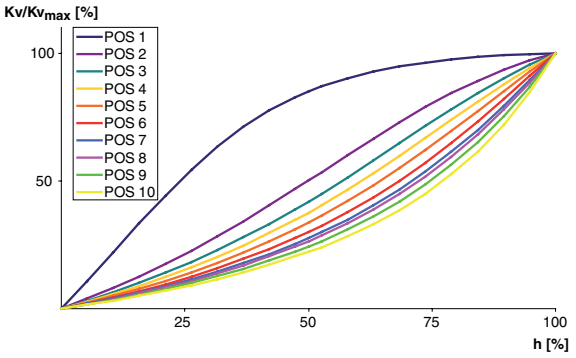


TBV-CM NF, DN 25, Kvs 4,0

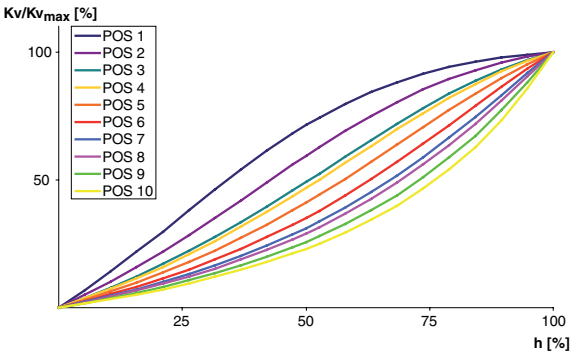


Standardised valve characteristic

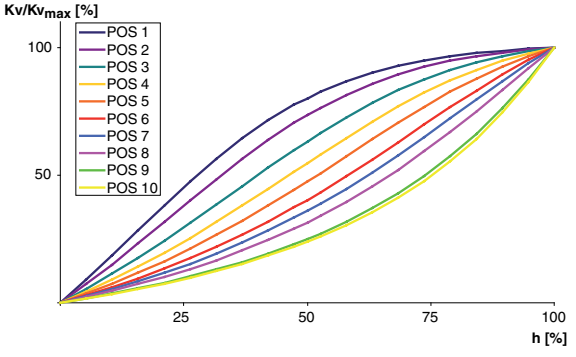
TBV-CM LF, DN 15, Kvs 0,40



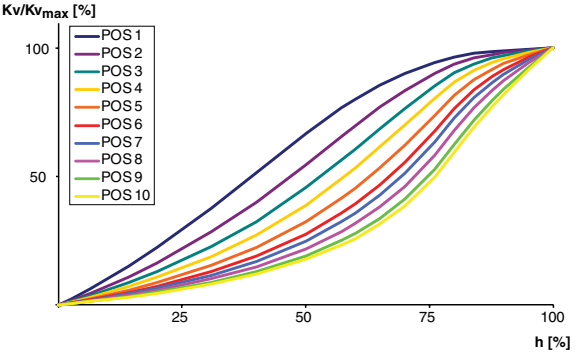
TBV-CM NF, DN 15, Kvs 1,0



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



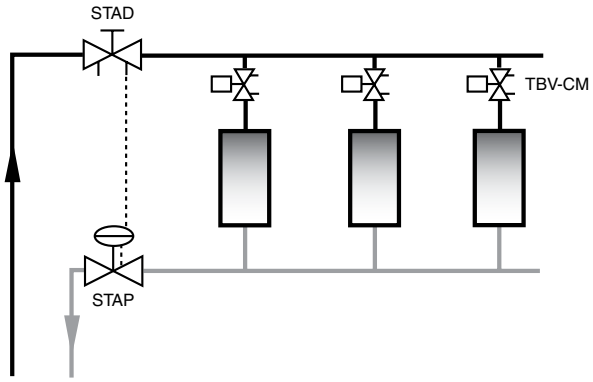
TBV-CM NF, DN 25, Kvs 4,0



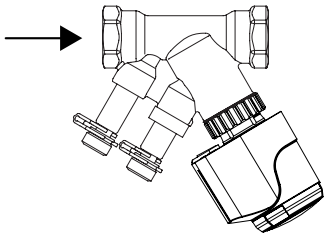
Kv_{max} = m^3/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.
h = lift

Installation

Application example

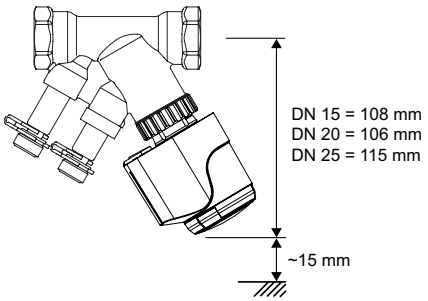


Flow direction

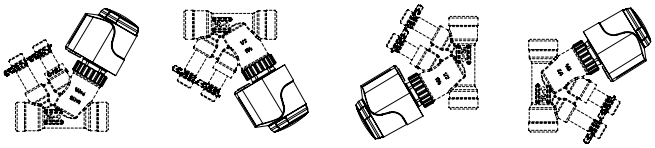


Installation of actuator EMO T

Approx. 15 mm of free space is required above the actuator.



TBV-CM + EMO TM



IP54 IP54 IP54 IP54

Sizing

When Δp and the design flow are known, use the formula to calculate the Kv-value.

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

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

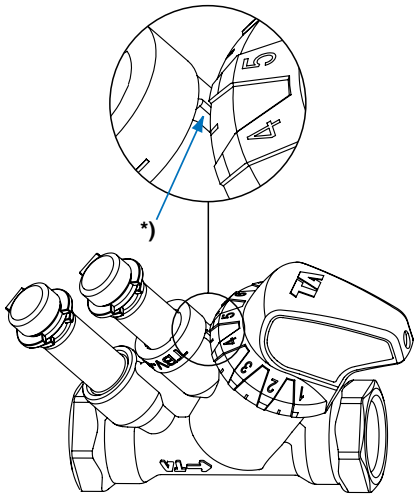
Setting

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 Kv_{max} value, 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 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

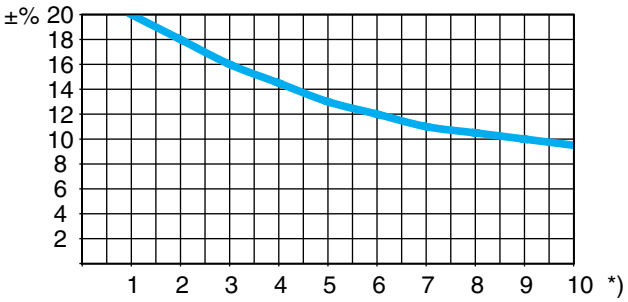
In order to avoid noise in the installation the flows must be correctly balanced and the water de-aerated.
Excessive differential pressures can cause noise in the installations, and in that case, differential pressure controllers should be used.

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

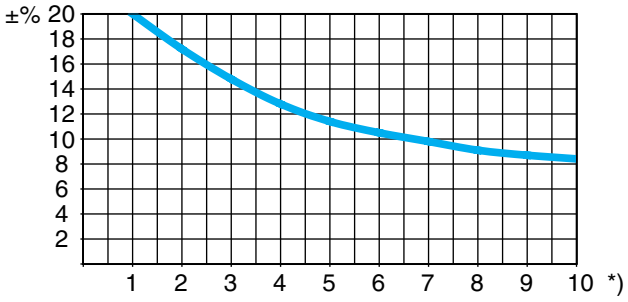
Measuring accuracy

Maximum flow deviation at different settings

TBV-CM LF

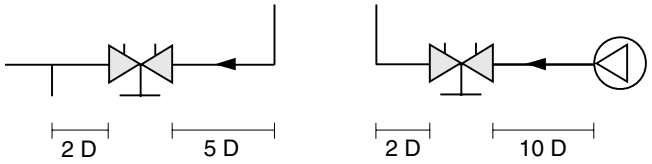


TBV-CM NF



*) 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 (ΔpV).

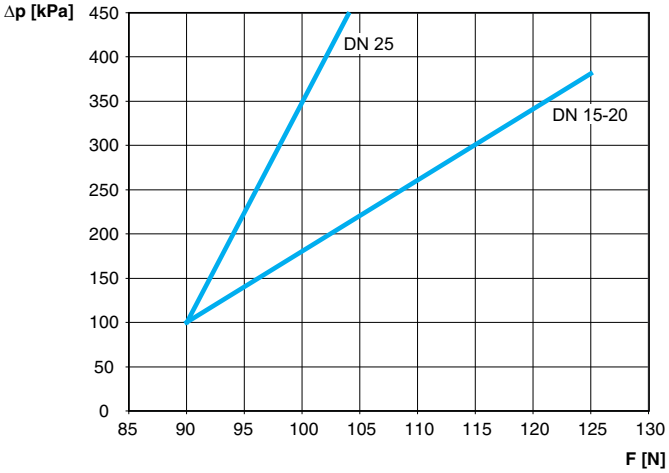
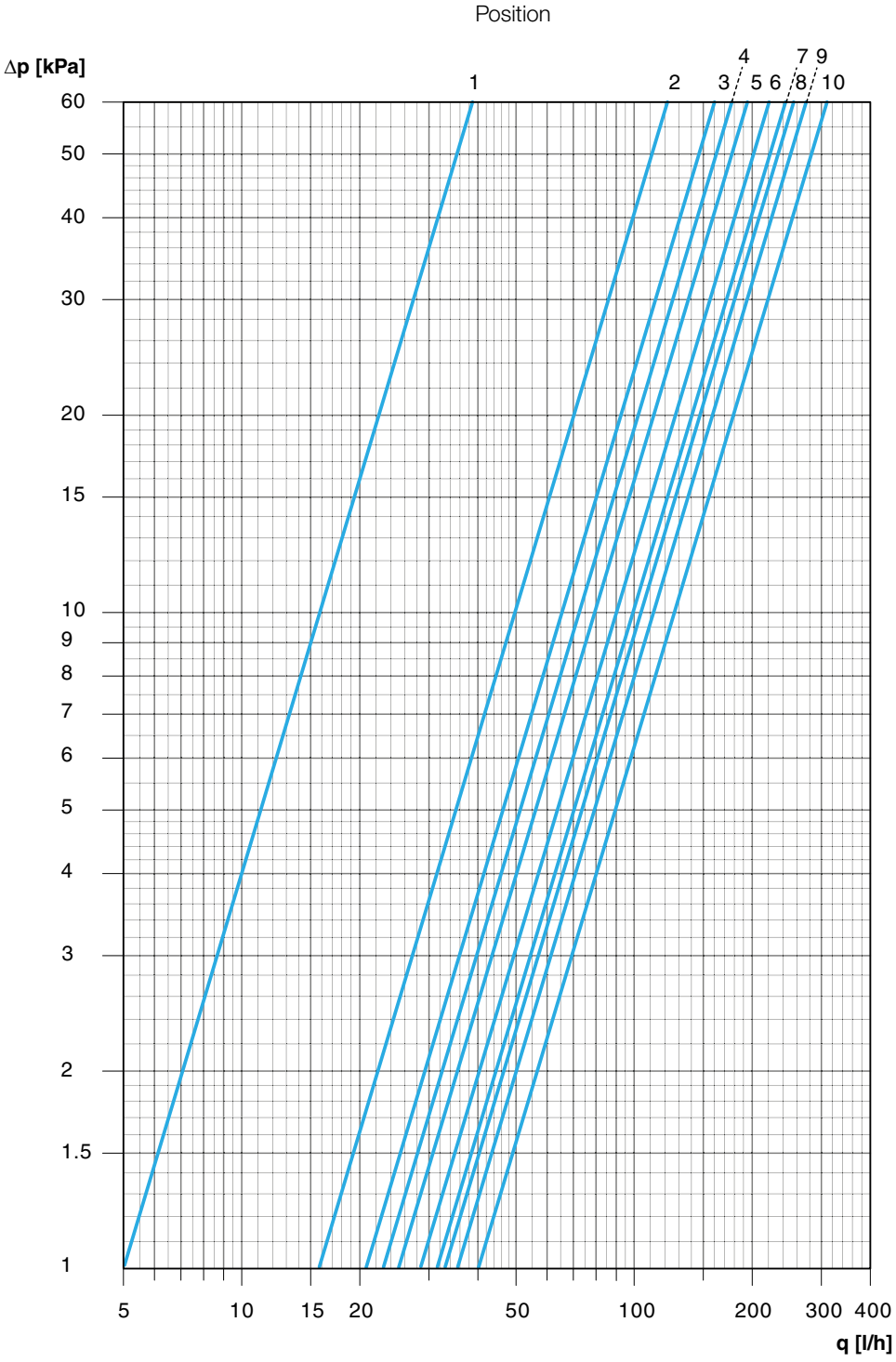


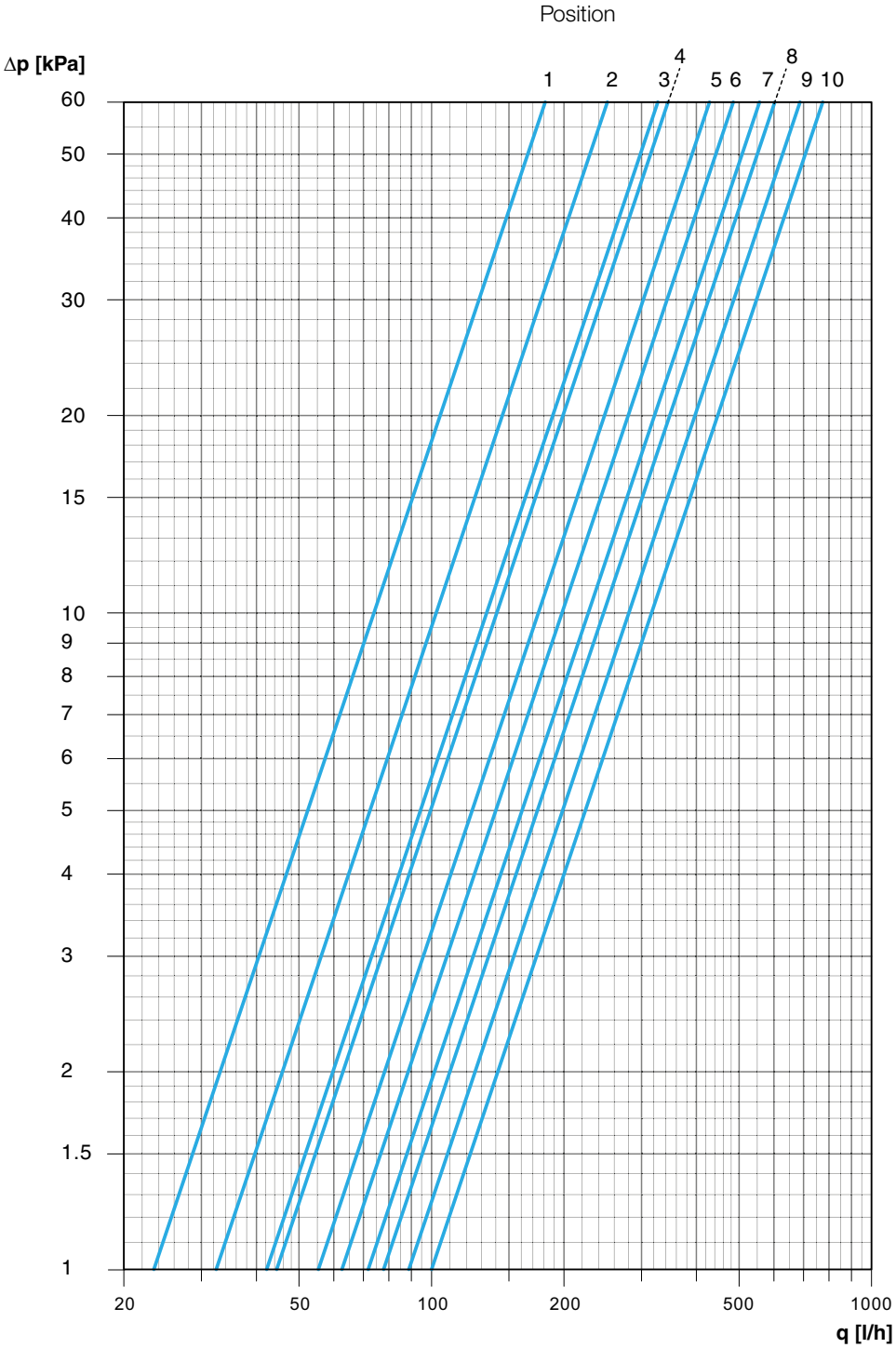
Diagram TBV-CM LF, DN 15



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^3/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

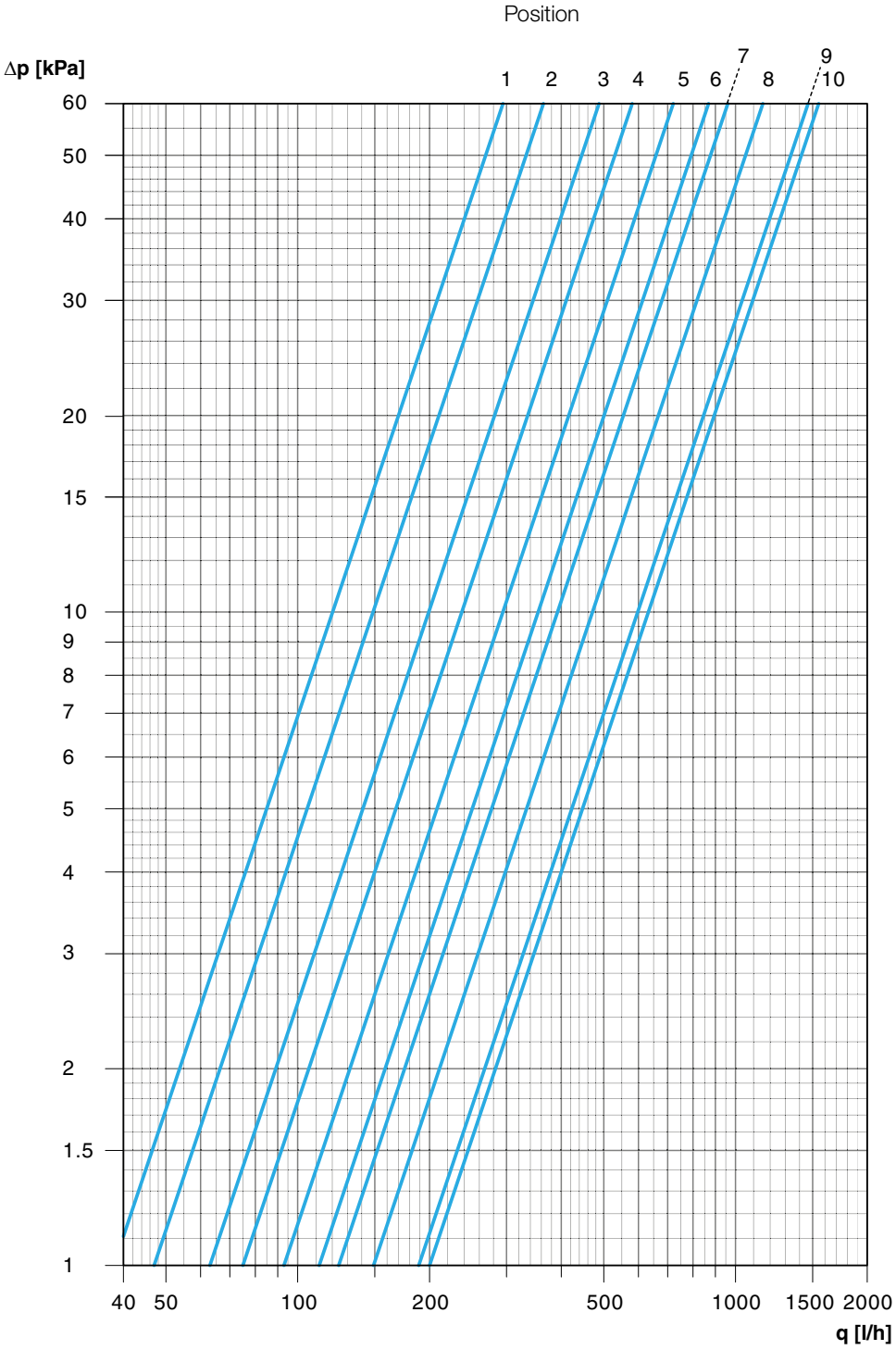
Diagram TBV-CM NF, DN 15



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^3/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

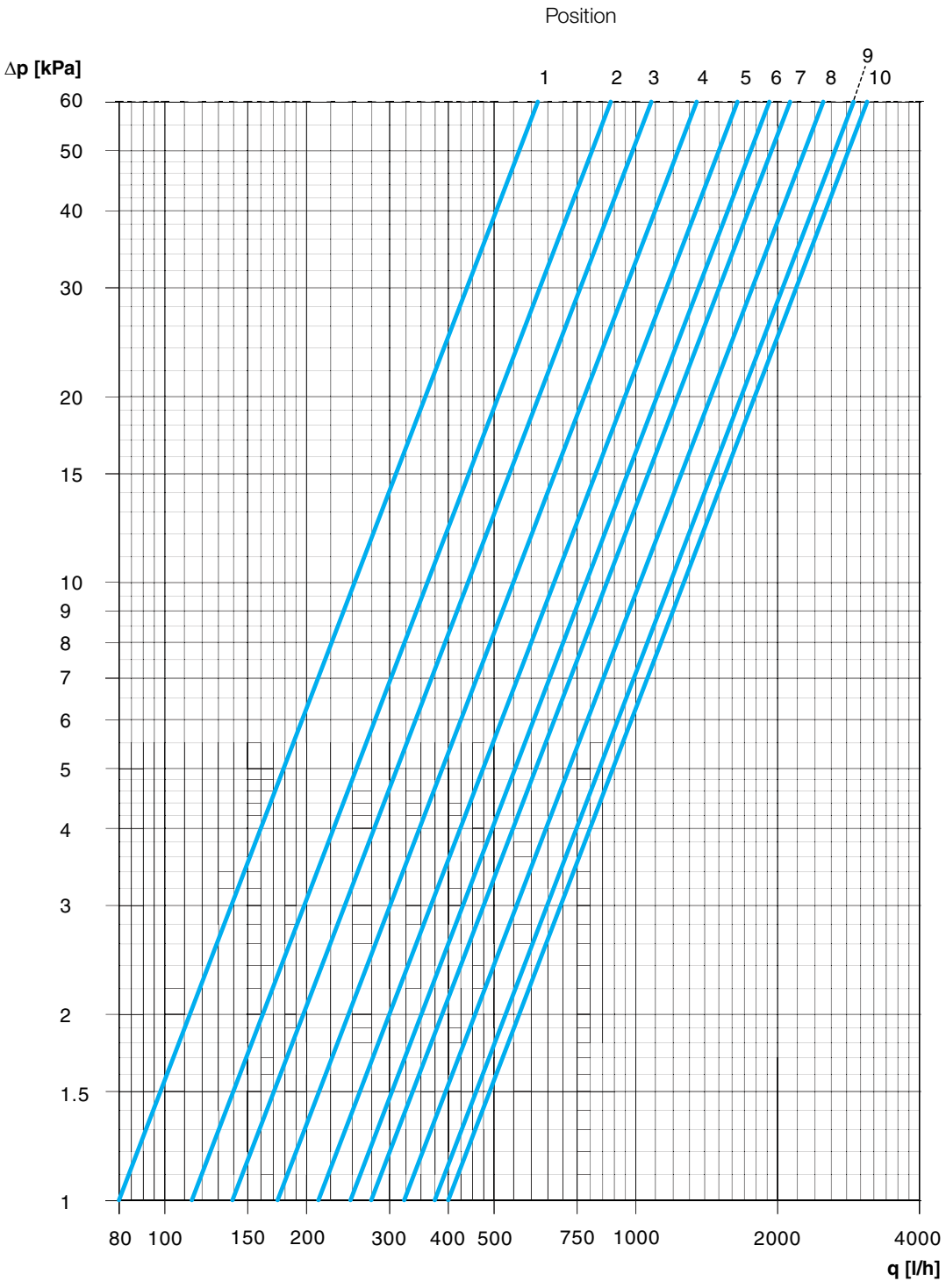
Diagram TBV-CM NF, DN 20



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^3/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

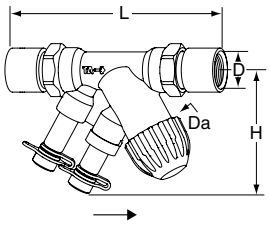
Diagram TBV-CM NF, DN 25



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^3/h at a pressure drop of 1 bar at each pre-setting and fully open valve plug.

Articles

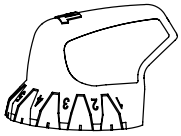


Female thread

DN	Size	D	Da*	L	H	Kvs	Kg	EAN	Article No
TBV-CM LF, low flow									
15	1/2”	1/2 NPT	M30x1,5	128	58	0,40	0,49	7318794019300	52 143-515
TBV-CM NF, normal flow									
15	1/2”	1/2 NPT	M30x1,5	128	58	1,0	0,52	7318794019409	52 144-515
20	3/4”	3/4 NPT	M30x1,5	139	57	2,0	0,64	7318794019508	52 144-520
25	1”	1 NPT	M30x1,5	164	64	4,0	0,99	7318794019607	52 144-525

*) Connection to actuator.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.
→ = Flow direction

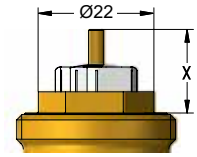
Accessories



Presetting tool

For TBV-C, TBV-CM

EAN	Article No
7318793886002	52 133-100



Actuator EMO TM

For more details of EMO TM, see separate catalogue leaflet.
TBV-CM is developed to work together with the EMO TM actuator. Actuators of other brands require a working range of:
X = 11,50 - 15,80 (closed - fully open)

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