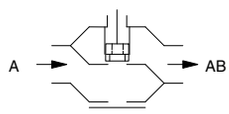
VUP: Pressure-relieved 2-way flanged valve, PN 25 (el.)

VUP040F304



How energy efficiency is improved

Efficiency means precise and reliable control

Features

- Continuous control of cold and hot water in closed circuits, and of steam
- In combination with valve actuators AVM 322(S), AVM 234S, AVF 234S and AVN 224S as a control unit
- Water quality as per VDI 2035
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, with pressure compensation, galvanised and painted black
- Equal-percentage characteristic, can be set with SUT (SAUTER Universal Technology) valve actuators to linear or quadratic
- The valve is closed when the spindle is moved in
- Valve body made of ductile cast iron
- Valve seat, plug and spindle made of stainless steel
- Closing procedure only against the pressure
- Maintenance-free stuffing box in brass with spring-loaded PTFE-FKM-PTFE washer

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ValveDim app

Technical data

Parameters		
	Nominal pressure	PN 25
	Connection	Flange as per EN 1092-2, form B
	Valve characteristic	Equal percentage
	Control ratio	> 100:1
	Leakage rate at max. Δp_S	< 0.05% of K_{VS} value

Admissible ambient conditions		
	Operating temperature[1)]	DN 40…DN 100: -20…200 °C DN 125, DN 150: 0…110 °C
	Operating pressure	Up to 120 °C, 25 bar Up to 200 °C, 20 bar

Overview of types

Type	Nominal diameter	K_{VS} value	Valve stroke	Weight	Regulations
VUP040F304	DN 40	25 m³/h	14 mm	10 kg	Article 4.3 PED
VUP050F304	DN 50	40 m³/h	25 mm	14 kg	Cat. I PED, CE
VUP065F304	DN 65	63 m³/h	25 mm	18 kg	Cat. I PED, CE
VUP080F304	DN 80	100 m³/h	25 mm	25.5 kg	Cat. I PED, CE
VUP100F304	DN 100	160 m³/h	40 mm	36.5 kg	Cat. I PED, CE
VUP125F304	DN 125	250 m³/h	40 mm	56.5 kg	Article 4.3 PED
VUP150F304	DN 150	350 m³/h	40 mm	84.5 kg	Article 4.3 PED

PED: Directive 2014/68/EU for pressure equipment, fluid group II, liquid or steam pressure

Cat. I / CE: Category I valve with CE marking

Accessories

Type	Description
0372336180	Adaptor (required when temperature of the medium is 130...180 °C)
0372336240	Adaptor (required when temperature of the medium is 180...200 °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
0378356001	Replacement pack for stuffing box DN 40…80
0378357001	Replacement pack for stuffing box DN 100…150

[1)] *Use stuffing box heater at temperatures below 0 °C; use the relevant adapter (accessory) at temperatures above 130 °C or 180 °C*

Combination of VUP with electric actuators

Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. Any warranty will be invalidated if valve actuators from other manufacturers are used.

***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.*

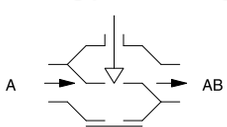
Pressure differences

Actuator	**AVM322F120 AVM322F122**	**AVM322SF132**	**AVM234SF132**	**AVF234SF132 AVF234SF232**		**AVN224SF132 AVN224SF232**	
Actuating power	1000 N	1000 N	2500 N	2000 N		1100 N	
Control signal	2-/3-point	2-/3-point, 0…10 V, 4…20 mA	2-/3-point, 0…10 V, 4…20 mA	2-/3-point, 0…10 V, 4…20 mA		2-/3-Pt., 0…10 V, 4…20 mA	
Running time for DN 40	84/168 s	56/84 s	28/56/84 s	28/56/84 s		28/56/84 s	
Running time for DN 50...80	–	–	50/100/150 s	50/100/150 s		50/100/150 s	
Running time for DN 100...150	–	–	80/160/240 s	80/160/240 s		80/160/240 s	
Closes against the pressure	Δp_{max} [bar]	Δp_{max} [bar]	Δp_{max} [bar]	Δp_{max} [bar]	Δp_s [bar]	Δp_{max} [bar]	Δp_s [bar]
VUP040F304	25.0	25.0	25.0	25.0	25.0	25.0	25.0
VUP050F304	–	–	25.0	25.0	25.0	20.0	25.0
VUP065F304	–	–	25.0	25.0	25.0	16.0	17.0
VUP080F304	–	–	25.0	25.0	25.0	12.0	15.0
VUP100F304	–	–	25.0	20.0	22.0	9.0	12.0
VUP125F304	–	–	19.0	14.0	20.0	6.0	6.0
VUP150F304	–	–	15.0	10.0	15.0	4.0	4.0
Cannot be used to close with the pressure							

Description of operation

The valve can be moved to any intermediate position with an electric actuator. When the spindle is pressed in, the valve is closed. The direction of flow on the valve must be considered, as it may only be used in the direction of closure “against the pressure”. The flow parameters comply with EN 60534.

Closing procedure against the pressure



These valves are used for great differential pressures, and thanks to the pressure compensation standard valve actuators can be used. The valve spindle is automatically and firmly connected to the actuator spindle. The plug has a piston form. Depending on the nominal diameter, the upstream pressure is directed to the rear side of the plug via two or more holes in the plug. The forces acting on the plug are relieved up to the area of the stem surface. The pressure-relieved plug is also sealed against the outlet. This design means there is very little flow in the pressure relief area. This minimises the risk that pressure relief is impaired by dirt.

The stuffing box is maintenance-free. Two slightly tapered flat seals are inserted between an FKM seal and a spring. The spring ensures permanent tension on the seals, thus guaranteeing that they are leaktight against the spindle. In addition, a glycerine grease reserve ensures that the spindle is constantly lubricated. The glycerine grease reserve also stops particles that may be contained in the medium from penetrating to the PTFE sealing.

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 regulations must also be adhered to. Changing or converting the product is not admissible.

Improper use

The flanged valve is not suitable for use in drinking water installations and in ATEX zones.
The valves are not approved for safety functions.

Engineering and fitting notes

The valves are combined with the AVM 322(S) or AVM 234S valve actuators without spring return or with the AVF 234S or AVN 224S valve actuators with spring return. When the system is first commissioned, the AVM 322(S), AVM 234S and AVF 234S actuator moves out and the connector automatically closes when it reaches the valve spindle. The stroke of the valve is also detected by the actuator, and no further adjustments are required. The force-based cut-off in the actuator always ensures that leakage is kept to a minimum. With the SUT valve actuators, the characteristic, which starts as equal-percentage, can be set to linear or quadratic as required.
When using AVN 224S valve actuators, the actuator must be initialised manually. For a more detailed description, see PDS 51.379 “Initialisation and feedback signal”.

Additional information

	Document no./link
Fitting instructions for VUP	0505963033
Fitting instructions for AVM 322(S)	P100011900
Fitting instructions for AVM 234S	0505919033
Fitting instructions for AVF 234S	0505920033
Fitting instructions for AVN 224S	0505927033
SAUTER slide rule for valve sizing	P100013496
Technical manual on control units	7000477001
Declaration on materials and the environment	MD 56.122

Fitting

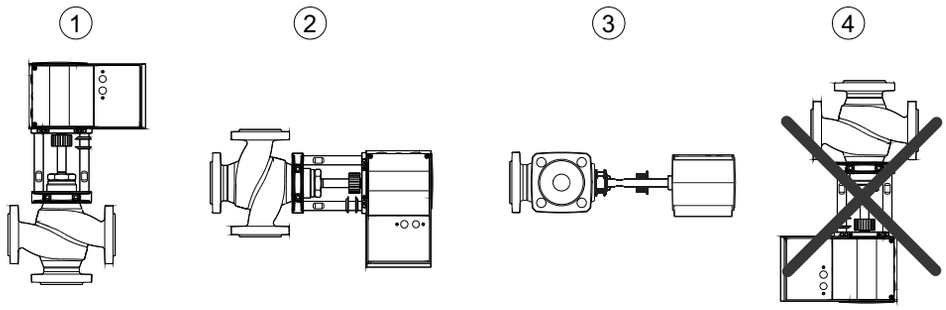
The actuator is mounted directly on the valve and fastened with screws. The actuator is connected with the valve spindle automatically.

NOTICE!
Damage to the sealing surface.
►When fitting the actuator on the valve, take care not to turn the plug on the valve seat.

Note
Ensure secure fitting to prevent the risk of touching moving parts or hot/cold surfaces on the valves.

Fitting position

The control unit can be fitted in any position except suspended (4).
If fitted horizontally (2) and (3), the maximum permissible weight on the valve is 25 kg. If this weight is exceeded, the customer must install a support for the control unit.



For a media temperature above 130 °C or above 180 °C: The horizontal fitting positions (2) and (3) are recommended. The intermediate piece corresponding to the temperature must be used.
To protect the valve actuator from overheating, the valve and pipes must be insulated. When insulating the valve, it may only be insulated up to the connecting clip of the actuator.

Using with steam

The valves (DN 40…DN 100) can be used for steam applications up to 200 °C with the same Δp_{max} values as listed in the combination tables. When using the valve, make sure that it does not operate mainly on the lower third of its stroke range. This position leads to an extremely high flow speed, which greatly reduces the serviceable life of the valve.

Using with water

So that impurities are retained in the water (e.g. weld 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.
When using an additive in the water, the compatibility of the valve materials must be checked with the manufacturer of the medium. The materials table shown below may be used. When using glycol, we recommend a concentration between 20% and 55%.

Hydraulics and noise in plants

The valves can be used in a low-noise environment. To prevent noise, the pressure differences Δp listed below should not be exceeded. These are listed as recommended values in the table of pressure losses. 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. Cavitation accelerates wear and causes noises. To prevent cavitation, the differential pressure on the valve should not exceed the value Δp_{crit}:

$\Delta p_{crit} = (p1 – pv) \times 0.5$

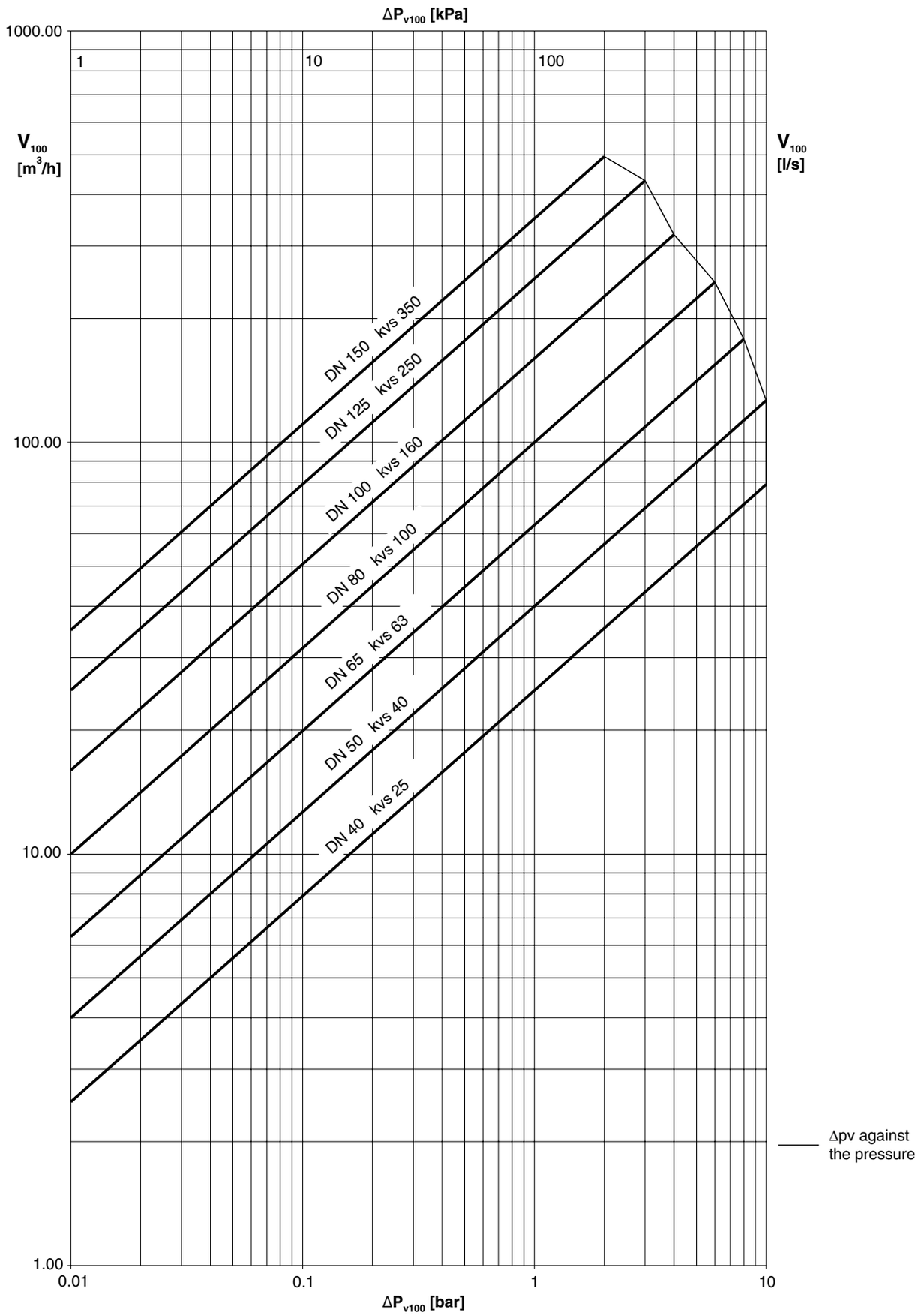
p1 = upstream pressure before the valve (bar)

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 a safety function with a fast stroke movement (using a spring), this value can exceed Δp_{max}.

Flow-rate chart for VUP



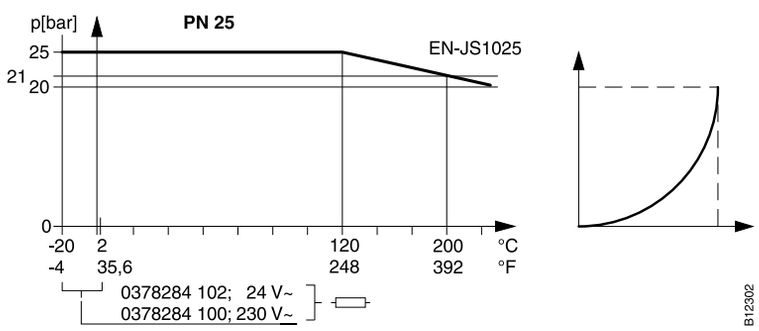
Additional version information

Valve body made of ductile cast iron as per EN 1563, code EN-GJS-400-18-LT, material number EN-JS 1025 with smooth drilled flanges as per EN 1092-2, seal form B. Valve body protected against corrosion by zinc coating, 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. Brass stuffing box with PTFE/FKM/PTFE spring-loaded packing.

Material numbers as per DIN

	DIN material no.	DIN designation
Valve body	EN-JS1025	EN-GJS-400-18-LT (GGG40.3)
Valve seat	1.4305	X8CrNiS18-9
Spindle	1.4305	X8CrNiS18-9
Plug	1.4305	X8CrNiS18-9
Stuffing box	CW614N	CuZn39Pb3F36
Attachment/valve body seal		FKM
Groove ring		PTFE

Pressure/temperature assignment



Definition of pressure differences

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 both 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 tightness. 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 safety function with a rapid stroke movement, Δp_S can be greater than Δp_{max} or Δp_V. The flow disturbing effects that arise here are quickly passed through. They are of secondary importance with this method 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 or steam pressure. For valves that close with pressure, the static pressure plus the pump pressure are used.

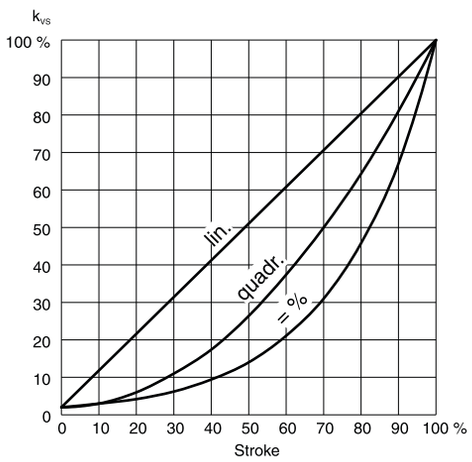
Valve design

SAUTER provides various tools for valve design and engineering:

- ValveDim mobile app
- ValveDim PC program
- ValveDim slide rule

You can find the tools under the link www.sauter-controls.com/en/performance/valve-calculation/ or scan the QR code

Characteristic for actuators with positioner (24 V only)



On actuators AVM 322(S), AVM 234S, AVF 234S or AVN 224S

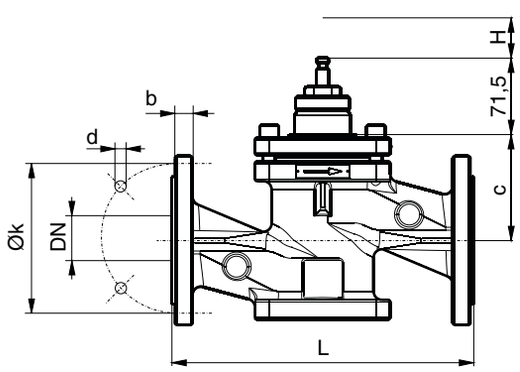
——— Equal-percentage, linear, quadratic
Can be set using coding switch

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 drawings

All dimensions in mm.

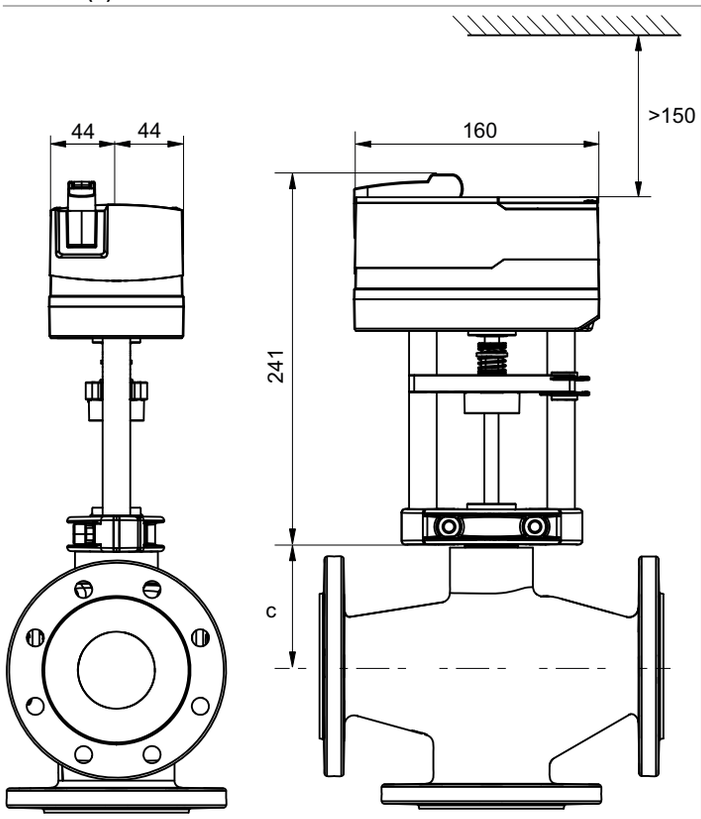


VUP	DN	c	L	H	k	d	b
040	40	88,5	200	14	110	19 x 4	19
050	50	103,0	230	25	125	19 x 4	19
065	65	104,0	290	25	145	19 x 8	19
080	80	110,0	310	25	160	19 x 8	19
100	100	183,0	350	40	190	23 x 8	19
125	125	202,0	400	40	220	28 x 8	19
150	150	222,0	480	40	250	28 x 8	20

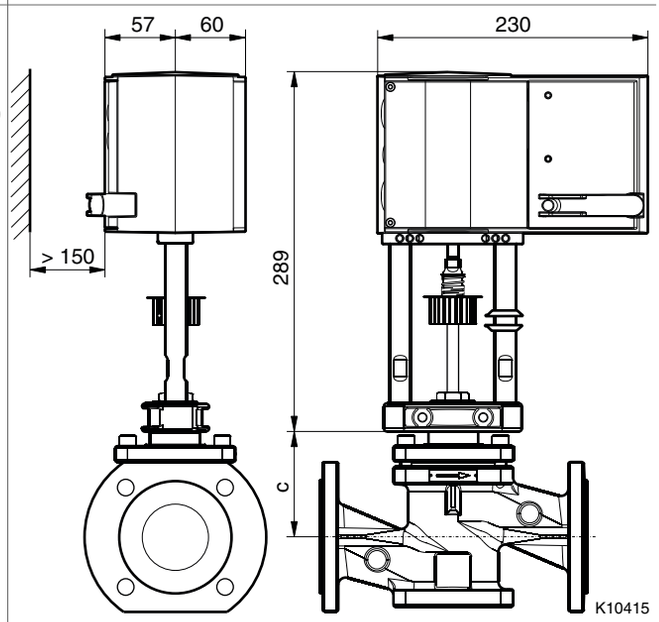
Combinations

i *For dimension c, see tables above.*

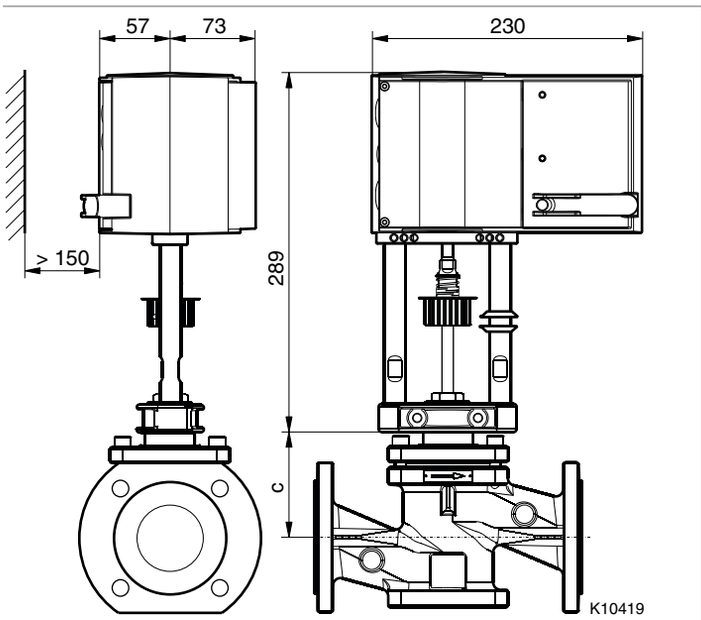
AVM 322(S)



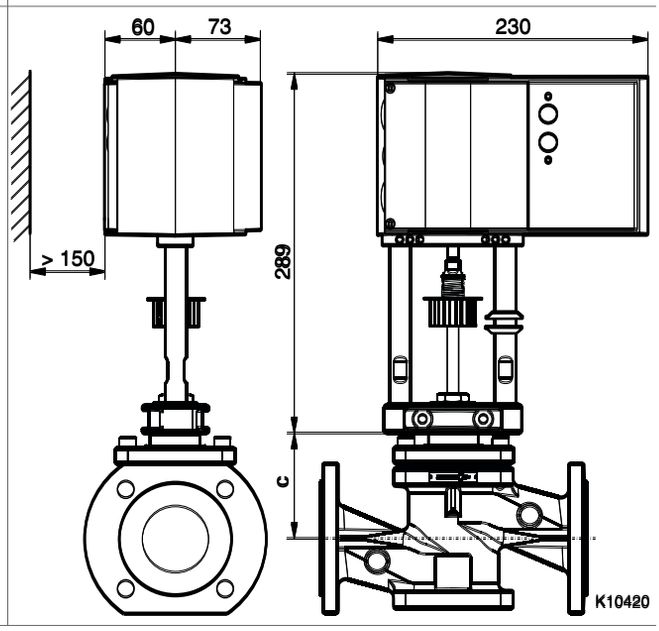
AVM 234S



AVF 234S

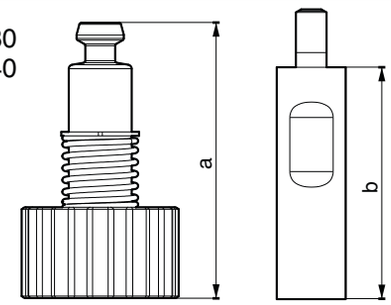


AVN 224S



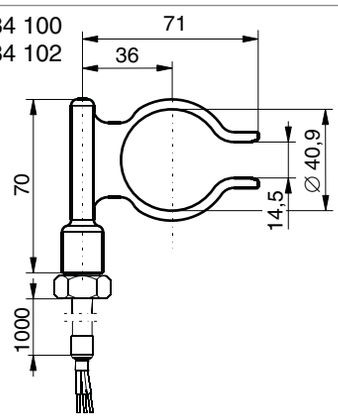
Accessories

0372336 180
0372336 240



0372336	T (°C)	a (mm)	b (mm)
180	180	69,4	60
240	240	109,4	100

0378284 100
0378284 102



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