



DN range: 8 ~ 150



PN range: 10 ~ 250

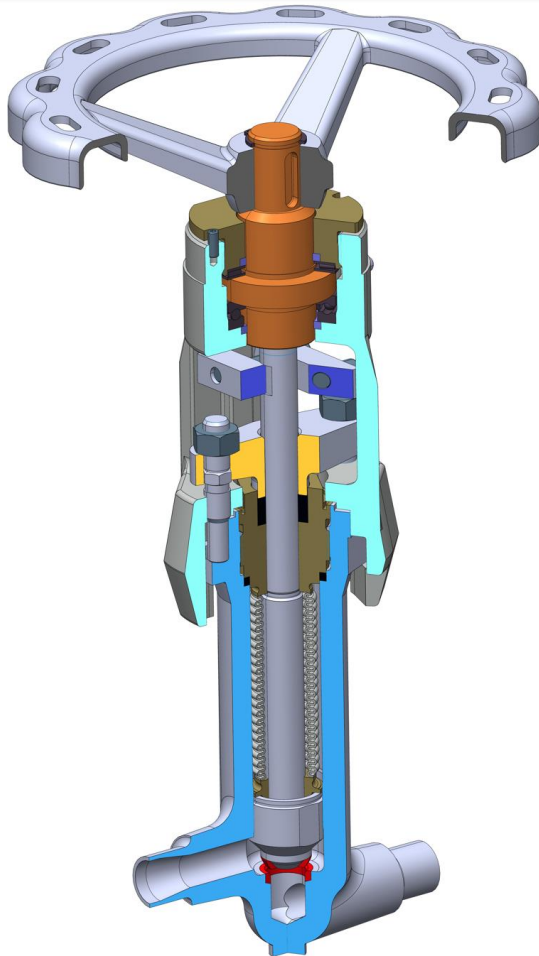


HIGHLIGHTS
PROVISION



NUCLEAR
POWER

Connection to the pipeline: **Butt-Welded**



APPLICATION

- A10 shut-off bellow valve, or A11 control bellow valve for rough regulation with linear characteristics, or A13 fast-acting valve. Valves can be operated at full pressure drop on the cap with a both sided flow direction of the operating fluid. In the case of A11 also for regulation.
- **Fluids**
According to NP-068-05.
- **Industry**
Nuclear power plants with VVER reactors.
- **Environments**
Mild, harsh, seismic resistance class 1a.

TECHNICAL DESCRIPTION

- Valves are made of carbon steel or corrosion resistant steel.
- Forged body.
- The seat in the body and the plug sealing surfaces are hardfaced using hard cobalt-free alloy.
- The body and stem are sealed with bellows and sealing ring (expanded graphite, spiral-wound or serrated gaskets).
- Emergency stem seal.
- Rising stem non-rotating.
- Stem nut seated in two antifriction bearings.

OPERATING CONDITIONS

- **NP-068-05** – General Technical Requirements for purpose-made valves for NPP
- **NTD ASI Section I** - Welding of NPP equipment and piping.
- **NTD ASI Section II** - Materials for NPP equipment and piping.
- **NTD ASI Section III** - Strength evaluation of NPP equipment and piping.
- **NTD ASI Section IV** - Aging and durability evaluation of NPP equipment.
- **NTD ASI Section V** - Materials Testing.
- **NTD ASI Section VII** - NTD NPP Inspections.
- **NTD ASI Section IX** - Design, Construction, Fabrication and Installation of NPPs.
- **Decree No. 329/2017** - Requirements for the design of a nuclear installation.

CENTRAL CAVITY EQUALIZATION

- Carried out where necessary or on customer's request

CONNECTION

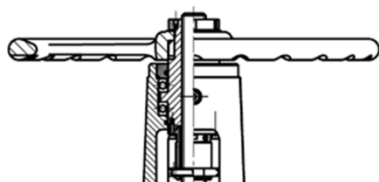
- Butt-welded.
- Other connection at customer's request.

INSTALLATION

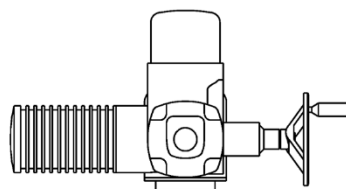
- The valves can be installed in any position.

OPERATION

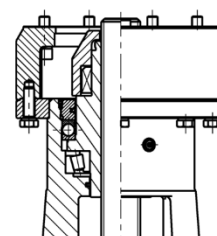
- Hand wheel (handwheel with stop), with locking device option
- Electric actuator
- Spur gear
- Bevel gear
- Direct remote control
- Connection of the electric actuator or gearbox to the valve according to ISO 5210



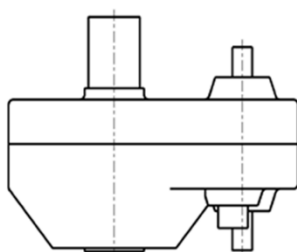
Hand wheel



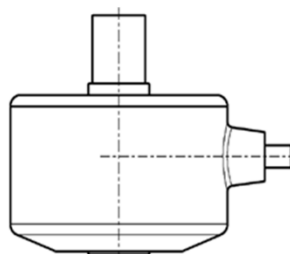
Electric actuator



Connection for electric actuator and gearbox



Spur gear



Bevel gear

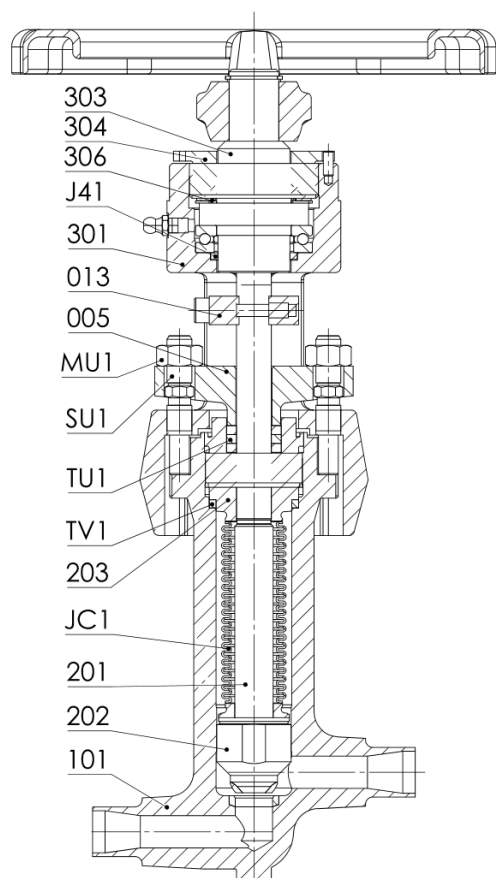


Direct remote control

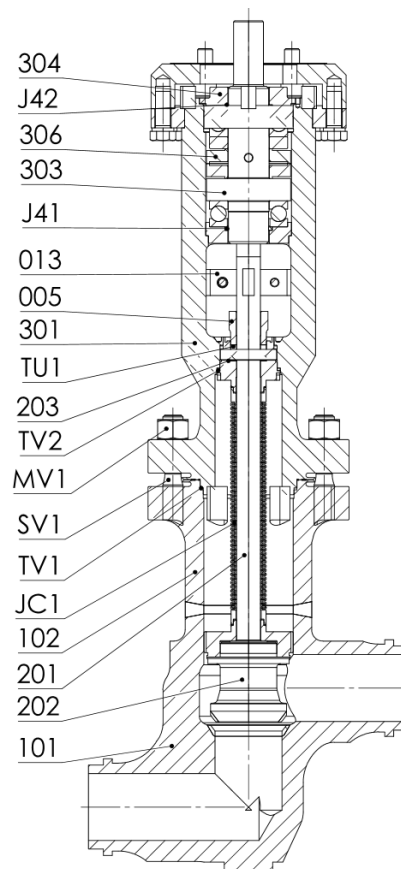
TABLE OF DESIGNED AND MAXIMUM OPERATING PARAMETERS

Valve		Connection ends	
Max. pressure MPa	Max. temperature °C	Max. pressure MPa	Max. temperature °C
Valves DN 50-300, Pp to 4 MPa, carbon and stainless steel			
4	250	2,5	250
		4	250
Valve DN 50-300, Pp to 4 MPa, carbon and stainless steel			
12	300	6	275
		8,6	300
		9,2	300
		11	300
		12	250
Valves DN 10-150, Pp 4 – 14 MPa, stainless steel			
14	335	6	275
		8,6	300
		9,2	300
		11	300
		12	250
		14	335
Valves DN 10-150, Pp 14 – 20 MPa, stainless steel			
18	350	18	350
20	300	20	300

MAIN PARTS MATERIALS



Bellows valves DN 8 - 32 (40)



Bellows valves DN 50 - 150

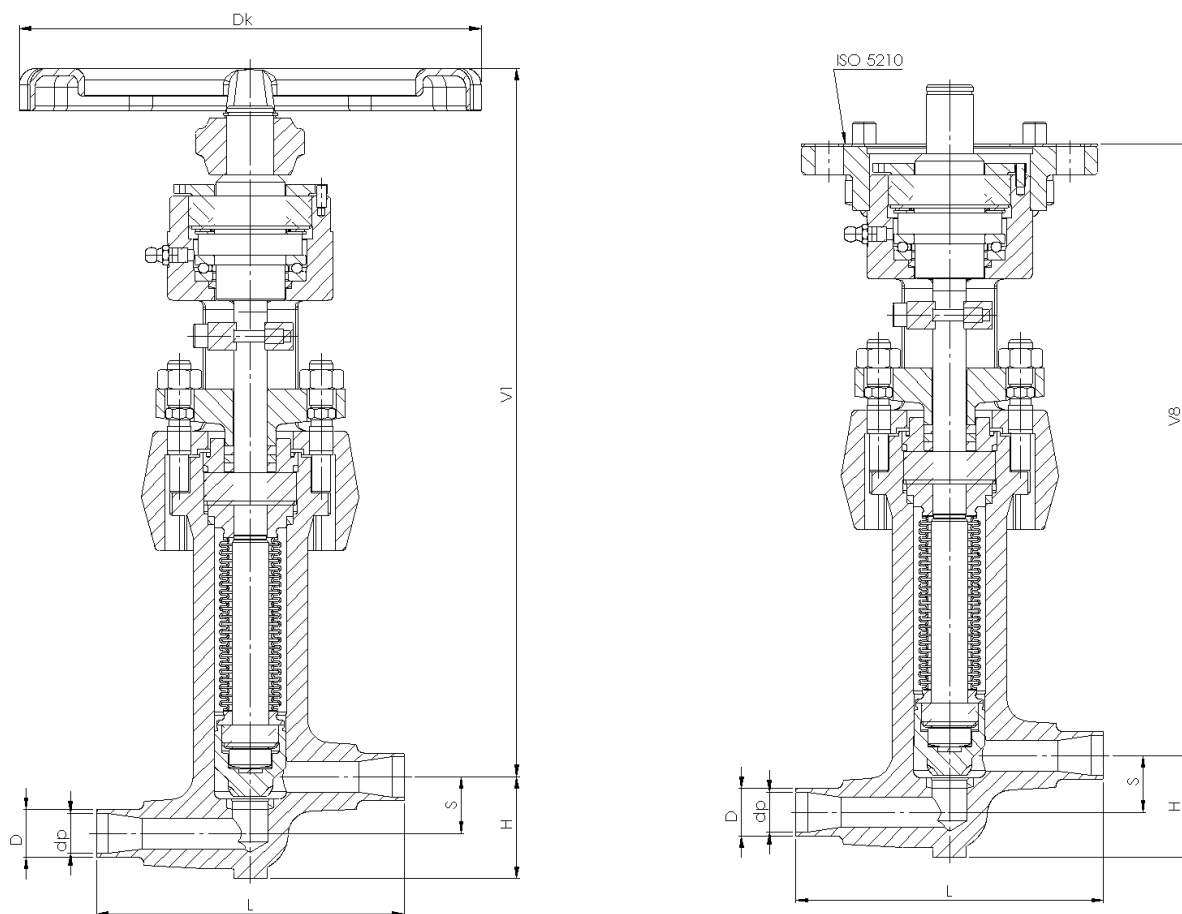
No.	Name	Material	
101	Body	P265GH (11 416, 12 020)	08CH18N10T (1.4571)
102	Adapter	P265GH (11 416, 12 020)	08CH18N10T (1.4571)
201	Spindle	14X17H2 (1.4057, 1.4922, 1.4923)	
202	Plug	08CH18N10T (1.4571)	
203	Bellows cover	1.4541 (1.4571, 08CH18N10T, X6CrNiTi18-10)	
301	Stem	P265GH (11 416, 12 020)	08CH18N10T (1.4571)
303	Stem nut	CuAl10Fe3Mn1,5 (ČSN 42 3046)	CuAl10Fe3Mn1,5 (ČSN 42 3046)
304	Bearing nut	11416 (P265 GH, S235J2G3)	08CH18N10T (1.4571, 1.4541, 1.4301)
306	Spring	14 260	1.4310
005	Seal cover	11416 (P265 GH, S235J2G3)	08CH18N10T (1.4571, 1.4541, 1.4301)
013	Track	11416 (P265 GH)	08CH18N10T (1.4571, 1.4541, 1.4301)
SV1, SU1	Bolt	15 320	A4-80 (1.4923, 1.4057, 1.4922, 1.4980, CHN35VT)
MV1, MU1	Nut	15236 (1.7709)	A4-80 (1.4923, 1.4057, 1.4922, 1.4401, CHN35VT)
JC1	Bellows	1.4541 (1.4571, 08CH18N10T, X6CrNiTi18-10)	
TV1	Sealing ring	Expanded graphite, Spiral-wound gaskets, Serrated gaskets	
TV2			
J41	Dust ring	Felt	
TU1	Sealing ring	Expanded graphite	

NOTES:

The plug disc and seat sealing hardfaced using hard cobalt-free alloy.

Recommended spare parts to order: sealing rings (TV1,TV2,TU1,J41), stem with bellows (003), stem nut (002).

DIMENSIONS OF BELLOWS VALVES DN 8 – 32 (40)



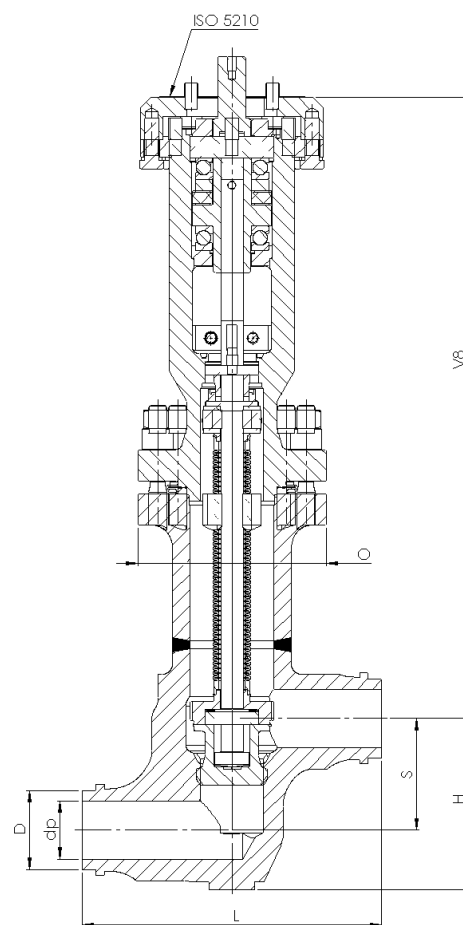
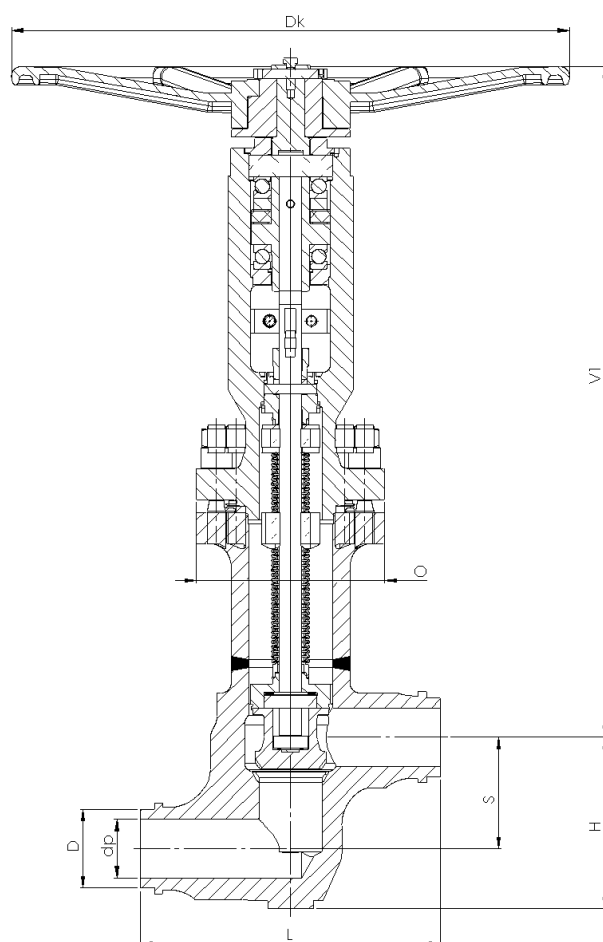
Bellows valves DN 8 – 32 (40)

DN	Pp MPa	ØD	Ødp	ØDk	H	L	ØO	S	V1	m1 kg	V8	m8 kg
8, 10, 15	up to 4	Connection dimensions according to TP		200	43	130	80	24	237	4,1	196	4,4
20, 25				200	62	160	92	35	277	7,2	236	7,5
32 (40)				250	76	180	108	35	361	10,2	270	10
8, 10, 15	above 4 up to 14			200	43	130	92	24	281	6,1	240	6,3
20, 25				250	62	160	108	35	330	9,7	284	9,5
32 (40)				250	76	180	128	45	464	16,4	376	17,8
8, 10, 15	above 14 up to 20			200	43	130	92	24	300	6,4	259	6,7
20, 25				250	62	160	108	35	351	10,3	295	10,1
32 (40)				250	76	180	128	45	433	17,3	390	18,6

NOTE:

Other types of connection available on customer's request.
Weight m1 for handwheel version, m8 for flange version.

DIMENSIONS OF BELLOWS VALVES DN50 - 150



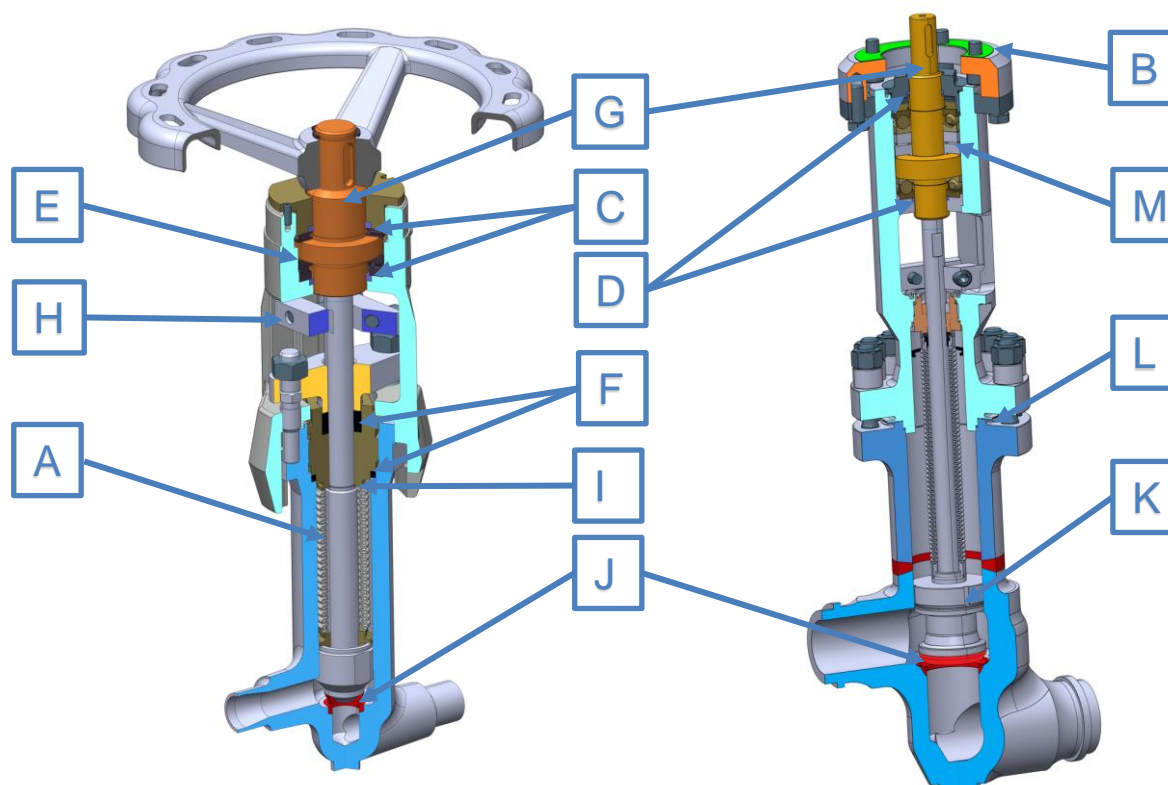
Bellows valves DN 50 – 150

DN	Pp MPa	ØD	Ødp	ØDk	H	L	ØO	S	V1	m1 kg	V8	m8 kg
50	up to 4	Connection dimensions according to TP		250	127	230	188	70	450	33	408	40,4
65				250	172	340	200	110	551	50	508	57
80				500	216	380	265	140	599	104	543	111
100				500	246	430	265	160	599	120	543	127
125				800	322	550	352	210	857	235	864	285
150				800	322	550	352	210	857	240	864	290
50	above 4 up to 14	Connection dimensions according to TP		500	127	230	210	70	618	70	567	85
65				500	165	340	265	110	700	103		
80				710	216	380	270	140	922	195	840	195
100				710	246	430	270	160	922	209	840	199
125						550		210				
150						550		210				
50	above 14 up to 20	Connection dimensions according to TP		500	127	230	210	70	700	70	667	85
65				500	165	340	265	110	880	147		
80				800	216	380	270	140	960	208	891	195
100				800	246	430	270	160	960	221	891	210
125						550		210				
150						550		210				

NOTE:

Other types of connection available on request.
Weight m1 for handwheel version, m8 for flange version.

ADVANTAGES OF CONSTRUCTION



A	The stem sealed with multi-casing bellows: Perfect stem sealing.
B	Uniform connection for drives as well as for gear as per ISO 5210: Possible to use control elements made by different manufacturers.
C	The stem nut seated in two antifriction bearings: User-friendly, prolonged service life.
D	Dust rings: Protects the bearing space against impurities.
E	Pressure lubrication: User-friendly, prolonged service life of bearings.
F	Emergency seal of the stem, bellows and cap flange sealing – expanded graphite: Protection against a release of medium to the surrounding area in case of failure of the bellows; reliable tightness, environment-friendly.
G	The stem nut uniform for all modes of control: There is no need to dismantle the valve in order to change the mode of control.
H	The valve position indicator: Local for the purpose of orientation of the operator where the valve not controlled by electric drive. Possible to install a remote indication of DSP position.
I	Reverse closure of the stem: Ensures the defined travel of the bellows.
J	The sealing is surfaced using hard cobalt-free alloy: Long term lifespans, resistance against wear and tear, and radiation.
K	The plug guided through the body hole - plugs with aligning grooves: Ensure pressure equalization and removal of service medium from the space above the plug.
L	Tongue-and-groove sealing joint: Allow to additionally, during the operation, weld the body-bellows joint or body-cap.
M	Disc springs: Makes it possible to alleviate inertial effects upon the turning down the electric drive and compensate the heat expansion.