BUE: 3-way flanged valve, PN 16/10 (el.)



BUE032F300

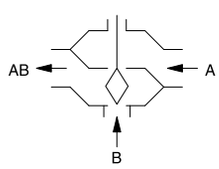
How energy efficiency is improved

Efficient use in continuous control systems

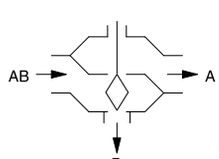
Features

- Continuous control of cold and hot water in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 105(S), AVM 115(S), AVM 321(S) and AVF 124 and AVF 125(S) as a control unit
- Not suitable for drinking water or potentially explosive atmospheres
- Valve with flange connection as per EN 1092-2, seal form B, for PN 16 and PN 10
- Regulating valve, free of silicone grease, painted black
- Equal-percentage characteristic with F300, can be set with SUT valve actuators (SAUTER Universal Technology) to linear or quadratic
- Valve passage A–AB is closed when the spindle is moved out
- Can be used as a control valve or a distribution valve
- Valve body and seat made of grey cast iron
- Stainless-steel spindle
- Plug made of brass with glass-fibre reinforced PTFE sealing ring
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM





Control valve



Distribution valve

Technical data

Parameters		
	Connection	PN 16/10
	Connection	Flange as per EN 1092-2, form B
	Valve characteristic, control passage F200	Linear
	Valve characteristic, control passage F300	Equal-percentage
	Valve characteristic, mixing passage	Linear
	Control ratio of valve	> 50:1
	Stuffing box	2 EPDM O-rings
	Leakage rate of control passage	< 0.05% of k_{VS} value
	Leakage rate, mixing passage	< 1% of k_{VS} value
	Valve stroke	8 mm

Ambient conditions[1)]		
	Operating temperature[2)]	–10...150 °C
	Operating pressure	PN 16: Up to 120 °C, 16 bar At 150 °C, 14.4 bar PN 10: Up to 120 °C, 10 bar At 150 °C, 9 bar Between 120 °C and 150 °C, a linear interpolation can be performed

Standards and directives		
	Pressure and temperature data	EN 764, EN 1333
	Flow parameters	EN 60534 (page 3)
	Pressure Equipment Directive	97/23/EC (fluid group II) No CE label, article 3.3

Overview of types

Type	Nominal diameter	k_{VS} value	Weight
BUE015F330	DN 15	1 m³/h	3.2 kg
BUE015F320	DN 15	1.6 m³/h	3.2 kg
BUE015F310	DN 15	2.5 m³/h	3.2 kg

1) *Air humidity must not exceed 75%*

2) *At temperatures below 0 °C, use a stuffing box heater. Use adaptor (accessory) at temperatures above 100 °C*

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Type	Nominal diameter	k_{VS} value	Weight
BUE015F300	DN 15	4 m³/h	3.2 kg
BUE020F300	DN 20	6.3 m³/h	4.1 kg
BUE025F300	DN 25	10 m³/h	4.7 kg
BUE032F300	DN 32	16 m³/h	7.1 kg
BUE040F300	DN 40	22 m³/h	8.4 kg
BUE050F300	DN 50	28 m³/h	11.2 kg
BUE050F200	DN 50	40 m³/h	11.2 kg

Accessories

Type	Description
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Adaptor required when temperature of the medium is 100...130 °C (recommended for temperatures < 10 °C) DN 15...50
0372249002	Adaptor required when temperature of the medium is >130 up to 150 °C, DN 15...50
0378284100	Stuffing box heater 230V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24V~, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

Combination of BUE with electric actuators

Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.

***Definition of Δp_s:** Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*

***Definition of Δp_{max}:** Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

Combination of BUE with electric actuator, actuating power 250 N, 500 N

Actuator	**AVM105F100**	**AVM105F120 AVM105F122**	**AVM105SF132**	**AVM115F120 AVM115F122**	**AVM115SF132**
Actuating power	250 N	250 N	250 N	500 N	500 N
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	35/60/120 s	120 s	60/120 s
			Δp [bar]		
As control valve	**Δp_{max}**	**Δp_{max}**	**Δp_{max}**	**Δp_{max}**	**Δp_{max}**
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300	4.0	4.0	4.0	6.0	6.0
BUE025F300	2.8	2.8	2.8	6.0	6.0
BUE032F300	2.1	2.1	2.1	5.2	5.2
BUE040F300	1.4	1.4	1.4	3.3	3.3
BUE050F300 BUE050F200	0.9	0.9	0.9	2.0	2.0
Cannot be used as distribution valve					

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Combination of BUE with electric actuator with spring return, actuating power 500 N

Actuator	AVF124F130 AVF124F230	AVF125SF132 AVF125SF232
Actuating power	500 N	500 N
Control signal	3-point	2-/3-pt., 0...10 V, 4...20 mA
Running time	60/120 s	60/120 s

Δp [bar]

As control valve	Δp_{max}	Δp_s	Δp_{max}	Δp_s
BUE015F330 BUE015F320 BUE015F310 BUE015F300	6.0	16.0	6.0	16.0
BUE020F300	6.0	11.0	6.0	11.0
BUE025F300	6.0	6.8	6.0	6.8
BUE032F300	5.2	5.2	5.2	5.2
BUE040F300	3.3	3.3	3.3	3.3
BUE050F300 BUE050F200	2.0	2.0	2.0	2.0
As distribution valve				
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300	6.0	16.0	6.0	16.0
BUE025F300	5.0	16.0	5.0	16.0
BUE032F300	4.0	16.0	4.0	16.0
BUE040F300	2.5	16.0	2.5	16.0
BUE050F300 BUE050F200	1.5	16.0	1.5	16.0

Spring return: 18 ± 10 s

At temperatures above 100°C, accessories are required

Combination of BUE with electric actuator, actuating power 1000 N

Actuator	AVM321F110 AVM321F112	AVM321SF132
Actuating power	1000 N	1000 N
Control signal	2-/3-point	2-/3-pt., 0...10 V, 4...20 mA
Running time	48/96 s	32/96 s

Δp [bar]

As control valve	Δp_{max}	Δp_{max}
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300 BUE025F300 BUE032F300	10.0	10.0
BUE040F300	6.0	6.0
BUE050F300 BUE050F200	4.0	4.0
As distribution valve		
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300	6.0	6.0
BUE025F300	5.0	5.0
BUE032F300	4.0	4.0

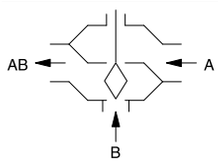
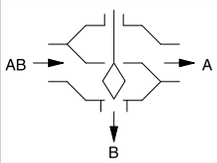
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Actuator	AVM321F110 AVM321F112	AVM321SF132
BUE040F300	2.5	2.5
BUE050F300 BUE050F200	1.5	1.5

At temperatures above 100°C, accessories are required

Description of operation

The valve can be moved to any intermediate position with an electric actuator. When the spindle is moved out, the control passage of the valve is closed. These valves may be used as control valves or distribution valves. The flow direction marked on the valve must be observed. The flow parameters correspond to EN 60534.

Used as a control valve	Used as a distribution valve
	

These control valves are characterised by their reliability and precision and make an important contribution towards environmentally friendly regulation. They meet difficult challenges such as the quick-closing function, overcoming differential pressures, controlling medium temperatures and performing the shut-off function, all with a low noise level.
The valve spindle is automatically and firmly connected to the actuator spindle. The brass plug controls the equal-percentage flow rate in the control passage. To compensate for the complementary characteristic of the consumer and ensure a constant quantity of medium regardless of the valve position, the mixing passage acts with a linear characteristic. The tightness of the valve is ensured by the seat incorporated in the body.
The stuffing box is maintenance-free. This consists of a brass body, 2 O-rings, a wiper ring and a grease reserve. This is free of silicone grease, and silicone oil may not be used for the spindle.

Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the “Description of operation” section.
All related product documents must also be adhered to. Changing or converting the product is not admissible.

Engineering and fitting notes

The valves are combined with the valve actuators without a spring return or with valve actuators with a spring return. The actuator is mounted directly on the valve and fastened with either a nut or screws. The actuator is connected with the valve spindle automatically. When the system is commissioned, the actuator moves out and the connector closes automatically when it reaches the lower valve seat. The stroke of the valve is also detected by the actuator, and no further adjustments are required. Therefore the force on the seat is always the same and the smallest amount of leakage is ensured. With the SUT actuators, the characteristic of the control passage can be set to linear or quadratic as required. The combination of AVM105S and DN 50 F200 cannot be set to equal-percentage.

Additional technical data

SAUTER slide rule for valve sizing	P100013496
Technical manual on control units	7 000477 001
Parameters, fitting notes, control, general information	Applicable EN, DIN, AD, TRD and UVV regulations
Fitting instructions:	
DN 15…50	MV 506008
AVM 105,115,105S,115S	MV 506065
AVM 125S	MV 506066
AVF 124,124S	MV 505851
AVF 125S	MV 506067

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AVM 321S	P 100011900
Declaration on materials and the environment	MD 56.116

Fitting position

The control unit can be fitted in any position, but the hanging position is not recommended. Condensate, drops of water, etc. must be prevented from entering the actuator.
When the actuator is mounted on the valve, make sure the plug is not twisted on the seat (this can damage the sealing surface). When insulating the valve, it may only be insulated up to the connecting clip of the actuator.
To increase the functional reliability of the valves, the system should conform to DIN/EN 14336 (heating systems in buildings). DIN EN 14336 states, amongst other things, that the system has to be flushed through before being put into service.

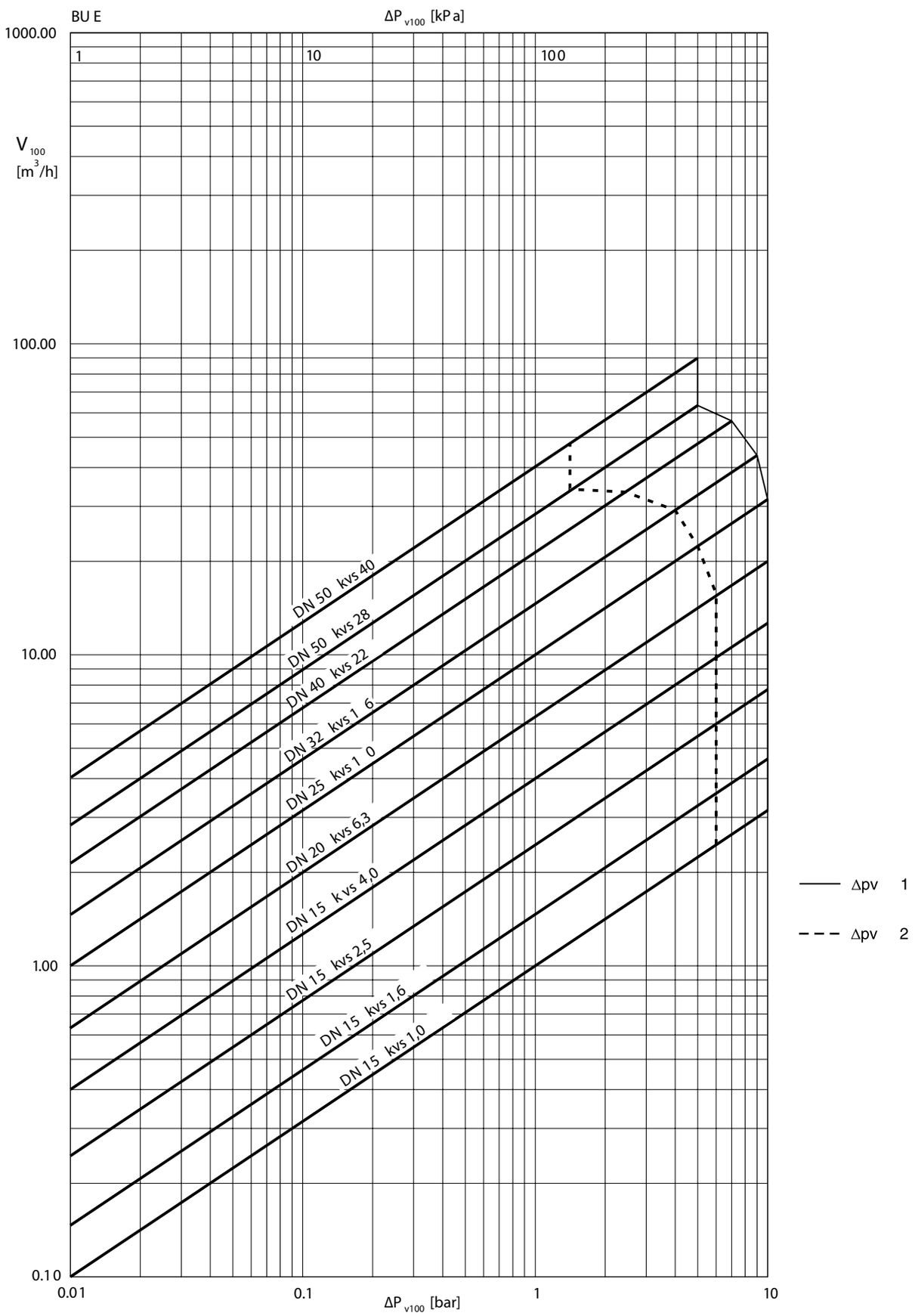
Using with water

So that impurities are retained in the water (welding beads, rust particles, etc.) and the plug seal is not damaged, we recommend installing collecting filters, for example one for each floor or pipe run. Water requirements according to VDI 2035. When using an additive in the water, the compatibility of the materials must be checked with the manufacturer of the medium. The materials table shown below may be used. When glycol is used, we recommend using a concentration of between 20% and 55%.

Other information regarding hydraulics and noise in systems

The valves can be used in a low-noise environment. To prevent noise, the pressure differences Δp_{max} listed below should not be exceeded.
The pressure difference Δp_v is the maximum pressure that may act on the valve regardless of the stroke position, in order that the risk of cavitation and erosion is limited. These values are irrespective of the actuator force. The cavitation accelerates wear on the plug and seat in the valve and causes noises. To prevent cavitation, the pressure differential on the valve should not exceed the value Δp_{krit}:
$\Delta p_{krit} = (p1 – pv) \times 0.5$
p1 = upstream pressure before the valve (bar)
p_v = steam pressure at operating temperature (bar)
The calculation works with absolute pressure.
For the spring return, the stated Δp_s values are also the permissible differential pressure up to which the actuator can guarantee that the valve is closed in the event of an incident. Because this is an emergency function with a fast stroke movement (using a spring), this value can exceed Δp_{max}.

Flow-rate chart



1: Control valve

2: Distribution valve

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Type	Δp_v	
	Used as a control valve	**Used as a distribution valve**
BUE015	10	6
BUE020	10	6
BUE025	10	5
BUE032	9	4
BUE040	7	2.5
BUE050	5	1.5

Additional version information

Valve body made of grey cast iron as per EN 1561, code EN-GJL-250, material number EN-JL 1040 with smooth drilled flanges as per EN 1092-2, seal form B. Valve body protected by matt paint RAL 9005 jet black. Recommended for the welding flange as per EN 1092-1. Valve fitting length as per EN 558-1, basic series 1. Flat seal on valve body made of asbestos-free material.

Material numbers as per DIN

	DIN material no.	DIN designation
Valve body	EN-JL 1040	EN-GJL-250 (GG25)
Valve seat	EN-JL 1040	EN-GJL-250
Spindle	1.4305	X8CrNiS18-9
Plug	CW617W	CuZn40Pb2
Plug seal	PTFE	
Stuffing box	CW617W	CuZn40Pb2

Additional details on the definitions of pressure difference

Δp_v:

Maximum admissible pressure difference over the valve at every stroke position, limited by noise level and erosion.

With this parameter, the valve is characterised as a flow element with specific hydraulic behaviour. Monitoring the cavitation and erosion along with the associated noise increases the service life and the operational capacity.

Δp_{max}:

Maximum admissible pressure difference over the valve at which the actuator can reliably open and close the valve.

The following are considered: Static pressure and flow effects. This value ensures trouble-free stroke movement and closing of the valve. The value Δp_v of the valve is never exceeded.

Δp_s:

Maximum admissible pressure difference over the valve in the event of a malfunction (e.g. power failure, excessive temperature or pressure, pipe break) at which the actuator can close the valve tightly and, if necessary, maintain the entire operating pressure against atmospheric pressure. Because this is a quick-closing function with a rapid stroke movement, Δp_s can be greater than Δp_{max} or Δp_v. The disruptive flow effects that arise here are quickly passed through and are of minor importance in this mode of operation.

For 3-way valves, the values only apply to the control passage.

Δp_{stat}:

Line pressure behind the valve. This essentially corresponds to the idle pressure when the pump is switched off, caused for example by the fluid level in the system, increased pressure due to pressure tanks, steam pressure, etc.

For valves that close with pressure, the static pressure plus the pump pressure are used.

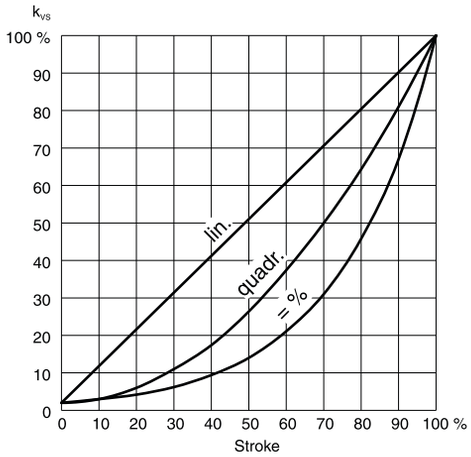
Characteristic for actuators with positioner

On actuator AVM 105S, AVM 115S or AVM 321S

Equal-percentage/linear

Can be set using coding switch

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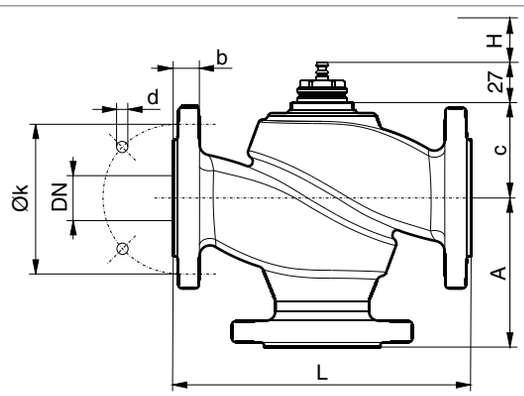


Disposal

When disposing of the product, observe the currently applicable local laws.
More information on materials can be found in the Declaration on materials and the environment for this product.

Dimension drawing

DN 15…50

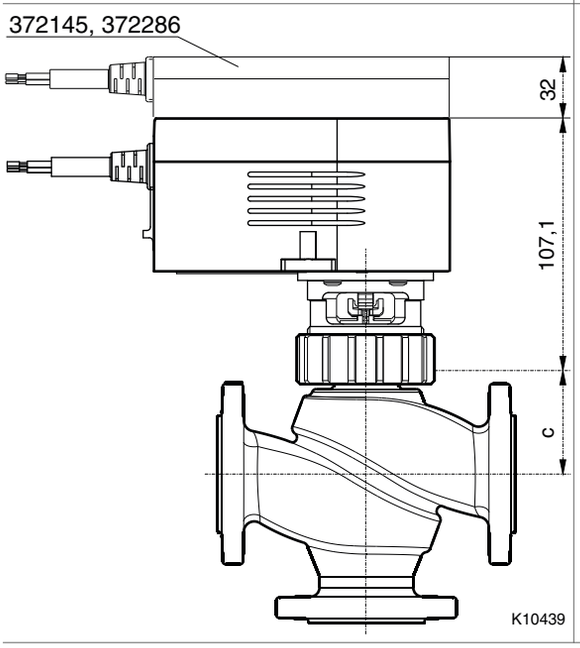


VUE, BUE	DN	A	c	L	H	k	d	b
015	15	70	41,5	130	8	65	14 x 4	14
020	20	75	48	150	8	75	14 x 4	16
025	25	80	54,5	160	8	85	14 x 4	16
032	32	95	60,5	180	8	100	19 x 4	18
040	40	100	70,5	200	8	110	19 x 4	18
050	50	115	71	230	8	125	19 x 4	20

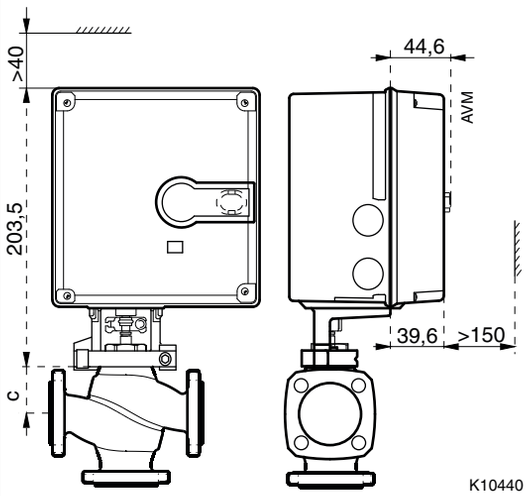
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Combinations

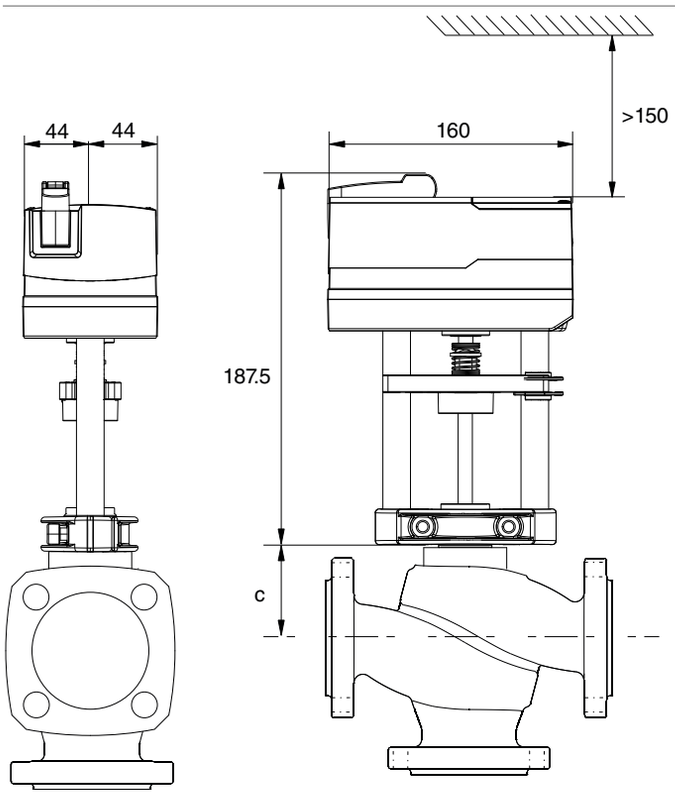
AVM 104 / 105 / 114 / 115 /S



AVF / 124 / 125 /S

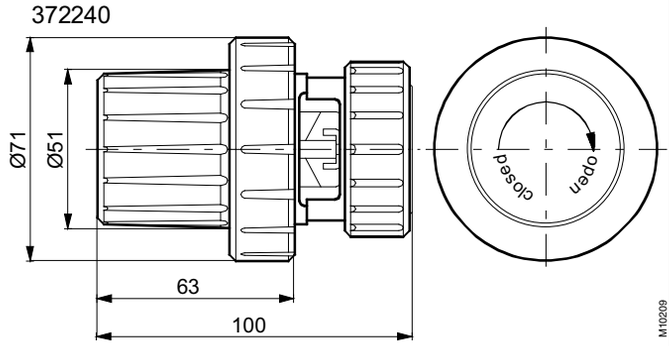


AVM 321/S

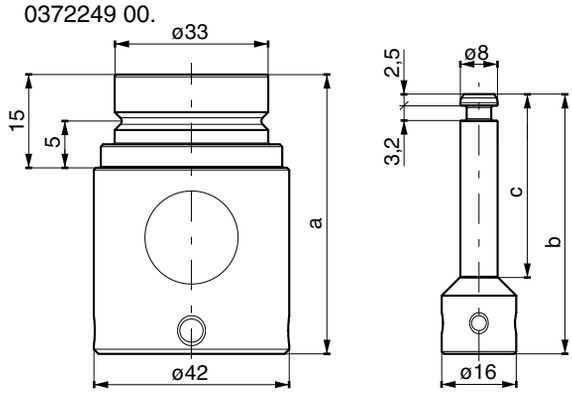


Accessories

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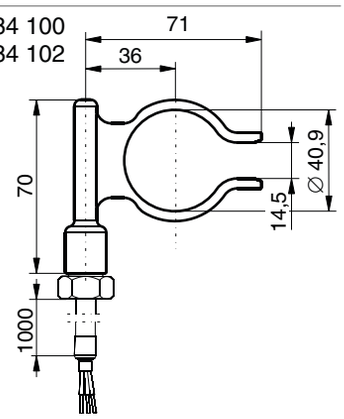


0372249 00.



	a [mm]	b [mm]	c [mm]
0372249 001	60	55,8	40
0372249 002	80	75,8	60

0378284 100
0378284 102



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