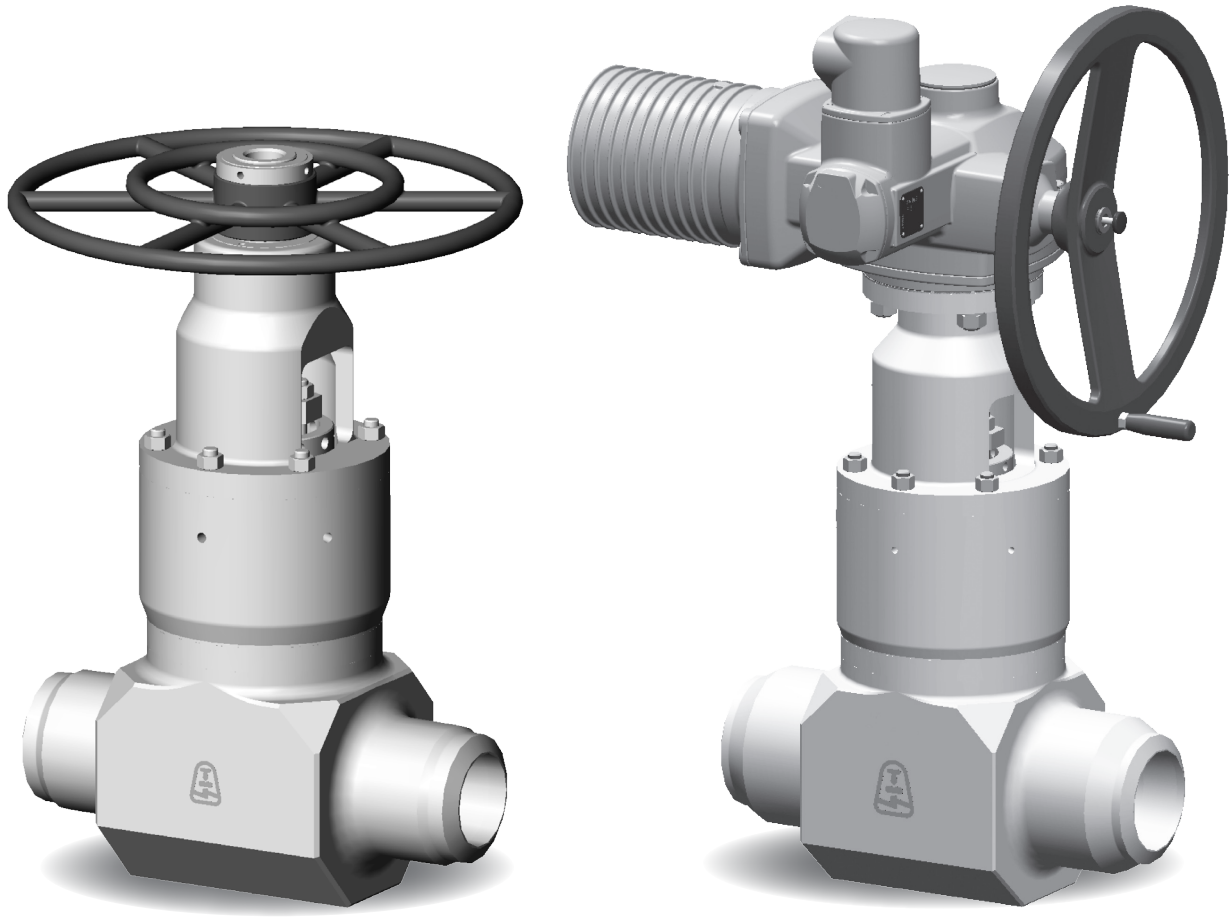
GATE VALVE S43

PN 160–500 (630); DN 50/50–350/275; T_{MAX}: 600 °C



APPLICATION

- water, steam, gases, other working substances in the energy sector

CONNECTION

- weld ends, flanged

OPERATION

- handwheel, electric actuator, gearbox, remote control, attachment for pneumatic or hydraulic actuator

DESCRIPTION

- shut-off gate valve
- non-rotating rising stem
- non-rising handwheel
- self-sealing bonnet
- flexible wedge
- hard surfacing welded surfaces by Stellite 6
- complies with the requirements of the directive 2014/68/EU
- testing is carried out according to EN 12266-1, part 2

BASIC DESIGN OPTIONS

- position indicator
- limit switches
- TA-Luft (Typ S43)
- protection cover for the stem
- drain plug
- by-pass
- drilled wedge
- safety valve
- according to AD 2000-Merkblatt A4

PROTECTION OF THE SPACE ABOVE THE WEDGE

At the customer‘s request, the valves can be equipped with protection of the space above the wedge from extreme pressure increase. This case may occur after the system is decommissioned, when the amount of fluid in the middle part of the closed valve is cooled (the space above the wedge). If after some time we start the valve in the closed state to heat (using a by-pass), due to the increase in temperature, there will be a high pressure increase in the space above the wedge.

If during the production process such a situation may arise, it is necessary to indicate in the order the requirement to put a valve with a space guard above the wedge (the inside of the valve).

Types of protection:

a) drilling a wedge - the input side

b) use of diaphragm safety valve P 10.01

c) external by-pass - using two high pressure valves connected to the central part

The use of a diaphragm safety valve, although the most expensive, is a universal solution. Can be used on all valves and all production parameters. When using a diaphragm safety valve, the valve is two-way. The safety device is installed on the condensation circuit, which is led out of the valve body, outside its thermal insulation. Due to the replacement of the diaphragm bolt during the production process, part of the safety valve is the flywheel, which can be used to close the safety valve when replacing. To set the allowable overpressure limit, you must specify the manufacturing parameters of the valve in the order.

Example of recommended membrane

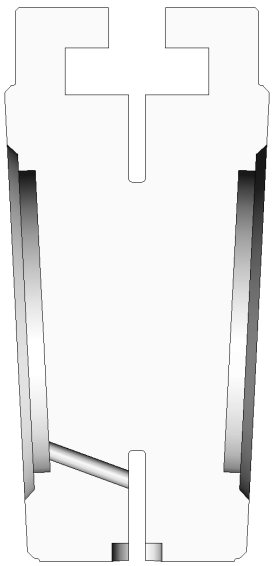
Operating parameters of the valve: working pressure Pp = 23.5 MPa, production temperature Tp = 250 °C.

Bursting pressure of the membrane: 1.3 Pp = 1.3 * 23.5 = 30.55 MPa and at a temperature of 250 °C.

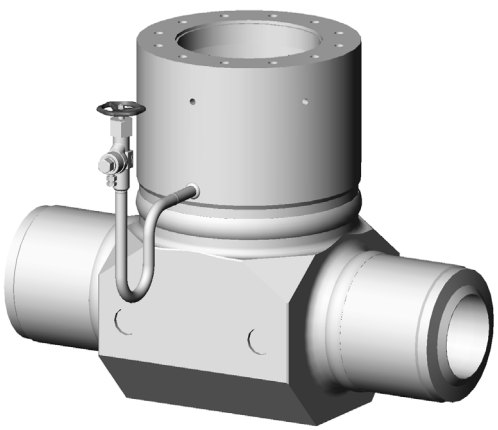
The entry in the order: valve operating parameters Pp = 23.5 MPa - Tp = 250 °C (bursting pressure of 30.55 MPa at temperature of 250 °C).

At high pressure drops and on the basis of the customer›s requirements, it is possible to produce valves with by-pass valves.

a)



b)



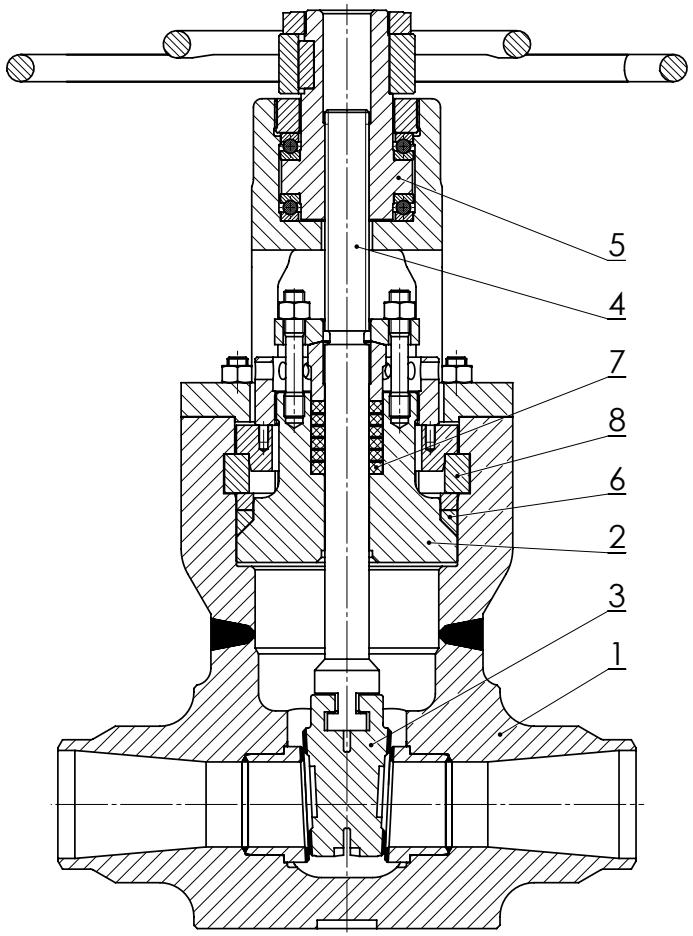
c)

PRESSURE-TEMPERATURE-RATINGS

Material	PN	Admissible operating pressure PS [bar] at operating temperature TS [°C]															
		-10	50	100	150	200	250	300	350	400	450	500	530	550	570	590	600
1.0460 (P250GH)	160	160	160	160	148	135	120	105	88	70	51	-	-	-	-	-	-
	250	250	250	250	230	211	188	164	137	109	80	-	-	-	-	-	-
	320	320	320	320	295	270	240	210	175	140	102	-	-	-	-	-	-
	400	400	400	400	368	357	316	276	230	172	132	-	-	-	-	-	-
1.7383 (11CrMo9-10)	160	160	160	160	160	160	160	160	160	145	123	100	70	50	40	30	25
	250	250	250	250	250	250	250	250	250	227	191	156	109	78	63	47	39
	320	320	320	320	320	320	320	320	320	290	245	200	140	100	80	60	50
	400	400	400	400	400	400	400	400	400	400	400	355	237	179	134	100	80
1.7715 (14MoV6-3)	160	160	160	160	160	160	160	160	160	160	154	147	101	76	56	-	-
	250	250	250	250	250	250	250	250	250	250	240	230	158	119	87	-	-
	320	320	320	320	320	320	320	320	320	320	307	294	202	152	111	-	-
	400	400	400	400	400	400	400	400	400	400	400	400	274	208	154	-	-
	500	500	500	500	500	500	500	500	500	500	500	500	342	260	192	-	-
1.5415 (16Mo3)	160	160	160	160	160	145	130	115	111	107	89	71	36	-	-	-	-
	250	250	250	250	250	227	203	179	173	166	139	111	56	-	-	-	-
	320	320	320	320	320	290	260	229	221	213	178	142	72	-	-	-	-
	400	400	400	400	400	362	324	286	277	267	222	177	90	-	-	-	-
1.7335 (13CrMo4-5)	160	160	160	160	160	160	151	141	133	126	115	105	61	40	25	-	-
	250	250	250	250	250	250	235	220	208	196	180	163	95	62	39	-	-
	320	320	320	320	320	320	301	282	266	251	230	209	122	79	50	-	-
	400	400	400	400	400	400	400	389	352	314	288	261	165	103	69	-	-
1.6368 (15NiCu-MoNb5-6-4)	160	160	160	160	160	160	160	154	151	148	145	-	-	-	-	-	-
	250	250	250	250	250	250	250	241	236	231	227	-	-	-	-	-	-
	320	320	320	320	320	320	320	308	302	296	290	-	-	-	-	-	-
	400*	400	400	400	400	400	400	385	378	370	363	-	-	-	-	-	-
	500	500	500	500	500	500	500	462	437	405	403	-	-	-	-	-	-
	630	630	630	630	630	630	630	582	550	510	508	-	-	-	-	-	-
1.4903 (X10Cr-MoVNb9-1)	160	160	160	160	160	160	160	160	160	160	160	144	118	100	82	65	56
	250	250	250	250	250	250	250	250	250	250	250	225	184	156	129	101	88
	320	320	320	320	320	320	320	320	320	320	320	288	235	200	165	130	112
	400*	400	400	400	400	400	400	400	400	400	400	360	294	250	206	162	140
	500	500	500	500	500	500	500	471	452	432	412	393	337	279	225	178	158
	630	630	630	630	630	630	630	594	569	544	519	495	425	351	283	224	199

* Design of gate valve from pressure series PN 160-320 | Other materials on request

USED MATERIALS



Pos.	Part	Material						
1	Body	1.0460 (P250GH)	1.7383 (11CrMo9-10)	1.7715 (14MoV6-3)	1.5415 (16Mo3)	1.7335 (13CrMo4-5)	1.4903 (X10CrMoVNb9-1)	1.6368 (15NiCu-MoNb5-6-4)
	Hard facing of seat sealing surface	Stellite 6	Stellite 6	Stellite 6	Stellite 6	Stellite 6	Stellite 6	Stellite 6
2	Bonnet	1.0460 (P250GH)	1.7383 (11CrMo9-10)	1.7715 (14MoV6-3)	1.5415 (16Mo3)	1.7335 (13CrMo4-5)	1.4903 (X10CrMoVNb9-1)	1.6368 (15NiCu-MoNb5-6-4)
3	Wedge	1.0460/1.0425 (P250GH)	1.7383 (11CrMo9-10)	1.7715 (14MoV6-3)	1.5415 (16Mo3)	1.7335 (13CrMo4-5)	1.4903 (X10CrMoVNb9-1)	1.6368 (15NiCu-MoNb5-6-4)
	Hard facing of wedge sealing surface	Stellite 6	Stellite 6	Stellite 6	Stellite 6	Stellite 6	Stellite 6	Stellite 6
4	Stem	X22CrMoV12-1+QT1 (1.4923+QT1)	X22CrMoV12-1+QT1 (1.4923+QT1)	X22CrMoV12-1+QT1 (1.4923+QT1)	X22CrMoV12-1+QT1 (1.4923+QT1)	X22CrMoV12-1+QT1 (1.4923+QT1)	X6NiCrTiMoVB25-15-2+P (1.4980+P)	X6NiCrTi-MoVB25-15-2+P (1.4980+P)
5	Stem nut	42 3046.01	42 3046.01	42 3046.01	42 3046.01	42 3046.01	42 3046.01	42 3046.01
6	Bonnet sealing	Graphite pressed	Graphite pressed	Graphite pressed	Graphite pressed	Graphite pressed	Graphite pressed	Graphite pressed
7	Gland packing	Graphite knitted + pressed	Graphite knitted + pressed	Graphite knitted + pressed	Graphite knitted + pressed	Graphite knitted + pressed	Graphite knitted + pressed	Graphite knitted + pressed
8	Divided ring	1.7715 (14MoV6-3)	1.7383 (11CrMo9-10)	1.7715 (14MoV6-3)	1.7715 (14MoV6-3)	1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1)	1.6368 (15NiCu-MoNb5-6-4)

VALVE DIMENSIONS

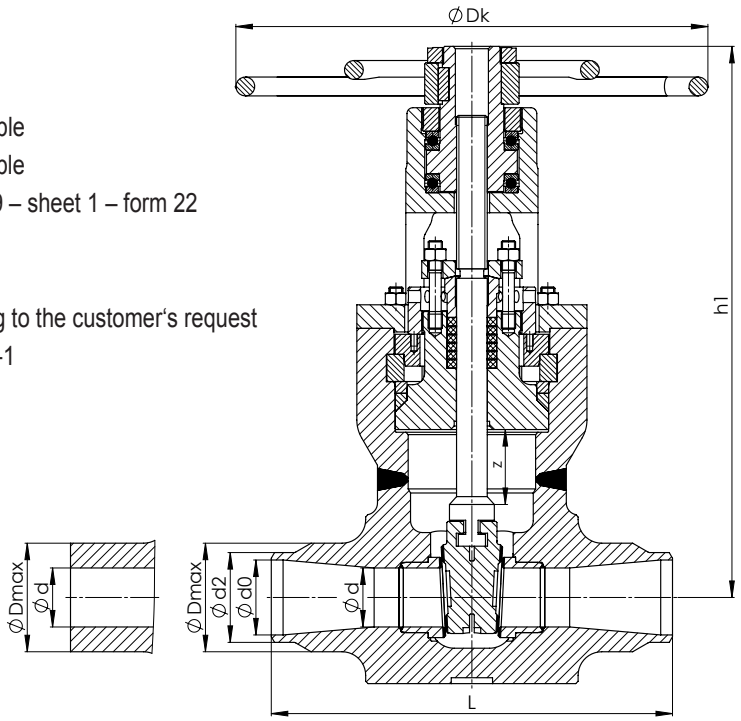
1. Weld ends

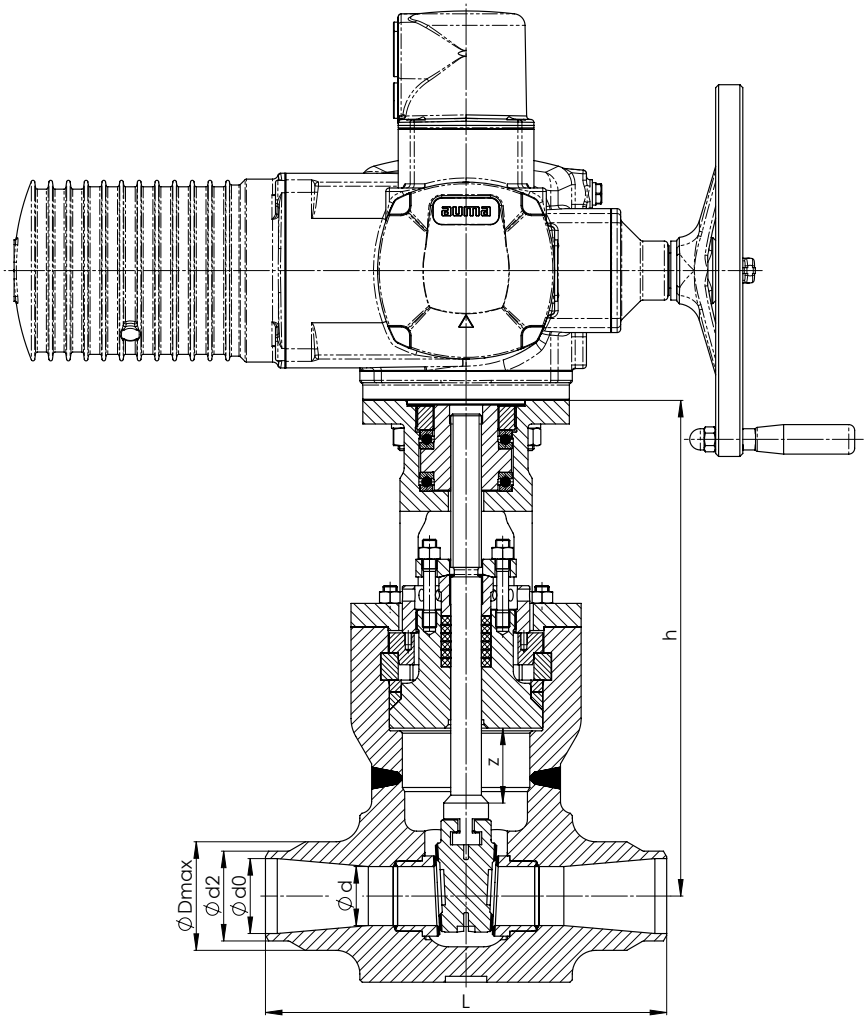
Face-to-face dimensions:	as per table
Dimensions of welding ends:	as per table
Groove form:	DIN 2559 – sheet 1 – form 22

2. Flanged

Face-to-face dimensions:	according to the customer‘s request
Flanges:	EN 1092-1

Other adjustments on request





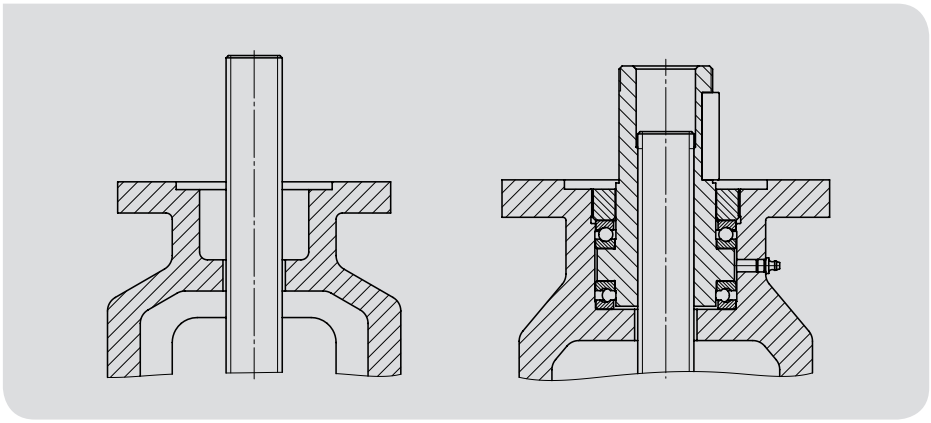
GATE VALVE S43

Nominal pressure	Nominal size	Face-to-face	Stroke	Handwheel	E-actuator (connection ISO 5210)	Centre-to-top	Centre-to-top	Weld ends								Dmax/d [mm]	m [kg]
								PN 160		PN 250		PN 320		PN 400-500			
PN	DN	L [mm]	z [mm]	Dk [mm]	-	h [mm]	h1 [mm]	d2	d0	d2	d0	d2	d0	d2	d0		
160	50/50	300	65	400	F14-B2	470	420	60,3	50,3	63,5	47,5	70	50	-	-	92/50	74
	65/50	340	65	400	F14-B2	470	420	76,1	63,5	76,1	58,5	88,9	63,9	-	-	92/50	77
	80/65	390	80	400	F14-B2	495	435	88,9	74,7	101,6	76,6	101,6	73,2	-	-	110/65	94
	100/80	450	105	500	F14-B2	570	505	114,3	96,7	127	98,6	133	98	-	-	136/80	147
	125/110	550	130	630	F16-B2	670	595	139,7	117,7	152,4	117,4	168,3	123,9	-	-	184/110	253
	150/125	550	140	710	F16-B1	790	745	168,3	143,3	177,8	137,8	193,7	143,7	-	-	210/125	348
	200/150	700	180	710	F16-B1	920	840	219,1	183,1	244,5	188,5	244,5	180,5	-	-	245/150	610
	250/200	850	245	800	F25-B1	1125	995	273	229	298,5	234,5	323,9	233,9	-	-	325/200	1130
	300/250	1000	300	gearbox	F30-A	1065	1065	323,9	273,9	355,6	283,6	355,6	265,6	-	-	372/250	1715
	350/275	1200	310	gearbox	F35-A	1190	1190	355,6	299,6	406,4	316,4	406,4	296,4	-	-	420/275	2645
250-320	50/50	300	65	400	F14-B2	470	420	60,3	50,3	63,5	47,5	70	50	-	-	92/50	74
	65/50	340	65	400	F14-B2	470	420	76,1	63,5	76,1	58,5	88,9	63,9	-	-	92/50	77
	80/65	390	80	400	F14-B2	495	435	88,9	74,7	101,6	76,6	101,6	73,2	-	-	110/65	94
	100/80	450	105	500	F14-B2	570	505	114,3	96,7	127	98,6	133	98	-	-	136/80	147
	125/110	550	130	630	F16-B2	670	595	139,7	117,7	152,4	117,4	168,3	123,9	-	-	184/110	253
	150/125	550	140	gearbox	F16-B1	790	745	168,3	143,3	177,8	137,8	193,7	143,7	-	-	210/125	348
	200/150	700	180	gearbox	F25-B2	920	840	219,1	183,1	244,5	188,5	244,5	180,5	-	-	245/150	610
	250/200	850	245	gearbox	F30-B2	1125	995	273	229	298,5	234,5	323,9	233,9	-	-	325/200	1130
	300/250	1000	300	gearbox	F35-A	1065	1065	323,9	273,9	355,6	283,6	355,6	265,6	-	-	372/250	1715
	350/275	1200	310	gearbox	F35-A	1190	1190	355,6	299,6	406,4	316,4	406,4	296,4	-	-	420/275	2645
400-500	50/50	300	60	400	F14-B2	510	450	-	-	-	-	-	-	On customer request		92/45	105
	65/50	340	60	400	F14-B2	510	450	-	-	-	-	-	-	On customer request		95/50	106
	80/65	390	80	500	F14-B2	570	500	-	-	-	-	-	-	On customer request		110/65	144
	100/80	450	93	630	F16-B2	610	535	-	-	-	-	-	-	On customer request		145/80	196
	125/110	550	125	710	F25-B2	795	710	-	-	-	-	-	-	On customer request		190/110	367
	150/125	550	145	-	F25-B2	-	790	-	-	-	-	-	-	On customer request		222/125	572
	200/150	750	170	-	F25-A	-	795	-	-	-	-	-	-	On customer request		252/150	895
	250/200	900	225	-	F30-A, F35-A	-	953	-	-	-	-	-	-	On customer request		344/200	1624
	300/250	1100	275	-	F35-A	-	1125	-	-	-	-	-	-	On customer request		425/250	2779
	350/275	1200	300	-	F35-A	-	1205	-	-	-	-	-	-	On customer request		450/275	3501

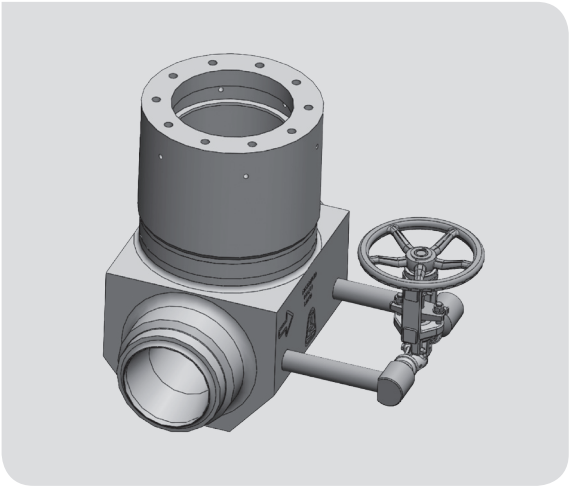
L can be adjusted to customer requirements | * On customer request

DESIGN VARIANTS

ADJUSTMENT FOR CONNECTION OF ELECTRIC ACTUATOR



BY – PASS



VALVE DESCRIPTION CODE

S43 123–3320–150/125

DN

PN

Body materiál

3 – alloy stell – forged

1.7383	11CrMo9-10	(max. 600 °C)
1.7715	14MoV6-3	(max. 570 °C)
1.5415	16Mo3	(max. 530 °C)
1.7335	13CrMo4-5	(max. 570 °C)
1.6368	15NiCuMoNb5-6-4	(max. 450 °C)
1.4903	X10CrMoVNb9-1	(max. 600 °C)

4 – carbon steel – forged

1.0460	P250GH	(max. 450 °C)

Operation

1 – handwheel
2 – gearbox
3 – electric actuator
4 – attachment for pneumatic or hydraulic actuator
5 – remote control

Type of connection

1 – flanged
2 – weld ends

Body/bonnet style

1 – straigh-way pattern

Valve type

S – gate valves
43 – self-sealing bonnet

VALVE INSTALLATION

When installed in the duct, the position of handwheel operated valves is arbitrary. In case of a gate valve operated by electric actuator, the position of control elements is arbitrary, however in the upper half to the horizontal plane. Recommended assembly position of the gate valve with actuator is vertical. In case of installation of the gate valve operated by electric actuator with stem in horizontal position, it is necessary to mount the gate valve at the flange of the yoke.

During the installation and use of the valve, the following points have to be respected:

- operating conditions must comply with operating parameters of the valve
- proper function of the valve is affected by the presence of impurities in the pipeline and flowing medium, therefore it is necessary keep working environment a pipeline clean, for example with using filters
- medium used must comply with the corrosion resistance of the valve material
- use of mechanically damaged valves during the operation is prohibited

The service life of valves significantly extends regular maintenance and minor repairs carried out by trained personnel.