

VUP: Pressure-relieved through flanged valve, PN 25

How energy efficiency is improved

Thanks to the pressure compensation, savings can be made with the actuator. Precision and reliability go without saying.

Areas of application

Continuous control of cold/warm/hot water, water vapour and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features

- Nominal pressure 25 bar
- Control valve contains no silicone grease; with pressure compensation; galvanised and painted black
- Nominal diameters DN40 to DN150
- Equal percentage characteristic
- With the spindle pressed in, the valve is closed
- Closes only against the pressure
- Temperature range up to 200°C

Technical description

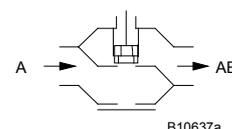
- Valve with flange connection as per EN 1092-2, Form B raised face
- Ductile cast iron valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel cone
- Maintenance-free brass stuffing box with spring-loaded PTFE / FKM / PTFE washer



T110435



Y07544



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Type	Nominal diameter DN	Connection	k_{VS} value m ³ /h	Weight kg
VUP 040 F304	40	PN 25	25	10
VUP 050 F304	50	PN 25	40	14
VUP 065 F304	65	PN 25	63	18
VUP 080 F304	80	PN 25	100	25,5
VUP 100 F304	100	PN 25	160	36,5
VUP 125 F304	125	PN 25	250	56,5
VUP 150 F304	150	PN 25	350	84,5

Operating temperature ¹⁾	-20...200 °C	Dimension drawing	M10426
Operating pressure	up to 120 °C, 25 bar up to 200 °C, 20 bar -20...-10°C, 18 bar	Installation instructions Valve	MV 505963
Valve characteristic	equal-percentage	Assembly AVP 242	MV 506012
Rangeability	> 100:1	Assembly AVP 243 / 244	MV 506013
Stuffing box	Brass / PTFE / FKM	Declaration on materials	MD 76.122
Leakage rate at max. Δp_s	$\leq 0,05\%$ of k_{VS} value		
Stroke	DN 40 14 mm DN 50...80 25 mm DN 100...150 40 mm		

Zubehör

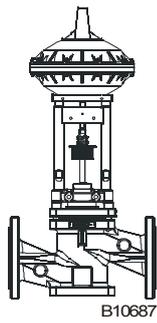
- 0372336 180*** Intermediate piece (required for medium > 130 °C / < 180 °C; MV 505902)
- 0372336 240*** Intermediate piece (required for medium > 180 °C / < 200 °C; MV 505902)
- 0378284 100*** Stuffing box heater, 230 V~; 15 W, for media below 0 °C; MV 505978
- 0378284 102*** Stuffing box heater, 24 V~; 15 W, for media below 0 °C; MV 505978
- 0378356 001** Replacement pack for stuffing box, nominal diameter DN 40-80; MV 505972
- 0378357 001** Replacement pack for stuffing box, nominal diameter DN 100-150; MV 505972

*) Dimension drawing or wiring diagram available under the same number

1) At temperatures below 0°C, use the stuffing box heater; at temperatures above 130 °C or 180 °C use the appropriate intermediate piece (accessory).

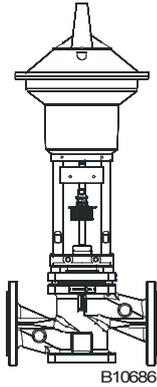
Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter valve drives. Any warranty shall lapse if valve drives from other manufacturers are used.

Combination of VUP, PN 25 with pneumatic drive AVP 242...244



Drive	AVP 242 F021 ²⁾	
Running time ¹⁾	8 s	
Stroke	20 mm	
Valve	Δp_{max}	
VUP 040	22,2	
VUP 050	15,1	
VUP 065	15,1	
VUP 080	9,8	

For temperatures above 130°C, accessories are required



Drive	AVP 243 F031 ²⁾	AVP 244 F031 ²⁾
Running time ¹⁾	24 s	40 s
Stroke	40 mm	40 mm
Valve	Δp_{max}	Δp_{max}
VUP 100	18,5	25
VUP 125	10,7	25
VUP 150	10,7	25

For temperatures above 130°C, accessories are required

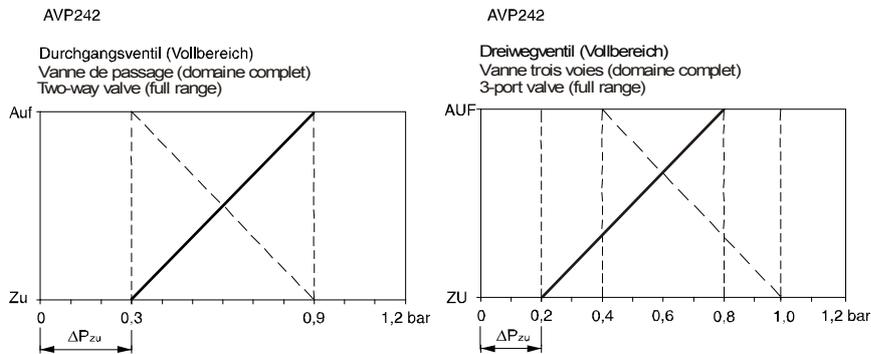
- 1) In relation to the Centair air rate (400 l_v/h) and to a pipe with length of 20 m and diameter of 4 mm
- 2) VUP with AVP only in combination with XSP 31 possible

Valve: Variant F, for technical data and accessories see Valve Type Table
 Drive: Variant F, for technical data, accessories and installation position see section 71
 Example: VUP 040 F304 / AVP 244 F021

Valve control passage A-AB is closed when actuator is pressureless = factory setting
 Valve control passage A-AB is open when actuator is pressureless = on request

Δp_{max} [bar]= Maximum permitted pressure difference over the valve at which the drive can still reliably open and close the valve, taking account of ΔP_v .

Pressure-stroke characteristic (with built-on valve)
 Characteristic is not adjustable:

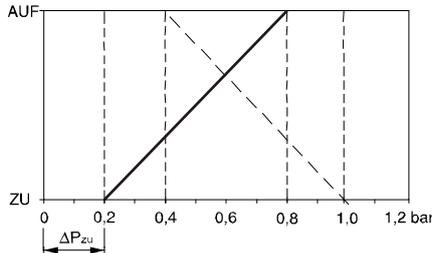
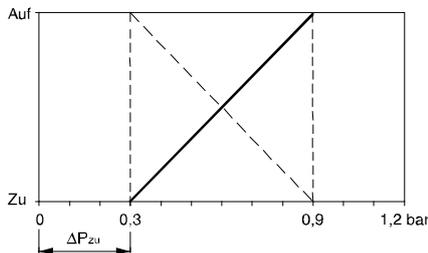


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Characteristic is adjustable:

AVP243
AVP244
Durchgangsventil (Vollbereich)
Vanne de passage (domaine complet)
Two-way valve (full range)

AVP243
AVP244
Dreiwegventil (Vollbereich)
Vanne trois voies (domaine complet)
3-port valve (full range)



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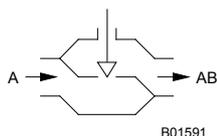
————— = CLOSED without pressure (function E)
- - - - - = OPEN without pressure (function A)

Sequences with XSP31 are possible

Function

The valve can be controlled into any desired intermediate position by means of an electrical drive. If the valve stem is retracted, the valve is closed. Please observe the direction of flow through the valve. Closure with the pressure is not permissible with pneumatic drives, since it would cause pressure surges. Parameters related to flow mechanics conform to EN 60534.

Closing procedure against the pressure



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Description

These valves are used for high differential pressure, and standard valve drives can be used thanks to the pressure compensation. An automatic and fixed connection is made between the valve stem and the drive shaft. The cone is designed as a piston. Depending on the nominal diameter, the upstream pressure is fed to the rear side of the cone via two or more bores in the cone. The forces acting on the cone are cancelled out up to the area of the cone rod surface (stem surface). The pressure-relieved cone is also sealed against the outlet. Thanks to this design, only very little flow occurs in the pressure relief area. The risk that the pressure relief might be impaired by possible contamination is therefore reduced to the minimum.

The stuffing box is maintenance-free. Between a FKM seal and a spring, two slightly conically-shaped flat seals are inserted. The spring ensures constant tension in the seals so that tightness against the valve stem is guaranteed. In addition, a glycerine grease reserve ensures continuous lubrication of the valve stem. Also, the glycerine grease reserve also prevents any particles that might be present in the medium from reaching as far as the PTFE seal.

Engineering and installation notes

The drive is placed directly on top of the valve and is fixed with screws. The connection between the drive and the valve stem is made automatically. The closing point must be set as described in the installation instructions (MV 506012 AVP 242 or MV 506013 AVP 243/244).

Installation position

The final control element can be installed in any desired position, but an installed position facing downwards is not recommended. Condensate and water drips etc. must be prevented from penetrating into the drive. With a horizontal installed position, the permitted maximum weight on the valve is 25 kg unless a support is provided by the customer or others.

up to 130 °C: in any position, but not facing downwards.

above 130 °C: at temperatures above 130 °C or 180 °C respectively, the horizontal installed position is recommended and the intermediate piece corresponding to the temperature must be inserted. However, the intermediate piece can also serve as an extension so as to bring the drive out of the pipe insulation. The pipes must be insulated to protect the valve drive against great heat.

When fitting the drive onto the valve, you must make sure that the cone is not rotated on the stainless steel seat (this would damage the sealing surface). If the valve is insulated, the insulation must only extend as far as the connecting clip of the drive.

Applications with steam

The valves can be used for steam applications up to 200 °C with the same Δp_{\max} values shown in the combination tables. However, we advise you only to use the valves for open-closed switching. For use as a control valve, you should make sure that the majority of the work is not done in the lower third of the valve stroke range. In this position, an extremely high flow speed would develop, severely reducing valve's lifetime.

Applications with water

To ensure that impurities in the water (such as welding beads or particles of rust, etc.) are retained and the stem seal is not damaged, it is advisable to install collective filters, e.g. for each storey or pipe run. Water quality requirements conform to VDI 2035. If an additional medium is used, the compatibility of the valve materials must be clarified with the manufacturer of the medium. The Material Table shown below can be used for this purpose. If glycol is used, we recommend that a concentration of between 20% and 55% should be selected.

The valves are not suitable for drinking water or Ex zones.

Other notes concerning hydraulics and noises in systems

The valves can be used in a low-noise environment. To avoid noises, the pressure differences Δp listed below should not be exceeded. These are shown as recommended values in the pressure loss table.

Pressure difference Δp_v is the maximum pressure that may be present on the valve, regardless of the stroke position, so that the danger of cavitation and erosion is limited. These values are independent of the drive force. Cavitation accelerates wear and causes noises. To prevent cavitation, which mainly occurs with applications involving vapour or steam, differential pressure Δp_{\max} should not exceed value Δp_{krit} :

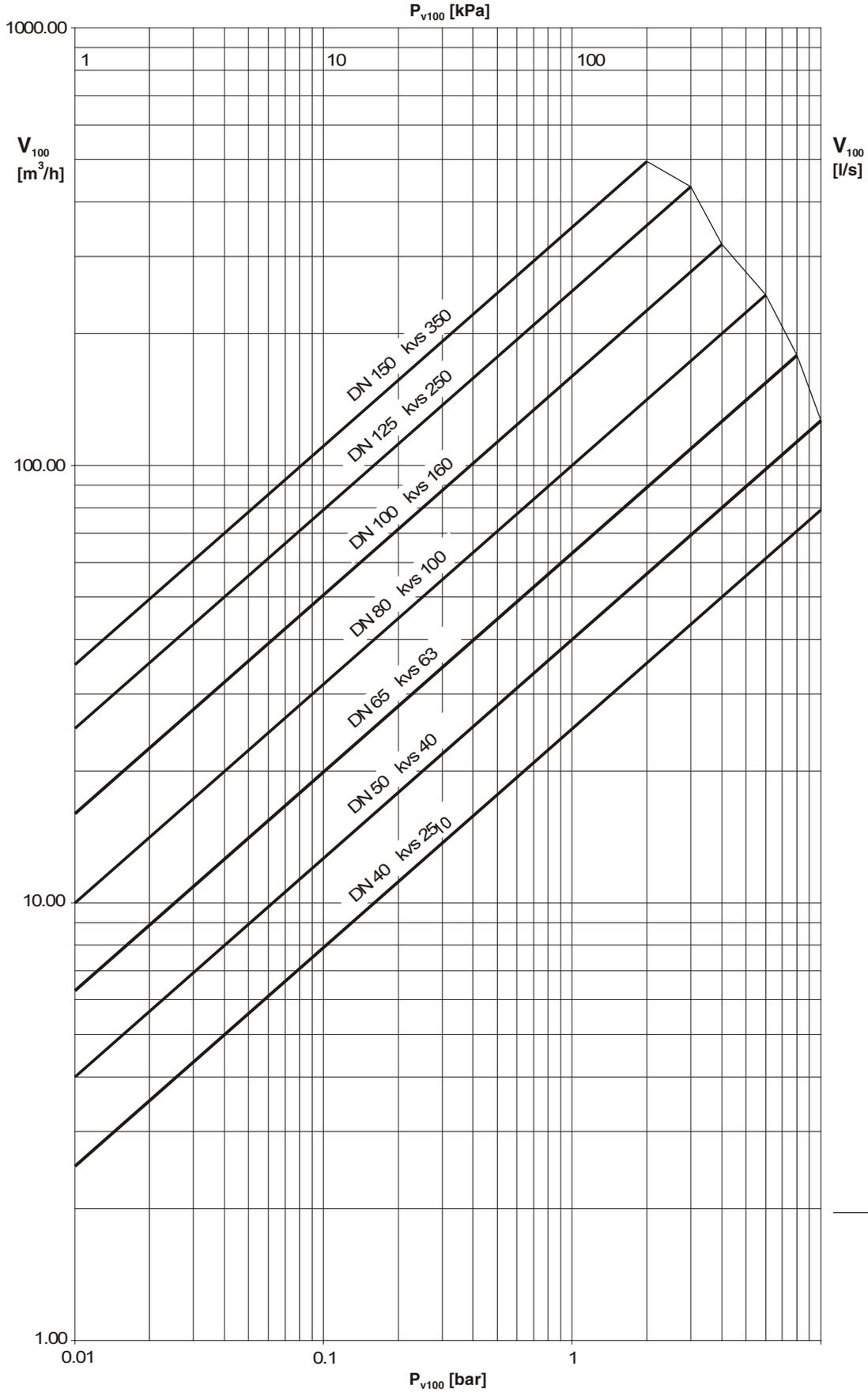
$$\Delta p_{\text{krit}} = (p_1 - p_v) \times 0,5$$

p_1 = upstream pressure in front of the valve (bar) p_v = steam/vapour pressure

Absolute pressure is used for the calculations.

The close/off pressure values which are also listed represent the maximum pressures at which the drive can still use its own force to move the valve. It should be pointed out here that if these pressures are used and the pressure difference Δp_{\max} is exceeded, the valve may sustain damage due to cavitation and erosion. In case of a spring return function, the stated Δp_s values also represent the permitted differential pressure up to which the drive guarantees closure of the valve in case of an incident. As this is a safety function with 'fast' performance of the stroke (by means of the spring), this value may exceed Δp_{\max} . The valves are not suitable for drinking water or Ex zones.

Flow-rate chart VUP



E10737

Additional technical data**Technical information**

- Pressure and temperature data
 Parameters related to flow mechanics
 Sauter slide rule for valve dimensioning
 Manual for slide rule
 Technical manual: 'Regulating Units'
 Parameters, installation notes, control, general

EN 764, EN1333
 EN 60534
 7 090011 001
 7 000129 001
 7 000477 001
 Valid EN, DIN, AD,
 TRD and UVV
 specifications
 /regulations
 97/23/EC
 Article 33
 Category I or II

CE conformity, Pressure Equipment Directive (fluid group II)

VUP 040: CE-0035 symbol
 From VUP 050 onwards: CE-0035 symbol

Additional information on execution

Valve body made of spheroidal-graphite cast to EN 1563. Code EN-GJS-400-18-LT. Material number EN-JS1025 with smooth drilled flanges to EN 1092-2, form B, sealing strip. Valve body to RAL 9005, dark black. Recommendation for the welding- neck flange as per EN 1092-1. Overall valve length to EN 558-1, basic series 1. Flat seal on valve body made of asbestos-free material. Stuffing box made of brass, spring-tensioned with PTFE / FKM / PTFE packing.

DIN material numbers

	DIN material number	DIN designation
Valve body	EN-JS1025	EN-GJS-400-18-LT (GGG40.3)
Valve seat	1.4305	X 8 Cr Ni S 18-9
Stem	1.4305	X 8 Cr Ni S 18-9
Cone	1.4305	X 8 Cr Ni S 18-9
Stuffing box	CW614N	Cu Zn 39 Pb 3 F36
Seal upper part/valve body		FKM
Lip ring		PTFE

Amplified information on pressure difference definitions **Δp_v :**

Maximum permitted pressure difference over the valve for every position of the stroke, limited by noise level and erosion.

This parameter specifically characterises the hydraulic behaviour of the valve as an element through which a flow passes. Monitoring of cavitation and erosion, and the associated development of noise, will improve the valve's lifetime as well as its usability.

 Δp_{max} :

Maximum permitted pressure difference over the valve at which the drive can reliably open and close the valve.

The following are taken into account: static pressure and influences related to flow mechanics. Faultless performance of the stroke and tightness are guaranteed with this value, and in no case is valve value Δp_v exceeded.

 Δp_s :

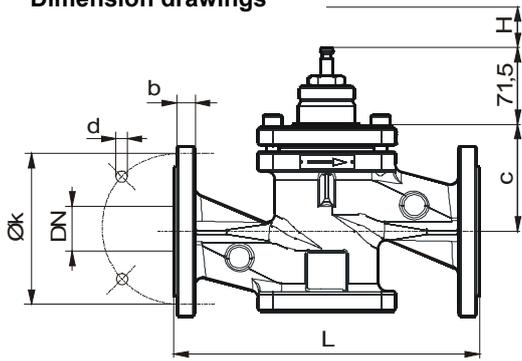
Maximum permitted pressure difference over the valve in case of a fault (such as a voltage failure, excessive increase in temperature and pressure, and pipe break) at which the drive can close the valve tightly and can hold the full operating pressure against atmospheric pressure if need be. As this is a safety function with a 'fast' performance of the stroke, Δp_s may be greater than Δp_{max} or Δp_v . The disruptive influences arising here in connection with flow mechanics are quickly passed through, and are of secondary importance in this functioning mode.

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

 Δp_{stat} :

Pipe pressure upstream of the valve. Essentially corresponds to the dead pressure with the pump switched off, caused (for example) by the fluid level in the system, increase in pressure due to the pressure tank, steam pressure, etc.

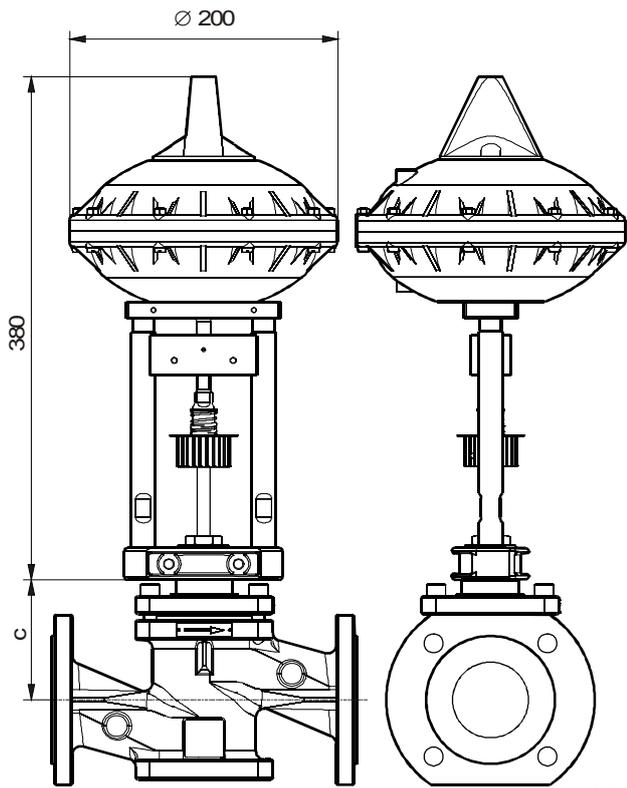
Dimension drawings



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

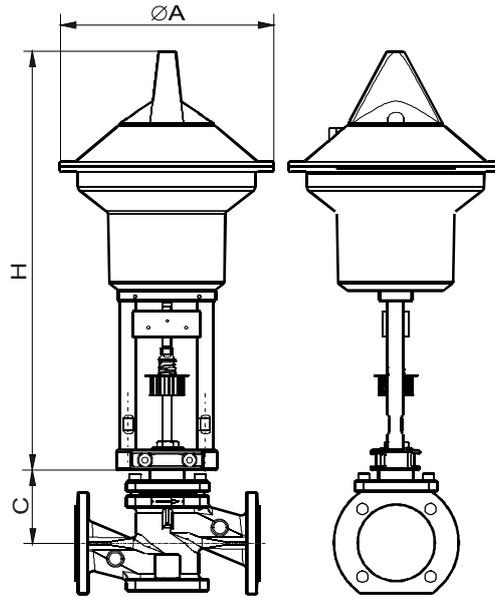
M10426c

AVP 242 F021



K10426a

AVP 243/244

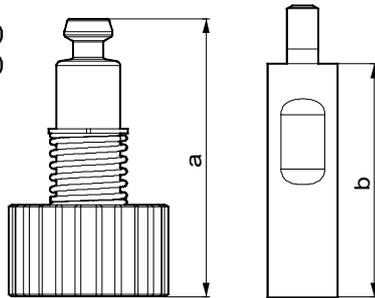


AVP ...	A	H
243 F021	250	497
243 F031	250	517
244 F021	335	536
244 F031	335	556

K10430a

Accessories

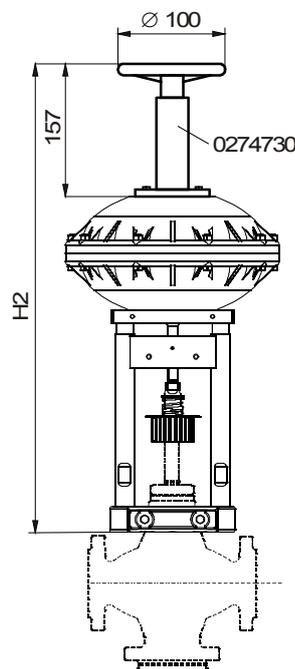
0372336 180
0372336 240



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

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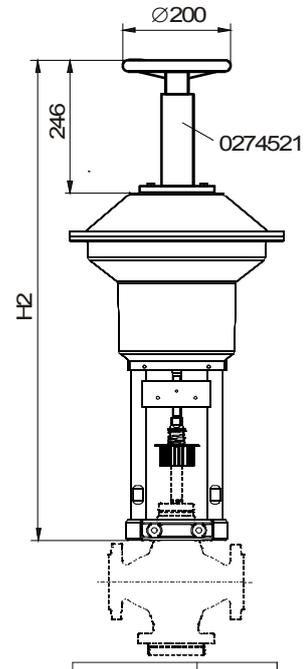
AVP 242



AVP ...	H2
242 F001	472
242 F021	474

K10454b

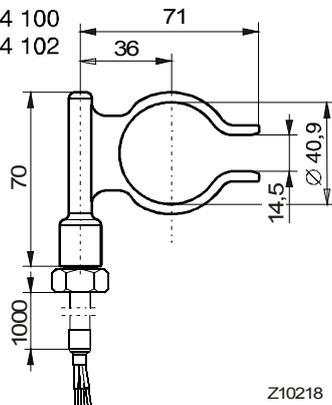
AVP 243/244



AVP ...	H2
243 F021	656
243 F031	676
244 F021	695
244 F031	715

K10455b

0378284 100
0378284 102



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