

Type A00 / A01

DN 65 - 800
Pp to 25MPa

Gate Valve for Nuclear Power

Butt-Welded

Data Sheet

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Application

- Shut-off valve used to fully open or close the flow, can be operated at full pressure drop on the valve with the reversible direction of the fluid flow
- **Fluids**
According to NP-068-05, VTP- 87/91
- **Industry**
Nuclear power plants (especially with VVER and RBMK reactors); chemical industry
- **Environments**
Normal, seismic

Technical description

- Gate valves are made of carbon and austenitic steel
- Forged body
- Seats are inserted into the body with the overlap, welded with the seal weld
- Split wedge, its function is ensured by the guidance placed in the groove
- Body is sealed by the bonnet joint
- Sealing of the spindle is ensured by a single or two-part sucked gland with the organized drain of leakage
- Bonnet joint of the gate valves to 9,2 MPa and the spindle gland are sealed with the sealing rings made of the expanded graphite
- Rising non-rotating spindle
- Spindle nut is located on two bearings
- Resversible flow of the operating fluid

Connection

- Welding ends
- Other connection on request

Installation

- Gate valves can be mounted to the pipelines in all positions
- For assembly with the electric actuator – see manufacturer’s instructions
- For installation, operation and maintenance is valid AL 990923 – Technical description and maintenance and repair manual for the gate valves type A00, A01

Operating conditions

- **NP-068-05 a VTP-87** – General technical requirements for NP special valves
- **PNAE G-7-008-89** – The rules for the construction and safe operation of the NP equipment and pipelines
- **PNAE G-1-011-97 (OPB-88/97)** – General requirements for NP safe operation
- **PNAE G-7-002/86** – Standards of calculation of the strength of the NP equipment and piping
- **PNAE G-7-009-89** – NP equipment and piping. Welded joints and weldings
- **PNAE G-7-010-89** – NP equipment and piping. Control rules
- **NP-031-01** – Standards of designing seismically resistant NPP



By-pass

- Standard delivery without by-pass; by-passes on request

Central cavity equalization

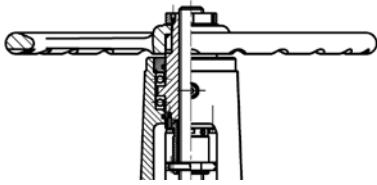
- Carried out where necessary or on the customer’s request by drilling the wedge plate
- Fluid flow direction is indicated by the arrow «→»

Testing

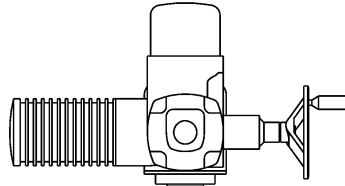
- Test of the operational capacity and tightness by the pressure Pp
- Vacuum tightness test towards the external environment – just for the gate valves working at underpressure
- Strength test:

Pp (MPa)	Testing fluid test (Mpa)
2,5	4,5
4	7
6	10
8,6	14
9,2	15
11	18
12	20
14	22
18	29
20	32
25	40

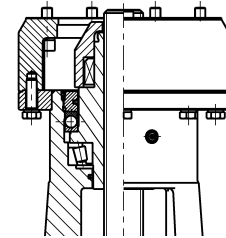
Operation



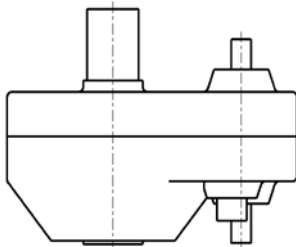
Hand wheel



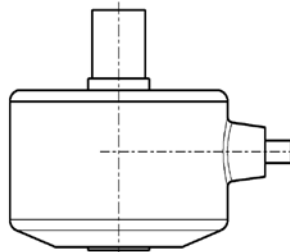
Electric actuator



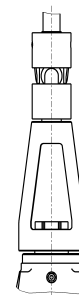
Connection for the electric actuator and reducer



Spur gear



Bevel gear



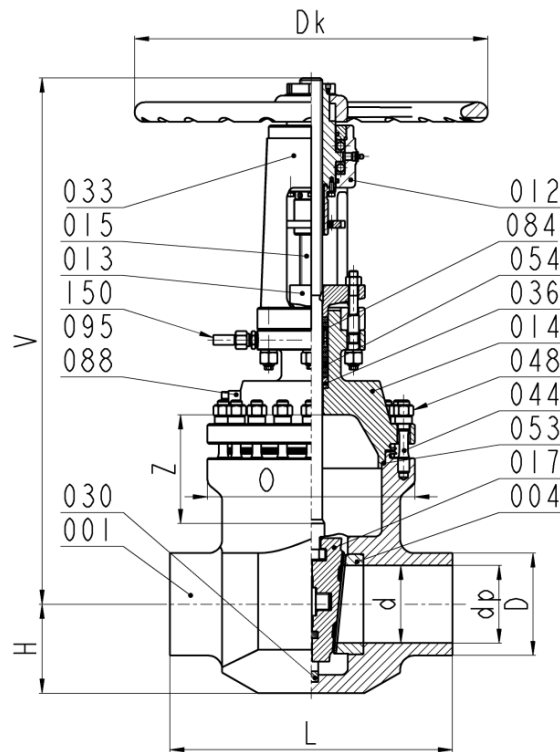
Direct remote control

- Manual operation (hand wheel with stop), with locking device
- Electric actuator – with location outside or inside the hermetic zone
- Spur gear
- Bevel gear
- Direct remote control
- Connection of the electric actuator or gear to the valve according to ISO 5210

Table of designed and maximum operating parameters

Gate valve		Connection ends	
Max. pressure MPa	Max. temperature °C	Max. pressure MPa	Max. temperature °C
Gate valves DN 200-400, Pp to 4 MPa, carbon and stainless steel			
4	250	2,5	250
		4	250
Gate valves DN 200-300, Pp over 4 to 9,2 MPa, carbon and stainless steel			
9,2	300	6	275
		8,6	300
		9,2	300
Gate valves DN 65-150, Pp to 9,2 MPa, carbon and stainless steel			
9,2	300	2,5	250
		4	250
		6	275
		8,6	300
		9,2	300
Gate valves DN 200-350, Pp over 9,2 to 12 MPa, carbon steel			
12	300	11	300
		12	250
Gate valves DN 200-350, Pp over 9,2 to 14 MPa, stainless steel			
14	335	11	300
		14	335
Gate valves DN 65-150, Pp to 12 MPa, carbon steel			
12	300	2,5	250
		4	250
		6	275
		8,6	300
		9,2	300
		12	250
Gate valves DN 65-150, Pp to 14 MPa, stainless steel			
14	335	2,5; 4	250
		9,2; 11	300
		12	250
		12	300
		14	335
Gate valves DN 80/75, Pp over 14 to 25 MPa, stainless steel			
18	350	18	350
20	300	20	300
25	250	25	250
Gate valves DN 250-300/350, Pp over 14 to 20 MPa, stainless steel			
18	350	18	350
20	300	20	300
Gate valves DN 400 – 600, Pp to 12 MPa, carbon steel (classification marking 3C)			
4,4	256	4,4	256
6,8	220	6,8	220
7,2	220	7,2	220
8,6	300	8,6	300
12	300	12	300

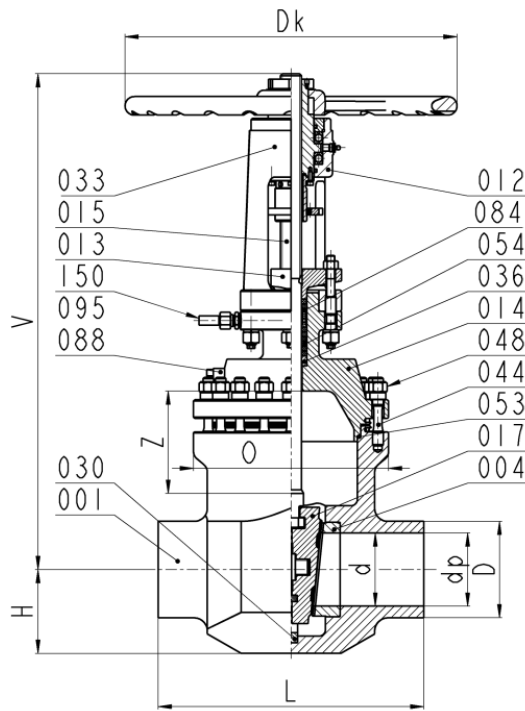
Materials of main parts



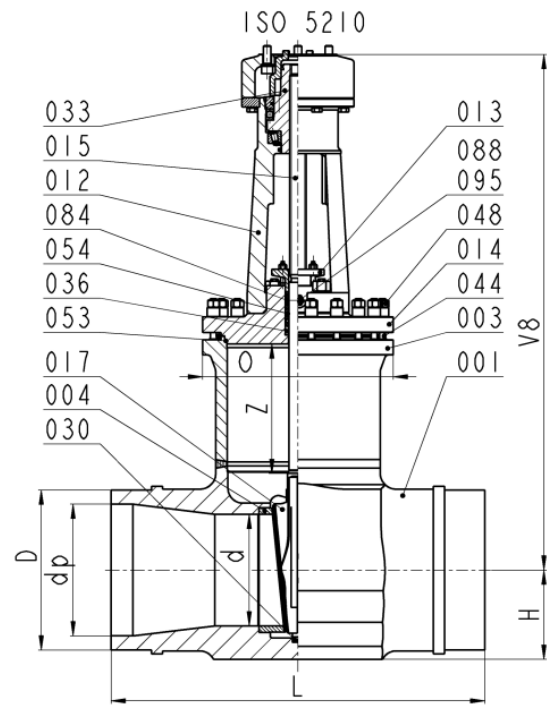
	Name	Material		
001	Body	11416	22K	08X18H10T
004	Seat			
003	Flange			
014	Bonnet			
017	Wedge			
088	Stopper	12020		08X18H10T
015	Spindle	14X17H2, 17134 – hard-coated with Cr		
030	Wedge guidance	11523		17027.4
012	Yoke	422743, 11416		
013	Gland lid	422743, 11416		
033	Spindle nut	423046/11416		
044	Bolt	15320		
048	Nut	15236		
036	Bushing	08X18H10T		
084	Ring	08X18H10T		
053 054 095	Sealing rings	Expanded graphite		

Notes: Sealing surfaces of the seat and plug are hardfaced with cobalt-free alloy ANTINIT DUR 500 FD (type C1111)
 Recommended spare parts on order: sealing rings (053, 054, 095), spindle (015), spindle nut (033), wedge (017)

Dimensions



DN 65 – 300 , Pp to 9,2 MPa



DN 350 – 400, Pp to 4 MPa

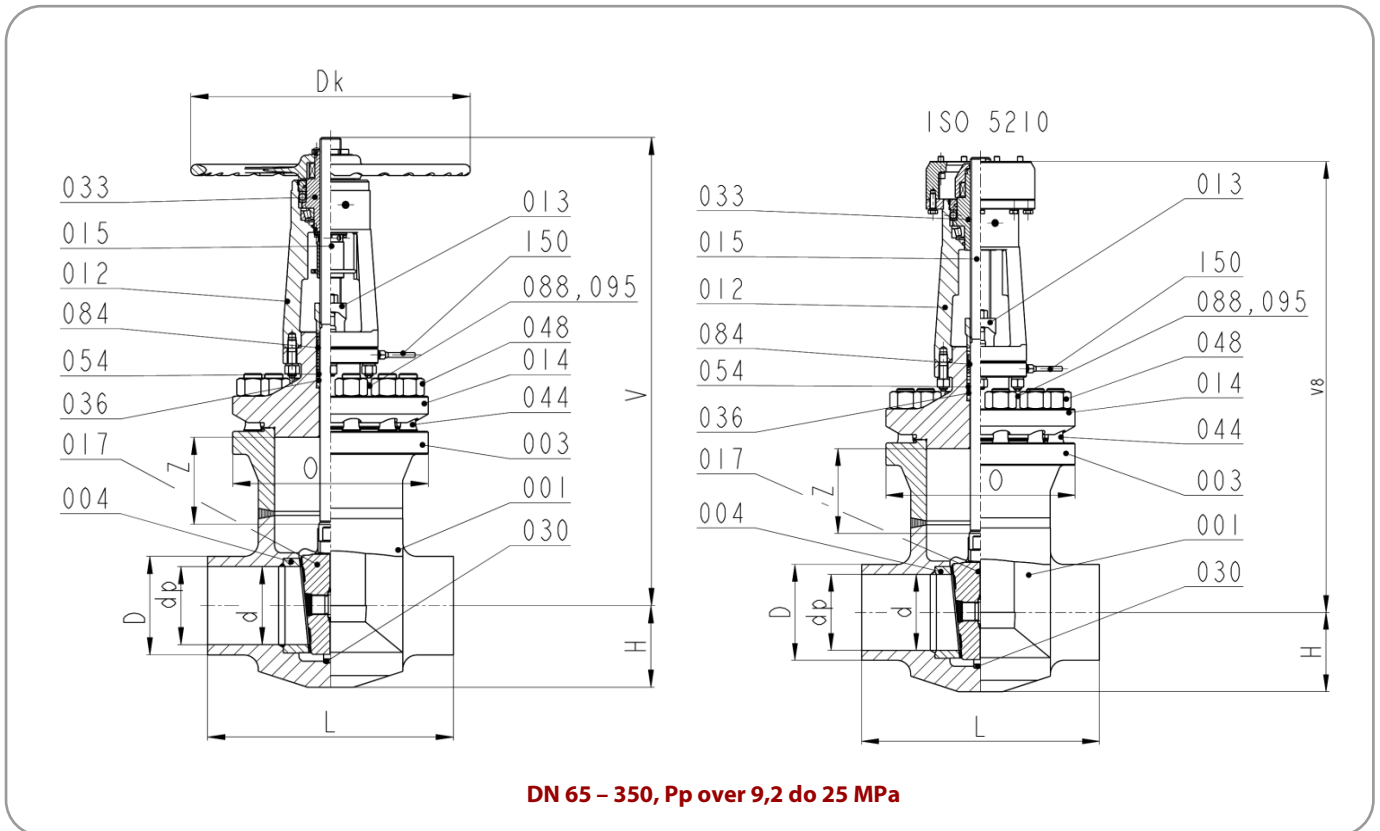
Gate valves with the hand wheel for the electric actuator and the reducer

DN	Pp MPa	D	dp	d	Dk	H	L	O	V	Z	m kg	V8	m8 kg
65/60	to 9,2	Connection dimensions according to TP		60	300	70	330	189	504	80	48	534	55
80/75				75	300	100	360	200	581	113	82	612	96
100/90				90	300	100	400	200	581	113	79	612	93
125/110				110	500	126	400	294	746	154	174	766	179
150/130				130	500	126	400	294	742	157	176	766	181
200/170	to 4			170	500	155	550	306	850	182	237	855	240
250/250				250	710	210	650	420	1095	259	433	1098	442
300/250				250	710	210	750	410	1095	259	554	1098	562
350/300				300	800	240	1000	510	1348	330	960	1386	1118
400/300				300	800	240	1000	510	1348	330	995	1386	1128
200/140	over 4 to 9,2			140	630	157	550	308	860	159	318	870	320
250/225				225	800	245	650	435	1169	242	776	1195	787
300 / 225				225	800	245	750	435	1169	242	870	1195	881

Quick-acting gate valves with the electric actuator

DN	Pp MPa	D	dp	d	Connection with EA	H	L	O	V8	Z	m8 kg
200/170	2,5	Connection dimensions according to TP		170	ISO 5210 *)	155	550	300	854	180	219
200/170	4			170		155	550	300	854	180	219
250/225	4			225		235	650	435	1160	242	576

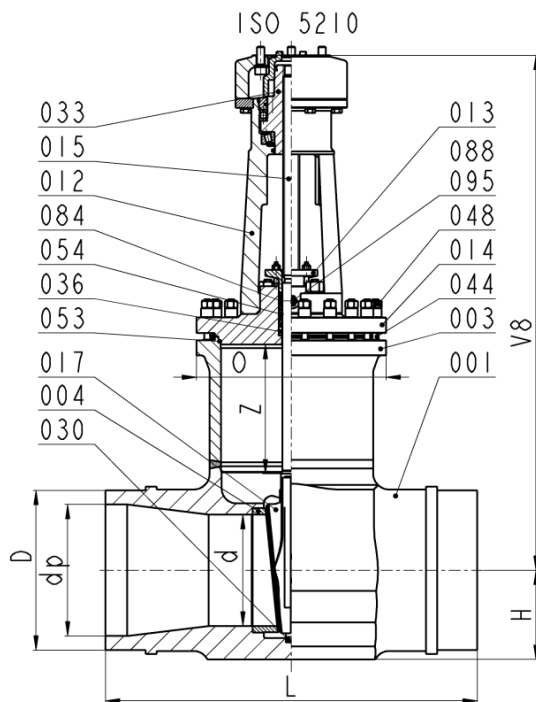
Notes: *) Other types of connection on request



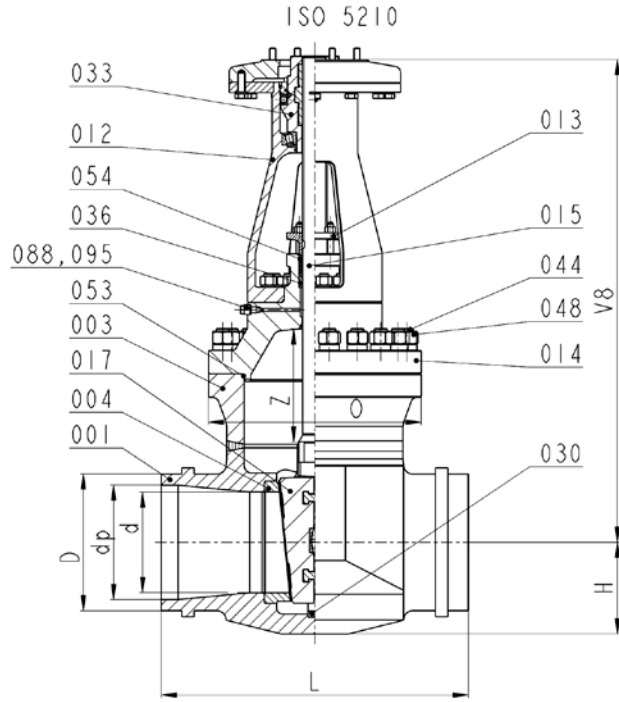
Gate valves with the hand wheel for the electric actuator and the gear (connection with the electric actuator ISO 5210 ¹⁾)													
DN	Pp MPa	D	dp	d	Dk	H	L	O	V	Z	m kg	V8	m8 kg
65/55	to 14	Connection dimensions according to TP		55	320	70	360	210	585	60	69	607	82
80/75				75	400	90	450	270	635	90	108	650	120
100/75				75	400	90	450	270	635	90	124	650	135
125/110				110	500	130	500	350	830	130	271	835	275
150/110				110	500	130	550	350	830	130	284	835	285
200/140	over 9,2 to 14			140	630	155	650	390	930	171	393	945	398
225/200				200	800	235	750	560	1345	250	1072	1335	1080
250/225				225	800	235	800	560	1348	251	1090	1336	1103
300/225				225	800	235	900	560	1348	251	1214	1336	1220
125-150/110	over 14 to 20			110	500	128	450	335	883	130	366	885	283
250/225				225	ISO 5210	235	800	560	-	255	-	1340	1177
300/225				225		235	900	560		255		1340	1352
300-350 /225				225		235	900	560		255		1340	1352
300-350 /225				225		235	900	560		255		1340	1445
80/75	over 14 to 25	75	500	130		450	350	870		90		230	875

Quick-acting gate valves with the electric actuator											
DN	Pp MPa	D	dp	d	Connection with EA	H	L	O	V8	Z	m8 kg
150/110	to 14	Connection dimensions according to TP		110	ISO 5210 *)	130	500	350	890	130	220
200/140				140		155	650	390	945	170	398
250/200	200			235		800	560	1335	250	1090	
300/225	11/7 ²⁾			225		235	900	560	1360	250	1230
300/225	18/6			225		235	900	560	1360	251	1352
125-150 /110	18/18 ²⁾			110		130	560	335	885	130	294
125/110	14/14 ³⁾			110		130	560	335	780	130	294
300-350 /265	18/6,5 ³⁾			265		263	990	632	1764	296	1726

Notes: *) Other types of connection on request
CAOP
CAO3



DN 400– 800, Pp to 12 MPa



DN 400/330, Pp to 12 MPa

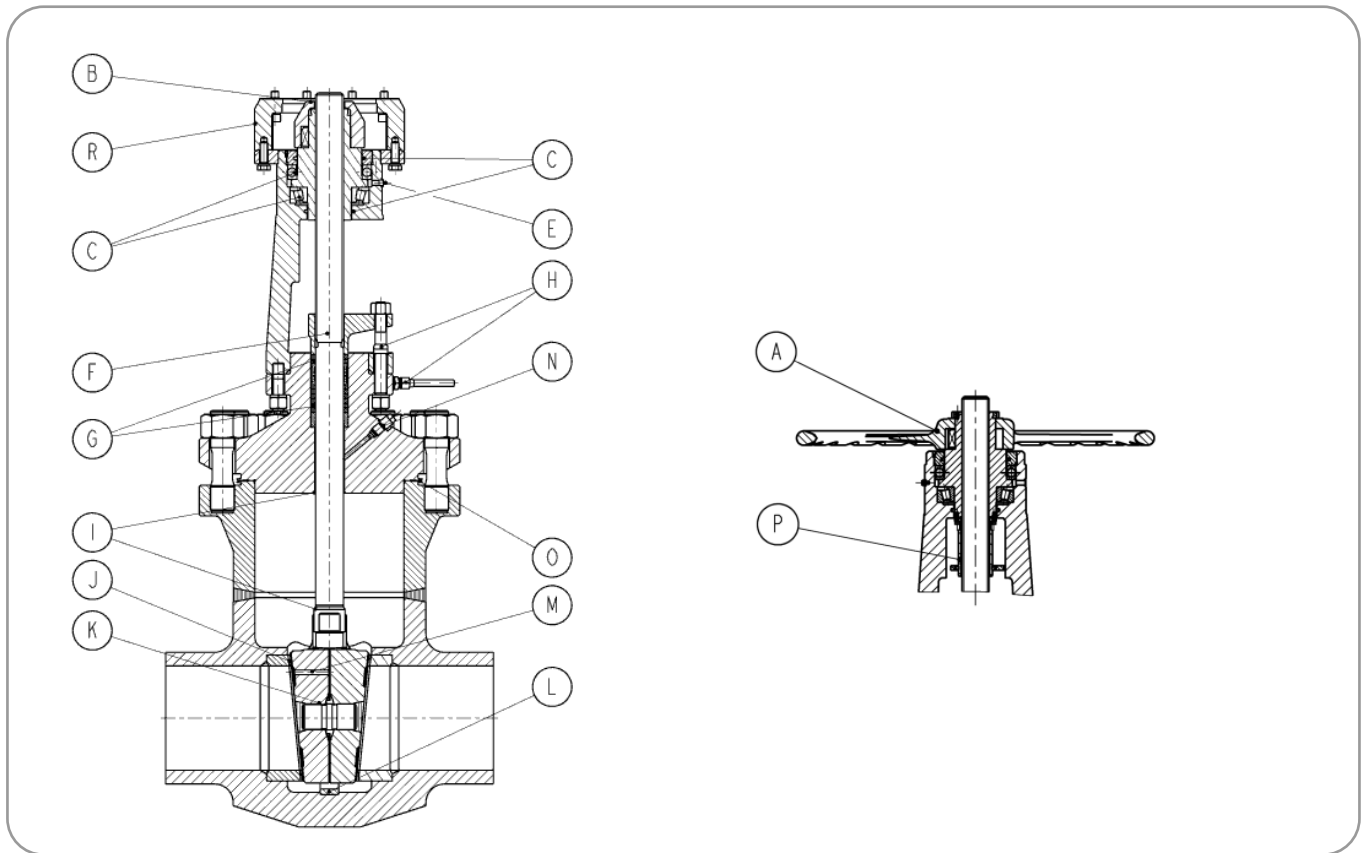
- Gate valves with by-passes on request
- Maximum pressure difference of the gate valve DN 500/450 and 600/500 - 3.0 ÷ 3.5 MPa - when using electric actuator

Gate valves with electric actuator											
DN	Pp MPa	D	dp	d	Connection with s EA	H	L	O	V8	Z	m8 kg
400/400	4,4	Connection dimensions according to TP		400	ISO 5210 *)	325	1000	660	1678	445	1940
400/400	6,8			400							1884
450/400	4,4			400							1990
450/400	6,8			400							1995
500/450	4,4			450		2665					
500/450	6,8			450		2702					
400/330	12			330		2258					
500/450	8,6/3,5			450		4025					
500/450	12/3,5			450		4025					
500/500	8,6/3,5			500		4425					
600/500	12/3,5			500		4425					
800/700	11/2,5			625		7950					
500/450	4,4			360		2665					
500/450	6,8			360		2702					
500/500	8,6/3,5	425	4425								
600/500	12/3,5	425	4425								
800/700	11/2,5	515	7950								

Quick-acting gate valves with the electric actuator											
DN	Pp MPa	D	dp	d	Connection with EA	H	L	O	V8	Z	m8 kg
450/400	7,2/7,2	Connection dimensions according to TP		400	ISO 5210 *)	325	1000	660	1680	445	1995
400/330	12/12			330		300	1000	695	1585	365	2260

Notes: *) Other types of connection on request

Advantages of construction



A	Non-rising hand wheel with the stop: Suitable for lack of space and to achieve the required control effect
B	Single connection of the actuators and gears according to ISO 5210: Possibility of using control elements from different manufacturers
C	Spindle nut located on two roller bearings: Simplifies control
D	Dust rings: Protect the bearings from dirt
E	Pressure lubrication: Simplifies control, extends bearings lifetime
F	Rising non-rotating spindle More reliable sealing of the spindle in the gland
G	Spindle stem – expanded graphite with side wiper rings: Reliable tightness, ecological material
H	Spindle gland with suction: Emergency protection against the release of radioactive substances into the air
I	Check valve of the spindle: Additional sealing by the spindle to replace the gland
J	Sealing surfaces are hard-alloyed with the cobalt-free alloy: Long-term durability, wear resistance
K	Wedge with inclined plates: Reliable fit and sealing

L	Demountable guidance of the wedge: Simple replacement and removal when replacing the seats
M	Central cavity equalization against overpressure: Protects the body from the excessive rise of the pressure
N	Opening with the stopper: Allows to replace the gland and install the gauge for testing and release of air
O	Bonnet with tabs: Allows triple additional sealing by welding the tabs
P	Local valve position indicator: For service orientation of the gate valves without control of the electric servo motor. Ability to install the remote control of the position