

Type K12

DN 65 – 600
PN 63 – 400

Forged Gate Valve with Pressure Sealed Bonnet

Butt-Welded, Flanged

Data Sheet

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Application

- Shut-off valve
- **Fluids**
Water, water steam and other fluids based on material selection
- **Industry**
Power engineering, chemical industry, nuclear power
- **Environments**
Normal, tropical, explosive, seismic

Technical description

- Body is die of free forging
- Yoke cast or welded
- Seats are pressed in the body and seal welded
- Sealing surfaces of the seats and wedge are hard-alloyed (Stellite)
- Spindle packing and sealing ring of the pressure seal bonnet are made of expanded graphite
- For the flanged gate valves, the flanges are welded to the body
- The gate valves design includes sizing of the main components according to the pressure-temperature system
- Gate valves can be operated in position open – close

Accessories

- By-pass
- Gland with permanently pressed spring (Live Loading System)
- Membrane Rupture Insurance Devices
- Another accessories upon request

Testing

- Gate valves shall be tested with water for the strength, impermeability, operational capacity and tightness depending on the operating parameters and material of the body according to EN 12266-1
- Minimum test pressure for the strength test is 1.5 x PN
- Strength welds shall be inspected by radiography

Operation

- Hand wheel (on request with locking device)
- Electric servo motor (also for seismic requirements) - standard connection dimensions according to ISO 5210
- Direct remote control
- Bevel gear

Connection

- Welding and flange according to CSN, EN, ANSI, GOST, DIN or according to customer requirements

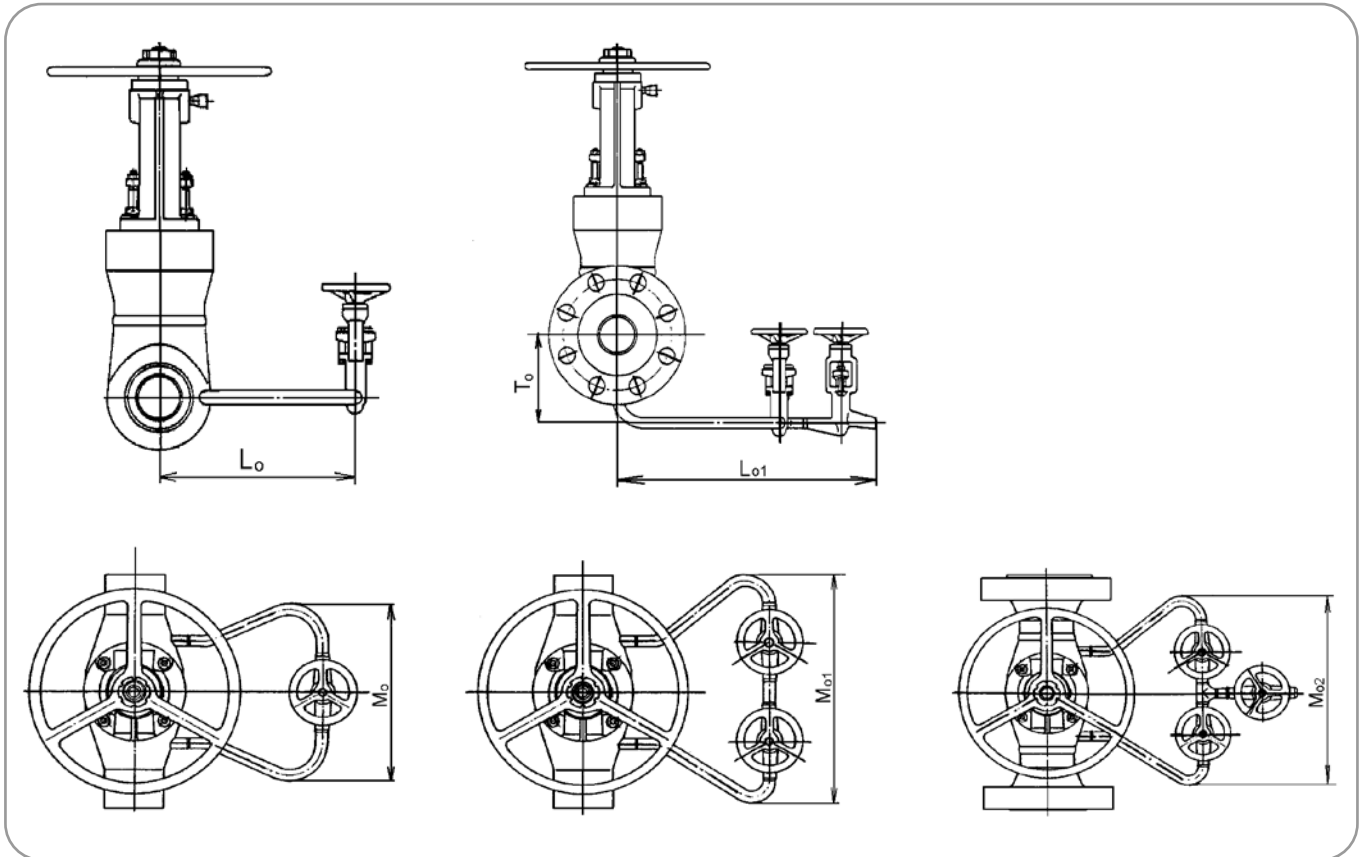


Installation

- Gate valves can be mounted in any position regardless the direction of the working fluid flow
- Gate valves with electric actuator with oil filling - see installation instructions from the manufacturer
- It is recommended to installed the gate valves of larger diameters in the horizontal piping with vertical sapindle and control at the top

By-pass

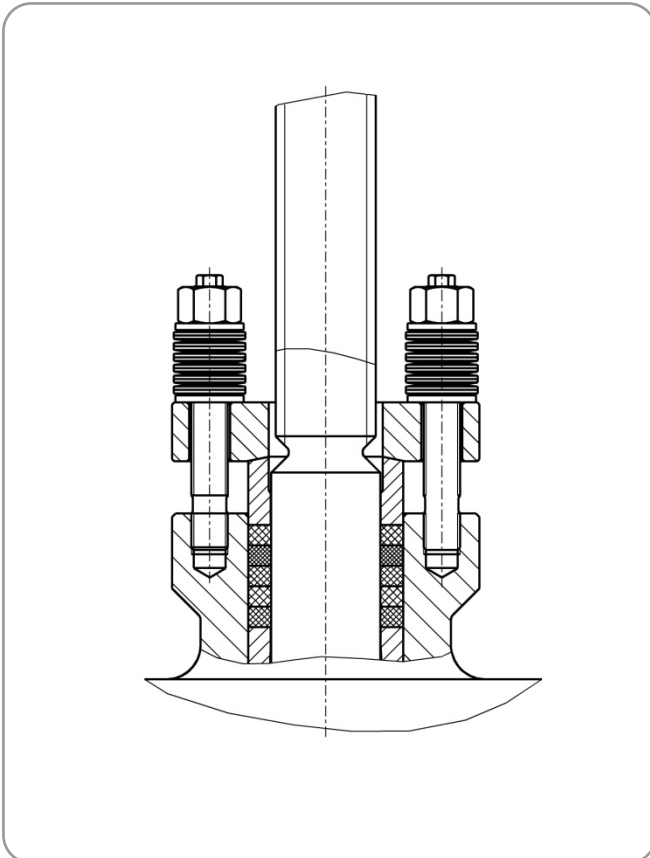
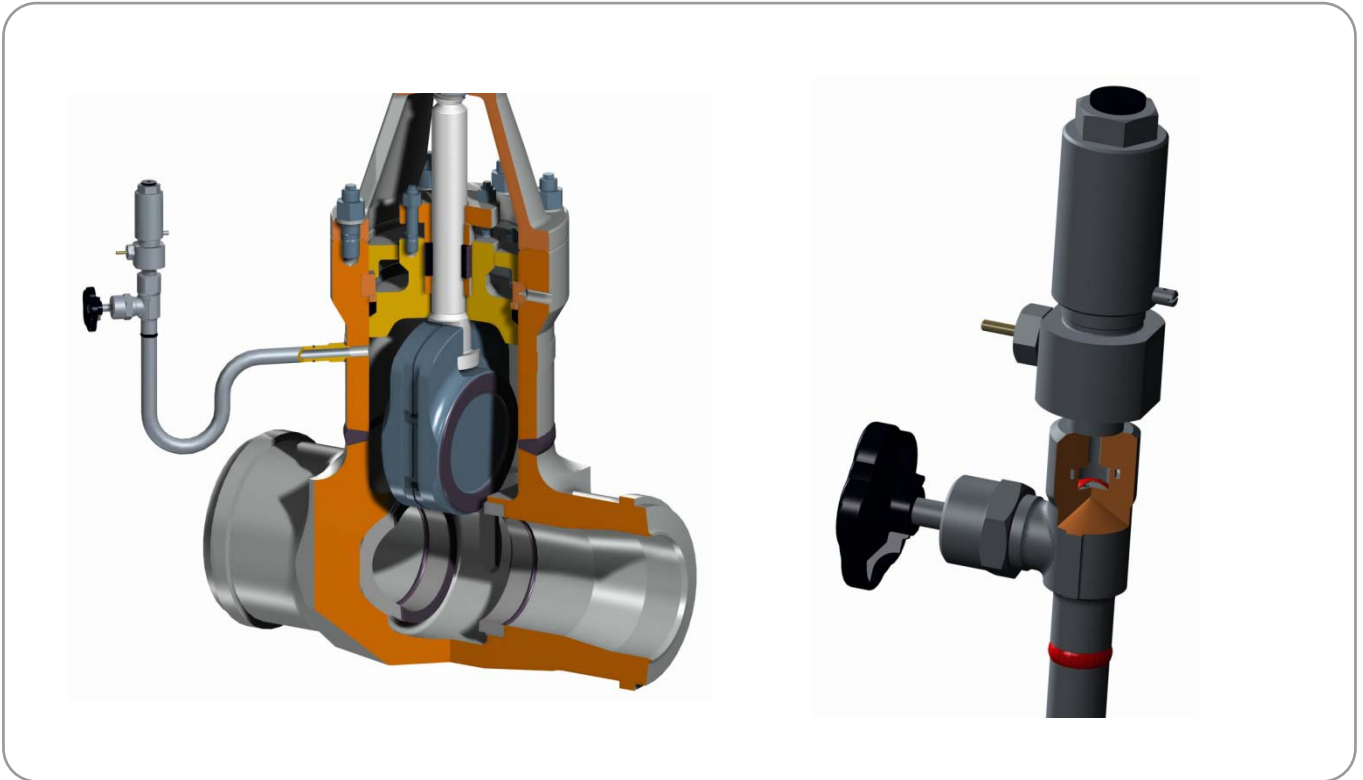
- Gate valves are standardly equipped with the protection of the inner part by the valve K89
- Gate valves up to DN 250 are designed for full pressure drop and bypass is not needed
- AT the customer's request, bypass with one to three valves can be supplied

By-pass


Gate valve DN/d	By-pass valve		Side by-pass				Block by-pass		
	DN	PN	1 valve		2 valves		3 valves		
			Lo	Mo	Lo	Mo ₁	Lo ₁	Mo ₂	To
65/50 65/55	15	63 ÷ 250	355	295	355	560	680	560	190
80/75 100/75			355	335	355	600	680	600	212
125/110 150/110			355	405	355	670	680	670	245
175/125	25		-	-	515	685	880	685	267
175/150 200/150			-	-	515	685	880	685	267
225/175			-	-	515	735	880	735	299
250/200 275/200	40		-	-	515	785 805	880	785 805	326
250/225			-	-	670	985	1160	985	406
275/225 300/225			-	-		1175		1175	
300/250	-		-	670	1205	1160	1205	406	
350/275 400/275	-		-		1115		1115	438 473	
400 ÷ 600			250 ÷ 400	*	*	*	*	*	*

Note: *) upon request

Central cavity equalization against overpressure

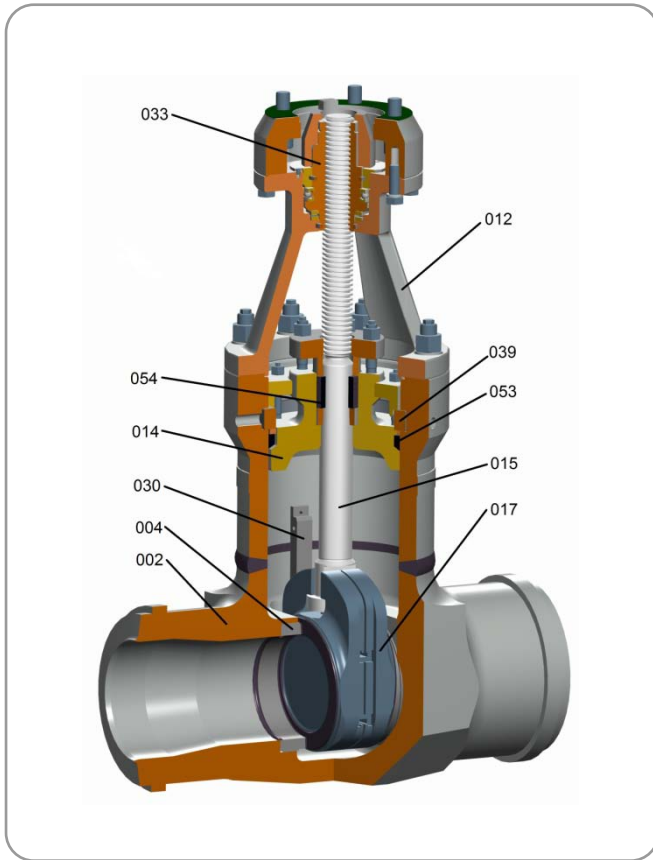


In some pipe systems may occur a situation where after the shutdown of the system and after subsequent cooling, a certain amount of water remains in the central part of the closed gate valve, ie in the space above the wedge. If after some time the gate valve closed that way again begins to heat (eg using by-pass), due to the temperature increase the pressure of the fluid between the plates of the wedge and above the wedge will increase. In order not to damage the valve by the pressure increase, the gate valve is fitted with the protection of the inner part by the valve K89. Relief valve is positioned on the pipe led out from the central part just below the pressure seal bonnet. The solution is universal and applicable to all gate valve and operating parameters, does not change bidirectional use of the valve. The safety device is fitted to the condenser loop lead out of the gate valve body outside its thermal insulation. Due to the replacement of the rupture disk during operation, the part of the safety device is the pressure measurement shut-off valve with locking device to prevent unallowed manipulation. By selecting an appropriate condensing loop be used the relief device with horizontal or vertical connection. Detailed description of the relief device is indicated in a separate catalogue sheet "K89 - Membrane rupture insurance device".

Live Loading System

- On request it is possible to supply the packing with permanently pressed spring (so-called Live Loading System)
- This design is used in cases where a special working fluid is used, where the nature of the operation eliminates regular maintenance of the packing or where operating conditions do not permit frequent check of the valves

Materials of main parts



Pos.	Name	Material						
		Non alloy	Low alloy		High alloy		Stainless	
002	Body	11416, P250GH (C22.8)	15128	16Mo3 (15Mo3)	11CrMo9-10, 10CrMo9-10, 13CrMo4-5, 14MoV6-3	15NiCuMoNb5- 6-4	X10CrMoVNb9- 1	X6CrNiTi18-10, 08X18H10T
004	Seat							
005	Flange							
017	Wedge							
039	Segmented ring	11416		11CrMo9-10 (10CrMo910)				
014	Pressure sealed							
011	Connection branch	16Mo3	10CrMo	16Mo3	10CrMo910	16Mo3	10CrMo9-10	X6Cr, 08X
030	Wedge guide	11523, S35532G3	15128	10CrMo9-10,11CrMo9-10		X10CrMoVNb9-1		17027.4
053 054	Sealing ring	Expanded graphite						
012	Yoke	GS-17CrMo5-5, 427744,10CrMo9-10, 11CrMo9-10, 15128						
015	Stem	X22CrMoV12-1, X39CrMo17-1						
	Hardfacing	Typ Stellite 6 (TYPE C1111)						
033	Stem nut	423046, CuAl10Fe3Mn2, CuAl10Fe5Ni5-C						

Operating data

Material of body	PN	Working pressure MPa / Working temperature °C											
		200	250	300	350	400	450	500	520	540	560	580	600
P250GH (C22.8) (W.Nr. 1.0460)	63	5,7	4,9	4,2	3,7	2,9	2,2	-	-	-	-	-	-
	100	9,0	7,8	6,7	5,8	4,6	3,5	-	-	-	-	-	-
	160	14,4	12,5	10,7	9,3	7,4	5,6	-	-	-	-	-	-
	250	22,5	19,6	16,7	14,5	11,6	6,7	-	-	-	-	-	-
	320	28,8	25,0	21,3	18,6	14,8	11,1	-	-	-	-	-	-
	400	40,0	31,3	26,7	23,2	18,6	13,9	-	-	-	-	-	-
11416	63	6,3	5,6	4,8	4,1	3,6	2,5	-	-	-	-	-	-
	100	10,0	8,8	7,7	6,6	5,7	4,0	-	-	-	-	-	-
	160	16,0	14,1	12,2	10,5	9,1	6,4	-	-	-	-	-	-
	250	24,9	22,0	19,1	16,4	14,2	10,0	-	-	-	-	-	-
	320	31,9	28,2	24,5	21,0	18,2	12,8	-	-	-	-	-	-
	400	39,9	35,2	30,6	26,2	22,7	16,0	-	-	-	-	-	-
15NiCuMoNb5 (W.Nr. 1.6368)	63	6,3	6,3	6,3	6,3	6,3	6,3	-	-	-	-	-	-
	100	10,0	10,0	10,0	10,0	10,0	10,0	-	-	-	-	-	-
	160	16,0	16,0	16,0	16,0	16,0	16,0	-	-	-	-	-	-
	250	25,0	25,0	25,0	25,0	25,0	25,0	-	-	-	-	-	-
	320	32,0	32,0	32,0	32,0	32,0	32,0	-	-	-	-	-	-
	400	40,0	40,0	40,0	40,0	40,0	40,0	-	-	-	-	-	-
16Mo3 (15Mo3) (W.Nr. 1.5415)	63	6,3	6,0	5,3	5,1	4,9	4,7	3,4	2,2	-	-	-	-
	100	10,0	9,6	8,4	8,1	7,8	7,5	5,4	3,4	-	-	-	-
	160	16,0	15,3	13,4	13,0	12,5	12,1	8,6	5,5	-	-	-	-
	250	25,0	23,9	21,0	20,3	19,6	18,8	13,5	8,6	-	-	-	-
	320	32,0	30,6	26,9	26,0	25,0	24,1	17,3	10,9	-	-	-	-
	400	40,0	38,3	33,6	32,5	31,3	30,1	21,6	13,7	-	-	-	-
13CrMo4-5 (W.Nr. 1.7335)	63	6,3	6,3	6,3	6,0	5,8	5,5	5,0	3,4	2,2	1,5	-	-
	100	10,0	10,0	10,0	9,6	9,3	8,7	7,9	5,4	3,5	2,3	-	-
	160	16,0	16,0	16,0	15,3	14,8	13,9	12,7	8,7	5,7	3,7	-	-
	250	25,0	25,0	25,0	23,9	23,2	21,7	19,9	13,6	8,8	5,8	-	-
	320	32,0	32,0	32,0	30,6	29,7	27,8	25,4	17,4	11,3	7,4	-	-
	400	40,0	40,0	40,0	38,3	37,1	34,8	31,8	21,8	14,1	9,3	-	-
11CrMo9-10 (W.Nr. 1.7383)	63	6,3	6,3	6,3	6,3	6,3	6,0	4,9	3,8	2,8	2,1	1,6	1,2
	100	10,0	10,0	10,0	10,0	10,0	9,6	7,8	6,0	4,5	3,4	2,6	2,0
	160	16,0	16,0	16,0	16,0	16,0	15,3	12,5	9,6	7,2	5,4	4,1	3,2
	250	25,0	25,0	25,0	25,0	25,0	23,9	19,6	14,9	11,3	8,4	6,4	4,9
	320	32,0	32,0	32,0	32,0	32,0	30,6	25,0	19,1	14,5	10,8	8,2	6,3
	400	40,0	40,0	40,0	40,0	40,0	38,3	31,3	23,9	18,1	13,4	10,2	7,9
10CrMo9-10 (W.Nr. 1.7380)	63	6,3	6,3	6,3	6,3	6,0	5,7	4,9	3,8	2,8	2,1	1,6	1,2
	100	10,0	10,0	10,0	10,0	9,6	9,0	7,8	6,0	4,5	3,4	2,6	2,0
	160	16,0	16,0	16,0	16,0	15,3	14,4	12,5	9,6	7,2	5,4	4,1	3,2
	250	25,0	25,0	25,0	25,0	23,9	22,5	19,6	14,9	11,3	8,4	6,4	4,9
	320	32,0	32,0	32,0	32,0	30,6	28,8	25,0	19,1	14,5	10,8	8,2	6,3
	400	40,0	40,0	40,0	40,0	38,3	35,9	31,3	23,9	18,1	13,4	10,2	7,9
14MoV6-3 (W.Nr. 1.7715)	63	6,3	6,3	6,3	6,3	6,3	6,3	6,3	5,4	4,1	3,1	-	-
	100	10,0	10,0	10,0	10,0	10,0	10,0	10,0	8,6	6,6	5,0	-	-
	160	16,0	16,0	16,0	16,0	16,0	16,0	16,0	13,8	10,5	8,0	-	-
	250	25,0	25,0	25,0	25,0	25,0	25,0	25,0	21,6	16,4	12,5	-	-
	320	32,0	32,0	32,0	32,0	32,0	32,0	32,0	27,6	21,0	16,0	-	-
	400	40,0	40,0	40,0	40,0	40,0	40,0	40,0	34,6	26,2	19,9	-	-
15128	63	6,3	6,3	6,3	6,3	6,3	6,3	6,2	4,8	3,7	2,8	2,2	1,6
	100	10,0	10,0	10,0	10,0	10,0	10,0	9,8	7,6	5,9	4,5	3,5	2,6
	160	16,0	16,0	16,0	16,0	16,0	16,0	15,7	12,2	9,4	7,2	5,6	4,2
	250	25,0	25,0	25,0	25,0	25,0	25,0	24,5	19,0	14,6	11,3	8,7	6,5
	320	32,0	32,0	32,0	32,0	32,0	32,0	31,4	24,3	18,7	14,5	11,1	8,3
	400	40,0	40,0	40,0	40,0	40,0	40,0	39,2	30,4	23,4	18,1	13,9	10,4

Material of body	PN	Working pressure MPa / Working temperature °C											
		200	250	300	350	400	450	500	520	540	560	580	600
X10CrMoVNb9-1 (W.Nr. 1.4903)	63	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	5,5	4,4	3,4
	100	10,0	10,0	10,0	10,0	10,0	10,0	10,0	10,0	10,0	8,7	7,0	5,4
	160	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	13,9	11,1	8,7
	250	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	25,0	21,7	17,4	13,6
	320	32,0	32,0	32,0	32,0	32,0	32,0	32,0	32,0	32,0	27,8	22,3	17,4
	400	40,0	40,0	40,0	40,0	40,0	40,0	40,0	40,0	40,0	34,8	27,8	21,8
X6CrNiTi18-10 (W.Nr. 1.4541)	63	6,1	5,4	5,0	4,7	4,6	4,4	4,3	4,3	4,3	4,3	3,9	3,1
	100	9,7	8,5	7,9	7,5	7,2	7,0	6,9	6,9	6,9	6,8	6,2	5,0
	160	15,5	13,6	12,6	12,1	11,6	11,2	11,0	11,0	11,0	10,9	9,9	8,0
	250	24,2	21,3	19,7	18,8	18,1	17,5	17,2	17,2	17,1	17,1	15,5	12,5
	320	31,0	27,3	25,2	24,1	23,2	22,4	22,1	22,0	21,9	21,9	19,8	16,0
	400	38,7	34,1	31,5	30,1	29,0	28,1	27,6	27,5	27,4	27,4	24,8	19,9
08X18H10T	63	6,0	5,6	5,4	5,0	4,8	4,5	4,1	3,8	3,5	3,1	2,8	2,5
	100	9,5	8,8	8,5	7,9	7,7	7,1	6,6	6,0	5,5	5,0	4,5	4,0
	160	15,2	14,1	13,6	12,7	12,2	11,4	10,5	9,6	8,8	8,0	7,2	6,5
	250	23,8	22,0	21,3	19,9	19,1	17,8	16,4	15,0	13,7	12,5	11,3	10,1
	320	30,4	28,2	27,3	25,4	24,5	22,8	21,0	19,3	17,5	15,9	14,4	12,9
	400	38,0	35,2	34,1	31,8	30,6	28,5	26,2	24,1	21,9	19,9	18,1	16,2

Dimensions

The table of building dimensions applies only to standard valves with PN 250. For other parameters of the working medium (pressure, temperature), each offer drawing is delivered with specific dimensions according to customer requirements. Upon agreement with the customer, dimensions and standard valves can be adjusted if the strength conditions are maintained.

Gate valves for electric actuators and gears

DN/d	H mm	L mm	V ₈ mm	Z mm	m kg
65/50	55	360	460	65	58
65/55	55	360	460	65	58
80/75	75	450	555	88	90
100/75	75	450	555	88	99
100/110	108	450	668	132	190
125/110	108	550	668	132	180
150/110	108	550	668	132	187
125/125	120	550	743	150	285
150/125	120	550	743	150	280
175/125	120	650	743	150	291
150/150	140	550	817	170	350
175/150	140	650	817	170	375
200/150	140	650	817	170	380
175/175	165	650	1001	207	530
200/175	165	650	1001	207	550
225/175	165	700	1001	207	579
200/200	185	650	1074	230	705
225/200	185	700	1074	230	725
250/200	185	800	1074	230	740
275/200	185	850	1074	230	760
225/225	210	700	1195	250	980
250/225	210	800	1195	250	1010
275/225	210	850	1195	250	1052
300/225	210	900	1195	250	1100
250/250	240	1000	1318	280	1505
275/250	240	1000	1318	280	1540
300/250	240	1000	1318	280	1581
275/275	265	1000	1458	315	2150
300/275	265	1000	1458	315	2215
350/275	265	1100	1458	315	2273
400/275	265	1100	1458	315	2320
450/300	*	*	*	*	*
500/350	325	1350	1782	394	4070
550/350	325	1350	1782	394	4117
600/400	*	*	*	*	*

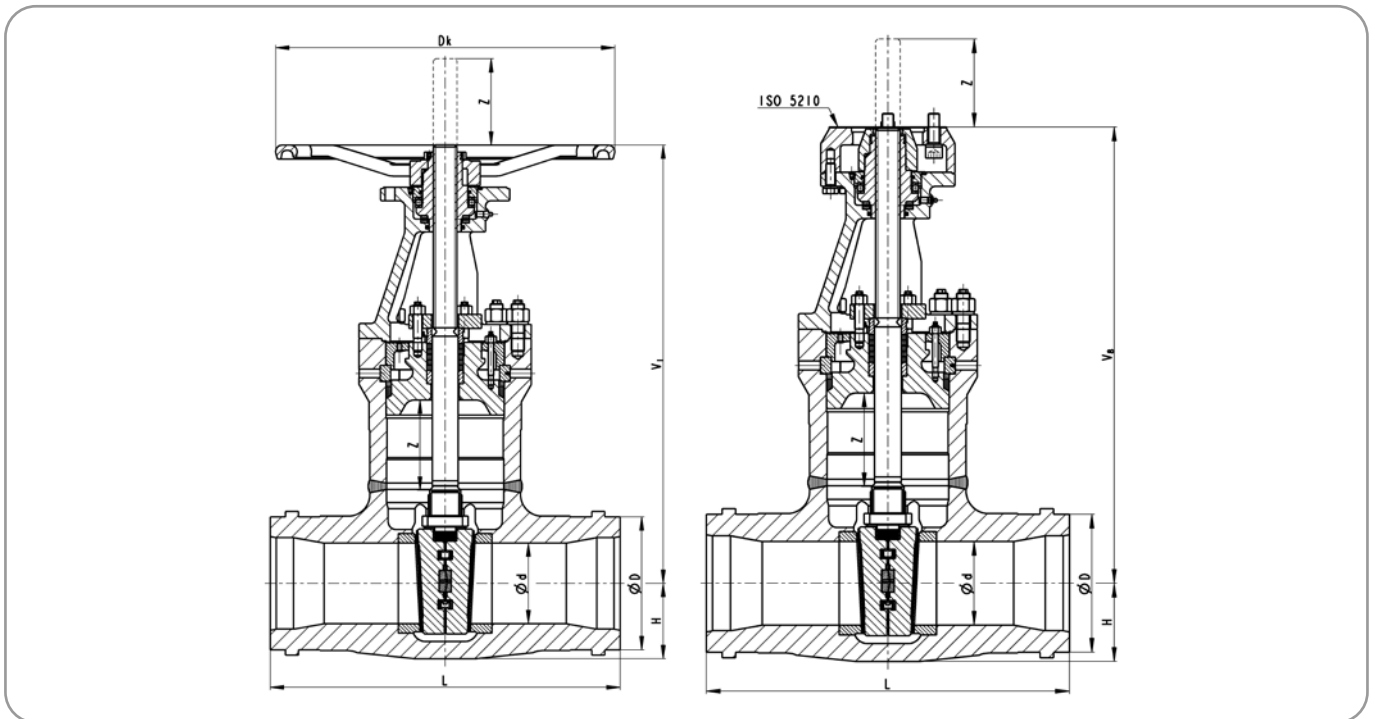
Notes: „D“ according to ČSN, EN, DIN or on demand
*) upon request

Gate valves with hand wheel

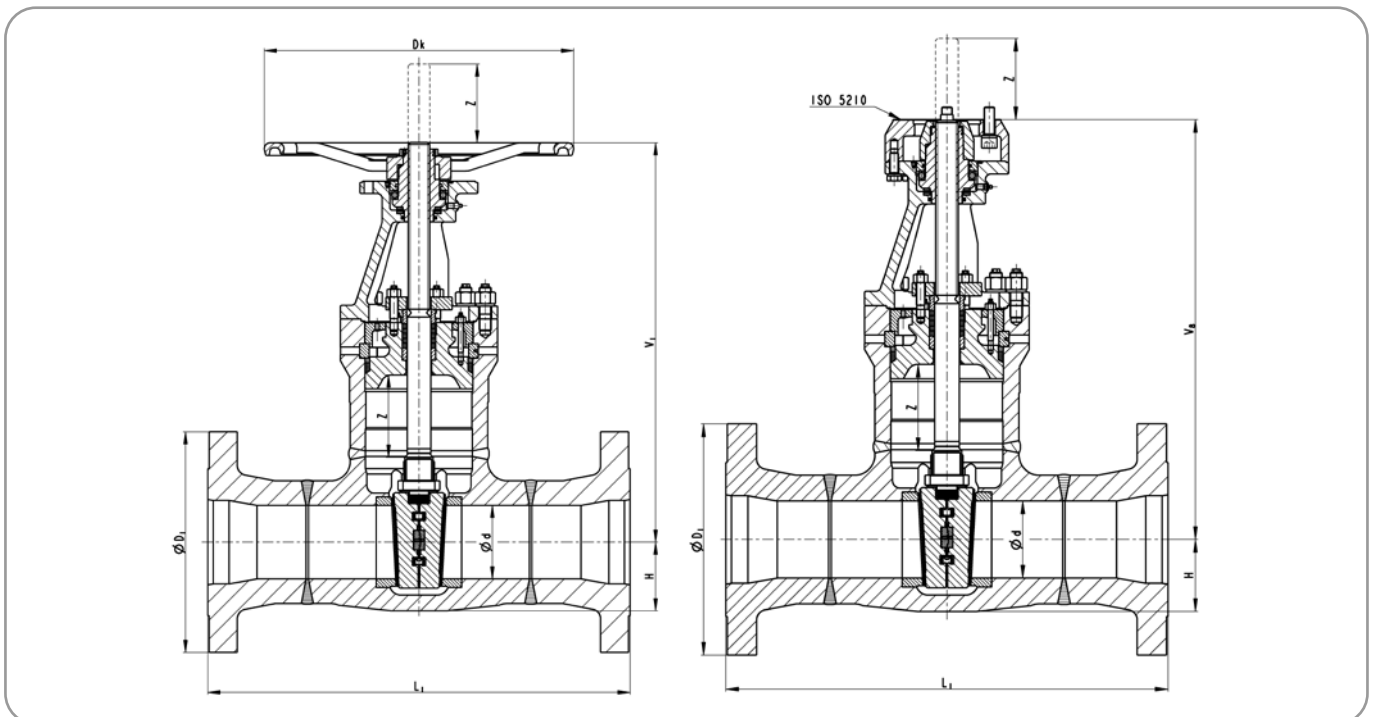
DN/d	D_k mm	H mm	L mm	V₁ mm	Z mm	m kg
65/50	300	58	360	460	66	60
65/55	300	58	360	460	66	58
80/75	400	75	450	545	88	90
100/75	400	75	450	545	88	92
100/110	500	108	450	672	132	172
125/110	500	108	550	672	132	180
150/110	500	108	550	672	132	188
125/125	500	120	550	746	150	285
150/125	500	120	550	746	150	280
175/125	500	120	650	746	150	290
150/150	630	140	550	815	170	350
175/150	630	140	650	815	170	375
200/150	630	140	650	815	170	380
175/175	710	165	650	979	207	504
200/175	710	165	650	979	207	534
225/175	710	165	700	979	207	567
200/200	*710	185	650	1052	230	705
225/200	*710	185	700	1052	230	725
250/200	*710	185	800	1052	230	750
275/200	*710	185	850	1052	230	790

Notes: „D“ according to CSN, EN, DIN or on demand
 For „d“ larger than 200, control by the hand wheel is not manufactured
 * - control by the hand wheel only to PN 160

Butt-welded type, PN 63 – 250

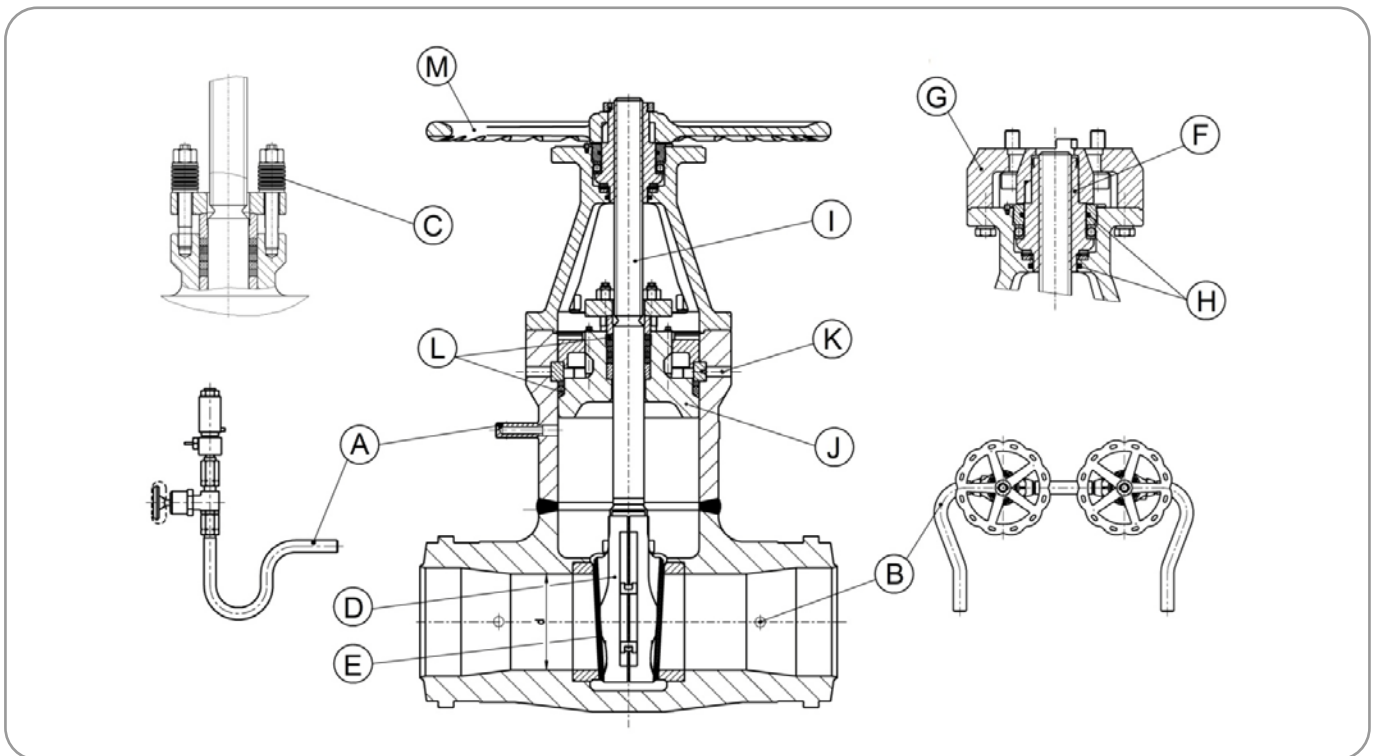


Flanged type, PN 63 – 250 (PN 400 with electric actuator)



- Flange connection dimensions according to CSN EN 1092-1
- Building length of the flanged valves according to CSN EN 558
- Dimensions according to the drawing are available on request, other flange connection is possible after agreement with the manufacturer

Advantages of construction



A	Protection of the inner part against overpressure: The inner part of the valve is protected against overpressure by the membrane rupture insurance device
B	Bypass: Allows to heat the valve and reduce the pressure drop (available on request)
C	Live Loading System: The stem packing is permanently pressed by a set of disk springs (supplied on request)
D	The wedge design: Reliable fitting and sealing. Allows easy removal of the plates at the customer
E	Sealing surfaces: The sealing surfaces of the wedge and seats are equipped with a weld of hard weld alloy
F	Yoke: Yoke is provided with a bronze spindle nut with needle and ball bearing with the pressure lubrication for the easy control of the valve
G	Actuator connection: Possibility to connect all drives conforming to ISO 5210
H	Dust rings: Dust rings protect the bearings from dirt
I	Spindle: The spindle is non-rotating, rising, allowing better sealing in the packing
J	Pressure seal bonnet: Pressure seal bonnet without a central nut simplifies and accelerates its removal, easier and quicker disassembly by meand of the closing plate.
K	Openings in place of the split ring: Simplify the removal of the split ring
L	Sealing: Pressure seal ring and the sealing rings are made of the expanded graphite. Guarantee reliability
M	Non-rising hand wheel with sticking point: Advantage in case of lack of space and for achieve of required operating effect