

## VUN: 2-way valve with male thread, PN 16

### How energy efficiency is improved

Reliable actuation in efficient control systems

### Features

- Regulating valve free of silicone grease with male thread (DIN/EN ISO 228-1) for cold or hot water in closed circuits
- In combination with valve actuators AVM 105(S), 115(S), 321(S) and AVF 124, 125S as a control unit
- Equal-percentage (F300) / linear (F200) characteristic, can be set with SUT valve actuators (SAUT-ER Universal Technology)
- The valve is closed when the spindle is moved out
- Closes either against or with the pressure
- Stainless steel spindle
- Valve body and seat in dezincification-resistant (DZR) cast brass
- Plug with glass-fibre-reinforced PTFE sealing ring made of dezincification-resistant (DZR) cast brass
- Stuffing box with wiper ring made from dezincification-resistant (DZR) cast brass and double O-ring seal made from EPDM

### Technical data

Parameters		
Nominal pressure		16 bar
Control ratio		> 50:1
Valve characteristic		F200 = linear F3*0 = equal percentage
Nominal stroke		8 mm
Leakage rate		≤ 0.02% of $k_{VS}$ value

Ambient conditions		
Operating temperature <sup>1)</sup>		-15...150 °C
Operating pressure up to 120 °C		16 bar
Operating pressure up to 130 °C		13 bar
Operating pressure up to 150 °C		10 bar

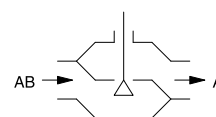
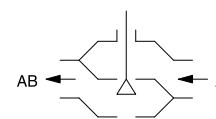
Overview of types				
Type	Nominal diameter	$k_{VS}$ value	Connection	Weight
VUN015F350	DN 15	0.4 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F340	DN 15	0.63 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F330	DN 15	1 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F320	DN 15	1.6 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F310	DN 15	2.5 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F300	DN 15	4 m <sup>3</sup> /h	G1" B	0.82 kg
VUN020F300	DN 20	6.3 m <sup>3</sup> /h	G1¼" B	1 kg
VUN025F300	DN 25	10 m <sup>3</sup> /h	G1½" B	1.3 kg
VUN032F300	DN 32	16 m <sup>3</sup> /h	G2" B	1.74 kg
VUN040F300	DN 40	22 m <sup>3</sup> /h	G2¼" B	2.52 kg
VUN050F300	DN 50	28 m <sup>3</sup> /h	G2¾" B	3.44 kg
VUN050F200	DN 50	40 m <sup>3</sup> /h	G2¾" B	3.44 kg

Accessories	
Type	Description
0361951015	1 screw fitting for male thread with flat seal, DN 15
0361951020	1 screw fitting for male thread with flat seal, DN 20
0361951025	1 screw fitting for male thread with flat seal, DN 25

<sup>1)</sup> Use stuffing-box heater at temperatures below 0 °C; use temperature adaptor (accessory) at temperatures above 100 °C



VUN032F300



Type	Description
0361951032	1 screw fitting for male thread with flat seal, DN 32
0361951040	1 screw fitting for male thread with flat seal, DN 40
0361951050	1 screw fitting for male thread with flat seal, DN 50
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)
0372249002	Adaptor required when temperature of the medium is 130...150 °C
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 VUN with electric actuators

**i** *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.*

**i** *Definition of  $\Delta p_s$ : 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.*

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

### Pressure differences

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

### $\Delta p$ [bar]

Closes against the pressure	$\Delta p_{max}$	$\Delta p_{max}$	$\Delta p_{max}$	$\Delta p_{max}$	$\Delta p_{max}$
VUN015F350	4.0	4.0	4.0	6.0	6.0
VUN015F340					
VUN015F330					
VUN015F320					
VUN015F310					
VUN015F300					
VUN020F300	4.0	4.0	4.0	5.0	5.0
VUN025F300	4.0	4.0	4.0	4.0	4.0
VUN032F300	3.0	3.0	3.0	3.5	3.5
VUN040F300	1.9	1.9	1.9	3.0	3.0
VUN050F300	1.0	1.0	1.0	2.4	2.4
VUN050F200					

Cannot be used to close with the pressure

Actuator	AVM321F110 AVM321F112	AVM321SF132	AVF124F130 AVF124F230	AVF125SF132 AVF125SF232
Actuating power	1000 N	1000 N	500 N	500 N
Control signal	2-/3-point	2-/3-pt., 0...10 V, 4...20 mA	3-point	2-/3-pt., 0...10 V, 4...20 mA
Running time	48/96 s	32/96 s	60/120 s	60/120 s

 $\Delta p$  [bar]

Closes against the pressure	$\Delta p_{\max}$	$\Delta p_{\max}$	$\Delta p_{\max}$	$\Delta p_s$	$\Delta p_{\max}$	$\Delta p_s$
VUN015F350	10.0	10.0	6.0	16.0	6.0	16.0
VUN015F340						
VUN015F330						
VUN015F320						
VUN015F310						
VUN015F300						
VUN020F300	10.0	10.0	5.0	12.0	5.0	12.0
VUN025F300	10.0	10.0	4.0	8.0	4.0	8.0
VUN032F300	10.0	10.0	3.5	6.0	3.5	6.0
VUN040F300	6.0	6.0	3.0	3.5	3.0	3.5
VUN050F300	4.0	4.0	2.4	2.4	2.4	2.4
VUN050F200						

## Closes with the pressure

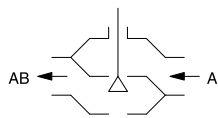
VUN015F350	6.0	6.0	4.0	16.0	4.0	16.0
VUN015F340						
VUN015F330						
VUN015F320						
VUN015F310						
VUN015F300						
VUN020F300	6.0	6.0	2.8	16.0	2.8	16.0
VUN025F300	5.0	5.0	2.8	16.0	2.8	16.0
VUN032F300	4.0	4.0	2.0	16.0	2.0	16.0
VUN040F300	2.5	2.5	1.5	16.0	1.5	16.0
VUN050F300	2.0	2.0	0.8	16.0	0.8	16.0
VUN050F200						

⚠ At temperatures above 100°C, accessories are required

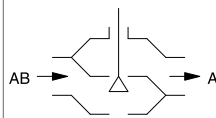
## Description of operation

The valve can be moved to any intermediate position with an electric actuator. When the valve spindle is pulled out, the valve is closed. Closing against the operating pressure is possible with valve actuator AVM 105(S), 115S, 124, 125S or valve actuator with spring return AVF 124, 125S. Closing with operating pressure is only admissible with AVM 124, 125S and AVF 124, 125S.

## Closing against the pressure



## Closing with the pressure



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 media 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. This enables closing against or with the operating pressure. It also eliminates the vibration of the plug in the end position while simultaneously preventing premature cavitation and erosion. As there is no opposing spring force when closing the valve, the full power of the actuator is available for the admissible pressure difference. The brass plug controls the equal-percentage flow rate in the control passage (exception VUN 050 F200: flow rate linear). The tightness of the valve is ensured by the seat incorporated in the body, and on the plug by the seal made of PTFE reinforced with fibre glass. The stuffing box is maintenance-free. This consists of a brass body, two 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 can be set to linear or quadratic as required. The combination of AVM 105S and DN 50 F200 cannot be set to equal-percentage; use AVM 115S.

So that impurities are retained in the water (welding beads, rust particles, etc.) and the spindle seal is not damaged, we recommend installing collecting filters, for example one for each floor or pipe run.

Requirements for water quality as per VDI 2035.

All valves must be used in closed circuits only. An excessively high oxygen mixture may damage the valve in open circuits. To avoid this, an oxygen binding agent must be used; here the compatibility must be clarified with the manufacturer with regard to corrosion.

The material list can be used here.

The valves are usually insulated in the systems. However, note that the neck into which the actuator is inserted is not insulated. Additionally, a stuffing box heater absolutely must not be insulated.

To prevent any disturbing flow noise from being audible in quiet rooms, the pressure difference over the valve must not exceed 50% of the specified values.

The manual adjuster (accessory) is fitted onto the valve like an actuator. The actuator is automatically connected to the valve spindle when the valve is opened with the knob.

### Using with water

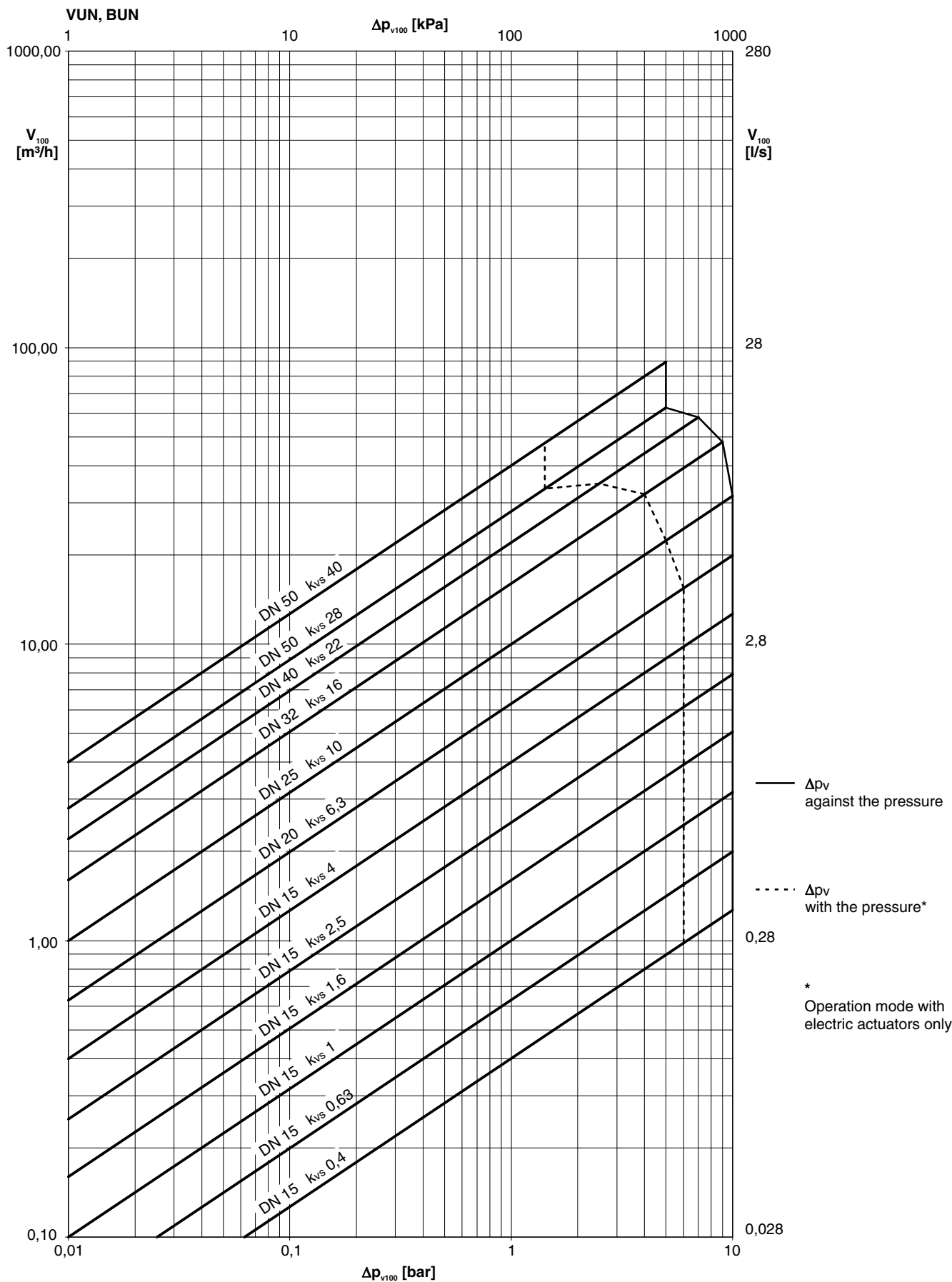
When using water mixed with glycol or an inhibitor, the compatibility of the materials and seals used in the valve should be clarified with the manufacturer. The materials table shown below may be used. When glycol is used, we recommend using a concentration of between 20% and 55%.

The valves are not suitable for potentially explosive atmospheres. The materials selected are admissible for drinking water areas. The complete valve is not approved for drinking water.

### 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.

Flow-rate chart



Type	$\Delta p_v$	
	Against the pressure	With the pressure
VUN 015 F350	10	6
VUN 015 F340	10	6
VUN 015 F330	10	6
VUN 015 F320	10	6
VUN 015 F310	10	6
VUN 015 F300	10	6
VUN 020 F300	10	6
VUN 025 F300	10	5
VUN 032 F300	9	4
VUN 040 F300	7	2.5
VUN 050 F300	5	1.5
VUN 050 F200	5	1.5

### Additional technical data

Technical information	
Pressure and temperature data	EN 764, EN 1333
Fluidic parameters	EN 60534, page 3
SAUTER slide rule for valve sizing	P100013496
Technical manual: "Control units"	7 000477 001
Parameters, fitting notes, control, general information	Applicable EN, DIN, AD, TRD and accident prevention regulations
CE conformity as per pressure equipment directive, no CE label (fluid group II)	97/23/EC, Article 3.3

### Additional version information

Valve body in dezincification-resistant permanent mould casting (EN 1982) with cylindrical male thread as per ISO 228/1, class B, flat seal on body. Stuffing box with double O-ring made of ethylene propylene.

### Material numbers as per DIN

	DIN material no.	DIN designation
Valve body	CC752S-GM	Cu Zn 35 Pb 2 Al-C
Valve seat	CC752S-GM	Cu Zn 35 Pb 2 Al-C
Spindle	1.4305	X 8 Cr Ni S 18-9 + 1G
Plug	CW 602 N	Cu Zn 36 Pb 2 As
Plug seal	PTFE	
Stuffing box	CW 602 N	Cu Zn 36 Pb2 As

### Additional details on the definitions of pressure difference

#### $\Delta p_v$ :

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.

#### $\Delta p_{max}$ :

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

Static pressure and flow effects are considered. This value ensures trouble-free stroke movement and tightness. The value  $\Delta p_v$  of the valve is never exceeded.

#### $\Delta p_s$ :

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,  $\Delta p_s$  can be greater than  $\Delta p_{max}$  or  $\Delta p_v$ . 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.

**$\Delta p_{stat}$ :**

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.

**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.

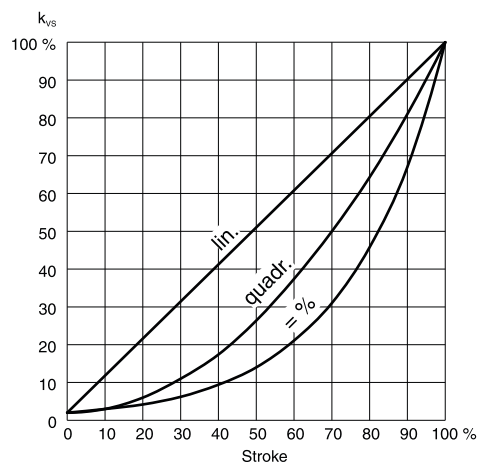
**Characteristic for actuators with positioner**

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

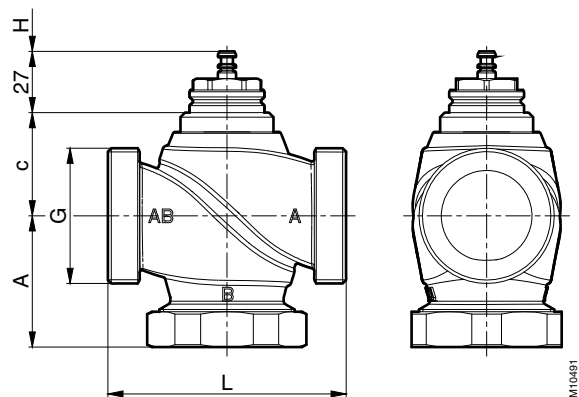
Equal-percentage/linear

On actuator AVF 125S

Equal-percentage/linear/quadratic



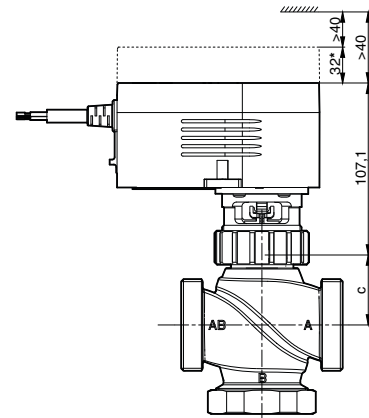
**Dimension drawing**



DN	A	c	L	H	G
15	58.5	45.5	100	8	G 1"
20	58.0	38.5	100	8	G 1¼"
25	60.7	42.5	105	8	G 1½"
32	62.5	45.5	105	8	G 2"
40	75.0	59.0	130	8	G 2¼"
50	87.0	67.5	150	8	G 2¾"

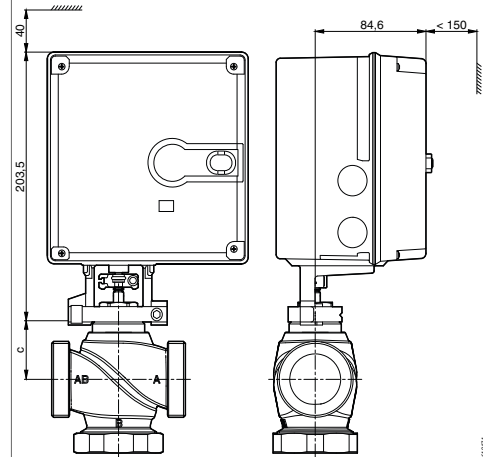
**Combinations**

**AVM 105(S), 115(S)**

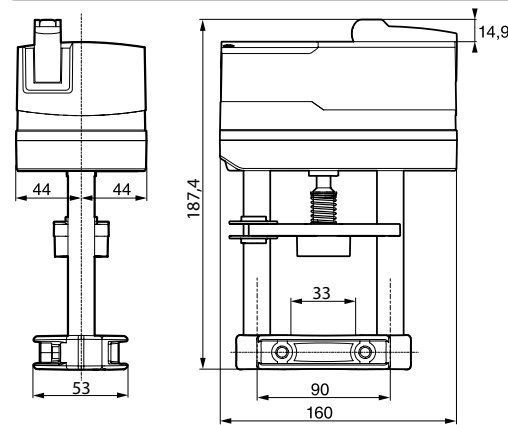


\* with accessory 372145, 372286

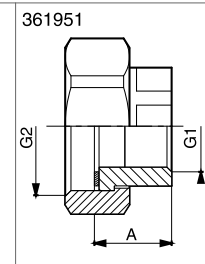
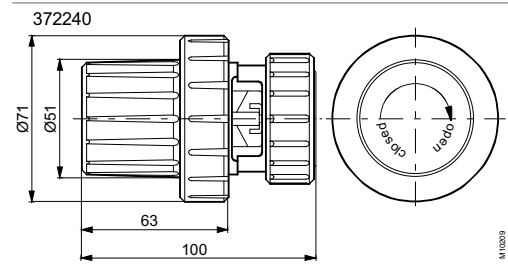
**AVF 124, 125S**



**AVM 321S**

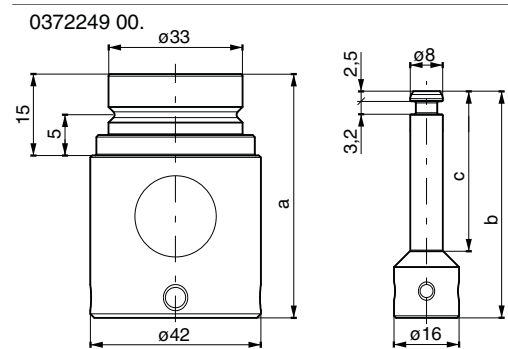


**Accessories**



DN	A	G1	G2
40	33	Rp 1 1/2	G 2 1/4
50	32,3	Rp 2	G 2 3/4

M08806b



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

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