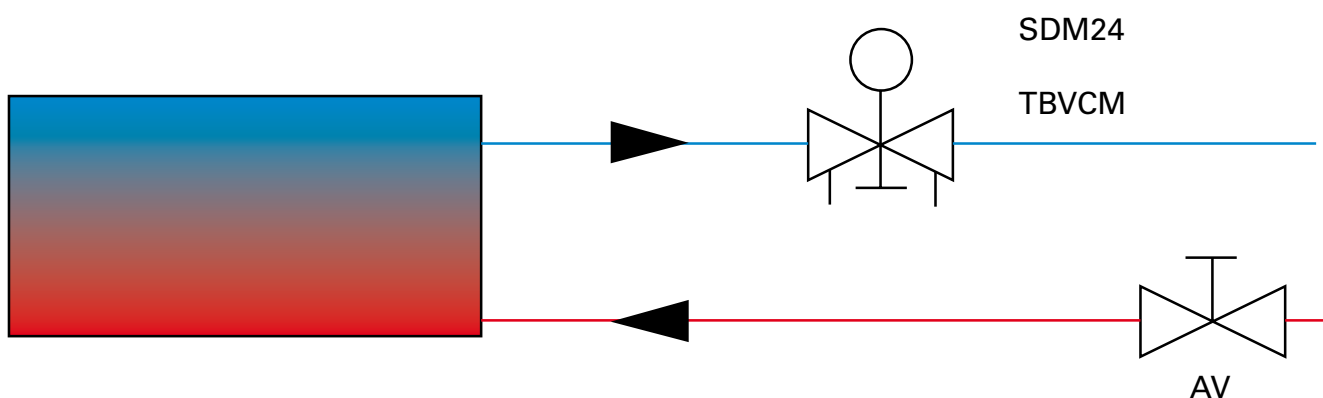
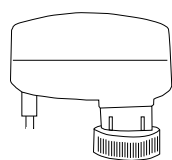


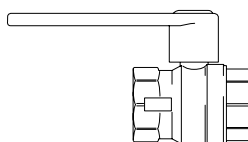
VMO



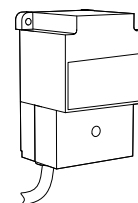
TBVCM



SDM24



AV



ST23024

SE ... 8

GB ... 17

NO ... 26

DE ... 35

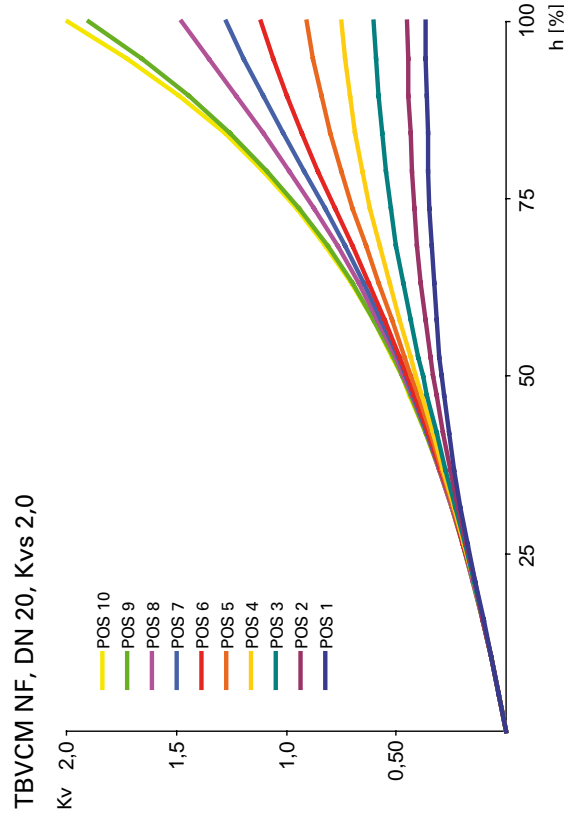
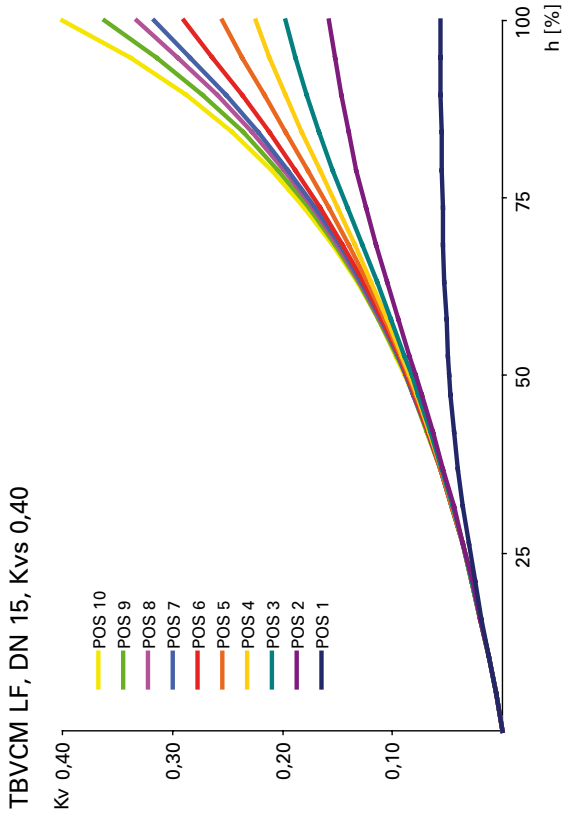
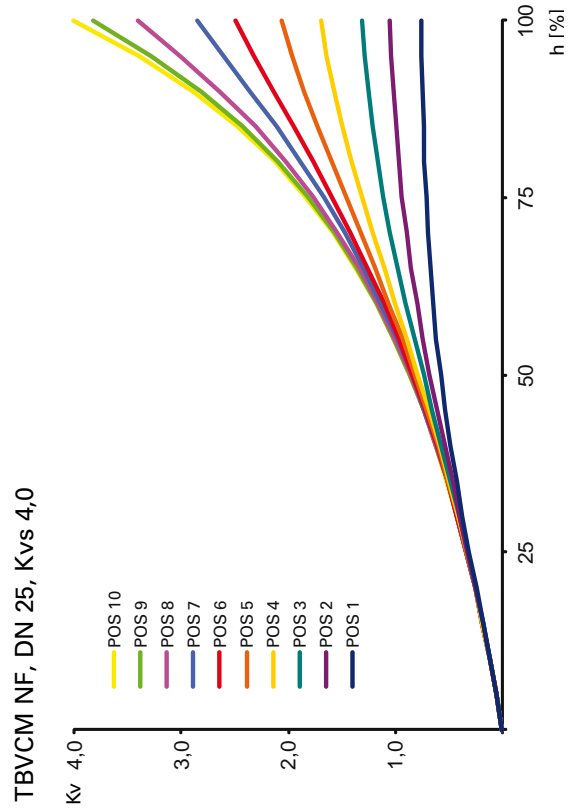
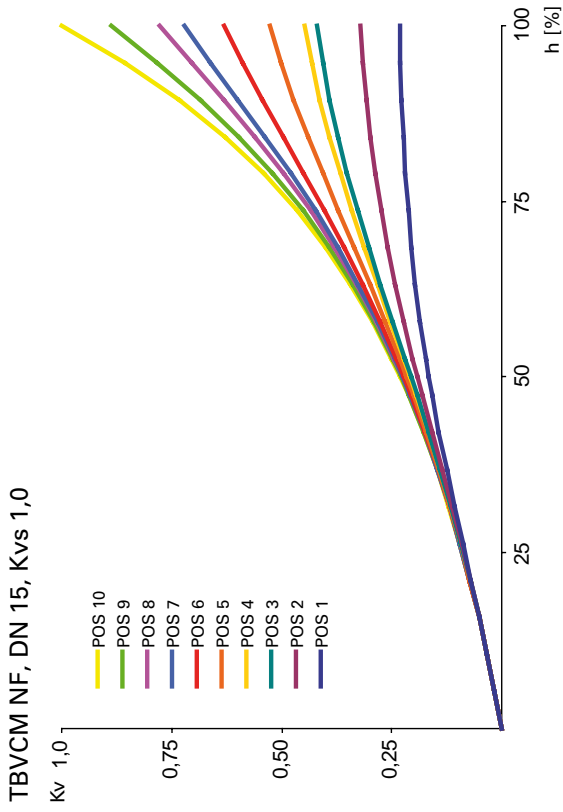
FR ... 44

ES ... 53

NL ... 62

RU ... 71

Valve characteristics

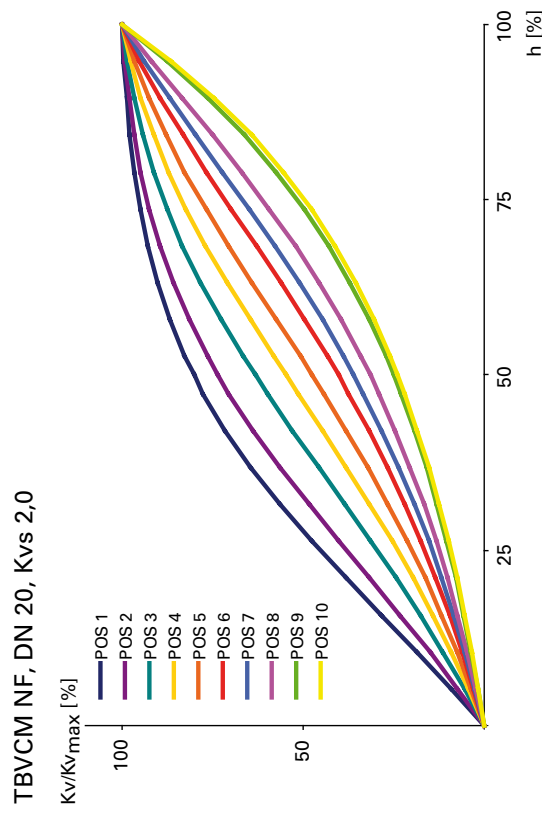
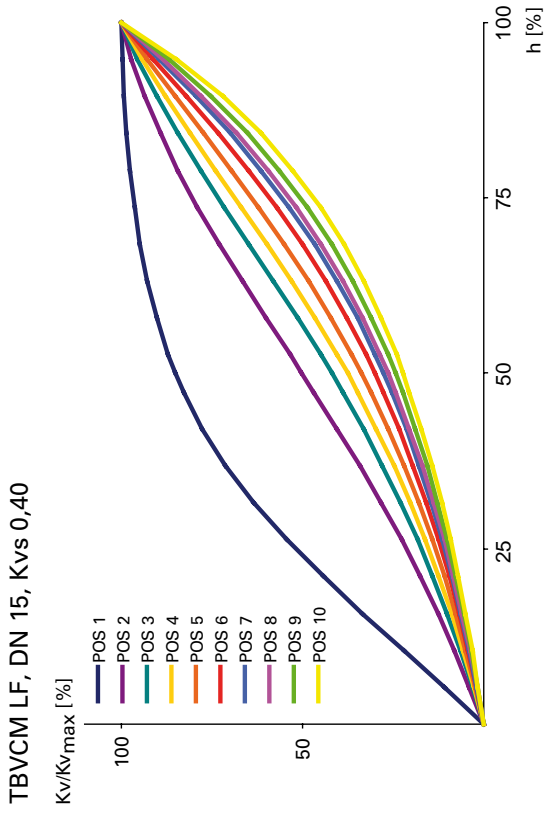
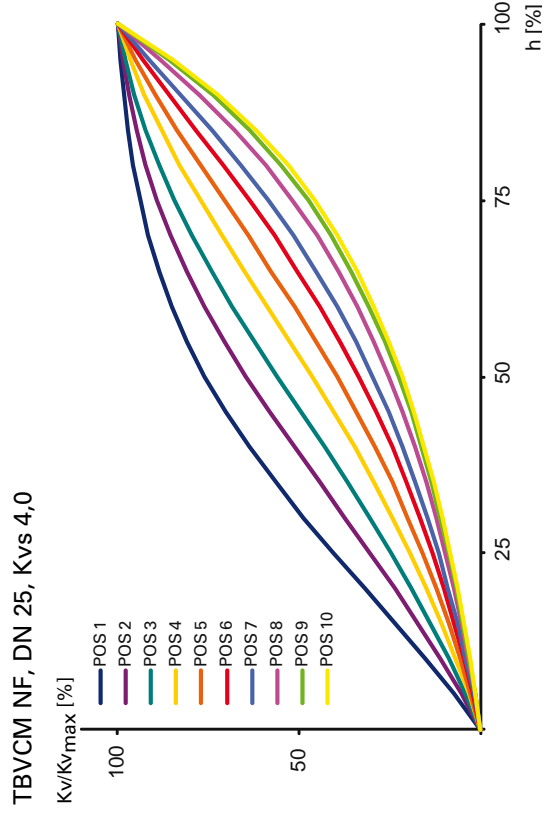
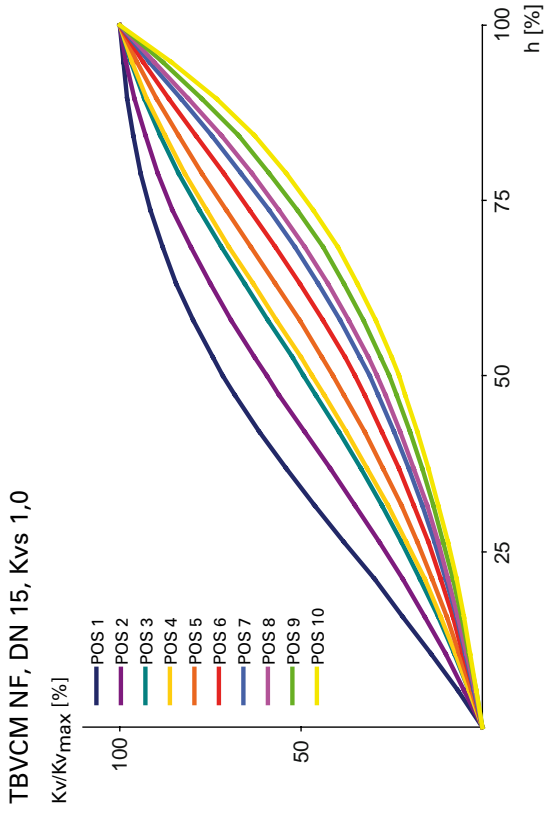


Kv_{max} = m³/h at a pressure drop of 1 bar each pre-setting and fully open valve plug.

Kvs = m³/h at a pressure drop of 1 bar and fully open valve plug.

h = lift

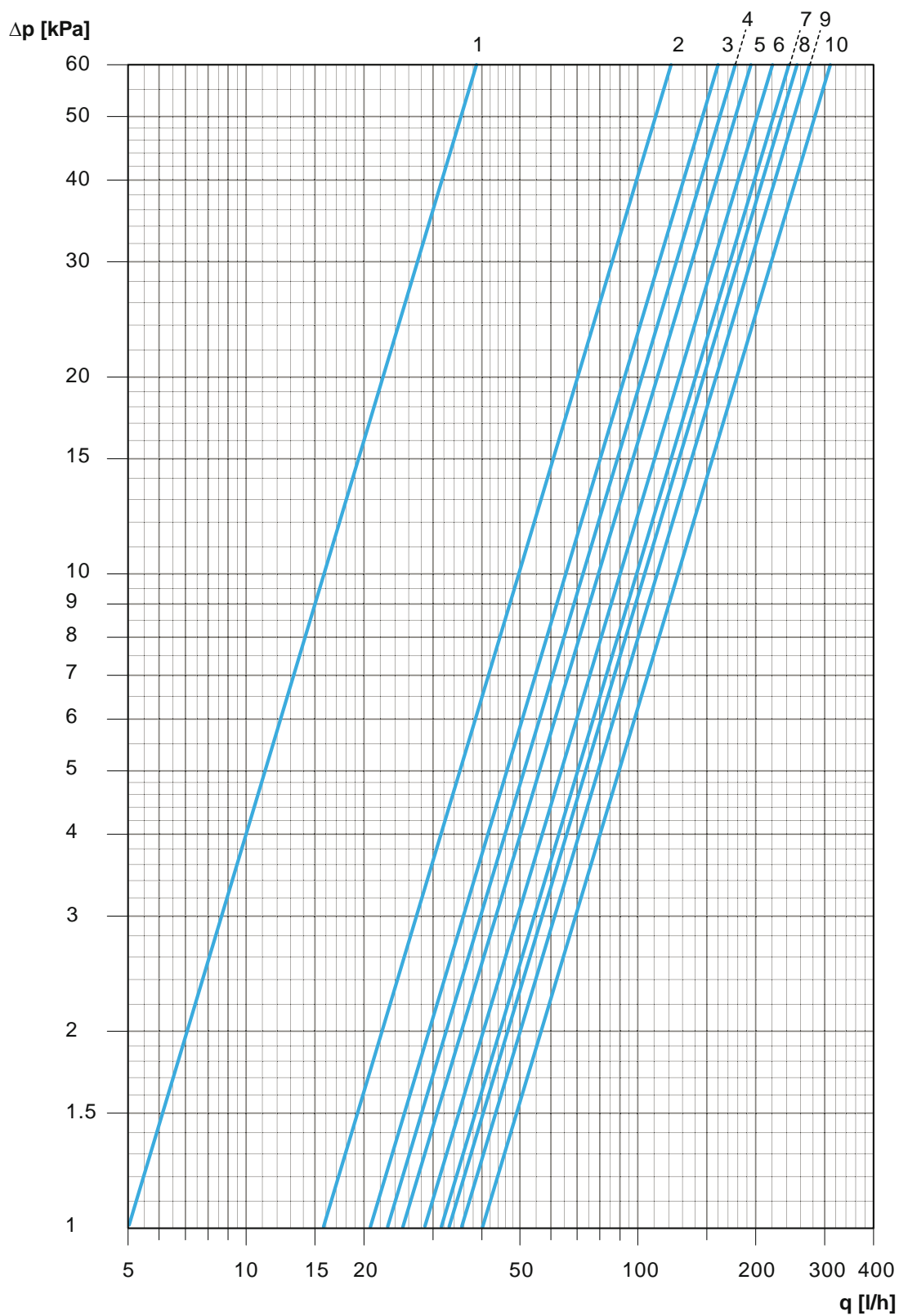
Relative valve characteristics



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

h = lift

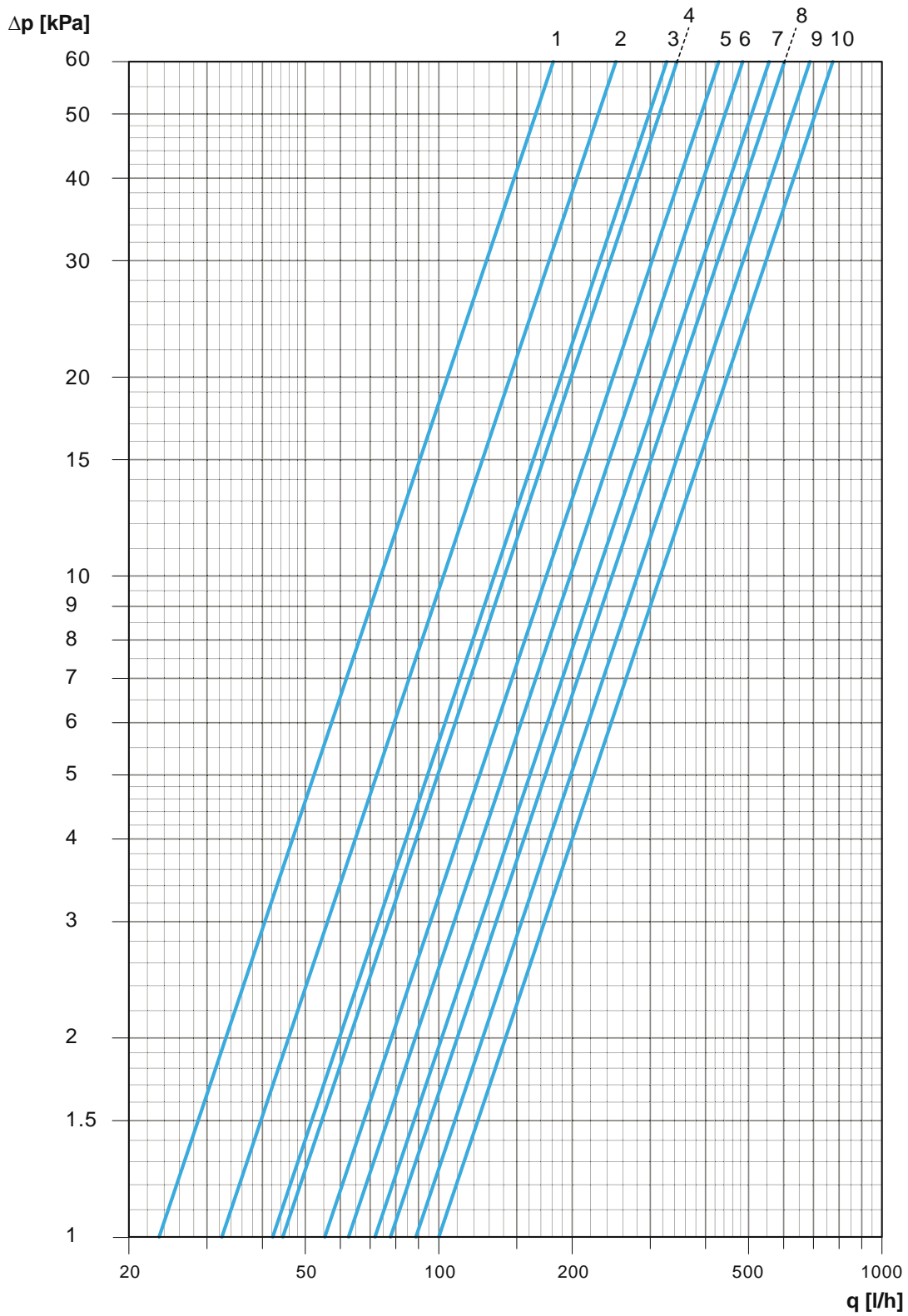
Diagram TBVCMLF15



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 each pre-setting and fully open valve plug.

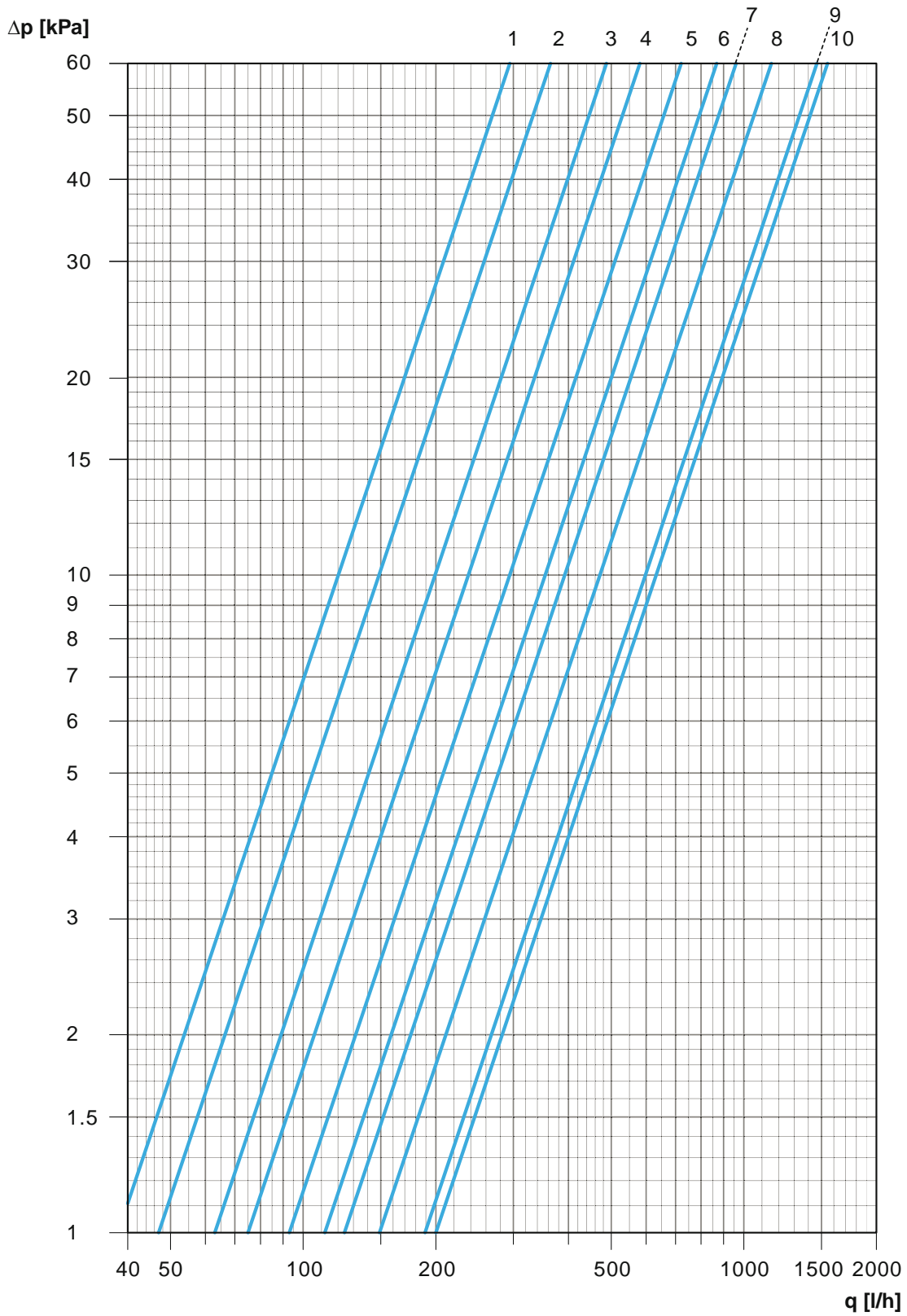
Diagram TBVCMNF15



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	1,00

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

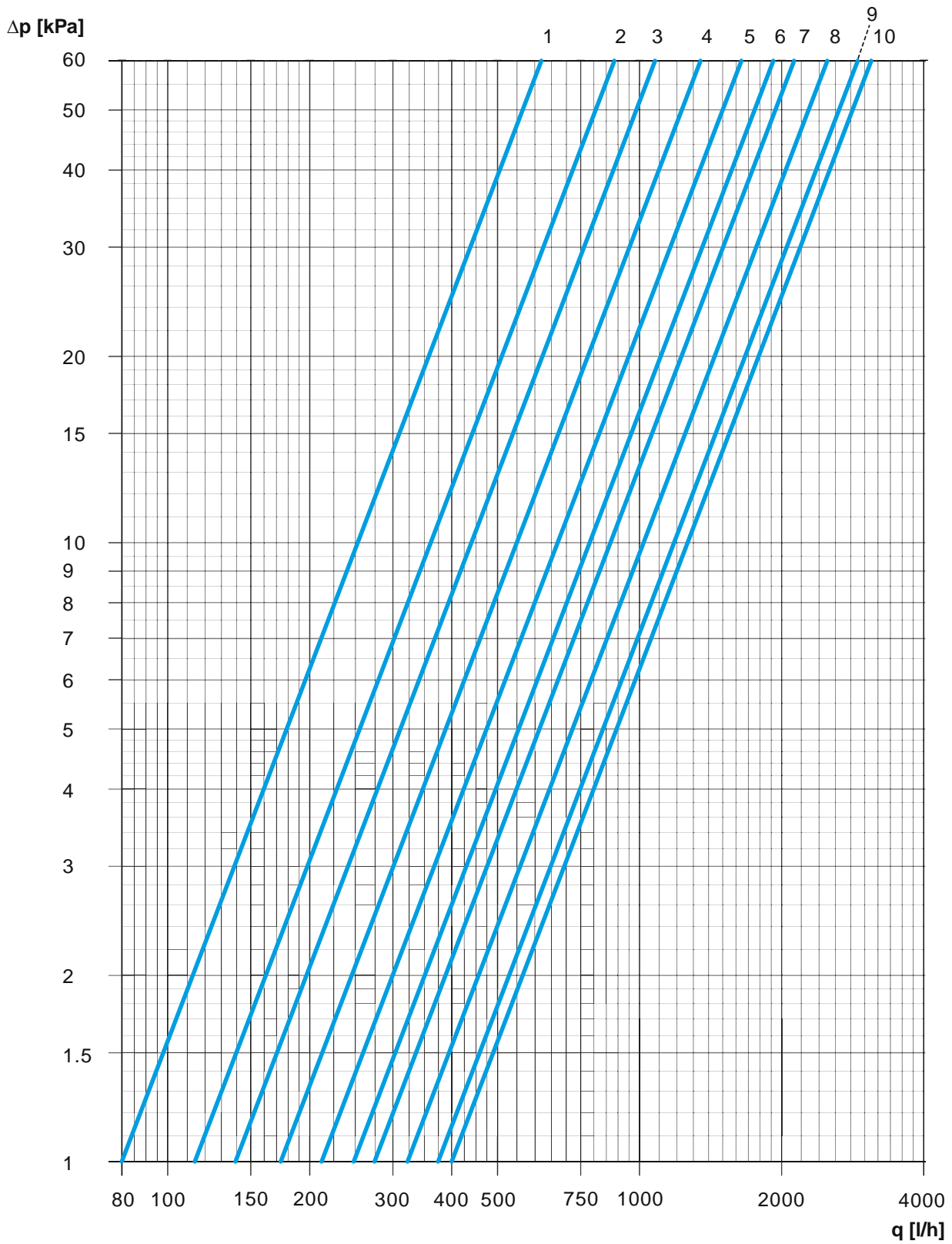
Diagram TBVCMNF20



Position	1	2	3	4	5	6	7	8	9	10
Kv_{max}	0,38	0,47	0,63	0,75	0,93	1,10	1,20	1,50	1,90	2,00

Kv_{max} = m³/h at a pressure drop of 1 bar each pre-setting and fully open valve plug.

Diagram TBVCMNF25

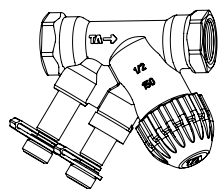


Position	1	2	3	4	5	6	7	8	9	10
Kv_{max}	0,80	1,10	1,40	1,70	2,10	2,50	2,80	3,20	3,70	4,00

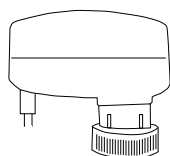
Kv_{max} = m³/h at a pressure drop of 1 bar each pre-setting and fully open valve plug.

Components

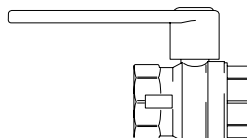
VMO, modulating valve kit



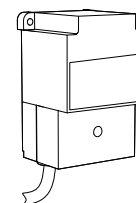
TBVCM



SDM24



AV



ST23024

VMO15LF

Typ		Specification
TBVCM15LF	Two way combined regulation and adjustment valve	Low flow, DN15, Kvs 0,4
SDM24	Modulating actuator 24V	24V~
AV15	Shut off valve	DN15
ST23024	24V transformer for valve actuator	DN10

VMO15NF

Typ		Specification
TBVCM15NF	Two way combined regulation and adjustment valve	Normal flow, DN15, Kvs 1,0
SDM24	Modulating actuator 24V	24V~
AV15	Shut off valve	DN15
ST23024	24V transformer for valve actuator	DN10

VMO20

Typ		Specification
TBVCM20NF	Two way combined regulation and adjustment valve	Normal flow, DN20, Kvs 2,0
SDM24	Modulating actuator 24V	24V~
AV20	Shut off valve	DN20
ST23024	24V transformer for valve actuator	DN10

VMO25

Typ		Specification
TBVCM25NF	Two way combined regulation and adjustment valve	Normal flow, DN25, Kvs 4,0
SDM24	Modulating actuator 24V	24V~
AV25	Shut off valve	DN25
ST23024	24V transformer for valve actuator	DN10

Kv-values and min- and maxflow at different pressure drop

Type	Kv _{min}	Kv _{max}	At 3 kPa		At 10 kPa		At 20 kPa	
			Q _{min} [l/s]	Q _{max} [l/s]	Q _{min} [l/s]	Q _{max} [l/s]	Q _{min} [l/s]	Q _{max} [l/s]
VMO15LF	0,05	0,40	0,002	0,019	0,004	0,035	0,006	0,050
VMO15NF	0,20	1,00	0,010	0,048	0,018	0,088	0,025	0,124
VMO20NF	0,40	2,00	0,019	0,101	0,035	0,185	0,050	0,261
VMO25NF	0,80	4,00	0,039	0,193	0,070	0,352	0,099	0,497

VMO, modulating valve kit

Two way combined control and adjustment valve with modulating actuator and shut-off valve. DN15/20/25. 24V.

The valve set consists of the following:

- TBVCM, regulation and adjustment valve
- SDM24, modulating actuator 24V
- AV, shut off valve
- ST23024, 24V transformer for valve actuator

The shut off valve (AV) consists of a ball valve which is either open or closed and is used to shut off the flow, when servicing for example.

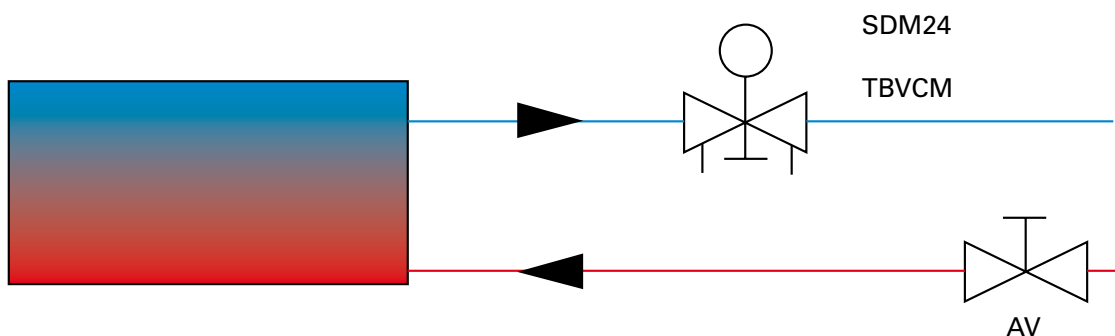
The regulation and adjustment valve (TBVCM) can be used to finely adjust or shut off the water flow manually. The water flow is set using the adjustment tool (option).

The regulation and adjustment valve (TBVCM) also has a shut off function for maintenance and a self sealing measurement outlet for measurement and adjustment.

The actuator (SDM24) is modulated and gives the correct heat. SIRE can be set to always allow a small leakage flow through. This is to provide quick heat supply when a door is opened but also to provide a degree of frost protection.

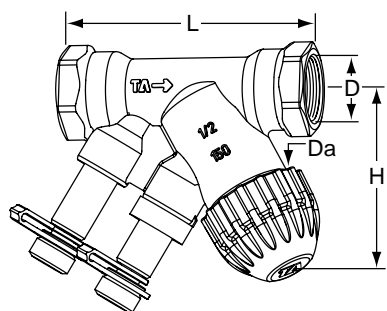
The valve set is available in three different valve dimensions, DN15 (1/2"), DN20 (3/4") and DN25 (1").

Used with SIRE Advanced or supplemented with suitable thermostat.



Two way regulation and adjustment valve (TBVCM)

Dimensions and technical specifications



Type	DN	Flow	D	Da*1	L [mm]	H [mm]	Kvs*2	Weight [kg]
TBVCM15LF	15	Low flow	G1/2	M30x1,5	81	58	0.90	0.34
TBVC15MNF	15	Normal flow	G1/2	M30x1,5	81	58	1.8	0.34
TBVC20MNF	20	Normal flow	G3/4	M30x1,5	91	57	3.4	0.40
TBVC25MNF	25	Normal flow	G1	M30x1,5	111	64	7.2	0.73

*1) Connection to actuator.

*2) Kvs = Flow [m³/h] at a pressure drop of 1 bar and fully open valve.

Pressure class: PN16

Max. working temperature: 120 °C

Min. working temperature: -20 °C

High: 4 mm

Material

Valve body	AMETAL®
Valve plug	PPS (polyphenylsulphide)
Seat seal	EPDM/Stainless steel (DN 15-20). EPDM/AMETAL® (DN25)
Spindle seal	EPDM O-ring
Valve insert	AMETAL®. PPS (polyphenylsulphide)
Return spring	Stainless steel
Spindle	Teflonized AMETAL®
Nipple	AMETAL®

AMETAL® is a dezincification resistant alloy.

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)

Functions

- Control
- Balancing
- Pre-setting
- Measuring
- Shut-off

Application

The regulation and adjustment valve (TBVCM) can be used to finely adjust or shut off the water flow manually. The water flow is set using the adjustment tool (option).

The regulation and adjustment valve (TBVCM) also has a shut off function for maintenance and a self sealing measurement outlet for measurement and adjustment.

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 deaerated.
- 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 30 kPa = 0,3 bar

Setting

TBVCM is delivered with a red protective cap, which must be used when isolating the valve.

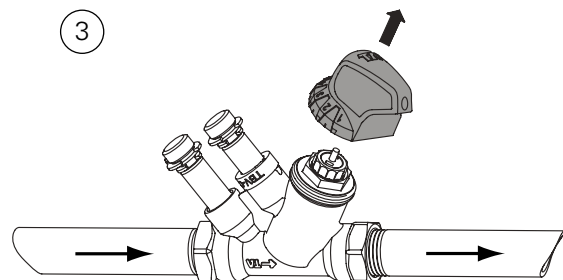
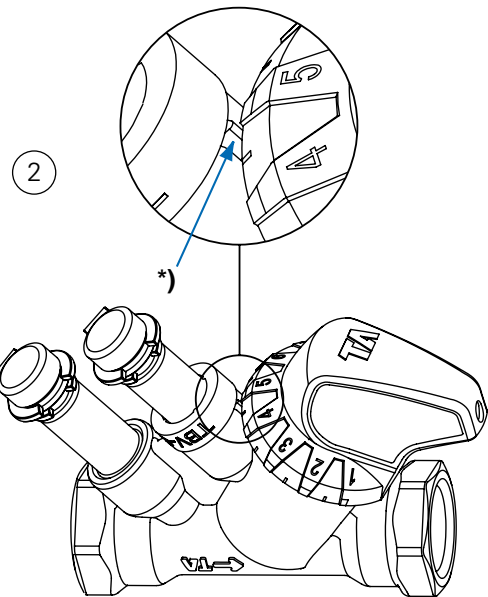
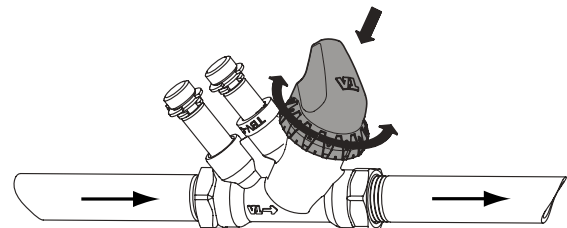
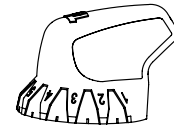
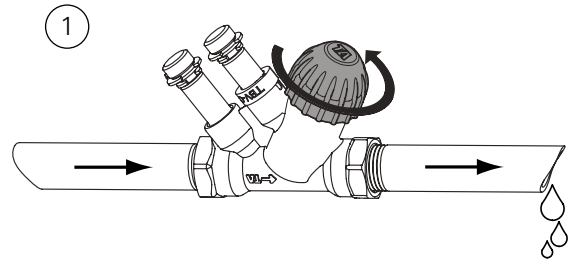
TBVCM is delivered with the pre-setting fully open. The setting of a valve for a given pressure drop, e.g. corresponding to position 5 is done as follows:

1. Place the presetting tool VAT (accessory) at the valve.
2. Turn the presetting tool so that position 5 is pointing at the index* (* see picture) 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 in the last section of the manual.

Accessory

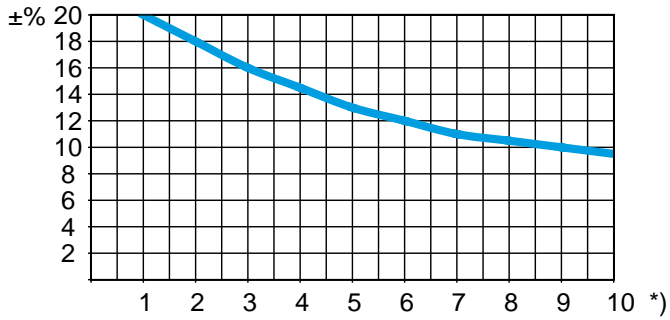
Presetting tool VAT.



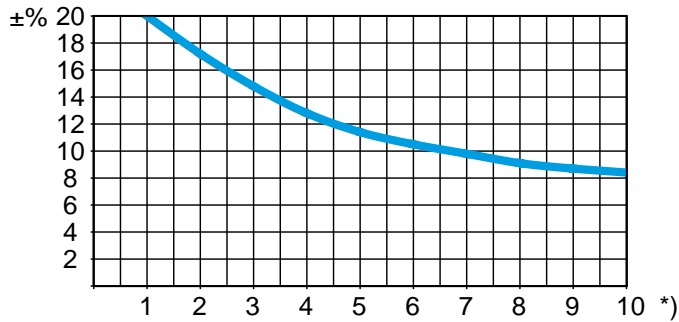
Measuring accuracy

Flow deviation at different settings.

TBVCMLF

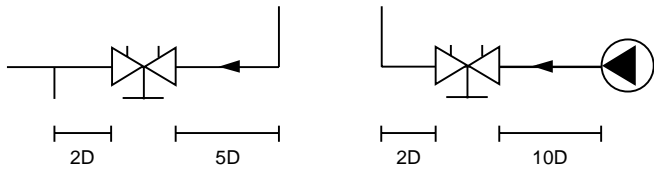


TBVCMNF



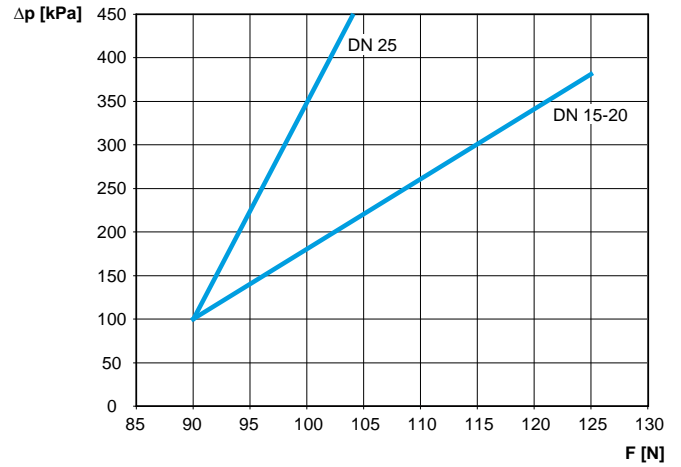
*) Position

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



Stroke force

Necessary force (F) to close the valve versus the differential pressure (Δp).



Sizing

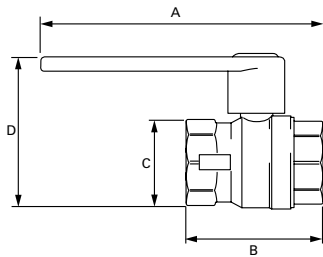
When Δp and the design flow are known, use the formula to calculate the Kv-value.

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

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

Shut off valve (AV15/20/25)

Dimensions and technical specifications



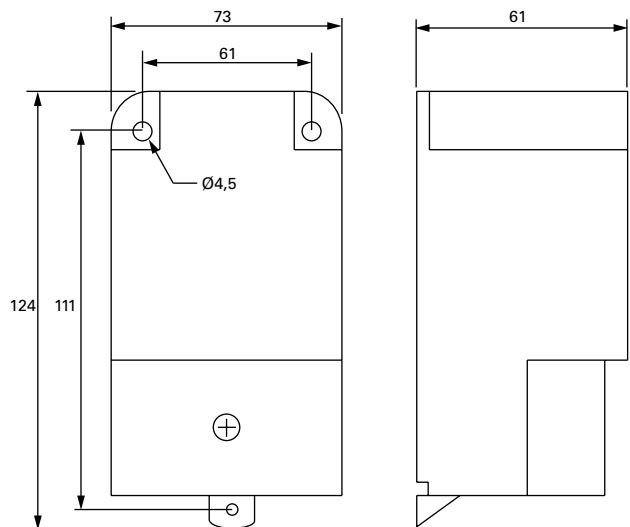
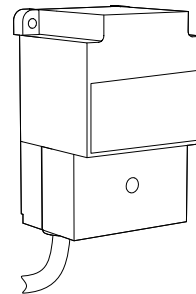
Type	DN	A [mm]	B [mm]	C [mm]	D [mm]	Weight [kg]
AV15	15	119	57	25	57	0,2
AV20	20	130	57	32	70	0,3
AV25	25	140	62	42	85	0,3

Application

The shut off valve is used to shut off the water flow to the unit and consists of a ball valve which is either open or closed. The shut off valve have no adjustment function and is only used for maintenance and service.

Transformer (ST23024)

Dimensions and technical specifications



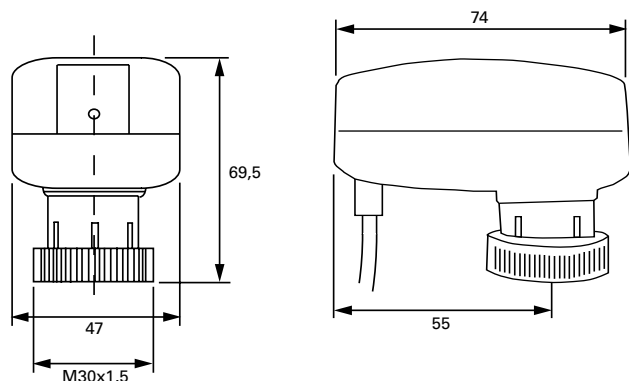
Primary voltage	230 V	47-63 Hz
Secondary voltage	24 V	7 VA, 292 mA
Protection class	IP44	
Cable length	2 m	
Weight	1,0 kg	

Application

The transformer is connected between SIREB1(X) and the actuator SDM24 to deliver 24V voltage to the actuator.

Actuator (SDM24)

Dimensions and technical specifications



Function	Modulating 0-10 V
Supply voltage	24 AC \pm 15%, 50-60 Hz
Power consumption	2,7 VA at max. power supply 2 W - active
Nominal force	120 N +30% / -20%
Maximum stroke	5 mm
Running time	15 s/mm
Protection class	IP40
Fitting thread	M30x1,5
Cable	L = 1,5 m, \varnothing 4,5 mm
Ambient operating condition	0 - 50°C, non condensing
Ambient storage condition	-20 - 65°C, non condensing
Max. water temperature	95 °C
Sound level	<30 dB(A)
Weight	0,15 kg
Colour	RAL7035
Material housing	PA66 - Glass + Mineral filled (30% total) Kelon A FR CETG/300-VO
Material fitting	Brass CuZn40Pb2
CE-Compliance	Directive 89/336 EEC; EN 61000-6-1; EN 61000-6-3

Operating status indication

ON		Power supply present, motor not running. Floating actuators: time out Proportional actuators: actuator is in control
Single Blinking		Motor is running
Double Blinking		Actuator performs an end-of-stroke confirmation cycle or an anti-sticking cycle
OFF		Power supply is not present

Application

The actuator (SDM24) is modulated and gives the correct heat. SIRE can be set to always allow a small leakage flow through. This is to provide quick heat supply when a door is opened but also to provide a degree of frost protection.

Function

Actuator is controlled by a 0-10 V signal.

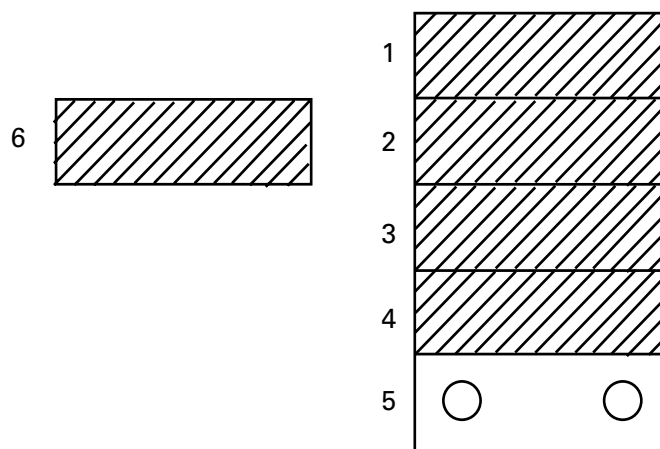
The valve is open in unaffected position. The actuator should be in "Reverse Action," i.e., no pins / jumper in jumper 5, which means that at 10 V, the valve is unaffected, ie fully open for heat input. In the closed position there are still an output of 0.5 V to pass through a small leak flow through the valve.

The actuator is self-calibrating and sets the end positions by itself.

When jumper 1 is in on-mode anti-sticking cycle is active, which means that the valve opens and closes once every 24 hours for cleaning the components. This is especially important during summer mode when the heat is not active.













Jumper settings


SDM24 is adjustable, this is done with jumpers. These are located under the hatch of the actuator. To SDM24 to work with SIRE the setting should be as follows:





Jumper 4 and 6 are not in use.

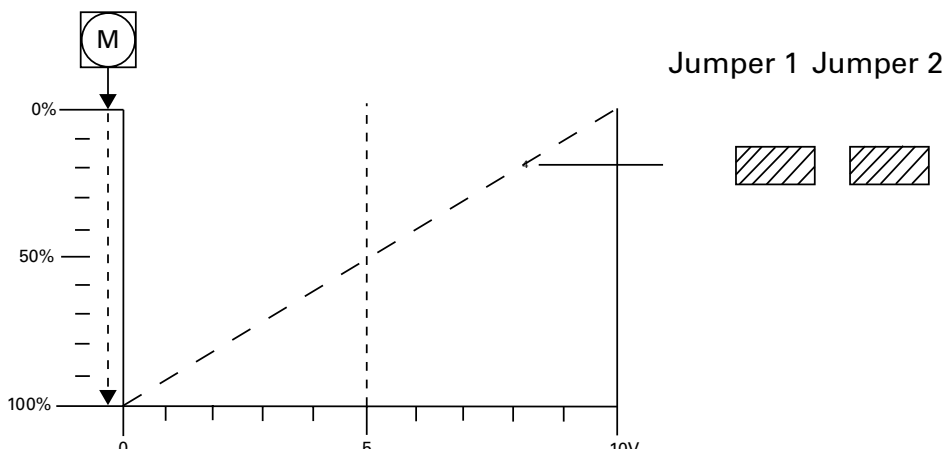
Settings


Function	Jumper No	Factory setting	Alternative setting
Anti-sticking	1	 Activated	 Disabled
Input control signal	2	 0-10 V	 5... 10 V  0... 5 V
	3		 
No function	4	 No function	---
Action	5	 Direct (RDA)	 Reverse (RA)
No function	6	 No function	---

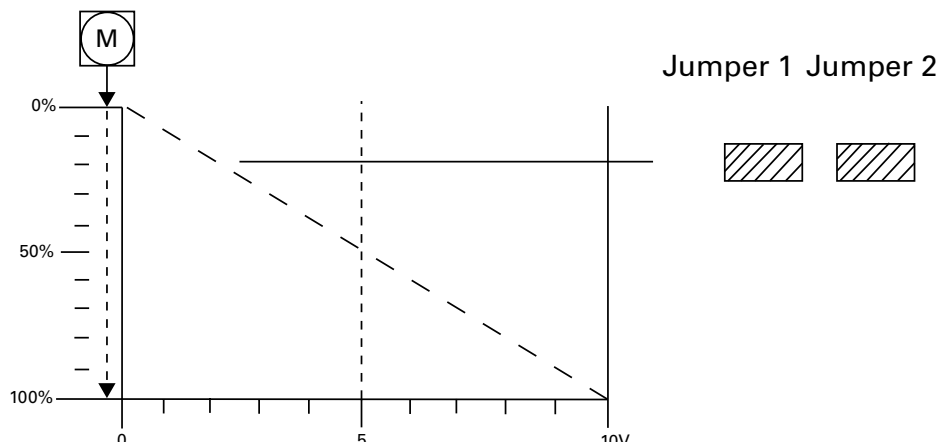
 Jumper in place

 Jumper removed

Jumper 5 "Reverse action" 



Jumper 5 "Direct action" 

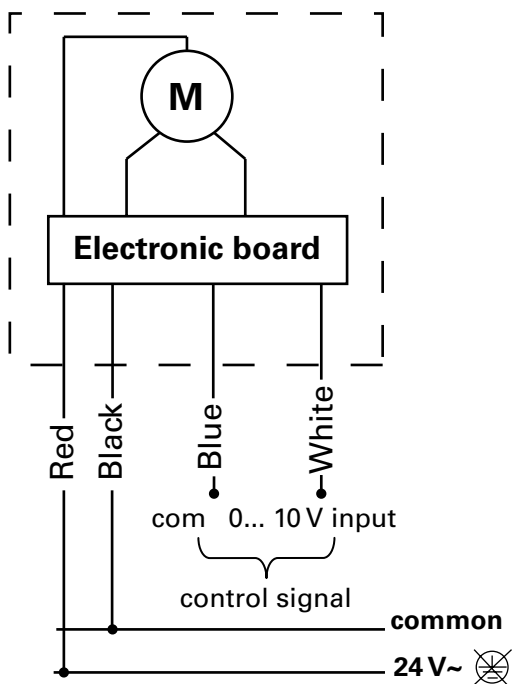
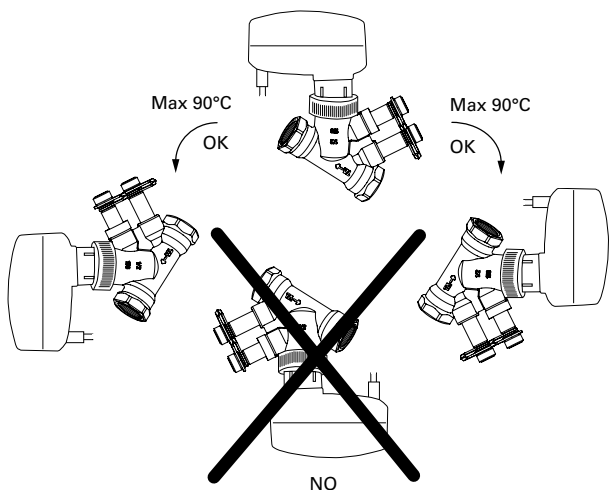


Mounting

The actuator is mounted on the valve when the power supply is disconnected.

Wiring

All electrical connections must be made by a qualified electrician



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