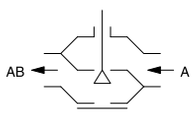
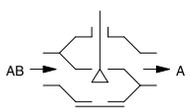
VUG: 2-way flanged valve, PN 25/16 (el.)

VUG032F304





How energy efficiency is improved

Efficiency means precise and reliable control

Features

- Continuous control of cold and hot water in closed circuits
- In combination with valve actuators AVM 322(S), AVM 234S, AVN 224S and AVF 234S as a final control element
- Water quality as per VDI 2035
- Valve with flange connection as per EN 1092-2, seal form B
- Nominal pressure 25 bar (VUG065F316: 16 bar)
- Not suitable for drinking water
- Regulating valve, free of silicone grease, painted black
- Equal percentage characteristic, can be set with SUT (SAUTER Universal Technology) valve actuators to linear or quadratic
- Valve is closed when spindle is moved out
- Closing procedure against the pressure or with the pressure
- Valve body made of ductile cast iron; seat and spindle made of stainless steel
- Plugs of nominal diameter DN 15...50 made of stainless steel with PTFE sealing ring reinforced with fibre glass
- Plugs of nominal diameter DN 65...150 made of stainless steel with metal-to-metal seal
- Maintenance-free stuffing box in brass with spring-loaded PTFE washer

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ValveDim app

Technical data

Parameters		
	Nominal pressure	PN 16/25
	Connection	Flange as per EN 1092-2, form B
	Valve characteristic	Equal percentage
	Control ratio from valve	> 50:1
	Leakage rate at max. Δp_S	≤ 0.05% of K_{VS} value
Ambient conditions		
	Operating temperature[1)]	−10…200 °C VUG150F304: −10…110 °C
	Operating pressure[2)]	PN 16: 16 bar at 30…120 °C 14 bar at 200 °C PN 25: 25 bar at 30…120 °C 21.7 bar at 200 °C
Standards, directives		
	Pressure and temperature data	EN 764, EN 1333
	Flow parameter	EN 60534 (page 3)
	PED 2014/68/EU	Fluid group II, liquid or steam pressure VUG150F304 Fluid group II, liquid

Overview of types

Type	Nominal diameter	K_{VS} value	Valve stroke	Connection	Weight	Approval
VUG015F374	DN 15	0.16 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED
VUG015F364	DN 15	0.25 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED

1) *For cold water applications from -20...30 °C, the VUG***F3**S versions with a stuffing box containing silicone (e.g. VUG015F304S) must be used. VUG***F3**S are only available up to DN 125.*
Use a stuffing box heater at temperatures below 0 °C; use the relevant intermediate piece (accessory) at temperatures above 130 °C or 180 °C. Down to −10 °C, as per AD code of practice W 10, use water with antifreeze and brine solution. When the VUG065F316 is combined with the AVN224S actuator, the permissible media temperature is > 0 °C.

2) *For operating pressures, see diagram "Pressure/temperature assignment"*

Type	Nominal diameter	K_{VS} value	Valve stroke	Connection	Weight	Approval
VUG015F354	DN 15	0.4 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED
VUG015F344	DN 15	0.63 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED
VUG015F334	DN 15	1 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED
VUG015F324	DN 15	1.6 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED
VUG015F314	DN 15	2.5 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED
VUG015F304	DN 15	4 m³/h	20 mm	PN 25/16	4 kg	Article 4.3 of the PED
VUG020F304	DN 20	6.3 m³/h	20 mm	PN 25/16	5 kg	Article 4.3 of the PED
VUG025F304	DN 25	10 m³/h	20 mm	PN 25/16	5.6 kg	Article 4.3 of the PED
VUG032F304	DN 32	16 m³/h	20 mm	PN 25/16	9.1 kg	Article 4.3 of the PED
VUG040F304	DN 40	25 m³/h	20 mm	PN 25/16	11.2 kg	Article 4.3 of the PED
VUG050F304	DN 50	40 m³/h	20 mm	PN 25/16	13.8 kg	CE
VUG065F316	DN 65	63 m³/h	40 mm	PN 16	25 kg	CE
VUG065F304	DN 65	63 m³/h	40 mm	PN 25	25 kg	CE
VUG080F304	DN 80	100 m³/h	40 mm	PN 25/16	37 kg	CE
VUG100F304	DN 100	160 m³/h	40 mm	PN 25	50 kg	CE
VUG125F304	DN 125	250 m³/h	40 mm	PN 25	75 kg	CE
VUG150F304	DN 150	340 m³/h	40 mm	PN 25	100 kg	Article 4.3 of the PED

VUG150F304 only approved for use with water up to Tmax = 110 °C

Accessories

Type	Description
0372336180	Intermediate piece (required when temperature of the medium is 130...180 °C)
0372336240	Adapter (required when temperature of the medium is 180...200 °C)
0378284100	Stuffing box heater 230 VAC, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 VAC, 15 W for medium below 0 °C
0378384001	Torsion protection DN 65...150
0560260001	Stuffing box for VUG/BUG for cold water application with grease containing silicone

Combination of VUG 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 15...50	120/240 s	80/120 s	40/80/120 s	40/80/120 s		40/80/120 s	
Running time for DN 65...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]
VUG015F374 VUG015F364 VUG015F354 VUG015F344 VUG015F334 VUG015F324 VUG015F314 VUG015F304 VUG020F304	16.0	16.0	16.0	16.0	25.0	16.0	25.0
VUG025F304	15.2	15.2	16.0	16.0	25.0	16.0	17.0
VUG032F304	9.4	9.4	16.0	16.0	21.0	10.5	10.5
VUG040F304	6.1	6.1	16.0	13.5	13.5	6.5	6.5
VUG050F304	4.0	4.0	11.0	8.5	8.5	4.0	4.0
VUG065F316	–	–	7.1	5.6	5.6	–	–
VUG065F304	–	–	7.1	5.6	5.6	3.0	3.0
VUG080F304	–	–	4.7	3.4	3.4	2.0	2.0
VUG100F304	–	–	3.0	2.2	2.2	1.1	1.1
VUG125F304	–	–	2.0	1.6	1.6	0.8	0.8
VUG150F304	–	–	1.5	1.2	1.2	0.6	0.6
Closes with the pressure	Δp_{max} [bar]	Δp_{max} [bar]	Δp_{max} [bar]	Δp_{max} [bar]	Δp_s [bar]	Δp_{max} [bar]	Δp_s [bar]
VUG015F374 VUG015F364 VUG015F354 VUG015F344 VUG015F334 VUG015F324 VUG015F314 VUG015F304 VUG020F304 VUG025F304 VUG032F304	6.0	6.0	6.0	6.0	25.0	6.0	25.0
VUG040F304	5.5	5.5	6.0	6.0	25.0	6.0	25.0
VUG050F304	3.5	3.5	6.0	6.0	25.0	4.0	25.0
VUG065F316	–	–	4.5	4.5	16.0	–	–
VUG065F304	–	–	4.5	4.5	25.0	2.6	25.0
VUG080F304	–	–	3.5	3.4	25.0	1.7	25.0
VUG100F304	–	–	3.0	2.2	25.0	1.1	25.0
VUG125F304	–	–	2.0	1.6	25.0	0.8	25.0
VUG150F304	–	–	1.5	1.0	16.0	0.6	16.0

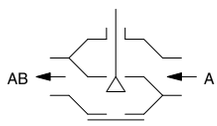
At temperatures above 130 °C, accessories are required

*The VUG can be used with the AVN224SF*** actuator, but not as a safety device.*

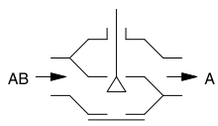
Description of operation

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 in the “against the pressure” and “with the pressure” closing procedures. The direction of flow on the valve must be considered, or must be pasted over when using “with the pressure” (adhesive to be found in fitting instructions). The flow parameters comply with EN 60534.

Closing procedure against the pressure



Closing procedure with the pressure



These regulating valves are characterised by their reliability and precision and make an important contribution towards efficient regulation. They meet difficult challenges such as safety functions, overcoming high differential pressures, controlling media temperatures and performing the shut-off function, all with a low noise level.
The spindle is automatically and firmly connected to the actuator spindle. The deluxe stainless steel SAUTER plug controls the equal-percentage flow rate in the control passage. The tightness of the valve is ensured by the stainless steel ring pressed in the housing and the corresponding plug.
The stuffing box is maintenance-free. This consists of 6 tapered PTFE rings and a spring. The spring ensures permanent tension on the seals, thus guaranteeing that they are leaktight against the spindle. In addition, a grease reserve ensures that the spindle is constantly lubricated. The grease reserve also stops particles that are present in the medium from penetrating to the PTFE sealing.

Intended use

This product is only allowed to be used in HVAC building systems for control and regulation purposes. Other uses require the prior consent of the manufacturer.
The “Description of operation” section and all product instructions in this data sheet must be observed.
Modifying or converting the product is not permitted.
The valves are suitable for control functions.

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.

Notice in accordance with California Proposition 65
The product contains lead. To be marketed in North America, the appropriate warnings must be affixed to the product or packaging.

Engineering notes

The valves are combined with the AVM 322(S) or AVM 234S valve actuators without a spring return or with the AVF 234S or AVN 224S valve actuators with a spring return. When the system is commissioned, the AVM 322(S), AVM 234S and AVF 234S actuator moves out and the connector automatically closes the connection to the valve 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 leakage levels are always minimised. With the SUT actuators, the characteristic 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.
Fitting instructions VUG/BUG DN 15…50	0505947133
Fitting instructions VUG/BUG DN 65…150	0505973033
Fitting instructions AVM 321/322	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 56.120

CE conformity

	PED 2014/68/EU	Label
VUG015F374 VUG015F364 VUG015F354 VUG015F344 VUG015F334 VUG015F324 VUG015F314 VUG015F304 VUG020F304 VUG025F304 VUG032F304 VUG040F304	Art. 4.3	–
VUG050F304 VUG065F304 VUG080F304 VUG100F304 VUG125F304	Category I	CE
VUG065F316	Category I	CE
VUG150F304	Art. 4.3	–

Fitting

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

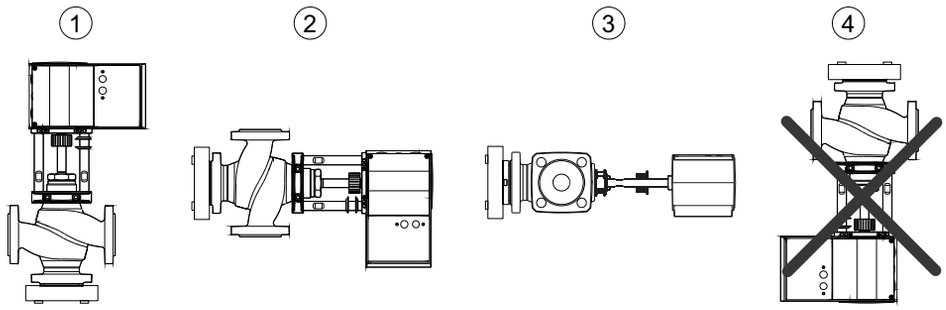
NOTICE!
Damage to the sealing surface.
►When fitting the actuator on the valve, take care not to turn the plug on the valve seat.

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

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 commissioning

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 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.
The VUG150F304 is not approved for use with steam!

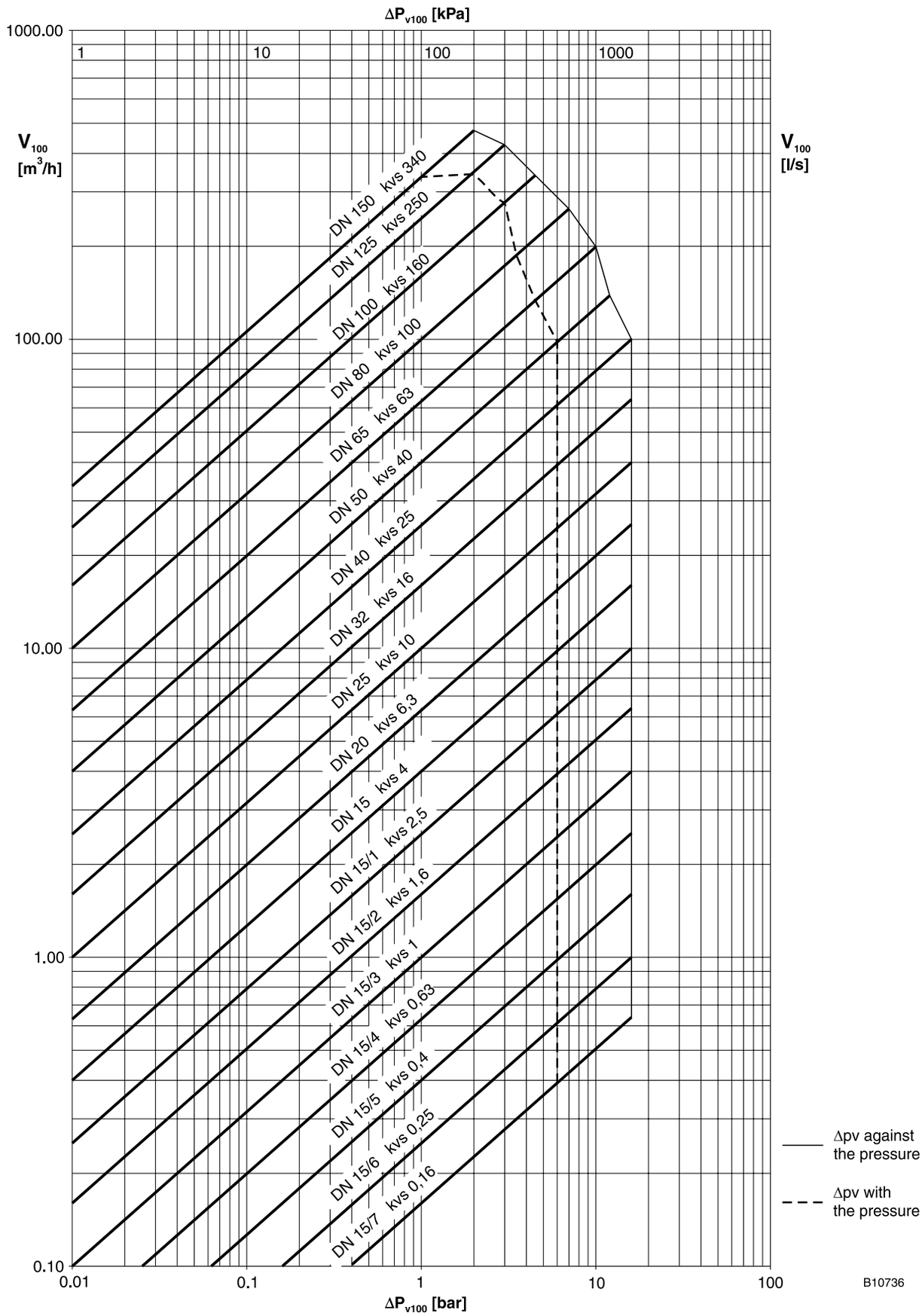
Using with water

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_{max} 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. The cavitation accelerates wear on the plug and seat in the valve 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 an emergency function with a fast stroke movement (using a spring), this value can exceed Δp_{max}.

VUG flow-rate chart



Maximum permissible pressure difference

	Δp_v	
	Against the pressure [bar]	With the pressure [bar]
VUG015F374	16	6
VUG015F364	16	6
VUG015F354	16	6
VUG015F344	16	6
VUG015F334	16	6
VUG015F324	16	6
VUG015F314	16	6
VUG015F304	16	6
VUG020F304	16	6
VUG025F304	16	6
VUG032F304	16	6
VUG040F304	16	6
VUG050F304	12	6
VUG065F304	10	4.5
VUG065F316	10	4.5
VUG080F304	7	3.5
VUG100F304	4.5	3
VUG125F304	3	2
VUG150F304	2	1

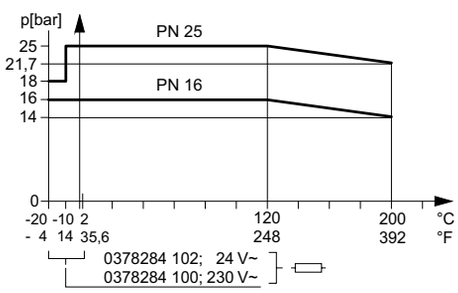
Additional version information

Valve body made of ductile cast iron as per EN 1563, code EN-GJS-400-18U-LT, material number EN-JS 1049 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-JS 1049	EN-GJS-400-18U-LT (GGG40.3)
Valve seat	1.4021	X20Cr13
Spindle	1.4305	X8CrNiS18-9
Plug	1.4305	X8CrNiS18-9
Plug seal	PTFE	Glass-fibre reinforced
Stuffing box	CW617N	CuZn40Pb2
Seal under stuffing box	CW024A	Cu-DHP

Pressure/temperature assignment



Definition of pressure differences

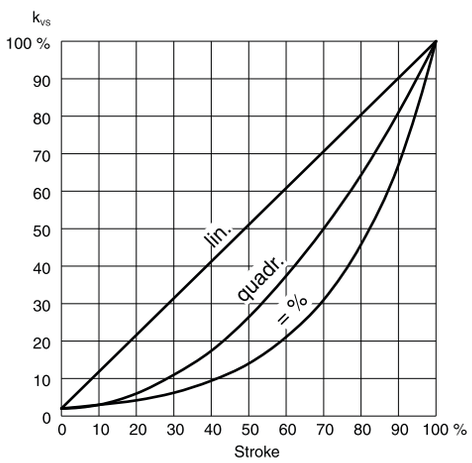
Δp_V: Maximum admissible pressure difference over the valve at every stroke position, limited by noise level and erosion. With this parameter, the valve is characterised as a flow element with specific hydraulic behaviour. Monitoring the cavitation and erosion along with the associated noise increases 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.

Characteristic for actuators with positioner (24 V only)



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

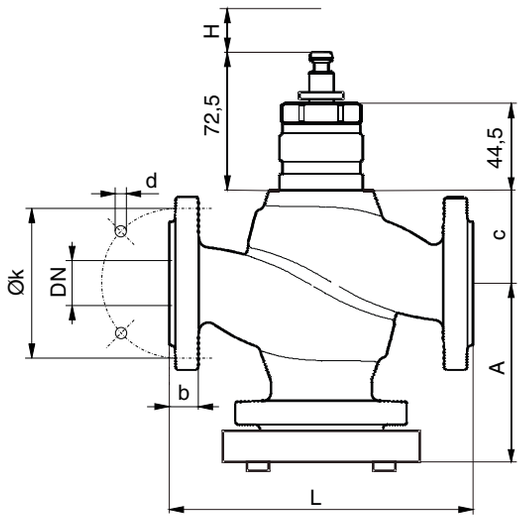
——— Equal-percentage, linear, quadratic
Can be set using coding switch

Disposal

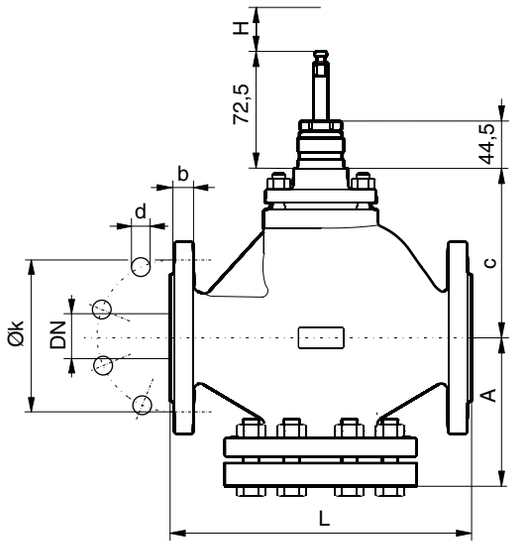
When disposing of the product, observe the currently applicable local laws.
More information on materials can be found in the Declaration on materials and the environment for this product.

Dimension drawing

All dimensions in mm.



VUG	DN	A	c	L	H	k	d	b
015	15	84	54	130	20	65	14 x 4	14
020	20	94	48	150	20	75	14 x 4	16
025	25	97	50	160	20	85	14 x 4	16
032	32	110	59	180	20	100	19 x 4	18
040	40	116	63	200	20	110	19 x 4	19
050	50	126	67	230	20	125	19 x 4	19
065	65/ PN16	144	163	290	40	145	19 x 4	19



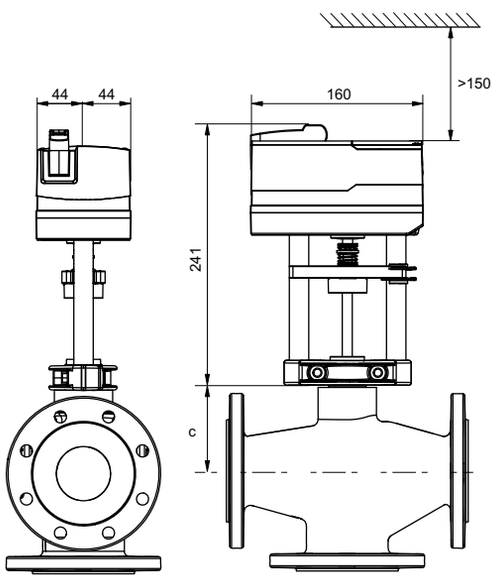
VUG	DN	A	c	L	H	k	d	b
065	65/PN25	144	163	290	40	145	19 x 8	19
080	80	156	182	310	40	160	19 x 8	19
100	100	176	183	350	40	190	23 x 8	19
125	125	228	223	400	40	220	28 x 8	19
150	150	242	257	480	40	250	28 x 8	20

Combinations

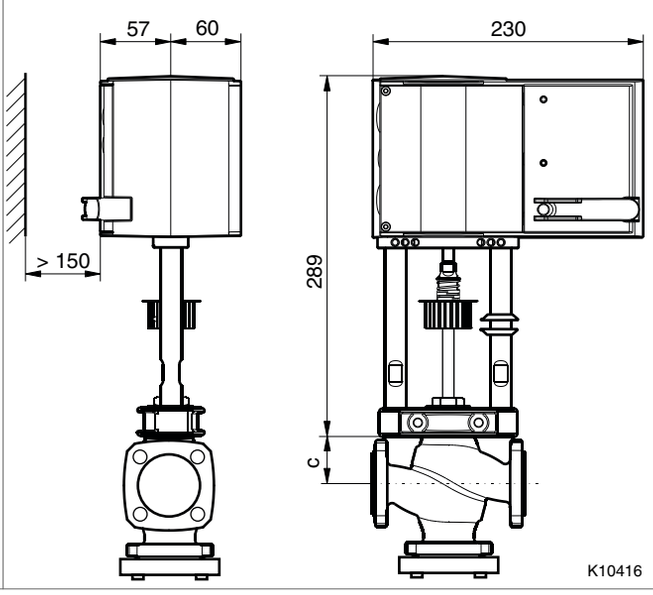
i *All dimensions in mm.*

i *For dimension c, see tables above.*

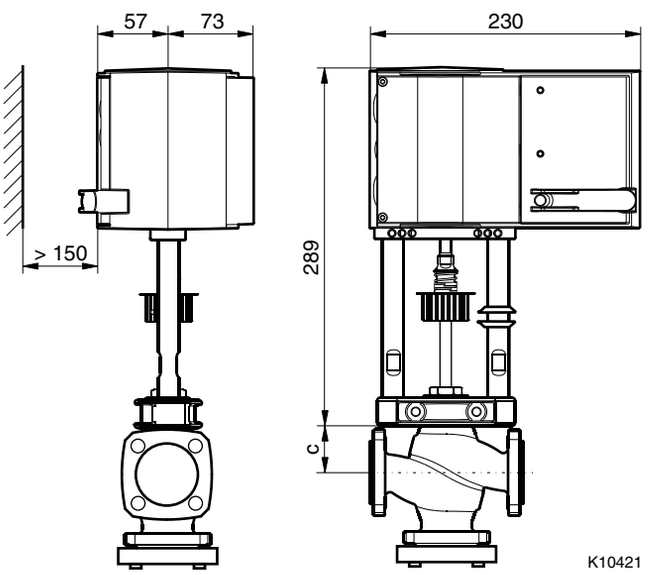
AVM 322(S)



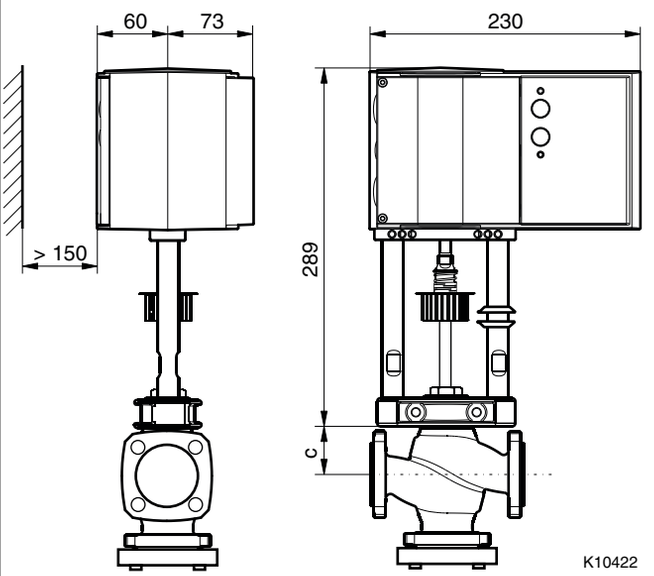
AVM 234S



AVF 234S



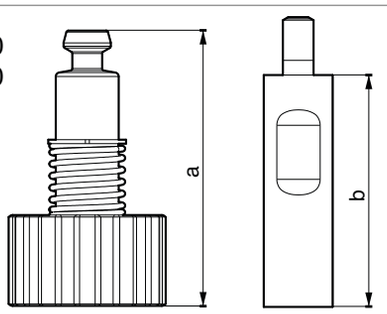
AVN 224S



Accessories

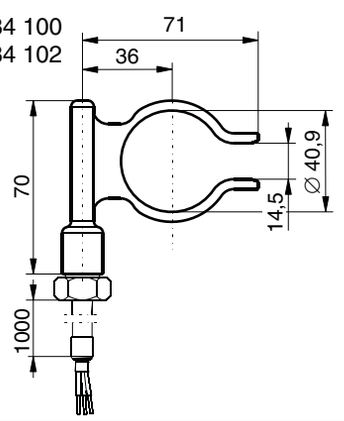
All dimensions in mm.

0372336 180
0372336 240



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

[mm]
0378284 100
0378284 102



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