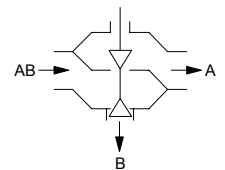
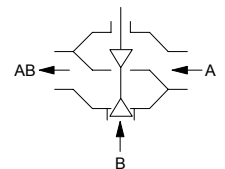


KVDN../3(B)/... : Unit three-way valve, PN 16

Used as a mixing, diverting or change-over valve in conjunction with either the VA125... thermal drive for unit valves, the continuous VA120.1(M) drive or the VA150.2 motorised drive for unit valves for controlling heating zones, air secondary-treatment appliances, fan convectors and two-wire systems with heat exchanger.

Valve and drive are assembled either by simply screwing together or by using the bayonet fitting. Nickel-plated valve body of cast brass, with male thread, without cap nut. Spindle of stainless steel with soft-sealing valve cone for control and mixing passages. Characteristic practically equal-percentage. The flow through the mixing passage has been reduced by 30%. Stuffing box with double O-ring seal. The control passage A-AB is closed when the spindle is pressed in.



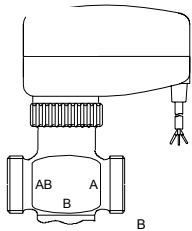
Type	Nominal dia. [DN]	k _{vs} value ¹⁾ [m ³ /h]	Connection	Weight [kg]
KVDN10/3/0.4	10	0.40	G½B	0.30
KVDN10/3/0.63	10	0.63	G½B	0.30
KVDN10/3/1.0	10	1.0	G½B	0.30
KVDN10/3/1.6	10	1.6	G½B	0.30
KVDN15/3/2.5	15	2.5	G¾B	0.33
KVDN15/3/4.0	15	4.0	G¾B	0.33
KVDN20/3/5.0	20	5.0	G1B	0.36

Version with T-piece bypass

KVDN10/3B/0.4	10	0.40	G½B	0.38
KVDN10/3B/0.63	10	0.63	G½B	0.38
KVDN10/3B/1.0	10	1.0	G½B	0.38
KVDN10/3B/1.6	10	1.6	G½B	0.38
KVDN15/3B/2.5	15	2.5	G¾B	0.42
KVDN15/3B/4.0	15	4.0	G¾B	0.42
KVDN20/3B/5.0	20	5.0	G1B	0.50

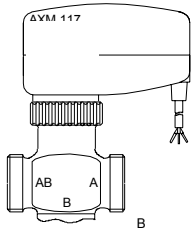
Nominal pressure	PN 16	Leakage rate: control passage Leakage rate: mixing passage Dimension drawings	0.0001% of k _{vs} approx. 0.1% of k _{vs}
Max. operating pressure	up to 120 °C 16 bar		
Operating temperature	2...120 °C		
Characteristic: control passage	equal-percentage		
mixing passage	linear		
Valve stroke	3.7 mm		

Combined with a 24 V electric drive, VA120.1 , VA120.1M



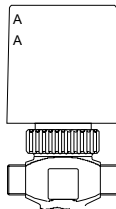
Actuator	Used as a control valve			Used as a diverting valve		
	Δp_{max}	Δp_s	close/off pressure	Δp_{max}	Δp_s	close/off pressure
KVDN10/3(B)/...	1.7	–	1.8	1.9	–	2.3
KVDN15/3(B)/2.5	1.4	–	1.5	1.2	–	1.2
KVDN15/3(B)/4.0	1.2	–	1.3	1.2	–	1.2
KVDN20/3(B)/5.0	1.0	–	1.1	1.2	–	1.2

Combined with a 230 V electric drive, VA150.2



Actuator	Used as a control valve			Used as a diverting valve		
	Δp_{max}	Δp_s	close/off pressure	Δp_{max}	Δp_s	close/off pressure
KVDN10/3(B)/...	1.7	–	1.8	1.9	–	4.0
KVDN15/3(B)/2.5	1.4	–	1.5	1.6	–	2.1
KVDN15/3(B)/4.0	1.2	–	1.3	1.4	–	2.1
KVDN20/3(B)/5.0	1.0	–	1.1	1.2	–	2.0

Combined with a thermal and continuous drive, VA125.1(S) , VA125.2(S) , VA125.1M



Actuator	Used as a control valve			Used as a diverting valve		
	Δp_{max}	Δp_s	close/off pressure	Δp_{max}	Δp_s	close/off pressure
KVDN10/3(B)/...	1.7	1.8	1.8	1.9	4.0	4.0
KVDN15/3(B)/2.5	1.4	1.5	1.5	1.6	2.1	2.1
KVDN15/3(B)/4.0	1.2	1.3	1.3	1.4	2.1	2.1
KVDN20/3(B)/5.0	1.0	1.1	1.1	1.2	2.0	2.0

Δp_{max} [bar]= Max. permissible pressure difference across the valve at which the actuator can still firmly open and close the valve. Figures stated are for a static pressure of 6 bar; at a static pressure of 16 bar, the values are reduced by 15%.

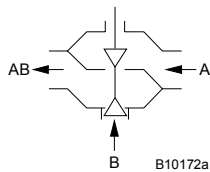
Δp_s [bar]= Max. permissible pressure difference across the valve at which, in the event of a malfunction, the actuator can close the valve.

Close/off pressure The pressure difference across the valve in control mode that the force of the drive can overcome. In this mode, a reduced serviceable life can be expected. Cavitation, erosion and pressure surges may damage the valve. The values stated apply only when the valve is fitted to the actuator.

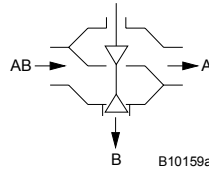
Operation

The control passage (A-AB) is closed and the mixing passage (B-AB) is opened by pressing the spindle in; it is returned by spring pressure (the spring is in the valve). The VA125... thermal drive can be used to move the valve to the OPEN or CLOSED position. Used in combination with the 'normally closed' drive version, the control passage closes in the event of power failure.

Used as a mixing valve



Used as a diverting valve



Used with the VA125.1M drive, the valve can be moved to any position. Depending on the way the control voltage is connected, the valve is moved continuously with a control voltage of 0...10 V. Connected to red cable: the control passage opens as the control voltage rises. Connected to white cable: the control passage closes as the control voltage rises.

Used with the VA120.. motorised drive, the valve can be moved to any position. On the VA120.1M (with positioner), the valve is moved continuously by a control voltage of 0...10V-.

Used with a continuous drive (0...10 V), the practically equal-percentage characteristic provides optimum control.

The k_{VS} values in the bypass are about 30% less than those of the control passage. Therefore, the flow resistance of the load is taken into account, so that the total throughflow in every stroke position remains fairly constant. The practically equal-percentage characteristic in the control passage provides optimum control when used together with a continuous 0...10 V drive.

Engineering and fitting notes

The final control element can be fitted in any position except facing downwards. The ingress of condensate, dripping water etc. into the drive should be prevented.

In order to prevent cavitation noise from affecting rooms where quietness is essential, the pressure difference across the valve should not exceed the following values:-

KVDN10/3/0.4 = 0.5 bar, KVDN10/3/0.63 = 0.6 bar / KVDN10/3/1.0 and 1.6 = 0.8 bar

KVDN15/3/2.5 = 0.6 bar, KVDN15/3/4.0 = 0.8 bar

KVDN20/3/5.0 = 0.5 bar

In order to restrain contaminants in the water (e.g. welding beads, rust particles etc.) and prevent the spindle seal from being damaged, we recommend the employment of collective filters, e.g. for each floor or feed pipe. The composition of the water should be in accordance with VDI 2035. Medium with coolant such as glycol, min. 16% max. 40%.

When insulating the unit valve, the insulation should not extend beyond the cap nut or the bayonet ring on the drive.

Additional technical data

Valve body and T-piece of nickel-plated chill cast and male thread as per ISO 228/1 Class B, flat seal on body. stuffing box with O-ring of ethylene-propylene, cone of brass with EPDM sealing ring and spindle of stainless steel, protective cap (or manual-adjustment knob) of plastic.

Material numbers as per DIN

	DIN material no.	DIN code
Valve body	CC 754S-GM	Cu Zn 39 Pb 1 Al-C as per EN1982
Valve seat	CC 754S-GM	Cu Zn 39 Pb 1 Al-C as per EN1982
Spindle	1.4305	X 8 Cr Ni S 18-9 as per EN188-1
Plug	CW617N	Cu Zn 40 Pb 2 as per EN12164
Stuffing box	CW617N	Cu Zn 40 Pb 2 as per EN12164

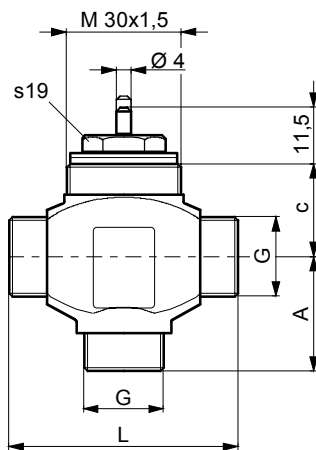
Additional technical data

Valve	k _{vs} value in m ³ /h	
	Control passage	Mixing passage
KVDN10/3/0.4	0.40	0.30
KVDN10/3/0.63	0.63	0.47
KVDN10/3/1.0	1.0	0.75
KVDN10/3/1.6	1.6	1.2
KVDN15/3/2.5	2.5	1.9
KVDN15/3/4.0	4.0	3.0
KVDN20/3/5.0	5.0	3.8

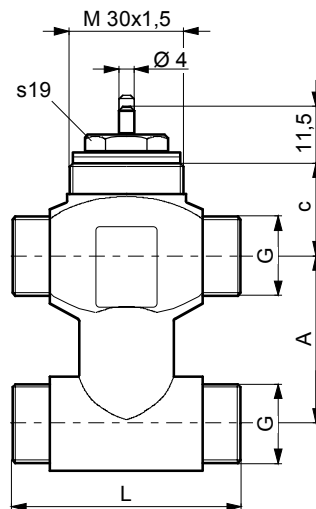
Technical information

- Pressure and temperature specifications EN764, EN1333
- Flow parameters VDI/VDE 2173
- Sauter slide rule for valve sizing 7 090011 003
- Slide rule manual 7 000129 003
- PC program: Valve and drive sizing 7 000675 003
- Valvedim.exe
- Technical manual: 'Regulating units' 7 000477 003
- CE conformity: Directive on Pressure Equipment 97/23/EG Article 3.3

Dimension drawings



Type	A	c	G	L
BUL 010 F3 ..	30	27	G1/2B	60
BUL 015 F3 ..	30	27	G3/4B	60
BUL 020 F3 ..	30	27	G 1B	60



Type	A	c	G	L	d
BUL 010 F4 ..	40	27	G1/2B	60	-
BUL 015 F4 ..	40	27	G3/4B	60	-
BUL 020 F4 ..	50	27	G1B	60	-
BUL 010 F6 ..	40	27	G1/2B	60	15

Assembly

Combinations with VA125... thermal drive and VA120..., VA150.. motorised drive

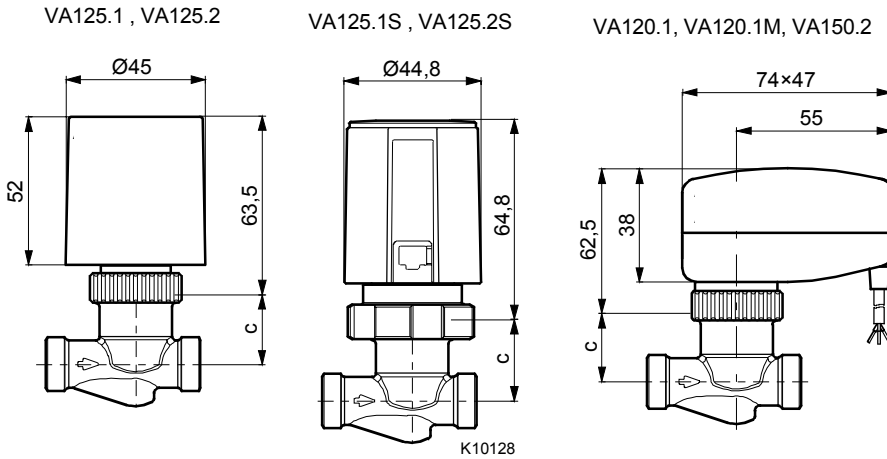


Table of pressure losses

