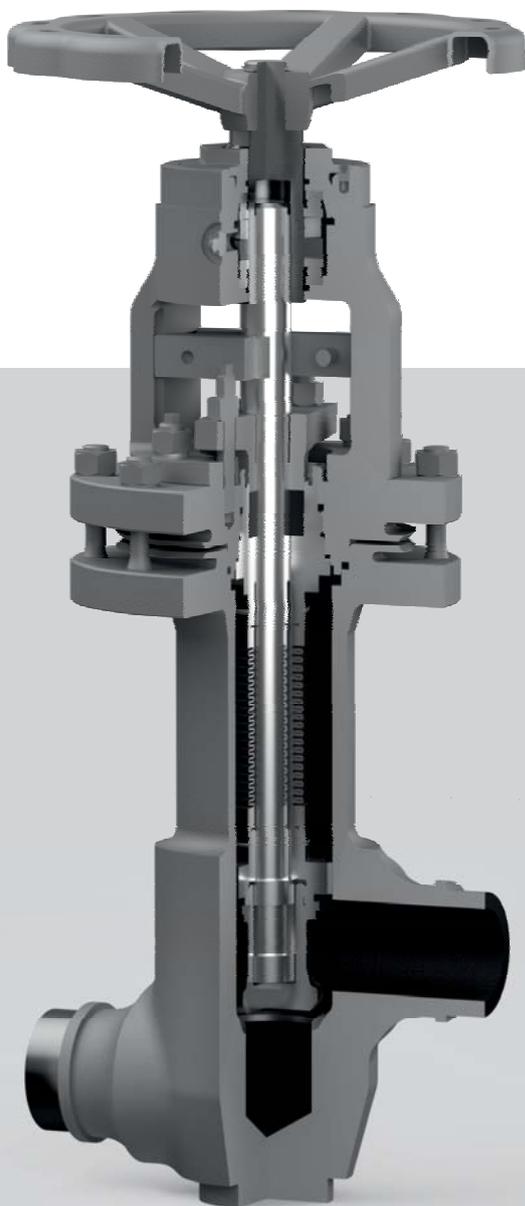




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BELLOW VALVES FOR NUCLEAR POWER

A10
A11
A13





A10, A11, A13

Bellow Valves
for Nuclear Power

DN 10 - 150
Pp to 20 MPa

- A10 are shut-off single-seat two-way valves designed for closure of media flow.**
- A11 are control single-seat two-way valves designed for rough regulation with linear characteristics.**
- A13 are shut-off single-seat two-way valves designed for fast-acting closure of media flow.**

Valve body is forged from carbon or austenitic steel. Sealing surfaces are hard-faces with cobalt-free alloy C-1111. Valves are available with butt-weld ends in default, alternatively according to customer requirements (flanged).

Application

A10, A11 and **A13** valves are intended for nuclear power and chemical industry. Maximal permissible pressures in dependence on body material and media temperature are listed in table on page 6. Maximal operational temperature of valve is dependent on body material.

A10, A11 and A13 valves actuated by hand-wheels and electric actuators Auma or Sipos **fulfill seismic resistance requirements** in terms of maintaining the mechanical integrity and functionality after the seismic event with response spectrum up to $30 \text{ m}\cdot\text{s}^{-2}$ in all directions and in range of 0-33 Hz. Therefore they meet conditions for use in areas with expected earthquake occurrence with a maximum intensity of degree IX on EMS-98 or MSK-64 (9bal) scale.

Process media

A10, A11 and **A13** valves are suitable for process media such as water, steam or other liquid and gaseous media compatible with valve body and trim materials.

Installation

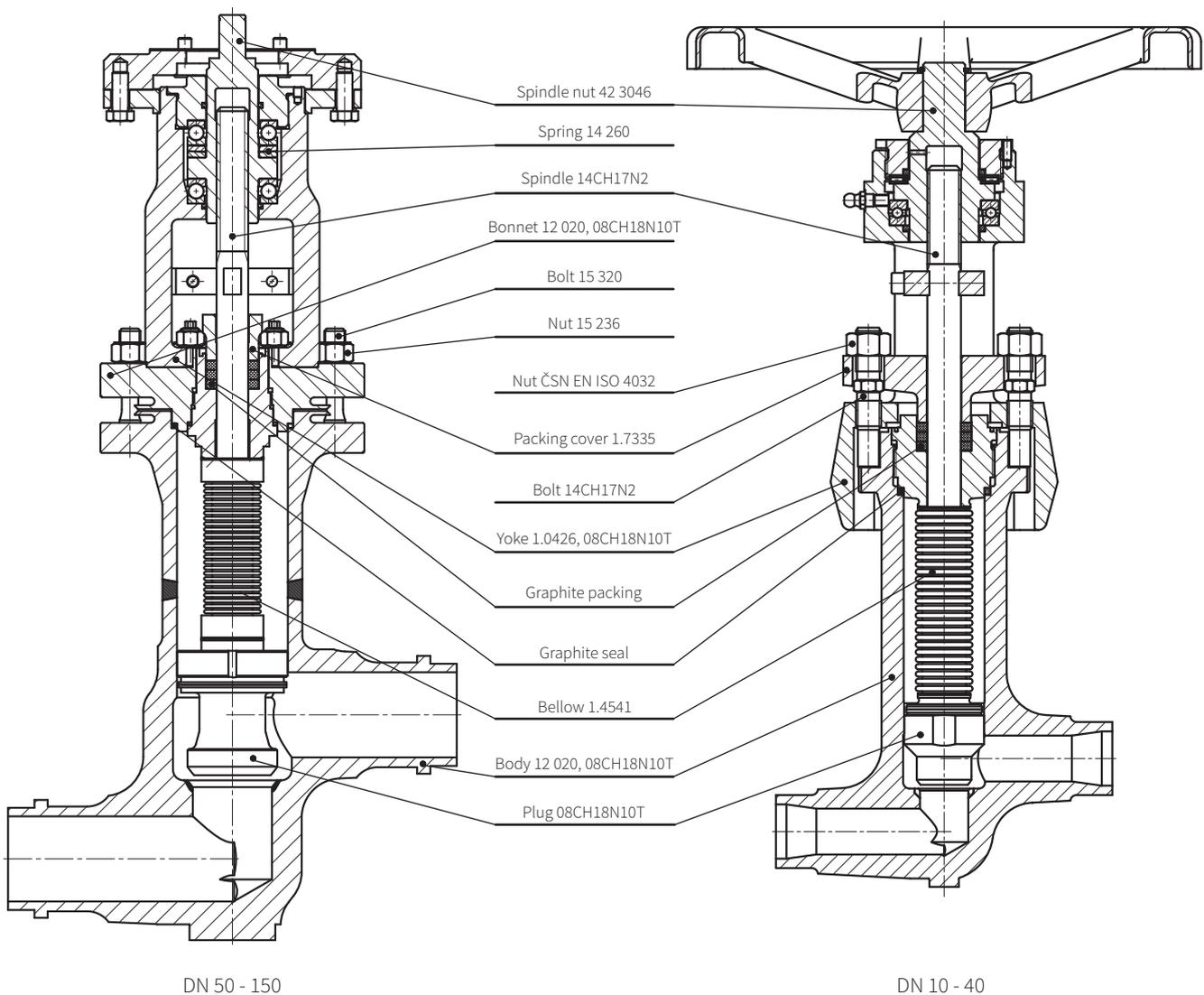
Valves **A10, A11** and **A13** with hand wheel or remote control can be installed in any position. The valves with electric actuator can be installed in any position except position when the actuator is under the valve body. The flow direction is arbitrary except in version with control plug. In case of control plug the flow direction has to comply with flow direction marked on the valve body. It is suitable to insulate the pipeline around the valve but it is prohibited to insulate the valve yoke.

It is necessary to ensure enough of space for handling.

Technical data

Series	A10	A11	A13
Version	Shut-off single-seat, two-way valve	Control single-seat, two-way valve	Shut-off single-seat, fast-acting, two-way valve
Nominal size	DN 10 to 150		
Nominal pressure	2,5 to 20 MPa		
Butt-weld specification	Acc. to VTP-87/91		
Flow characteristic	Shut-off	Control	Shut-off
Leakage rate	Grade B acc. to ISO 5208	Grade D acc. to ISO 5208	Grade B acc. to ISO 5208

Main parts material



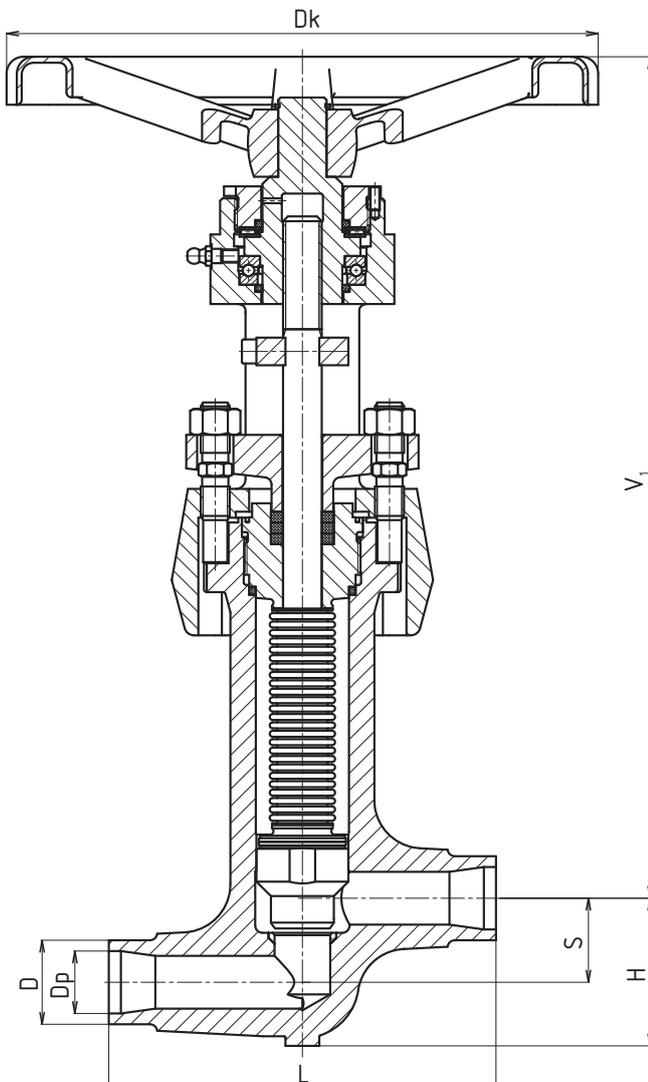
Dimensions and weights of A10, A11, A13 DN 10 to 40 with weld ends

DN	Pp [MPa]	D [mm]	dp [mm]	Dk [mm]	H [mm]	L [mm]	S [mm]	Stroke [mm]	V ₁ [mm]	m ₁ [kg]	V ₈ [mm]	m ₈ [kg]
10, 15	up to 4	Connection dimensions acc. to VTP-87/91		200	43	130	24	5 ÷ 6,6	237	4,1	196	4,4
20, 25				200	62	160	35	6,5 ÷ 8,2	277	7,2	236	4,5
32 (40)				250	76	180	45	7,5 ÷ 9,3	361	10,2	270	10
10, 15	4 to 14			200	43	130	24	4,5 ÷ 5,8	281	6,1	240	6,3
20, 25				250	62	160	35	5,8 ÷ 7,3	330	9,7	284	9,5
32 (40)				250	76	180	45	6,5 ÷ 8,2	464	16,4	376	17,8
10, 15	14 to 20	200	43	130	24	4,5 ÷ 5,8	300	6,4	259	6,7		
20, 25		250	62	160	35	5,8 ÷ 7,3	351	10,3	295	10,1		
32 (40)		250	76	180	45	6,5 ÷ 8,2	433	17,3	390	18,6		

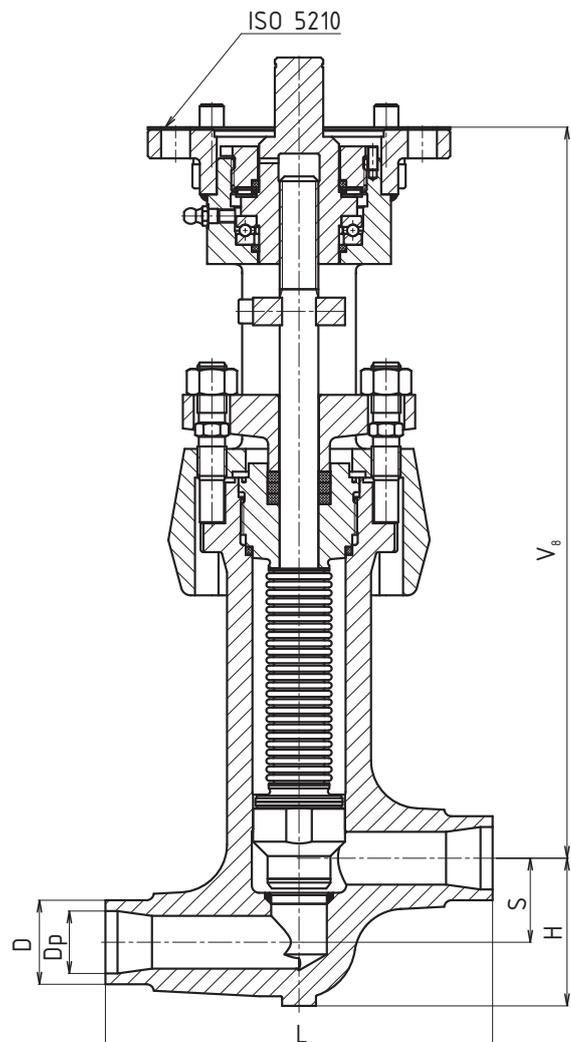
m₁ - valve weight with hand wheel

m₈ - valve weight with adapter for electric actuator

A10, A11, A13 valves with weld ends and hand wheel



A10, A11, A13 valves with weld ends and adapter for electric actuator

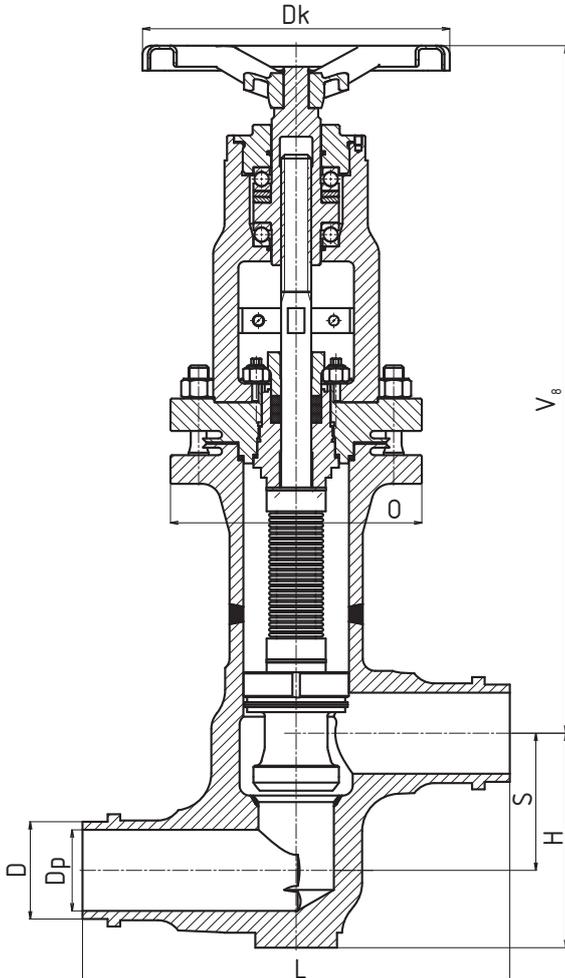


Dimensions and weights of A10, A11, A13 DN 50 to 150 with weld ends														
DN	Pp [MPa]	D [mm]	dp [mm]	Dk [mm]	H [mm]	L [mm]	O [mm]	S [mm]	Stroke [mm]	V ₁ [mm]	m ₁ [kg]	V ₈ [mm]	m ₈ [kg]	
50	up to 4			250	127	230	188	70	15	450	33	408	41	
65				250	172	340	200	110	21	551	50	508	57	
80				500	216	380	265	140	27	559	104	543	111	
100				500	246	430	265	160	27	559	120	543	127	
125				800	322	550	352	210	40,5	857	235	864	285	
150				800	322	550	352	210	40,5	857	240	864	290	
50	4 to 14	Connection dimensions acc. to VTP-87/91		500	127	230	210	70	15	618	70	567	85	
65				500	165	340	265	110	21	700	103			
80				710	216	380	270	140	27	922	195	840	195	
100				710	246	430	270	160	27	922	209	840	199	
125									550		210	40,5		
150									550		210	40,5		
50	14 to 20			500	127	230	210	70	15	700	70	667	85	
65				500	165	340	265	110	21	880	147			
80				800	216	380	270	140	27	960	208	891	195	
100				800	246	430	270	160	27	960	221	891	210	
125									550		210	40,5		
150									550		210	40,5		

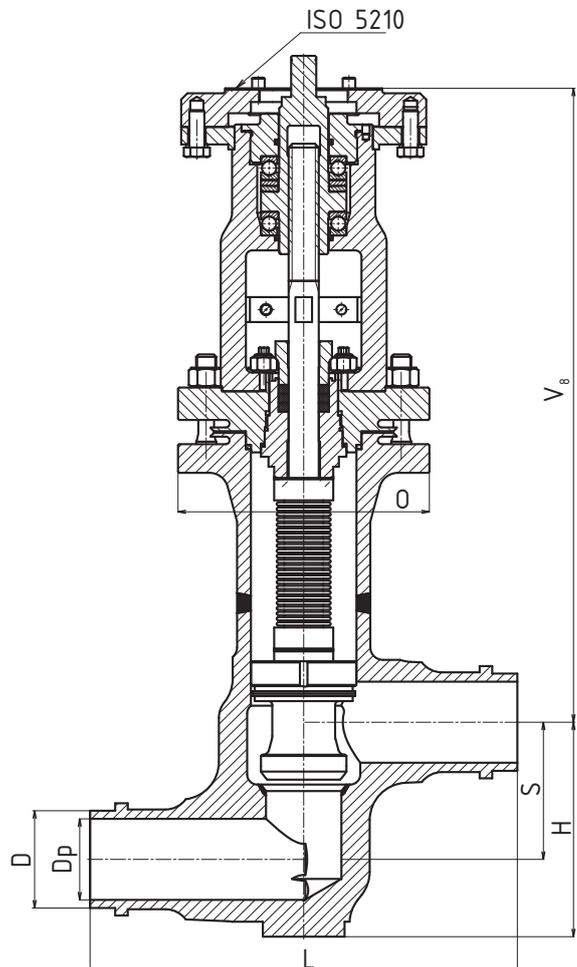
m₁ - valve weight with hand wheel

m₈ - valve weight with adapter for electric actuator

A10, A11, A13 valves with weld ends and hand wheel



A10, A11, A13 valves with weld ends and adapter for electric actuator



Valve complete specification No. for ordering A10, A11, A13

		XXX	XXX	XX	-	XXXX	/	XXX	-	XXX
1. Valve	Shut-off valve	A10								
	Control valve for rough regulation	A11								
	Shut-off valve fast-acting	A13								
2. Design	Straight with offset ends		8							
3. Type of valve ends	Flanged		1							
	Butt-weld		2							
4. Actuator type	Hand wheel		1							
	Valve supplied with electric actuator		3							
	Direct remote control		5							
	Bevel gearbox		6							
5. Medium	For liquids and steams									
	For gases					/G				
6. Material	Forged carbon steel 12 020							0		
	Forged austenitic steel 08CH18N10T							4		
7. Nominal pressure	Pp up to 4 MPa							040		
	Pp 4 to 14 MPa							160		
	Pp 14 to 20 MPa							250		
8. Max. operating temperature	250°C								250	
	275°C								275	
	300°C								300	
	335°C								335	
	350°C								350	
9. Nominal size DN	DN 10 to 150									XXX

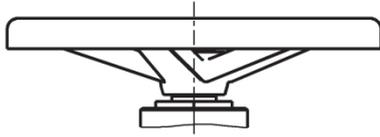
Order example:

A10 821-0160/335-025, butt-weld ends acc. to VTP 87/91, pipe 32x3,5

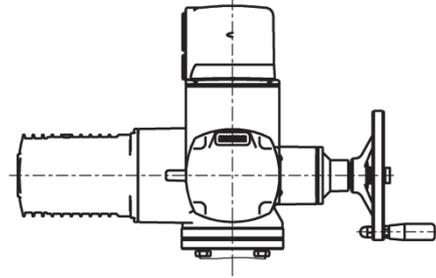
Table of design and maximum operating parameters

Valve		Valve ends	
Max. pressure [MPa]	Max. temperature [°C]	Max. pressure [MPa]	Max. temperature [°C]
Valves DN 10 - 150, Pp up to 4 MPa, mat. 12 020 and 08CH18N10T			
4	250	2,5	250
		4	250
Valves DN 10 - 150, Pp 4 to 12 MPa, mat. 12 020			
12	300	6	275
		8,6	300
		9,2	300
		11	300
		12	250
Valves DN 10 - 150, Pp 4 to 12 MPa, mat. 08CH18N10T			
14	335	6	275
		8,6	300
		9,2	300
		11	300
		12	250
Valves DN 10 - 150, Pp 14 to 20 MPa, mat. 08CH18N10T			
18	350	18	350
20	300	20	300

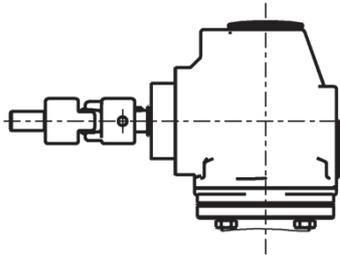
Types of actuators



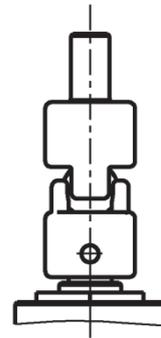
Hand wheel



Electric actuator



Bevel gearbox



Direct remote control



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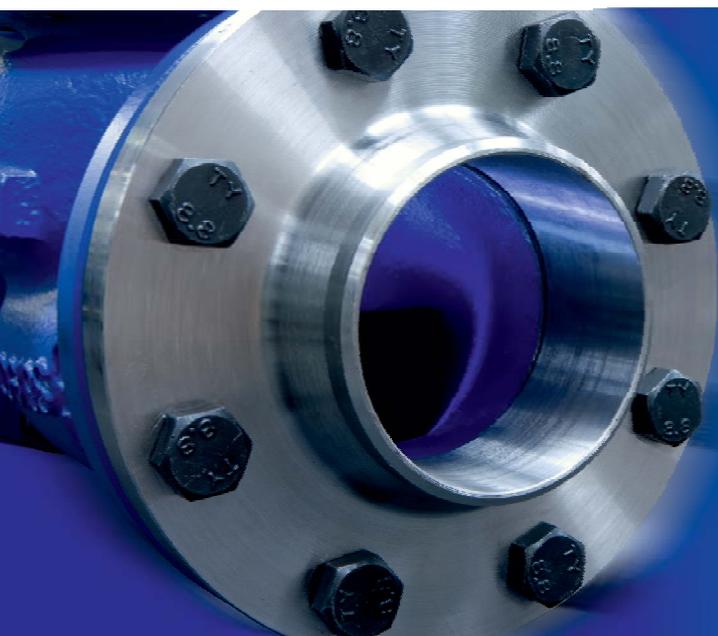
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